

THE FARMER'S RIGHTS THROUGH AWARENESS AND SEED PRODUCTION SYSTEM OF JUTE (*Corchorus olitorius* L. & *Corchorus capsularis* L.) UNDER PROTECTION OF PLANT VARIETIES & FARMER'S RIGHTS ACT (PPV & FR ACT) REGIME

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ABSTRACT

Farmer's rights are the traditional rights of farmers on the seeds or the propagating material of plant varieties. This right arises from the important role farmers have been playing to conserve and enrich varieties and the knowledge they hold on the total genetic variability of the country. Hence, the farmers' rights on seed is concerned with both the traditional varieties conserved by them and modern varieties bred by using traditional varieties. The importance of these rights from the conservation point of view becomes more compelling with the grant of Plant Breeder's Rights (PBR) to breeders. India is among the first countries in the world to have passed legislation granting Farmers' Rights in the form of the PPV & FR Act, 2001. India's law is unique in that it simultaneously aims to protect both breeders and farmers. Therefore, the PPV & FR Act safeguards farmers' rights on plant varieties, while simultaneously allowing PBR. The implementation of this Act is vested with two national apex bodies, one administrative and the other jurisprudential. The administrative apex body is the PPV & FR Authority (PPV & FRA). The judicial apex body is the Plant Varieties Protection Appellate Tribunal (PVPAT). Along with this the protected varieties need to be produce by own, maintain their quality, requirement for varietal registration as well as certification and ultimately essential for marketing their own produce.

INTRODUCTION

In Indian Agricultural research, including development of new plant varieties has large been concern of the Government and public sector institutions. Earlier, India did not have any legislation to protect the plant varieties and in fact, plant varieties developed were notified and released under Section 5 of the Indian Seed Act, 1966. However, after India became a signatory to the International Trade Related (Aspect of) Intellectual Property Rights (TRIPS) Agreement in 1994, such legislation was necessitated. Article 27.3 (b) of the TRIPS Agreement requires the member countries to provide for protection of plant varieties either by a patent or by an effective *sui-generis* system or any combination. Therefore, India opted for *sui-generis* system. The existing Indian Patent Act 1970 excluded living organism and agricultural and horticultural method of production from patentability. The *sui-generis* system for protection of plant varieties was developed integrating breeders, farmers and village community's rights and taking care of concern for equitable sharing of benefit. Helfer (2002) did not

expected a complaint over plant varieties in World Trade Organization (WTO) Dispute Settlement Mechanism, particularly, within the next 5-10 years.

Plant Genetic Resources (PGR) is the heritage of mankind and the foundation for attaining food, nutritional and health security. Before 1993, the PGR were shared freely among countries for the betterment of human beings, till concerns of conservation of biological diversity were raised by the Convention of Biological Diversity (CBD). Consequently, many issues regarding the rights of the farmers as conservers, protectors and developers of PGR in the biodiversity hot spots, the researchers and breeders who invest on development of improved varieties with superior traits, the users of PGR and intellectual property rights related matters emerged.

India is a signatory to both CBD and WTO conventions. The Agreement on TRIPS is an International Agreement administered by the WTO that sets down minimum standards and regulations for many forms of Intellectual Property (IP) as applicable to WTO members. Nations

seeking to obtain easy access to the numerous international markets opened by the WTO must enact the strict intellectual property laws mandated by TRIPS. The WTO under the Article 27.3(b) of the TRIPS, for the protection of plant varieties provided different options namely by patents, by an effective *sui-generis* system or a combination of both. As a corollary to this, India opted for the *sui-generis* system for the plant varieties giving importance to farmer's rights compared to the provision of the International Union for the Protection of New Varieties of Plants (UPOV) which satisfies (i) National interest of sustainable agricultural development and (ii) Balance between Plant Breeder's Rights, Farmer's Rights and Researcher Rights. A *sui-generis* system simply means 'a system of their own kind' designated for the purpose. With intensive and extensive national level consultations and dialogues, the Government of India enacted the legislation "PPV & FR Act" in 2001 in order to provide the incentive to plant breeding programmed both in public and private sector and giving effect to the clause 27.3 (b) of the TRIPS Agreement. The PPV & FR Act recognizes the rights of the farmers with respect to their contributions made in conserving, improving and making available PGR for the development of new plant varieties and evolvers of farmer's varieties. According to this Act, plant varieties seeking protection need to be registered with PPV & FRA, an independent and permanent body vested with exclusive authority for implementation of the PPV & FR Act. The following varieties are eligible for registration:

New Variety: Based on criteria of Novelty, Distinctiveness, Uniformity and Stability (NDUS) test a variety may be registered as a new variety. The propagating or harvested material of the new variety must not sold. It must also have distinct denomination.

Essentially Derived Variety (EDV): Variety developed by repeated use of a registered variety subject to authorization from breeder of original variety. In respect of a variety (the initial variety) shall be said to be essentially derived from such initial variety when it – (i) 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 genotypes of such initial variety;

(ii) is clearly distinguishable from such initial variety; and

(iii) 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;

(iv) EDV may be derived through various methods viz. genetic transformation, mutation breeding, tissue

culture, back cross breeding or any other (ploidy change etc).

Farmer's Variety (FV): New variety developed by the farmers subject to that the breeding/parental material was acquired lawfully.

Extant Variety: Within a specified period of implementation of the Act subject to criteria distinctness, uniformity and stability (the period has been defined as within fifteen years from the date of notification under the Seeds Act 1966). As extant variety notified under the Seeds Act, 1966 have under gone exhaustive pre-release testing, such varieties have been exempted from DUS testing under the Act. The complete application is placed before Extant Variety Recommendation Committee of experts constituted under PPV & FR Regulations, 2006 and the committee after due examination of the application makes recommendation for their registration.

Variety of Common Knowledge (VCK): Such extant variety shall be registered under Section 2 (j) (iii) of PPV & FR Act, 2001 if the candidate variety is:

(i) not released and notified under the Seeds Act, 1966 but is well documented through publications and is capable of satisfying the definition of 'variety';

(ii) under cultivation or marketing during the time of filling of application for registration;

(iii) the true representative seed of the variety should be available at the time of filling of application;

(iv) sold or otherwise disposed off in India more than one year but less than 13 years prior to the date of filling of the application and in case of trees and vines it should not have been sold or otherwise disposed of 16 years prior to the date of filling of application.

Protection of Jute Varieties: A plant variety can be registered if it conforms to the criteria of DUS which ensures distinctiveness, uniformity and stability of a variety for certain morphological characteristics over seasons across locations. In other words, protection can be granted if a variety has been proved to be distinct from the existing varieties, and is sufficiently uniform and stable in its relevant characteristics. It is to be mentioned here that while novelty is essential for all new varieties bred by breeders, this is not essential for extant varieties. Therefore, the requirements for registration of new variety are NDUS, whereas extant varieties must fulfill only the criteria of DUS for their registration. The uniqueness of a variety is established by DUS tests (Shil and Kumar, 2013) for which UPOV has provided guidelines in the case of most economically useful plant species. Distinctness is the capability of a descriptor that demonstrates clear differences in inter-varietal variation. Uniformity is the intra-varietal homogeneity, and stability is the absence of temporal or spatial variation. The uniqueness of a variety is established through DUS testing which is the technical base of Plant Variety Protection (PVP) and the

scientific basis for the approval of PBR, a world-wide intellectual property protection system designed to assist plant breeders to recoup their investment in the development of new varieties (Mauria, 2000). As per PPV & FR Act, plant varieties can be protected for a period of 15 years for annuals and 18 years for vines and trees.

The PBR concept is based on the realization that if commercial plant breeding is to be encouraged for the benefit of agriculture and society, measures have to be taken to allow breeders to profit from their product (Mishra, 1999). Further, it makes possible to define a plant grouping with sufficient specificity to allow unambiguous assignment and enforcement of property rights. DUS testing of cultivars is one of the requirements for granting PBR and it is conducted according to the national guidelines prepared based on UPOV guidelines. The PPV & FR Act, 2001 of India provides the opportunities for registration of new/extant varieties of agricultural and horticultural crops. Jute is one of the 35 prioritized crops identified for notification and registration at the first instances albeit registration is now open for 57 crops (www.Plantauthority.gov.in). Development of agro-morphological descriptors for both the cultivated species of jute has already been standardized (Shil *et al.*, 2011) through the DUS testing of jute varieties following the Revised Official DUS Guidelines of Jute (PPV & FRA, 2008).

As many as 46 varieties of both the cultivated species of jute were released in India. Based on UPOV guidelines on other crops, National DUS Test Guidelines for Jute has been published by PPV & FRA in 2008 for conducting DUS test. The responsibility for DUS testing of jute following the National DUS Test Guidelines of Jute (PPV & FRA, 2008) has been assigned to the ICAR-CRIJAF, Barrackpore, Kolkata 700 120, West Bengal.

About the Authority: In exercise of the power conferred under sub-section (1) of the Section 3 of PPV & FR Act, 2001, Government of India under the Ministry of Agriculture, established the PPV & FRA” on 11th November, 2005 in exercise of powers conferred by Gazette Notification S.O.1589-E. The Chairperson is the Chief Executive of the Authority. Besides the Chairperson, the Authority has 15 members, as notified by the Government of India. Eight of them are *ex-officio* members representing various Departments/Ministers, three from SAUs and the State Governments, one representative each for farmers, tribal organization, seed industry and women organization associated with agricultural activities are nominated by the Central Government. The Registrar General is the *ex-officio* Member Secretary of the Authority.

Objectives of the PPV & FR Act, 2001:

1. To establish an effective system for the protection of plant varieties, the rights of farmers and plant breeders

and to encourage the development of new varieties of plants.

2. To recognize and protect the rights of farmers in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.

3. To accelerate agricultural development in the country, protect plant breeder's rights; stimulate investment for research and development both in public & private sector for the development of new plant varieties.

4. To facilitate the growth of seed industry in the country which will ensure the availability of high quality seeds and planting material to the farmers.

General Functions of the Authority:

1. Registration of new plant varieties, extant varieties (extant varieties notified under the Seeds Act, 1966, VCK, FV and EDV.

2. Developing DUS test criteria and formulation of general, specific and special guidelines for new plant species.

3. Compulsory cataloging facilities for all plant varieties.

4. Documentation, indexing and cataloging of farmers varieties.

5. Recognizing and rewarding farmers, community of farmers, particularly; tribal and rural community engaged in conservation, improvement and preservation of plant genetic resources of economic plants and their wild relatives, particularly in areas identified as agro-biodiversity hot spots.

6. Preservation of plant genetic resources of economic plants and their wild relatives.

7. Maintenance of the National Register of Plant varieties.

8. Maintenance of National Gene Bank.

9. Developing database for all crop varieties.

10. Ensuring that the seeds of varieties registered under the Act are available to farmers by providing compulsory license.

11. Collecting statistics about plant varieties.

12. Supporting the conservation and sustainable use of plant genetic resources including *in-situ* and *ex-situ* collection.

13. Awareness and capacity building.

14. International cooperation with respect to plant variety protection and farmer's rights.

15. Indexing of varieties registered under this act.

16. Promote, encourage the development of new varieties of plants and protect the rights of the farmers and the breeders.

Essentiality for protection of plant varieties:

Protection of plant varieties is legally introduced in the country by a recent legislation called PPV & FR Act, 2001. The Government of India, which enacted this

legislation, states four reasons for introducing the PPV&FR Act, 2001.

- ❖ To protect the intellectual property associated with the development of plant varieties in fulfillment of an agreement signed by India under the WTO.
- ❖ To recognize the rights of farmers arising from their contribution in conserving, improving and making available plant genetic resources to develop new plant varieties.
- ❖ To stimulate public and private investment in plant breeding to accelerate agricultural development.
- ❖ To ensure high quality seed and planting material to farmers by promoting the seed industry.

Rights provided under the Protection of Plant Varieties & Farmers Rights Act, 2001:

Breeder's Rights (Section 28): Breeders will have exclusive rights to produce, sell, market, distribute, import or export the protected variety. Breeder can appoint agent/licensee and may exercise for civil remedy in case of infringement of rights. Breeder shall enjoy provisional protection of his variety against any abusive act committed by any third party during the period between filling of application for registration and decision taken by Authority.

Researcher's Rights (Section 30): Researcher can use any of the registered variety under the Act for conducting experiment or research. This includes the use of a variety as an initial source of variety for the purpose of developing another variety, but repeated use needs prior permission of the registered breeder.

Farmer's Rights (Section 39): The first mention of farmer's rights was made in the meeting of the Working Group of the FAO Commission on Plant Genetic Resources (1986), in the context of the International Undertaking on Plant Genetic Resources (IUPGR). The 25th session of the FAO's Conference of 1989 was a landmark in the history of recognition of farmer's right. The FAO's Conference endorsed the concept of farmers right, and defined these as rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centers of origin/diversity. The 27th session of FAO recognized the need to further the process of renegotiations, including the realization of farmer's rights. These negotiations culminated in the adoption of the ITPGRFA (Seed Treaty), through FAO Resolution 3/2001, in November 2001. The Treaty recognized the enormous contribution that the local and indigenous communities and farmers have made and will continue the efforts on conservation and development of plant genetic resources (Article 9.1). It recognized following rights as main components of the farmer's rights:

(i) Right to save, use, exchange and sell farm-saved seed and other propagating material (Article 9.3).

(ii) Right to fair and equitable sharing of benefits arising from the use of plant genetic resources for food and agriculture.

(iii) Right to participate in national-making process about plant genetic resources (entrusting national governments with the responsibility for implementing these rights in accordance with their needs and priorities subject to national legislation (Article 9.2) and

(iv) Protection of traditional knowledge. Thus, a full-fledged concept of farmer's rights came to an existence.

Who is Consider as Farmer [Section 2(k) (i) (ii) & (iii)]: The PPV & FR Act, 2001 recognizes 'Farmer' any person who

- (i) Cultivates crops by cultivating the land himself or
- (ii) Cultivates crops by directly supervising the cultivation of land through any other person or
- (iii) Conserves and preserves, severally or jointly, with any person any wild species or traditional varieties, or adds value to such wild species of traditional varieties through selection and identification of their useful properties.

Farmer as a Breeder [Section 39(1) (iii)]:

A farmer who has bred or developed a new variety shall be entitled for registration in the like manner as a breeder of a variety under the Act.

Farmers Variety [Section 21 (i) & (iii)]: Traditionally cultivated and evolved by the farmers in their fields or a wild relative or land race or a variety about which the farmers possess the common knowledge.

The PPV & FR Act seeks to address the rights of plant breeders and farmers on an equal footing. It affirms the necessity of recognizing and protecting the rights of the farmers with respect to the contribution they make in conserving, improving and making PGR available for the development of new plant varieties. The PPV & FR Act recognizes the multiple roles played by farmers in cultivating, conserving, developing and selecting varieties. About developing or selecting varieties, the Act refers to the value added by farmers to wild species or traditional varieties/landraces through selection and identification for their economic traits. Accordingly, farmer's rights encompass the roles of farmers as users, conservers and breeders. Farmers are granted nine specific rights which are as under:

Right 1: Access to Seed [Section 39 (1) (iv)]

Farmers are entitled to save, use, sow, re-sow, exchange, share or sell their farm produce, including seed of protected varieties, in the same manner as they were entitled to before the coming into force to the PPV & FR Act. However, farmers are entitled to sell branded seed of a variety protected under this Act. Farmers can use farm saved seed from a crop cultivated on their own.

Right 2: Benefit Sharing [Section 26]

Under Section 26 of PPV & FR Act, 2001 on receipt of copy of the certificate of registration under Sub-section

(8) of Section 23 or Sub-section (2) of Section 24, the Authority publishes the contents of the certificate for inviting claims for benefit sharing under the Act. The advertisement is made in the Plant Variety Journal of India. Any person or group of persons, being citizen(s) of India or firm or Governmental or Non-Governmental organization formed or established in India shall submit their claims for benefit sharing (under Section 26 (2) of PV & FR Act, 2001 read with Rule 41 of PPV & FR Rules, 2003) in Form PV 7 of the First Schedule (in triplicate) within a period of six months from the date of publication. Plant breeders and legal entities including farmers who provide PGR to breeders for developing new varieties shall receive a fair share of benefit from the commercial gains of the registered varieties. Out of all the national plant variety protection laws enacted since 2001, the PPV & FR Act is the first that integrates a provision for access and benefit-sharing (ABS) along with PBRs. Accession of the genetic resource used in breeding is permitted under the Biological Diversity Act, 2002. However, the PPV & FR Act requires a breeder to make a sworn declaration on the geographical origin of the genetic resources used in the pedigree of the new variety, and its accession.

Right 3: Compensation [Section 39 (2)]

Registered seed must be sold with the full disclosure of their agronomic performance under recommended management conditions. When such seed is sold to farmers but fails to provide the expected performance under recommended management conditions, the farmer is eligible to claim compensation from the breeder through the intervention of the PPV & FRA.

Right 4: Reasonable Seed Price [Section 47]

Farmers have the right to access seed of registered varieties at a reasonable and remunerative price. When this condition is not met, the breeder's exclusive right over the variety is suspended under the provision concerning compulsory licensing, and the breeder is obligated to license the seed production, distribution and sales of the variety to a competent legal entity. Most of the laws for plant variety protection have provisions on compulsory licensing of protected varieties to ensure adequate seed supply to farmers, and several of protected varieties to ensure adequate seed supply to farmers, and several of them also use unfair pricing as grounds for compulsory licensing.

Right 5: Farmer's Recognition and Reward for Contributing to Conservation [Section 39 (i) (iii) & Section 45 (2) (C)]

Farmers who have been engaged in PGR conservation and crop improvement, and who have made substantial contributions in providing genetic resources for crop improvement, receive recognition and rewards from the national gene fund. The gene fund receives resources from the implementation of the Act, which in turn are complemented by contribution from national and

international organizations. The expenditures of the fund are earmarked to support the conservation and sustainable use of PGR, and in this way, it can be a national equivalent to the global benefit-sharing fund operating within the International Treaty on Plant Genetic Resources for Food and Agriculture. Since 2007, the Plant Genome Saviour/Community Awards, associated with the national gene fund, has been rewarding farming communities and individual farmers for their contribution to *in-situ* and on farm conservation to the selection of PGR. The Authority in consultation with Government of India, has established five Plant Genome Saviour Community Awards of Rs.10.00 Lakh each along with citation and memento to be conferred every year to the farming communities for their contribution in the conservation of Plant Genetic Resources. In accordance with the PPV & FR (Recognition and Rewards from the Gene Fund) Rules, 2012 the Authority also setup ten Plant Genome Saviour Farmer Reward of Rs.1.00 lakh each with citation & memento and twenty Plant Genome Saviour Farmer Recognition annually from 2012-13 to the farmers engaged in the conservation of the Genetic Resources of the landraces and wild relatives of economic plants and their improvement through selection and preservation.

Right 6: Registration of Farmer's Varieties [Section 39(1) (iii)]

The PPV & FR Act allows for the registration of existing farmer's varieties that fulfill requirements for DUS and Denomination, but does not include that of Novelty. This right provides farmers with a one-off opportunity for a limited period, from the moment when a crop species is included in the crop portfolio under the PPV & FR Act for registration. Once registered, these varieties are entitled to all PBRs.

Right 7: Prior Authorization for the Commercialization of Essentially Derived Varieties [Section 28 (6)]

When farmer's varieties, whether extant or new, are used by a third party as source material for the development of an essentially derived variety, the farmers need to provide prior authorization for its commercialization. Such a process can allow farmers to negotiate the terms of authorization with the breeder, which may include royalties, benefit-sharing, etc.

Right 8: Exemption from Registration Fees for Farmers [Section 44]

Under PPV & FR Act, farmers have the privilege of being exempted from payment of registration fee that are normally payable for variety registration; tests for DUS, and other services rendered by the PPV & FRA; as well as for legal proceedings related to infringement or other causes in courts, tribunal, etc.

Right 9: Farmer Protection from Innocent Infringement [Section 42]

If a farmer can prove before court that he or she was not aware of the existence of any rights at the time of an infringement on any such rights, as detailed in the PPV & FR Act, he or she will not be charged. The provision is made in consideration of the centuries-old unrestrained rights that the farmers had over the seed of all varieties, the novel nature of the PPV & FR Act and the poor legal literacy of farmers.

Community Rights [Section 41]:

(i) Recognition of the role of traditional communities in conserving and preserving genetic resources of land races and wild relatives.

(ii) Compensation for contribution of village or local communities for their significant contribution in evolution of a variety which has been registered under the Act.

(iii) Compensation to be determined by the Authority and deposited in National Gene Fund.

(iv) Any person/ group of persons/governmental or non-governmental organization, on behalf of any village/local community in India, can file in any notified center, claim for contribution in the evolution of any variety.

(v) After verification, if the Authority is satisfied, and after giving an opportunity to the breeder to file an objection and of being heard, subjected to the limit notified by the Central Government, it may by order grant such compensation to be paid to the claimant.

Compulsory Licensing (Section 47): After three years of issue of certificate of registration, any person can appeal on ground of inadequate seed supply/not reasonable price from the breeder to undertake production, distribution and sale of seed. Criteria would be nature of variety; time elapsed since grant of license, price of seed and efforts by breeder to meet seed requirement of public and the capacity/ability/technical competence of the applicant to produce and market. Period of compulsory license will be maximum to period of protection. Authority can settle terms and conditions revoke or modify compulsory license.

Impact of Plant Breeders Right's on farmers: Under the PPV & FR Act, PBR on a plant variety is established by registration of the variety. By registering a variety, a person becomes its PBR holder. The PBR holder can be one person, a group or community or an institution. The PBR holder alone has the exclusive right to produce, sell, market or distribute the seeds or planting material of that variety. The important questions then are whether farmers are eligible to register the traditional varieties developed and conserved by them. Should the farmers buy the seed of a registered variety from the PBR holder every time they want to sow or are they allowed to save the seeds of a registered variety and use the saved seeds for the next sowing or to exchange, share or sell to other farmers. These bring to focus the rights of farmers

arising from their contribution in improving, conserving and making available plant genetic resources for developing new plant varieties. We know that breeders always develop new varieties by using available genetic diversity. The origin of this genetic diversity is from on-farm conservation and selection of many traditional or farmers' varieties. Fundamental to these processes is the unrestricted freedom farmers have had on seed selection, saving, exchanging and sharing. Conservation of genetic diversity of such magnitude as is found in India could not have been achieved without the continuous participation of communities of farmers and tribal people. Such community participation essentially demands a traditional seed sharing and exchange system. Conservation and enrichment of existing genetic diversity in India are more vital to the future of agriculture than to the present. Hence, the protection of the traditional rights of farmers, to save seed from their own crops and to use it for sowing, exchanging, sharing or selling, is one of the important recognitions accorded to farmers for their past, present and future contribution in conserving and making available plant genetic resources to develop new plant varieties. Therefore, the PBR allowed to plant breeders on new varieties has to be inclusive of these traditional rights of farmers. And like the professional plant breeders, farmers are also eligible to receive PBR on their varieties.

Convention Countries: Convention Country means a country which has acceded to an International Convention for the protection of plant varieties to which India has also acceded or a country which has law of protection of plant varieties based on which India has entered into an agreement for granting plant breeders rights to the citizen of both the countries.

Provisions for Convention Countries: Any person if applies for the registration of a variety in India within twelve months after the date on which the application was made in the convention country, such variety shall, if registered under this Act, be registered as of the date on which the application was made in convention country and that date shall be deemed for this Act to be the date of registration.

Plant Varieties Protection Appellate Tribunal: The Act provides for establishment of PVPAT. All orders or decisions of the Registrar of Authority relating to registration of variety and orders or decisions of Authority relating to benefit sharing, revocation of compulsory license and payment of compensation can also be appealed in the Tribunal. There is transitory provision by which it is provided that till the PVPAT is established the Intellectual Property Appellate Board (IPAB) will exercise the jurisdiction of PVPAT. The decisions of the PVPAT can be challenged in High Court. The Tribunal shall dispose of the appeal within one year. The Tribunal consists of one Judicial Member and one Technical Member. The form of appeal and

period within which it must be preferred has been prescribed in PVPAT (Application & appeals) Rules, 2010.

Plant Variety Journal of India: Authority publishes its official journal “Plant Varieties Journal of India” as a monthly bilingual (Hindi & English) publication and made public on the first working day of each month. This journal has the status of a gazette for the Act. The content of journal includes official and public notices, passport data of plant varieties, DUS test guidelines of the crop species, details of certificate of registration and other related matters.

National Gene Fund (Section 45): Recognition of farmers/farming communities engaged actively in conserving genetic resources. Nine farmers/farming communities have been recognized so far. Plant Genome Saviour Community Recognition Award-under the provisions of rule 70(2) of the Act, under ‘Gene Fund’ Authority will award to a maximum of five farmers /farming communities with Rs.10 lakhs as a support to them for conservation and sustainable use of genetic resources.

A National Gene Fund has been established by the Authority to receive the contributions from:

- (i) The benefit sharing received in the prescribed manner from the breeder of a variety or an essentially derived variety registered under the Act, or the propagating material of such variety or essentially derived variety.
- (ii) The annual fee payable to the Authority by way of royalty.
- (iii) The compensation deposited by breeders.
- (iv) The contribution from any National and International Organizations and other sources.

The Gene Fund shall be utilized for: (i) Any amount to be paid by way of benefit sharing.

(ii) The compensation payable to the farmer/community of farmers.

(iii) The expenditure for supporting the conservation and sustainable use of genetic resources including *in-situ* and *ex-situ* collections and for strengthening the

capability of the panchayat in carrying out such conservation and sustainable use.

(iv) The expenditure of the schemes relating to benefit sharing.

National Register of Plant Varieties (Section 13): National Register of Plant Varieties has been kept at the head office of the Registry, containing the names of all the registered plant varieties with the names and addresses of their respective breeders, the rights of such breeders in respect of the registered varieties, the particulars of the denomination of each registered variety, its seed or other propagating material along with specification of salient features thereof and such other matters as may be prescribed.

National Gene Bank of PPV & FR Act: Authority has established National Gene Bank at New Delhi to handle the orthodox or true seeds of the varieties of crop species notified for registration, to store the seed material including parental lines submitted by the breeders of the registered varieties, to act as repository of the seed or propagules during the process of registration and to provide the true reference sample of the registered varieties for any future use. The seed lot is stored under low temperature conditions at 5⁰ C for the entire registration period, and if necessary after few years of storage in the National Gene Bank, the seed lot will be rejuvenated and replenished at the cost of the applicant. The seed stored in the National Gene Bank will be used for dispute settlement or when an exigency arises for invoking compulsory licensing provision. Such a seed deposition in the National Gene Bank would dissuade market malpractices or violations as the sample in custody can be drawn to verify the facts. When the period of registration granted lapses, the material automatically moves to public domain.

Field Gene Bank: The Field Gene Banks maintain referral samples of perennial, asexually/vegetative propagated crops/ species and repository of the varieties under registration and established in suitable agro-ecological conditions. At present the Authority is maintaining four field gene banks as follows:

Gene bank	Location (Area of Adaptation)	Crops
Balasaheb Sawant Konkan Krishi Vidyapith	Dapoli, Maharastra (Konkan, Western Ghats, Western part of India)	Mango, Ginger, Small Cardamom, Citrus, Turmeric, Coconut and Banana
Birsha Agricultural University	Ranchi, Jharkhand (Central & Eastern India)	Mango, Citrus, Guava and Banana
Dr. YS Parmar University of Horticulture & Forestry	Solan, Himachal Pradesh (Northern Hills, Temperate Zone)	Apple, Peach, Plum, Pear and Walnut
Central Arid Zone Research Institute	Jodhpur, Rajasthan (Arid Zone)	Agroforestry species, Fodder and Grass species of Arid region

Plant Genome Saviour Awards: Rule 70(2)(a) of PPV & FR Rules, 2003 provides that Gene Fund could be

utilized to support and reward farmers, particularly the tribal and rural communities engaged in conservation,

improvement and preservation of genetic resources of economic plants and their wild relatives, particularly in areas identified as Agro-biodiversity Hotspots (22 Agro-biodiversity Hotspots distributed over 7 Agro-geographical zones). Recognizing the important contribution of farmers and farming communities and their role in enhancement of quality in research and development in agriculture and to energies and implement Rule 70(2)(a) of PPV & FR Rules, 2003 and the provision of section 45 of PPV & FR Act, 2001, the PPV & FR Authority in consultation with the Govt. of India instituted the Plant Genome Saviour Community Awards (maximum of five awards per year consisting of a citation, a memento and cash of Rs. 10.00 Lakhs). This is being awarded since 2009-10 onwards and a total of ten awards have been conferred to various farming communities.

As per section 39 (1) (iii) of PPV & FR Act, 2001, the Government of India has notified the PPV & FR (Recognition and Reward from the Gene Fund) Rules, 2012, whereby a farmer who is engaged in the conservation of genetic resources of landraces and wild relatives of economic plants and their improvement through selection and preservation and the material so selected and preserved has been used as donors of gene in varieties which can be registered under the PPV & FR Act, 2001 (53 of 2001) shall be entitled to Plant Genome Saviour Farmer Reward (maximum of 10 rewards per year comprising of a citation, memento and cash of Rs.1.00 lakh each) & Plant Genome Saviour Farmer Recognition (maximum 20 recognitions per year consisting of a citation and memento). So far, the Authority has conferred 35 awards/rewards and recognitions.

Registration: Section 29.2 of the Act provides that the Central Government shall by notification in official Gazettes specify the genera and species for registration of varieties. For this purpose, PPV & FRA has developed “Guidelines for the Conduct of Species Specific DUS tests or “Specific Guidelines” for individual crop species. The purpose of these specific guidelines is to provide detailed practical guidance for the harmonized examination of DUS and to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

Criteria for Registration: Among the farmers’ varieties, extant varieties and new varieties only those varieties which satisfy the following requirements will be eligible for registration:

- The variety should belong to the crops notified by the Government of India.
- The variety must be distinct from all other existing varieties of that crop. This means that any person who is familiar with the crop should be able to distinguish it easily from all other known varieties of the crop. This may be

possible only 27 when the variety has at least one character, which distinguishes it from the rest.

- The variety should be uniform. This means that plants grown from different seed lots of that variety should have very high similarity with respect to its characters.
- The variety should be stable. This means that the characteristics of the variety should not change generation after generation. (A generation covers one seed cycle from sowing to harvest of the seed).

Traditional cultivation practices often keep varieties in a state of mixture. Mixtures of more than one variety are also consciously practiced under high-risk marginal farming. The presence of such mixtures in farmers’ varieties may cause difficulties in their identity, uniformity and stability. Such varieties may require removal of mixtures to bring uniformity to make them eligible for registration. The grant of registration by the PPV&FRA is always made only after determining their distinctness, uniformity and stability under a test called DUS test. Farmers’ varieties lacking these requirements may not be eligible for registration. Uniformity refers to the extent to which all plants grown from different seed lots of the same variety look and perform identically. This similarity in appearance and performance may vary among crops depending on their reproductive propagation system. The three important propagation systems are propagation by vegetative parts by self-pollinated seeds and cross-pollinated seeds. The scientific standards of uniformity are different for varieties belonging to each of these propagation systems. The PPV & FRA will decide these standards for determining the uniformity in different crop varieties.

Usefulness to register the Farmers Varieties: Farmers in India are not familiar with ownership on plant varieties. Although they have richly contributed to the development of hundreds of traditional varieties, they have not held these varieties as their property. Therefore, the paradigm of ownership on plant variety is totally new to them. As this ownership under PPV & FR Act, 2001 is established by registration of plant variety, it is natural that the farmers should know why they should register varieties. With the implementation of PPV & FR Act, 2001 the historic value system of plant variety as the common property will change.

Some of the important reasons for registration of farmers’ varieties are:

(a) Registration of farmers’ varieties is free:

It costs nothing to register farmers’ varieties. The process of registration is also simple, as farmers need to provide only the information they know about the variety. Moreover, renewal of registration of farmers’ variety is also free.

(b) For establishing intellectual property rights of farmers on their varieties:

The primary purpose of registration of plant varieties is to establish the IPR of the breeder on the plant variety bred by him/her. This IPR is the basis of the PBR on the variety. The PPV & FR Act, 2001 recognizes farmers as breeders for their profound and extensive contribution in developing and conserving so many varieties. Thus, farmers are eligible for the PBR on their varieties. If they fail to establish this right, they will be foregoing an entitlement allowed under the law.

(c) For exploiting commercial potential of farmers' varieties:

The PBR granted on farmers' varieties offers exclusive right to produce and market the seed of registered varieties. There are many farmers' varieties in several crops, which are popular and offer commercial opportunities for large-scale sale of seed and propagating material. Farmers themselves can exploit this market with the help of exclusive marketing right on the seed or license the PBR of the variety for a competitive licensing fee.

(d) For establishing ownership on farmers' varieties:

Many farmers' varieties are notable for one or more special traits, which may have greater value in contemporary and future crop improvement. The PPV & FR Act, 2001 provides for equitable share of benefit from new plant varieties, which were bred by using one or more farmers' varieties. Whenever a registered farmers' variety is used for such breeding, the determination of eligibility for a share of the benefit to the legal owner of the variety becomes easier for the PPV & FRA.

(e) For safeguarding farmers' varieties from piracy:

There are instances where the traditional variety of one country was pirated to another country, and IPR on that variety was established by the pirate. Registration of farmers' variety establishes all information about a variety in the National Plant Variety Register. When such record is available on a variety, it is difficult for a plant pirate to establish elsewhere another IPR on that variety. Even when such IPR is established by deceit, it can be revoked with the help of the prior information on the variety available in the National Plant Variety Register. However, the revoking process may not be easy, if farmers' varieties are not registered.

Certificate of Registration: Applications which have fulfilled all requirements and have been finally accepted by the Registrar for registration were issued Certificates of Registration. The certificate of registration issued will be valid for nine years in case of trees and vines and six years in case of other crops. It may be reviewed and renewed for the remaining period on payment of renewal fees subject to the condition that total period of validity shall not exceed 18 years in case of trees and vines from the date of registration of the variety, fifteen

years from the date of notification of variety under Seeds Act, 1966 and in other cases fifteen years from the date of registration of the variety.

Miscellaneous Initiatives for Farmers Welfare: The Authority has undertaken several initiatives for the welfare of the farmers as under –

- (i) Constitutions of Farmer's cell in the Authority.
- (ii) Conducting of Awareness cum Training Workshops.
- (iii) Participation and Organizing of Kishan Divas/ Farmer's Fair.
- (iv) Printing of Brochures/ publications on Farmer's Rights (Multi lingual).

Seed Production: Large seed companies in the private sector are expected to undertake extensive seed production and marketing to extract maximum benefit from the sale of seeds of newly protected variety, particularly in the initial years of its protection and release. The seed production and marketing may also be licensed by them to other seed companies. However, the social responsibility of producing and supplying seeds of self-pollinated crops of important cereals, millets, oilseeds, pulses and vegetables will continue to be with state owned Seed Corporations. These Corporations will also be required to maintain buffer seed stocks for contingent situations like drought and floods and produce seeds of varieties suitable for hilly, rainfed and other difficult regions. They will also be expected to be more competitive with private sector and help in stabilization of seed prices. These corporations will be required to be more efficient and responsive to the changing needs. The technical competence of staff will have to be updated and new recruitment with dedicated qualified seed technologists will be needed to make them more capable of organizing an efficient seed production and delivery system.

Strengthening of alternative seed supply systems through further expansion of breeder/foundation seed programmes of SAUs and ICAR institutions, involvement of Krishi Vigyan Kendras in seed production and distribution; development of entrepreneurship in seed production among resourceful farmers in each village and a massive programme of training of farmers in scientific on farm seed production, processing and storage can play a significant role in improving and sustaining supply of quality seeds of improved varieties to the farmers in the villages.

Production and Marketing of Seeds of Protected Varieties: For the production and marketing of seeds of protected varieties, two options are available to the plant breeding research organization. One to auction the variety and give rights to the highest bidder and second to enter into contract with a licensee to produce and market seeds and pay royalty on a regular basis for each unit of seed sold. If first option is followed, higher bid can be obtained by demonstrating the potential of the

protected variety. The only authentic information on potential performance of a variety is the results of AINP (All India Network Project) Trials. However, these trials do not always provide an indication of the subsequent adaptability and acceptance of the variety by the farmers. Hence, royalty collection may be a better option. To have authentic information of seed production of a protected variety for royalty collection, it will be desirable to produce seeds under seed certification schemes.

Improvement of Seed Quality: In the post PPV & FR era, there will be increased competition among companies and public-sector seed organizations for sale of seeds of protected varieties for realization of maximum profits. To be competitive, seed organizations will be required to produce and market seeds with high genetic and physical purity, germination and vigour and free from seed borne diseases. Therefore, advanced seed enhancement technology viz. priming, pelleting and coating will be used more frequently particularly, in high value low volume seeds.

Seed Certification: The existing system of seed certification in the country is likely to be affected, if the model of self-certification (being practiced in Andhra Pradesh) is followed by other states. In this system, there is no role of Official Seed Certification Agency and companies are marketing their seed based on their internal seed quality control. In India seed certification is voluntary and its role is being further weakened by following Andhra Pradesh model of seed certification, the royalty collection will be difficult. Royalty collection on sale of seed is always a better option. Therefore, in the best interest of public sector, the system of seed certification, which provides most reliable information on production of seeds, need to be, not only maintained, but also, further strengthened. In order to improve the current seed certification system, it will be desirable to entrust the job of seed crop inspection and testing to public and private licensed field inspectors and seed testing laboratories, respectively. The official Seed Certification Agency, however, monitors certain percentage of seed plots. Similarly, the official Seed Testing Laboratories monitors a percentage of seed samples of private seed testing laboratories (Sharma, 2005).

Conclusion: The objectives of PPV & FR Act is to provide incentive for increased investment in plant breeding, however private sector seed companies have apprehension regarding clauses related to Farmer's Rights for sale of seeds of protected varieties and benefit sharing which may not induce them to seek protection in the initial years when they will carefully watch the implementation of the act. Since, public sector institutions have the social responsibility of ensuring access of seeds of improved varieties to all the farmers particularly those of difficult eco-system viz.

rainfall, hilly and drought prone regions, the protection of varieties may not be the best option for them particularly for those crops and varieties, which have been recommended for the harsh agro-climatic conditions. Since, PPV & FRA will encourage uniformity of varieties, the norms of uniformity will have to be developed which will ensure adaptation of varieties to wide range of agro-climatic conditions. The free availability of germplasm will be restricted; hence, initiative will be needed to facilitate exchange of germplasm through suitable multilateral agreements internationally and through simple MTA's within the country. In depth discussions are also required to be initiated to review and modify the current system of breeder seed production and variety evaluation and testing system to suit the concerns of all concerned in the post PPV & FR regime. It is suggested to submit a candidate variety for protection after evaluation for 2 years in AINP Trials i.e. after Advanced Varietal Trial I year. This will be helpful in entering only promising material for DUS trials.

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