

Intellectual Property Rights (IPR) : Legal and Policy Concept of Protection of Plant Variety and Plant Breeder's Right

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Abstract

Intellectual property represents products of the mind and intellect. The rights given to a creator for the protection of its creation and economic benefits from it are called intellectual property rights. IPRs intend to promote research and development by providing incentives for investments in the creative process and encouraging access to inventions produced elsewhere. Different forms of IPR are patents, copyrights, trademarks, trade secrets, industrial designs, geographical indications, traditional knowledge, and protection of plant varieties (breeder's right). On a global scale organizations like GATT (General Agreement on Tariffs and Trade), WTO (World Trade Organization), WIPO (World Intellectual Property Organization), and TRIPS (Trade Related Aspects of Intellectual Property Rights) are progressively working for IPRs. UPOV (International Union for the Protection of New Varieties of Plants) established in 1961 aims to provide and promote an effective system of plant variety protection. The development of new and improved varieties of plants benefits the economy by increasing the marketability of crop produce and improving rural income along with overall economic development. Moreover, it favours the environment by increasing productivity and minimising the use of land and other scarce resources and benefits society in general by providing a better product quality. Therefore, it is crucial to provide an effective system of plant variety protection (PVP), which encourages the development of new plant varieties along with protecting the breeders and farmers interest. India has sui generis system compatible with UPOV Act, 1961 for protection of plant varieties. An act named as Protection of Plant Varieties and Farmers' Right (PPV&FR) was enacted on October 30, 2001. Act aims at establishment of an effective system for protection of plant varieties, farmer's rights and breeders' rights and to encourage the development of new varieties of crop plants. Newly bred varieties, extant varieties, farmers' varieties, varieties of common knowledge, essentially derived varieties (EDV) and transgenic varieties may be comes under protected varieties. For a variety to be registered it must confirm Novelty, Distinctiveness, Uniformity and Stability (DUS) as well.

Keywords: IPR, Policy, Protection, Plant Protection, Breeder

Introduction

Enhanced competitiveness together with increased production should be the target for various agricultural commodities having export prospects. These include high value commercial crops, animal breeds, spices, medicinal and aromatic plants, and products like milk, meat, fish, leather and wool. Effective implementation of IPR related legislations in place and those in the offing is expected to have significant impact on the course of agricultural R&D in India. Therefore, it is considered important to identify and develop various national policy options for addressing the emerging areas of IPR in agriculture, including the access to various protected technologies to the Indian farmers, entrepreneurs and users.

The recognition of agriculture as a rule-bound enterprise of investment and profit making became obvious with its inclusion in the intergovernmental negotiations for the General Agreement on Tariffs and Trade (GATT) for the first time in the Uruguay Round (1986-1994). This round led to the establishment of the World Trade Organization (WTO) in January 1995. Now, the WTO has at least half a dozen intergovernmental agreements that directly affect agriculture. These are, Agreements on Agriculture (AoA), Applications of Sanitary and Phytosanitary Measures (SPS), Technical Barriers to Trade (TBT), Anti-Dumping, Subsidies and Countervailing Measures, Safeguards, and Trade Related Aspects of Intellectual Property Rights (TRIPs).

An understanding of the implications and the application of these agreements, particularly the TRIPs, has become more important than ever before at every stage of planning, research, upscaling and commercialisation

of agricultural technologies. The TRIPs Agreement is covered in an elaborate document—comprising 73 articles in 7 parts, namely, (i) General provisions and basic principles, (ii) Standards concerning availability, scope, and use of IPRs

(iii) Enforcement of IPRs, (iv) Acquisition and maintenance of IPRs and related *inter partes* procedures, (v) Dispute prevention and settlement, (vi) Transitional arrangements, and (vii) Institutional arrangements. There are seven forms of intellectual property rights recognised in the TRIPs Agreement. These include, Copyright and related rights, Trademarks, Geographical Indications, Industrial Designs, Patents, Layout-Designs (topographies) of integrated circuits, and protection of undisclosed information.

In the days to come, IPR is likely to dominate the agricultural scenario irrespective of whether the technology in question is conventional or modern—biotechnology or information technology. Countries are required to enact/amend their domestic laws in accordance with the TRIPs Agreement and the between-country disputes have to be resolved at the WTO platform, according to its dispute settlement procedures. In this context, it is important to have in place well enacted laws corresponding to the different forms of IPR that not only keep in view the basic needs of the country but are also capable of tackling complexities, which might arise at the international level.

It is important to understand that developed economies are likely to benefit greatly from an organised IPR system due to their inherent capabilities to capitalise on such opportunities. Realisation of the gains, principles of equity and the need for a level-playing field is a real challenge. Nevertheless, in keeping with the spirit of the intergovernmental agreements, application of IPR and also maintenance of equity and social justice must be effectively addressed at the national level.

Intellectual property (IP) refers to the Creation of the mind which has some commercial value such as inventions, literary and artistic works, symbols, names, images and designs used in commerce. It is Intangible in nature. A Tangible property is which one can see, feel and use e.g. land. When IPs are expressed in a tangible form they can also be protected as INTELLECTUAL PROPERTY RIGHTS (IPR).

IPRs are protected by the following legal mechanism

- Patent
- Copyrights
- Trademarks
- Trade secrets
- Geographical Indications
- Designs
- Layout design of integrated circuits

PATENT is a grant of an “exclusive right” for an invention by the Government to an inventor to prevent others from practising i.e. making, using or selling the invention in exchange for full disclosure of the invention. Patent Cooperation Treaty and International Patenting, Paris Convention 1883, and Budapest Treaty are different treaties and convention for Patent protection at world level.

INDUSTRIAL DESIGNS refers to shape, configuration, pattern, ornamentation or composition of line and colours applied to any article in 2D or 3D. Industrial Design protects aesthetic aspect of an article. Hague Agreement is an international registration system for protection of industrial designs. In India, it is protected under Design Act, 2000 & Design Rules, 2001. The duration of protection is 10 years.

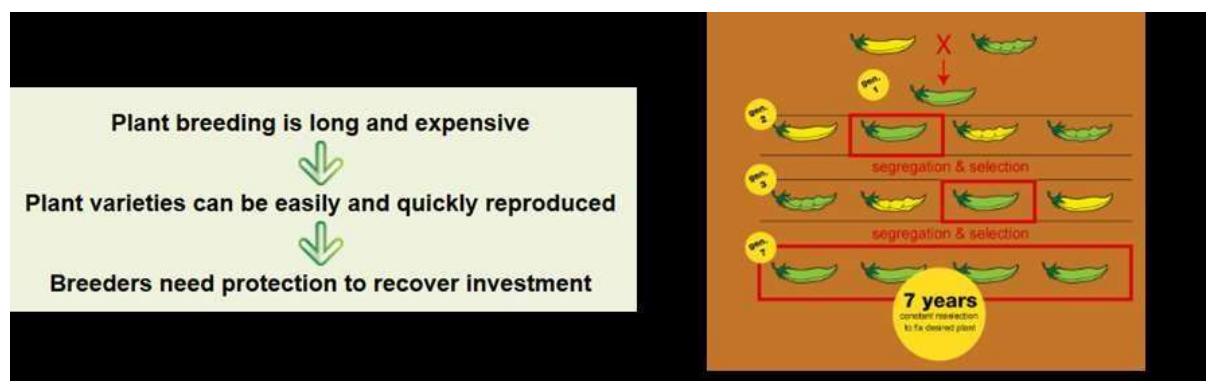
COPYRIGHT –Right to reproduce or make copy of his/her creations i.e., original literary, dramatic, musical and artistic works; Computer Software's, Engineering Drawings, Cinematographic films and Sound recordings. The Berne Convention for the protection of Literary and Artistic Works (9 sep, 1986) is for international protection of copyright and in India Copyright Act, 1957

TRADEMARK may be a word, symbol, label, design or device or combination of colours, shape distinguish the goods or services of one enterprise from those of others. Madrid Agreement and Madrid Treaty (1989) for international registration of Trade Marks. In India Trade Marks Rights are governed under Trade Marks Act, 1999 & Trade Marks Rules, 2002 (amendment) 2012.

GEOGRAPHICAL INDICATIONS refers to country or place of origin of the product e.g. Darjeeling Tea. A given quality, reputation or other characteristics of such goods are essentially attributable to its geographical origin. It provides a particular indication (mark and/or logo) and helps a purchaser or user of the goods to identify the goods manufactured in a particular geography. Paris convention (1883) and Lisbon Agreement for the Protection of Appellation of Origin and their International Registration are global treaties and convention for GI. In India Geographical Indication Of Goods Act 1999 & Geographical Indication of Goods Rules ,2003 protects GI.

The essence of plant breeding is the discovery or creation of genetic variation in a plant species and the selection from within that variation of plants with desirable traits that can be inherited in a stable fashion. The development of new and improved varieties of plants benefits the economy by increasing the marketability of crops and improving rural income and overall economic development. Moreover, it favours the environment by increasing productivity and minimising the use of land and other scarce resources and benefits society in general by providing a better product quality. Therefore, it is crucial to provide an effective system of plant variety protection (PVP), which encourages the development of new plant varieties and which is not impaired by the effects of other intellectual property (IP) systems.

Plant variety protection (PVP)



The PVP system was established in 1961 as a *sui generis* protection system by the International Convention for the Protection of New Varieties of Plants (the “UPOV Convention”). The Convention sets out the basis for UPOV members PVP Offices of UPOV members. 2 to provide PVP by granting an IP right: the breeder’s right. To obtain protection, individual applications for registration must be filed with the national or regional authority. The UPOV Convention simultaneously established an intergovernmental organization, the International Union for the Protection of New Varieties of Plants (UPOV). UPOV is, *inter alia*, in charge of developing the rules to be applied to the examination of new plant varieties. The UPOV Convention foresees a minimum term of protection for plant varieties of 20 years from the date of grant of the PVR. This minimum duration of protection is extended to 25 years in the case of trees and vines.

The provision for Plant Variety Protection (PVP) made under the TRIPs Article 27.3(b), allows countries to provide such protection either through patent, or an effective *sui generis* PVP system or any combination of the two. Patents, in India, are so far available to new processes but not to all products *per se*. In agriculture, patents may be obtained for processes related to agrochemicals, growth promoters and regulators, vaccines, drugs, hides and wool, dairy technology, food technology, fuel and biogas production, bioreactors, standardization of various laboratory protocols, environment management, etc. A plant variety can be protected if it is **new, distinct, uniform and stable**. Furthermore, it should be identified with a suitable denomination and the registration fees must be paid.

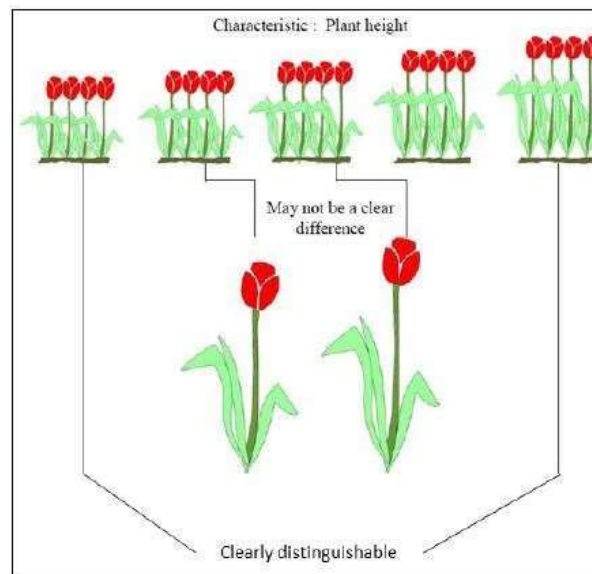
Novelty

The novelty requirement is a commercial concept, linked to the availability of the plant material on the market for its commercial exploitation by the right holder or with its consent. The requirement is fulfilled if, at the date of application, the propagating (i.e. variety constituents) or harvested material of the plant variety have not been sold, or otherwise disposed of, to others within certain periods in specific territories:

- Within 1 year in the territory in which the application has been filed, or
- Within 4 years in other territories, or 6 years in the case of trees and vines.

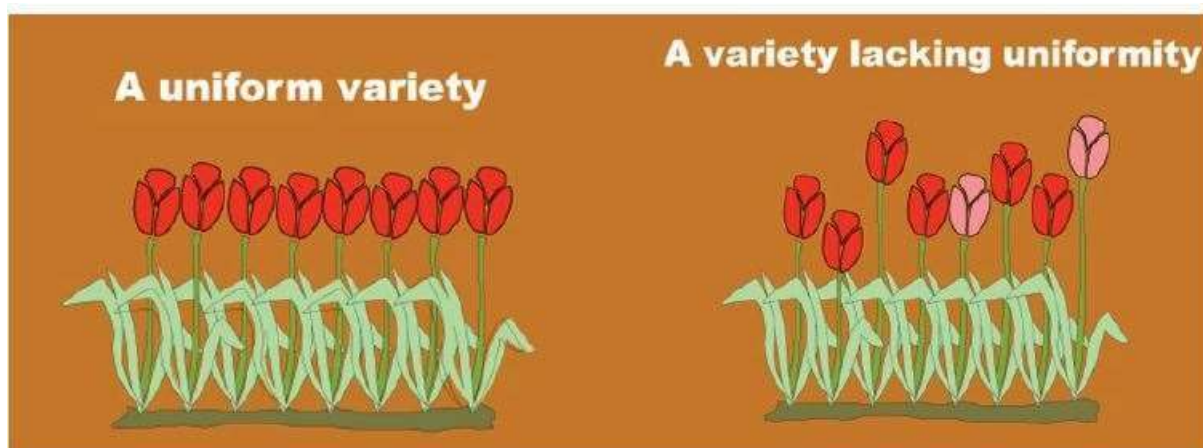
Distinctness

The variety should be clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of filing the application. The concept of common knowledge comprises all existent varieties within the same species. In order for a plant variety to fulfil this requirement, its phenotypic characteristics shall be different from those of the varieties of common knowledge. These characteristics may have direct commercial relevance like the flower or fruit colour. However, this is not a required criterion and it is often not the case.



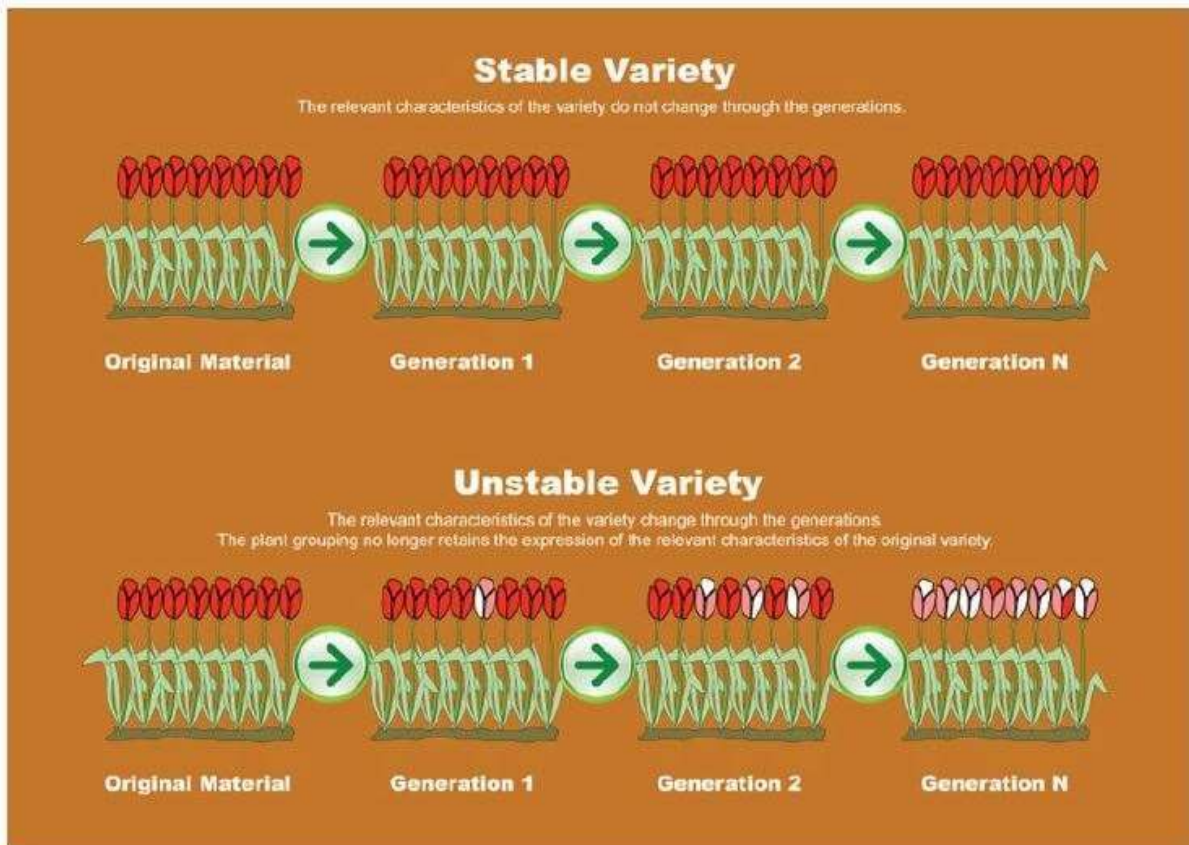
Uniformity

The variety shall be sufficiently uniform in the expression of those characteristics which are included in the examination for distinctness, as well as any others used for the variety description, subject to the variation that may be expected from the particular features of its propagation. This expected variation means that when testing the uniformity requirement, only a limited number of off-type individuals are allowed for the relevant characteristics of the variety in one cycle of propagation. Those relevant characteristics shall be the result from a given genotype or combination of genotypes and must be sufficiently consistent and repeatable in a particular environment or after repeated propagation. The type or way of propagation is taken into account because it may lead to different standards, like hybrids.



Stability

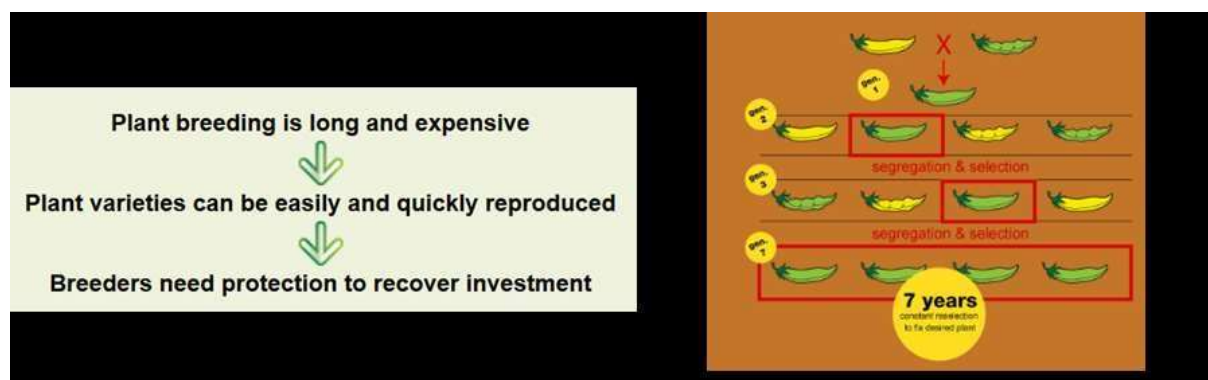
The plant variety shall be expressed in the same way, meaning that its relevant characteristics shall remain unchanged after repeated propagation. Therefore, in practice, stability is usually assumed based upon the assessment of uniformity



Variety denomination

The denomination serves as the identifier of the variety in the market to avoid confusion as to which plant material is being sold.

Anybody making the variety constituents of a protected variety available for commercial purposes must use its variety denomination, even after the expiration of the IP right on the variety



Breeders' Right

Under the UPOV convention the breeders' right extends to:

- i. The protected variety
- ii. Varieties not clearly distinguishable from the protected variety
- iii. Varieties whose production requires repeated use of the protected variety

iv. Essentially derived varieties

Essential characteristic means such heritable traits of a plant variety which are determined by the expression of one or more genes of other heritable determinants that contribute to the principle features, performance or value of the plant variety. Essentially derived variety in respect of a variety (the initial variety), shall be said to be essentially derived from such initial variety when it is predominantly derived from such initial variety, or from a variety that itself is predominantly derived from such initial variety, while retaining the expression of the essential characteristics that results from the genotype or combination of genotype of such initial variety is clearly distinguishable from such initial variety and conforms (except for the differences which result from the act of derivation) to such initial variety in the expression of the essential characteristics that result from the genotype or combination of genotype of such initial variety.

Plant breeders' right (PBR), also known as plant variety rights (PVR), are rights granted to the breeder of a new variety of plant that give the breeder exclusive control over the propagating material (including seed, cuttings, divisions, tissue culture) and harvested material (cut flowers, fruit, foliage) of a new variety for a number years. The UPOV 1978 Act requires its signatories to protect a variety's reproductive or vegetative propagating material or other marketed products, with the exception of ornamental plants that are used for commercial propagating purposes. Like its predecessor, the 1991 Act recognizes the right of breeders to use protected varieties to create new varieties. However in the 1991 Act extensive additions to the 1978 Act were made. The breeder's prior authorization must be obtained for the use of reproductive or vegetative propagating material of the variety for (1) production or reproduction (2) conditioning for the purpose of propagating material of the variety (3) offering for sale (4) selling or marketing (5) Exporting (6) Importing and (7) stocking

Duration of Breeder's Right

Under UPOV 1978 Act the protection is granted to new varieties for a period of 18 years for trees and vines and 15 years for all others. The 1991 Act extends the term of protection to 25 years for trees and vines and 20 years for all other varieties.

Limitations of Breeders' Right

The breeder's exemption is a unique and key feature of the PVR system that ensures the safeguard of free access to protected varieties for further breeding and commercialization. The resulting variety can be protected and commercialized without any obligation towards the right holder of the protected variety. By allowing free access to protected varieties, the breeder's exemption guarantees the continued creation of improved varieties, safeguarding the access to genetic variation

The farmer's privilege is provided in the UPOV 1991 Act as an optional exception for UPOV members. This means that the members of the Union can choose whether to implement it into their national PVR legislations. The PVR is restricted, within reasonable limits and provided that the legitimate interests of the right holder are safeguarded. The provision usually regards certain crops for which there has been a common practice of farmers saving their own seeds, i.e. seeds are produced on a farm for the purpose of re-sowing on the same farm and not for sale purposes. The provision allows each member of the Union to take into account this practice when providing variety protection PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHT ACT, 2001 (PPV&FR)

India is a signatory to WTO agreements and it has to abide by the TRIPS regulations. As per article 27.3 (b) of the TRIPS which demand that member countries should protect their plant varieties either by patent or an effective system sui generis protection or a combination of these two. In this context India chose a sui generis system for protection of plant varieties and farmers' right (PPV&FR) Act 2001 was enacted in India on October 30, 2001. The rules under the Act were notified on September 12, 2003. Central Government established the PPV&FR Authority on 11 th November, 2005 with its Head Office located at Delhi. The PPV&FR Act is TRIPs compliant and compatible with UPOV system of plant variety protection. But India is not a member of UPOV convention.

This Act may be called the Protection of Plant Varieties and Farmers' Rights Act, 2001.

(2) It extends to the whole of India.

(3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint; and 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.

As per PPV&FR Act,2001 a '**variety**' means a plant grouping except microorganism within a single botanical taxon of the lowest known rank, which can be :

- i. Defined by the expression of the characteristics resulting from a given genotype of that plant grouping;
- ii. Distinguished from any other plant grouping by expression of atleast one of the said characteristics and
- iii. Considered as a unit with regard to its suitability for being propagated, which remains unchanged after such propagation, and includes propagating material of such variety, extant variety, transgenic variety, farmer's variety and EDV

Types of Varieties Eligible for Protection

Extant varieties

- Notified under *Section 5 of Seed Act, 1966*
- Varieties of common knowledge e.g. JK Vijay (wheat), Vivek Sankul Makka-11 (maize)
- Farmers' varieties e.g. Tilak Chandan, INDRASAN, Hansraj, rampur local& kudrat 9 Newly bred/developed varieties (Novel) e.g. HD-3226 in wheat

Essentially Derived Varieties (EDV) e.g. Improve Pusa Basmati 1 Genetically Modified Varieties (GM) e.g Bt cotton

- *Does not contain any technology that is injurious to the life or health of human being / animal / plants, including Terminator Technology*

Types of Varieties not Eligible for Protection

Any variety where prevention of commercial exploitation of such variety is necessary to protect public order or public morality or human, animal and plant life and health or to avoid serious prejudice to the environment

Or any varieties which has terminator technology

Or any variety belonging to the species or genera which is not listed in the notification issued by the Central Government

As such those plant variety present in wilderness cannot be registered, under PV&FR Authority

Eligibility Criteria for Registration

- **Novelty***
- **Distinctiveness**
- **Uniformity**
- **Stability**

*Not applicable for extant-notified/ farmers' varieties

DUS testing is the criteria on the basis of which the Breeders' Right will be granted to a variety by the Authority. DUS test will be used as one of the main criteria for deciding the novelty of a variety. Present system of DUS testing involves the comparison of candidate variety with the existing referred varieties by recording the phenotypic characters, which are (mostly) morphological and physiological in nature. DUS testing will be conducted for two seasons at two locations for new variety. For variety in common knowledge (VCK) and farmers variety test is conducted at two location and one season.

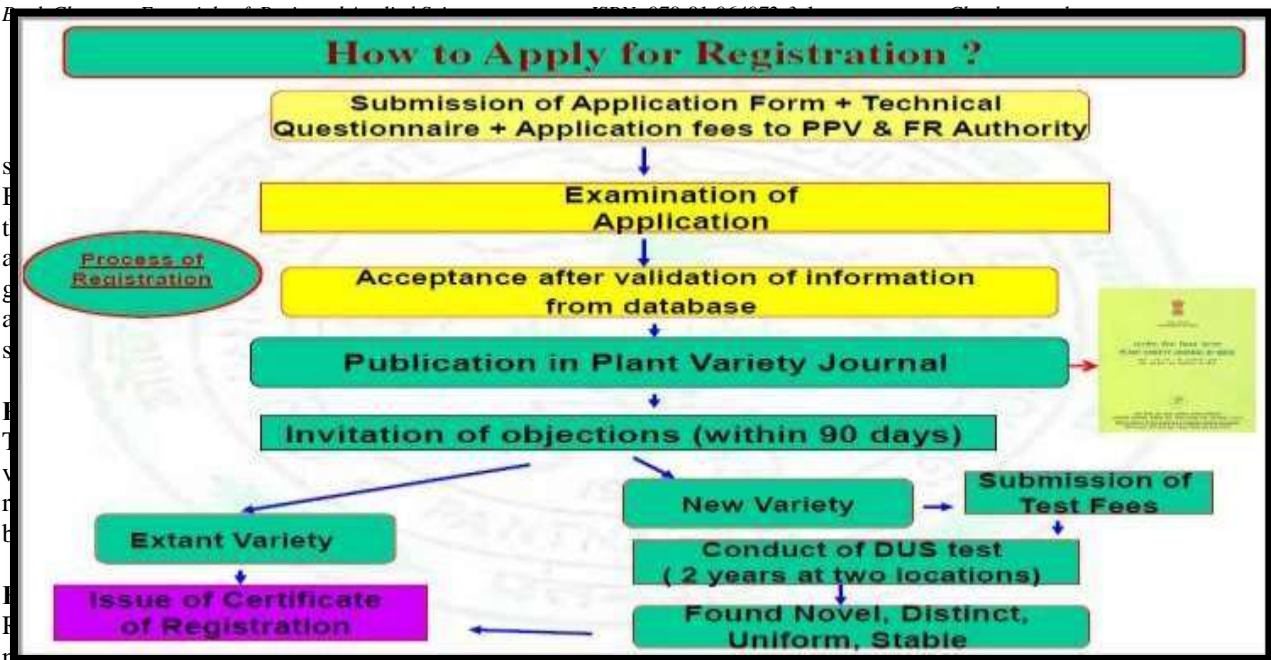
Any person claiming to be the breeder or his successor or assignee or authorized person or farmer or group of farmers or any University or Publicly Funded, Agriculture Institute (e.g. ICAR/SAUs), claiming to be the breeder of variety can apply for registration of a variety.

In case of SAUs the applicant will be University with Scientist (s) indicated as breeder

Under this Act varieties are protected with Breeders' Right, Researchers' Right and Farmers' Right

Breeders' Right

The certificate of registration for a variety issued under this Act shall confer an exclusive right on the breeder or his



Recognition from Gene Fund and compensation for the loss. Farmers do not have to pay any fees for registration etc. and also get protection against innocent infringement.

Fee for registration for different types of variety:

S. No.	Type of variety	Fees for Registration
1.	Extant Variety notified under section 5 of the Seeds Act, 1966	Rs. 1000/-
2.	New Variety/Essentially Derived Variety (EDV)	Individual Rs. 5000/- Educational Rs. 7000/- Commercial Rs. 10000/-
3.	Extant Variety about which there is common knowledge (VCK)	Individual Rs. 2000/- Educational Rs. 3000/- Commercial Rs. 5000/-

Community Rights

It is compensation to villagers or local communities for their significant contribution in the evolution of variety which has been registered under the Act. Any village or local community in India can claim the credit for the contribution to a particular plant variety registered as a new plant variety.

Compulsory License

In the Act a provision of compulsory license has also been put. According to this, after expiry of three years from the date of issue of certificate of registration of a variety, after date of expiry of three years from the date of issue of

certificate of registration of a variety, any person interested can claim in an application to the authority alleging that reasonable requirements of the public for seeds or other propagating material has not be satisfied or the seed is not available to the public at a reasonable price and pray for the grant of a compulsory license to undertake production, distribution and sale of seed of that variety.

Certificate of registration

Once the variety has been tested for its features then the Registrar of the Authority will issue the certificate of registration. It shall have the validity of nine years initially in case of trees and vines with renewal up to a period of 18 years. For other crops certificate of registration will be issued for six years initially with renewal up to 15 years. In case of extant varieties the validity period is 15 years from the date of notification of that variety by the central government under sec 5 of Seeds Act 1966.

Infringement and Penalty

Any of the following may be a case of infringement under the PPV&FR Act:

- (a) If a person who is not the breeder of a variety registered under this Act or a registered agent or registered licensee of that variety, sells, exports, imports or produces such variety without the permission of its breeder or within the scope of a registered license or registered agency without permission of the registered licensee or registered agent, as the case may be;
- (b) If a person uses, sells, exports, imports or produces any other variety giving such variety, the denomination identical with or deceptively similar to the denomination of a variety registered under this Act in such manner as to cause confusion in the mind or general people in identifying such variety so registered.

Penalty for applying any false denomination to a variety or using the false name of a country or place or false name and address of the breeder of a variety registered under this Act in the course of trading such variety, is punishable with imprisonment for a term which shall not be less than three months but which may extend to two years, or with fine which shall not be less than fifty thousand rupees but which may extend to five lakh rupees, or with both. Penalty for selling varieties to which false denomination is applied, etc.—Any person who sells, or exposes for sale, or has in his possession for sale or for any purpose of trade or production or any variety to which any false denomination is applied or to which an indication of the country or place in which such variety was made or produced or the name and address of the breeder of such variety registered under this Act has been falsely made, is punishable with imprisonment for a term which shall not be less than six months but which may extend to two years, or with fine which shall not be less than fifty thousand rupees but which may extend to five lakh rupees, or with both.

National Gene Bank and Field Gene Bank

As per the Act it is mandatory to maintain the seed samples/ propagating material of registered plant varieties up to a period of protection provided to candidate variety and also to address the issues for intellectual property of plant varieties including legal requirements such as infringement of plant breeder's rights, compulsory license etc. Authority has established the National Bank at Old Campus of National Bureau of Plant Genetic Resources (NBPGR), New Delhi. Authority has established four Field Gene Banks at Dapoli, Maharashtra (for tropical and sub-tropical crops), Ranchi, Jharkhand (Eastern ecosystem), Mashobra, H.P. (for temperate crops) and Jodhpur, Rajasthan (for arid ecosystem).

National Gene Fund

The central government has constituted a Fund called the National Gene Fund which would be enriched through the benefit sharing received in the prescribed manner from the breeder of a variety or an essentially derived variety: the annual fee payable to the Authority by way of royalty by the breeders of the registered variety and the compensation deposited in the Gene Fund.

Benefit Sharing

The Act provides for benefit sharing involving registered varieties. It first applies specifically to EDVs. In the second, any village local community can claim benefit for contributing to the development of a variety registered under the Act.

Plant Varieties Protection Appellate Tribunal

The Act provides for establishment of Plant varieties Protection Appellate Tribunal (PVPAT). All orders or decisions of the registrar or Authority relating to the registration of variety/ registration as an agent or licensee can be appealed in the tribunal. Further all orders or decision of the registrar or Authority relating benefit sharing, revocation of compulsory .license and payment of compensation can be applied to the Tribunal.

Achievements :

- Till now 3538 varieties have been registered 158 crop species open for registration
- Pant Chari 4 (sorghum) was registered from Pantnagar in 2012. Tilak Chandan is farmers variety that has been registered by the efforts of Pantnagar University.
- Up till now this year 2019, 14 varieties have been registered and the number was 477 in 2018.

Palam Soya & Pusa 12 in soyabean, KMH-6681 in maize, Tulsi Pamji & AGIYASAL in rice are recently registered varieties

Traditional Knowledge

Community based knowledge system developed, preserved and refined by generation of people through continuous interaction, observations and experimentation with the surrounding. It is always associated with cultural practices and transmitted orally. The protection may be granted to exclude the unauthorized use by third parties of the protected traditional knowledge and the protection may also mean the preservation of traditional knowledge from uses that may erode it or negatively affect the life or culture of the communities that have developed and applied it.

Successful cases:

1. TBGRI model or Kani Model
2. Hoodia
3. Xa21 gene
4. Bioresource Development and Conservation Programme in the field of Traditional Medicine in Nigeria.

Conclusion

❖ Recognising the need to capitalise on our national resources and capabilities to attain and sustain IPR advantages locally, regionally and globally with timely and effective action, the area of IPR in agriculture should be addressed in conjunction with traditional rights and indigenous knowledge.

❖ Access to genetic resources in the new regime is likely to be facilitated but it will certainly be regulated. Rights to equitable sharing of benefits must be suitably balanced with the rights to IPR protection wherever applicable.

❖ Acknowledging that the issues of IP protection by third parties based on our indigenous traditional knowledge (ITK) are sensitive and important, a high priority and liberal financial allocation should be made to the projects that may lead to development and strengthening of traditional knowledge and resource databases in order to discourage such protection by third parties.

❖ There is a fundamental need for the development of improved plant varieties. However, in order to reap the benefits of their investment, breeders need an effective PVP system.

❖ Plant varieties present a number of challenges that are different from those faced by other IP areas, such as the constant need to adapt to climate change, urbanisation or an increasing world population. In this context, PVRs were born as the IP rights designed specifically to protect new varieties of plants. Besides PVRs, patents play an increasing and important role in the plant breeding sector.

❖ Realising that awareness generation is important for confidence building in order to accept and apply IPR in agriculture and to naturalize the IPR culture, an intensive campaign should be launched to this effect, at all levels and for all relevant sections of the society. Increased general awareness should be brought out in public to enable them to respond to various opportunities, challenges and threats.

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