CHAPTER IV

INTELLECTUAL PROPERTY RIGHTS IN AGRICULTURE

4.1: TRADITIONAL KNOWLEDGE

4.1.1 Introduction:

The protection of traditional knowledge is one of the major issues that to be addressed in the recently launched Doha Round of the WTO negotiations is protection of traditional knowledge (T.K). This is acknowledged in Paragraph 19 of the Doha Ministerial declaration. [WTO/MIN(01/Dec/1). [1]

What is Traditional Knowledge?

Indigenous knowledge or traditional knowledge is a local knowledge –knowledge that is unique to a given culture or society. It differs from the international knowledge system generated by universities, research institutions and private firms. TK is the basis for local level decision; making in agriculture, healthcare, food preparation, education, natural resource management and a host of other activities in rural communities.

According to Farrington and Martin [1988]:

"Indigenous Knowledge can be defined as basis for knowledge, beliefs and customs which are internally consistent and logical to those holding them but at odds with the objectively deduced findings of formal science. So, it is important for scientists to build upon the components to traditional knowledge which are not consistent with scientific knowledge seeking to change overtime may potentially counter productive practices associated with local belief system.[2]

Another group of researchers [Reijntjes et al.1992] define, it as 'knowledge of people living in a certain area, generated by their own and their ancestor's experiences and including knowledge originating from elsewhere which has been internalised by the local people.(2)

Traditional Knowledge [TK] is associated with the biological resources, is the knowledge about a country's bio-diversity, the applied users and

applicants of biological resources and the prevalent practices .TK has direct correlation with the bio-diversity of the country. It has the potential of being transformed into commercial opportunity, providing useful leads for development of product and processes. Hence a share of benefits must aecure to creators and holders of traditional knowledge. This also provides material information for future innovations.

The importance of TK can be judged from the fact that two thirds (2/3) of world's population survive on food provided through indigenous knowledge of plants, animals, insects, microbes etc.

As much as 80% of world's population depends upon traditional medicine for their primary health needs. So international protection of traditional knowledge felt as necessity to stop its misappropriation and bio-piracy. International agencies like World Intellectual Property Organization (WIPO), FAO, Convention on biological diversity (CBD),and WTO have adopt different program's towards this direction. Many ways have been adopted for protection of traditional knowledge which are given below.

1. Using existing IPR system
2. Developing sui-generis system
3. Using resource rights of indigenous people
4. Through benefit sharing contracts between [pharma companies and TK holders]
5. By giving prizes and awards to TK holders.

Intellectual protection would recognise the social value of traditional knowledge and promote it's integration into domestic and international trade regimes while respecting and preserving local autonomy and cultural values. Interest in the

protection of traditional knowledge is rooted in the goal of promoting social , economic relations affecting the livelihood of the bulk of the world's population.[3]

The European Union's recent directive on herbal medicine (worldwide market value about $ 80 billion) is an indication of the growing interests of traditional medicine and the need to regulate.

To assign IPR to Traditional Knowledge:

(a) Subject matter of traditional knowledge has to be identified.

(b) Beneficiaries identification has to be done.

(c) Contribution of traditional knowledge to bio-diversity conservation has to be ascertained.

(d) Duration of IPR and it's enforcement mechanism is to be determined.

(e) Implementation mechanism of such system need to be evolved. [4]

In India, there exist traditional medical systems like kampo, unani, ayurveda, siddha, homeopathy, acupuncture , yoga to mention a few capable to treating a wide range of disease –not all – and are particularly effective for stress-related and life –style related disease, the fastest growing non-communicable diseases. Basmati, neem, peeper-bitter gourd, turmeric etc. every aspect of our innovation embodied in our indigenous food and medicinal systems is now being pirated and patented. So India is needed to protect the wealth of traditional knowledge through new and clever means like patents on bio-diversity and indigenous knowledge.

4.1.2 Need of Documentation of Traditional Knowledge:

The issue of protection of traditional knowledge , innovations and practices of indigenous or local communities is currently on the agenda of

different intergovernmental bodies , including WIPO, WTO, TRIPS AND CBD. The developed countries are able to sequence the genomes cost effectively and quickly which is leading to bio-piracy because patents are based on claimed them as first to specify these characteritics and awarded with patents.

Agriculture has first coming under globalisation process after the GATT negotiations. The role played by the private sector in agriculture the world over is increasing in the days of globalisation competition and research; with the result, agriculture sector is becoming more technology and research oriented and hence protection of innovations becomes essential .In the world's market there is domination of MNCS. In the era of globalisation , Basmati ,Neem, Peeper-bitter gourd ,turmeric etc. every aspect of innovation are being pirated and patented by developed countries like America. The wealth of poor countries is being violently appropriated through new and clever means like patents on bio-diversity and indigenous knowledge. Genomes cost effectively and quickly which is leading to bio-piracy because patents are based on DNA sequences. Novelty and uniqueness , as the requirement of patenting developed countries claimed them as first to specify these characteristics and awarded with patents.[4]

We can study some cases of the traditional knowledge and the crops in India which are given below.

1] Traditionally grown basmati rice of India and Pakistan patented by Rice Tec. Inc., USA on the patent no. of 5,663,484 for basmati rice and grains , was under cultivation among our farmers.[5]

2] The patenting of ancient herbal remedies e.g. the healing properties of turmeric, known for centuries to Indian; as well as considered sacred and used for medicinal purposes by Amazon's indigenous peoples.

3] Similarly in the case of Neem: the oil from it is used in different parts of rural India for it's pesticidal principal, which has a short shelf life making transformation corporation named W.R.Grace and Company protected with a patent making huge benefits.[6]

In the case of basmati and neem lack of published evidence and specification of patent claim made the case more complex , whereas the profits of public domain knowledge is of little use in contesting the patents.

It means that knowledge of the poor is being converted into the property of global corporations, creating a situation where the poor will have to pay for the seeds and medicines they have evolved and have used to meet their own needs for nutrition and healthcare. The multinational companies (MNCS) can make an attempt to enjoy royalty from these ancient users. If traditional users do not have the right according to patent law they will be appearing as a theft. Historical 'theft' of biological and indigenous knowledge by more powerful actions of the global society can be needed to stopped and communities or countries are able to gain control and benefits from their use. But for it documentation and protection of indigenous knowledge is most important. Interest in the protection of traditional knowledge is rooted in the goal of promoting social, economic and ecological development of rural areas.

Many of the older farming traditions and the knowledge stored within them are being lost. Foreign technology, education, regions and values , the fragmentation of holdings and neglect of agriculture and other factors have led to the marginalisation of farmer's knowledge and way of spreading it. With the loss of TK , indigenous practices , crop species , breeds, tools etc. also lost. But the

other way round, when e.g. certain genetic resources become extinct, knowledge about how to use them is also lost.

Gupta (1990) recognized the following causes for documenting traditional wisdom of farmers.

1. Climate , soil, crop and other variability's at short distance in humid and arid risky environments compel the cultivators to evolve location specific farming practices.
2. Science underlying many of these practices still remains to be properly understood With the result that some of the innovative practices are considered traditional and sign of backwardness of peasants.
3. Some of these innovations will help extend the frontier of knowledge by providing basis of developing new concepts or adding value by grafting or budding available formal biological science knowledge to the farmers own knowledge.
4. Inclusion of these innovative practices in the graduate and post-graduate curriculum will help instill pride among young minds in their own heritage, make them more humble and respectful towards farmers.
5. By sharing this accumulated knowledge with the farmers, their pride in their own innovativeness is restored.
6. Agricultural scientists working in Agricultural University , development departments and extension agencies will find an opportunity for recasting their research and action agenda wherever felt necessary . It is not argued that farmers can develop technologies for all situations entirely through their own efforts. Plant introduction and technology transfer across continents has gone for centuries.

7. Innovations like any other aspect of knowledge are embodied in a cultural setting.
8. Besides these, the old and wise persons who where specialists in farming are gradually leaving this world. There is a common proverb in African society that 'when a knowledgeable old person dies, a whole library disappears. Thus ,there is an urgent need to safeguard and reaffirm traditional knowledge. Yet much work must be done to locate , document and disseminate TK. So that it becomes part of the body of sustainable development . Unless we make urgent and quicker efforts to track this valuable knowledge, it will be lost soon, not to be regained in future at any cost.
9. As well as further research on these traditional knowledge could provide opportunity for refinement of new agricultural technologies to the farming community in integrated way.
10. There is an urgent to scientifically investigate these technologies further more to understand scientific background and subsequently register under IPR to protect the right of such TK. [7]

4.1.3 Indegenous Technological Knowledge :

Sr. No.	Indigenous Technical Knowledge	Scientific Rationale
1	Placement of handful Compost over the cotton Seeds after placing the seeds in the soil.	1. Prevents erosion of cotton seeds when it rains. 2. Germination is facilitated as crust formation is prevented. 3. It serves as a source of nutrient. 4. Helps to improve the physical conditions of soil and enhances its water holding capacity.
2	Border sowing of 2-3 rows of niger around sorghum crop.	1. Border crops act like trap crops for insects and pests. 2. Border crops serve as wind barriers. 3. They serve as natural fence against cattle attack While grazing on the bunds.
3..	Feeding banana mixed With rice gruel to cattle, sheep and goats suffering from Foot and mouth disease.	1. Animals suffering from F and M disease will be unable to consume straw and concentrate due to ulcer formation in mouth. Feeding banana due to its slimy nature will help to soothen the ulcers and cure them also. 2. Banana and rice gruel will help in providing energy required otherwise due to low intake cattle will became weak faster and milk yield may be reduced.
4.	Husk burial in coconut Basins.	1. 1kg husk can retain 5 to 6 liters of water. Hence ,its burial will help in better water retention and moisture conservation. 2. Husk is a good source of potash . 1lakh numbers of husk contain 1 tone of muriate of potash.
5.	Coating redgram seeds With red earth.	1. Seeds of pulse crops like redgram and stored for consumption and also as seed for next season. 2. Seeds of some of these crops imbibe atmospheric moisture especially in rainy season resulting in fungal attack, thereby seeds become unfit for consumption and also for sowing. 3. Coating redgram seeds with red earth will guard the seeds against moisture attack and keep them. Even these seeds are to used for consumption after through wash.

4.1.4 Protection of Traditional Knowledge some Measures:

1) As regards to protection of knowledge , innovations and practices associated with biological resources , these do not seem to meet the conditions required for grant of patents or other forms of IPRS under the prevalent IPR, regime i.e. novelty, inventiveness and industrial applicability.
2) These conventional forms of IPRS are inadequate to protect TK essentially because they are based on protection of individual property rights whereas TK is by and large collective.
3) Further , TK is developed over several generations over period of time and is therefore not novel or inventive.

4.1.5 Traditional Knowledge Digital Library [TKDL] :-

TKDL will help in patenting products based on TK as well as enhancing innovative capacity .The GOI approved for setting up of TKDL in the field of medicinal plants . It is world's first TKDL. Such a database would enable the patent offices all over the world to search and examine any prevalent use / prior art, and thereby prevent incorrect grant of patent on products or processes based on knowledge in public domain . India's efforts in this regard have been appreciated by the committee of Experts of the International classification [IPC] Union held in Feb. 2001 and IPC Union has agreed to setup a task force on the Traditional Knowledge Resource Classification . TKDL containing ayurveda database translated into six languages sometimes in 2003.

4.2 Biotechnology in Agriculture and It's Patenting

4.2.1

Introduction

India need to focus on increasing the economic contribution of every agriculturist and agriculture worker in this country. New technologies that can balance sustained growth with industrialization of agriculture so as to increase income generation to farm families need to be developed. Agricultural biotechnology is a very patent tool to achieve this end in our country. The advancement of biotechnology offers an opportunity to attain higher productivity with sustainable of agriculture during 1980s. Because in developing country agriculture faced with stagnation productivity.

In India 50 public research institutions are engaged in modern biotechnology tools for agriculture. At least 10 of these are engaged in plant genetic engineering with rice, oilseeds, cotton, and horticulture products more over, there are about 45 private, centres also.

4.2.2 Definition of Bio-Technology

The Convention on Biological Diversity (CBD), 1992 defined biotechnology as, follows,

"Any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or process for specific use". [10]

Biotechnology is in its broadcast sense, is the application of living organisms to develop new products e.g. microscopic organisms are used in fermentation to produce vinegar and yoghurt, as well as leavened bred. Other

products of biotechnology include insulin to treat diabetes and a vaccine against hepatitis B.

In this way, biotechnology is going to become an essential and accepted activity of our culture and will continue to create exciting new opportunities for commercial development and profit in a wide range of industrial sectors including Agriculture, healthcare, medicine forestry, food technology, fuel and energy production, pollution control and resource recovery. India is particularly unique in plantation crops and horticulture and thus have good opportunities for application of biotechnology in agriculture sector India is also able to build on its unique heritage of work on plant tissue culture and its rapidly developing expertise in plant genetic engineering.

4.2.3

Need of Biotechnology

In Agriculture Biotechnology in agri. culture aims to give additional tools to the farmer for;

1) Improving crop yield.
2) Less chemical usage
3) Improved food quality
4) Environment friendly farming.
5) New and more efficient crop-breeding systems that allow production of hybrids that cannot be produced by conventional plant breeding.
6) Crops that are better able to tolerabe hostile environmental conditions such as frost or drought.

7) New crop varieties that have different growth characteristics (e.g. altered flowering time or rate of growth) and improving crop yield.
8) New crop varieties that are qualitatively different (e.g. plants that produce seeds or tubers that have an altered starch composition and thus represent new valuable products).[11]

The relevance of Biotechnology to developing countries like India has to be seen in the light of two factors. The first pertains to the priorities that agro-biotech research has seen thus far and the second relates to the p[ossibiliti8es of access of small farmers.

Biotechnology industry is highly capital intensive, so funding in this area is influenced by IPR owned by the company or being developed by it. IP in biotechnology presents complexities because living organisms can reproduce themselves and patenting may undermine the value of genetic resources (GRS) and Traditional Knowledge (TK). The various forms of intellectual property in respect of biotechnology are patents, copy rights, trade marks, plant breeders rights, trade secrets etc.

India's commitments in IP for Biotechnology :

Following are some of the provisions made in respect of Biotechnology.

1) TRIPs Agreement 1995.
2) The Indian Patents Amendment Act, 2002.
3) International Treaty of plant Genetic Resources for food and agriculture.
4) International convention for the protection of new varieties of plants.
5) Convention on Biological Diversity and the Biological Diversity Act, 2002.

6) Budapest Treaty on Microorganisms.

7) Protection of Plant varieties and farmer's Rights Act, 2001.

8) Genetic modification of fruits to improve flavour and shelf life. [12]

4.4.A

The Patent and Agribiotechnolgoy Debate

1) IPRs have now become a means through which biotechnology firms can safeguard returns of R and D investments. The knowledge about the standards and effectiveness of IPR in developing countries is seriously inadequate and that patent protection may not be necessarily work in the same way it does in developed countries. This is because developing countries might not afford the cost of absorbing this knowledge e.g. investing in developing the necessary human capital. In addition developing countries experience IPRs as ~~adevt~~. A development cost and barrier to global markets, because patents are increasing used as a means for consolidating restrictive exploitation of the patented inventions.

2) Patent protection of biotechnological innovations may have the adverse effect on biotechnological research affecting agricultural trade and disenfranchising poor and small farmers who depend on agriculture as a source of livelihood by restricting easy and cheap access to biotechnology products.

3) Most enabling technologies (research tools) used in the production of agriculture biotechnology are end-products such as promoter gene techniques and market gene techniques are under patent protection. As such it has been argued that IP protection affects the use of biotechnology

reassert tools. There is an emerging consensus that innovations are characterized by a cumulative nature. This means that while some innovations are radical, others are incremental. Incremental innovations are build upon, previous innovations, Thus in the case of agriculture biotechnology this means that most modern methods used to develop new crop varieties depend on a wide range of component innovations the rights of which might be held by many competing parties (IP owners or others such as licenses). The number of separate rights needed to produce a new innovation will only escalate as biotechnology patents become more prevalent. It becomes even more complicated if the ownership of these rights is diffuse and uncertain, it can be relevant parties. The golden rice case is exemplary in showing that most times research may not necessary be hindered as much as development and commercialization of products. The devt of this rice variety was slowed down by a complex tangle of close to 780 patents owned by some 32 companies.

4) Patent protection affects agricultural trade if crop breeders produce crop varieties that can not then be legally exported to countries where the tools and processes used in developing the crop varieties fall under IP protection. This essentially looks out developing countries from accessing global markets and thus seriously impacting their agricultural industries. This is particular concern to those countries whose economies are heavily dependent on agricultural or horticultural produce[2].
5) Proponent view is that the research required to create transgenic plants or animals is very expensive and patent protection will help these investors to reap the benefits of the investment.

6) On the other hand it is argued that patents for transgenic and gene sequences should be denied for moral, ethical, economical and environmental grounds. The environmentalists say that nothing is known about the long term effects of releasing these transgenic into the environment. Moreover as more and more transgenic are released in the environment will be subjected to greater risk. On the moral and religious front, the argument is that developing transgenic is 'playing God' and defying the 'sanctity of life' as God created it. These arguments, however, are not directed at the patent process but biotechnological research itself.
7) The argument about the use of genetic is that this will be more expensive than their traditional counterparts, small farmers feel that they will not be able to afford them. However, it is argued that the benefits will be costly than the initial cost of investments in seeds or animals. [13]

4.3

GM Crops / Transgenic Crops and India

4.3.1 Introduction :

In last one decade the rate of transfer of biotechnology in the field has gone up many times. GM crops or transgenic crops are expected to be the major players in food and nutritional security in future. In Europe, Asia Africa, Australia and Latin America, the acceptance of genetically engineered crops is increasing[14]. The relative hectare of transgenic crops in industrial / developed countries has gone up from 1.4 million hectares in 1996 to 33.5 million hectares in 2000 amounting to a growth of 96 percent while the proportion of transgenic corps in developing countries has increased from 0.1 million hectares to 10.8 million hectares in the same period[15].

India is one of the 16 countries in the world that have permitted the transgenic crops for commercial cultivation. Now, Bt cotton is the first commercialized transgenic crop in India and it is being cultivated by the farmers of almost all cotton growing states of our country. Next to Bt cotton, Proagro's GM mustard (first food crop) is awaiting GEAC's approval for commercial use. From the four varieties of Bt cotton seeds, three are from Mhyco-Monsanto and one is from Rasi seeds. In 2002, the GEAC released three varieties of Bt cotton seeds viz; MICH 162, MECH 184 and MECH 12 in the southern, central and western zones. The RCH2 Bt by Rasi seeds was approved in April 2004 for the south, west and central region. At present, more than seven public research institutes are working on 11 crops for transgenic manipulation[16]. Due to the use of GM seeds there is increase in yield to the extent of 10-15% with IPm (integrated pest management) and a considerable saving in pesticide[17].

4.3.2 Concept / Definition of GMC

When one or more genes from diverse sources are added to a normal plant it is known as transgenic plant[18]. Genetically Engineering (GE) and GM are used interchangeably and refer to the process and methods by which organisms are genetically altered to exhibit specific qualities or traits deemed desirable. GMCs, refer to those products resulting from the artificial insertion of genes from one organism into the genes of another unrelated organisms. GMOs are effectively new "engineered" organisms with genetic sequences that could not be achieved under normal conditions. This differs from conventional plant breeding in which genes from related species are combined to create hybrid varieties.

To breakdown the barriers and allow a fair a critical evaluation of GM technology, policy making in this area will have to be open to public scrutiny, Equity and justice will have to define regimes for IP protection. Risk benefit analysis must be conducted in an open and transparent manner.

4.4.3 Global Status of GM crops

In 2002, global GM crop area continued to grow for the sixth consecutive year at a sustained rate of more than 10%. In 2002, for the first time just over half of the world's population lived in countries where GM crops are approved and grown.

Global area of GM crops

Table 1 : Global area of GM crops

Year	Area (Million ha.)
1996	1.7
1997	11.0
1998	37.8
1999	39.9
2000	44.2
2001	52.6
2002	58.7
2003	67.7

4.4.4 Regulatory process for GM crops in India

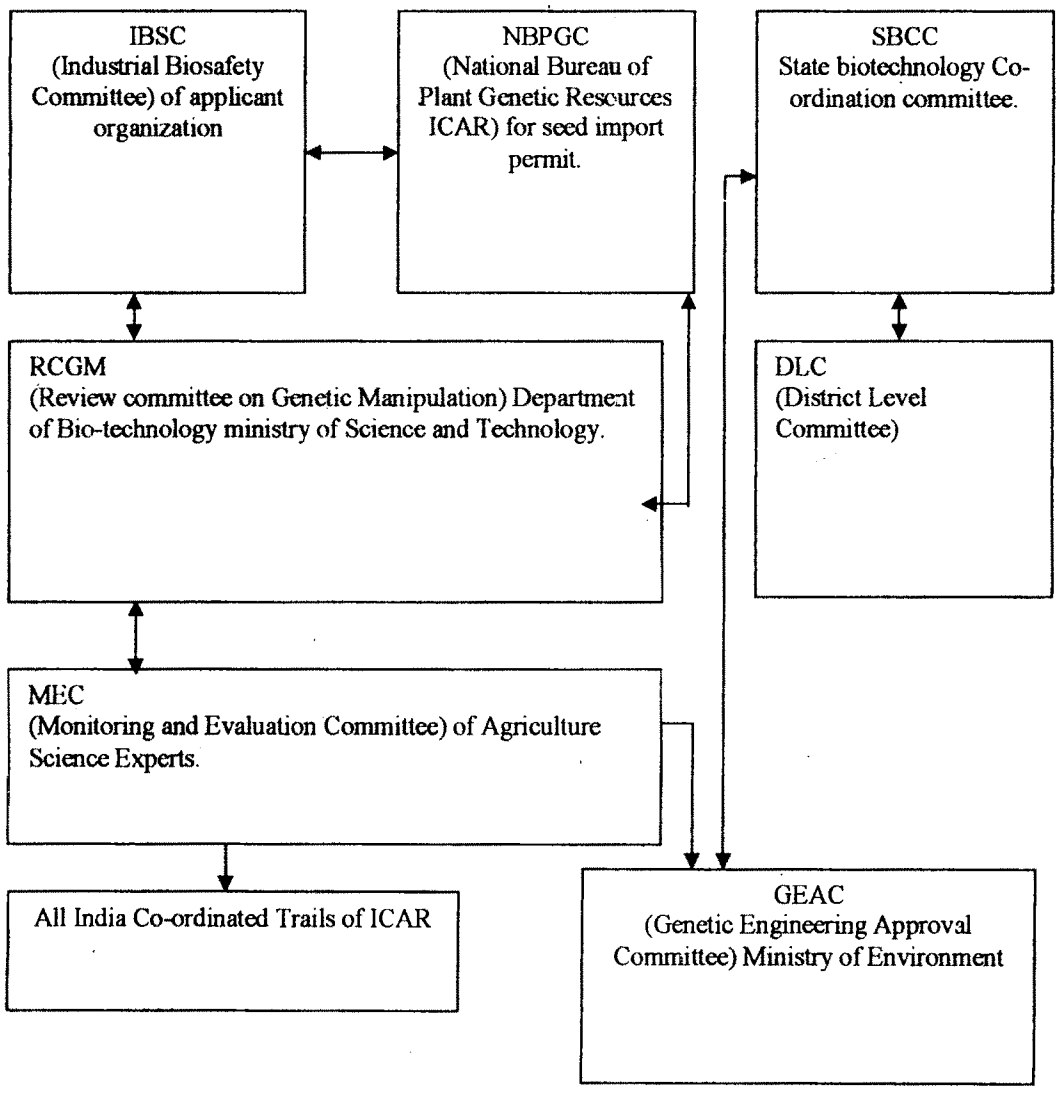
Three-Tier system for assessment of environmental and biosafety is in reform stage in India for regulatory processes of GM crops. Confederation of

Indian Industries (CII) has worked out on the issues and a 'White Paper' on regulatory reforms has been submitted to the Govt. of India – (See the chart 1). GOI moved on various steps to introduce the regulatory procedures, viz.,

1) 'Single Window' for handling of application through a Review Committee on Genetic Manipulation, which will work under the Department of Bio-technology, Ministry Science and Technology.
2) Pharma application are also be channelised through RCGM.
3) Processing time is rationalized – for RCGM – 60 days, for GEAC – 90 days.
4) RCGM and GEAC should have more no. of experts.
5) Health Ministry should finalize the guidelines.
6) Department of Bio-Technology and Environment Ministry should closely act together.
7) Training to Govt. and Institutional personnel with regulatory requirements and procedures should be designed.
8) Creation of public awareness is must. [19]

Chart - 1

Regulatory process for GM crops in India



Source : Syngeta

4.3.5 GM Crops and IPRS

GM crops are closely associated with IPRS. The TRIPs agreement, one of the agreement of WTO requires processes. TRIPS let countries choose a sui generic, system of protection for plant varieties. However, industrialized nations

are advanced patent like protection and or plant breeders rights for plant varieties. Also TRIPs requires members of the WTO to adjust their IP legal systems to those of industrialized nations, this facilitates patent filling procedures (in several countries) by corporations further more ongoing negotiations on regional trade agreements such as free trade area of the Americas (FTAA) in the American continent, contain more stringent proposals on IPRs than TRIPs. Additionally hundreds of bilateral agreements (negotiated in secret) between industrialized nations and non industrialized nations have emerged in the past few years with provision of IPRS. Bilateral agreements oblige countries to allow patents on living organisms or to join the UPOV. TRIPs was developed under influence of giant multi national, including biotech companies. It was the patenting of a living organism in the early 1980s that initiated the rush to GE research by corporations. The introduction of GMOs as well as enforcement of IPR regimes globally can be seen as market expansion by corporations. Almost patent holders are not in the developing world.

The push on GMOs runs parallel to the push on IPR regimes difference is that GMO production and marketing is done more in the public eye whereas IPR agreements signed secretly between govt.

4.4 Protection of Plant varieties :

IPR protection for plants and plant varieties was in some countries much earlier than the Uruguay Round of GATT negotiations. In 1930, a legislative instrument was established in the USA for patenting varieties of asexually propagated plants where as in 1961, an International Convention [convention of New Varieties of Plants (VPOV) was held albeit with few countries to negotiate and provide for

the protection of new varieties of plants and triggered enactment of plant variety protection laws in countries of Europe. Further, the effective sui generis system of protection for plant varieties mentioned in the TRIPs Article 27.3 (b) may be arguably based on the UPOV system of PVP an granting plant breeder's right (PBR) on the protected varieties. The Convention had already 54 countries partly to it as on 15 April 2004. [20]

Plant Genetic Resources (PGRs) are the foundation for the development of a food and nutritionally secure society. In addition, plants have many uses, including feed, fibre, medicine and industrial applications. PGRs are treated as the 'heritage of mankind' and were shared freely among nations, till the concerns for conservation of biological diversity were raised by the Convention on Biological Diversity, which came into force in 1993. The conservation and sustainable utilization and access to biological diversity were considered as national sovereignty by CBD. Consequently, many issues regarding the rights often conservers users, breeders, farmers and intellectual property have emerged [21]

4.4.1 Meaning :

Plant variety protection (PVP) have worked very well as a mechanism to promote the interests of the plant breeders for developing new variety through giving them proprietary rights on the one hand and as a custodian of public rights of access and use of genetic material on the other hand. PVP gives patent like rights to plant breeders. What gets protected in this case is the genetic make up of a specific plant variety. PVP laws can provide exemptions for breeders, allowing

them to use protected varieties for further breeding and for farmers allowing them to save seeds from their harvest [22].

4.4.2 Article

Article 27.3 (b), which reads 66 members may also exclude from patentability plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non biological and micro biological processes. However, members shall provide for the protection of plant varieties either by patents or by an effective sui gentries system or by any combination there of. The various interpretations form the Article could be that WTO members.

(i) Must grant patents for a) Microorganisms, b) Non-biological process for production of pants and c) Microbiological processes for production of plants and microorganisms.

(ii) May exclude plants form patentable subject matter in their jurisdictions, alternately, they may provide patents for plants, and

(iii) May not make any alternate / suigeneris provision of IPR protection for plants where they choose to exclude plants from patentability.

According to above interpretation of Article 27.3 (b) countries are not obliged to grant IPR protection to plants, it is also required of them to encourage the overall objectives of the IPRS Agreement. [23]

4.4..3 Difference Between Sui Generis System and Patent Law

1) As patent law deals with inanimate objects, it was not well suited for the protection of living matter like plant varieties.

2) The criteria for patentability, a) Novelty b) Non obviousness c) Industrial applicability and d) Enabling disclosure were too high for any plant variety to meet, hence the criteria devised for grant of PVP were a) Novelty b) Distinctness, c) Uniformity d) Stability.
3) The criteria of Novelty for plant variety protection are not on the basis of marketing. A new variety has to be clearly distinguishable from the existing variety, and sufficiently uniform and stable in its essential characteristics.
4) Patent law in all countries [with the possible exception of the U.S.] explicitly exclude discoveries from patentability. But PVP is possible on discoveries too. This was supposed to encourage breeders to discover plants with useful mutations and bring them into use.
5) One interesting difference between PVP system and patent system is that under the latter protection is for the product, unlike the former in which protection can be both for process as well as product inventions.
6) Exhaustion of rights is a principle of the patent system. It means that, once the patentee sells his product he loses all his rights on the products. But plant varieties as living matter produce propagating material. PVP law extends the rights of the breeder to the propagating material for commercial marketing. [24]

4.4.4 Plant variety Protection in India

In India, agricultural research including the development of new palnt varieties has largely been the concern of the govt. and public sector institutions. Earlier India did not allow patents on seeds or plants and had no system of

protection of plant varieties. India's policy of 'common heritage of mankind' i.e. agricultural resources are to be freely used and shared by all.

The process of drawing up a new PVP law in India started in 1993. A draft which was prepared that year underwent many revisions. Based on UPOV model. The protection of plant varieties and Farmers Rights Bill, 1999 was introduced in Lok Sabha on December 14, 1999. And later referred to 30 member Joint Parliament Committee of both the Houses under the Chairmanship of Sahib Singh Varma, for redrafting the bill, which was due to inadequate provisions to protect the interests of the farmers, registration of extinct varieties and tribunals for speedy settlement of disputes etc. The Committee submitted its report on August 25, 2000 and made certain changes to the bill .The Lok Sabha passed the bill on August 9, 2001 and the Rajya Sabha on August 28, 2001.

The Act has 97 sections scattered in 11 chapters. The notified rules have 76 sections arranged in 9 chapters with four schedules and 45 forms. [25]

4.4.5 Conditions for plant variety protection

A variety according to the Indian act is said to be,

1) Novel :

If the date of filling of the application for registration for protection, the propagating or harvested material of such variety has not been sold otherwise disposed of by or with the consent of its breeder or his successor for the purposes of exploitation of such variety

a) In India, earlier than one year; or

b) Outside India, in the case of trees or vines earlier than 6 years or in any other case, earlier than 4 years, before the date of filling of such application.

2) Distinct :

If it is clearly distinguishable by at least one essential characteristic from any other variety whose existence is a matter of common knowledge in any country (this is not mentioned in other type of protections at the time of filling of such application.

3) Uniform :

If its essential characteristics remain unchanged after repeated propagation or in the case of a particular cycle of propagation at the need of each such cycle.

3.5.5 Objectives of PPVFR Act, 2001 :

The objectives of protection of plant variety and farmers rights act are given below :

i) To provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders.

ii) To encourage the devt. Of new varieties of plants.

iii) To recognize and protect the rights of the farmers for their contribution in conserving, improving and making plant genetic resources available for devt. of new plant varieties.

iv) To stimulate investments in research and development.

v) The Act although has many things in common with the UPOV but there are some very important differences namely the Indian Act provides for farmers rights to reuse seeds from their crop and also sell

them (not under a brand name), benefit sharing with farmers liability on supply of spurious propagation motherland community rights.

4.4.6 Protection of plant varieties and farmers right bill 2001

Sr. No.	Particulars	PVFRB (2001)
1.	Criteria	Novelty, distinctiveness, uniformity and stability.
2.	Industrial applicability / utility distinctiveness	The variety ~~should~~ should be clearly distinguishable by at least one essential characteristic from any other variety whose existence is a matter of common knowledge in any country at the time of filling the application.
3.	Extent of Protection	Registration under this act shall confer an exclusive right on the breeder or his successor, agent or licensee, to produce, sell, market, distribute import / export the variety.
4.	Farmers Privilege	A farmer shall be deemed to be entitled to save use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this act in the same manner as he was entitled before the coming into force of this Act. A farmer will not be entitled to sell branded seed of a variety protected under this act.

5.	Breeders / Research Exemption	Yes. Any person for conducting experiment or research can use any variety registered under this act; however, if an initial source of a registered variety is repeatedly used for the purpose of creating other varieties for commercial production, then a authorization of the breeder of the registered variety is required.
6.	Compulsory licenses	Yes At any time, after the expiry of 3 years of the date of issue of a certificate of registration of a variety, any person interested may make an application to the authority alleging that the reasonable requirements of the public for seeds or other propogating material if the variety have not been satisfied or that the seed or other propagating material of the variety is not available to the public at a reasonable price and pay for the grant of compulsory license to under take production, distribution and sale of the seed or other propagating material of that variety.
7.	Duration of protection	Registration is valid, for 9 years in case of trees and vines and 6 years for other crops and may reviewed and renewed for the remaining period on payment of fees as fixed by the rules. The total period of validity shall not exceed.

		a) 16 years from the date of registration of the variety in the case of trees and vines. b) 15 years from the date of notification in the case of extant varieties and c) in other cases 15 years from the date of registration of variety.

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4.4.7. Farmers Right (FR)

Farmers Rights are defined as the rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centers of origin / diversity. [27] Farmers can save use, resow, exchange share or sell farm produce of a protected variety except sale under a commercial marketing arrangement [branded seeds] [section 39 (1) (iv) – (iv)] [2].

FR have the potential to restrict the repeated sale of planting material of crops, which are propagated by vegetative and self-pollinated seed. This however, does not preclude commercial opportunity and private investment in those crops which have large market size or low multiplication rate or skill deficiency among farmers to produce their own planting material. In case of cross pollinated seed crops FR will be restricted to locally evolved or improved populations, with no impact on commercial hybrids Genetically improved populations of these crops may also command attractive seed ,market. Therefore, the commercial disadvantage arising from FR to private investment is largely confined to low volume, low value crops, where the private investment is anyway low. The FR may influence the exclusive right in variable manner

depending on the propagation system and technology used for large scale production of propagating material[25].

The importance of FR in earning a livelihood ensuring a harvest and contributing to the household food security of people increases with the increasing dependency in agriculture linked subsistence and the magnitude of their resource scarcity. Denial of FR leads to denial of better harvest, better access to food and health and better income to the poor, it attracts violation of human rights as provided under Article 25 UHRDI. For many poor farmers, who largely depend on agriculture for livelihood, reasonable access to increased production and increased production and increased income are important for their economic development. When an unaffordable seed cost of an intellectually protected plant variety prevents, there farmers from increasing income and production. It amounts to denial of a universal and inalienable right to development for every human person and all people. FR also averred to assist the farmers and farming communities to participate fully in the benefits derived at present and in future, from the improved use of plant genetic resources through plant breeding and other scientific methods.

FR arise from their role in conserving, improving and making available plant genetic resources for the development of new plant varieties. [26]

Following are the farmers rights.

1)

i) Farmer who has bred or developed a new variety shall be entitled for registration and other protection in like manner as a breeder of a variety under this act.

ii) The farmers variety shall be entitled for registration if application contains necessary declarations.

iii) A frame who is engaged in the conservation of genetic resources of land races and wild relatives of economic plants and their improvement through, selection and preservation shall be entitled in the prescribed manner for recognition from Gene Fund; provided that material so selected and preserved has been used as donors of genes in varieties remittable under this act;

iv) Farmers shall be deemed to be entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this act in the same manner as he was entitled to sell branded seeds of a variety protected under this act.

2) Where any propagating material of a variety registered under this Act has been sold to a farmer or a group of farmers or any organization of farmers, the breeder of such variety shall disclose to the farmers or the organization of farmers, as the case may be. The expected performance under given conditions, and if such propagating material fails to provide such performance under such given conditions, the farmer or the group of farmers or the organization of farmers, may claim compensation in the prescribed manner before of the variety and after providing him an opportunity to file opposition in the prescribed manner and after hearing the parties, it may direct the breeder of the variety to pay such compensation as it deems fit, to the farmers or the group of farmers the organization of farmers as the case may be[27].

4.4.8 Plant Breeders Rights [PBRS) : [Section 42(1)]

A farmer who is engaged in the conservation of Genetic Resources of landraces and wild relatives of economic plants and their improvement through selection and preservation, shall be entitled in the prescribed manner for recognition and reward from the Gene-Fund, provided the material so selected and preserved has been used as donot of genes in varieties registrable under the Act[5]. As per PBRs a plant breeder or a seed production company by developing the seed material of a new variety and selling the seed to the farmers can obtain a permission or license from the agency for trading the same plant Breeders Right is a right obtainable for new variety distinct from the existing stock of plant genetic material, like patents these exclude others from using newly developed varieties for purposes of seed production.

4.4.9 Plant Breeding Research in India

ICAR and SAUs are the main agencies involved in plant breeding and production of breeder seeds (NFC and SFCI have also been involved in the production of breeder seeds in the past few years). ICAR was established in 1929, which is principal agency undertaken plant breeding work in India. Today ICAR has a network of 46 central institutes, 4 national bureau, 27 national research centers, 10 project directorates and 90. All India Coordinated research projects. State Agricultural Universities [SAUS] are the major plant breeders in India. The SAUs are based on the land grant collage system of US. The first SAU was established in 1963. Today there are 26 SAUs in 16 states and one central agricultural university to catter to the needs of the northeast. ICAR and SAUs employ more than 5,000 breeders. Breeder seeds are produced directly

under the supervision of the plant breeders. These institutions have developed around 2000 varieties since the 1960s[28].

4.4.10 Protection offered under PBR

Sr. No.	Element	PBR
1.	Subject of protection	Plant variety
2.	Scope of protection	Protected variety
3.	Criteria for protection	Novelty, Distinctness, Uniformity stability
4.	Disclosure of invention	Essential
5.	Denomination of subject matter	Essential
6.	Term of protection	25 years for trees and wines 20 years for species, from date grant.

Source : Jordens (2004). 32

MNCs Effects on Indian Agriculture and Boipiracy

The government of India announced a new seed policy in the year 1988 and thus permitted the import of vegetables, flowers and plants in India. As a result of this, a number of multinational companies [MNCs] such as the Kargil seeds, Bejo Sheetal seeds, sandor, the pioneer overseas corporation I.T.C. Agro tech, the Hindustan Leaver began to establish their dominance in the market of seeds. And since 1991, these companies have been expanding their fields of works and scope. These companies are became aggressive when the patents of the seeds are accepted. In the beginning these companies will sell the seeds at the attractive prices with the help of tempting advertisements. And Indian farmers

tempted to purchase these seeds because of their low prices. Once the Indian farmer is habituated to buy the new seeds from them, there will be no demand for the traditional seeds and traditional seeds will be no more. The same case will happen in the case of the present seeds which happened in the case of hybrid seeds (after 1966). 1

MNCs are controlled by a microscopic minority of the rich in the North. With the active support of WTO, World Bank, IMF and with blessing of G-7 countries MNCs become new instruments of domination. Now the global corporations control more than 70% of the world trade. In 1996, there were 44,000 MNCs control 25% of the world productive assets, 1. It means that production is decentralized all over the world but the finance control and power remain concentrated in the hands of managerial elites.

Effects f MNCs on Indian Agriculture :

1. Developing countries like India don't have enough capital to invest in R & D activities. Whereas MNCs have vast amount of capital MNCs invest in developing countries aiming at highest possible returns. They have no commitment to eradicate poverty or to increase income of poor country. MNCs mostly which are from developed countries like U.S.A. having economic and political power control use the market for their welfare.
2. The increased market concentration and enhanced control by MNCs will result in the charging of higher monopoly margin on inputs and technologies and increase the cost of production for farmers. This is also affect the consumers in the long run.
3. Genetically Modified products like soya oil, which are rejected by affluent western consumers may be dumped through the MNCs in our marks; the

impacts of GM products on human health are not fully tested. This will affect the nutritional food security options of our middle and upper classes.

4. The expansion of MNCs agribusiness, agro processing and fast food industry is meant to replace the small peasant and farmer based agricultural economy of India with MNCs agribusiness controlled industrial agriculture. This change is associated with transformation of farmers as breeders and reproducers of their own seed supply to consumers of MNCs seed and a controlled food system by a handful of MNCs which results into food insecurity and agricultural biodiversity erosion.
5. GM Crops have led to conflict between business ethic and socio-economic concerns because, firstly, if exotic genes enter into Indian crop cultivars through conventional breeding it would be difficult to trace their origin. Secondly farmers can not save seeds of their crops at the end of the crop season and therefore have to buy seeds every year at a much higher crop season and therefore have to buy seeds every year at a much higher price than local cultivars. This conflict is also reflection products manufactured form neem, garlic, turmeric and other indigenous plants by MNCs and the patents are owned by them.
6. Farmers decision in selection of crops, chemical fertilizers would be depends on the profit of MNCs.
7. patents n microorganisms leads to patents on blue green algae, rhyzobium by which way there is way incentives for chemical fertilizers. Though

there is need to use of bio-fertilizers, it becomes costly due to patents on microorganisms.

8. Traditional users of bio-wealth do not have the right according to patent law the traditional users will be appearing as theft and the MNCs can make an attempt to enjoy royalty from these ancient users.

Piracy of MNCs

In India Dupont, Aventis, Syngenta and most prominently Monsanto are all developing their stakes in the market. With large investment capacity and with the use of technologies MNCs could get patents on resource rich poor countries bio-wealth. Genetic material and traditional plants which have been bred over generations and held in common have been stolen and patented in another country by corporate industry. This has become known as biopriacy patents have been granted in the north n such traditional crops as Indian turmeric, Neem and basmati, Andean-Ayahuasca and coloured cottons etc. Some of these have now been successful fought and over turned.

4. 4.11

Conclusion

Under the TRIPs Agreement, member countries are required to provide IPR protection to plant varieties. The Indian Government has chosen sui generic, system for protection of plant variety India will having an opportunity to exploit traditional knowledge through patent like protection. Indian farmers are in confused position about IPR and its protection. Proper utilization of indigenous knowledge and protection of bio-wealth will give an opportunity to becoming

super power in 21st century . The biopiracy attempt of MNCs needs to be taken seriously as the technologically poor countries rich biodiversity may get locked in their hands. The development of Public Gene Bank for the documentation of the bio-diversity of developing countries will act as an efficient check to such attempts. The Plant Breeders Rights need to be modified to take care of the indigenous people who have helped and developed the plant varieties for centuries. Also, there is urgent need to protect the farmers right and government look at other options which would better serve the interests of their people. Otherwise, there will be a misery and our own farmers product will be sold out by the patent company in their brand name at a better price.

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