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## PLANT VARIETY PROTECTION: AN HISTORICAL PERSPECTIVE

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### ABSTRACT

Plant Variety Protection is a form of Intellectual Property Right granted to the breeder of new plant variety in relation to certain acts concerning the exploitation of the protected variety which require prior authorization of the breeder. Plant breeders developing new plant varieties are able to apply for different kinds of Intellectual Property Rights (IPR). However, this is the result of complex historical process that only resulted in the consideration of plants as suitable for intellectual property protection at a global scale. This paper examine overview of the evolution of Intellectual property (IP) protection for plant varieties are a highly topical and strongly debated issues, in its proposal and implementation, relating the institutional history. We have identified some main issues that were discussed along history.

## INTRODUCTION

Plant varieties were developed over centuries through the exchange of seeds and the sharing of knowledge among farmers. Even today this is the model of innovation and diffusion in agriculture that prevails in most developing countries. It is based on principles of common ownership, within a given community, and free access to materials and knowledge. However, with the development of commercial plant varieties by seed companies, a new model of production and diffusion, based on Intellectual property rights, has emerged. As a result of the obligations imposed by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), World Trade Organization (WTO) member countries have now become bound to provide for some form of Intellectual property Protection on Plant varieties (Carlos *et al.*, 2015). The evolution of Plant Breeders Rights has a long and often controversial history. At least two critical questions lay behind the introduction of PBRs as a form of Intellectual property rights (IPRs). The first concerned the rationale for introducing IPRs to cover improvements in plant varieties and the second, the form of protection to be adopted. Here, the key consideration was whether or not a patent-like protection was to be extended to new plant varieties.

Although the first multilateral system for the protection of PBRs was created through the Convention establishing the International Union for the Protection of New Varieties of Plant (UPOV) in 1961 (Biswajit, 2002). Plant variety protection is one type of intellectual property (IP) right, alongside others like patents, copy right and trademarks. Plant variety protection designed for plant varieties, and grants breeders exclusive rights on propagating material (such as seeds) of new plant varieties that they have developed. PVP relates to agricultural policy, food security, rural development, economic development, biodiversity, genetic resource conservation, and human rights (Dutfield, 2011). However, Intellectual property rights for plant varieties are a highly topical and strongly debated issue, particularly with regard to the situation in developing countries, where agricultural continues to be important source of livelihood for many people, and where food insecurity prevails (Anja *et al.*, 2015).

Intellectual Property Rights have the potential to enhance agricultural production. However, in the context of developing countries, this contribution must be analysed in a broader perspective which take in to account a number of other varieties.

The introduction of IPR in agriculture has important link with other forms of property rights directly in relevant in agriculture. In fact the question of access to biological and genetic resources for food and agriculture has been at the centre of significant debates at the international level for a number of years. Control by individual farmers, private companies and states over the genetic and biological resources they hold and related knowledge has become increasingly contentious with the progressive introduction of IPR over certain types of plant varieties for instance. While the sharing of resources and knowledge was emphasized until 1980s the new system which promotes individual appropriation has led to the formulation of new set of rules concerning control over knowledge and resources (Cullet, 2003).

The aim of this paper is to provide a historical overview of the evolution of IP protection for plant varieties considering their recommendation and implementation. The discussions were driven over the years by mainly the same concerns and, especially, some issues shaped the debate. First, granting IPR to plant breeders' aims at stimulating private investments, thus improving farmers' possibilities to use new plant varieties that are developed based on scientific breeding methods. Secondly, on the other hand, there are concerns with regard to the sustainable use of agriculture bio-diversity, the rights farmers, and also to food and nutrition security and human rights. Thirdly private investment tends to be focused on few crops of major economic importance, and on breeding strategies that do not particularly address of small-scale farmers in developing countries. Lastly, identified as the 'breeder' has the right to control the use of the plant variety. This concerns the rights of farmer to save, use, exchange and sell seed obtained from their own harvest, as far as protected varieties are concerned.

In this paper, another aspect also to discuss with the historical analysis is carried on from a different perspective. By studying the evolution of IP protection for plant varieties, the analysis aims to contribute to the some issues concerning the intellectual property rights in agriculture, firstly at the international level, while private individual appropriation of inventions through IPRs has been condoned; state control over primary resources has at least in principle been reinforced. Secondly at the national level, the role of farmers in conserving and enhancing agro-biodiversity has generally been recognized this is not necessarily translated in to specific claims over resources or knowledge.

## HISTORICAL BACKGROUND

The first legislative proposal for the protection of agricultural innovations was the Papal States Edict of 3 September 1833 concerning the declaration of ownership of new inventions and discoveries in the fields of the technological arts and agriculture. This general measure was never implemented. The inclusion of agriculture in this instrument could not be attributed to the incentivization of innovations in plant breeding, as it anticipated, by three decades, the 1865 publication of the experiments of *Mendel* on the principles of heredity and, by almost 70 years, the rediscovery of his works by *Corren*, *Von Teschermark* and *de Vries* in 1900. The significance of the publication of *Mendel's* theories is that made possible the establishment of a plant breeding industry. A significant food security aspect of this industry is that agricultural innovation shifted away from farmers to corporations.

The primary corporate objective of seed companies, to secure repeat purchases of seed, was in direct contradiction to the practice of farmers to save seed for future plantings. The subsequent history of the seed breeding industry has been characterized by the development of legal and technological means to preserve innovations and to secure repeat purchases of seed (Blakeney, 2009).

## INTELLECTUAL PROPERTY AND AGRICULTURE

The first International Intellectual Property Convention was the 1883 Paris Convention for the Protection of Industrial Property. In this instrument agriculture was envisaged as an area of enterprise in respect of which property rights could be secured, thus Article 1 (3) of the Convention had declared that:

*Industrial Property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flower and flour (Paris Convention for the Protection of Industrial Property, 1967).*

Given the state of technology in 1883, the inclusion of these agricultural subjects within the Paris Convention, was probably in the context of the protection of trademarks and indications of source. The importance of the latter was reflected in the Second Conference of Revision of the Paris Convention, held at Madrid in 1890-91, which proposed a special agreement for the repression of false indications of origin. The Possibility of including the subject of plant varieties protection within the Paris Convention was addressed, for the first time, in 1955 by a meeting of experts that had been convened to prepare the agenda for the Lisbon Revision Conference of the Paris Union, scheduled for 1958. The committee of experts concluded that it was premature to include the subject within the Paris Convention and attempts to raise the matter in the resultant Lisbon Conference by the International Association for the Protection of Industrial Property (AIPPI), the International Chamber of Commerce (ICC) and the United Nations Food and Agriculture Organization (FAO), were unsuccessful (Keith, 2005).

The first inclusion of agriculture innovations in an intellectual property statute was the US Plant Patents Act of 1930, which had been foreshadowed by the introduction in the US Congress in 1906 of a "Bill to a mend the laws of patents in the interest of the originators of horticultural products". This Bill was unsuccessful, as were similar Bills introduced in 1907, 1908 and 1910. The Plant Patent Act, created a sui-generis system of protection for agricultural innovations, confining protection to asexually reproduced plants, because of the view that sexually reproduced varieties lacked stability. The section also excluded tuber propagated plants principally because of concern that this would lead to monopolies in basic foodstuffs such as potatoes (Blakeney, 2004). Applicants for Plant Patents were required to asexually reproduce the plant in relation to which protection was sought to demonstrate the stability of the characteristics of the plant which were claimed. Section 161 required that new varieties be "distinct". The statute did not define this requirement, although the Senate Committee report accompanying the Act, state that "in order for a new variety to be distinct it must have characteristics clearly distinguishable from those of existing varieties" and

that it was not necessary for the new variety to constitute “a variety of a new species. Legislations similar to the US Plant Patent Act was adopted in 1937, South Africa in 1952 and the Republic of Korea in 1973, in an Endeavour by those countries to align their patents system with that of the USA (Rossman, 1935).

### THE ROAD TO THE UPOV

In Europe, the first formal suggestion for a *sui-generis*’ type of protection for plant varieties occurred in the Congres’ Pomologique de France of 1911. A French Decree of 5 December 1922 introduced a Register for Newly-bred plants, and a similar system of seed certification was established by the Netherlands in 1932. The first national statute that clearly anticipated the UPOV Convention was the Czech law of 1921 on the Originality of types, seeds and seedlings and the Testing of Horticultural Types. It provided the registration of plant seed types entitled the registrant to place its material in commerce under a registered indication. The horticulturalist or producer who produced the original material obtained the exclusive right to make use of a registered trademark covering the type.

A more obvious precursor to the UPOV Convention was the German law of 27 June 1953, on the Protection of Varieties and the Seeds of Cultivated Plants. Art.1 of this statute stated that the purpose of protection was to promote the creation of useful new varieties of cultivated Plants. An exception was provided for non-food Plants and Varieties of intended for export. A precondition for protection was that a variety should be ‘individualized’ and stable. This anticipated for UPOV requirements of distinctiveness and stability. The registered owner of a protected variety had the exclusive right to produce and sell seed of the variety. The law also permitted the use of protected variety for the creation of new varieties (See. The above Supra Note .8). Attempts had been made with varying degrees of success in a number of European jurisdictions to obtain patents, covering plant varieties. In Germany, there were a number of decisions of the Beschwadesent, in 1934 and 1936 that approved the acceptance of applications for patents on tobacco and lupin seed, and in relation to the ‘Seed of a Small- Seeded garden pea.’ However, these applications were withdrawn because of concerns about compromising agricultural policy that had been expressed by the Reichsnarstand. In France, a patent had been secured on a rose variety in 1949, by a celebrated rose breeder, Roger Meilland. He then pursued successful patent application in Belgium and Italy, but failed in an application in Switzerland. There were no applications in any of these countries outside the field of ornamental plants (See. The above Supra Note .6).

### PLANT VARIETY RIGHTS PROTECTION

As with other categories of intellectual property, a key role in the inclusion of agriculture innovations within the international regulatory regime was played by industry associations. The Congre’s Pomologique de France, held in 1911, had called for special protection for plant varieties. This agitation continued in the 1920s and 1930s, culminating in the foundation in Amsterdam on 17 November 1938, of the International Association of Plant Breeders for the Protection of Plant Varieties (ASSINEL). At its semmering Congress in June 1956 a resolution of ASSINEL called for an international Conference to promulgate an international system for the protection of plant varieties.

### THE PARIS CONFERENCE ON SPECIAL PROTECTION OF 1957 AND 1961

On 22 February 1957, the French Government issued invitations to 12 Western European Countries ([www.researchgate.net/publication/237396088\\_Genes\\_and\\_Plant\\_Breeding\\_in\\_an\\_IPR-led\\_World](http://www.researchgate.net/publication/237396088_Genes_and_Plant_Breeding_in_an_IPR-led_World)) to attend a diplomatic conference in Paris Conference from May 7 to 11, 1957 to consider establishing such a system. Participation was limited by the French those states who were known to have similar concerns to it on this subject. The conclusions of the 1957 Paris Conference were set down in its Final Act, adopted in May 1957. This recognized the legitimacy of breeders’ rights and established as the preconditions for protection that a variety had to be distinct from pre-existing varieties and sufficiently *homogenous* and *stable* in its essential characteristics. The act defined the rights of the breeder and acknowledged the principle of the independence of protection. At the second session of the conference, held in Paris in late 1961, the International Convention of New Varieties of Plants, or Union pour la Protection des Obtentions Ve’getales (UPOV) was adopted.

Article 4 (1) applied the draft UPOV Convention to ‘all botanical genera and species’, but it was envisaged that the Convention would have a gradual introduction. A list of 13 genera was annexed to the Convention: wheat, barley, oats or rice, maize, potato, beans, Lucerne, red clover, ryegrass, lettuce, apples, roses or carnations. Art.4 (3) required each Member State on entry in to force of the Convention to apply it to at least five genera from this list and, within 8 years, to all the listed genera.

### ADDITIONAL ACT OF 1972

Article 27 of the 1961 Convention provided for its period review, with the first revision scheduled for 1972. Within the first 19 years of its life, the UPOV Convention had attracted the accession of only 12 states. A reason identified for the reluctance of states to adopt the Convention was the stringency of its provisions, in particular the obligation of states to select either patent or UPOV-style protection for plant varieties but not both. Art. 2 of the Convention to permit the accession of countries like the USA, which had laws allowing the double protection of varieties under paten and *sui-generis* laws The list of genera, annexed to the 1961 Convention, was removed. This list had contained mainly species from temperate climates. Under the new Art. 4, Member States agreed to apply the Convention to at least five genera or species, rising to 24 genera or species within 8 years. Additionally grace period was introduced to permit the marketing of varieties twelve months prior to an application for PVP (Blakeney, 2017).

### THE REVISION OF 1991

A further broadening of the UPOV Convention occurred with the 1991 Revision. The 1991 Act requires states to protect at least 15 plant genera or species upon becoming members of the Act, and extend protection to all plant varieties within 10 years. In response to demand form breeder in industrialized countries, the 1991 Act required signatory states to make dual protection mandatory. The 1978 text merely permitted states to grant dual protection if they so desired. Through the definition of a ‘breeder’ in Art.1 (c) as including a ‘person who bred, or discovered and developed, a variety’, the 1991 Act makes

explicit the requirement that even discovered varieties should be protected. The 1991 Act recognizes the right to breeders to use protected varieties to create new varieties. However, this exception is itself restricted to such new varieties as are not 'essentially derived' from protected varieties. The drafters added this restriction to prevent second generation breeders from making merely cosmetic changes to existing varieties in order to claim protection for a new variety. The concept of essential derivation has proved highly controversial in practice, however. Breeders have been unable to agree a definition of the minimum genetic distance required for second generation varieties to be treated as not essentially derived from an earlier variety and thus outside of the first breeder's control (See *ibid* Note 14.)

From the perspective of farmers, probably the most contentious aspect of the 1991 is the limitation of the farmer's privilege to save seed for propagating the product of the harvest they obtained by planting a protected variety 'on their own holdings', 'within reasonable limits and subject to the safeguarding of the legitimate interest of the breeder'. Unlike the 1978 Act, the 1991 version of the farmers' privilege does not authorize farmers to sell or exchange seeds with other farmers for propagating purposes. This has been criticized as inconsistent with the practices of farmers in many developing nations, where seeds are exchanged for purposes of crop and variety rotation. A number of developing countries have resisted adopting the 1991 Act as the standard for PVP laws. The foreign ministers of the Organization for African Unity issued a statement at a January 1999 meeting calling for a moratorium on IPR Protection for plant varieties until an Africa-wide system had been developed that granted greater recognition to the cultivation practices of indigenous communities. However, at a subsequent meeting of the Organization *Aricaine de la proprie'te' intellectuelle* (OAPIO), patent official from sixteen francophone African recommended that countries adopt the 1991 Act (Helfer, 2014).

#### PLANT VARIETY PROTECTION AND THE TRIPS AGREEMENT 1994

Probably the most notorious requirement of the TRIPS Agreement is that in Art.27.3 (b), which requires that Member 'shall provide for the protection of plant varieties either by patents or by an effective 'sui-generis system or by any combination thereof.' Art 8 of Agreement, in enunciating the principles which are to animate it, provides that 'consistent with the provisions of the Agreement'; signatories may 'adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development. It would not be too difficult to construct an argument that the obligation to protect plant varieties might to be inconsistent with a given nation's need for food security. However, the opening words of Art.8 suggest that in case of a conflict between these provisions, the obligations within the Agreement, such as Art. 27.3 (b), are paramount (Intellectual Property, Traditional knowledge and Genetic Resources).

#### PLANT VARIETY PROTECTION

PVP gives the breeder exclusive rights to a new and distinct plant varieties so that the breeder can exploit the breeder is defined by the 1991 UPOV (International Union for the

Protection of new varieties of Plants) Convention as the person who bred, or discovered, and developed a variety. Therefore, protection is not limited to breeders who produce varieties as a result of crossing g parent plant and selecting from progeny. The term breeder also includes a person who discovers a mutation and converts that discovery in to a cultivated variety by a process of selective propagation. Discovery itself, however, does not constitute breeding. The PVP Act of U.S.A, enacted in December 1970 and amended in 1994, provides legal IP Rights Protection to developers of new varieties of plants that are sexually reproduced (by seed) or are tuber propagated. Bacteria and fungi are excluded. The PVP Act is administered by the United States Department of Agriculture (USDA). A certificate of protection is awarded to an owner of varieties after an examination shows that the variety is new and distinct from other varieties and is genetically uniform and stable through successive generation. The term of protection is 20 years, for most crops and 25 years for trees, shrubs, and vines (Arshadeep Kaur sidhu, 2011).

#### PLANT BREEDERS RIGHTS (PBR)

PBR is a patent-like system that allows the plant variety owner to prohibit specific unauthorized uses of the variety. PBR apply only to plants, and hence are among the class of sui-generis system, that is special purpose systems. PBR, like patents and other forms of IP law are form of national legislation. That is, protection applies only in countries where protection has been sought and PBR granted under the TRIPs Agreement signatories of WTO (Currently about 150) are commercial to comply with the TRIPs requirements of a harmonized minimum level of IP rights protection. Although the TRIPs text is quite exhaustive in most regards, only a single sentence refers to PBR. Article 27.3 (b) reads in part, that WTO members must provide plant variety patents, 'an effective sui-generis system'. Most countries new to protecting plants are opting for PBR over patents (Lesser, 2007).

#### SUI-GENERIS SYSTEM

A *sui-generis* (of its own kind) system of protection is a special system adapted to particular subject matter, as opposed to protection provide by one of the main systems of intellectual property protection, e.g. the patent or copy right system. A special law for the protection of integrated circuits is an example of *sui-generis law*. In this case, it means countries can make their own rules to protect new plant varieties with some form of IPR provided that such protection is effective. The Agreement does not define the elements of an effective system. One possible sui-generis system likely to be recognized as effective is the UPOV system of Plant Breeders' Rights (PBRs) this initially developed in Europe, has now been adopted by the industrialized countries, and is also being adopted by an increasing number of developing countries (Geoff, 1999). The "effective *sui generis* system" referred to in Article 27.3(b) of the TRIPS Agreement is clearly intended to be an alternative to the patent system. In this connection, it is useful to recall that the UPOV system was also established, in 1961, as a special form of protection, in lieu of the patent system, covering only plant varieties and specifically adapted to plant varieties. The importance of Sui-generis system is Firstly, the sui generis system presents the possibility of an additional option of choosing 'new forms of intellectual property rights' which are not necessarily based on the existing ones such as patents or plant breeder's rights. Secondly, the

idea of sui generis protection provides developing countries with the 'conceptual justification' to look beyond established categories of IPRs and protect certain categories of inventions in accordance with the specificities of the field concerned and the distinct needs of individual countries. Thirdly, it provides a foundation for integrating intellectual property rights and sustainable development (Dang Rohan & Chandni Goel, 2001). The scope of protection could be limited to cover only the reproductive parts of plants, or could be extended to include also harvested plant materials. Second, the TRIPs agreement does not prohibit the development of additional protection systems, nor does it prohibit the protection of additional subject matter to safeguard local knowledge systems and informal innovations as well as to prevent their illegal appropriation. Several elements could be added, such as community gene funds and the establishment of mediation procedures (public defender) for the protection of local interests or local registers (Blakeney, 1999). Finally, this paper an historical analysis of the evolution of Intellectual propriety protection for plant varieties uncovered in several debates around theoretical issues on plant variety protection. In some main discussion seems to be still unsolved and possibly further complicated by recent technological changes.

## Conclusion

An historical perspective of plant variety protection right to the breeder still it is controversial in developing countries, whether it is form of patent or effective *sui-generis* legislation for PVP in line with their commitments under Article 27.3. (b) of the TRIPs Agreement. This Article extends Intellectual Property Rights to developing country agriculture and brings their regimes of IPP in line with those in developed countries. Intellectual property right in agriculture contentious issue in the developing countries. There is however, an important difference between the two sets of countries in the process of extending PVP. While the latter evolved the system of protection after decades of debate involving local stakeholders, the formers have to do without any such process and within the relatively short time frame provided for in the TRIPs Agreement. The Agreement does not define what constitute an "effective" sui-generis system. This offers the flexibility to WTO Members to devise PVP systems which suit their interest to the fullest extent. This Article mainly focused the overview of historical perspective of plant variety protection, its proposal and their implementation, some issues are driven and debates are raised in development of plant variety protection is form of intellectual property right to the breeder.

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