

**THE INDIAN PLANT VARIETIES BILL 1993 :
A REVIEW**

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CERTIFICATE

This is to certify that the M.Phil dissertation entitled **THE INDIAN PLANT VARIETIES BILL 1993: A REVIEW** submitted by **S. Afsar Hussain Jafri** in partial fulfillment of the requirements for the award of the degree of **MASTER OF PHILOSOPHY** from Jawaharlal Nehru University is an original work. This has not been published or submitted to any other university for any other purpose.

Prof. V.S. Mani
(Chairperson)

Dr. B.S. Chimni
(Supervisor)

Dedicated to

My

Parents

ACKNOWLEDGEMENT

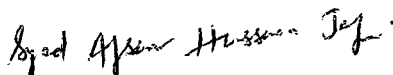
This dissertation has been nourished by the sweet and loving affection of a number of well wishing teachers, dedicated friends and ever supporting relatives. The stimulating discussions held with my supervisor Dr. B.S. Chimni, has gone a long way in giving a proper perspective and direction to this study and helped in crystallizing my ideas and thoughts. But what I really learnt from him is the art of writing and arguing in a coherent manner with an emphasis on brevity and clarity.

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CHAPTER - I
INTRODUCTION

India possesses rich and diverse plant-genetic resources. It is one among the centres of diversity first defined by N.I. Vavilov, a Russian geneticist, who showed that genetic diversity in crop plants is restricted to a few areas and he called them centres of origin or centres of diversity. These centres lie around the equator and mostly coincide with developing countries, called 'gene rich' countries.¹ We have in India over 45,000 species of plants, among them about 15,000 belong to the category of flowering plants. About 300 of them are grown for a variety of purposes, including veterinary and human medicine. The major food plants of significance to the national food security system are however less than 20. Only about a third of our flowering plants are endemic to India. This is because in the past our genetic resources moved freely across the globe and were domesticated by different societies and visa versa.²

I. Free Availability of Genetic Resources and Property Rights

Earlier the genetic resources found within the national territories of sovereign gene rich countries was considered

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1. Danial Querol, *Genetic Resources: Our Forgotten Treasure* (Penang: 1992) p.30.
 2. M.S. Swaminathan, "A Plant Variety Protection System for India" in V. Ramachandriah, ed., *GATT Accord: India's Strategic Response* (New Delhi: 1994), p.183.

to be the 'common heritage of mankind'. In 1983, the United Nations Food and Agriculture Organisation (FAO) also recognised this, and adopted a resolution called International Undertaking on Plant Genetic Resources. Article 1 of the Undertaking provided that "this Undertaking is based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction."³ Hence common heritage meant free access. The 'technology rich' developed countries and the multinational corporations (MNCs) involved in pharmaceuticals, seeds and fertilizers business, based in those countries have been fully exploiting the genetic resources of the 'gene rich' countries and making massive profit without any obligation towards the 'gene rich' countries and those who protect and conserve the genetic resources, i.e. farmers and local communities.

The genetic resources e.g. landraces and wild species, offers the largest potential for use in agricultural research. These are source for resistance to pests and diseases and physiological stress as well as to obtain quality attributes etc. The big seeds companies not only using the genetic material from South for fertilisers e.g.

3. FAO, "Plant Breeders' rights in India", a (draft) report to the Government of India based on the work of D. Woold and L.M. Bombin (Rome: 1990), p.30.

biofertilisers and biopesticides, and plant breeding purposes but also monopolizing them. Between 1930 and 1960, various industrialized countries passed laws giving the creators of new plant varieties a temporary monopoly on exploitation. In USA, the Plant Patent Act (PPA) was enacted in 1930 to provide patent protection to plants which are asexually reproduced. In 1961, UPOV was established for providing protection to new varieties of plants and also for safeguarding the interests of the breeders.

The monopolisation of genetic resources have been accelerated with the emergence of biotechnologies. Now DNA fragment collected anywhere could constitute a genetic resource which would improve any type of living organisms. It accelerated the trend towards patenting, appropriation and widespread marketing of genetic resources. Intellectual property law is also undergoing an upheaval. In the plant world, invention no longer focussed on variety but on numerous constituent elements-genes, plant tissues, enzymes etc.⁴

However, this regime of intellectual property rights (IPR) recognized only those inventions, in the field of agriculture, which are being done in the laboratories and research stations and is biased against the informal

4. *ibid*, p.27.

innovation done by farmers and local communities in their field. In fact, these informal innovation and experimentation by local communities and farmers who have developed, preserved and propagated genetic resources and safeguarded the tremendous biodiversity which the breeder and seed industry use as "raw material" for plant breeding. But these rural community does not get any thing in return for their genetic resources.

But in 1989, the situation was little changed, and the FAO recognized informal innovations by farmers and the 1983 Undertaking was modified through an Agreed Interpretation of the Undertaking which recognized the breeders' right and farmers' right. On farmers' right it provides: "States adhering to the Undertaking recognize the enormous contribution that farmers of all regions have made to the conservation and development of plant genetic resources, which constitute the basis of plant production throughout the world and which form the basis for the concept of farmers' right". Hence the concept of farmers' right was evolved which mean recognition of the informal innovation by farmers and compensation or royalty in return for their utilization by breeders for scientific breeding.⁵ Therefore, now, free access does not mean free access without payment.

5. *ibid.*

All this mean that the use of wild plants and local varieties can be subjected to payment linked to "farmers' right". With regards to breeders' right⁶ it stated that rights as provided for under Union for the Protection of New Varieties of Plant (UPOV) Convention⁷ are compatible with the International Undertaking.

The next FAO Conference in November 1991, went further and recognized that "nations have sovereign rights over their plant genetic resources and that breeders' lines and farmers' breeding material should be only available at the discretion of their developers during the period of development". In other words, in less than a decade, the position on the ownership of plant genetic resources changed by 180° degrees.⁸ The United Nations Convention on Biological Diversity⁹ signed at the Rio de Janerio Earth Summit in June 1992, also acknowledges the sovereignty of nations over the biodiversity found in their territories.

6. *ibid.*

7. UPOV, *The Twenty Five Years of the International Convention for the Protection of New Varieties of Plants* (Geneva: 1987), pp.101-109.

8. Usha Menon, "Access to Genetic Resources", *International Journal of Technological Management* (Geneva), vol.10, no.10, 1994.

9. *Selected Documents, Environmental Policy and Law* (Amsterdam), vol.22, no.4, 1992, pp.251-258.

The reason for taking the 180° degree turn from common heritage to national sovereignty on genetic resources was that in the regime of patent and biotechnology, the common heritage principle would only mean that the technology rich countries and MNC's would becoming richer in monetary terms as well as their stocks of genetic material in gene bank will be increasing, on the other hand, the gene rich countries would lose not only their genetic material and rewards which they may get in return for those material, but the very survival of the rural communities who are based on the resources will be in danger. Thus the legal solution could be that all the invention are protected by breeders' right and that all the genetic resources are protected by farmers' right. During the patent regime, the principle of common heritage for genetic resources cannot survive.

Further, the production of new varieties of plants through scientific methods and the process of patenting led to the replacement of old varieties, land races and primitive cultivars. The gene rich countries including India, in order to protect their rich genetic material from genetic erosion, have adopted *ex-situ* method of conservation, i.e. storing landraces and local varieties and their wild relatives in the 'Gene Bank'. For example, the responsibility for *ex-situ* conservation of our genetic material is on the National Bureau of Plant Genetic

Resources (NBPGR), set up in 1978 by Indian Council of Agricultural Research (ICAR) which is in the process of establishing a National Gene Bank in the country.¹⁰

II. India and Plant Breeders Rights

India is a country of small land holdings and over 70 per cent of the population are dependent on agriculture for food, jobs and income.¹¹ Its population is growing fast and about to cross one billion. Now there is no option but to produce more food on less land, possible only through the improved varieties, to meet the needs of the growing population.

For agriculture, seed is one of the major inputs. Therefore, Indian farmer need an adequate supply of good quality seeds. Today, the public & private seed agencies are not able to meet the demand of seeds to the required extent. At present, 65 per cent of the required seeds are provided by the inter-farmer sales.¹² In this context, it may be

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10. H.N. Jain, "Plant Genetic Resources and Policy Implications for a Changing Agriculture", *Indian Journal of Genetics and Plant Breeding* (New Delhi), vol.53, no.3, 1993, p.232.
 11. M.S. Swaminathan, "Draft Plant Varieties Recognition and Protection Act: Rationale And Structure", in V. Ramachandriah, ed., *GATT Accord: India's Strategic Response* (New Delhi: 1994), p.196.
 12. K.S. Gill, "GATT Issues - Agriculture Sector, Implication of IPR for India". *Monthly Commentary on Indian Economic Condition* (New Delhi), vol.33, no.5, December 1991, p.52.

mentioned that we have one of the world's largest plant breeding enterprises in the public sector¹³ - through ICAR (Indian Council of Agriculture Research) and Agricultural Universities. The aim of plant breeding is to create better varieties: better for cultivation, better for food, better for use in one way or another. It is the task of breeders to satisfy changing demands as quickly as possible. It is an even bigger challenge to anticipate future changes and to have the answers ready when required. The Indian public sector is commendably performing its responsibility of developing better seeds and planting material for Indian agriculture. India also has a tradition of informal innovation and experimentation by local communities and farmers who have experimented, developed, preserved and propagated genetic resources.

Till today, India has not enacted any law providing protection to the improved varieties of plants. Plant variety protection refers to the protection provided legally to a breeder, originator or owner of a variety to control its production and marketing. The term is used synonymously with "plant breeders right" (PBRs).¹⁴ PBRs stipulate three

13. Swaminathan, *ibid.*, p.187.

14. Khem Singh Gill, "Plant Variety Protection" in *Plant Variety Protection: Pros and Cons*, proceeding of the 2nd National Seeds Seminar organised by Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.59.

basic requirements : (i) distinctiveness i.e. the variety must look different in one or more characteristics from already existing plants/varieties; (ii) uniformity i.e. the variety must be homogeneous and perform the same in the field; (iii) stability i.e. the seeds must breed true to the type (produce the same type of plants with identical morphological and biological characteristics in the subsequent generation).¹⁵ Section 3(i) of the Indian Patent Act, 1970 says that "Patents cannot be given for a method of agriculture or horticulture or any process for the medicinal, surgical, curative, prophylactic or other treatment of animals or plants to render them free of disease or to increase their economic value or of their products". Hence, Indian farmers are free to produce and sell seeds of any or all improved plant varieties. They are free to pass on these seeds to fellow farmers. Researchers and breeders are free to use these improved varieties for further breeding. But the current regime will have to be changed since India has ratified the Final Act emerging from the GATT Uruguay Round of Trade Negotiations which concluded on April 15, 1994 at Marrakesh. This will greatly increase

15. Abhijit Bhattacharjee, "Biotechnology, Patents and Plants Breeder rights", *Manthan* (New Delhi), vol.11, no.1, January 1990, p.55.

the possibility of exploiting genetic material commercially.¹⁶

The Final Act contains, inter alia, an Agreement on TRIPs. Article 27, para 3, of the TRIPs Text¹⁷ which talks about the patentable subject matter, states that patents shall be available for any inventions, whether product or process. It provides for the patenting of micro-organisms and micro-biological processes. It further states that Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. Since India has ratified the Final Act, she is now bound to introduce some form of IPRs in Plants by A.D. 2000.

Patents themselves are not considered obligatory but in its absence a *sui generis* form is demanded. A *sui generis* system implies a system of PBRs, a specific system for the protection of plant varieties. *Sui generis* means a form of IPR which is derived from itself. This has however allowed the somewhat false impression that each country is free to have its own IPR system. But the key term in Article 27 is 'effective', a term which is also inserted in the

16. For discussion on Patent and genetic resources, see chapter IV.

17. Anonymous, *GATT Agreements: Final Text of Uruguay Round* (Bombay: 1994) pp.178-95.

Biodiversity Convention and in the Super 301 section of the USA Trade and Competitiveness Act, 1988. The understanding that each country is free to devise its own IPR system overlooks the fact that the meaning of what is an effective *sui generis* system will be eventually determined in GATT forums. The only model recognized as effective at the international level by the developed countries is the system of PBRs as codified in UPOV established in Geneva in 1961, and amended in 1972, 1978 and 1991.¹⁸ UPOV gives monopoly markets to breeders of new varieties.

The UPOV Convention provides the two important features of a PBR system, i.e. "farmers' exemption" and "breeders' exemption". Farmers' exemption, as distinct from "farmers' right" recognized by the FAO, means they have right to save and sow the seeds of harvested crops of the protected varieties and the authorization of the breeder is not required. While breeders' exemption means researchers and breeders have the right to use the protected variety as an initial source of variation for the purpose of creating other varieties or for the marketing of such varieties. But these exemptions are provided in UPOV (1978). In UPOV (1991) both these exemptions have undergone sea changes. The right of farmers to save seed was introduced as an option which

18. For discussion on UPOV see chapter II.

the member countries could grant to its farmers. The breeders exemption has been removed by introducing a new concept called 'essentially derived varieties'. It means, if a variety which is derived from a patented variety and conforms to the essential characteristics of the genotype of the initial patented variety, then the derived variety would become the property of the breeder of patented variety and he/she can alone exploit it commercially. So it is but natural that no breeder will ever use a protected variety when he/she cannot enjoy its results. Infact, UPOV (1991) amendment brought the *sui generis* system closer to a patent.

The TRIPs Agreement presently excludes plants and animals from patentability but includes "micro-organism" and "micro-biological processes" within the purview of patent. Micro-organism refers to very small form of life like bacteria, viruses and even genes. With the revolution in genetic engineering it is now possible to shift genes from micro-organisms to plants and animals and vice versa and thereby it is possible to make what are called 'transgenic' plants and animals. These transgenic plants and animals attract provisions of TRIPs even though there is no *de jure* patents for plants and animals.¹⁹ Patenting of micro-

19. P.R. Sivasankar and D. Krishnamurthy, "Implication of TRIPs for India Industry and Agriculture" in G.S. Batra and N. Kaur, ed., *GATT: Implication of Dunkel Proposal* (New Delhi: 1994), p.188.

organism could represent a threat to India's rich and diverse plant genetic resources, because whatever genetic resources are going out of the country will return in the form of a patented finished variety, made using India's genetic resources. It is also feared that patenting would destroy India's biodiversity in the field because of the availability of few high yielding protected varieties for sowing which would led to monoculture practices in the field.

In order to meet its obligation under the TRIPs Text the Ministry of Commerce, Government of India drafted and circulated in February 1994 a draft legislation on Plant Varieties Protection. This bill is an attempt to define and operationalise the concept of PBRs, as also ensure sovereign rights over access to and utilisation of plant genetic resources. It however appears to deny the rights of local communities and farmers on various crucial issues. Indeed Clause 5 of the draft makes it clear that the objective is primarily to protect the rights of plant breeders and developers and to foster competitiveness and investment, in plant breeding in both private and public sectors.

Objective of the Study

The objective of this dissertation is to review the Draft Plant Varieties Bill, 1993 in the background of the TRIPS Text which requires a *sui generis* system to be introduced by the year 2000. The only possible model of an effective *sui generis* system is considered to be UPOV. And if it is UPOV, the question arises as to which version of this international convention: UPOV (1978) or UPOV (1991). In the process, it will also deal, albeit briefly, with aspects of inequities of the international patent system for the agriculture and biodiversity of Third World countries.

The major issues identified in the bill to be discussed in this dissertation are the following.

The first important issue relates to the breeders' right. Does a country like India, which has 25 per cent of the world's farming population afford to have a legislation that erodes its people's capacity to innovate and utilise its rich heritage.

The second important issue relates to the patenting of micro-organisms. Though India has yet not achieved self-sufficiency in food, can she afford to allow patenting of micro-organisms.

The third important issue is as to why when the Indian Government is proposing to provide protection to formal innovation and creativity in the field of agriculture, the

same protection cannot be given to the informal innovation system of farmers and recognize and reward the contributions of local communities who have been traditional seed selectors and conservers.

The fourth issue concerns the nature and extent of protection which should be given to MNC's through a legislation for it may extend their monopoly in the sale of plant varieties of both hybrid or non-hybrid types which could eventually allow them to control the Indian seed market.

Scope of the Study

The study consists of four more chapters.

The second chapter examines in detail the historical evolution of patents and PBRs in plant.

The third chapter examines the Draft Plant Varieties Bill, 1993 in the context of breeders'/researchers' rights and farmers' privileges.

The fourth chapter examines the Draft Plant Varieties Bill, 1993 from a different angle. It will try to analyse the provision about the rights of local communities and protection of genetic resources, patenting of micro-organisms and their effect on India's genetic diversity. Attempt will also be made to assess the effect of the bill on India's small seed industries.

The last chapter would summarize the major findings of the study.

It may be noted that this study does not propose to examine at length either the Biodiversity Convention, 1992 or the Indian Patent Act, 1970. However, wherever necessary, references will be made to them.

CHAPTER - II

THE EVOLUTION OF PATENTS IN PLANTS

The development of plant genetic resources for man's use has been ongoing for millennia, with the most rapid and notable advances in the last 70 to 100 years. Significant advances have been made in the development of higher yielding hybrids and varieties as well as improvements in insect and disease resistance. Other advances have resulted from the utilization of chemical fertilizers and biocides, and the emerging area of biotechnology. It is with the application of biotechnology in plant breeding and the entry of large corporations into the seed sector, that the question of intellectual property rights has become the subject of much discussion.

Plant variety protection law is a highly specialized branch of law owing to the narrowness of its subject matter and the specific features of the area of economic activity to which it relates: the subject matter - the variety - belongs to plant biology and genetics, and is a product of a human activity called "plant improvement" or more commonly "plant breeding". That activity is connected to the production and marketing of seed and seedlings and through it to agriculture.¹

Plant variety protection law fits into the general

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1. UPOV, *The Twenty five Years of the International Convention for the Protection of New Varieties of Plants* (Genava: 1987), p.54.

framework of intellectual property law, which on December 10, 1948, was given formal recognition by the United Nations General Assembly in Article 27(2) of the Universal Declaration of Human Rights:

Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.²

In historical perspective, plant variety protection is an offshoot of the intellectual property law. In plant breeding terms, one could say that plant variety protection is the result of a mutation of patent law, itself a branch of industrial property. Thus, as a matter of principle its history could not be written without at least an outline, by way of background of the history of its parent, i.e. the patent system.

I. History of the Patent System

Intellectual property rights (IPRs) or patent rights arose within the feudal system of granting monopolies and privileges. Litterae Patentes - from which the word "patent" in English or German and its equivalents in other languages originate - were letters patent open to the public, which

2. UN Doc. ST/HR/1/Rev.3, Universal Declaration of Human Rights (New York: 1988), pp.1-7.

made their owners subject to a particular legal regime.³

The genesis of intellectual property rights may be traced to the seventh century B.C. when the Greek colony of Sybaris, established in Southern Italy, which then formed part of Greater Greece, promulgated the following law:

If any caterer or cook should invent an original and refined dish, no person other than the inventor himself is allowed to use the recipe before one year has expired and, therefore, only the first person to have invented the dish may draw profit therefrom during that period, and this to the end that others, by their own assiduous application, may distinguish themselves with similar inventions.⁴

It set forth two fundamental principles of intellectual property law which continue to be valid today - the inventiveness requirement and the limitation of the exclusive rights in time and also two purposes of that law - the protection of the material interests of the inventor and the promotion of inventive activity.

The modern law on the subject has its origin in the famous "Statute of Monopolies" passed by the House of Commons in England in 1623, the purpose of which was to declare totally contrary to the laws of the realm all monopolies and all commission, grants of privileges,

3. UPOV, no.1, p.55.

4. *ibid*, p.56.

licenses, charters and letter patent. However, it made an exception in favour of "letter patent and grant of privileges for the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures".⁵ In return for the granting of the monopoly right for a limited period, the patentee was supposed to make the invention available to the society. This basic idea of the patent as an optimal balance between the interests of the inventor and the rest of society is still prevalent. This limited monopoly is supposed to be in the interest of society as a whole since it is expected to promote technological development.

Gradually, Exclusive rights in invention started being evolved in several countries, under a variety of political regimes, under different economic circumstances and on the basis of different philosophical concepts. For example, the concept of patent got a place of honour in the Constitution of the USA⁶, Article I, Section 8(8) of which gives the Congress the power

5. *ibid.*

6. William R. Barnes, *The Constitution of The United States and The Declaration of Independence*, (New York: 1958), pp.7-28.

to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

In India, the first patent law was enacted by the British Empire ruling in India, in 1859 which was based on the British Patent Act of 1852. On the international plane, an important development in field of patent law took place in the Paris Universal Exposition of 1878, with the signing of the text that eventually became the Paris Convention for the Protection of Industrial Property on March 20, 1883. The final protocol of this Convention provides that,

The words 'industrial property' should be understood in the broadest sense; they relate not only to the products of industry in the strict sense but also to agricultural products (wines, grain, fruit, cattle etc.)

II. Development in Plant Breeding:

It is generally assumed that plant breeding was already being performed in ancient times when nomadic tribes decided to settle. More or less different types of food crops were grown for ages, during which some further selection, both by ecological condition and by man, will have taken place. Probably some individual growers, equipped with a keen eye, made efforts to select better performing and more uniform material long before the first recorded attempt. The first

7. UPOV, n.1, p.59

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recorded interspecific cross in 1717 was made between *Dianthus caryophyllus* and *D. barbatus* by Thomas Fairchild and resulted into a sterile F₁ hybrid. Subsequently, it was multiplied vegetatively and became known as Fairchild's Sweet William.⁸ In the case of wheat, the first attested selection followed by offspring testing, carried out by Le Conteur in Jersey, dates back to 1800. John Goss appears to have been the first to cross peas to produce new types, new varieties that were more interesting for the grower. That was in 1820.⁹ The Sheriff of Scotland's statement of 1873, that the new varieties of the cereals can annually be obtained from three sources-from crossing, from natural sports and from foreign countries" and always "cross with the seedlings which inherit in the greatest degree the properties you wish a cereal to possess" indicates how relevant it is even today.¹⁰

Evidently, new plant varieties become the most significant element of technological progress in modern agriculture. Simultaneous with this development is the

8. Mangal Rai, "Plant Variety Protection Vis-a-Vis Hybrid Research and Development in the Asia-Pacific Region" in R.S. Paroda and M.Rai, ed., *Hybrid Research and Development Needs In Major Cereals in the Asia - Pacific Region*, (Bangkok: 1994), p.218.

9. UPOV, n.1, p.62.

10. Rai, n.8, p.218.

increasing importance attached to legal protection of improved varieties during the century.

III. Historical Development of Plant Variety Protection

Although IPRs underwent major reformulations in the Western World in the 19th Century it did not extend to plants. In order to understand this, it is necessary to consider the requirement of patents. The common core of all patent laws is that patents could be granted only for inventions which were novel, non-obvious and useful. Usefulness was normally interpreted as being useful for industrial application. Non-obviousness referred to the fact that there should be an inventive step. It meant that patents should not be granted for something which was obvious to someone skilled in the art. The term 'invention' described the subject matter of the patent and meant that scientific discoveries and discoveries of unknown natural products were excluded from patenting. Further, the granting of patent required that the inventor disclose the invention to the public through the patent application so that the invention can be reproduced by anyone skilled in the art.¹¹

11. Usha Menon, "Evolution of Intellectual Property Rights in Plants", paper presented at the session on Intellectual Property Rights at the Golden Jubilee

In this background, one can understand why whenever the question of patenting of plants was raised, the following arguments were used to show why plants could not be patented:

- a) plants were products of nature and not inventions;
- b) a plant variety cannot be adequately described to fulfil the requirement of disclosure required by the patent law; and
- c) the method of breeding was not sufficiently reproducible to allow patenting.¹²

Moreover, the ethical question of granting monopoly rights on what was considered as the creation of God also played a role. But, soon these objections were overcome. An important development in the extension of IPR to plants was made by the development of plant breeders right (PBRs), a system of rights independent of industrial patent. Plant breeders right did not require the new variety to be an invention which is not obvious to someone skilled in the art. The requirement of non obviousness of patent laws was replaced by the requirement of distinctiveness. The new variety had to be distinct. All the later laws conferring IPR in plants have maintained this requirement.

...Continued...

Symposium on Genetic Research and Education: Current Trends and the Next Fifty Years, New Delhi, February 1991.

12. *ibid.*

The extension of monopoly rights to a particular sphere, i.e. plants, is not determined by merely the technical characteristics of the sphere but also by the efforts of those whose interest were affected by these monopolies. Those interest groups were, plant breeders, seed producers, farmers, and consumers. While the interests of the seed producers and the plant breeders formed the primary factor in shaping the evolution of the system of IPR in plants. The interests of consumers and farmers essentially enter as secondary factors in the fine tuning of the system.

The first attempt to declare property rights on agricultural subjects was by an Edict of the Papal States on September 3, 1833.¹³ The Edict provided that when a person discovered a natural product or found or introduced an important new type of agricultural plant in the Papal States the person was granted an exclusive property right. The owner of the right was even guaranteed undisturbed enjoyment thereof, as in practice third parties were prohibited from challenging it, and obstructing the working of the invention. The duration of the right was from five to fifteen years; it was reduced to six years in the case of the introduction of new methods and useful improvement.

13. UPOV, n.1, p.60.

However, this did not lead to any success since it was never put into effect.

The seed industries of USA and Europe were first to raise the question of rights in respect of plant varieties during the initial years of the 20th Century, at the Congress of Pomologie de France (French Fruit Growing Congress). Also, in 1911, the question of a *sui generis* system for protection of varieties, now a part of the TRIPS Text, was raised for the first time.¹⁴

The first legislation that came into force in this respect was in France way back in 1922, safeguarding PBRs by making it compulsory to register a variety before it could be commercially released and to allow its sale only if it was labelled by its varietal name and the name of the breeder who developed it.¹⁵

The famous North-American Luther Burbank, a zealous promoter of variety protection, once wrote to the US House of Representative that "A man can patent a mousetrap or copyright a nasty song, but if he gives to the world a new fruit that will add millions to the value of the earth's

14. Rai, n.8, p.218.

15. Partha R. Das Gupta, "Plant Variety Protection - An Indian Perspective", in *Plant Variety Protection: Pros and Cons*, proceeding of 2nd National Seeds Seminar, organised by Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.137.

annual harvests he will be fortunate if he is rewarded by so much as having his name connected with the result."¹⁶

(a) USA

In USA, the attempt to place the plant breeder on a similar footing as the inventor or author finally succeeded in 1930 with the enactment of the Townsend-Purnell Act, or Plant Patent Act (PPA), consolidated in 1952 and further amended in 1954. It is a *sui generis* system, which in many respects is at par with the UPOV Convention.¹⁷ This Act of 1930 gave monopoly rights to breeders of new and distinct, asexually propagated varieties other than tuber propagated species. The rights were given to the asexually propagated species, because they could be multiplied true-to-type and so were eligible for patenting. While the exclusion of seed regenerated plants from patenting was on the ground that such plants did not always breed true-to-type.¹⁸

Following the passage of the PPA in 1930, the primary development of new asexually reproduced varieties moved from government experiment stations to private industry. However, between 1930 to 1970, the development of new sexually reproduced varieties (i.e., non-hybrid cultivars (plants)

16. UPOV, n.1, p.65.

17. Rai, n.8, 219.

18. Menon, n.11, p.4.

which are pure strains and which breed true) was primarily undertaken by plant breeders at state agricultural experiment stations. Plant breeders in private industries worked primarily with corn and sorghum, the commercial product of which is hybrids, with some breeding effort in alfalfa, cotton, sugar beets and certain vegetables. There was little incentive to invest in plant breeding of non-hybrid crops because a private company would receive sales benefits in only the first year after releasing a new variety. After the release of a non-hybrid crop, anyone could grow, increase and sell seeds of that new variety the following season. Because new variety development could take from 10 to 20 years, it was economically unreasonable to invest in private plant breeding research programs without plant protection. Consequently, the private industry sought greater financial returns because of increased investment in development of new varieties.¹⁹

In 1970, the US Plant Variety Protection Act (PVPA) was enacted into law. The purpose of the PVPA was to encourage the development of novel, sexually reproduced plants by providing protection to plant breeders. One of the arguments

19. Jeffrey L. Ihnen, "U.S. Proprietary Rights for Plant Germplasm", in *Plant Variety Protections: Pros and Cons*, proceeding of the 2nd National Seeds Seminar organised by Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.111.

was that plant breeding had advanced enough to produce sufficiently uniform and stable varieties. "Certificates of plant variety protection" were issued to the developers of new, sexually reproduced varieties which gave the developer the exclusive right to sell, reproduce, import or export such varieties for a period of 17 years. Plant variety protection certificates are directed to any sexually reproduced plant except fungi, bacteria and hybrids. In order to be protectable under PVPA, a variety must be novel, uniform, distinctive and stable. PVPA provides protection not only against its reproduction for commercial sale but also from its use as parent line for developing another new variety. However, it does not prevent a farmer from collecting seed from his crop and using it for raising the next one. The PVPA provides for exemptions viz., exemption for farmers to sell to other farmers so long as the sale of seed does not become a primary business, a research exemption for breeders' developing new varieties; and an exemption for carriers for advertising businesses.²⁰

(b) EUROPE

In Europe as well it was in the 1930's that the real foundation of plant property rights was laid. Germany led the movement and introduced a new system of protection in

20. *ibid*, P.114.

1933 for agricultural, and in 1937 for horticultural varieties. Under German influence, seed laws were enacted in the Netherlands, Hungary, Italy, Austria and Romania. These regulations ensured money to the breeders by compulsory certification of seed crops with an inspection fee, and a small remuneration to the breeder paid by the seed farmers.²¹

Since most countries did not have a legal system under which a new variety could be protected, an international organisation of plant breeders called the International Association of Plant Breeders for Plant Variety Protection (ASSINSEL) was established in 1938, to persuade different Governments to introduce laws to protect the rights of plant breeders so as to ensure a reasonable return for their investment in breeding new varieties.²² With all these developments there has been a spurt in release of high yielding varieties (HYV) and hybrids and lately, the achievement of private breeders has been very significant.

The progress made by the middle of the nineteen fifties was not at all impressive. After the Second World War, it was widely considered necessary in Europe to stimulate plant breeding to increase agricultural production

21. Rai, n.8, p.219.

22. *ibid.*

by recognizing the rights of plant breeders in order to encourage plant breeding, because same variety was considered useful in almost all European countries. The professional circles concerned realised that a solution to the problem was only going to be found in an international dimension, in which the principles that were to govern the protection of new plant varieties would be defined. Two international organisations provided the driving force in this respect : ASSINSEL, and International Association for the Protection of Industrial Property (AIPPI) founded by International Permanent Commission which itself was established by World Congress on Industrial Property with the responsibility to draw up a text for the creation of an International Union. The result was the adoption of the International Union for the Protection of New Varieties of Plants (UPOV) Convention on December 2, 1961.²³ The origin of the word UPOV lies in the abbreviation based on initials in French - *Union internationale pour la protection des obtentions vegetales*.

The genesis of the UPOV can be found in the seed laws of Netherlands and Federal Republic of Germany. The real protection for new plant varieties, in more or less

23. For Text of the UPOV (1961) Convention see UPOV, n.1, pp.101-109.

developed form, existed in only these two countries of the Western Europe, which after all is the birth place of the UPOV Convention.

WEST GERMANY

In Germany, a seed control system had been established in 1895 under the aegis of the Farmers' Union and in 1897 it was taken over by the German Agriculture society. In 1905 a register of newly bred varieties was created. Thanks to this official control signs, the breeders were assured of the possibility of defending his interests. In 1930 a draft Seed and Seedlings Law was submitted to the Parliament.²⁴ Its first chapter provided protection for breeders, and the second provided protection for users in the form of certification of seed and the regulation of the seed trade. Certification was optional, and its purpose was to test the seed's trueness to type and purity and its freedom from health problem. It contained provision for the denomination of the variety. Protection was available for new variety, distinguishable from existing varieties by important characteristics. It also provided for entry of the variety in the register of protected variety which had the effect of making the owner's authorization necessary for the use of the breeders' references or the variety denomination in

24. UPOV, n.1, p.72.

connection with the marketing of derived seed. But the draft was never passed into law because of its relations with trademark law. In 1953, the Law on the Protection of Varieties and the Seeds of Cultivated Plants (Seed law) was enacted in Germany.²⁵ The Seed Law played a substantial part in the making of the UPOV Convention. It would therefore be instructive to analyse some of its provisions.

The purpose of the protection, under Article 1, was to promote the creation of useful new varieties of cultivated plants. The protection was reserved for varieties produced by breeding or improvement, which were of agronomics value, mean possessing essential property (in relation to yield potential or reliability, product quality and pest and disease resistance). However, exception were provided for non - food plants and for varieties intended for export (Article 3.2). The variety had to be distinct and stable. Article 6 provided the scope of protection which gave the owner the exclusive right to produce seed of the protected variety for purposes of seed trade, to offer them for sale and to market them. Export of one of the first generations of multiplication was subject to authorization by the breeder. And breeder exemption was also provided, i.e. the freedom of use of the seed of a protected variety for the creation of a new variety under Article 6.

25. *ibid*, p.75.

NETHERLANDS

In spite of the smallness of the territory, agriculture is one of the mainstays of the Dutch economy. The first important encouragement to the breeders was unquestionably the creation of the Institute for Agricultural Plant Breeding in Wageningen in 1912. Then in 1932 the Netherlands General Department for the control of Agricultural Seed and Potato Seedling (NAK) was set up. Soon afterwards a system of bonuses was also introduced. In 1941 the Plant Breeders' Decree was issued which is known as 1941 Breeders Ordinance²⁶, which is an unique case of a non-monopoly form of providing remuneration to the plant breeders, apart from being the first European Law that was specifically designed for plants. It is also the first independent and complete intellectual property statute for plant varieties.

This Decree finally introduced the recognition of plant breeders' rights. But it did not provide monopoly to breeders which existed in Germany. The Decree set up a Central Register of varieties into which new varieties were to be entered on application. It defined varieties as new if it is sufficiently distinguishable from others varieties and if it is homogeneous. The Decree granted the plant breeders' right to the person on whose name a variety is registered.

26. Menon, n.11, p.6.

It also established a List of varieties for crops, and propagating material could only be marketed if varieties for that crop is included in the List. Similarly, the monopoly right or right to exclude others from producing the same seed was given only to those breeders whose crop were included in the List, which meant horticultural seeds. It provided only two rights to breeders' of agricultural crops:

- (i) "The exclusive right to put on the market propagation material, described as 'original' or 'elite' of the variety" and
- (ii) a right to compensation for plant breeders. So in the agricultural sector, the right did not include the right to prevent others from multiplying and selling the seed.

(c) UPOV

With the enactment of the plant variety protection laws in Germany and Netherlands, the ground for UPOV had been laid. As mentioned earlier AIPPI had been playing a constructive part in the making of UPOV Convention, through its insistence to protect new plant varieties. But it was mainly interested in advocating amendments to the Paris Convention to cover plants and to place on an equal footing an invention's in agriculture with an invention's in industry as seen in its Vienna Congress in 1952, and in

Brussels Congress in 1954. The Vienna Congress adopted a text which states: "The Congress expresses the view that in order to achieve effective protection for new plant varieties, the legislation of the countries of the Union must, "provide, in so far as it is not yet granted, for patent or equivalent protection for plants that possess important new properties, with a view to their exploitation, provided that their propagation is assured;...."²⁷ The Diplomatic Conference (1957 - 1961) which preceded the establishment of UPOV referred the above formulation of the Vienna Text which provided both options, i.e. patent or a *sui generis* system.

UPOV (1961)

The first session of the Diplomatic Conference was opened on May 7, 1957 and concluded on May 11, 1957 with the adoption of a Final Act, which provided to set up a committee of Experts. This committee along with Group of Legal Experts and Drafting committee framed the UPOV Convention which was finally approved in the second session of the Diplomatic Conference which began on November 21, 1961 and finally concluded with the signing of the Convention on December 2, 1961 by plenipotentiaries of France, Belgium, Italy, the Netherlands and the Federal

27. UPOV, n.1, p.78.

Republic of Germany. UPOV (1961) Convention recognized the legitimacy of breeders' rights; provided technical conditions for granting of a title of protection, i.e. the variety had to be distinct from pre-existing varieties, sufficiently homogeneous and stable in its essential characteristics: the artificial or natural origin of the initial variation that gave rise to it was of no consequences. It defined the fundamental right of the breeders which had to do with the trading of seed and seedlings of the variety. It meant that the authorization of the breeder of protected variety was required for the production, for the purposes of commercial marketing of the reproductive or vegetative propagating material of the new variety or for the offering for sale or marketing of such material. Thus it provides for farmers' exemption because authorization of the breeder of the protected variety was not required to produce seed for own use by individual farmers even where the seed produced is identical to the protected variety. So farmers can save seed for next crop. Similarly, authorization of breeder of the protected variety was not required either for the utilization of the new variety as parent material to create other new varieties or for marketing of such varieties. The breeder were placed under an obligation to ensure maintenance breeding of the variety during the period of protection and it was made a

ground for forfeiture in the event of failure to comply. It also provided that a variety had to be identified by a name that must not be misleading; the name had to be filed and registered in all member states (except where it is inappropriate or unacceptable); the name has to be used in any act of marketing involving reproductive or vegetative propagating material, even after the period of protection has expired. It also provided for the prohibition of double protections which states that both a special title of protection and a patent may not be applicable to one and the same botanical genus of species. Regarding the definition of the contents of the right, it provided that vegetative propagating material deemed to include whole plants. UPOV (1961) Convention came into force on August 10, 1968.

UPOV (1972)

UPOV (1961) also provided for a review provision in Article 27 under which conferences shall be held every five years. Therefore the first revision was to take place in 1972. The Diplomatic conference convened for this purpose, lasted from November 7 to 10, 1972, adopted an Additional Act²⁸ which amended Article 26 (2) of the UPOV (1961), according to which members states were divided into three

28. For Text of the UPOV (1972) Additional Act, see UPOV, n.1, p.111-112.

classes, corresponding to one, three and five contribution units, and introduced a five - class contribution system, with a span of contribution rising continuously from one to five. In addition it also introduced a penalty for delay in the payment of contribution in the form of the withdrawal of voting rights.

UPOV (1978)

No sooner had the 1972 revision been completed than the one that was due in 1977 had to be prepared. Since 1973 ordinary session of the Council²⁹, one notable change was the participation of the representatives of the United States of America. In December 1977 the Council decided to hold the next Diplomatic Conference from October 9 to 23, 1978, the object of the conference was to "negotiate and adopt a revised text of the Convention". At the end of the conference, a Revised Text was adopted which was signed by nine member states and one non member, i.e. USA.

The Revised Text³⁰ adopted in 1978 ultimately differs little from the one drawn up in 1961. Some of the essential amendments was the prolongation from four to six years of the period during which a variety may have been marketed abroad without its novelty being affected, in the case of

29. The permanent organ of the Union established under Article 15 of the UPOV (1961).

30. For Text of the UPOV (1978), see UPOV, n.1, pp.113-123.

vines, trees and their rootstocks. The provision on priority was refined. In the UPOV (1961) it allowed an unscrupulous breeder to make use of the time limits granted him to "finish off" a variety without fear of being overtaken by the competition. He had only to file an application in a State that was of no interest to him and claims its priority in the other states (Art. 12.3). The Revised Text provides that the additional documents and the plant material necessary for testing may be demanded prematurely in the event of withdrawal or rejection of the first application (Art. 12.3). The provision on variety denomination were also revised, although the fundamental principles remained unchanged.

The most notable change was made regarding the prohibition of double protection, only to accommodate USA. An exception to Article 2(1) of UPOV (1961) was written into Article 37 of UPOV (1978) which provided that any state which gave protection of two types as prohibited in UPOV (1961) could still become a member, provided that this double protection was introduced prior to October 31, 1979, the date till which the UPOV (1978) was open for signature. USA ratified UPOV (1978) on 12 November 1980. Lastly, some interpretation was done notably with regard to Article 7 and the manner in which the testing of varieties was to be conducted.

UPOV (1991)

After the Diplomatic Conference of 1978, a lot of changes took place in the field of patent especially under the influence of biotechnology and genetic engineering. Now a plant can be created through gene manipulations which no more be considered as product of nature but a human invention. In 1980, a product patent was granted to Anand Chakraborty for a micro-organism. In 1985, the US Patent and Trademark Office granted patent to corn plants containing an increased level of tryptophan. In 1989, the European Patent Office granted a patent to Lubrizol for a process of introducing gene for a higher protein content, by making use of the provision under Article 53 (b) of the European Patent Convention which provides that exclusion to patenting did not apply to "microbiological processes or product thereof". The major development in the field of IPR had to leave an impact on the UPOV and the revised version of UPOV (1991)³¹ clearly reflects it. The next Diplomatic Conference was called between March 4 to 19, 1991, which further revised the UPOV Convention and new provision were added into the UPOV (1978). It provided under Article 37 that a non member have option to join UPOV (1978) till UPOV (1991) comes into

31. UPOV, Publication no.221(E), 1991, Reprint 1992, pp.3-31.

force, and requires five states to accede to it, and among them at least three must be party to the (1961) or (1978) Convention. However, it grants an special concession to the developing countries to accede to UPOV (1978) till December 31, 1995.

The Revised Text of 1991 made drastic changes regarding the scope of "Breeder's Rights". The authorization of breeder is now required, apart from those provided under UPOV (1978), also for reproduction or multiplication, conditioning for the purpose of propagation, selling, export, import and stocking for any of these purposes (Article 14). All these acts shall be applied on two classes of material, (a) the propagating material and (b) the harvested material, including whole plants and parts of plants, as well as products made directly from these harvested material provided these have been obtained through the unauthorized use of propagating material or the harvested material of the protected variety. UPOV (1991) has also added a new concept called 'essentially derived varieties'. According to Article 14 para 5, a variety is to be considered as essentially derived from another variety when it conforms to the essential characteristics of the initial variety. If we analyse the above provision carefully, we will find that these provision has drastically

curtailed the breeders'/researchers' exemption³² as well as farmers' exemption³³ as provided by the UPOV (1978).

The Revised Text of UPOV (1991) has also increased the number of the genera and species to be protected. The UPOV (1978) provided that the member states shall apply it to the maximum possible number of genera and species while the Revised Text provided that each member state must grant and protect breeder's right for all plants, genera and species (Art. 3.1.i.). Regarding the provision on double protection, the Revised Text possesses no provision relating to form of protection.

By October 1993, the total membership of UPOV has reached 24 but still it is an organisation of mainly developed countries. Till the end of 80's, only the developed countries have provided protection to the plant varieties. Some of the developing countries have also introduced the provision for the protection of plant varieties. They are Cuba (1973), Republic of Korea (1973), Argentina, Chile, Kenya and Zimbabwe. But even they are not member of UPOV Convention. Out of the UPOV member countries, exclusive patent protections is granted only in Hungary and Italy. USA has a provision of both Plant Variety Protection

32. Breeders'/Researchers' Exemption have been discussed in Chapter III.

33. Farmers' Exemption have been discussed in Chapter III.

and patent.³⁴ The intellectual property for plants provided in the UPOV system is considered to be an effective *sui generis* system, i.e. plant breeders rights, by the developed countries.

But, now, a great development in the evolution of IPR in plants in a large number of countries is going to be evolved to fulfill an obligation undertaken in the TRIPS Text³⁵, which is contained in the Final Act of the GATT Uruguay Round of Trade Negotiations which was signed in 1994 by 117 countries. Article 27.3(b) of the TRIPS Text states that,

...Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.....

Thus, all member countries are under obligation to provide for a system of IPR for plant varieties.

IV. Indian Scene

Before completing this chapter it is necessary to say a few words on the Indian Scene. The growth and development of agriculture continues to occupy a key position in the strategy of growth for the Indian economy. The Economic

34. Rai, n.8, p.220.

35. Anonymous, *GATT Agreement: Final Text of Uruguay Round*, (Bombay: World Trade Centre, 1994), pp.178-96.

Survey of 1986-87 has rightly observed that with 75 per cent of India's population still living in the rural areas, rapid and broad based agricultural growth is a necessary pre-requisite for maintaining the pace of overall economic development and tackling the deep seated problem of rural poverty.³⁶ The National Commission on Agriculture(1976) envisages a food grain production target of 225.0 million tonnes for the country by 2000 AD.³⁷ The foodgrain increases in future have to come through increases in compound growth rate of per hectare yields. New varieties and hybrids are required in major foodgrain crops to increase the crop production.

Before 1960's almost the entire crop improvement work was carried out by the public sector, viz. the State Department of Agriculture and the Central Institutes. With the reorganisation of research education and extension in agriculture after the 60's the varietal development work is now conducted by the State Agricultural Universities and the

36. Khem Singh Gill, "Plant Variety Protection - India Context" in *Plant Variety protection: Pros and Cons*, proceeding of the 2nd National Seeds Seminar, organised by Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.60.

37. Y. Yogeswara Rao, "Plant Variety Protection: Pros & Cons", in *Plant Variety Protection: Pros and Cons*, proceeding of the 2nd National Seeds Seminar, organised by the Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.133.

ICAR institutes. While the individual strength of these breeding centres may vary, their collective strength is considerable. They have developed several improved varieties of different food crop. It was Sardar Harbhajan Singh who released Okra Variety Pusa Sawani in the 50's . The first Indian hybrid in cereals came out of the breeding program of Maize in 1961, of Sorghum in 1964 and Bajra in 1965.³⁸ Since these cultivars were developed on tax payers money no attention was given to the PBRs in India.

No private company in India had plant breeding activity before 1947. The superiority in yield performance of new hybrids in pearl millet, maize and sorghum and new high-yielding, fertilizers and water responsive in cereals particularly wheat and rice attracted the attention of the private sector in seed research and development since 1970's. At present, the private sector commands a significant per cent of the commercial seed market of the country. Now several large seed companies do their own plant breeding research , particularly to develop and sell their own unique hybrids of maize, millet, sorghum and cotton and vegetables and floriculture. No doubt, the private sector is

38. B.R. Barwale, "Plant Variety Protection: Pros and Cons" in *Plant Variety Protection: Pros and Cons*, proceeding of the 2nd National Seeds Seminar organised by Seed Association of India in March 1989, New Delhi (New Delhi: 1990), p.66.

giving useful stimulus and competition to public plant breeding efforts all of which, in the end benefit the Indian farmer. The first hybrid bred by the seed industry was released by the Central Variety Release Committee in the year 1982 to be followed by several other varieties.³⁹

At present, about 12 private companies are engaged in plant breeding activities. In 1980, only six companies had plant breeders, whereas in 1986 this number increase to 10. In 1980, only 2 companies had 1 to 2 plant breeders and 4 companies had plant breeders between 3 to 8. Whereas in 1986, the number of companies having 1-2 and 3-8 plant breeders increased to 4 each and two companies had 9 to 14 plant breeders.⁴⁰ It shows the growing interest of private companies in initiating plant breeding programs. Plant breeding research has become expensive over the years. Although no authentic information is available on the expenditure incurred on the development of a variety/hybrid in India, it has been estimated to be between Rs. 4,00,000

39. *ibid.*

40. P.K. Agrawal, "Plant Breeders' Right: Its Relevance in India Under Changing Scenario", in *Plant Variety Protection: Pros and Cons*, proceeding of the 2nd National Seeds Seminar organised by Seed Association of India in March 1989, New Delhi, (New Delhi: 1990), p.76.

to 10,00,000.⁴¹ Because of the big investment involved in plant breeding, the Indian breeder, whether in the public or private sector started thinking in terms of getting some return for the investment in plant breeding.

Till today, India has not enacted any law providing protection to the improved varieties of plant. Even the Patent Act of 1970 does not provide any protection to plant or seed. The basic principle underlying the grant of patents under the Act is that the invention must be new and useful and capable of industrial application. Section 3(i) of the Act states that

Patents cannot be given for a method of agriculture or horticulture or any process for the medicinal, surgical, curative, prophylactic or other treatment of animals or plants to render them free of disease or to increase their economic value or of their products.

Although not explicitly stated in the Act, going by its underlying objectives and the fact that methods of agriculture or horticulture or treatment of human being, animals or plants are not patentable, it is argued that living things are not patentable. Therefore plant and animal varieties or biological processes for the production of plants and animals will not be considered to be patentable.

With the announcement of the New Seed Development Policy in October 1988, issues relating to PBRs, plant

41. *ibid*, p.78.

variety protection, etc. were raised more often than before. The absence of plant variety protection became a matter of discussion because the private sector feels that it is acting as a disincentive for strengthening research and marketing of new improved varieties of self-pollinated crops, since after the first sale such varieties would essentially be public varieties, available for one and all to multiply and sell. The private seed companies consider that there would have no chance to recoup its investment in research for development of those varieties.

Taking all these facts into consideration as well as to fulfill its obligation under the TRIPs Text, the Government of India drafted and circulated in February 1994, the Plant Variety Bill, 1993.⁴² This bill is still in a draft form and is yet to be placed before the Parliament. If the Parliament passes it, this would be the first ever legislation in respect of the plant variety protection on the Indian soil. To summarize, the system of IPR for plants originated and nurtured in the developed countries are now being imposed on the developing countries like India, with very different social structure and needs, in its latest form, i.e., GATT (TRIPs) and UPOV (1991). The original land of patent and PBR

42. Vandana Shiva, ed., *Protection of Plants, People and Intellectual Rights: Proposed amendments to the Draft Plant Variety Act*, (New Delhi: 1993), p.13-39.

are industrialised societies having self sufficiency in food. On the other hand India is an agricultural society and majority of its farmers are having small land holding and they are completely dependent upon its produce for their livelihood. So the question of saving seeds for next crops, inter-farmers sales of seed, price of seeds and fertilizers are very much important for these farmers. India has yet to achieve self sufficiency in food. For that, Indian breeders'/researchers' require developed varieties for further research to breed new varieties. So these are important issues which needs special attention before the enactment of a system for the protection of new varieties of plants.

CHAPTER - III
ANALYSIS OF DRAFT PLANT VARIETIES BILL,
1993-I

The Ministry of Commerce, Government of India, formulated a draft Plant Varieties Bill, 1993¹ and circulated it in February 1994. The full title of the Bill is "An Act to encourage the Development of Novel Varieties of Plants and ensure availability of quality seeds and planting material of such varieties to farmers by Protecting the Rights of Breeders, Researchers and Farmers, 1993". This bill on plant varieties protection consists of six chapters and 51 clauses. As mentioned in the previous chapter, it has been drafted to fulfil an obligation undertaken under the TRIPS Text² contained in the Final Act of the GATT which India has ratified on December 9, 1994.

Article 27 of the TRIPS Text states that patents shall be available for any invention, whether products or processes. Apart from standard exclusions related to moral order, surgical methods etc., exclusions are only allowed for:

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 generis* system or by any combination thereof....

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1. Vandana Shiva, ed., *Protection of Plants, People and Intellectual Rights : Proposed Amendments to the Draft Plant Varieties Act, 1993*, (New Delhi, 1993), p.13-39.
 2. Anonymous, *GATT Agreements : Final Text of Uruguay Round* (Bombay: 1994), pp.178-195.

This provision embodies three obligation for the Government of India:

- (a) to introduce some form of IPRs applicable to seeds and other planting materials. In other words, the TRIPS Agreement forces monopoly control on seeds and plants, though it gives a choice to the country in terms of the kind of monopoly control that will be applied, i.e. patents or PBRs;
- (b) recognize patents for micro-organisms; and
- (c) recognize patents for micro-biological processes.

On the face of it, Article 27 gives some relief to the Indian farmers in particular and people in general, by not making the patent system obligatory for the seeds and plant material. Yet, it enjoins India to evolve an effective *sui generis* system of protection for plants. *Sui generis* means a form of IPRs which is derived from itself or, in other words, which is not a part of the patent system. This has allowed the false impression that each country is free to have its own IPR system. However, the key term in Article 27 is "effective". This term was also inserted in the United Nations Convention on Biological Diversity³ signed at the Rio de Janerio Earth Summit in June 1992 by the USA. The

3. Selected Document, *Environment Policy and Law* (Amsterdam), vol.22, no.4, 1992, pp.251-58.

same phrase is used in Section 301 of the US Trade and Competitiveness Act, 1988 which has been used to retaliate against countries whose IPR laws do not conform to US standards.

The use of the term "effective" in all global negotiations related to IPRs and biodiversity is a result of the US attempt to globalize US IPR regimes which allow patenting of all life, including plants and animals. In case of dispute, the meaning of the phrase 'effective *sui generis* system' in the TRIPs Text will not be, it needs to be noted, determined by individual countries but by GATT.

I. Characteristics of Patent and PBR

But before going further, it is also necessary to discuss here some of basic differences in the two systems of protection of plant varieties, i.e. patent and PBRs for it would help us to understand the two later versions of the UPOV Conventions, i.e., 1978 and 1991.

A PBR protects the rights of the plant-breeder to exclusively market commercially the new plant variety he develops (called the protected variety). It provides protection against the unauthorized multiplication and selling of seed for propagative purposes. Unauthorized propagation of a protected wheat variety to make bread, for instance, would not be an infringement in a breeders right

system. Seed grown or sold to be propagated, however, would be an infringement of a breeder's right. Thus, the PBR offers monopoly on sale of the variety but not on the variety itself or its genes. While, either of these activities would be an infringement of a patent.⁴ The holder the patent reserves the right to exclude others from making, using or selling of the protected variety.

Secondly, PBRs protect only a particular variety, whereas, patent in addition to protecting the new variety itself, protect its parts. The process of breeding the new plant, if it meets the patent criteria, can also be patented. Most important, however, the patent can apply to the entire genus or species to which the new variety belongs. Also, it is even possible to patent the gene responsible for new variety.⁵

Thirdly, PBRs provide that a protected variety can be used for further breeding to develop a new variety (known as Breeders' Exemption). But under the patent system, the authorization of the patentee is required to use patented variety for research.

4. Stanlay D.S., "Private Property Rights Promote Innovation" in *Plant Variety Protection Pros & Cons*. Proceeding of the 2nd National Seeds Seminar organised by Seed Asociation of India, March 1989, New Delhi (New Delhi : 1990), p.101.

5. *ibid*, p.102

Fourthly, the PBR system provides that the farmer can save and sow seeds of harvested crops of protected varieties, (known as farmer's exemption). While under a patent system the authorization of patentee may be required.

Fifthly, the patent system requires three conditions to be fulfilled for giving protection. An invention to be patented must be new, useful and unobvious. An invention will be regarded as new only if it was not known or used or made public anywhere in the world before the filing of the patent application. The invention should also be useful. The standard of non obviousness is to ensure that patents will only be granted for those solutions to problems that involve skill over and beyond that of the person of ordinary skill in the art.

The PBR system, on the other hand, stipulates the following three requirements: distinctiveness, uniformity and stability. The same requirements are provided in the UPOV too for allowing varieties to be registered and legally protected. The Indian bill also under clause 11 provides the same requirement for protection with an addition that the variety should be 'new'. These requirements are elaborated below.

II. Conditions Required for PBR

(a) Distinctiveness

Article 6.1.a. of the UPOV (1961)⁶ requires that:

...the new variety must be clearly distinguishable by one or more important characteristics from any other variety whose existence is a matter of common knowledge at the time when protection is applied for.

It means the plant to be patented must look different in one or more characteristics from the already existing plant varieties. The distinctiveness of a variety is a requirement for any workable seed legislations, to ensure that the correct variety is being produced, certified and sold. India has a successful history of seed legislation, so that with respect to the recognition of varieties, the present UPOV or ^{the} bill requirement for distinctiveness should cause no additional problem in India.

(b) Uniformity

Art. 6.1.c. of the UPOV (1961) states that:

The new variety must be sufficiently homogeneous, having regard to the particular features of its sexual reproduction of vegetative propagation.

This legal requirement of uniformity is related to distinctness as a means of recognizing varieties. Without

6. UPOV, *The Twenty-Five Years of the International Convention for the Protection of New Varieties of Plants*, (Geneva : 1987), pp.101-109.

this requirement within-varietal variation would make the definition and circumscription of varieties difficult. Unfortunately, varieties with low within-sample variation may be uniformly susceptible to disease strains, with the risk of great loss of production, which can be particularly unfortunate for small farm agriculture.⁷

(c) Stability

Art. 6.1.d. of the UPOV Convention (1961) defines the need for variety stability:

The new variety must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication, at the end of each cycle.

It means that the seeds must breed true (produce the same type of plants with identical morphological and biological characteristics in the subsequent generations). But stability may restrict the potential of the variety to adapt to changing conditions during a series of multiplication cycles.

(d) Novelty

This requirement was not provided in the UPOV (1961) or (1978) but it was included in UPOV (1991) under Article 6. It states:

7. FAO, "A (draft) Report on the Plant Breeders' Right" to the Government of India based on the work of D.Wood and L.M. Bombin, (Rome: 1990), p.9.

The variety shall be deemed to be new if, at the date of filing of the application for a breeder's right, propagating or harvested material of the variety has not been sold or otherwise disposed of to others, by or with the consent of the breeder....

It means, the criteria of novelty is required in respect of marketing. In other words, at the moment of application for a PBR the variety in question should not have been marketed at all.

III. UPOV and the Plant Varieties Bill

The Draft Plant Varieties Bill, 1993, as already mentioned, has been drafted following the TRIPs provision for an effective *sui generis* system, which is considered to be embodied in the UPOV Convention. The TRIPs Text does not provide that member countries should follow the UPOV model in their national legislation for the protection of plant varieties yet, on the other way, the word 'effective' indicates for it. Hence, if the bill follow UPOV, then whether it should be UPOV (1978) or UPOV (1991). Some of the critics of the bill points out that the bill creates protection equivalent to UPOV (1991).⁸ Thus, a thorough review of the important provision of the bill should be made to ascertain which version of UPOV this bill is adhered to and also to find out whether the bill fulfills

8. *Times of India* (New Delhi), May 9, 1994.

the provision of the TRIPs Text for an effective *sui generis* system. This is possible only by a comparative study of the two versions of UPOV i.e., 1978 and 1991, and the bill.

Clause 2 of the bill provides that the Act will extend to the whole of India and cover the whole range of plants. UPOV (1978)⁹ in this regard provides that the member states shall endeavour to apply it to the maximum possible number of genera and species. Member state must apply this Convention to at least five genera or species in the first instance and must subsequently increase the number to at least 10 within three years, to at least 18 within six years, and to at least 24 within eight years. Thus, the minimum number of genera or species to which the Convention must be applied is 24 at the end of the specified period. While UPOV (1991)¹⁰ stipulates that each member state must grant and protect breeders' right for all plants, genera and species after a transitional period of five years when it is bound by UPOV (1978) and 10 years when it is only bound by UPOV (1991). Member states of the latter kind must protect a minimum of 15 plant genera and species when first acceding to the Convention. Hence, the coverage of the protection

9. UPOV, n.6, pp.113-123.

10. UPOV, Publication no.221(E), UPOV 1991, Reprint 1992, pp.3-31.

under the bill goes much beyond than UPOV (1978) and includes the entire plant range, as under UPOV (1991).

The two important features of a PBRs which distinguish it from a patent system are, as has been noted earlier, the breeders' exemption and the farmers exemption. These two are also important factors in distinguishing between UPOV (1978) and UPOV (1991).

(a) Breeders'/Researchers' Exemption

One of the most important characteristics of the system of PBRs is the principle of "breeders' exemption". This is the right of the breeders/researchers to use the protected varieties of other breeders for research purposes and for the breeding of new varieties. Article 5 para(3) of UPOV (1978) states:

Authorization by the breeder shall not be required either for the utilisation of the variety as an initial source of variation for the purpose of creating other varieties or for the marketing of such varieties.

The right of free access to protected varieties for further development is therefore an important provision of benefit to both private and public breeders/researchers. It stimulates plant breeding and encourages further research to come out with new improved varieties promoting competitiveness in the process.

There is some difference of opinion about the availability of protected varieties from one country to be

used in breeding in other countries. Access for research purposes to varieties protected in other countries is not specifically prohibited under UPOV (1978) but in practice requested samples are not sent if there is a suspicion that they will be commercialized without the benefit of varietal protection. There is however no ban on purchasing protected varieties in their country of origin, and moving them to a country without varietal protection legislation for research and even for commercial production. Samples of protected varieties are deposited in the national seed storage laboratories.¹¹

The PBR system under UPOV (1978) does not cover the end products, that is harvest products not being produced for use as propagating material, or for the cultivation of the next crop. Farmers and vegetable growers can sell their products to anyone; there is no duty to ask for permission or to pay royalty. Secondly, the use of a protected variety for the creation of another variety is not covered by PBR and the new variety which emerges from breeding activities may be protected and exploited without any obligations with respect to the holder of the right in the parent variety.

However, an exception to the rule of free access to protected varieties for breeding purposes and of the free

11. FAO, n.7, p.10

marketing of new varieties emerging therefrom is made for hybrid varieties, where a protected variety of inbred line has to be used perpetually in the production of commercial seeds for the market. This is incidentally something quite different from using a protected variety in a cross for the purpose of reshuffling genes.¹²

But UPOV (1991) has considerably expanded the rights of the plant breeder. The breeders'/researchers' exemption has been done away with in the new version of UPOV. This it does by introducing a new concept called "essentially derived varieties".¹³ Article 14 para(5) states that the rights of

12. Dr. IR. Mastenbrock C., "Plant Variety Protection, A Global Perspective", in *Plant Variety Protection : Pros and Cons*, proceeding of the 2nd National Seeds Seminar organised by Seed Association of India, March 1989, New Delhi (New Delhi : 1990), p.9.

13. According to the UPOV (1991), a variety is supposed to be **essentially derieved** from another variety if it fulfils any of the condition.

i) it is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety, particularly through methods which have the effect of conserving the essential charecteristics that are the expression of the genotype or of the combination of genotypes of the intial variety, such as the selection of a natural or induced mutant or of a somaclonal variant, the selection of a variant, back crossing or transformation by genetic engineering;

ii) it is clearly distinguishable from the initial variety; and

the breeder will extend to varieties which are essentially derived from the protected variety. According to the Convention, a variety is to be considered as essentially derived from another variety when it conforms to the essential characteristics from the genotypes or combination of genotypes of the initial variety. This means that a right holder can prevent another from marketing a variety by arguing that it was essentially derived from the protected variety. One consequence of the change is that a breeder who inserts a single new disease-resistance gene into a PBR-protected variety, will now have to obtain permission from the original right holder before marketing the new variety.¹⁴

However, a variety which is essentially derived from a protected variety and which fulfils the normal protection criteria of novelty, distinctness, uniformity and stability may be protected. In practical sense, varieties will only be essentially derived when they are developed in such a way

...Continued...

iii) it conforms to the genotype or the combination of genotypes of the initial variety, apart from the differences which result from the method of derivation.

14. M.S. Swaminathan, "Draft Plant Varieties Recognition & Protection Act : Rationale & Structure", in V. Ramachandriah, ed., *GATT Accord : India's Strategic Response*(New Delhi : 1994), p.191.

that they retain virtually the whole genetic structure of the earlier variety. Any protected variety may, even under UPOV (1991) be freely used as a source of initial variation and, only if a resulting variety falls within the narrowly defined category of essential derivation, authorization of the breeder of the protected variety is required.¹⁵

The breeder of the protected variety can lay its claim on those varieties developed by other breeders/ researchers if it is derived from and contains genetic structure of the original protected variety. Thus, the rights of the original right holder to exclude others from production or reproduction, sale, exporting, importing etc, is being extended to varieties other than that bred by the breeder himself/herself. Development of these so called essentially derived varieties is a part of the normal practice of plant breeders and have contributed to the improvement of existing varieties. It is only for the sake of formality that the UPOV (1991) still maintains in Article 15 para 1(iii) that the breeders right shall not extend to acts done for the purpose of breeding other varieties subject to the

15. M.Rai, "Plant Variety Protection Vis-A-Vis Hybrid Research and Development in the Asia-Pacific Region", in R.S. Paroda and M. Rai, ed., *Hybrid Research and Development Needs in Major Cereals in Asia-Pacific Region* (Bangkok : 1994), p.224

limitation of essentially derived varieties.¹⁶

Thus, the Revised Text (1991) clearly removes the free access of germplasm which was a component of the PBR system earlier. The success of the green revolution in India was not achieved by the introduction of the Mexican varieties such as Sonora-64 and Lerma Roja-64, containing the dwarfing gene, but by the success achieved by modifying the Mexican material to make them adaptable to Indian conditions. If such an stringent PBRs had existed in those days then Mexican varieties could have been used only with the permission of the owners and after paying the fees demanded by him.¹⁷

The struggle over breeders'/researchers' exemption is the struggle between two types of monopoly holders, the independent seed companies who want PBRs and the integrated biotechnology companies who want patents. The smaller seed companies are interested in the maintenance of free accessibility to protected varieties for developing new varieties, but large multinational companies are interested in obtaining world-wide monopolies by preventing the

16. Usha Menon, "Impact of TRIPS Negotiation on Agriculture", in *GATT Negotiations : Economic Sovereignty in Jeopardy*, brainstorming workshop organised by National Working Group on Patent Laws, New Delhi, December 30, 1990.

17. *ibid.*

development of comparable varieties. This would give them the exclusive rights to exploit new plant characteristics for a period of twenty to thirty years.

UPOV (1991) have also extended the right of the breeders of a protected variety not only to the propagating material but also to the harvested material as well as products made using the harvested material of the protected variety. Article 14 para(2) states:

...in respect of harvested material, including entire plants and parts of plants, obtained through the unauthorized use of propagating material of the protected variety shall require the authorization of the breeder....

While paragraph (3) of the of Article 14 states:

...in respect of products made directly from harvested material of the protected variety falling within the provision of paragraph(2) through the unauthorized use of the said harvested material shall require the authorization of the breeder....

It means that if the breeders' right is violated at the stage of the propagating material (seed), he can stake his claim at the stage of the harvested material (crops) or even at the stage of processing of harvested material for products. Thus, UPOV (1991) changes the basic right of the breeders' from 'commercial' right to 'exploitation' right namely exclusive right for production or multiplication, offering for sales, marketing, exporting, importing and stocking for any of these purposes, of not only the

propagating material but also of the harvested material and products made from the harvested material of the protected variety. The 1991 revision also extends the duration of protection offered to the breeder from the earlier 15 years for plant and 18 years for trees and vines, to 20 years for plant varieties and 25 years for trees and vines.

Furthermore, Article 14(5) of UPOV (1991) specifies two more types of subject matter, apart from the essentially derived varieties, to which the breeders' right extends:

- a) varieties which are not clearly distinguishable from the protected varieties; and
- b) varieties whose production requires the repeated use of the protected variety.

Article 15 of UPOV (1991) also establishes three compulsory exceptions to the defined breeders rights. These are :

- a) acts done privately and for non-commercial purposes;
- b) acts done for the experimental purposes; and
- c) acts done for the purpose of breeding and exploiting other varieties (provided such other varieties are not essentially derived varieties).

Though these compulsory exceptions, on its own, reaffirmed the free availability, as under UPOV (1978), of genetic material embodied in a protected variety for the purpose of further breeding. But, as already mentioned, it is

only a formality because these exception are subject to the limitation of essentially derived varieties.

(b) Farmers' Exemption

It is necessary to make clear at the outset itself that the farmers' exemption is not the same as "farmers' right" which is a positive concept adopted in United Nations Food and Agricultural Organisation (FAO) which recognize that farmers of the Third World are the original custodians of domesticated crops and the original breeders whose innovations have gifted the world with diversity of crop species and crop varieties.

The PBRs under UPOV allow the farmers, cultivating on their own holding, the right to retain a part of the harvest to be used as seed for next season. This is known as the farmers' exemptions (exemption from paying royalties) or farmers' privileges. This right or privilege of the farmer to save seed was an integral part of the UPOV system, and it is highly unlikely whether any system of PBR could have ever evolved if this right of the farmer to save seed was not recognized. Article 5 para (i) of UPOV (1978) states that the prior authorization of the breeder shall be required for:

- (a) the production for purposes of commercial marketing;
- (b) the offering for sale; and
- (c) the marketing of the reproductive or vegetative propagative material, as such, of the variety.

The authorization of the breeder of the protected variety is therefore not needed for the use of the variety to produce seed for own use by individual farmers even where the seed produced is identical to the protected variety. Thus the farmers' privilege entitles him to use his farm saved seed (of protected variety) for growing of subsequent crops on his own land or on leased lands or for traditional exchanges in the village community.¹⁸ Given the lack of ability of farmers to buy seeds each season, and the lack of national capacity for seed production sufficient to fill 100 per cent of national needs, this farmers' exemption is of great importance to India and other developing countries. It is also useful for small farmer-breeders to continue their selection activities.

In case of the hybrid varieties, of course, the seed does not breed true and the results are generally disastrous if the production is saved and planted.¹⁹

The seed industries both in Europe and USA have never been happy with this "farmers' exemption", since they saw

18. A.V. Ganeshan, "Uruguay Accord : An Oppertunity", in V. Ramachandriah, ed., *GATT Accord : India's Strategic Response* (New Delhi : 1994), p.123.

19. Michael J.Roth, "PVP : A Global Perspective", in *Plant Variety Protection : Pros and Cons*, Proceeding of the 2nd Natioal Seeds Seminar organised by the Seed Association of India in March 1989, New Delhi (New Delhi : 1990), p.29.

the saving of the seed by the farmer as a loss of part of their market. In Europe the farmers used to save their seeds and get them cleaned at the factories owned by their co-operatives under farmers' exemption. The farmers' exemption came under severe attack in France when orders were issued prohibiting the farmers from having their seeds cleaned outside the farms. A big movement began in France in defiance of this ban which included demonstrations and court battles. The French Farmers Confederation started a campaign for saving seeds and getting them cleaned by the cooperatives which was in effect a semi seed-boycott.²⁰

The above semi seed-boycott was infact started in the context of the discussion about patenting the products of biotechnology and especially after the issuing of the draft directives on the legal protection of biotechnological inventions. If plants get patented it is normally assumed that this will give the patent holders the legal right to prevent the farmers from saving the seed.²¹

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20. Usha Menon, "TRIPs Negotiation and Indian Agriculture", *Journal of Scientific and Industrial Research*(New Delhi), vol. 52, no.4, April 1993, p.297.
 21. Usha Menon, "Evolution of Intellectual Property Rights in Plants", paper presented at the session on Intellectual Property Rights at the Golden Jubilee Symposium of Genetic Research and Education : Current Trends and the Next Fifty Years by the Indian Society of Genetic and Plant Breeding; 12-15 February 1991, New Delhi.

The farmers' exemption has been severely eroded in UPOV (1991). In this revision the scope of the rights of the breeder (Article 14) was changed in order to cover:

- i) production or reproduction (multiplication);
- ii) conditioning for the purpose of propagations;
- iii) offering for sale, selling or other marketing;
- iv) exporting;
- v) importing; and
- vi) stocking for any of the purposes mentioned in (i) to (v) above.

It is clear from the manner in which the scope of the rights of the breeders has been defined in UPOV (1991) that the right of the farmer to save seed is not automatically included as in the earlier case, since what it covers is not production for commercial purposes but production itself. Indeed there was tremendous pressure from the seed industries to remove the right of the farmer to save seed altogether. Secondly, the prior authorization of the breeder is also required for conditioning for the purpose of propagation [Art. 14.1.a(ii)]. It means the farmers cannot clean the propagating material of the protected variety for further propagation.

Article 15 para(2) provides for the farmers' exemption in a restricted manner. It states:

...Each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeders' right in relation to any variety in

order to permit farmers to use for propagating purposes, on their own holding, the product of the harvest which they have obtained by planting, on their own holding, the protected variety....

Thus the right to save seed was introduced as an option which the member countries could grant to their farmers. Even this option was made subject to many conditions, such as within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder. This, it can be stated, will almost never happen. Every PBR holder will want to maximise his sales and will certainly not allow farmers to produce seed for themselves which they would otherwise have to buy from him. This article on farmers' exemption has considerably circumscribed the freedom of the farmer to reproduce seed. Under the restricted freedom permitted by the UPOV the farmer will neither be able to get his seeds cleaned elsewhere or sell the seeds to his neighbours. Thus UPOV (1991) offers the same kind of ironclad protection that patents do.

Today, farm saved seed accounts for 30 per cent of seed in UK, 60 per cent in France and Germany and 90 per cent of the seed used for sowing in the southern states of the European Union. UPOV (1991) will therefore drastically reduce the use of such seed and increase farmers dependence on corporate seeds.²²

22. Navdanya, *bija* (New Delhi), no.9, June 1994, p.3.

In the US, the seed corporations lobby is seeking to change the US Plant Variety Protection Act, to remove "farmers' exemption" and "farmers' privilege" by making it illegal for a farmer to sell limited quantities of proprietary seed to his/her neighbour, on the grounds that such sales reduce the seed corporation's markets.

IV. Breeders'/Researchers' Exemption in the Bill

In the light of the above discussion, the Draft Plant Varieties Bill, 1993 may be reviewed. The bill in its statement of objectives makes it clear that it is primarily an act to protect the right of plant breeders' and developers and to foster competitiveness and investment, in plant breeding in both public and private sectors. Thus, the focus of the government's PBR bill is on the breeder which in this case means seed companies, most often multinational seed companies.

The bill under Clause 12, greatly enhances the monopoly rights of the breeder. It states:

- (i) The following acts, in respect of the seed and/or propagating materials, or the protected variety, for commercial purposes, shall require the authorization of the breeder.
 - a) the production,
 - b) the offering for sale,
 - c) export, and
 - d) import.

(ii) The breeder of protected variety may authorize the use of the variety under this Clause subject to conditions and limitations as approved by the Authority. The Authority while approving terms shall take care that they are consistent with the provisions of all other relevant laws of the country in force.

This Clause shall apply equally to :

- a) any variety that is essentially derived²³ from a protected variety.
- b) any variety that is not clearly distinguishable from a protected variety; and
- c) any variety whose production requires the repeated use of a protected variety.

So, under the above Clause on the 'Scope of the Protection of New Varieties of Plants' the government is proposing to extend the rights of the breeder to even those varieties which can be considered to be varieties 'essentially derived' from the protected varieties. The right of the breeder extending to 'essentially derived varieties' is a new introduction in UPOV (1991), which was not there earlier. These types of increased monopoly rights are much more than what is even being demanded by the GATT Final Act.

The draft provides for the 'Researchers' Right' under Clause 14. It states:

Nothing in this Act shall be construed to abridge or restrict the rights of the researchers to have free and complete access to protected materials

23. See Appendix for the meaning of the term Essentially Derived Varieties as given in the bill.

for research use for developing new varieties of plants. These acts done for experimental and/or research purposes and for developing new varieties of plants shall not require authorization of the breeder.

Though the breeders' or researchers' exemption is provided in the bill it would be of not much help in the case of the essentially derived varieties. No breeder will want to use the protected variety when he/she can not use the fruit of the research. This increased monopoly will be injurious to Indian researchers and also to farmers, inspite of the existence of farmers' right. Thus for example, let us assume that a company has developed an extremely useful new variety by adding new elements to farmers' variety. Even if a particular community might benefit from a share of the profits of the company, what would be the situation of the other farmers or of the breeders who would be prevented from developing new varieties which would be considered as "essentially derived".²⁴ It means that it has restricted the free availability of plant genetic material for further development of varieties.

Secondly, under the provision of the Researchers' Rights, exemption are provided for use of the protected variety for research or experiment purposes. It means, the

24. Usha Menon, *Seminar* (New Delhi), 418, p.57.

result of these research in the form of a new improved variety can not be exploited commercially. Thus, no breeder will use the protected variety when he/she cannot get monopoly on his/her new improved variety. So what the bill provides is researchers' exemption and not breeders' exemption as provided in the UPOV (1978).

But the Indian Seed Industry is not fully satisfied with the provision under Clause 12 (i). They have prepared their own amendment to the bill, called "Recommendations and Comments on the Draft Plant Varieties Act, 1993"²⁵ in which they have proposed additions to this Clause; i.e.

- (e) stocking;
- (f) reproduction; and
- (g) conditioning for the purpose of propagation.

They argue that these changes should be included to make the scope for protection comprehensive and meaningful. They have also proposed amendment in Clause 14 i.e. "Researchers' Rights", and want that it should be in this form:

Nothing in this Act shall be construed to abridge or restrict the rights of the Researchers to have access to protected materials for *bonafide research use* for developing new and novel varieties of plants, and *if it was not for commercial production purposes....*

25. This is jointly made by the All India Seed Growers, Merchants & Nurserymen Association, The Association of Seed Industry & The Seed Association of India.

Thus, they have deleted the word "free and complete" and added the words "bonafide research use" and "if it was not for commercial production purpose" and added the words "and novel" after the word "new". The reasons provided are that as "free and complete" access would defeat the purpose of "protection" and it would confer upon poachers unfettered rights under the garb of research; the adjective "bonafide" will, on the other hand, amplify the intention of the legislature.

V. Farmers' Exemption in the Indian Bill

Further, the bill provides for the farmers' exemption under the Clause 22 (iii). It states:

...it is provided that additional rights to dispose of his farm produce as he chooses which includes his right to save, use, exchange, share and sell propagating material of seed from seed obtained or descended from seed obtained of protected variety except sale of branded seed/propagating material with the denomination of varieties as in clause 17 for commercial purposes.

The bill envisages farmers continuing to enjoy 'traditional right' to save, use, exchange, share and sell their produce with the only restriction that they will not be able to sell branded seed for commercial purposes. Breeders' authorization will be required only if there is the production and sale of a reproductive or propagating material for commercial marketing on such terms and conditions as are approved by the administrative Authority

proposed to be set up²⁶, and are consistent with other laws in force in the country (Clause 12).

So what is offered by the government in its new *sui generis* system is only the protection of farmers' rights to "traditional exchange of seeds". This raises the question as to whether non-commercial transactions and the farmers' present right to sell seeds is taken away.

Peter Sutherland, the GATT Director General in an article relating to UPOV (1978) provision on 'farmers' exemption' has noted that the traditional practice of exchange of seeds in an informal fashion by way of mutual help over the fence by the farmers is difficult, if not impossible to control. In other words, provided such practices are not extended to the point where they undermine the protection that should apply to commercial marketing transactions, farmers will be able to continue such forms of mutual help.²⁷

In India, the largest producers and distributors of seeds is the farming community. Of the 600,000-ton seed requirement of Indian agriculture each year, not more than

26. Clause 32 of the bill provides for the establishment of the Authority. It states: "The Central Government shall constitute a national Authority for plant variety protection and protection of breeders, farmers and researchers rights".

27. *Times of India*, (New Delhi), March 15, 1994.

38 per cent is met by formal agencies like the National and State Seed Corporations. The rest 62 per cent of our needs are provided by inter-farmer sales.²⁸ The enterprising farmers of Punjab and Haryana have set up a massive farmer to farmer seed exchange to fulfill their requirement of new seeds. Farmers have been getting seed from the agricultural universities and multiplying it for their own use and selling to other farmers. This sharing of seeds between farmers can truly be considered to be the life line of the green revolution.

This volume of seed sales cannot by any stretch of the imagination be called the 'limited exchange of seed'. It means that Clause 12 can be applied to stop such extensive exchange and sale of seeds by Indian farmers. This would create serious problem in view of the traditional practice of selling seeds to other farmers and the strong and viable inter-farmer network responsible for the rapid distribution and acceptance of high yielding or improved disease-resistant varieties and the dissemination to remote interior areas. This strong and viable inter-farmer network allows technology to trickle down. All this cannot be tolerated by the big multinational seeds companies, who are starting

28. Suman Sahai, "Dunkel Draft is Bad for Agriculture", *Economic and Political Weekly* (Bombay), vol.28, no.25, June 19, 1993, p.1200.

their business in India on large scale after the passing of the New Seeds Policy of the Government of India in 1988.

Apart from farmers, it is the small seed industries which helps in the wide diffusion of new varieties to every part of the country. It is the function of these companies to multiply and sell the seeds over which proprietary rights exist and thus, ensuring the supply of seeds that are free from diseases and are of the required levels of purity and germination. But the provision of the bill under Clause 12 forbids this. It will make these companies dependent upon the breeder of the protected variety, who are often multinational companies, to whom they have to pay royalties whether to multiply the seed or only clean and process it. Since multinational companies are profit oriented, they will not issue licence to other companies which would affect their monopoly. So it would mean the end of these small seed companies. Infact it is this apprehension that many seed companies have already started their own breeding programme.

The Indian Seed Industry in their 'Recommendation and Comments'²⁹ on the bill have sought an amendment in Clause 22 para 3(a). They want that the word "exchange" and "sell" should be deleted from the scope of this Clause. They argue that while farmers right to save his seeds for use in his

29. See, n.25.

own holdings or to exchange with his neighbouring farmers is recognized, if he is allowed to sell, he no longer remains a farmer but takes the role of the Seed Trade(r). If the word "sale" remains intact, any seed dealer will escape the regulation under the cover of calling himself/herself a "farmer", so this should be deleted. Since open exchange mechanism cannot be defined and monitored, but will give room for clandestine sale under the cover of exchange of unwanted materials, so this word 'exchange' should also be deleted.

Further, the TRIPs Text envisages review of Article 27 after four years. Article 27(3) states:

...The provisions of this sub-paragraph shall be reviewed four years after the entry into force of the Agreement Establishing the WTO.

Clearly the intention is to monitor the effectiveness of the implementation of the PBR system. It means that if the developed countries are not satisfied with the 'effectiveness' of the Indian PBR system they may pressurise India for the progressive upgradation of the levels of protection of plant varieties, which would mean "patent" protection or the adoption of UPOV (1991) model. Patents would mean the end of the "farmers' exemption" as well as "breeders exemption" as we have already discussed it earlier. Thus, whether it is patent or the effective *sui generis* system, either system threatens the farmer. The

Commerce Ministry (Government of India) also recognizes the threat to farmer to save, reuse, exchange, develop plant-material and during the GATT negotiations, it proposed an amendment to Article 27, which would have stated:

it is understood that the effectiveness of a *sui generis* system for the protection of plant varieties can not be challenged on the ground that farmers' exemption and/or researchers' exemption is available in a national legislation for this purpose.³⁰

This amendment would not have been proposed if the Government of India did not anticipate that the GATT Agreement, as it is, threatens the erosion of farmers exemption and breeders'/researchers' exemption.

To summarize, the bill almost copy the provision of the UPOV (1991) so far as the breeders'/researchers' exemption and farmers' exemption are concerned and they are not at all going to help the Indian breeders/researchers and farmers. The Government of India should make changes in this bill to conform to the Indian social and economic conditions. Indian farmers and small seed companies are completely dependent upon public sector which is itself under a threat from the multinational seed companies. These big companies will also become a great threat to the rich genetic resources and

30. Vandana Shiva, "Farmers Rights, Biodiversity and International Treaties", *Economic and Political Weekly*, vol.28, no.14, April 3, 1993, p.556.

biodiversity of the country and even more, under the provision of TRIPs for patenting of micro-organism if Government of India fails in its duty to protect them. The government has also to recognize the contributions of farmers and local communities in protecting and conserving the genetic resources of the country.

CHAPTER - IV

**ANALYSIS OF DRAFT PLANT VARIETIES BILL,
1993 - II**

The developments in the field of biotechnology and genetic engineering have become a threat to the genetic resources and biodiversity of the Third World Countries. Most of these countries which are rich in genetic resources are poor in biotechnology. This leads to a flow of genetic resources from South to the North. In the North these genetic resources undergo light changes, and the modified genetic resources are sold back to the Third World as priced and patented seeds and drugs. This threat to the genetic resources has been aggravated with the signing of GATT. The TRIPs Text of the Final Act (Art.27.3) provides for the patenting of micro-organism and micro biological processes. As has been seen in the previous chapter, it also makes it obligatory for the signatories to provide for a *sui generis* system of IPR for plants and seeds. The international model of a *sui generis* system of IPR in plants is the UPOV. Though UPOV provides for protection to the new varieties developed by the breeder through formal or scientific method, it does not recognize the informal methods of innovation in plants and other genetic resources by farmers and local communities. In other words, there is no provision for farmers' right. In this background, this chapter deals with the provision provided in the Plant Varieties Bill, 1993¹,

1. Vandana Shiva, ed., *Protection of Plants, People and Intellectual Rights: Proposed Amendments to the Draft Plant Varieties Act, 1993* (New Delhi: 1993), pp.13-39.

about the protection of genetic resources and the related rights of the farmers and local communities. It also deals with the provision under the TRIPs Text about the patenting of micro-organisms and its effect as well as the effect of PBR on the biodiversity in the field. In fact, all these components are quite interrelated.

I. Farmers' and Local Communities Rights

Farmers' right, as distinct from the "Farmers' exemption" discussed in previous chapter, refers to the rights of the farming community of the Third World in creating and maintaining the genetic resources.

For the sake of avoiding ambiguity, agricultural families have been classified into two groups - farmers and farmer innovators. Farmers are those who cultivate crops for their own use and for sale within India and abroad and who also produce seeds for planting on their own farms. Farmer innovators could be individual farm women and men or farming/tribal families who have contributed parents which have gone into the pedigrees of varieties. These farmer innovators have over thousands of years contributed to the conservation and improvement of the genetic diversity that is the backbone of modern breeding technology, the exercise of sovereignty and control over genetic resources.²

2. M.S. Swaminathan, "A Plant Variety Protection System for India" in V. Ramachandriah, ed., GATT Accord: India's Strategic Response (New Delhi: 1994), p.184.

The genetic material is of two types. The first includes all wild relatives of cultivated plants and domesticated animals, ancestral species, land races and traditional varieties and many medicinal plants discovered by the indigenous people through the trial and error method and observation. This constitutes the raw and gene rich pool, critical to future need. The second is the improved and high yielding cultivars developed by geneticists and breeders for commercial purposes, and the chemicals isolated, refined, tested and commercialized by pharmaceutical companies.³ The first one can be called "informal innovation" while the second "formal innovation".

The first group is considered as common heritage of mankind, ownerless and non patentable whereas the second group is patentable and includes plant breeders rights (PBRs), trade secrets, and so on.

The genetic resources of the world have acquired their recognizable economically important form because of the labour and ingenuity of the Third World farmer and its indigenous people. There were no plants of rice, potato and cotton lying around in the forest waiting to be picked up. Food and cash crops on which the survival of the human race

3. A. Krishnakumar, "Harnessing a heritage: The rights of local communities". *Frontline* (Madras), vol.11, no.5, March 11, 1994, p.100.

is based, were created from wild plants in tropical forests by generations of careful breeding and selection. This innovative, laborious process carried out by the farmers of the Third World has gifted the world a stable, secure food supply and many grain dollars to countries exporting agricultural surplus.⁴

It is not only that Third World farmers have created almost all important crop varieties, they have also identified in several cases, the genetic traits that gave these crops desirable characteristics. So it is that the first disease resistant potatoes were bred by the farmers of Bolivia, the first insect resistant bean varieties were bred by West African farmers, while rice and certain forms of wheat were created by the farmers of India.⁵

That is why, farmers' rights are derived from the farmers as breeders. They are the equivalent of "breeders' right" sought by corporate breeders under UPOV. This was acknowledged by the FAO in 1989 when it passed the Farmers Rights Resolution⁶ admitting that the contribution of farmers will have to be placed on par with those of the

4. *The Hindu* (New Delhi), 4 March, 1994.

5. Suman Sahai, "Farmers' Rights." *Seminar* (New Delhi), 418, June 1994.

6. Usha Menon, "Access to Genetic Resources", *International Journal of Technological Management* (Geneva), vol.10, no.10, 1994.

breeder because they had domesticated our important agricultural crops, and observed, developed and safeguarded the tremendous biodiversity that breeders/researchers and seed industry use as "raw material". Thus farmers' right are an intellectual right, based on the recognition of the intellectual creativity and innovative capacity of farmers. Farmers' right challenged the understanding that innovation only takes place in western labs and research stations.

However, the viability of the 1989 undertaking itself came into question because of several developments in international negotiations. These were:

- (a) the revision of the UPOV Convention,
- (b) the TRIPs Text in the Final Act of the GATT, and
- (c) the Biodiversity Convention.

The first two substantially broadened the gap between source materials and improved varieties in terms of value and ownership rights attached to them. The right of breeders/inventors over improved varieties are given greater recognition at the expense of rights of local communities over source materials which themselves are the results of innovation and improvements by generations of farmers.

The 1991 Revision of UPOV further restricted the farmers' right or privileges. The protected varieties may still be used as an initial source of variation for the

creation of new varieties but such new varieties can be marketed or sold only when a PBR holder allows for it. Since the PBR holder always wants to maximize his sales and profit, he will certainly never give his authorization. Further, governments have the freedom to adopt in their national law the right of the farmer to use his seed for replanting (Art. 15.2). It is unlikely, however, that developing countries will do so. Because they are under extreme pressure from the developed countries to harmonize their national legislation with the IPRs standards formulated by these developed countries. One more restriction imposed by UPOV (1991) is that harvested material cannot be sold or marketed without the breeders' authorization. If royalties are not paid, the breeder can interpose to prevent the farmer from selling the produce.

The TRIPs Text of the Final Act has drawn a distinction between genetic material developed in the North by technologists and that which has been developed in the South by farmers or indigenous population. Essentially, this is a clash of definition of knowledge systems. TRIPs recognizes only the Northern industrialised model of innovation but fails to recognize the more informal, communal system of innovation through which Southern farmers produce, select, improve and breed a diversity of crop and livestock varieties. This collective intellectual property

of Southern farmers is denied recognition, and hence protection.⁷ This non recognition destroys the informal sector innovation. For example, when ethno-botanists transfer knowledge from traditional healers to pharmaceutical firms and genetic resource conservationists transfer knowledge from farmers to seed corporations, the intellectual property rights go to the corporation, not to the farmers and healers. Over time this appropriation of knowledge kills the original socio-cultural context of knowledge generation.⁸

Regarding the farmers' right, the preamble of the Biodiversity Convention⁹ states that contracting parties recognise

...the close and traditional dependence of many indigenous and local communities embodying traditional life style on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices, relevant to the conservation of biological diversity and sustainable use of its components.

However, no article in the Convention directly

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7. G.S.Nijar & Chee Yoke Ling, "Intellectual Property Rights: the threat to farmers & biodiversity." *Third World Resurgence* (Penang), no.39, November 1993, p.37.
 8. Vandana Shiva, "Farmers' Right, Biodiversity and International Treaties, *Economic and Political Weekly* (Bombay), vol.28, no.14, April 3, 1993, p.557.
 9. Selected Document, *Environment Policy and Law* (Amsterdam), vol.22, no.4, 1992.

addresses farmers' right or mechanisms for the compensations of indigenous knowledge. Article 10(c) and 18(4) refer to indigenous practices, but not to rights of farmers or local communities. Still the Convention offers avenues for the protection of farmers' right.

II. Farmers' Rights and the Bill

In this background, the relevant provision of the Draft Plant Varieties Bill, 1993 may be examined. However, such examination needs to be preceded by a knowledge about 'farmer innovators of India'. Rich in genetic resources, India has an estimated 54 million indigenous people, a fifth of such people the world over. Known for their genetic ecological and economic prudence, and distributed in 42 communities, they live in less-disturbed forests and have enormous knowledge about edible and medicinal plants. About 50,000 local cultivars of edible plants and 10,000 medicinal plants are with these indigenous and local communities. Living in close harmony with nature for centuries, they have evolved unique knowledge about the use of and conservation of plant genetic resources without such aids as "gene mapping" or a passport which gives the origin of the cultivars, its locations, innovator and so on. According to T.N. Khoshoo, former Secretary, Union Ministry of Environment and Forests, the potential of these local

cultivars developed by the tribals is so high that each tribal is probably worth Rs 10 lakh.¹⁰

According to Madhav Gadgil, the traditional people who are protecting and maintaining India's natural habitats are the stewards, the scientists and seed industries are the manipulators, and the official machinery, the regulators. While policies so far have protected the interests of the manipulators and the regulators the interests of the stewards have been ignored.¹¹

However, in the outset itself, it is necessary to clear that there exist several school of thoughts on the question of farmers' right and the protection of India's genetic resources. These are: Vandana Shiva viewpoint as provided in her amendment to the government bill, the Swaminathan Foundation which has drafted its own alternate plant variety bill and the Gail Omvedt viewpoint, and of course, the government viewpoint which is embodied in the Plant Varieties Bill, 1993.

Clause 22 of the bill provides for "Community Rights and Farmers' Rights". It states:

- (i) In recognition of the contribution made by rural communities with sustained perseverance in the development, on-farm innovations, enrichment and conservation of plant genetic

10. Krishnakumar, n.3, p.100.

11. *ibid*, p.101.

resources, the Authority may, when deemed appropriate, require the breeder seeking protection under this Act, to provide for rewards and/of compensation to such communities or clusters, integrating considerations of equity and ethics such that rural communities may have a stake in and continue their efforts at preservation and improvement of land races in the interests of intra and inter-specific variability amongst plants.

- (ii) The farmers' rights for the purpose of this Act mean the rights arising from the past, present and expected future contributions of farmers in ensuring conservation, improvement and availability of plant genetic resources, particularly in the centres of origin of diversity through a continuous engagement in an on-farm evolution of variations within varieties. For their above said contributions, the farmers are entitled to full benefits and support in the continuation of their contribution. It is the purpose of this Act to balance the protection of plant variety rights with need
 - (a) to foster the direct participation of the farmers and the scientists in programmes and action aimed at conservation and use of plant genetic resources;
 - (b) to promote exchange of plant genetic resources as also related information on technologies;
 - (c) to avoid excessive or un-controlled collection of germplasm by an individual;
 - (d) to bring recognition to the rights and needs of farmers who manage wild and cultivated plant genetic resources;
 - (e) to facilitate compensation to farmers for their contribution to conservation and development of plant genetic resources;

- (f) to promote conservation and use of plant genetic resources consistent with the requirement of environment, local traditions and cultures;
- (g) to avoid situations benefits derived from the plant genetic resources by farmers are undermined.

Under this provision, the Government of India recognizes the contribution of rural communities/families for the informal innovation as well as the enrichment and conservation of plant genetic resources. It also provides for reward and compensation to the farmer innovators. The Government also realises the need for giving full benefit and support to these farmers for ensuring conservation, improvement, and availability of plant genetic resources. But if we closely analyse Clause 22 it will be seen that they merely consist of several rhetorical and vague statements. The bill does not provide anything concrete in the form of farmers' right.

Though the bill acknowledges that reward and compensation should be given to the rural communities by the breeder seeking protection, it however leaves this decision to the Authority. If the Authority deems it appropriate, then it may demand the reward and compensations for the farmers from the breeder. But this provision is not complete in the absence of a major requirement, that is, the breeder seeking protection should submit the certificate of pedigree identifying the folk varieties. It should contain

the name and location of the genetic stocks which he/she have used as parents in breeding of the new strain, so that the reward and compensation reach the right farmer and local community. The said Clause also provides that the Authority may seek the reward and compensation at the time when the breeder will come for seeking protection and not at the time of collection of cultivars by the breeder.

Further, this Clause does not give a concrete statement of the nature and quantum of the reward and compensation. The M.S. Swaminathan Foundation, Madras, has formulated an alternate draft legislation on plant breeders and farmers' right, to be called the Plant Variety Recognition and Rights (PVRR) Act 1994.¹² The PVRR Act, has given concrete suggestions on recognizing and rewarding informal innovations. It says that return could be in cash or in kind and there could be panchayats or cooperatives at the local level to monitor and manage the rewards. Five per cent of the gross income from the sale of seeds of the new variety are to constitute the royalty. Such royalty shall be paid to the farmer innovators and if they cannot be identified, to the community gene fund. The PVRR Act also provides a

12. M.S. Swaminathan, "Draft Plant Varieties Recognition and Protection Act: Rationale and Structure", in V. Ramachandriah, ed., *GATT Accord: India's Strategic Response* (New Delhi: 1994), pp.199-243.

detailed mechanism for identifying the locations from where the valuable genetic material came and for using the gene fund for the purposes designated by the local community through the appropriate Gram Sabha and Gram Panchayat or other democratic and transparent mechanisms. The money will be utilized for strengthening the infrastructure for *in situ* and *ex situ* conservation of genetic variability at the village level, like facilities for seed drying and storage, nurseries and training in seed technology. The Executive Director of the Community Gene Fund will be assisted by a Fund Management Committee comprising among others, of media representatives, to serve as monitors of the working of the system. There will also be an overall Plant Variety Recognition and Rights drawn from all principal stake holders. A minimum of 40 per cent of members of such committees will be women (Article 23).

The return in kind could be in the form of developmental and natural resources regeneration, capacity enhancement, access to gene banks, rights to local natural resources and exemption from application of restrictive IPRs, particularly on products and processes derived from the utilization of their own resources.¹³

Vandana Shiva has also proposed a set of amendments to

13. Krishnakumar, n.3, p.101.

the Draft Plant Varieties Bill 1993. As an advocate of the farmers' right, she has gone to the extent of introducing an additional Clause on Farmers Varieties Protection, in the proposed amendment.¹⁴ But, before discussing these rights, the amendment proposed to the Clause 22 (Community Rights and Farmers' Rights) makes the same mistake. Rather, it has reproduced the same with few alterations. The amended Clause 22 does not provide for seeking the pedigree certificate from the breeder, to help in the disbursement of the compensation and reward to right community/ies. But few additions in this Clause are important. The one which provides for the free exchange and selling of seeds and propagating material of plants by farmers without the authorization of the breeder except brand name used by breeders and seed corporations (22.1.c). And secondly, the proposed amendment gives the ownership of the genetic resources to the local communities for ever(22.1.a). Unlike the Biodiversity Convention, the proposed amendment provides all right of ownership of India's genetic resources to the local communities along with the Central Government.

The new Clause added in the proposed amendment deals with the rights given to farmers' varieties (Clause 9).

14. Shiva, n.1, pp.40-70.

These varieties are supposed to be owned by community/ies which are given the possibility of registering themselves, under the proposed Act, as an organisation to represent its interest. The amendment also recognizes the rights of these communities over innovation, based on plants. The amendment grants farmers right in perpetuity for their varieties and presumably also for their innovations. These rights are to be jointly owned by any other community/ies who might lay claim, as well as by the Central Government. The payment are to be made to the community and in case of an innovation, to the Central Government which is then supposed to use it to support the genetic resources of the community/ies. Only the community singly or jointly with the Central Government can sell, assign or transfer any such variety innovation. The amendment also provides that a community can stake a claim retrospectively for a farmer variety owned by them which was granted patent or protection under any system.

So the monopoly powers granted to the community/ies under the proposed amendment, are in fact much greater than the monopoly powers which are granted under any system of IPRs whether of plant breeders' right, patents or copyrights. In the case of these rights they are granted for a limited period of time after which they move into the public domain of knowledge. Thus for example, in the case of patents, the time period proposed even under the TRIPs is

twenty years. In contradistinction, the proposed amendment grants right for ever even for variety/ies developed centuries ago. Of course this monopoly is attenuated by the fact that the proposals prevent exclusive usage from being granted [9(vi)]. But the monopoly rights are further strengthened by excluding farmers varieties from the purview of compulsory licensing (23.ii.c.note). What is dangerous with this amendment is that it leaves the proposed monopolisation of farmers unchallenged and infact even legitimises it.¹⁵

So, in a bid to recognize the rights of farmers and local communities, the proposed amendment by Shiva has gone to the extent of giving almost absolute monopoly to the farmer & communities over India's genetic resources.

III. Plant Genetic Resources and IPRs

However, apart from Clause 22 of the bill, there are other Clauses which deal with genetic resources of India and also related rights of the farmers and local communities. Infact, the question of protection of genetic resources and the farmers' right are quite interrelated. Clause 7 of the bill talks about the "Germplasm Protection".

The genetic resources of this world are a natural

15. Usha Menon, *Seminar*, 418, June 1994, p.57.

resource on which several forms of economic activity like agriculture, pharmaceuticals, textiles and other forms of industry are based. In this they are no different from other natural resources like, oil, iron ore or copper. The international conventions governing the ownership of natural resources e.g. Permanent Sovereignty Over Natural Resources and Charter of Economic Rights and Duties, acknowledges that the natural resources are the property of those countries in whose territories they are found. So, oil found in USA is the property of USA and copper found in Canada is the property of Canada and these can be obtained only by paying the prices fixed by USA and Canada for their minerals. But these international conventions have failed to acknowledge, the ownership of genetic resources. These resources are located almost exclusively in the tropical and subtropical areas, that is today's Third World. The great Russian scientist Vavilov, as already mentioned in the previous chapter, has identified different regions in the world as being the world centres of origin (and diversity) of crop plant species. Most of these centres lie in the poor, developing countries of Asia, Africa and Latin America.

The process of identifying plant genetic resources started nearly ten thousand years ago with the first domestication of plant in the valley of Euphrates and Tigris. Modern plant breeders make use of the land races

selected by generation of farmers for traits useful to man such as disease and pest resistance, drought tolerance, good grain quality and higher yields. With the knowledge of Mendelian genes and of their segregation and recombination, the breeder is able to synthesize varieties giving higher yields and combining other desirable characters. The classical example is that of the dwarf varieties of wheat and rice released in the 1960s which had a major impact on food production in India and in other countries.¹⁶

The North is a truly gene poor area and its dependence on Third World genetic material or germplasm cannot be exaggerated. For example, every Canadian wheat variety today contains genes introduced from as many as 14 different Third World countries. American cucumbers use disease resistant genes from Korea, Burma and India. New spinach varieties are protected by genes from India, China, Iran and Turkey.¹⁷ There is hardly any country in the world whose agriculture has not gained immensely from genetic diversity of plant material from other countries, especially developing countries. The reason is that the movement of crops and of

16. H.K.Jain, "Plant Genetic Resources and Policy Implication for a changing agriculture" *Indian Journal of Genetics and Plant Breeding* (New Delhi), vol.53, no.3, August 1993, p.223.

17. Suman Sahai, "Intellectual Property Rights for Life Forms", *Economic and Political Weekly*, vol.29, no.3, January 15, 1994, p.87.

plant varieties from one region of the world to another has been based on the principle of free access and free sharing.

Genetic resources, however, unlike all other natural resources have been declared to be the Common Heritage of Mankind. This has led to a blatantly unfair situation in which use of these resources has never been paid for. So whereas USA and Canada were able to earn from their oil and copper, the Third World was denied the opportunity to earn from its genetic resources. If the oil found in USA is American and the copper found in Canada is Canadian, then by the same principle, genetic resources found in the Third World will have to be considered their property. There cannot be two set of rules. But India and all other Third World countries never get paid for the use of their genes from which the economies of North have benefited to the tune of billions.

The contribution of the wild germplasm to the US economy has been estimated at US \$ 66 billion; with wild tomatoes from Peru alone contributing US \$ 8 million a year, and drugs from the Madagascar periwinkle¹⁸ generating sales of US \$ 160 million a year. The pharmaceutical giant E

18. A small Plant with light blue or white flower, found to contain two drugs called vinblastine and vincristine, the only known drugs effective against a kind of childhood leukemia.

Merck patented the drugs and destroyed the natural habitats of the periwinkle by over exploitation. Madagascar never received a penny. A few years ago the musk melon crop of California, valued at million of dollars, was threatened by a fungal outbreak. Resistant genes were brought in from India and the California Musk melon industry was saved. India received no payment for genes from which the Californians earned several millions. Many would be surprised to know that the United States is the second largest exporter of rice in the world after Thailand. All the rice germplasm is taken from the Indian and Japanese centres. No payment of any kind has ever been made for the use of germplasm from which the US has earned huge profits.¹⁹

It should be obvious that the principle of Common Heritage cannot be sustained, more so in the light of the growing trend of privatization by patents and stricter PBRs. If genetic resources are a common heritage, they cannot be privatized. If they are to be privatized, they must be acknowledged as the property of the Third World and paid for like any other privately owned resources. A correct step in this direction has been taken in the Biodiversity Convention. The preamble of the Convention acknowledges the

19. Sahai, n.17, p.88.

sovereignty of nations over the biodiversity found in their territories. Article 8(j) of the Convention states that, each Contracting Parties shall,

Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.

These provisions, though considerably weakened by the caveat "subject to its national legislation" are a good beginning, for the concept of "equitable sharing" of the benefits of wider utilization of traditional knowledge has been introduced for the first time in international law.²⁰

But some of the weaknesses of the Biodiversity Convention are that it has accepted patents in the area of living resources. Article 16 para 2 and 3 address the issue of transfer of technology on fair and concessional terms, with no commitment to patents and intellectual property protection.²¹ The other flaw in this Convention is that it was too easy on access to germplasm. The Convention says specifically that any biological material collected prior to

20. Krishankumar, n.3, p.100.

21. V. Shiva, "Why Biodiversity Convention may harm the South" *Third World Resurgence*, no.24/25, p.17.

its coming into force, belongs to the country that has it at that time. Approximately 93 per cent of the South's plant genetic material is now stored in gene banks in the North. All of that material, as of December 29, 1993 became the national patrimony and genetic heritage of the North.²²

These genetic material in the gene bank of the North are contributed by Third World agriculture and is the result of thousands of years of patient nurturing of different plant varieties by its farmers. Using these material, the multinational seed companies, based in the developed countries, produce new varieties of seeds and patent them for their profit. Our intellectual knowledge is thus abducted by them for their profit. Consider as an example the 30,000 odd rice varieties that are banked in the International Rice Research Institute (IRRI), Manila, over which Third World farmers will lose control if companies can patent genes from IRRI banks.²³ The imposition of IPRs will restrict the availability of these stocks even to the originating countries. For example, Genes from Ethiopian Sorghum, African Cowpea and Bolivian potatoes have been

22. "The Gene Piracy", An Interview with Pat Roy Mooney, *Frontline*, vol.11, no.15, July 29, 1994, p.92.

23. Suman Sahai, "Dunkel Draft is Bad for Agriculture", *Economic and Political Weekly*, vol.28, no.25, June 19, 1993, p.1281.

transplanted to improve crop resistance to disease in the developed countries. Since these were never subjected to patents in the Third World Countries gene banks, the MNC's could freely use them to develop new products that they have patented! The Ethiopian, Bolivian and African farmers now cannot use this product without paying royalties.

One of the most publicized effort to compensate the Third World for its contribution was the 1991 agreement between Merck Pharmaceuticals and InBio, the National Biodiversity Institute of Costa Rica. Merck got the right to screen, develop and eventually patent new products from the plant samples to be gathered from Costa Rican rainforest parks by InBio employees. In return Merck agreed to pay InBio US \$ 1 million and to share 5 per cent of the royalties arising from the sale of the products derived from these biological materials. The agreement was not between the people living in or near the national parks to be prospected. They had no say in the deal, nor were they received any benefits. Nor the agreement was between a TNC and a national government.²⁴ So, this deal caused not only the loss of those traditional land races and rewards and compensation to Costa Rican people but, the finished product, made using these genetic resources may return to the Costa Rican market as a patented product.

24. Menon, n.6.

Thus, patents and any other forms of privatization would lead to the destruction of plant genetic diversity within individual plant species. It is a situation of 'genetic erosion' or 'genetic destruction' which threatens and jeopardizes future plant breeding research in the world because plant varieties carrying a few economically important traits like high yielding or resistance to a particular disease, have been and will continue to be marketed aggressively by the patent and PBR holder.

IV. India's Genetic Resources and the Bill

Among the 12 centres of genetic diversity and origin of crop plants described by Vavilov, one is the Hindustan Centre including the Indo-Burma region. The region is home to such important plants as rice, several species of pulses, citrus, mango, yams and several vegetables and spices, in addition to numerous medicinal and aromatic plants. These rich genetic resources have made a valuable contribution to the development of agriculture both in India and in many other countries. Thus, when a high yielding, dwarf varieties of rice developed at the IRRI were found to be susceptible to brown plant hopper, the genes for resistance were identified in the Pattambi rice collection of Kerala. These genes now find a place in the pedigree of a number of modern rice varieties. Another

example is that of genes for useful traits in the wild species of sugarcane which were exploited to such good effect by Venkataraman at the Sugarcane Breeding Institute of India in Coimbatore. The improved sugarcane varieties from Coimbatore have been introduced in many sugar producing countries of the world.²⁵

The world community has been given a large amount of germplasm for improvement of various crops such as rice, wheat, jowar, bajra, pigeonpea and chiclepea. India has released nearly two thousand varieties of various crops. They have traveled far and wide. India fear that these germplasm and the germplasm provided to the International Agricultural Research Centres will get patented by the private industry or MNCs.

India's fear is quite natural. Few examples can explain it well. Although the medicinal and pesticidal properties of the neem tree were known in ancient India, methods of extracting azadirachtin from the neem tree are now patented in the US and Japan. In US it has been patented by Robert Larson, who has sold it to W R Grace and company which is setting up a plant in Antarasanahalli in the Tumkur district of Karnataka in collaboration with P. J. Margo Private

25. Jain, n.16, p.32.

Limited.²⁶ Even worse, patents have been granted in the US on soil material taken out of India. Bristol Meyers - an American company - has taken so much soil out of India over last decade or so that it has been described as the biggest absentee - landlord of absentee land. These materials have been commercialised and being used in pharmaceuticals, cosmetics and in food processing.²⁷

Plant genetic resources research in India started with a modest beginning in the 1950s at the Indian Agricultural Research Institute (IARI) when a new section was created for this purpose. It is now being coordinated by the National Bureau of Plant Genetic Resources (NBPGR) set up in 1978 by the Indian Council of Agricultural Research (ICAR). The Bureau with its headquarter in New Delhi and 11 Regional Stations in different parts of the country has been in the process of establishing a National Gene Bank which when completed will have facilities for long term storage of 8,00,000 seed samples. Much of the plant genetic resources work in India has been concerned with the collection and maintenance of seeds of local varieties and landraces

26. Anonymous, "Comman Plant Property: Piracy by MNC's", *Economic and Political Weekly*, vol.28, no.32&33, August 7-14, 1993, p.162.

27. Mooney Roy, n.22, p.92.

threatened with extinction following the development and release of high yielding varieties.²⁸

In the background of the above discussion about the genetic resources or germplasm, one may examine the draft plant varieties bill and its provisions about genetic resources and farmers' right. Since India is already a signatory member of Biodiversity Convention, she has the sovereign right over all genetic resources on her territory.

Clause 7 of the bill deals with "germplasm"²⁹ protection". This Clause provides for the nationalization of all of India's plant genetic resources, although this is not required under the TRIPS agreement. The bill negates the right of the farmers and communities to participate and decide on germplasm conservation and utilization, as demanded under the Biodiversity Convention. Clause 7 of the bill states:

Recognizing the conscious and unconscious innovations of Indian farmers, and formal and informal contribution of Indian researchers, in broadening the base of genetic variability by way of creating, upgrading, collecting and evaluating and preserving, conserving and keeping the germplasm accessions in trust of the Indian farmers by the National Gene Bank, National Bureau of Plant Genetic Resources shall exercise rights on germplasm covering the whole range of plant of all the genera and species in the Indian

28. Jain, n.16, p.232.

29. See Appendix for meaning of the term germplasm as given in the bill.

territory under the sovereign right, exercised on behalf of the Government of India. The National Gene Bank, National Bureau of Plant Genetic Resources shall operate and manage these genetic resources as follows:

- (i) Making germplasm available as and when appropriate to those parties who allow access to germplasm, with a proviso that the germplasm so supplied by India, shall not be transferred to any other country without the joint authorization of the National Gene Bank, National Bureau of Plant Genetic Resources of any other centre duly accredited by the Central Government for this purpose.
- (ii) The National Gene Bank, National Bureau of Plant Genetic Resources (NBPGR) or any other centre duly accredited by the Central Government shall negotiate and settle terms and conditions for exchange of germplasm with other countries/or agencies who do not allow free access to germplasm. The germplasm access in all such cases shall be on mutually agreed terms and conditions according to guidelines as laid down by the Authority from time to time.
- (iii) Resources generated, if any, from supply of germplasm shall be utilized only in trust of the Indian farmer for collecting, evaluating, upgrading, conserving and utilizing the genetic variability for the ultimate benefit of the Indian farmers through varietal development.
- (iv) Nothing in this Act shall abridge the right of any person or body to have and to continue to have access to the germplasm conserved in the International Agricultural Research Centre.

The above Clause, while recognizing formal and informal contributions and innovation by Indian farmers vests all the rights with National Gene Bank and the NBPGR. Despite the fact that the local communities have developed and

identified the traits of plants and this knowledge is the basis for the plant genetic engineering conducted in the North, the bill forecloses them from asserting their rights and vests all rights in the Government, without any provision for limiting the government's powers in disposing of these resources. Neither the farmers, nor researchers have any control over these two institutions, i.e. National Gene Bank and NBPGR. Even the state government and Union Territories have no control over them. Both the institutions are responsible only to the Central Government.³⁰ This negates the principle as already mentioned before, under Article 8(j) of the Biodiversity Convention.³¹

Clause 7, therefore, goes against this principle. It makes no provision for participatory decision making, equitable sharing of benefits, and for obtaining the consent of farmers and communities. The National Gene Bank and NBPGR have the monopoly right on matters relating to accessions, utilization and transfer of germplasm. The bill does not provide for any equitable sharing of benefits or

30. K.R. Srinivas, "Power Without Accountability", *Economic and Political Weekly*, vol.29, no.13, March 26, 1994, p.729.

31. See page no.104.

revenues for it does not recognize any such claim by any farmers or communities.

The Government is to be responsible for all the sale and use (royalties) derived from this germplasm, with the only requirement being that funds "shall be utilized only in trust of the Indian farmer for collecting, evaluating, conserving and utilizing the genetic variability for ultimate benefit of the Indian farmers through varietal development". In other words, whereas up to now the state has been claiming ultimate ownership of land, forests, water, etc, now it is going a step further and claiming ownership over germplasm/genetic resources. Just as tribal and peasant communities have been dispossessed from their control over "common property resources" in land and forests, now they will be dispossessed of control over the traditional varieties and biodiversity they have developed and are using. Of course, the Act gives farmers' the right to 'reuse seeds' - but any commercial control is in the hands of the state, and it is assumed that the state is required to supervise all scientific development. The state is to be a kind of "trustee" protecting the supposedly incompetent farmers.³²

32. Gail Omvedt, "Protecting Biodiversity and Farmers' Right" , *Frontier* (Calcutta), July 16, 1994, p.4.

Interestingly, the bill under Clause 7, envisages granting the government full authority to transfer germplasm even to those countries which do not provide India with access to their own gene banks. One important provision which is missing from this Clause is that whether these germplasms accredited by the Government will be used for commercial or non-commercial purposes.

Astonishingly, in the U.S.A.I.D. (US Agency for International Development) deal, India has committed herself to provide access to her rich genetic resources to USA, almost free of cost. In August 1988, an agreement was signed between India and the United States of America, under which U.S.A.I.D. was to provide a total of US \$ 13 million to India for setting up a gene bank, greenhouse/screenhouse facilities etc. while the total Indian contribution in this project will come to around US \$ 22.41 million. However, the money which is given by US are for the equipments to be bought in USA but in return, it provides the US access to the vast plant genetic resources. The project document says that it seeks to enable NBPGR to provide access to better maintained germplasm collection to the U.S. scientists. On the contrary the Director of NBPGR maintained that no germplasm, especially of foreign exchange earner or medicinal plants, will be made available to the US besides what is normally provided. But once these material are

identified and a comprehensive inventory been completed, it would be easy for US to obtain these material through unofficial channels if not available through official channel. Interestingly, the contract does not place any limitation of the use of these materials, thus it cannot prevent US from patenting any material derived from these genetic materials.³³

Vandana Shiva, in her proposed amendment to the government bill, made some changes in Clause 7. She has used the term 'biodiversity' instead of 'germplasm'. She argues that the term 'germplasm' refers to hereditary component of organisms which are assumed to be totally separate from the body of the organism as well as from the environment. Genetics traits and genes are not independent entities but dependent parts of the whole organism that gives them effect, plants in this case. But unlike the government bill, the proposed amendment provides that royalty has to be negotiated before making the genetic resources available to the commercial enterprises claiming IPRs on varieties derived from it. Hence, there should be no provision for a free availability of biodiversity. The proposed amendment vests all powers to the farming communities and the government can exercise only its national sovereignty. So,

33. Manon, n.6.

the authorization of the local communities is a must for transfer of biodiversity and they are to have equal rights of participation in the decision making related to biodiversity. In fact, the proposed amendment makes the local communities the co-owner of the plant genetic resources and gives them full control, and recognizes their central role in innovation and knowledge development.

But, the amendment proposed does not question the power of the state, for in any questions of "foreign or commercial" utilization (sale, royalties) etc., it gives authority to local communities and the state; the alternative draft by Shiva calls this "co-ownership" of the state over biodiversity (germplasm). Shiva's alternative seeks to give powers to the state on the ground that local communities are often weak and ignorant in dealing with the world. Indeed, her picture of farmers seems to be that they are noble, sharing and innovative in community life but naive and foolish otherwise and so need the protection of a ruling elite.³⁴

Gail Omvedt is more vocal in her support of local communities. She emphasises the need "to give full power to local communities and act to provide them with the knowledge to deal with the commercial work. The right

34. Omvedt, n.32, p.5.

over biodiversity should belong to local communities; any royalties generated from this should be their alone; and decision about how to use these funds should also be theirs. Some percentage of these royalties might be given to the government in the form of taxes; the government might also offer its services in return for legal fees in negotiating the sale and usage of the traditional varieties but there is no reason to compromise on local control and local ownership".³⁵

The alternative plant varieties Act called PVRR Act³⁶, prepared by the Swaminathan Foundation, under Article 3, provides for a complete compatibility with the provision of the Biodiversity Convention. It means action proposed under the farmers' rights and community gene bank under the PVRR cannot negate the objective provided under the Article 8(j) of the Biodiversity Convention. One important thing provided under the PVRR Act is that it has recognized a special role for women under Article 5, who are traditional seed selectors and conservers. An action plan for training rural women in seed technology and capacity building in genetic conservation and seed production is also proposed. Unlike PVRR, the government bill is gender

35. *ibid*, p.5.

36. Swaminathan, n.12, pp.199-243.

insensitive, as far as the provision of the bill, for farmers happens to be a 'he' and not a 'she'. Even Vandana Shiva has not given proper attention to this drawback of the bill and reproduced the same language in her alternative proposal.

In the "Extant Varieties" protection provision under Clause 9, the bill ignores the right of farmers and state governments. The Clause 9 para (iv) states:

The Government of India shall have rights on all these extant varieties developed by the public sector institutions and resources generated on this account, if any, shall be utilized only for the purpose of developing new varieties of plants through the Indian Council of Agricultural Research (ICAR) by public sector institutions.

It specifies ICAR as the authority for managing resources generated on account of rights over extant varieties. Public sector institutions and universities are also funded by state government but the bill has no provision for sharing the revenue generated with state governments or universities. The monopoly rights are granted to the Government of India. Neither the public sector institutions nor the state governments have any right over extant varieties developed by public sector institutions. This act denies the rights of institutions and scientists over their work in respect of extant varieties. Since the Central Government is not accountable to any research institution, unfair practice, if adopted by

the Central Government, cannot be questioned under this law. For example, if the Central Government decides to collect royalty or user fee on account of an extant variety developed by a public sector institution, or permits large-scale commercial adoption of an extant variety, there is no compulsion under the bill to share the benefit with the institutions. It hands over to the Central Government the fruits of labour without any reward or suitable compensation.³⁷

The bill also contains some praiseworthy provisions which is beneficial for Indian farmers as well as the breeders especially those in the public sector. Among some of these commendable provisions under the bill are, Clause 30, which lays down the "Obligation of the State Employee". It envisages the introduction of a scheme which would provide monetary incentives to plant breeders in the public sector on a co-sharing basis with the employee/organization. The extent of such co-sharing shall be decided by the Central or by the concerned state government. This step in the proposed bill is expected to give a fillip to research undertaken by various ICAR scientists and prevent a large-scale exodus to the private

37. Srinivas, n.30, p.730.

sector. Also, this move is likely to pre-empt the loss/theft of genetic resources from premier research institutes to other commercial organizations within or outside India.

In an attempt to give the proposed legislation some teeth, the bill proposes to vest the administrative body i.e. Authority, with the power to impose conditions on the breeders at any time if it deems it necessary in the public interest. A compulsory license can also be issued in public interest to anyone deemed fit to produce the material of the protected variety if the breeder of the protected variety fails to meet the public requirement. Moreover, the farmers' right to compensation from the breeder/licensee if the protected variety does not give the required output in terms of yield, productivity and freedom from disease has also been provided for (Clause 22 iii. b).³⁸

However, the Seed Growers, Merchants and Nurserymen Association of India, in their comments on government bill called "Recommendation and Comments on the Draft Plant Varieties Protection Act, 1993",³⁹ want that the provision under Clause 22(iii)(b), to be deleted. They argue that providing and administering this provision of affording

38. *Economic Times* (New Delhi), April 26, 1994.

39. This is jointly made by The All India Seed Growers, Merchants & Nurserymen Association, The Association of Seed Industry and The Seed Association of India.

compensation will be beyond the scope of the Act because they maintain that, first a variety has been tested and after satisfying that the variety is novel and as per its claimed features only, that the very registration and protection is granted to a variety. For no fault of the breeders and his multiplying agencies, a farmer may not get satisfaction on account of several natural factors operating beyond the control of either the breeder or the seller of seeds. A breeder cannot afford to visit every farmer and instruct and monitor the cultivation practices. The common law will adequately take care of any proven damages caused to the users on account of negligence of the seed dealer. The act cannot monitor this aspect.

V. Patenting of Micro-Organisms

But the major threat to the Indian agriculture and farmers comes from the provision of the TRIPs about the patenting of micro-organisms and microbiological processes. Article 27.3(b) of the TRIPs Text refers to the patenting of life. The article states:

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 microbiological processes....

So, the TRIPs text excludes from patentability plants and animals, but "micro-organisms", "non-biological" and "microbiological processes" must be patented.

In the last few years tremendous developments have been achieved in the arena of biotechnology and genetic engineering. These two areas of modern science are conceptually very original and intellectually very rewarding. The broader term biotechnology includes a wide range of techniques. These include tissue culture (the creation of identical genetic copies or clones of an individual plant), cell culture (growth of plant cells in the laboratory which are then separated off and encouraged to grow as real plants) and genetic engineering. Genetic engineering also known as genetic modification or bioengineering, is the manipulation of DNA. Genes are made of DNA, which carries all the information living things inherit from their parents. DNA contains all the instructions needed to make the proteins and other materials which make up an organism, as well as information on its structure and the way in which it functions.⁴⁰

In genetic engineering genes are selected and moved from one organism to another. It is now possible and, indeed, is common practice to transfer genetic material between completely dissimilar organisms from fish to plants, from micro-organisms to animals, from humans to

40. Panos Breafing, "Genetic Engineers Target Third World Crops", *Link* (New Delhi), vol.36, no.15-16, Nov. 7-14, 1994, p.14.

other organisms, and, theoretically, from other organisms to humans. It is also possible to isolate and to multiply for commercial use, parts of organisms to, for example, mass-produce chemicals that are otherwise produced in much smaller quantities by plants. For instance, vanilla, an expensive flavouring that comes from the bean of the vanilla orchid can now also be produced in a vat from the masses of vanilla orchid cells. Such life forms are often called 'transgenic'. These transgenic plants or animals attract the provision of TRIPs even though there is no de jure patent for plants and animals. These technical advances have served to blur the distinctions between natural and manmade, between life and chemistry, and between living and nonliving.⁴¹

Biotechnology also includes biological processes used in food industry. Some of these have been used for centuries, like yeasts to help bread rise and convert sugar into alcohol in brewing, and bacteria to digest sugar and add flavour in cheese making. But these techniques all use naturally occurring viruses, bacteria, yeasts, plants and animals which have never occurred in nature. The Flavr Savr tomato is expected to be on sale in USA grocery stores

41. B. Belcher, and G. Howtin, "A Patent of Life : Ownership of Plant and Animal Research", in K.R.G. Nair, ed., *Intellectual Property Rights* (New Delhi:1994), p.263.

soon, and will be the first genetically modified food known to have been sold to consumers. A gene has been introduced into it which confuses the tomato's natural tendency to soften when ripe, so it will remain hard enough to handle during transport and in super market.⁴²

Genetic engineering is capital-intensive. It requires expensive equipment and even greater cost in time and human resources. According to Abby Munson, from the Cambridge University Global Security Programme, the US has already spent US \$ 6,000 million on biotechnology research. Brazil, one of the biggest spenders in the South, has spent US \$ 100 million. The biotechnology budget of one transnational corporation, Bayer, may soon exceed that of the whole of Latin America. A large proportion of all biotechnology research is carried out by the private sector in Europe, Japan and North America. In 1992, just two US firms, Monsanto and Du Pont, were between them spending US \$390 million per year.⁴³ An obvious prerequisite for investment is some assurance that the investment will be rewarded. Wanting some guarantees of returns on their investment, researchers are increasingly seeking, and winning, patents on their living inventions.

42. Panos, n.40, p.14.

43. *ibid*, p.16.

Anand Chakrabarty, an Indian microbiologist based in US, filed a patent application in 1972, assigning to the General Electrical company for invention of a bacterium from the genus Pseudomonas containing therein at least two stable energy - generating plasmids, each of said plasmids providing a separate hydrocarbon degradative pathway. This human genetically engineered bacterium is capable of breaking down multiple components of crude oil, a property which no naturally occurring bacteria possesses, hence providing an effective remedy against oil spills, common in maritime zone. Chakrabarty's patent claim were of three type; first, process claim for the method of producing bacteria; second, claims for an inoculum comprised of a carrier material floating on water, such as straw, and the new bacteria and third, the claim to the bacteria themselves. The patent examiner allowed the patent for first and the second category but rejected the claim for the bacteria on the ground that (i) micro-organism are product of nature (ii) as living thing, they are not patentable under 35 U.S.C. section 101. But the US Supreme Court cleared this last hitch and granted Chakrabarty a patent on his bacteria in a 5-4 division in 1980. Thus, for the first time in the annuals of science a patent was allowed on a living organism. The US Supreme Court held-that a live human made micro-organism is patentable subject matter, because it

can be considered as manufacture or composition of matter.⁴⁴ While Chakrabarty explained about his invention that "I simply shuffled genes, changing bacteria that already existed"⁴⁵. So it was a discovery rather an invention.

The TRIPs Text gives the signatories the freedom to exclude plants from patentability. The word 'plants' is very important. In the European Context, the European Patent Convention (EPC) Article 53(b) provides that "plant and animal varieties or essentially biological processes for the production of plants or animals cannot be patented." However, this provision did not apply to the "micro biological processes and product thereof". In 1989 EPC granted a patent to Lubrizol, for a process of introducing gene for higher protein content, thus, making use of the provision of "micro-biological processes and product thereof" of Article 53(b). So in this case gene manipulation was defined as "micro-biological processes". The question of granting patents to plant cells and plant containing these cells was also solved by the argument that the exclusion under Article 53(b) refers only to patenting of plants in the genetically fixed form (original form) of a plant

44. *Diamond Vs Chakrabarty Case, International Legal Materials* (Workington. D.C.), Vol.19, no.4, July 1980, p.981.

45. V. Shiva, "Why we should say 'No' to GATT-TRIPs, *Third World Resurgence*, no.39, November 1993, p.33.

variety and not to individual traits of a plant like species, cell lines or genes. Hence, genetically modified plants can be patented. The TRIPs Text also excludes plants but patents must be granted for micro-biological processes as well as micro-organism. It means, the route which was taken in Europe to grant patent to plants can also be applied here and a product (plants) made using the micro-biological process will be patented.⁴⁶

But this alone will not be enough for granting patent for plants and much depends upon the definition of the word 'micro-organism' a country adopt in its national law. If India includes gene, cell lines as a micro-organism and considered it as patentable in the Indian Patent Act, which has to be amended in order to conform to the TRIPs, then this would lead to the patenting of plants. Thus a plant which is grown out of a seed having a patented gene or cell, will be considered as patentable.

The word "micro-organism" has not been defined in any International Convention. Micro-organism refers to very small form of life such as bacteria, virus, fungus, algae (the green scum that grows near water), small plants and animals and according to the lexicon of corporate

46. Usha Menon, "Impact of TRIPs on Indian Agriculture", *Symposium on impact of GATT on Agro-exports*, 11 August, 1994.

biotechnology, even genes. Since now with the tools of genetic engineering, it is possible to shift genes from micro-organisms to plants and animals and vice-versa, the MNC's involved in biotechnology are trying to interpret the definition of micro-organism in their own way to include such new categories as cell lines and genes. Such a definition would greatly enhance the scope of patents under the micro-organism label since many cell lines are from plants and animals and even humans. The inclusion of genes as micro-organism means that without any further effort all 'transgenic' forms of higher plants and animals can be patented.⁴⁷

The acceptance of patents on micro-organism makes complete nonsense of the rhetoric that of excluding naturally occurring genes from patentability. All the genes of bacteria and fungi and other micro-organism that have been patented are natural. There is no such thing as a artificial gene as yet. All the genes that are being used in agriculture and biotechnology today, the genes of corporate interest, are genes that exist already, they are natural genes.⁴⁸

47. P.R. Sivasankar, & D. Krishnamurthy, "Implication of TRIPS for Indian Industry & Agrculture" in G.S. Batra and N. Kaur, ed., *GATT: Implication of Dunkel Proposal* (New Delhi: 1994), p.

48. Suman Sahai, "GATT and Patenting of Micro-Organisms", *Economic and Political Weekly*, vol.29, no.15, April 19, 1994, p.841.

However, as the Chakrabarty case illustrates, the term naturally occurring is also ambiguous. All that genetic engineering really does is to 'shuffle gene around', they do not create life. Therefore, literally speaking, no life form should be patentable. However patent offices and courts have interpreted 'modification' as 'creation'. This allows the ownership of any altered biological material. The term 'naturally occurring' does not prevent such patenting of life because the term does not cover altered biological materials.⁴⁹

The micro-organism has extremely important application in the fields of agriculture, fertilisers, industrial biotechnology etc. In agriculture, for instance, international experience has shown that high usage of chemicals and fertilisers poisons the land and is not ecologically sustainable. The substitutes for chemical fertilizers and pesticides are formed in the world of micro-organism. These benign substitutes are biofertilizers and biopesticides based to a large extent on micro-organisms.

The world of microbes or micro-organism promise ever increasing opportunities for improving plant nutrition and warding off pests. Bio-fertilisers are preparations containing a mix of cells which can provide nutrition,

49. Shiva. n.45, p.33.

chiefly the major nutrients nitrogen and phosphate, to plants. Although traditional farmers were well versed in the use of certain kinds of biopesticides to control diseases and pests, intensive microbe based weed and pest control strategy has been refined in the last few decades. The capabilities of various fungi, bacteria and viruses are being tested to control insects and plant pests that compete for energy and nutrition and so damage crops plants.⁵⁰

The most promising of the new approaches has been the *bacterium bacillus thuriagensis* whose toxic properties have been used effectively as a biopesticide in several kinds of crops. Incorporating the toxic gene into crop plants by genetic engineering reduces the use of chemical pesticides.⁵¹

Besides being ecologically sustainable, these potential biosubstitutes are cheap and do not cause health hazards to the users. According to one estimate, India could with an investment of Rs. 30 crore in biopesticides, replace at least Rs. 200 crore worth of imported plant protection chemicals. The commercial exploitation of this indigenous technology requires considerable gestation period.⁵²

50. Sahai, n.48, p.841.

51. *ibid.*

52. *ibid.*

It is proved beyond doubt that biotechnology is the technology of the future, and the multinationals have a dominant presence in the field due to enormity of their capital resources. With India having accepted patents on micro-organisms, these companies can now obtain and start operating patents on products they already have, and get a head start on developing new categories of biofertilisers and biopesticides. Thus, handing over control of fertilisers and pesticides to MNC's will turn our agriculture capital intensive, keeping out large majority of small and marginal farmers from the fruits of the new technology. Patenting of micro-organism would also mean no "farmers' exemption" and no "breeders'/researchers' exemption".

VI. Effect of Introducing PBR on Biodiversity

The Ministry of Agriculture, in the bill on Plant Varieties has provided protection to new varieties. It is expected that this move would stimulate investment in plant breeding and will generate competitiveness in the field of research and development which would result in maximising agricultural production and productivity in the country. India has also accepted patents on micro-organisms and microbiological processes by ratifying GATT. These development have created great threat to the biodiversity in the field.

According to the dominant paradigm of production, diversity goes against productivity, which creates an imperative for uniformity and monocultures. Many of the traditionally grown landraces no longer exist. They have been replaced by 'modern' varieties-indeed it is ironic that the success of plant breeding has itself been the major cause of the loss of the raw material on which future advances in crop improvement depend. Instead of a huge patch-work of different landraces of crop, many parts of the world are now covered by a comparatively small number of varieties that themselves are often closely related.⁵³

The requirement of modern agriculture for uniform product, whether for field mechanization or processing, have further exacerbated the situation. In addition, for a variety to be eligible for a PBR, it must be sufficiently uniform to be able to distinguish it from other varieties. This requirement by its very nature destroys biodiversity and produces uniformity as necessity. The reward under such a PBR system does not to go for breeding to maintain and enhance diversity and sustainability, but to the destruction of biodiversity and creating uniform and hence ecologically vulnerable agricultural systems.

The process has gathered momentum during the past 25 years with the discovery of plant type genes in wheat and

53. Belcher & Hawtin, n.41, p.284.

rice and in other important crop plants leading to the development of high-yield agriculture. The spread of monocultures of 'high yielding' in agriculture has been justified on grounds of increased productivity. All technological transformation of biodiversity is justified in the name of 'improvement' and increased 'economic value'. However, improvement and increased value are not neutral terms. They are contextual and value-laden. Improvement of crop species means one thing for a food processing industry and something totally different for a self-provisioning farmer. During the green revolution in India, the yields were 'high' for the purposes of centralised control of the foodgrain trade, but not in the context of diversity of species and products at the level of the farm and the farmer. Over the last half century, India has probably grown over 30,000 different indigenous varieties or land races of rice. The situation has altered drastically in the past 15 years and Dr. H.K.Jain, Director of the IARI, in New Delhi, predicts that in another 15 years this enormous rice diversity will be reduced to no more than 50 varieties, with the top ten accounting for over three quarters of the subcontinent's rice acreage.⁵⁴

Not only have the agriculture scientists been

54. Vandana Shiva, *Monocultures of the Mind* (Penang: 1993), p.67.

remarkably successful in increasing these very favourable gene environment interactions, they have also succeeded in developing widely adopted varieties. Some of the high yielding varieties of wheat developed at CIMMYT, in Mexico, have been cultivated in a number of other countries including India, Pakistan, Iran, Turkey. Similarly, the IR-8 variety of rice developed at the IRRI, in Manila, spread in the 1970s to many areas in South Asia, South East Asia and the Far East. It is this combination of plant-breeding for high yielding and wider adaptability that has resulted in large scale replacement of the traditional cultivars and landraces. Within a short period of about 25 years the new high yielding varieties have spread to one million hectares of land. Thus, the dwarf high yielding varieties of wheat which trace their origin to some of parental material developed at the CIMMYT had spread by 1983 to an estimated 48 million hectares of lands in the developing countries. This means that nearly 50 per cent of the total area planted under wheat varieties evolved from a common germplasm source.⁵⁵

The process of the loss of biodiversity has been further increased by the piracy of the genetic resources from the gene rich Third World countries to technology rich

55. Jain, p.16, p.225.

first world countries. And further, patent and other forms of privatization has led to even greater narrowing of the genetic base. The PBR system of protection militates against the moves to conserve and enhance crop diversity. For instance, one possible implication is that commercial seed breeders will find it expensive not only to breed new varieties but also to pass the stringent tests required for plant variety right application. They will, therefore, be more anxious to push a handful of widely adaptable seeds, which can get them back adequate profits, rather than develop a diversity of seeds which are suited to a diversity of micro-situation. This will have very unfortunate consequences for the viability of our agriculture stocks and their ability to survive biotic and abiotic stresses.

The developments in biotechnology and genetic engineering are even more disruptive of social fabric as they further distance the farmer from seed development. Any development takes place not merely in laboratories, but within the seed itself. The farmer becomes further dependent on outside agents for resources and information about how to use them. The seeds produced by new technologies are in no way superior to farmer varieties or landraces. By their very nature, they are monocultures and will therefore have same vulnerability to disease and pests.

As their characteristics have been modified at the level of the gene, their progeny will have the same

characteristics. Thus a plant that is engineered to produce its own pesticides will pass on this property to its progeny, which will continue to release it into the environment irrespective of any harm that it can cause. Further, products of genetic engineering have not been tested for adequate periods to see their long term effect on the environment. Once released into the environment, there is no way to recall these product.

A rational response to this on-farm decrease in diversity is to preserve varieties in gene banks, such as the National Bureau for Plant Genetic Resource, where the seeds of land races and local varieties and their wild relatives could be stored for use in future breeding programme.

Conclusion: The Government of India has not given proper attention to the vital issues likes farmers' rights and regulating access to genetic resources. The casual attitude which the government has shown on these important issues in the bill will become disastrous for the Indian breeding program both formal and informal in the present regime of patent and PBRs. It is only farmers and local communities who can develop, preserve and propagate our rich genetic resources and provide them to the breeders in the labs which eventually help in augmenting the crop production of India.

So, the rural communities do have a say in the decision making by the government with regards to the access to germplasm. But it is unjust either to give absolute powers to the government or to the farmers. The government should also prepare an inventory of India's genetic resources, which would help to stop piracy of our rich resources. Our genetic resources have been greatly threatened by the patenting of micro-organism by the western countries and now a part of the TRIPs. However, the government can save our plant germplasm by carefully amending the Patent Act, 1970. The government should also take proper step to maintain crop diversity in the field and it is possible only if in situ method of conservation are adopted, i.e. conserving the plant germplasm in the farmers' field. Infact the bill is silent on protecting the crop diversity.

CHAPTER - V
CONCLUSION

The Final Act of the GATT Uruguay Round of Trade Negotiations was signed on 15 April 1994 and it was ratified by India on 9 December 1994. The TRIPs Agreement under the Final Act, requires a *sui generis* system in Article 27 para (3) to be introduced by the year 2000. But the Government of India forgone the advantage of transition period and came out with a *sui generis* form of IPRs for plants and seeds, and titled it as "Plant Varieties Act, 1993". This Plant Varieties Bill (PVB) violates the provisions under section 3 (i) of the Indian patent Act 1970, which excludes from patentability any process for the treatment of plants to render them free of disease or to increase their economic value or that of their product.

The need for introducing the PVB can also be traced to the introduction of the new seed policy in October 1988 which envisages liberalisation of import/export of seed material and multiplication of new genetic material by private individuals and companies. It is feared that unless a PBRs are introduced Multinational Corporations (MNCs) will be reluctant to start business in India. Secondly, public institutions in India like ICAR which are involved in plant breeding want to protect their own work after the introduction of the new seed policy; in the absence of PBRs they could be put at a disadvantage. Thirdly, the Indian Government is under constant pressure from the developed

countries, especially USA, to introduce at the earliest some sort of IPR for plants and seeds.

However, the *sui generis* system which India has evolved under the ~~bill~~ bill is all wrong for India because it embodies the philosophy of industrialized countries in seeking protection for new plant varieties where the primary goal is to protect the interests of corporate biotechnology and powerful seed companies. Our PBR system should concentrate instead on protecting the interests of the farmer in his role as producer as well as consumer of seed. On the contrary, the bill has copied the provisions of UPOV (1978) and (1991) and its focus is on the breeder. As the objective of the bill makes clear, the Act is primarily designed to protect the right of plant breeders and developers and to foster competitiveness and investment in plant breeding. The bill disregards the fact that our public sector cannot withstand competition from the big multinational seed companies who invest billions of dollars on seed development. In other words, the focus of the bill on breeders' rights would eventually translate into benefit for MNC's.

The scope of the ~~bill~~ bill is wider than UPOV (1978) which can be applied to 24 genera or species, whereas it covers the entire plant genera and species. This provision is similar to the UPOV (1991) (Article 3.1.) provisions.

Furthermore, the requirement for the protection of plant varieties provided under ~~the~~ bill is same as under UPOV (1991). Apart from distinctiveness, uniformity and stability, both have added one more requirement, not given under UPOV (1978), that the variety for protection shall be deemed to be new, meaning thereby that it is different from other known varieties at the time of filing the application for protection of the variety by at least one essential characteristic. Thus, the requirement of the 'novelty' of a variety shows that the ~~bill~~ bill recognizes only those varieties as new which have been developed by the breeders in laboratories using genetic resources which belongs to farmers. Hence, the very requirement for protection of a variety rules out farmers informal innovations.

Though, the two most important features of a PBR system i.e., "the breeders' exemption" and "farmers' exemption" have been incorporated in the ~~bill~~ bill, they are not similar to those provided under UPOV (1978). Clause 14 of the bill which provides for the researchers' right states that the researchers have free and complete access to protected materials for research use for developing new varieties, but only if it is used for experimental and/or research purposes. It lacks a provision similar to that of UPOV (1978) (Article 5.3) which says that authorization of the breeder of protected variety shall not be required for

using it as initial source of variation for the purpose of creating other varieties or for the marketing of such varieties. The deliberate exclusion of this provision shows that the breeder can use the protected variety for research purposes only and not for commercial use. So what the draft bill provides is only researchers' exemption and not the breeders' exemption.

Not only this, the rights of the breeders'/researchers' has been further axed under the clause 12.ii.a. of the draft bill which has copied the provision of 'essentially derived varieties' from UPOV (1991). It means that varieties will only be essentially derived when they are developed in such a way that they retain virtually the whole genetic structure of the earlier variety. Any protected variety may be used freely as a source of initial variation and, only if a resulting variety falls within the narrowly defined category of essential derivation, authorization of the breeder of the protected variety is required for commercial exploitation of these essentially derived varieties. Hence, no breeder will use the protected variety when he/she can not benefit from the fruit of their research. So what the draft bill basically provides is researchers' exemption. Infact, it has reproduced the provision of UPOV (1991) verbatim without assessing its dangerous impact on the breeding programme going on in the country. These provision

^{the} of bill would be beneficial for the big seed companies and MNCs and they will be able to extend their monopoly control on hybrid and non hybrid types of varieties and eventually they would control the Indian seed market. The Indian farmers will become completely dependent upon them for seeds. This would led to the increase in prices of seeds and other propagating materials.

The second important feature of the PBR system, i.e. the farmers' exemption, which is distinct from the farmers' right¹, has been provided by ^{the} bill under Clause 22 (iii). It envisages farmers continuing to enjoy traditional right to save, use, exchange, share and sell their produce with only restriction that they will not be able to sell branded seed for commercial purposes. In India, more than 50 percent of the seed requirement, that is approx. 6,00,000 ton, for agriculture is provided by inter-farmer sales. Farmers have been getting seed from the ICAR and agricultural universities and multiplying it for their own use and also selling it to other farmers. Presently, the small seed companies are also doing the same, getting seeds developed by the public sector or any private company and multiplying and selling them. But Clause 12 of the bill, provides that breeders' authorization will be required for production and

1. For details see Chapter 4, page 85.

sale of a reproductive or propagating material of a protected variety for commercial marketing. The big seed companies who have started business after the passing of new seed policy in 1988, cannot afford to allow this much volume of the sale of seeds going on below their nose. Even the small seed companies will be left at the mercy of the big companies to whom they have to pay royalties whether they multiply the seed or only clean and process it. Hence, what is immediately threatened by the provision of the bill is the multiplying of seeds by the farmers and small seed companies. Ultimately, the farmers will have to depend on the big companies for seeds.

On several other crucial issues as well the bill has attempted to deny the rights of farmers. For instance, although the bill talks of innovations of farmers, the objective of the bill does not mention this, nor is it considered as a factor in developing new varieties, and finally, defines research and development as if it could be done only in laboratories and research stations. India is rich in genetic resources, which have been conserved and improved, over thousands of years, by Indian farmers and local communities and which infact goes into the pedigree of varieties developed by breeders in laboratories in India and abroad. The genetic resources have acquired their recognizable economically important form because of the

labour and ingenuity of the farmers and local communities. But Clause 7, on "Germplasm Protection", while it recognizes the formal and informal contribution and innovation of Indians farmers and rural communities in broading the base of genetic variability and for creating, upgrading, collecting, evaluating, preserving, and conserving them, yet vests all the rights with National Gene Bank and the National Bureau of Plant Genetic Resources (NBPGR). Neither the farmers nor the researchers, not even the State government or Union Territories have any control over these two institutions for they are only responsible to the Central Government.

It also makes no provision for participatory decision-making, equitable sharing of benefits and for obtaining the consent of farmers and local communities as provided under Article 8(j) of the Biodiversity Convention. The bill does not recognize any claim for equitable sharing of benefits or revenues by any farmer or local communities. The National Gene Bank and NBPGR have monopoly rights on matters relating to accessions, utilization and transfer of germplasm and farmers and local communities who have nurtured these germplasm by their hard labour and true devotion nowhere comes into picture. In return, what the bill provides for farmers is only the utilization of the royalties, derived from the sale and use of germplasm for varietal

development. Clause 7 even authorizes the Government to transfer the germplasm to those countries which do not provide access to their own germplasm and gene banks. But the bill has ignored the provisions of the Biodiversity Convention which provides that developing countries which make available genetic resources to the West will be able to share the results of research and development of the benefits of its commercialization. Thus, the bill negates the rights of farmers and local communities to participate and dicide on germplasm conservation and utilisation. It gives all rights and powers to the Government, ignoring the farmers and local communities.

The government strategy of formally recognizing the contribution of Indian farmers without any concrete benefit to them becomes apparent in Clause 22 of the bill which addresses community rights and farmers' rights. Here too, the bill recognizes the contribution of rural communities/families for their informal innovation as well as enrichment and conservations of plant genetic resources and even talks of reward and compensation to the farmer innovators, but in actuality these are nothing but rhetoric. Because, the decision for seeking reward and compensation from the breeder, at the time of seeking protection, lies with the Authority. Secondly, the Authority, as the bill provides, may demand for reward and compensation not at the

time of collection of cultivars by the breeder but when he/she will come to seek protection for his/her developed varieties made using the genetic resources. Thirdly, one major requirement which the bill fails to incorporate is that the breeder seeking protection should submit the 'certificate of pedigree' identifying the folk varieties. It should contain the name and location of the genetic stocks which he/she has used as parents in breeding of the new strain, so that the reward and compensation can reach the right farmer and local communities. Fourthly, the bill does not provide for a concrete statement of the nature and quantum of the reward and compensation. Finally, the bill does not recognize the contributions of rural and tribal women who have been traditional seed selectors and conservers. Infact, the government bill is gender insensitive, for farmers are always described as a 'he' and never a 'she'.

In the case of extant variety protection also, under Clause 9, the bill ignores the rights of farmers and also of State governments and gives Government of India all right on the extant varieties. It specifies Indian Council of Agriculture Research (ICAR) as the authority for managing resources generated on account of rights over extant varieties. The bill makes no provision for sharing the revenue generated from the extant varieties with state

governments or universities. On the other hand, it provides full right to the private organisations/institutions for the exclusive use of the funds generated from the varieties they develop. Thus, in the name of protection of farmers' and local communities right the bill actually drastically reduces their rights.

The bill however does contain some commendable provisions as well. Among them is the provision under Clause 30, which envisages the introduction of a scheme providing monetary incentives to plant breeders for a new variety in the public sector on a co-sharing basis with the employee/organisation. The details of this co-sharing is left to the Central or the concerned State government. This step is expected to check the theft/loss of genetic resources from India's premier research institutes to any other commercial organisation and will also prevent the exodus of various ICAR scientists to the private sector. Secondly, the bill provides that the Authority can impose conditions on the breeders at any time if it deems necessary in the public interest. Thirdly, the Authority can issue a compulsory license in public interest to anyone deemed fit to produce the material of protected variety if the breeder of the protected variety fails to meet the public requirement. Lastly, the bill provides for compensation to the farmer from the breeder/licensee if the protected

variety does not give the required output in terms of yield, productivity and freedom from disease.

However, there are certain subjects which are not directly connected with the bill but it is very important so far as plant variety protection as well as Indian agriculture are concerned. Article 27 para 3 of the TRIPS text makes it obligatory for the members to provide for patenting of micro-organisms and micro-biological processes. Therefore, India has to make changes in the 1970 Patent Act to introduce patenting of micro-organisms and microbiological processes. Though the bill does not contain any provision on micro-organisms yet this change in the patent act could have dangerous consequences for breeding research. Of course, much will depend on the definition which the amended patent act may adopt for micro-organism. If it defines it as a small form of life such as bacteria, virus, fungus, algae, along with genes and cell lines, it would be fatal for Indian agricultural research as well as farmers and consumers. For it is now possible to shift genes from micro-organisms to plants and animals and vice-versa through the recombinant DNA technology. It means that whereas a conventional breeder cannot cross a tomato plant with a corn plant in search of a favourable gene, the bio-tech breeder can cut out a disease-resistant gene from corn and put it into tomato to confer resistance and make a

transgenic. This category of breeder, mostly big seed companies, has demanded and received protection of the gene and the new variety created by its transfer, through the very rigid form of industrial patent. This means that other breeder cannot use that patented gene for further improvement of a variety and if used, the improved variety will belong to the breeder of the patented gene in the new variety and he would have the right to exploit that new variety commercially. So the funny thing about the micro-biological process is that holder of a patented gene not only claims the first process but also the following processes which are undoubtedly biological and the products of those biological processes, i.e. the plants, seeds and animals themselves. This would affect the main ingredients of farming, i.e. seeds, fertilisers and pesticides, and they will get patented and controlled by the giant MNCs. This would also increase the monopoly of the MNC's in the Agriculture Sector. Since the private sector seed companies are also being managed by pesticides companies, they may be tempted not to incorporate genes for resistance to those pests for which chemical pesticides are available. Therefore, although patents on plant and animals are excluded in the TRIPs Text the patenting of micro-organism and micro-biological processes would lead to the patenting of plants and seeds which would affect the development of agriculture and agricultural research in India.

But if we closely analyse the 'review' provision under TRIPs, Article 27 para 3, patents for plants and animals does not look to be a distant possibility. It provides that the provision of plant variety protection in the TRIPs Text will be reviewed four years after the Final Act comes into force, i.e. in 1999. Further, if we study the transitional arrangement under Article 65, India can delay the introduction of a *sui generis* system until the year 2000 and the product patent system could be deferred till 2005. The ~~bill~~ bill 1993, however, would make India forego these transitional period benefits because if enacted it would bring a plant breeders' right system into effect immediately. It would mean that India would reverse its long standing public policy against patenting of living organisms and grant monopoly rights over plants and seeds even before it is required to do so under the TRIPs Text.

Since the bill already gives protection to plant breeders at the level demanded by UPOV (1991), it would be much easier for developed countries to force India to adopt patent system for plants and seeds. Or it may be on the lines of the North American Foreign Trade Agreement (NAFTA) which takes the UPOV (1991) as the norm and US Congress might amend PVPA 1970 to make it compatible with UPOV (1991). Or it may be similar to the provision under treaty Supplementing the Paris Convention, on which the negotiation

is still going on in the Diplomatic Conference. In this Conference the developed countries have proposed that 'all areas of technology' be brought under the patent system that the Paris Convention underlines. This amendment to the Paris convention when it comes, would be applicable to all the countries since the signatories to the Agreement on TRIPS would automatically become members of the Paris Convention. Accordingly, countries like India, which are not the members of the Paris Convention at present would be obliged to accept the changes that are introduced through the amendments to the convention.

Therefore, it is very essential for India to make a detailed study of these future changes which is in the process in the international relation, before enacting the system for protection for plant varieties.

The repercussion of introducing industrial patent system for agriculture would be disastrous for India where 75 percent of the population are based on agriculture and are having medium and small land holding. The patent system would mean restriction on free exchange of germplasm; proliferation of private sector at the cost of public sector; monopolization of market by few varieties and increasing genetic uniformity and vulnerability; monopolization of MNC's in the seed, fertilizers and pesticides sector; no farmers' exemptions and no breeders'

exemptions; increasing theft of genetic material from gene banks; increasing poaching of genetics resources from gene rich countries etc. Therefore, it is very essential for India to initiate a full fledged debate on the national level, which would take into consideration the forth coming changes in the patent system in the world, before enacting a legislation for the protection of plant varieties.

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APPENDIX

V. PLANT VARIETIES ACT, 1993

draft legislation prepared by the Government of India

CHAPTER I

GENERAL

Clause 1

Short title

This Act shall be known as The Plant Varieties Act (PVA) 1993.

Clause 2

Extent

It extends to the whole of India and covers the whole range of plants.

Clause 3

Commencement and Scope

i) It shall come into force on such date as the Central Government may specify by notification in the Official Gazette. Different dates may be appointed for different provisions of this Act, and any reference in any such provision to the commencement of this Act shall be construed as a reference to the coming into force of that provision.

ii) This Act shall apply to all new varieties which belong to genera and/or species indicated from time to time through the Authority Journal. Similarly, protection of germplasm shall be governed as per provisions in the Clause 7 of this Act. Plant varieties released and/or notified before entry into force of this Act shall be governed as per provisions of the Clause 9 on Extant Varieties Protection of this Act, if otherwise not specified in this Act.

Clause 4

Preamble

Recognising the need for :

Augmentation of agricultural production and productivity through availability of qualitatively excellent propagating material.

Perpetuation of genetic diversity for sustainable agriculture.

Full Title: An Act to encourage the Development of Novel Varieties of Plants and ensure availability of quality seeds and planting materials of such varieties to farmers by Protecting the Rights of Breeders, Researchers and Farmers, 1993.

Stimulation of investment in research and development for varietal improvement through assuring appropriate returns on investments on the same by public and private sectors. Generation of competitiveness in public and private sectors considered necessary for them to acquire the strength and confidence to emerge as sound collaborators, and receptive absorbers and assimilators of state-of-the-art technologies in the seed sector.

Creation of conditions conducive for harmonious growth and development of public and private seed sectors engaged in production, processing and marketing of seed.

Protection of public interest by giving it over-riding priority over the rights of any other specified segment.

Preservation of farmers' rights arising to them both from past, present and expected future contributions in ensuring conservation, improvement and availability of plant genetic resources, and past and present traditions and practices, by ensuring him access to best propagating material on reasonable terms.

Protection of researchers' rights to have free access to propagating material for purposes of research in public interest.

Cohesion between access to germplasm, and assertion of sovereign rights over germplasm resources.

Conservation of germplasm resources developed and evolved through ceaseless efforts of researchers and farmers.

Rectification of a situation of a lop-sided access to propagating material through a mechanism of reciprocal rights.

Fusion of interests of breeders, farmers and researchers so that they become mutually supportive and complementary while singly or jointly remaining subordinate to the overall larger public interest.

As a logical corollary to the above-stated preamble, the objective of this Act which is formulated by the Central Government for achieving balance in terms of trade and for promotion of trade is set out in Clause 5 of this Act.

Clause 5

Objective

The objective of this Act shall be to protect the rights of developers of new varieties to stimulate investment in plant breeding and to generate competitiveness in the field of research and development both in the public and private sectors with the ultimate aim of facilitating access to newly developed varieties and maximising agricultural production and productivity in the country and thus realising the full benefits of its genetic resources.

The protection of farmers' and researchers' rights will strive to balance the need for stimulation and incentive to R&D with welfare of the farmers.

Clause 6

Definitions and Interpretations

For the purposes of the Act:

- i) "Plant" means any organism or parts thereof belonging to the Kingdom Plantae, and not included in the animal kingdom.
- ii) "Propagating material" means any plant or its component or part thereof including seed intended, capable or suitable for regeneration into a plant.
- iii) "Seed" means the living embryo or proagule capable to regenerate and give rise to a plant which is true to type.
- iv) "Variety" means a plant grouping within a single botanical taxon of taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be
 - defined by the expression of the characteristics resulting from a given genotype or combination of genotypes;
 - distinguished from any other plant grouping by expression of at least one of the said fundamental characteristics; and
 - considered as a unit with regard to its suitability for being propagated unchanged;

A variety will include a self-pollinated variety or a hybrid or parental lines of hybrids or a cross-pollinated variety or composites or synthetics.)
- v) "Protected Variety" means a variety for which the right is conferred on a breeder, or the right of a nation is recognised.
- vi) "Extant Variety" means a variety released and/or notified under The Seeds Act, and remains unprotected as per the provisions of this Act applicable for new varieties of plants.
- vii) "New Variety" for the purpose of protection it means a variety which is different from other known varieties at the time of filing the application for protection of the variety, by at least one essential characteristic. For this purpose, the new variety shall be one whose reproductive material has been utilised for a period not exceeding one year in India, and outside India not more than six and four years in case of trees and vines and other plants respectively.

- viii) "Essentially Derived Variety" -- a variety shall be deemed to be essentially derived from another known variety when it is predominantly derived from the known variety, or from a variety that is itself predominantly derived from the known variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the known variety, and except for the difference which result from the act of derivation, it conforms to the known variety in the expression of essential characteristics.
- ix) "Germplasm" means the reproductive or vegetatively propagating material of plants and includes different kinds of plant materials from plants and parts thereof, and covers (a) hereditary materials from cells/tissues/ organs capable of replication, (b) primitive relatives, wild relatives (wild and weedy races), and related genera and species; (c) commercial types, obsolete varieties, minor varieties and special purpose types; and (d) plant materials derived from breeding programmes vis. purelines from farmers' stocks, elite varieties, released and/or notified varieties, breeding lines, genetic/breeding stocks, mutants, polyploids, aneuploids, intergeneric and inter-specific hybrids, cytoplasmic sources, and composites, synthetics and hybrids. Biodiversity includes the reproductive or vegetatively propagating material of plants and parts thereof held both at ex-situ and insitu gene banks.
- x) "Breeder" means
- the person/legal entity who bred or developed a variety
 - the person who is the employer of the aforementioned person or who has commissioned the latter's work, or
 - the successor in title of the first, second or third aforementioned person as the case may be.
- xi) "Breeder's Right" means the right of the breeder.
- xii) "Nationals" means Indian citizens as defined in the Constitution of India.
- xiii) "Contracting Parties" means any state or country having enacted a legislation on plant varieties protection and applying for protection of plant varieties under this Act.]
- xiv) "Applicant" - Applicant, unless the context otherwise specifies, in relation to any application, means the person by whom or on whose behalf that application is made.
- xv) "Application" - Application, unless otherwise specified, means an application for grant of plant variety protection in respect of a new variety under this Act.

- xvi) "Representative" - Representative in relation to applicant or holder of plant breeders' rights, means a person who is duly authorised by the applicant or breeder of protected variety or licensee for the purposes of this Act on behalf of the applicant, or breeder of protected variety or licensee, consistent with the requirement prescribed by the various authorities.
- xvii) "Successor" - Successor in relation to a breeder or developer of a new plant variety means a person in whom the right of the breeder or developer to make an application for plant variety rights in respect of that plant variety has been given by inheritance or bequest.
- xviii) "Authority" - Authority means the National Plant Variety Protection Authority as established under Clause 32 of the Act.
- xviii) "Registrar" means the person who maintains the register of plant varieties and shall be the Member-Secretary of the Authority as stated in Clause 32 (v).
- xix) "Appellate Board" - Appellate Board as stated in Clause 50 of the Act means a Board to be constituted by the Central Government. —
- xx) "Central Government" - Central Government of the Government of the Union of India.

CHAPTER II

Technical

Clause 7

Germplasm Protection

Recognising the conscious and unconscious innovations of Indian farmers, and formal and informal contributions of Indian researchers, in broadening the base of genetic variability by way of creating, upgrading, collecting and evaluating and preserving, conserving and keeping the germplasm accessions in trust of the Indian farmers by the National Gene Bank, National Bureau of Plant Genetic Resources shall exercise rights on germplasm covering the whole range of plants of all the genera and species in the Indian territory under the sovereign right, exercised on behalf of the Government of India.

The National Gene Bank, National Bureau of Plant Genetic Resources shall operate and manage these genetic resources as follows:

- i) Making germplasm available as and when appropriate to those parties who allow access to germplasm, with a proviso that the germplasm so supplied by India, shall not be transferred to any other country without the joint authorisation of the National Gene Bank, National Bureau of Plant Genetic Resources or any other Centre duly accredited by the Central Government for this purpose.

ii) The National Gene Bank, National Bureau of Plant Genetic Resources or any other Centre duly accredited by the Central Government shall negotiate and settle terms and conditions for exchange of germplasm with other countries/or agencies who do not allow free access to germplasm. The germplasm access in all such cases shall be on mutually agreed terms and conditions according to guidelines as laid down by the Authority from time to time.

iii) Resources generated, if any, from supply of germplasm shall be utilised only in trust of the Indian farmer for collecting, evaluating, upgrading, conserving and utilising the genetic variability for the ultimate benefit of the Indian farmers through varietal development.

iv) Nothing in this Act shall abridge the right of any person or body to have and to continue to have access to the germplasm conserved in the International Agricultural Research Centres.

Clause 8

Registration of Varieties

All plant varieties shall be registered with the Authority as per Clause of this Act and their seed and/or propagating material shall be governed as per Clause 33 of this Act.

Clause 9

Extant Varieties Protection

Those extant varieties, seeking protection under this Act shall be covered by the following provisions:

i) Those extant varieties which have been released and/or notified by the government, for seed production and commercial cultivation under the Seeds Act are protected through this Act.

ii) The total period of protection for all such extant varieties shall be 15 years in case of plants/crops and 18 years in case of trees and vines from the date of release and/or notification of such varieties.

iii) After the protection period as in sub-para (ii) above in this Clause is over, these varieties shall be dealt with as germplasm as per the provisions of Clause 7.

iv) The Government of India shall have rights on all these extant varieties developed by the public sector institutions, and resources generated on this account, if any, shall be utilised only for the purpose of developing new varieties of plants through the Indian Council of Agricultural Research by public sector institutions.

v) The private organisations/institutions will have full right on varieties developed by them and released and/or notified by the Government and thus on funds generated for their exclusive use. Other terms and conditions shall be as applicable to other public sector varieties.

Clause 10

Registration of New Varieties of Plants

A plant variety seeking protection under this Act shall be registered only if it conforms to the criteria of Distinctness, Uniformity and Stability as outlined in this Act, and is also clearly distinct by at least one essential characteristic from

- i) other varieties released and/or notified under The Seeds Act before this Act comes into force, and
- ii) other varieties registered under Clause 8 of this Act.

In addition to above provisions, a variety seeking protection shall not be registered if seed and/or propagating material of the variety has been commercially marketed, with the consent of the breeder or of his successor in title.

- iii) within the Union of India before the date of application for registration, and/or
- iv) in other countries for more than six years before the date of the application in case of trees and vines, and four years in all other cases referred to under this Act.

Clause 11

Requirement for Protection of New Varieties of Plants

- i) Plant variety protection shall be granted where the variety is new, distinct, uniform and stable.
- ii) The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filling of the application. In particular, the filling of an application for the granting of protection to the variety or for entering another variety in the register of varieties, in any country shall be deemed to render that other variety a matter of common knowledge from the date of the application provided that the application leads to the grant of a breeder's right or to the entering of the said other variety in the register of varieties as the case may be.
- iii) The variety shall be deemed to be uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its essential characteristics.
- iv) The variety shall be deemed to be stable if its essential characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle.

Clause 12

Scope of the Protection of New Varieties of Plants

i) The following acts, in respect of the seed and/or propagating materials, or the protected variety, for commercial purposes, shall require the authorisation of the breeder.

- a) the production,
- b) the offering for sale,
- c) the marketing,
- d) export, and
- e) import

ii) The breeder of protected variety may authorise the use of the variety under this clause subject to conditions and limitations as approved by the Authority. The Authority while approving terms shall take care that they are consistent with the provisions of all other relevant laws of the country in force.

This Clause shall apply equally to:

- a) any variety that is essentially derived from a protected variety
- b) any variety that is not clearly distinguishable from a protected variety; and
- c) any variety whose production requires the repeated use of a protected variety.

Clause 13

Duration of the Protection of New Varieties of Plants

Period of protection of new variety of plants shall be 15 years from the date of registration in all cases except in case of trees and vines, where it shall be 18 years.

Clause 14

Researchers' Right

Nothing in this Act shall be construed to abridge or restrict the rights of the researchers to have free and complete access to protected materials for research use for developing new varieties of plants. These acts done for experimental and/or research purposes and for developing new varieties of plants shall not require authorisation of the breeder.

Clause 15

Deposit of Sample of the New Varieties of Plants

A sample of seed and/or propagating material capable of regeneration in prescribed quantity shall be deposited by the breeder with the National Gene Bank, National Bureau of Plant Genetic Resources or such Centre as accredited under Clause 7 of this Act.

Clause 16

Evaluation of Material and Test of New Varieties of Plants

The Government shall prescribe an appropriate system for evaluation of material and carrying out various tests required under this Act for registration of varieties and grant of rights. The evaluation and test shall be carried out on payment of prescribed fee.

Clause 17

Variety Denomination in case of New Varieties of Plants

i) The variety shall be given a single denomination which permits its identification even after the expiry of the period of protection.

ii) The denomination must enable the variety to be identified without any confusion concerning the characteristics, value, identity of the variety or the identity of the breeder. The denomination of the new variety shall not be exclusively composed of numerals. In particular, it must be different from every other denomination, which identifies, in the territory of any Contracting Party, an existing variety of the same plant species or of a closely related species.

iii) The denomination of the variety shall be submitted by the breeder to the Authority. If the denomination does not satisfy any prescribed requirements, the Authority may refuse to register it and may require the breeder to propose another denomination within a prescribed period. The denomination shall be registered by the Authority at the same time as the breeder's right is granted.

iv) If, by reason of a prior right, the use of the denomination of a variety is forbidden to a person who, in accordance with the provisions of this Act, is obliged to use it, the Authority shall require the breeder to submit another denomination for the variety.

v) A variety must be submitted to all Contracting Parties under the same denomination.

vi) The variety shall not be offered for sale or for being marketed within or outside the country unless it is duly certified by an official seed Certification Agency located in the Union of India. When a variety is offered for sale or is marketed, it shall be permitted to associate a trademark, trade-name or other similar indication with a registered variety denomination. If such an indication is so associated, the denomination must nevertheless be easily recognisable.

vii) The denomination given to a protected plant variety shall not be registered as a trademark.

Clause 18

Revocation of the Breeder's Rights on Protected Varieties

The breeder's right granted shall be declared null and void when it is established that

- i) the prescribed conditions have not been complied with.
- ii) the grant of the breeder's right has been based upon incorrect information in the furnished documents
- iv) the breeder's right has been granted to a person who is not entitled to the same under this Act
- v) the breeder did not provide the Authority with such information, documents or material as demanded by the Authority for maintenance of the variety
- vi) the breeder failed to pay the prescribed fee
- vii) the breeder failed to provide a suitable alternative denomination in case where the earlier agreed denomination is cancelled after the grant of the right
- viii) the breeder of the protected variety did not provide the seed or propagating material to the licensee to whom a license is given under Clause 23 (iib) of this Act.

Clause 19

Surrender and Transfer of Rights

- i) The breeder of protected variety shall have right to request for the cancellation of the rights granted to him under this Act as per the conditions laid down by the Authority. The surrender of such rights shall be duly published in the Authority Journal.
- ii) The rights of the breeder may devolve on the legal representatives of the breeder on his demise or legal incapacity as the case may be, upon compliance of such requirement and fulfillment of such terms and conditions by the legal representatives as may be prescribed by the Authority.
- iii) Such application may be made by the representative either in respect of a variety for which protection has been granted or a variety for which application for protection has been made.
- iv) The transfer shall be permitted on payment of prescribed fee.
- v) The transfer shall be permitted after giving public notice for the prescribed period and after final disposal of objections received, if any, in this regard.

Clause 20

National Treatment

Without prejudice to the rights specified in this Act, nationals i.e. breeders of other countries, who are Contracting Parties, shall enjoy the same treatment as is accorded to its own Nationals i.e. breeders.

Clause 21

Plant variety rights subject to certain conditions

i) The Authority shall exclude from protection such varieties as interfere with maintenance of order, morality, human, animal or plant life or health or ecology and environment. The Authority shall also exclude diagnostic, therapeutic and surgical methods for the treatment of plants from the ambit of protection.

ii) The Authority may by statutory instrument make such regulations as are necessary or expedient for ensuring availability of reliable and adequate information as to the nature, condition and quality of seeds sold or offered for sale, and for ensuring that seeds are true to variety; for preventing the sale of seeds which are deleterious or have not been tested for purity and germination or of a variety, performance of which has not been subject to trials; and for regulating the marketing, importation or exportation of seeds.

iii) Wherever the Authority considers it necessary that the plant variety protection rights as granted under this Act should be subject to certain conditions in public interest, the Authority may impose such conditions as it deems necessary in public interest either at the time of grant or during the period of subsistence of plant variety protection rights under this Act.

iv) The conditions, if not incorporated in the original certificate of protection shall be conveyed in a separate document, as an addition to the original certificate and shall become effective immediately thereafter. They shall also be duly publicised by the Authority.

Clause 22

Community Rights and Farmers' Rights

i) In recognition of the contribution made by rural communities with sustained perseverance in the development, on-farm innovations, enrichment and conservation of plant genetic resources, the Authority may, when deemed appropriate, require the breeder seeking protection under this Act, to provide for rewards and/of compensation to such communities or clusters, integrating considerations of equity and ethics such that rural communities may have a stake in and continue their efforts at preservation and improvement of land-races in the interests of intra and inter-specific variability amongst plants.

ii) The farmers' rights for the purpose of this Act mean the rights arising from the past, present and expected future contributions of

farmers in ensuring conservation, improvement and availability of plant genetic resources, particularly in the centres of origin of diversity through a continuous engagement in an on-farm evolution of variations within varieties. For their above said contributions, the farmers are entitled to full benefits and support in the continuation of their contribution. It is the purpose of this Act to balance the protection of plant variety rights with need

- a) to foster the direct participation of the farmers and the scientists in programmes and actions aimed at conservation and use of plant genetic resources;
- b) to promote exchange of plant genetic resources as also related information on technologies;
- c) to avoid excessive or un-controlled collection of germplasm by an individual;
- d) to bring recognition to the rights and needs of farmers who manage wild and cultivated plant genetic resources;
- e) to facilitate compensation to farmers for their contribution to conservation and development of plant genetic resources;
- f) to promote conservation and use of plant genetic resources consistent with the requirement of environment, local traditions and culture;
- g) to avoid situations benefits derived from the plant genetic resources by farmers are undermined.

iii) For the purposes of achieving the objective as stated in subsection (i), it is provided that additional rights to dispose of his farm produce as he chooses which includes his right to save, use, exchange, share and sell propagating material of seed from seed obtained or descended from seed obtained of protected variety except sale of branded seed/propagating material with the denomination of varieties as in Clause 17 for commercial purposes.

- (b) The farmers will be entitled to suitable compensation from the breeder of protected variety and/or dealer in the event of the failure in the stated performance of seed/propagating material of protected variety.
- (c) There shall be no sale within or outside the country of seed/propagating material of protected variety, that is not duly certified by an official Seed Certification Agency located in Union of India.
- (d) The commercial sale and marketing of all branded seed shall be made through dealers registered with the concerned state authorities.
- (e) There shall be no sale of such varieties of seed/propagating material as are not registered with the Authority.

Clause 23

Compulsory licensing

i) The reasonable requirement of public for seeds and/or propagating material of a variety, and meeting of the same, will have an over-riding priority over the grant and continued protection of rights of breeders. In this context, any person may at any time from the grant of protection of rights of breeders request the Authority to consider whether reasonable quantity of seed, plant or reproductive material of a protected variety of a reasonable quality are available for members of the public at reasonable prices.

ii) The Authority may also on its own on being satisfied that the requirement of the public with respect to a plant variety has not been, or is not being met, or where there is an overseas market for sale of seed, plant or reproductive material of the protected variety and the same is not being met by the breeder of the protected variety, may take recourse to the following action:

- a) The Authority shall require the breeder of the protected variety to ensure availability of seed, plant or reproductive material of the protected variety in reasonable quantity at reasonable prices.
- b) Simultaneously the Authority may license a person or persons, body or bodies whom it considers appropriate to produce seeds, plants or reproductive material of that variety for sale.
- c) License a person or persons, a body or bodies whom it considers appropriate to sell seed, plant or reproductive material of that variety.

iii) Any organisation (whether claiming to be representative of persons requiring compulsory licence, having been refused the same by the breeder of the protected variety or having been subjected to unreasonable conditions in the licence by the breeder of the protected variety or not), or a person (whether requiring compulsory licence or having been refused the licence by the breeder of the protected variety or having been subjected to unreasonable conditions by the breeder of the protected variety or not) may represent to the Authority for issue of compulsory licence, and Authority being satisfied that the organisation of person/s have substantial interest in the issue, or the issue raised affects public interest and that the organisation/s or person/s representing it are reasonable representative of the class of persons which they claim to represent proceed to take action as set out in sub-para (iv) of this clause.

iv) Where it is proposed to issue a licence under sub-clause (i), (ii) or (iii) the Authority shall send a notice to the breeder of the protected variety to respond within the prescribed time.

The Authority before licensing a person under this clause shall

- a) given written notice of at least one month to the person who represents to the Authority under sub-para (i) and (iii) of this clause.
- b) give public notice of at least one month inviting eligible applicants for issue of licence under sub-clause (ii)
- v) Upon consideration of the reply received from the breeder of the protected variety or in the absence of the same, after the prescribed time limit is over, the Authority shall decide whether to exercise powers vested in it under sub-para (ii) (b) of this clause.
- vi) The Authority before granting a compulsory licence shall satisfy itself that the applicant is financially and otherwise in a position and has the ability and knowhow to exercise the rights conferred on him through the compulsory licence.
- vii) The period of validity of the compulsory licence will be different for different varieties belonging to various species or genera.
- viii) The Authority may make available the reproductive material of that variety stored in the National Gene Bank, National Bureau of Plant Genetic Resources and simultaneously initiate criminal and civil proceedings against the breeder of the protected variety, besides revocation of breeder rights under Clause 18.
- ix) The Authority may impose such conditions as it deems necessary and desirable for compliance by the licensee at the time of issue of compulsory licence or during the validity period of the licence.
- x) The Authority may at any time, on representation being made by any person stating grounds on the basis of which the representation is so made or on its own being satisfied that the licensee has failed to meet any of the obligations imposed on him in the compulsory licence or through a subsequent instrument limit, vary, extend or revoke a compulsory licence.

Clause 24

Supply of reproductive material

- i) The breeder of the protected variety or the licensee as the case may be shall comply with the conditions imposed on him at the time of grant of rights or issue of licence or during the period of protection of rights or validity of licence as the case may be under Clauses 21 and 22.
- ii) The Authority may require the breeder of the protected variety to deposit or ensure deposition of a specified quantity of reproductive material of plants in addition to the quantity deposited under Clause 15 at the expense of the breeder of the protected variety in the National Gene Bank, National Bureau of Plant Genetic Resources or such centre as is accredited for this purpose under Clause 7 within fifteen days of the giving of written notice or within such time as may be allowed to the breeder of the protected variety by way of extension by the Authority.

iii) The reasonableness of the quantity of reproductive material required to be deposited under (ii) above may be determined as per the requirements under Clause 23 (viii) and (ix).

iv) The reproductive material delivered to the National Gene Bank, National Bureau of Plant Genetic Resources or such centre as is accredited under Clause 7 shall be stored in the said Bureau/centre unless required to be used by the Authority under Clause 23 (viii).

Clause 25

Supplementary provisions

i) A compulsory licence under Clause 23 above may be granted to an applicant whether or not the breeder of the protected variety has granted licence/s to the applicant or any other person, and may not be an exclusive licence.

ii) If any agreement purports to bind any person not to apply for a compulsory licence under this Act, it shall be void.

iii) The licence shall alongwith its conditions imposed through it or subsequent to it become an agreement between the breeder of protected variety and the licensee, in addition to or without any other agreement between them.

iv) An appeal against any of the decisions of the Authority under Clause -- relating to allowing or refusing of application for compulsory licence shall lie to the Appellate Board.

Clause 26

Acts constituting infringement of plant variety protection rights

Except as otherwise provided, the plant variety protection of rights in respect of plant variety are deemed to be infringed by:

a) A person who not being a breeder of the protected variety or a licensee by the breeder/Authority, sells, disposes, imports or exports a variety for reproductive purpose by way of an act as provided in Clause 12 other than the one which is an integral part of programme of experiment or testing to ascertain the characteristics of a variety; an act other than the one which is by way of multiplication of the variety on behalf of the breeder or central or state government, corporation, agency or a cooperative federation or an act which is other than the sale of a material for non-commercial purpose.

b) A person, who not being a breeder of the protected variety or licensee by the breeder of protected variety or the Authority holds himself, herself or itself as being willing to sell or dispose of the material for the purpose as mentioned in sub-clause (a) above.

c) A person having been granted protection of rights of a plant variety does not comply with the terms or conditions of the grant of rights.

d) A person having been given a compulsory licence in respect of the plant variety does not comply with the terms or conditions of the licence.

e) A person who uses the name of that plant variety being the name entered in the register of the Authority in relation to any other plant variety.

Clause 27

Acts that do not constitute infringement of PVP rights

The plant variety protection rights are not deemed to be infringed by:

a) The production, sale, disposal, export or import, for other than reproductive purposes, of harvested material and shall include such harvested material as is produced as a result of experimentation or testing of a variety to ascertain the characteristics of the variety or as a by-product of

b) The production, sale or disposition, export and import of a variety for reproductive purposes if the acts stated above are done as an integral part of a programme of experimentation or testing to ascertain the characteristics of the variety or to multiply the variety on behalf of the breeder, central and/or state government, corporation, agency, organisation or a cooperative federation.

c) Using, saving, exchanging, sharing or sale of other than branded seed/propagating material under denomination as in clause 17 for commercial purposes, produced by a person from seed obtained, or descended from seed obtained by authority of the owner of that variety for seeding purposes.

d) Transportation or delivery by a carrier, advertising or stocking of the protected variety.

e) Production, sale, disposition, exchange, use, reproduction, export or import of a protected variety for bona-fide research.

f) Acts done privately or for non-commercial purposes.

Clause 28

Remedy for infringement of PVP rights

i) The affected party may seek remedy by civil action for infringement of his or her plant variety protection rights as defined Clause 26 of the Act.

ii) A defendant in action or proceeding for infringement of the rights as defined in Clause 26 may apply by way of counter-claim in the action or proceeding for the revocation of plant variety protection rights:

a) On the ground that the plant variety was not a new plant variety;
or

b) On the ground that there are sufficient facts whose knowledge to the Authority prior to the grant of these rights would have resulted in refusal of the grant of rights.

iii) In the event of such a counter-claim being filed before the Appellate Board as stated in sub-section (ii) above, the Appellate Board may if so satisfied that grounds for revocation of rights conferred through certificate or compulsory licence as the case may be exist, may fully or partially revoke those rights.

iv) The Board may refuse to award damages against a defendant in respect of the infringement of plant variety rights if the defendant/s satisfies the Board that at the time of the infringement he/they was/were not aware and had no reasonable ground for suspecting that plant variety was protected.

v) The Central Government may make regulations in respect of actions and proceedings by the Appellate Board under sub-clause (iii) including provisions prescribing the time within which the appeal may be filed before the Board under this section.

Clause 29

Declaration of non-infringement

i) A person or body who intends to do any act in respect of a variety may apply to the Appellate Board for a declaration that such an act does not constitute an infringement of a breeder's or licensee's right. —

ii) The breeder of the protected variety or the licensee as the case may be shall be the respondent to the application.

iii) The Board shall not grant the declaration unless the applicant has given the breeder of the protected variety or the licensee as the case may be, the full particulars of the act, and variety in respect of which the application has been filed, and has requested the breeder of the protected variety or licensee for the declaration for which he is applying to the Board, and the same has not been made within a reasonable period.

iv) The Board shall not dismiss an application for declaration only on the account that it was filed before expiry of such time as in the opinion of the Board is reasonable for making the declaration.

v) The cost of proceedings for a declaration under the section shall, unless the Board otherwise orders, be paid by the person seeking declaration.

vi) The validity of grant of plant variety rights or issue of compulsory licence as the case may be shall not be called into question in proceedings for declaration under this section. The grant and refusal of the declaration shall have no bearing on the question of validity of grant of rights or issue of compulsory licence.

Clause 30

Obligations of the state employee

(i) An employee of the central or state government or central or state enterprise or organisation or any other person who is paid for his service rendered on full time basis by the centre or state or by any such enterprise or organisation who breeds a variety in the period of his service or association or in consequence of his service shall intimate the same to the executive head of his Ministry or Department or organisation or to any such other level as may be prescribed about the variety developed by him/her.

(ii) In the event of a person developing a variety while being in the employment or as a consequence of employment on full time or part time basis or association as the case may be, or by virtue of association, as the case may be, with any central/state organisation as mentioned above, and upon the intimation to the employer as stated above, the employer and such person as develops a new variety may be eligible to jointly apply for registration of rights, and grant of protection thereof.

(iii) The benefits to accrue from grant of such a protection as stated in the aforesaid sub-section may be apportioned on a co-sharing basis between the employer and the employee or any such person who by virtue of his association with such an organisation is the joint applicant with central or state organisation. The extent of co-sharing shall be decided by the central or by the concerned state government.

(iv) A person who is bound under this section shall not file an application for registration of breeder rights and grant of protection outside the country without advance permission from the central or concerned state government.

Clause 31

Penal provisions

(i) Any person who obtains protection of a variety by means of grant of certificate or of compulsory licence as the case may be, by fraudulent act, or transfers for consideration the whole or part of a plant of registered variety or contravenes any other conditions imposed on him shall be liable to civil and criminal proceedings in the court having jurisdiction over the case.

(ii) Such a person shall be liable to rigorous imprisonment of one year and/or to a fine for which provision may be made in Rules.

(iii) Any person or agency contravening mutually agreed terms and conditions as referred to in clause 7 (ii) shall be liable to such civil and criminal proceedings in the Court having jurisdiction over the case, as may be deemed appropriate.

CHAPTER IV

Clause 32

Establishment of Authority

- i) The Central Government shall constitute a national Authority for plant variety protection and protection of breeders, farmers and researchers rights. The Secretary of Department of Agricultural Research and Education shall be the Ex-officio Chairman of the Authority. However, if the requirements of the Authority so merit, the Central Government may, upon being satisfied that it is necessary in public interest to appoint a full-time Chairman of the Authority, appoint a full-time Chairman. The incumbent in that case shall necessarily be a distinguished individual of outstanding talent and capability, having been the recipient of national and international acclaim in the relevant field of varietal development, seed production or research.
- ii) The Authority shall be purely professional body consisting of 11 members of which seven ex-officio members shall include the Chairman, Agriculture Commissioner, Horticulture Commissioner, Director, NBPGR, Ministry of Agriculture, Director, Botanical Survey of India, Ministry of Environment and Forest and Principal Scientific Officer, Department of Bio-technology, Ministry of Science and Technology (DBT). The Member-Secretary of the Authority, also referred to as the Registrar, shall also be an ex-officio member. Considering the highly technical and complex nature of the functions to be performed by the Authority, the other four members shall be experts in the relevant field of varietal development, seed production or research and shall necessarily be individuals of proven national and international eminence. They shall be men of outstanding stature in their respective fields.
- iii) The term of the Chairman and of Registrar will be for a period of 5 years from the date of its Gazette notification.
- iv) Members, other than those who are ex-officio may be full time or part-time depending on the requirements of the Authority and shall have a term of three years which may be extendable by two terms of like duration.
- v) The Central Government shall appoint the Registrar of Plant Varieties who shall also be Member-Secretary of the Authority.
- vi) It shall be the duty of an individual appointed on a full or part-time basis as Chairman or member or expert as the case may be, on the Authority to accept and discharge the responsibility so assigned to him or her unless the Appointing Authority accepts his or her request to the contrary.
- vii) The Central Government shall have the power to dissociate any member from the Authority at any time if it is satisfied that such a removal is in public interest.

viii) The Authority shall prescribe its Rules or procedures and for those of the panels appointed by it, if any, in so far as they are not contained in the provisions of this Act.

ix) The Chairman and members of the Authority, in the event of their being part-time incumbents, shall be entitled to an appropriate amount of sitting fee to be decided by the Appointing Authority, and to standard Government reimbursable expenses by way of travel and daily allowances.

x) The Authority shall have its Headquarters in New Delhi.

Clause 33

Functions of Authority

i) The Authority shall implement the various provisions of the Act as relate to the responsibilities and functions of the Authority as envisaged in Clause 8-12, 16-19, 21, 23-25, 31 and other relevant clauses in the most judicious and expeditious manner.

ii) The Authority shall consider and decide upon all applications filed, whether complete or not, with the Authority.

iii) The Authority shall also perform the responsibility of advising the Government on policy aspects as and when called upon by the Government to do so. Nothing, however, restricts the Authority from rendering advice to the Government on its own.

iv) The Authority shall also ensure proper maintenance of National Register of Plant Varieties (NRPV).

v) The Authority shall carry out any other functions and exercise any other power required to be so exercised for the fulfillment of the provisions of this Act.

Clause 34

Delegation

i) The Chairman may either generally or as otherwise provided in the document of delegation in writing, delegate to any other ex-officio member of the Authority all or any of the powers of the Chairman under this Act or under the Rules to be prescribed by the Authority other than his power to delegate.

ii) The power so delegated by the Chairman of the Authority when exercised by the delegate shall be deemed to have been exercised by the Chairman himself.

iii) The exercise of the delegation of powers by the ex-officio-member does not prevent the exercise of a power by the ex-officio member himself in which case the latter will prevail over the former.

Clause 35

Management of the Authority

- i) Considering the highly complex and technical nature of functions to be performed by the Authority, the Central Government shall set up the Authority only after provision of the requisite scientific, technical and administrative personnel and infrastructure as is appropriate, necessary and desirable to enable the Authority to carry out the functions prescribed for it under this Act and Rules.
- ii) The financial resources generated by the Authority through collection of fees for various acts including grant of rights and issue of compulsory licence shall form part of the internal resources of the Authority, and shall contribute to budgetary support to the Authority to facilitate implementation of the provisions of the Act by the Authority. The Central Government shall provide all necessary financial support to the Authority as is necessary to equip it for effective discharge of its functions.

CHAPTER V

PROCEDURAL REQUIREMENTS

Clause 36

Filing of Application

- i) Every application shall be filed by the breeder of a new variety or by his/her duly authorised representative or by his/her successor in respect of a variety sought to be protected by him/her or by his/her representative/successor with the Authority as the case may be. When two or more persons are the breeders, they can submit a joint application duly signed by each of them or by his/her representative or by his/her successor.
- ii) Every application shall be made to the Authority, and shall be accompanied by the prescribed fee and all relevant documents and photographs necessary in support of corroborating his claim to having developed the new variety.

Clause 37

Contents of Application

- i) The application shall contain a description of the variety bringing out its novelty, distinctness, uniformity, stability, and performance features, and shall contain all such relevant details as may be prescribed by the Authority from time to time.
- ii) The Authority may seek such records as it deemed necessary by way of proof of ownership or confirmation of assertions made in the application.

iii) The Authority may inspect the records of the breeders and of any official Seed Certification Agency or any organisation, centre or body including laboratory in the country or outside the country as evidence for examination of the application.

Clause 38

Effective date of filing application

i) An application for a certificate of plant variety protection shall be deemed to be effective from the date it is filed with the Authority in the country in complete form along with relevant documents and prescribed fees.

Clause 39

Submission of Application to the Authority

i) All applications submitted in the Authority's office whether complete in all respects or not shall be brought up for consideration before the members of the Authority for decision within such time limit as may be prescribed as per the Rules of the Authority.

Clause 40

Publication of application

i) * All applications submitted in Authority's office for registration and grant of certificate of breeders rights shall be published in the Authority's journal and displayed in a prominent public place on the Authority's premises by the Registrar within such time limit as may be prescribed by the Authority in its Rules.

The notice shall specify -

ii) the name/s or the applicant/s, the proposed denomination for the variety in respect of which application has been filed, and a description and specifications of their characteristics as submitted by the applicant. The Registrar may include any other relevant detail which he may deem fit in the notice.

Clause 41

Post Publication Procedure

i) Within 30 days of the publication of notice in the Authority's journal and its display in a prominent public place on the Authority's premises whichever is later, any person or body may file representations with the Authority, along with the prescribed fee, stating clear and precise reasons of objection to the proposed registration of the applicant's rights and grant of certificate.

ii) The objection to the registration and grant of certificate by the Authority may be made on grounds of

- a) the opponent's claim to possess the breeders right in the said variety viz-a-viz the applicant;
- b) the said variety not being new;
- c) the registration of the rights and grant of certificate to the breeder being against public interest.

iii) The Authority shall consider all such representations expressing objection to the proposed registration of rights, and grant of certificate to the breeder while considering the application for grant of certificate.

In such contested cases, the Authority shall record well-reasoned responses to each of the objections raised by the opponent along with reasons for arriving at a decision.

Clause 42

Amendment in application

- i) An applicant may request the Authority for an amendment in the application at any time before the application has been decided by the Authority (decided for this purpose meaning the date actual decision of the Authority in its meeting and not any other date) alongwith prescribed fee.
- ii) In the event of such an amendment being allowed by the Authority, a public notice to this effect in the Authority's journal and by display at a prominent place on the Authority's premises shall be issued within such time limit as may be prescribed by the Authority in the Rules.

Clause 43

Persons ineligible to acquire plant variety protection rights

- i) The following persons will be ineligible to acquire plant variety protection rights during the period of their employment, association, contract and for a period of 2 years from the date of cessation of their employment, association or contact with the Authority office or of any panel constituted by the Authority, or with the Appellate Board:
 - a) Chairman and members of Authority
 - b) Employees of Authority
 - c) Chairman of Appellate Board
 - d) Members and employee, if any of Appellate Board
 - e) Chairman of the panel, if any, so designated
 - f) Members of the panel, if any, constituted by the panel
 - g) Employees of the panel, if any.
- ii) In the event of application being filed by an institution in which members including Chairman or experts of Authority, panel constituted by Authority or Appellate Board may be employed or associated or by any

member of the family³ of the Chairman or member of the Authority, or Chairman or member of the Panel or of Appellate Board, such Chairman or member whose family member may have submitted such an application, shall not take part in the deliberations of the Authority/Panel/Appellate Board.

In the above situation, the vacancy caused in the Authority, Panel or Appellate Board may be temporarily filled up by associating another member as decided by the Chairman of the Panel/Appellate Board, and Central Government in respect of the Authority for the purpose of deciding such case/s as are referred to in the sub-para (ii) of this Section. There shall not be any requirement of any notification for temporary filling up of vacancy.

Clause 44

Contents of the Register of Plant Breeders Rights

i) The Authority shall maintain a register containing a record of the breeders rights known as the National Register of Plant Varieties (NRPV) which shall record

- a) the name and address of the holder of the right;
- b) the denomination of the variety along with a description and specification of the salient characteristics of the said variety;

In the event of hybrids, the register shall contain the denomination of hybrids along with their parent lines and the process adopted evolve the said hybrid.

- c) Any other particulars which may be deemed relevant by the Authority.

The register shall be kept at such a place where the Chairman of the Authority so directs it to be placed.

Clause 45

Publication of the Registration of Protected Variety

i) The Authority shall publish or cause to be published the details of the varieties registered and granted protection by it within such time as may be prescribed by the Authority in its Rules, in the journal. The Authority shall, part from the specification of the varieties, also publish such drawings and photographs as may be necessary to give complete information to the public on the protected variety.

ii) Any person/s or body/ies aggrieved by the act of registration or grant of protection of rights to the applicant, its modification,

³ Family in the context of Section 43 (ii) will mean mother, father, spouse, son, daughter, grand-son, grand-daughter, brother, sister and include step-father, step-mother, step-son, step-daughter, step-brother, and step-sister.

variation, limitation, revocation or surrender by grant of compulsory licence as set out in the relevant clauses of the Act, may submit representation to the Authority for reconsideration of the decision along with the prescribed fee and such documents as may be relevant to support its/their counter claims within such time as may be prescribed by the Authority in its Rules.

The grounds on basis of which the aggrieved party/parties may submit representation/s to the Authority under this Clause will be as follows:

- a) the applicant/s themselves staking claim to have the breeders rights on the said variety;
- b) the variety so registered being not new;
- c) the registration of rights and grant of protection being against public interest.

iii) The Authority shall take a decision on the representation within the time prescribed in the Rules.

Clause 46

Issue of Certificate of PVP

i) Upon expiry of processes in Clause 45 the Authority may confirm decision to register the breeders rights and consequently grant him protection thereof. Accordingly a communication will be issued to the applicant indicating the period of protection, and commensurate amount of fee to be deposited within the prescribed period.

ii) Upon payment of the prescribed fee and the deposition of the source sample in prescribed quantity at the applicant's expense in any of the specified NBPGR centres or any other centre as is accredited under Clause 7 and production of receipt thereof, the certificate shall be issued incorporating such conditions as the Authority may deem fit.

Clause 47

Correction of Certificate

i) A mistake in a certificate occurring on account of advertent or inadvertent negligence of the Authority shall be corrected upon its coming to notice and the corrected certificate thereof shall supersede the original certificate. The issue of such corrected certificate will not invite imposition of any charge.

ii) However, correction of a mistake in the certificate occurring on account of the applicant's mistake shall be done on payment of such charge as may be prescribed.

Clause 48

Payment of Fees

i) The Authority shall prescribe the amount and the scale of fee to be charged for the following acts:

- a) Filing of application as under Clause 38.
- b) Filing of representation as under Clause 41 (i).
- c) Applying for amendment in application as under Clause 41 (i).
- d) Applying for correction of certificate as under Clause 47(ii).
- e) For any other such act as the Authority may prescribe from time to time

ii) The Authority shall prescribe the amount and scale of fee to be charged from the breeder of protected variety of plant variety rights as under Clause 46 (ii).

iii) The Authority shall prescribe the amount and scale of fee to be charged from the licensee of the compulsory licence as under Clause 46(ii).

iv) The minimum amount and scale of fee for various acts as under this Clause shall be prescribed by the Central Government and shall be subject to periodical revision by the Authority as per the guidelines prescribed by the Central Government.

CHAPTER VI

Clause 49

Filing of Appeal

i) Any person aggrieved by the decision of the Authority in respect of grant of protection to him or to any other applicant or in respect of surrender or modification or revocation of right granted may if he so desires, within 30 days of such a decision being conveyed to him or being published in the Authority's journal or being displayed prominently in a public place in the Authority's premises, appeal against the decision.

ii) Action under para (i) above shall be resorted to only after remedy under Clause 45 (ii) has been availed of.

Clause 50

Appellate Board

i) Any person aggrieved on any of the accounts mentioned in Clause 49 may file an appeal to the Appellate Board constituted for this purpose by the Central Government subject to provisions of Clause 45 (ii).

ii) The Central Government shall appoint the Chairman of the Appellate Board. The incumbent shall necessarily be an individual of national and international eminence and of such outstanding calibre as renders him

suitable for presiding over an Appellate Board of the Plant Variety Protection Authority (PVPA).

iii) The Chairman of the Board shall be assisted in the discharge of his duties by a Judge of the High Court and three suitably distinguished experts drawn from the relevant fields.

iv) The Central Government may, if it so deems necessary, appoint full time or part-time members of the Board as per the requirements of the responsibilities to be discharged by the Board.

v) The Chairman and the experts/members, in the event of their being part-time, shall be entitled to sitting fee at the rates to be prescribed by the Government and to standard reimbursable expenses.

vi) It shall be the duty of the Central Government to ensure that the Board is appropriately serviced.

vii) The Appellate Board shall decide the cases before it as expeditiously as possible.

Clause 51

Implementation of the Decision

i) The decision of the Authority or/and of the Appellate Board in any matter relating to grant, surrender, modification or revocation of the breeders rights shall remain in force during the pendency of the legal proceedings unless specifically prohibited from being in operation or put under suspension by the Appellate Board.

ii) In so far as possible, and to meet the ends of justice and equity, the Appellate Authority shall hear both affected parties before issue of injunction or suspension or stay of proceedings.
