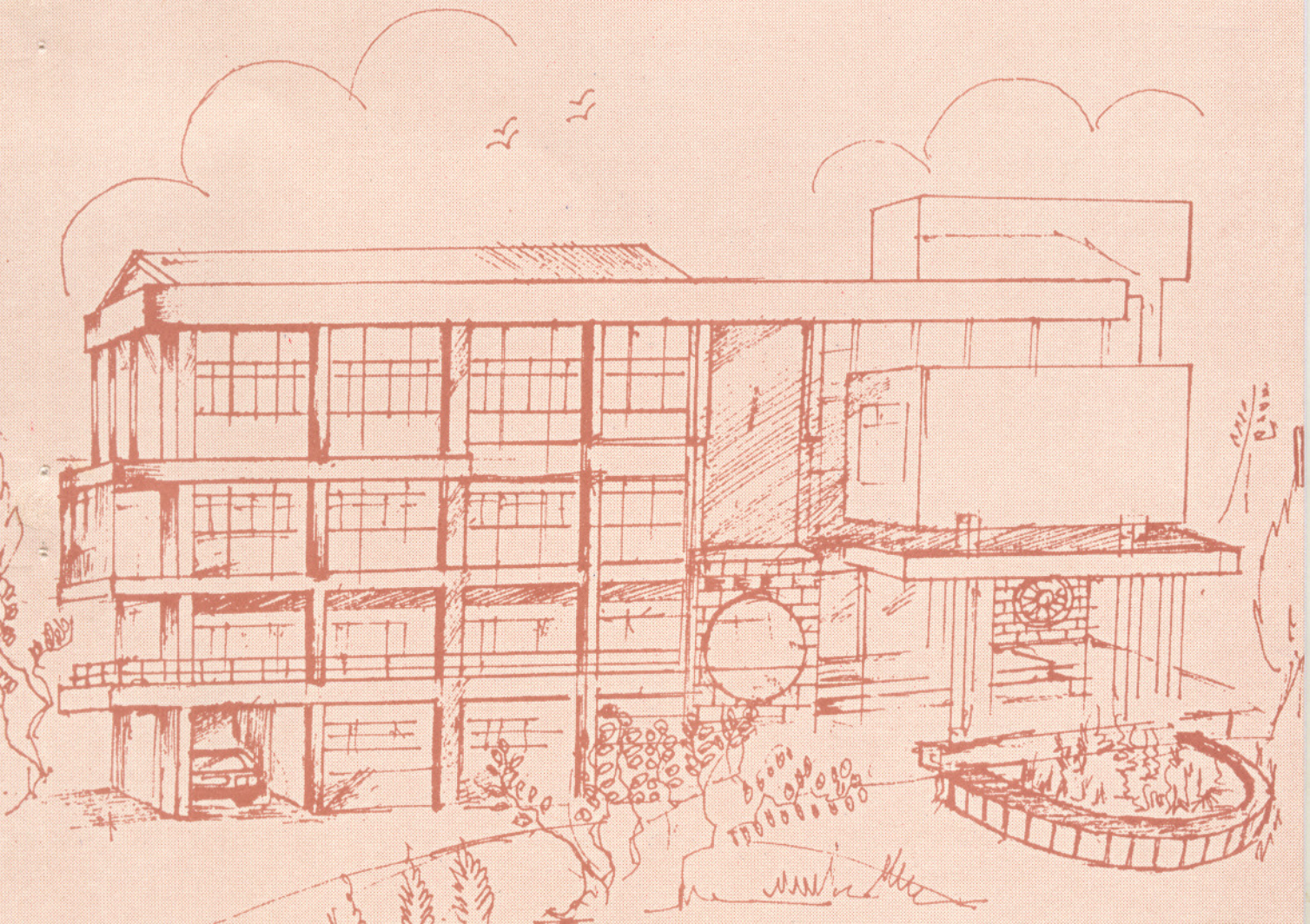




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Impact of Post-TRIPS IP Regime on Indian Agriculture



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ABSTRACT

In the twenty-first century, Gene Revolution has metamorphosed the agriculture sector with new plant varieties and terminator seed technology. The MNCs who fund the R&D, in bio-tech research, pressurize the developed countries to frame trade agreements with other nations conducive to recouping profitable return on investments. Thus, WTO and other agreements reflect the concerns of MNCs of developed countries. And, India has through “international-trade-agreements-compliant” laws pledged our food sovereignty, farmers’ needs, traditional knowledge, and ecological diversity by legalizing bio-piracy and promoting corporatization of agriculture at the altar of corporate greed. W(h)ither “Ever-green Revolution” in India?

1. Introduction

In the “century of bio-technology”, “As you sow, so you will reap!” is no longer the refrain in agriculture. Since immemorial times, the customary practice of farmers sowing seeds, harvesting the crops and saving part of the harvest for seeds is so much quintessentially typical of Indian agriculture that to envisage a different situation requires special explanation. Farmers’ ingenuous methods of creating indigenous varieties of seeds¹ over the centuries have enriched the bio-resources and ensured the food security and integrity of the country immeasurably. These incremental improvements over the centuries have consolidated into varieties with better yields. Thus, conservation and sustained development of bio-diversity (originally nurtured and maintained by the farmers) are necessary to humanity for its long-term survival. Better plant varieties are needed for ensuring food security to satisfy the hunger of the ever-growing world’s population. Farmers have contributed immensely to the bio-diversity through informal innovation and conservation guided by the larger common weal.

However, since the 1960s there has been a paradigm shift in the agricultural development and research from the erstwhile farmer's lands to the lab-based "top-to-down" model² ushering in High Yielding Varieties (HYVs), chemical fertilizers, pesticides and other critical inputs. Thus, with the onset of the "Green Revolution", the MNCs made their debut into the manufacture of seeds, pesticides and fertilizers displacing the traditional farmers as the prime contributors to the rich bio-diversity³. And, fifty years later, the MNCs have now come to dominate the entire agricultural development and research with the production of "Genetically Modified Varieties" (GMVs) of crops. No wonder, the cost of research in the area of crop improvement has become astronomically expensive; hence, while the contribution of the public sector in plant breeding tends to decrease, the private sector investments concomitantly have increased. Logically, the private sector seed industries and plant breeders tend to exact reasonably viable financial returns on their investment in plant breeding research. Thus, agriculture has come to pervade the multilateral trade agreements, (euphemistically promoting "free trade"!) culminating in the clutch of agreements signed at the time of the establishment of the WTO in 1994 mirroring the commercial concerns of the MNCs of the developed countries. The most notable of these is the Agreement on Trade-Related Aspects of Intellectual Property Rights (aka the TRIPS Agreement) which sets down minimum standards for most forms of intellectual property regulation within all member countries of the WTO.

Consequently, agriculture, which is the main source of livelihood of more than 60%⁴ of the Indian population, has been subjected to radical changes in the post-TRIPS period⁵. The recent legislative attempts – viz., the Patent Amendment Act, 2005, the Protection of Plant Varieties and Farmers' Rights (Denial?) Act, 2002⁶, Geographical Indications of Goods (Registration & Protection) Act, 1999⁷ and the Seed Act, 2004 - to become TRIPS-compliant by the Indian Government have, in fact, facilitated the corporatization⁸ of the Indian agriculture sector by permitting privatization of valuable bio-resources through patents.

The two IPRs - Patents and Plant Variety Protection (PVP) - grant exclusive monopoly rights over the creation (e.g. new plant variety, GM seeds, etc.) for commercial exploitation. While patents granted to inventors provide exclusive monopoly rights over

the product for twenty years on the basis of novelty, usefulness, and non-obviousness, Plant Variety Protection available to plant breeders protect the genetic makeup of a specific plant variety if the “novelty - distinctiveness - uniformity – stability” (NDUS) criteria are satisfied. In this globalized world, access to genetic resources, which may generate critical inputs for pharma-crops⁹ and industrial crops, assume vital significance in view of the political, cultural and economic ramifications that it may have on the developing and Third World countries.

The modern IPR protection regime runs counter to the very basis of Indian agricultural ethos and tantamounts to formalizing bio-piracy by commercializing traditional resources and indigenous knowledge of the native farming communities. India has already been rudely jolted from its deep slumber regarding these changes when two NRIs sought patent for turmeric for its wound-healing properties which is common knowledge of the entire Indian populace! Similar tremors shook the scientific community when basmati¹⁰, neem¹¹ and Nap-hal wheat¹² were patented. It is sad commentary on the US law of patents that “prior existing knowledge” which debars grant of patent is narrowly drafted to denote publication in a journal or availability on a database¹³ and does not extend to traditional knowledge handed over generations through oral traditions.

Further, globalization of agricultural trade poses a great challenge to the future world food security. The control of seeds and agricultural research in a handful of MNCs – Gene Giants – Monsanto¹⁴, DuPont and Syngenta¹⁵, not only renders the food security of the world vulnerable in the hands of these commercial enterprises¹⁶ but may also tend to affect the quality and well-being of everyone with food habits totally dictated by the MNCs to appease their “hunger for corporate wealth and power”¹⁷. The rich nations are adopting any and every type of means¹⁸ – fair¹⁹ and foul²⁰, to protect their farmers. Farmers in the LDCs, whose very economic survival depends on being able to save seeds from one year to the next, are ruined by the added input costs²¹. Ironically, the community which has helped the MNCs develop the new varieties of crops are not only denied ownership rights but are also made to pay royalties for use of their own resources²². Apart from the need to purchase seeds every year, they perforce have to use chemical herbicides and fertilizers. Uniformity in plant varieties and mono-cropping

world over may also affect the gene pool, perhaps, irreversibly, besides rendering food security totally dependant upon the stability of the international seed supply industry. Above all, the social costs of GM crops and GM contamination have not been addressed effectively to cast the burden on the source of the issue – viz, the bio-tech industry.

Further, the terminator technology, which helps in the creation of sterile seeds from GM plants to prevent farmers from re-using the seed for future crops, perpetuates a system that allows the technology itself to do the self-policing, rather than using laws and legal barriers for prevention of misappropriation of the technology. The genetic seed sterilization patents maximize seed industry profits by destroying the right of farmers to save their seeds and breed their own crops. The policy decisions benefit the bio-tech industry and compound the problems of the farmers and consumers by the transfer of the costs and burdens of the new technology onto them. Thus, corporate greed has vacuumed away the public interest concerns of the world as a whole.

2. International Agreements affecting Biological Diversity

These mind-boggling developments have the sanction of law in those countries signatory to WTO and other multilateral trade agreements. A short appraisal of the various international instruments impacting on bio-diversity and India's legislative reaction would help in the appreciation of the import of the international developments.

2.1. UN Convention on Biological Diversity (CBD), 1992

This was the first comprehensive instrument on plant genetic resources drafted with the objective of ensuring “that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes”²³. Some of the salient features of this Convention are:

1. The imposition of legal liability on the member-states to ensure the “fair and equitable sharing of benefits” arising from “the use of traditional knowledge, innovations and practices”; and,

2. The recognition of the “indigenous and local communities embodying traditional lifestyles” as the guardians of biological diversity and its sustainable management, and acknowledgement of its vital significance in “meeting the food, health and other needs of the growing world population”.

2.2. Cartagena Protocol on Biosafety, UN Convention on Biological Diversity, 2000

The Cartagena Protocol on BioSafety, though adopted as a supplementary agreement to the CBD in 2000, is a legally binding instrument that governs transfer of, from one nation to another, of living modified organisms²⁴.” It is also important for the “precautionary principle” which enables the importing countries to ban the imports where there is lack of conclusive proof of the LMOs transferred being safe for the bio-diversity of the State and consumers. The procedure for “Advanced Informed Agreement” (AIA) covers seeds for planting live fish for release, micro-organisms for bio-remediation and other LMOs intentionally introduced into the environment; ... to enable information-flow to countries to make informed decisions before agreeing to the import of such organisms into their country and the establishment of the Biosafety Clearing-House “to facilitate the exchange of information on living modified organisms and to assist countries in the implementation of the Protocol”²⁵.

2.3. International Treaty on Plant Genetic Resources, FAO, 2001

Originally a non-binding undertaking in 1983, based on the well-established principle that plant genetic resources as a common heritage of mankind to be available freely, in 2001, it had to be galvanized as a legally binding treaty to be in conformity with the CBD. The Treaty is the first of its kind to provide a legal framework for balancing the need for conservation and sustainable use of plant genetic resources with a procedure for access and benefit-sharing, and providing direct and indirect links to IPR instruments. It envisions the grant of multilateral system of “facilitated access” to seeds and other germplasm of 64 of the most important food and forage crops, basic to food security, between member states for research, breeding and crop development. The significant provisions of this treaty are the “Access & Benefit Sharing” (ABS) provision for those who commercialize a product developed from the multilateral system (MLS) to pay an

equitable share of the benefits arising from the commercialization of that product and the involvement of farmers, their communities and countries in relevant policy discussions and decision-making and further, to participate fully in the benefits derived from improper use of PGRs including plant breeding. However, the Treaty has failed to make international provisions for farmers' rights by squarely placing the onus on national governments to do so.

2.4. International Union for the Protection of New Varieties of Plants (UPOV Convention), 1961

The UPOV Convention was first negotiated and ratified mostly by developed countries. The UPOV, an important instrument concerning the management of biological resources provides a legal mechanism for the protection of plant varieties developed by commercial plant breeders through the introduction of "plant breeders' rights." Plant breeders' rights are a hybrid form of intellectual property rights, which give the seed industry similar incentives to those offered by patents, without establishing a complete monopoly. The glaring flaw is its failure to address the consequent effect of the IPR regime that it advocates on the environment. The important aspects of this 1961 convention (with six European countries) are:

1. the recognition accorded to the exclusive rights of individual plant breeders to produce or reproduce protected varieties, to condition them for the purpose of propagation, to offer them for sale, to commercialize them, including exporting and importing them, and to stock them in view of production or commercialization;
2. (ii) Protection provided for developed or discovered plant varieties which are new²⁶, distinct²⁷, uniform²⁸ and stable.²⁹

The UPOV underwent some revisions in 1972 and 1978. It is noteworthy that as the preamble to the 1961 and 1978 Acts of the Convention state it was originally conceived to be a mechanism for the development of agriculture in addition to providing IP protection to breeders.

Some of the principal aspects of the 1978 Act are that it:

1. Recognized 'farmer's privilege' to re-use propagating material from the previous year's harvest and to freely exchange seeds of protected varieties with other farmers;
2. Plant breeders' rights (PBR) were not to extend to acts done privately and for non-commercial purposes or for experimental purposes and do not extend to the use of the protected variety for the purpose of breeding other varieties and the right to commercialize such other varieties;
3. The period of protection was of a minimum of 15 years: For vines, forest trees, fruit trees and ornamental trees, the minimum was 18 years;
4. Member states had to offer protection through any form of intellectual property right;
5. The grant of a PBR on a given variety implied that no other intellectual property right can be granted to the same variety.

In 1991, substantial revisions were effected to the UPOV Act, 1978, although it came into force in April 1998. Hence, any country wishing to join UPOV can only do so under the Convention of 1991. The prime reasons for the changes in 1991 were to take cognizance of the technological developments and to accordingly strengthen the protection offered to the breeders in more specific manner apart from the need to clarify certain provisions in the light of the experiences of the member-states. Thus the 1991 Act:

1. Extends breeders' rights to all production and reproduction of their varieties and to species as well as general and specific plant varieties and also includes so-called 'essentially derived varieties';
2. Grants Breeders exclusive rights to harvested materials;
3. Eliminates the distinction between discovery and development of varieties;
4. Renders the right to save seed as the farmer's privilege and has been made optional;

5. Limits exceptions to acts done privately and for non-commercial purposes, experiments, and for the breeding and exploitation of other varieties;
6. Extends the minimum period of protection ed from 15 to 20 years: For trees and vines, the minimum is of 25 years;
7. Grants double protection to PBR.

In the post-TRIPS scenario, more developing countries have progressively joined the Convention mainly because the UPOV regime is generally held to fulfill the conditions of a *sui generis* system as required under Article 27.3b of the TRIPS Agreement. Hence, the following Table provides a summarized version of the objectives and the important features of the UPOV Convention.

Table 1: Impact of UPOV on Farmers' Rights

UPOV, 1991	Impact on farmers rights & rights of the community
Rights over the harvest	If farmer uses the protected variety without paying royalties to the owner, the breeder can claim ownership rights not only over the harvest but also over any products derived from that harvest
Saving & Exchanging Rights Denied	Restricts farmers' right to purchase the protected variety only from the original breeder.
Inherent rights to bio-diversity not recognized	Communities denied their space to innovate.
Research priorities biased in favour of cash and staple crops of the tropical countries	Restricted options to use traditional varieties; Gene contamination possible; Increased litigation <i>a la Schmeiser case</i> ³⁰ against innocent farmers.
Privatization of genetic resources	Affects research in agriculture negatively by the rules of "essential derivation" and control of plant varieties by MN seed companies
Individual plant varieties are to be genetically uniform	Dependency on uniform varieties can cause harvest loss having serious consequences on food security besides erosion of bio-diversity
Varieties can be patented	MNCs monopolise agriculture and displace farmers from their livelihood; bio-piracy gets legalized.
Certification process for Breeders' rights expensive	Costs of testing, approval and acquisition of Breeders' certificate beyond the reach of poor farmers and small farmers co-operatives.

3. WTO Agreements on International Trade in GMOs

Against the background of the above treaties the role played by the WTO and the various agreements forming part of GATT in shaping domestic policies for biodiversity management it becomes easy to comprehend. It covers different fields of intellectual property among which patent rights are the most important from the perspective of the management of biological resources.

3.1. General Agreement on Tariffs & Trade, 1994

General Agreement on Tariffs and Trade was created by the Breton Woods meetings that took place in Breton Woods, New Hampshire in 1944, as an economic recovery plan post-WW II in 1947". In 1994, GATT was again updated with new obligations upon its signatories. One of the most significant changes made in "GATT 1994" was the creation of the [World Trade Organization \(WTO\)](#). 75 of the GATT members and the [European Communities](#) are the founding members of WTO on 1.1.1995. The GATT, as an multilateral agreement, is based on the "*unconditional most favored nation principle*."³¹ The two crucial points worthy of note are the non-discrimination between domestic and imported goods and the provision for importing countries to legislate for protection of human, animal or plant life and for the conservation of exhaustible resources provided discrimination and arbitrariness are excluded.

3.2. Agreement on the Applications of Sanitary and Phytosanitary Measures (SPS Agreement), 1994

On 15 April 1994, 125 States signed the "Final Act embodying the results of the Uruguay Round of multilateral trade negotiations", concluded under the aegis of the General Agreement on Tariffs and Trade (GATT). This Final Act contains an "Agreement on the Application of Sanitary and Phytosanitary Measures". The aim of the SPS Agreement is to minimise the negative effects of health restrictions on international trade. To achieve this aim, the animal health measures established by countries to ensure the protection of

human and animal life and health should be based on international standards, guidelines and recommendations, primarily those developed by the *Office International des Epizooties* (OIE). The OIE Codes therefore play a central role in this process. The SPS Agreement requires States not to introduce or maintain animal health measures which result in a higher level of protection than that advocated by these international standards, except where a State is able to provide scientific justification of the need for such measures. The SPS Agreement also emphasises the need for transparency in the import health measures which States need to enforce on the assessment of the risks to human, animal or plant life or health carried out by other countries or by international organizations and may seek additional information from other member countries or from the industry. Lastly, the general provisions relating to dispute settlement contained in the Final Act will be applicable to disputes arising in the health sector. If scientific or technical questions are raised, the WTO panel responsible for settling the dispute will be able to consult the OIE.

3.3. Technical Barriers to Trade Agreement (TBT Agreement), 1994

Technical barriers to trade (TBTs) constitute an effective multi-pronged strategy for countries to not only regulate markets, protect their consumers, and preserve natural resources, but also to provide preferential treatment for domestic products as against imported goods. Most TBTs in agriculture are sanitary and phytosanitary (SPS) measures designed to protect humans, animals, and plants from contaminants, diseases, and pests. TBTs assume considerable significance for agricultural exporters in the light of trade agreements focusing on reduction of tariffs, import quotas, and other trade barriers.

Hence, the TBT Agreement provides for:

1. Labelling and documentation requirements related to food, nutrition claims and concerns, quality and packaging regulations required;
2. Regulations imposed for the prevention of deceptive practice, and for the protection of human, plant health or environment etc. should pass the proportionality test of international trade restrictions;

3. Measures not to discriminate between imported products and “like” products of domestic or foreign origin.

3.4. Agreement on Trade - Related Intellectual Property Rights (TRIPS), 1994

The TRIPS Agreement, which was one of the WTO group of treaties, was the result of intense lobbying by the United States, EU, Japan and other developed countries.³² As GATT was replaced by the WTO, ratification of TRIPs became mandatory for WTO membership. Hence, it was imperative for any country seeking easy access to international markets *via* the WTO either to provide strict intellectual property regime as mandated by TRIPs or face the wrath of the WTO's dispute settlement mechanism, in the form of trade sanctions against non-compliant countries. The relevant provisions of concern to agriculture prescribe that though countries are not required to grant patents for plants and animals³³ they should provide protection of plant varieties through patents or an effective *sui generis* system or both.

3.5. Agreement on Agriculture (AOA), 1994

Though the Preamble of the AoA mentions food security, the legal framework does not lend any credence to the same. In fact AOA seems structured on the quicksand of quixotic belief that the ‘fewer trade barriers, the easier the access to food’. Thus, the AOA proposes to “establish a pure market based agricultural system” through the reduction of subsidies for domestic agriculture³⁴ as well as export oriented agriculture while at the same time provides for compulsory minimum import of at least three percent of the total consumption at the level of a very low tariff. Logically, will not the farmers be at the mercy of international markets dominated by a few transnational corporations?

Table 2: Comparison of Plant Breeders' Rights and Farmers' Rights

ISSUES	PLANT BREEDER'S RIGHTS	FARMERS' RIGHTS
Nature of rights	Patent / other IP rights	Collective rights; not "property rights" belonging exclusively to any one person
Ownership of rights	Individuals/Corporate entities	Rights vested in communities to be held in trust for generations as "communal heritage"
Extent of such rights	Rights limited to genetic resources and IP	Rights extend to land and livelihood for maintenance and conservation of bio-resources
Entitlement to rights	Single inventive step also would suffice	Recognize the cumulative intellectual contribution of earlier generations.

4. Position in India

The stringent requirements of TRIPs had the propensity to cause deleterious impact on Indian agriculture and the bio-resources. The failure of India to comply with the 1995-deadline led to the declaration by the Dispute Settlement Body of the WTO that India was in violation of TRIPs on the complaints of the US and EU. This stricture compelled the hasty enactment of amendments to intellectual property laws besides enact new laws in order to comply with the TRIPs requirements. Two amendments to the Patent Act, 1970, both promulgated in response to Article 27.3b of TRIPs, have raised serious controversies and heated debates both nationally and at the international level.

Geographical Indications Act, 1999:

Though some international treaties like the Paris Convention, the Madrid Agreement and the Lisbon Agreement had dealt with "indications of source" and "appellations of origin", for the first time international protection was supposedly accorded to Geographical

Indications (GIs) by prescribing the “minimum standards”³⁵ in TRIPs. In fact, by adopting a preferential standard for protection of “wines and spirits” vis-à-vis other goods, misappropriation of renowned GIs, including those of Indian origin, has been facilitated without violating the letter of the law. Hence, to provide better protection to GIs for goods of Indian origin, The Geographical Indication of Goods (Registration & Protection) Act, 1999 was enacted. The Act designates the Controller General of Patents, Designs and Trade Marks as the Registrar of Geographical Indications.

“GI” in relation to goods means an indication which identifies such goods as agricultural goods, natural goods or manufactured goods as originating, or manufactured in the territory of country, or a region or locality in that territory, where a given quality, reputation or other characteristic of such goods is essentially attributable to its geographical origin and in the case where such goods are manufactured goods one of the activities of either the production or of processing or preparation of goods concerned takes place in India. By extending legal protection to Geographical Indications in India³⁶, unauthorised use of a Registered Geographical Indication by others is prohibited. Thus, by a simple process of registration, the registered proprietor or authorized users have the exclusive use of geographical indication in relation to goods in respect of which it is registered for a period of ten years, which period can be extended every ten years.

4.1. Patent (Second Amendment) Act, 2002

This amendment deleted “plants” from the exemptions in the scope of patentability by allowing the bio-technological processes to develop unique plants, to be covered under patents and thereby facilitated patenting of plants. Besides, extending the duration of patent term to 20 years after filing, the amendment expanded the grounds for revocation to include the non-disclosure or wrong disclosure of source or geographical origin of a biological material used in the invention.

4.2. The Plant Variety Protection & Farmers’ Rights Act, 2002

Forced by trade-compulsions, India chose to join the UPOV, despite strong protests of the farmers and civil societies. Caught between the devil and the deep sea, the successive

governments at the Centre (during 1994-2001) attempted to adopt the *sui generis* option to balance the needs and demands of breeders/scientists and farming communities. For the first time in the legislative history of the country, the PVPFR Act:

1. Recognizes farmers as conservators, breeders and cultivators;
2. Constituted Plant Varieties Protection Authority to register plant varieties developed by the farmers also;
3. PVPA to ensure equitable benefit-sharing with the farmers;
4. Farmers retain their traditional right to sell (locally) seed of any variety (including protected varieties of breeders) that he grows;
5. Protection to farmers against bad seeds to be provided by breeders;
6. Right to compensation for farmers.

4.3. Biological Diversities Act, 2002

India drafted, (after a long period of intense debates) as a follow-up to the Convention on Biological Diversity, the Biological Diversity Act 2002. Consequently, it addresses social concerns regarding the conservation and sustainable use of bio-resources including habitat and species protection. The following are some of the main features of the Act:

1. Recognition of conservation of biodiversity, sustainable use of biological resources, and equitable sharing of benefits arising from such use;
2. Provision for setting up of a National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs) in local bodies; NBA and SBB to consult BMCs in decisions relating to use of biological resources/related knowledge within their jurisdiction and BMCs to promote conservation, sustainable use and documentation of biodiversity;
3. Need for foreign nationals/organizations to seek prior approval of NBA for obtaining biological resources and/or associated knowledge for any use;

4. Approval of NBA for Indian individuals/entities for transferring results of research with respect to any biological resources to foreign nationals/organizations;
5. Levy of appropriate fees and royalties on such transfers and IPRs;
6. Sharing of benefits to all concerned parties;
7. Measures to conserve and sustainably use biological resources, including habitat and species protection, conservation in gene banks, environmental impact assessments of all projects which could harm biodiversity, etc.;
8. Decision-making power to local communities regarding the use of resources and knowledge within their jurisdiction, and negotiations with parties who want to use these resources and knowledge;
9. Development of an appropriate legislation or administrative steps, including registration, to protect indigenous and community knowledge;
10. Governments to declare Biodiversity Heritage Sites, as areas for special measures for conservation and sustainable use of biological resources, and notification of threatened species to control their collection and use; risks associated with biotechnology (including the use of GMOs), to be regulated or controlled through appropriate means;
11. Designation of repositories of biological resources³⁷, at national and other levels;
12. Creation of Funds at local, state, and national levels, to be generated from fees, royalties, donations, etc.

However, the notification of the Biological Diversity Rules 2004 under the Biological Diversity Act 2002 has attracted vitriolic criticisms from the NGOs that the role of local communities in safeguarding biodiversity and traditional knowledge has become diminutive, and thus, the spirit and letter of the Act, has been totally watered down.

4.4. Patent (Third Amendment) Act, 2005

This amendment extends the product patent regime to agro-chemicals, food and biotechnology products, apart from drugs and pharmaceuticals. This recognition of product patents formally legalizes patent monopoly on seeds³⁸ as the new amendment has not categorically excluded seeds developed by novel means. Though India had earlier opted for the *sui generis* system for protection of plant varieties and had subsequently put in place, the Plant Varieties Protection & Farmers' Right Act, lack of clarity in the amended patent law raises the piquant issue of patenting of seeds developed by novel means, particularly the transgenic seeds. Some glaring inadequacies in the legislative provisions which may well turn out to be "Pandora's box" are the lack of clarity in the definition of "micro-organisms and micro-biological process"³⁹ and the "emergency" clause⁴⁰.

4.5. Seeds Act, 2004

This Act has been much criticized as "anti-Constitutional", and "anti-national" for the anti-farmer provisions and the open-invite to the "foreign bio-pirates" to pillage on our traditional knowledge and rich bio-diversity. There is also the apprehension about the misuse of the powers vested in the agricultural bureaucracy constituted under this enactment to harass the farmers. The provisions that deserve to be focused are detailed below:

1. Only a producer registered with the government can grow or organize production of seed;
2. (ii) prohibits all others from growing, producing, drying, threshing, shelling, ginning, cleaning, grading or treating of seeds and planting materials;
3. all kinds and varieties of seeds to be registered in the National Register of Seeds; registered seed can be sold for the purpose of sowing or planting by any person;
4. prohibit the farmer from saving, using, exchanging, sharing, or selling his farm seeds and planting materials;

5. the seed or planting material should conform to the minimum limit of germination, physical purity, genetic purity as prescribed;
6. any traditional seeds used by the peasantry can also be registered by any producer in his name and the latter may obtain monopoly rights in perpetuity for producing that seed;
7. register of all kinds and varieties of seeds to be called the National Register of Seeds to be maintained by the Registration Sub-Committee of the Central Seed Committee;
8. no exclusion of the seeds traditionally used by peasants;
9. The grounds on which a registration, once granted can be cancelled are violation of terms and conditions of grant of certificate by the certificate holder, misrepresentation or concealment of material facts by the applicant, non-performance of the seed, prevention of commercial exploitation on the grounds of public interest to protect public order or public morality or to protect human beings, animals and plant life and health to avoid serious prejudice to the environment;
10. The grounds on which registration should be excluded in respect of certain kinds or varieties of seeds include protection of public order or public morality, life and health of human, animal and plants or to avoid serious prejudice to the environment, or, that the seed contains a technology which would be harmful or potentially harmful;
11. Non-exclusion of seeds traditionally used by peasants from compulsory registration and absence of provisions for filing, objections before the registration and applications for cancellation after registration enabling seed companies to obtain surreptitiously registration rights on traditionally used seeds;
12. The withdrawal of the state from seed certification and handing over this power to private organizations, individuals or seed producing organizations to carry out self-certification;

13. wide powers to seed inspectors to break open any container or door of any premises where any kind or variety of seed is kept; compensation may be claimed from the producer, dealer, distributor or vendor as per the provisions of the Consumer Protection Act, 1986;
14. Punishment of persons who supply spurious seeds weak and inadequate;
15. The rights of the states are diminished;
16. the states are divided into five geographical zones and only five states will get representation in the Central Seed Committee and, that too, one each from three out of the five geographical zones of the country on rotation basis

5. Conclusion

It is apparent from an analysis of the provisions of the “Post-TRIPS laws” that in India, allowing patents on life forms has a direct and substantial impact on many other previously unrelated areas and that new legislations have been developed to address these issues.

It has to be realized, recognized and appreciated that biotechnology when armoured with IPRs, can become a lethal weapon in the hands of a “fistful” group of agricultural companies to strip the independence and sustainability of rural farmers in India. Undeniably developed countries have had the upper hand in negotiations due to their economic power in contrast to the developing countries; competency, resources and candid greed to bargain in the market and at the negotiating table are totally skewed in favour of the First World countries. To use the trade agreements to displace the canon of international law which recognizes the world’s bio-resources as common heritage of mankind and to impose inequitably the western hegemony of property rights jurisprudence as the universal law is a harsh assault on the developing and LDCs to either “adhere or perish”!

Hence, India should not have adopted the UPOV-compatible plant variety protection legislation, especially as these legislative initiatives, a priori, amount to TRIPS-plus, creating higher standards than required. TRIPS Agreement clearly allows each country to

have its own sui generis system of plant variety protection. It is but small consolation that these two laws – The Plant Variety Protection & Farmer’s Rights Act, 2002 and the Seeds Act, 2004 have not yet been notified. It becomes imperative to harmonize the various legislative measures enacted as “international-agreements-compliant”. However, it remains to be seen, despite the constitution of the National Commission of Farmers⁴¹, if the Government of India would be able to effect a paradigm shift from “GE Revolution to Ever-Green Revolution” with “water harvesting, soil health improvement, dissemination of new technologies, infrastructure development and application of science and biotechnology”⁴² and organic farming and farmers welfare⁴³ the pivotal points triggering the new model. India’s agriculture, the backbone of the economy, has to be robust for the nation as a whole to survive and prosper.

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14. John R. Allison and Mark A. Lemley “[Who's Patenting What? An Empirical Exploration of Patent Prosecution](#)” *UC Berkeley Public Law Research Paper No. 19*; and *U of Texas Law, Public Law Research Paper No. 10* available at www.ssrn.com
15. www.navdanya.org
16. *The Economic Times*
17. *The Hindu*
18. The Swaminathan Task Force Report: <http://agricoop.nic.in/TaskForce/tf.htm>
19. <http://www.wipo.org>
20. <http://www.worldseed.org>
21. <http://www.wto.org>

¹ Indian farmers have developed flood-resistant, salinity-resistant, drought-resistant and frost-resistant varieties in different parts of the country suitable for cultivation in their

respective climatic conditions. Indian scientists have identified some 1,26,000 endemic species including 45,000 plants and 81,000 animals.

² Vide the comment at <http://www.thehindubusinessline.com/2006/01/09/stories/htm> that “Indian agriculture can never be salvaged with a “trickle-down” approach, which stands debunked now after four decades of the so-called Green Revolution. We need a revolution on the farm, on the soil. Only when agriculture survives, can India grow.”

³ The case of Josef Albrecht, an organic farmer from Bavaria, who was indicted for developing and distributing in Leipzig an organic variety of wheat in violation of the German Seed Trade Act, affords an interesting illustration. For more information refer http://www.ekd.de/english/food_security_5.html (last visited on 31.12.2005 "

⁴ Vide <http://www.indiainbusiness.nic.in/india-profile/india-glance.htm> Though out of the total main work force of an estimated 285.42 million, 64.90% constituted the agricultural workforce and agriculture forms the single largest source of employment in India, agriculture contributes only to a measly 29.93% of India's GDP.

⁵ According to National Sample Survey Organisation report on rural indebtedness in June 2005 one in two farm households are in debt.

⁶ TRIPS specifically provides [Art. 27.3(b)] a choice for the member nations to choose any type of protection of breeder’s rights – patents, *sui generis* system or both. India chose to adopt the *sui generis* system and enacted the PVP & FR Act, 2001.

⁷ This legislation was initiated so that other countries would extend similar reciprocal protection for goods protected in India as their country of origin.

⁸ Vide http://www.financialexpress.com/fe_full_story.php?content_id=111601. The last revision of GATT ----the General Agreement on Tariffs and Trade (the rules governing international trade) -- requires signatories to the Agreement to open up their markets to imports and to remove their subsidies to farmers if they do not want to face trade retaliation. The Agreement left intact, however, many of the subsidies given to US farmers. Thus, at the latest Hong Kong plenary session of the WTO Ministerial conference India has reiterated its stand that there would not be any agricultural

agreement without special products and special safeguard mechanisms (SSM) which are sine qua non for ensuring the livelihood and food security of the millions of Indian farmers.

⁹ Pharmaceutical companies use various crops, including corn, to grow ingredients for drugs, such as proteins used to develop vaccines and other medication. "Pharming", or the notion that biotechnology can provide nutrition and health through genetic engineering, is an idea that had been rejected by most countries.

¹⁰ *Vide* www.genecampaign.org/Publication/IPR/IPR-basmati.pdf and www.navdanya.org/articles/chronology_basmati_battle.htm On September 2, 1997, the U.S. Patent and Trademarks Office granted Patent No. 5,663,484 on "basmati rice lines and grains" to the Texas-based company RiceTec conferring several rights, including exclusive use of the term 'basmati', a monopoly on breeding 22 farmer-bred Pakistani basmati varieties with any other varieties in the Western Hemisphere, as well proprietary rights on the seeds and grains from any crosses. The patent also covers the process of breeding RiceTec's novel rice lines and the method to determine the cooking properties and starch content of the rice grains.

¹¹ In 1995, W R Grace patented neem-based bio-pesticides and the 10-year old litigation came to an end on 8th Mar., 2005 when the European Patent Office revoked the patent on the basis (of the contention of Prof. U P Singh of the Benares Hindu University) that the fungicidal qualities of the neem tree had been known in India for more than 2000 years! See The Hindu, March 9, 2005 for the full write-up.

¹² Monsanto has been awarded patent on the "chapatti-making wheat" by making marginal genetic makeover by crossing the traditional Indian variety Nap-Hal with another wheat line. The patent was granted for 13 European countries, Japan, Australia and Canada. For more info visit www.greenpeaceindia.org ; www.corpwatchindia.org.

¹³ *Vide* 35 USC 102: "A person shall be entitled to a patent unless: (a) the invention was known or used by others in this country or patented or described in a printed publication in this or foreign country, before the invention thereof by the applicant for the patent; or

(b)the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country more than one year prior to the date of application of patent in United States, or...” Cf. Art. 54, *Convention for the Grant of European Patent*: “(1) An invention shall be considered to be new if it does not form part of the state of the art. (2) The state of the art shall be held to comprise everything made available to the public by means of written or oral description, by use, or in any other way, before the date of filing of the European Patent application.” Available at <http://www.european-patent-office.org/legal/epc/e/ar54.htm#a54>. Similar is the legislative standard adopted in various other countries in Africa, Latin America and India.

¹⁴ <http://www.indlaw.com/2CE9301E7171EF699783E874BA7F62D0> wherein the “Committee, looking into the viability of challenging a patent for a strain of wheat by Monsanto, has submitted in its report before the Supreme Court that since new varieties of soft milling wheat could be developed in the country contesting the case in the US would not be of any benefit to India in the present circumstances.” This was in the case Research Foundation for Science, Technology and Ecology had filed in the apex court seeking a direction to the Centre to challenge the patent.

¹⁵ Based at Basel in Switzerland, through global patents over thousands of genes in rice (out of 37,544 genes), is likely to become the "owner" of rice, the world's most important staple food crop. Syngenta has filed for mega-patents on 15 groups of gene sequences covering thousands of genes, peptides, transgenic plants and seeds, method of genetic engineering etc.

¹⁶ Vide <http://www.fao.org> (last visited on 4th Jan. 06). According to an estimate of FAO of the total 10 000 species used by humans throughout history, a minuscule of about 120 cultivated species provide around 90% of food requirements and just 4 species (Maize, Wheat, Rice and Potatoes) provide about 60% of human dietary energy for the world's population. Hence the apprehension of the civil societies and developing countries about the monopolisation and total food control by the MNCs.

¹⁷ As per the ISF (International Seed Federation, the estimated size of the market for seed and other planting material in 56 select countries US\$ 25,243m. Philips McDougall Report, July 2005 estimates that the top 10 companies control 51% of the world market. In Brazil, more land is owned by multinationals than all the farmers put together. Most of the MNC land is used to grow cash crops for export abroad.

¹⁸ In fact, US has coined a new terminology - “counter-cyclical payments” to denote shifts of Amber Box subsidies into Blue Box, for legitimizing subsidies under the 2002 Farm Act which provides at least US \$190 billion over ten years. Developing country like India provides *only* a meager USD \$1 billion worth of *indirect subsidies* to 550 billion farmers!

¹⁹ *Vide* the Advertisement of Monsanto released in the UK “Worrying about starving future generations won’t feed them. Food biotechnology will!” Three words of the newly- crafted company slogan which appear in restrained lettering at the bottom of the advertisements are "Food - Health - Hope".

²⁰ Unethical practices are often resorted to at the cost of the local bio-diversity and farmers’ concerns and general well-being of the Third world’s population for the introduction of GM varieties. *Vide* US Securities & Exchange Commission’s website <http://www.sec.gov/litigation/complaints/comp19023.pdf> (last visited on 31st Dec. 05) which details the various corrupt practices of Monsanto in Indonesia and other African countries for promotion of its GM crops. To borrow the words of Vandana Shiva, “*Increasingly the US government uses multilateral and bilateral free trade agreements and high-level diplomatic pressure to push countries towards the adoption of many key bits of corporate-friendly regulations related to GM crops. And this external pressure has been effectively complimented by lobbying and funding from national and regional USAID biotech networks*”.

²¹ Robert Tripp points out in *The Structure of National Seed Systems*, (1999), traditional varieties of seeds are often disparaged by governments and are often excluded from government-approved seed lists.

²² Illustrations are aplenty to show the bio-piracy of traditional knowledge by the MNCs. For instance, the MNCs have appropriated the genes from *pattambi* rice variety in Kerala and has introduced the same into the rice variety in south east Asia for pest resistance from brown leaf hopper attack without payment of monetary compensation! *Vide* (last visited on 5th Jan. 06) <http://www.thehindubusinessline.com/2006/01/05/99hdline.htm>: The FAO supported gene bank at Icrisat, one of the biggest collection of germplasm in the public sector has given *free to scientists in 143 countries* for research purpose 672,000 accessions of germplasm out of a total collection of 110,000 accessions!!!

²³ *Vide* <http://www.fao.org/docrep/meeting/X8566e.htm> (last visited on 4th Jan. 06). A number of agreed interpretations were subsequently negotiated through the Commission, adopted as Conference Resolutions in 1989 and 1991, and annexed to the International Undertaking.

²⁴ “Living Modified Organisms” are defined as “any living organism that posses a novel combination of genetic material to be obtained through the use of modern bio-technology.”

²⁵ *Vide* <http://www.biodiv.org/biosafety/background2.aspx>.

²⁶ Novelty requirement would be satisfied if the concerned variety had not been commercialised in the country where the application is filed for more than a year before the application and in other member countries for more than four years.

²⁷ The protected variety should be clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filing of the application.

²⁸ The variety should remain true to the original in its relevant characteristics when propagated.

²⁹ The variety should remain true to its description after repeated reproduction or propagation.

³⁰ *Vide Monsanto Canada Inc v. Schmeiser*, 2004 SCC 34. In this case, a farmer from Saskatchewan growing canola for many years was sued for infringement of Monsanto’s

patent Roundup Ready Canola, for the GM variety of canola plants found on his lands which may have got blown onto or near his land from the adjoining neighbours' farms using the patented seeds. Interestingly, the court found him guilty of patent infringement but did not award any damages to Monsanto because the claim for "account of profits" could not be proved. Similarly Larry Proctor, the president of Pod-Ners seed company, and owner of the controversial US patent on a yellow-colored bean variety, filed a lawsuit on 30 November 2001 against 16 small bean seed companies and farmers in Colorado (USA), even though by his own admission in the patent application that Elona, the patented seed variety is "most likely a landrace from the azufrado-type varieties" found in Mexico and is a glaring example of bio-piracy of the genetic resources of Mexico!. Contrastingly, some cases of farmers claiming damages against bio-tech companies for contamination of their organic farms with GM varieties have also been reported. Vide

www.connectotel.com/gmfood/bayer.html;

www.agbios.com/static/news/NEWSID_6971.php. However, in *Hoffman v. Monsanto*, the contention by a group of organic farmers that patent ownership also entails responsibility for the contamination of organic crops by straying genetically modified organisms was not accepted. Vide

<http://www.patentinglives.org/abstractsagriculture.htm>.

³¹ i.e., the conditions applicable to the most favoured trading nation (i.e. the one with the least restrictions) are to apply to all member-states.

³² The US strategy of linking trade policy to intellectual property standards was prompted by the pressure of US corporations to make maximising intellectual property privileges the single-most priority of US trade policy. The stark truth is that the infringement by the developing world of IPRs in agricultural products was never considered a major problem!

³³ It is noteworthy that India has taken the initiative amongst the developing countries to propose amendment to the TRIPS Agreement so as to require patent applicants to

disclose the source of origin of the biological resources and associated traditional knowledge, and to provide evidence of prior informed consent and benefit sharing.

³⁴ It is a travesty that developed nations, - USA, EU and Japan - which extend huge subsidy to the farmers in their countries at an average 1 billion dollar per day and make agricultural products cheaper to sell all over the world are pressurizing developing countries to either withdraw or reduce drastically subsidy extended to the farmers in the developing countries. To date our farmers have only a subsidy of .03%. This low subsidy coupled with declining Public Investment in agricultural / rural economy has been running our rural society and thousands of farmers have committed suicide.

³⁵ *Vide* Arts. 22, 23, of the *TRIPS Agreement*. A peculiar feature of these provisions is that though there is only a single, identical definition for all GIs, irrespective of product categories, there are two level system of protection for GIs - (i) the general or basic protection applicable to GIs associated with all products in general (under Article 22) and (ii) the additional ('absolute') protection applicable only for the GIs denominating wines and spirits (under Article 23)

³⁶ For instance, Basmati rice, Darjeeling tea, Alphanso mango, Nagpur orange, Hyderabad grapes, Kanchipuram silk saree, Pochampalli saree, Mysore silk saree, etc.

³⁷ IMT, Chandigarh, is the IDA in India for some of biological materials such as bacteria and plasmids.

³⁸ It is an irony that Articles 7 and 8 of the *TRIPS Agreement* require that WTO Members must ensure that the laws relating to all forms of intellectual property rights covered by the Agreement give due consideration to issues like protection of public health and nutrition and do not merely serve the interests of the owners of intellectual property!

³⁹ Leading to claims in gene patent applications on “genes or partial DNA sequences, proteins encoded by these genes, vectors used for transfer of genes, genetically modified micro-organisms, cells, plants and animals and the process of developing a transgenic product” resulting in multiple right-holders and patent thickets over a final product.

Hence, there are problems of not only patent thickets, but also of royalty stacking and reach-throughclaims. See

http://www.financialexpress.com/fe_full_story.php?content_id=78652 3 Jan 05.

⁴⁰ Apart from mentioning only national emergency and circumstances of extreme urgency, the emergency clause has no clarity regarding extension to situations where the government can step in and intervene in public interest relating to health and environment.

⁴¹ In 2004 with the noble objective of “improving the economic viability and sustainability of diversified agriculture including horticulture, livestock, dairy and fisheries and doubling the farmers' income...alleviate poverty and impart viability and attractiveness to farming as a remunerative and rewarding profession.”

⁴² As envisaged by the PM in his inaugural address of the 93rd Indian Science Congress, Hyderabad. *Vide*, Business Line Jan. 4, 2006.

⁴³ Perhaps based on The BIOS Initiative – Biological Innovation for Open Society – is often called Open Source Biotechnology. *Vide*

http://www.innovations-report.com/html/reports/life_sciences/report-52691.html.