
ARTICLE 27.3(B) OF TRIPS AND PLANT VARIETY PROTECTION FOR DEVELOPING COUNTRIES

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1. Introduction:

During the last two decades, world economy has witnessed many changes. New world economy is more globalized through liberalization of markets and free trade agreements between countries. Intellectual Property laws of several developing countries also saw a major shift in order to make it TRIPs compliant. Although Intellectual Property regime predates these globalised economic order, but laws made in developing countries prior to that were mostly ineffective, unbalanced and restricted to areas like manufacturing products and processes or artistic creations. After the TRIPs agreement, developing countries were compelled to make laws on sensitive areas like foods, agriculture and biotechnological inventions. These were the main areas on which developed countries were interested as they already had strong intellectual property protection regime. Introduction of IPRs in areas like plant material raised a lot of concern for developing countries. Countries apprehended that exclusionary rights granted to Intellectual property holder could remove competition and in turn will make protected product unaffordable. Higher prices for seeds and other agricultural materials may be unfavourable to small farmers.

Article 27.3.b of TRIPs provides¹ that “Members may exclude from patentability plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological 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.” Thus Article 27.3.b require member states to allow patents for micro-organisms and non-biological and microbiological processes for the production of plants or animals and must provide

¹ Justin Malbon, Charles Lawson and Mark Davison, *The WTO Agreement on Trade-Related Aspects of Intellectual Property Rights* (Edward Elgar Publishing 2014) <<http://www.elgaronline.com/view/9781845424435.xml>> accessed 3 January 2021.

protection for plant varieties, **either by patents or by an effective sui generis system or a combination thereof.**²

Essentially what Article 27.3.b (which is also considered as ‘biotechnology clause’) does is that it defined forms of protection that member nation of WTO could take in order to grant Intellectual Property protection to developer of plant variety. A member nation could either grant patent protection or a sui generis form of protection depending on country specific requirements or may choose both at the same time. Many countries have become part of UPOV convention, which represents itself as best sui generis system of protection available for protecting plant variety. Countries which are not part of UPOV convention has largely made laws which are in line with UPOV convention. Form of protection chosen by country determine the scope of rights of commercial breeders and traditional farming practices and its economic and social impact on small and marginal farmers. Therefore, crucial choices need to be made about type and scope of IPRs conferred on plant material.

In this study, we will start our discussion with biotechnology and its efficacious and sustainable impact on agricultural production and how use of modern technology can in turn be effective in fulfilling food security requirement of nation and role of state to choose the effective protection that balances the rights of competing interested parties. Then we will analyse the biotechnology clause of TRIPs agreement and what form of protection member nations (both developed and developing countries) have opted for depending upon local conditions. We will discuss various modes of Plant variety protection available and analyse each protection to a limited extent in form of its impact that protection had on specific jurisdiction and finally conclude with its implications for developing countries.

2. Agriculture Biotechnology:

Before moving forward, it is pertinent to understand some basic issues regarding biological inventions. Biotechnology assures new set of tools for amplifying efficiency of agricultural production by making sure that produce has better safety, quantity and quality.

² This flexibility allowed by Article 27.3.b in connection with form of protection for plant varieties is reflecting the lack of consensus among developed countries during the TRIPs negotiation. Developed countries like Australia, Japan, USA wanted patent protection for plant variety whereas it was not the case with EU | Resource Book on TRIPs and Development(Cambridge University Press 2005).

These tools enable scientists to influence life processes at molecular level.³ The scope for plant biotechnology provides varied scale of methods which in turn are effective in solving many problems of developing countries. Most importantly these methods could be used to solve agronomics problem.⁴ The Convention on Biological Diversity⁵ (CBD) 1992 defined Biotechnology as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.” Hence biotechnology refers to method of using plants, animals and microbes to produce useful substances or improve existing species. The agriculture biotechnology include recombinant DNA, gene transfer, embryo manipulation and transfer, plant regeneration, tissue culture, monoclonal antibodies, and bioprocess engineering. These new technologies permit scientists to genetically modify animals and plants, to prevent diseases and pests, and to expand productivity and quality. For example, scientists are now able to develop plants with improved resistance to insects and environmental strains such as drought or cold.⁶

In this article⁷, following benefits of agricultural biotechnology has been mentioned:

- Biotechnology enable commercial plant breeders to keep track of crossings and selection and further permit useful genes to be identified and cloned and makes it possible for genes from same species to be utilized more promptly.
- Biotechnology could increase the average yield of plant by improving the ‘architecture’ of plant. This could be done by enabling the plant to absorb more photosynthesis energy or convert a large portion of that energy into grain rather than stem or leaf.
- Biotechnology could be useful in enhancing the nutritional value of cereals by increasing the existence of special nutrients or chemicals.

³ Christophe Bellmann, *Trading in Knowledge: Development Perspectives on TRIPS, Trade and Sustainability* (1st edn, Routledge 2013) <<https://www.taylorfrancis.com/books/9781849773447>> accessed 4 January 2021.

⁴ ‘Agricultural Biotechnology and New Trends in IPR Regime: Challenges before Developing Countries’ 12.

⁵ Biosafety Unit, ‘Text of the Convention’ (13 May 2016) <<https://www.cbd.int/convention/text/>> accessed 4 January 2021.

⁶ BELLMANN (N 3).

⁷ ‘Agricultural Biotechnology and New Trends in IPR Regime: Challenges before Developing Countries’ (n 4).

To understand it better we can take the example of Rapeseed mentioned in UPOV website. Originally, only the oil component of rapeseed provided a useful product, as a lubricant for steam engines. It was only when breeders started to work on the crop that it attained major importance for agriculture. Firstly, breeders reduced the glucosinolate content so that the meal could be used for feeding animals. As a following step, breeding was employed to reduce the erucic acid content so that rapeseed could be used as a source of edible oil for human consumption. More recently, efforts are continuing, and breeders are working to develop high oleic and low linoleic acid varieties with nutritional benefits for consumers.⁸

What this signify is that Role of biotechnology in ensuring adequate supply of food along with efficient nutritional value cannot be ignored. Hence to keep the momentum of research and development in this field, adequate protection in terms of Intellectual Property Rights must be available for commercial plant breeders.

3. Balancing Competing Interests: Role of developing Nations

UDHR ensures everyone right to enjoy benefits of scientific progress and its application on one hand and right to food on the other hand.⁹ If we consider these two rights in context of farmers and agricultural development, then we surely cannot overlook the contribution of scientific progress for betterment of farmers and in turn achieving food security. In this context it is important to look Article 11 of International Covenant on Economic, Social and Cultural Rights which provides that:

“ The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed:

(a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the

⁸ ‘Benefits // Web Presentation - UPOV’ <<https://www.upov.int/overview/en/benefits.html>> accessed 4 January 2021.

⁹ ‘Universal Declaration of Human Rights | United Nations’ <<https://www.un.org/en/universal-declaration-human-rights/>> accessed 2 January 2021.

principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;

(b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.”¹⁰

This formulation ensure that use of technology is part of the solution to right to food. Hence state must constantly aid in promoting scientific progress by strengthening Intellectual Property Rights of the relevant sector to ensure that scientific progress in that sector is not curtailed. Protection of IPRs to encourage innovation in agriculture is defended by argument that developer of new variety of seeds must be adequately rewarded for the investments made in research and development. Also the protection would attract international commercial seed firms into the domestic market.

Further, state also has a responsibility to ensure that strengthening Intellectual Property does not substantially alter the balance between entities who hold fast to technologies and knowledge, and those who need to use them. Governments in developing countries are confronted with coexistence of two separate seed system. On the one hand, genetically modified or improved varieties are developed by commercial plant breeders whose investments must be protected by IP rights and on the other hand, traditional seed system used by small farmers who still preserve, exchange and sell seeds that they have chosen for their own fields. The development of commercial seed sector could jeopardize traditional seed system followed by small farmers.¹¹ This was also the reason developing countries approached Intellectual property protection, in agricultural development, with a great caution which is also evident form negotiating history of Article 27.3.b of TRIPs.¹² Developing countries at that time anticipated that so called ‘biotechnology clause’ is heavily tilted in favour of developed countries and in turn large multinational companies which will incentivise professional plant breeders through monopolistic propriety rights at

¹⁰ ‘OHCHR | International Covenant on Economic, Social and Cultural Rights’ <<https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>> accessed 2 January 2021.

¹¹ Olivier De Schutter, ‘The Right of Everyone to Enjoy the Benefits of Scientific Progress and the Right to Food: From Conflict to Complementarity’ (2011) 33 Human Rights Quarterly 304 <http://muse.jhu.edu/content/crossref/journals/human_rights_quarterly/v033/33.2.de-schutter.html> accessed 2 January 2021.

¹² Resource Book on TRIPs and Development(Cambridge University Press 2005).

the cost of small and marginal farmers who would hardly have any resources to purchase 'improved' variety of seeds.

It is also important to note that even some farmers of developing countries who have sufficient resources tend to favour commercial seed market to traditional informal seeding programs due to the fact that commercial market provides reliability in terms of exhibiting expected traits and performing well in certain conditions.¹³ On the other hand, it is paramount for developing countries to also acknowledge traditional farming practices which allow farmers to save, store and share seeds for planting their next crop. Accordingly, developing countries must choose the veracious form of Intellectual Property protection in agricultural development field as such countries need to ensure adequate supply of food with the help of technological benefits and at the same time supporting modes of production that raises the income of poor farmers.

4. Forms of Protection:

As defined under TRIPs national laws must provide for patent protection or sui generis protection or combination of patent and PVP. What Article 27.3.b provides that countries choosing sui generis system has to make sure that the system is 'effective'. UPOV convention is surely an option for countries to choose but TRIPs does not mention that UPOV should be the only choice and hence WTO members can design their own system of protection. The word 'effective' could mean that countries are able to consider local and national welfare conditions. The form of protection chosen by each nation has its own impact in the globalized economy. In this section, we will analyse the various modes of protection available for nations. However, in depth study of exceptions under TRIPs or other mode of protection is not covered under this study.

One of the widely accepted form of protection to protect plant varieties is through acknowledgement of **plant breeders rights**. TRIPs provide this flexibility to member nations to develop *sui generis* form of protection best suited to their peculiar conditions. The International Convention for the protection of new varieties of Plants, developed under UPOV presents itself as best *sui generis* model for protecting rights of plant breeders by

¹³ Robin K Dillow, 'International Institute for Sustainable Development (IISD)' in S Philander, *Encyclopedia of Global Warming and Climate Change* (SAGE Publications, Inc 2008) <<http://sk.sagepub.com/reference/globalwarming/n343.xml>> accessed 3 January 2021.

recognizing protection of plant varieties which are new, distinct, uniform and stable.¹⁴ As evident, these requirements are lower as compared with what is required under patent protection (non-obviousness and utility). However, it is essential to consider few Articles of 1991 UPOV Convention and analyse them from perspective of developing countries.

UPOV convention was initially adopted in 1961 and revised later in 1978 and 1991. Countries who intend to join UPOV convention after 1999 must accede to 1991 edition. 1991 version heightens the protection of plant breeders rights in following ways:

- It increased the duration of protection from minimum of 15 years to minimum of 21 years(25 years for wines and trees).
- It extended the number of acts for which prior authorization of breeder is required.¹⁵ [(Article 14(1)]. Hence mentioned acts are prohibited without the authorization of plant breeders.
- These prohibitions extend beyond the reproductive or vegetative propagating material, and extend to harvested material obtained through illegitimate use of propagating material.[Article 14(2)]
- Further, plant breeder looking to commercialise new plant variety must take consent of breeder of variety from which new variety was *essentially derived*. [Article 14(5)]¹⁶.
- 1991 version of UPOV also limits the privilege of farmers by eliminating the options for states to authorize farmers to exchange or sell seeds saved from harvest of protected

¹⁴ 'Conditions // Web Presentation - UPOV' <<https://www.upov.int/overview/en/conditions.html>> accessed 3 January 2021.

¹⁵ The following acts in respect of the propagating material of the protected variety shall require the authorization of the breeder: "(i) production or reproduction (multiplication), (ii) conditioning for the purpose of propagation, (iii) offering for sale, (iv) selling or other marketing, (v) exporting, (vi) importing, (vii) stocking for any of the purposes mentioned in (i) to (vi), above."

¹⁶ Convention defines 'essentially derived variety' as a "variety shall be deemed to be essentially derived from another variety ("the initial variety") when (i) it is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety, (ii) it is clearly distinguishable from the initial variety and (iii) except for the differences which result from the act of derivation, it conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety."

variety. [Article 15].¹⁷

Although 1991 UPOV Convention does not bestow breeders' the same protection as patent protection does, but since adaption of above mentioned prohibitions raises a concern for developing countries. There is no concept of farmers rights that exist in UPOV. Also, TRIPs agreement under Article 27 has not mentioned about UPOV convention and in fact gave this flexibility to member nations to develop their own system of protection best suited to their conditions. At present, there are only 76 member countries who have acceded to UPOV convention¹⁸; which shows that many developing countries are still vary of the extended protection granted to plant breeders. Developing countries to protect rights of farmers and traditional practices of local communities need to allow them to save, share and replant seeds which has been specifically restricted under Article 15 of UPOV convention. Indian act is noticeable from this perspective as India while enacting sui generis system of protection, although took major portions from UPOV convention but did not just copy paste it. India enacted Protection of Plant varieties and Farmers Rights Act in 2001, in order to abide by minimum standards inflicted by TRIPs agreement. Act attempted to preserve plant varieties by giving rights to breeders, which in turn was aimed at encouraging further research in this field. Act at the same time allowed farmers to save, re-sow, exchange and sell new plant varieties grown by breeders in form of farmers rights.¹⁹ Hence Indian Act was aimed at protecting the farmers and empowering the breeder.

Another form of protection that is widely prevalent is **Patent Protection**. It grants twenty year monopoly right to patented invention. Under biotechnology clause of TRIPs agreement seeds, plant cells and DNA sequence could be patented. Under patent protection of such agricultural biotechnology products, farmers cultivating patented seeds do not have any rights over the seeds they plant. They are considered to be licensees of patented product and in turn forced to not save or exchange seeds they bought from patent-holders.²⁰ Moving forward, we will look at the current situation prevalent in certain jurisdiction with respect

¹⁷ Article mentions that “.....each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, *on their own holdings*, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety.”

¹⁸ 'UPOV - Membership' <<https://www.upov.int/members/en/>> accessed 3 January 2021.

¹⁹ 'PPV&FRAct2001.Pdf' <<http://www.plantauthority.gov.in/pdf/PPV&FRAct2001.pdf>> accessed 3 January 2021.

²⁰ De Schutter (n 11).

to plant patents.

Before moving forward, It is pertinent to note that UPOV 1991 convention allowed simultaneous patent protection to plant varieties registered under the act, which was missing in earlier versions of convention. Thus even UPOV convention promoted patent protection of plant varieties and thus shrinking the gap that exists between two forms of protection.

In USA, plant variety can be safeguarded under a system of plant patents, or utility patents or under Plant variety protection act (PVPA). New varieties of asexually reproduced plants have been protected under Plants Patent Act. Act specifies that plant variety must be novel, distinct and further invention or discovery or reproduction of such variety must be non-obvious. In 1970, PVPA was passed and sexually reproduced plants were granted protection under that regime. Further, in 1977, US Patents and Trademarks Office noted that “ any product of nature isolated from its natural form is patentable”. This step enabled patenting of products which are found in nature and when man intervenes and isolates it and identifies its utility. Later in 1980 in decision of *Diamond vs Chakrabarty*²¹, US Supreme Court ruled that any human made micro-organism falls under patentable subject matter.

As US grants multiple form of protection of plant variety, issue of overlapping claims arose with passing of time. In Federal Circuit Court of appeal in its decision in *Pioneer Hi-Bred International Inc. v. J.E.M. Ag Supply Inc*²² held that “when two statutes are capable of co-existence, it is the duty of the courts to regard each as effective”. In this case Pioneer’s has obtained patent protection as well as Plant Variety Protection for its hybrid corn seed products. Further, in *Monsanto Co. v. McFarling*²³, defendant contended that contractual prohibition imposed by plaintiff’s technology agreement restrict from using the patented seeds to produce new seeds for planting for following season violated seed saving provision of PVPA. Court in this case declined to limit the patent law by reference to PVPA.²⁴

²¹ [1980] 447 U.S. 303

²² [2000] 200 F.3d 1374

²³ [2002] 302 F..3d 1291

²⁴ M Blakeney, ‘Patenting of Plant Varieties and Plant Breeding Methods’ (2012) 63 Journal of Experimental Botany 1069 <<https://academic.oup.com/jxb/article-lookup/doi/10.1093/jxb/err368>> accessed 4 January 2021.

In EU, European Patent Convention(EPC)²⁵ takes account of UPOV Convention and in Article 53(b) excludes “plant or animal varieties or essentially biological processes for the production of plants or animals” from patentable subject matter. Similar provision has also been found in EU biotechnology directive²⁶. However this directive under Article 4.2 provides that “Inventions which concern plants or animals shall be patentable if the technical feasibility of the invention is not confined to a particular plant or animal variety”. This provision leaves open the door of patenting of plant varieties in EU. Rule 27 Implementing Regulations to the Convention on the Grant of European Patents²⁷ defines patentable biotechnological inventions as those which concern:

- “(i) biological material which is isolated from its natural environment or produced by means of a technical process even if it previously occurred in nature;
- (ii) plants or animals if the technical feasibility of the invention is not confined to a particular plant or animal variety;
- (iii) a microbiological or other technical process, or a product obtained by means of such a process other than a plant or animal variety.”

Moreover, basic difference between two systems is largely dependent upon the disclosure requirement imposed under patent law. For such biotechnological inventions disclosure in specification was not an easy task; that is the reason under UPOV requirements like distinctive, uniformity and stability were imposed. Another important point to be considered is that under patent law, discoveries are not patentable(except few jurisdictions like US) and only inventions are subject matter of concern. But, plant variety protection is possible on discoveries too. This is definitely encouraging for breeders to discover plants with appropriate mutations and get monetary benefit by using them.

Other ways in which plant variety could be protected is through **Trade secret protection and through contracts**. This system of protection has its own benefits and concerns associated with it. One of the concern is that if secret information is known, then

²⁵ European Patent Office, ‘The European Patent Convention’ <<https://www.epo.org/law-practice/legal-texts/html/epc/2020/e/ma1.html>> accessed 4 January 2021.

²⁶ DIRECTIVE 98/44/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 6 JULY 1998 ON THE LEGAL PROTECTION OF BIOTECHNOLOGICAL INVENTIONS 1998 [31998L0044].

²⁷ ‘Implementing Regulations to the Convention on the Grant of European Patents’ 93.

protection and monetary benefits would cease to a great extent. Biological materials are not proper kind of subject matters that should be protected by trade secret as enabling information in this area is evident. However, some form of biological material due to its inherent nature is readily protectable as trade secret for example hybrid corn. The reason being hybrids cannot be reproduced without access to parent inbred line.²⁸ Contracts, on the other hand could be in form of license agreements or restrictive use agreement. However, effectiveness of contracts could only be guaranteed if it is backed by any intellectual property protection.

Despite the confusion regarding form of protection, developing countries have been pressurised to patent protection for plant varieties through bilateral and regional free trade agreement. These FTAs mostly include a provision that governments must provide intellectual property rights protection for plant breeders and generally such protection tend to go beyond what is prescribed under multilateral agreements, which in turn, benefits commercial seed firms at the expense of traditional plant breeders.²⁹

Hence to sum up if we consider a proper, effective and adequate protection in plant variety in a country, then such mechanism could definitely achieve food security by furnishing biotechnologically advanced seeds. But what we must also consider is question of accessibility of such advanced seeds, i.e., which group of people would be benefitted by such provision economically in comparison of others. As explained by Sperling et al.: “While formal sector varieties are referred to as improved and the quality of the seed is certified, these varieties often yield poorly in many smallholder cropping systems. Such new varieties may not be adapted to the local agroecological conditions and farmers may not possess the management inputs (for example fertilizers and pesticides) crucial for their growth.”³⁰

5. Conclusion:

As TRIPs has granted sufficient flexibility with regard to form of protection, developing countries who have opted for UPOV Convention must have some benefits associated with it. Developing countries of Asia and Africa which are densely populated

²⁸ BELLMANN (N 3).

²⁹ Dillow (n 13).

³⁰ De Schutter (n 11).

have generally small landholders and farmers and therefore intention to join UPOV is largely limited. But at the same time such large economies like India have high ambitions of commercialized agriculture, but to take into account the interests of farmers and small landholders, enthusiasm about patent or UPOV protection still rare. However, there are small developing countries where even climatic conditions are also not supporting large scale agricultural production, then such countries due to their local conditions can afford extensive IPR protection and instead promote research in this field.

In a country where small, medium and large farms and farmers exist at the same time, making policies which is beneficial for all of them could be tedious task for any nation. Interests of commercial breeders and small farmers are bound to overlap in such situation. On the one hand, we have varied forms of Intellectual Property protection for plant breeders which has been discussed earlier. While on the other hand, there are many international frameworks which recognize rights of farmers for example: International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) recognized rights of farmers as breeders and plant propagators. The treaty states, “Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law.” Further, The UN Declaration on the Rights of Peasants and Other Persons Working in Rural Areas was adopted by the UN Human Rights Council in 2018. The declaration gives “peasants and rural persons” the right to preserve, use, exchange, and sell the seeds they produce.” This goes further than the UPOV 1991 provision for “farmers’ privilege,” mentioned above, as it is not restricted to use on a farmer’s own land and for self-consumption.³¹ There is also a UN declaration on rights of indigenous people which explicitly recognised seeds as heritage and this knowledge must be maintained, controlled and developed through use of intellectual property rights. Further, Convention on Biological Diversity also take care of fair and equitable benefit sharing arising out of utilization of genetic resources.

One of the biggest challenge before developing countries is absence of single all-embracing international framework which can guide nations for their domestic legislation. It is quite clear that supporters of extensive plant variety protection are developed countries and these countries try and pressurise other countries through bilateral agreements to adopt

³¹ Dillow (n 13).

same measures. Hence if the same framework is carried on, then farmers rights as present in domestic legislations would definitely keep enjoying legal protection but top position would be held by commercial breeders. Hence we need an International Framework which balances such competing rights of farmers and breeders to guide nations. Such a framework could not be expected to be initiated from developed countries front; rather such developing countries who have traditional genetic resources and farming practices must come together to initiate action on this front.