

"Prof. S. Kannaiyan Memorial Oration"- Series:5

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Delivered during

9th NABS-National Conference on

"New Biological Researches:

Opportunities and Challenges for Sustainable Development"

(Agriculture, Biology, Energy, Environment, Health and Climate Change)

held at Preview Theatre

Madurai Kamaraj University, Madurai

on 12 August 2016



**"International Treaties, National IPR-Policy and
Impact on Innovations in Plants"**

Prof. Dr. R. R. Hanchinal

Chairperson

Protection of Plant Varieties and Farmers' Rights Authority

Government of India, Ministry of Agriculture and Farmers Welfare

Department of Agriculture and Co-operation, NASC Complex,

DPS Marg, Opp: Todapur Village, New Delhi-110 012

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Formerly Vice-Chancellor

University of Agricultural Sciences, Dharwad, Karnataka

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**Respected Teachers, Fellow NABSians, Galaxy of Vice Chancellors,
students, Ladies and Gentlemen,**

I am beholden and humbled by the honour conferred on me with the prestigious "Professor S. Kannaiyan Memorial Award". I deem it an honour conferred on the team with which I was part and was privileged to lead. Talking of Professor S. Kannaiyan, I am moved by the spirit and enlightenment

he had for improving science. He has tried to emulate the principles laid down by another great son of India Dr. Abdul Kalam who preached PURA (Providing Urban amenities in Rural Areas). When Professor Kannaiyan founded NABS, one of the cardinal principle was to carry the torch of science to the Tier two cities and to the student community. The award carries significance in its being conferred in the temple city of Madurai and world renowned University, which figured in Science for all the good reasons, the Madurai Kamaraj University. I dedicate this award to the farmers' of India and to the budding scientists of Biology. I am grateful to the NABS for this coveted award.

I am fortunate to have been working with the farmers all my life. The present job as Chairman of PPV&FRA is the culmination of this and we do our mite to protect all the natural resources of plants used by man.

We are currently living in the era of knowledge economy. There is an abundance of creative and innovative inventions emerging out through Research and Development. For converting knowledge by way of innovations in to wealth and social goods will determine the future of the country. Hence to protect new innovations and inventions, strong IP laws are going to become critically important. The ratification of GATT led to the establishment of WTO and under the broad umbrella of WTO, the International Agreements were signed by convention countries. The Agreements which made impact to seed industry are: TRIPS, CBD, ITPGRFA, Nagoya Protocol, UPOV, PCT, Cartagena Protocol and GI. India is a signatory to all the Treaties except UPOV. To comply with TRIPS and to bring robust, equitable and dynamic IPR regime, India enacted different kinds of IPR Acts namely: Copy Right Act, 1957; Patent Act, 1970; Trade Marks Act, 1999; Geographical Indications of goods (Registration

and Protection) Act, 1999; Designs Act, 2000; Semiconductor Integrated Circuits Layout-Design Act, 2000; Protection of Plant Varieties and Farmers' Rights Act, 2001 and Biological Diversity Act, 2002. Time and again as per the need, the Acts, Rules, Regulations and Schemes were either amended or introduced. All the Agreements except UPOV where India's not a compliant, promoted sustainable use of Plant Genetic Resources and fair equitable sharing of benefits arising from the utilization of Genetic Resources while protecting public interest. All IPR Acts promoted investments in research and development both in public and private sector. Implementation of these Acts promoted India's economic growth and socio-cultural development. India released National IPR Policy looking to the fast changing global economic growth in IPR regime, and to promote advancement in science and technology, traditional knowledge and biodiversity resources, arts and culture. The main mission is to stimulate a dynamic, vibrant and balanced IPR System in India. The objectives are to create awareness about economic, social and cultural benefits of IPRs among all sectors of society. The aim of the policy is to stimulate the generation of IPRs to provide strong legal and legislative framework for effective IPR laws, which balance the interest of Rights owners with larger public interest. Providing efficient service oriented IPR administration to promote IPR. Commercialization of IPR for betterment of both IPR owners and society is another objective. The IPR Policy is also aiming at strengthening the enforcement and adjudicatory mechanisms for combating IPR infringements. To achieve the above goals, IPR Policy is giving emphasis on strengthening and expanding human resources, institutions and capacities for teaching, research and skill building in IPR.

The PPV&FR Act, 2001, is an outcome in response international development/obligations. Article 27.3(b) of TRIPs agreement requires India to provide Protection of Plant Varieties either by a patent or by an effective *sui generis* system or by a combination there of. Hence, the *sui-generis* system for Protection of Plant Varieties was developed integrating the rights of the breeders, farmers and village communities and taking care of the concern for equitable sharing of benefits. Ten years after the implementations of the Act, it is observed that the Act facilitated the enhanced private investment in selected crops and seed supply system, while strengthening the public research and conserving the plant genetic resources for sustainable use and registering the farmers' varieties to achieve balanced agricultural growth and access of technology to farmers at a competitive cost.

Introduction

Since ancient days, our ancestors have always been great innovators through their creative thinking. That is how India is rich in traditional knowledge, in all fields. In Agriculture, it is through creative thinking and innovations, many innovative, locally adaptable technological were developed. These include varieties in different crops possessing uniqueness in resilience to weather aberrations, resistance to biotic and abiotic stresses, therapeutic and medicinal uses, pesticide value, grain storage technologies etc. Many of our indigenous traditional knowledge were being taken away by western world to patent the same. The best examples are turmeric and neem, which were being used by Indian community since ancient time for curing diseases, controlling of pests etc. were patented by European companies. This is mainly because, though we have always been an innovative society, but much of the

Intellectual Property (IP) created remains unprotected both on account of lack of awareness and the perception that IP Protection is either not required or that the process to obtain it is unnecessarily complicated.

Our forefathers were always of the firm opinion that Plant Genetic Resources (PGR) are the heritage of human kind and foundation for attaining food, nutritional and health security. The PGR/Farmers' varieties developed by the farmers were to be spared to others for their use freely. The exchange of farmers' varieties for use, sowing, re-sowing, saving, selling among the communities was a fare and transparent practise.

Today we are living in the knowledge economy. The golden saying in our culture "knowledge will increase when it is shared" has lost its significance. President Lincoln once remarked that "patent system adds fuel of interest to the fire of genius". Monetizing the innovations and invention is beneficial to the inventor and society. Innovation is the key for the production as well as processing of knowledge. A nation's ability to convert knowledge into wealth and social good through the process of invention will determine its future. In this, context, issues of generation, valuation, protection and exploitation of Intellectual Property (IP) are going to become critically important all around the world. Bill Gates used to say "IP has the shelf life of a banana". The saying is true considering the rapid pace of technological development and transfer taking place in the world. The process of globalization has posed major challenges to developing countries in the context of emerging regime of IP protection. In the beginning, in many developing and underdeveloped countries Intellectual Property Rights (IPR) was disadvantages due to the "patent illiteracy" (Hanchinal 2014). As the

world becomes more complex, innovations will also become more complex, which in turn leads to research and development investments becoming more complex and more expensive. IP will no longer be seen as a distinct or self-contained domain, but rather as an important and effective policy instrument that would be relevant to a wide range of socio-economic, technological and political concerns (Mashelkar, 2001). Effective IPR system balances Protection as an incentive for innovation and access to enable the others to further improve plant varieties.

The origin of IP is linked with the industrial revolution. With the progress in industrial sector, the need for a world trade regulation also increased. After the World War-II, to revive the shattered industrial growth and economic disaster, the three international organisations viz., World Bank, International Monetary Fund (IMF) and International Trade Organisation (ITO) were established in 1947. From the inception of General Agreement on Tariffs & Trade (GATT) in 1947, there have been eight rounds of multilateral trade negotiations. The Eighth Uruguay Round (UR), the longest, was launched in September 1986 in Punta del Este and was signed nearly eight years later in Marrakesh in April 1994. Agriculture was included as an important issue and this led to the creation of a completely new framework of rules by the World Trade Organization (WTO), an institution that replaced GATT. Until the Uruguay Round, agriculture received special treatment under GATT trade rules through exemption. As a result, the GATT allowed countries to use measures disallowed for other sectors (e.g. export subsidies), and enabled countries to maintain a multitude of non-tariff barriers that restricted trade in agricultural products. From a situation where controls on domestic trade policies in agriculture did not effectively exist, countries had to move to a

situation where well-defined constraints on import barriers, export subsidies and domestic support were to be in place at an international level. Apart from this, agricultural technology was poised to be used in trade, and institutions were forced to gear themselves to face competition.

International Treaties

To ensure a fair level playing ground, the WTO features nearly 22 agreements and undertakings. Some of these have a direct impact on farmers' livelihoods, food security and the economic development of the developing countries. The international agreements of particular significance to seed are as follows:-

1. Trade related aspects of Intellectual Property Rights (TRIPS)
2. Convention on Biodiversity (CBD)
3. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
4. Nagoya Protocol
5. International Union for the Protection of New Varieties of Plants (UPOV)
6. The Patent Cooperation Treaty (PCT)
7. Cartagena Protocol
8. Geographical Indications (GI)

Trade related aspects of Intellectual Property Rights (TRIPS)

The TRIPS agreement of WTO (1995) is a conscientious agreement that makes it mandatory for all nations to provide for IP protection to all inventions and affects the functioning of research. TRIPS incorporate provisions from many existing international IP agreements like the Paris and Berne conventions. It also provides for a transition period of 5 years (till

1/1/2000) to give effect to the provisions of the agreement. In the case of product patents in some areas of technology, this period is extended to 1/1/2005. Prior to this agreement, innovations in living organisms (plant, animals) or the biological processes that produce them were not protectable as intellectual property. In the case of plant varieties, the agreement provides for protection either through patents or through an effective *sui generis* system that can be adopted by individual nations. Protection of plant varieties through patents implies their registration in the breeder's name, so that the breeder has exclusive rights to all uses of that variety. This means that any future use of the variety has to be made against a royalty payment and with the permission of the breeder. In the *sui generis* system, each country is free to impose a wide range of restrictions upon breeders' rights as they see fit for research and for protecting farmers' rights.

Convention on Biological Diversity (CBD)

The CBD was opened for signature on 5 June 1992 at the United Nations Conference on Environment and Development (the Rio Earth Summit) and entered into force on 29 December 1993. As on today there are 196 members of the convention. The Convention is the only international instrument comprehensively addressing biological diversity. The Convention's three objectives are: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources.

The CBD introduced a system for the regulation of collection and other types of access to genetic resources known as ABS system. It involves the joint regulation of access to genetic resources and the sharing of benefits arising

from their use by the researchers or companies from user countries and the representatives of the states, in which the genetic resources have been accessed. The ABS is also applicable to the TK of indigenous and local communities associated with genetic resources. The mandate of Article 8(j) of the CBD (CBD, n.d.a), related *in situ* conservation of biodiversity, is that the contracting parties, subject to its national legislation shall: Respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity. Promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.

In tune to above provisions, contracting parties are implementing benefit sharing mechanisms and models for equitable sharing of the benefits arising from utilisation of biodiversity and related knowledge as reported from different parts of the world.

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

The ITPGRFA, well known as the International Seed Treaty or Treaty signed in 2001 is an initiative known as the International undertaking on Plant Genetic Resources was first launched at the FAO Conference in 1983. It was modified several times to incorporate the terms of UPOV, the CBD and TRIPS and was consummated as the International Treaty on Plant Genetic Resources for Food and Agriculture (known familiarly as “The Treaty”) in 1994. The Treaty came in to force on June 29, 2004 after 90 days when 40

countries ratified it. As of now, there are 140 countries which are members of the Treaty. Through the Treaty, Countries agree to establish an effective and transparent Multilateral System to facilitate access to plant genetic resources for food and agriculture, and to share the benefits (MLS) arising out of their use in a fair and equitable way. The MLS applies to 64 major crops and forages designated as Annexure 1 crops which include 35 food crops and 29 forages. ITPGRFA defines Plant Genetic Resources for Food and Agriculture (PGRFA) as “any genetic material of plant origin of actual or potential value for food and agriculture” and complements and supplements the provisions of the CBD. The ITPGRFA also ensures food security for all through the preserving, conserving, exchanging and using the global plant genetic resources for food and agriculture as well as equitable benefit sharing. The treaty aims at: Recognising the enormous contribution of farmers to the diversity of crops that feed the world; Establishing a global system to provide farmers; Plant breeders and scientists with access to plant genetic materials; Fair and equitable sharing of benefit arising but of their use in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.

Nagoya Protocol

To further advance the implementation of the third objective of CBD i.e. the fair and equitable sharing of benefits on sustainable development, the World Summit on Sustainable Development (Johannesburg, September 2002) called for the negotiation of an international regime, within the framework of the convention, to promote and safeguard the fair and equitable sharing of benefits arising from the utilisation of genetic resources, the Convention’s

Conference of the Parties responded at its seventh meeting, in 2004, by mandating its Ad Hoc Open-ended Working Group on access to genetic resources and benefit-sharing to elaborate and negotiate an international regime on access to genetic resources and benefit-sharing in order to effectively implement Articles 15 (Access to Genetic Resources) and 8(j) (Traditional Knowledge) of the Convention and its three objectives.

After six years of negotiation, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity was adopted at the tenth meeting of the Conference of the Parties on 29 October 2010, in Nagoya, Japan. On ratification by more than 50 Parties to the CBD, the Nagoya Protocol has entered into force on October 12, 2014. India has ratified it on October 9, 2012. In India, National Biodiversity Authority (NBA) located at Chennai is the Competent National Authority for Nagoya Protocol and the Secretary, NBA is the National Authorized User (NAU). As of now there are 74 member countries of this protocol.

The Convention of the International Union for the Protection of New Plant Varieties (UPOV-1978, 1991)

The International Union for the Protection of New Varieties of Plants *Union pour la Protection des Obtentions Vegetables*, commonly known as UPOV is an intergovernmental organization based in Geneva, Switzerland. UPOV was established in 1961 by the International Convention for the Protection of New Varieties of Plants. The Convention was adopted in Paris in 1961 (UPOV convention). The mission on UPOV is to provide and promote an effective

system of plant variety protection, with the aim to encouraging the development of new varieties of plants, for the benefit of society. The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right. UPOV established guidelines for dedicated or "*sui generis*" systems of IP rights that provide for plant variety protection (PVP). UPOV is the only international treaty focused on PVPs. The UPOV guidelines have been twice revised, once in 1978 and again in 1991; each revision required the approval of member countries. In 1978, the guidelines were amended to permit member countries to allow the protection of plant varieties under both a national patent system and a UPOV-style *sui generis* system. The 1991 revisions expanded the scope of protections to include second-generation varieties that are "*essentially derived*" from the variety in question and discarded the list of "allowable" plant genera, thereby ensuring that any and all plant genera could be protected under the UPOV aegis. The 1991 revisions gave national systems the right to limit farmers' rights and require that they save only as many seeds as they need to replant their own land.

The UPOV Conventions are administered through the World Intellectual Property Organization (WIPO). The two conventions, 1978 and 1991, differ primarily in the protection they offer to farmers rights to save and sell seed or other propagative material from a registered variety. The 1991 convention also severely restricts the rights of plant breeders to use protected varieties in their variety development programmes. A country's membership of UPOV, 1991 will therefore automatically align its IP regime for plant variety protection with that of the TRIPS regime as a legal framework is in place. India has applied for membership of the UPOV 1978 convention and submitted the

Protection of the Plant Varieties and Farmers Rights Act of 2001 to meet the required conditions. As of now there are 74 UPOV member countries

The Patent Cooperation Treaty (PCT)

The PCT was concluded in 1970, amended in 1979 and modified in 1984 and 2001. The PCT is an agreement between 150 contracting states including India to facilitate obtaining patents in several countries relatively quickly. India became the contracting party on December 7, 1998. The inventor needs to file one application in one country but has the effect of filing a separate patent application in each PCT member country designated by him. The PCT standardizes the patent search and examination process so that the initial evaluation done in the country of filing is valid in all member countries. The application does not mature into an international patent but extends the grace period up to 30 months for an inventor to take further action to obtain a patent in each PCT member country where one is desired. The PCT serves to simplify and make more economical and patenting process in foreign countries and facilitate the availability of technical information in member countries for patent search and evaluation.

Cartagena Protocol

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another. It was adopted on 29 January 2000 as a supplementary agreement to the Convention on Biological Diversity and entered into force on 11 September 2003. As on today 170 countries are the members of this protocol. It aims to ensure the safe handling, transport and use of living

modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.

Geographical Indication (GI)

A GI is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place. In addition, the qualities, characteristics or reputation place of origin. Since the qualities depend on the geographical place of production, there is a clear link between the product and its original place of production.

A number of international treaties deal partly or entirely with the protection of GIs or appellations of origin. The Standing Committee on the Law of Trademarks, Industrial designs and Geographical Indications is the forum where the World Intellectual Property Organization (WIPO) member states discuss policy and legal issues relating to the international development of law and standards for GIs and appellations of origin.

National IPR-Policy

Effective implementation of IPR related legislations have significant impact on the Industries development through research and development. There is adequate safeguard in our country for the implementation of IPR-laws. The provisions on judicial review and appellate are in place, Indian courts have consistently enforced IPRs, with land mark Judgements clearly expressing the intent and purpose of laws. Further to create an enabling environment it was considered important to identify and develop national policy options for addressing the emerging of IPR. It was also felt that the

need of critical analysis of present IPR system in the country, its strengths, weaknesses opportunities and threats (SWOT) to convert threats in to opportunities and weaknesses through timely action.

To stimulate a dynamic, vibrant and balanced IPR system in India to foster creativity and innovation and thereby, promote entrepreneurship and enhance socio-economic and cultural development and focus on enhancing access to health care, food security and environmental protection, among other sectors of vital social economic and technological importance, the national IPR-Policy was released on May 12, 2016.

Objectives

With the holistic slogan “Creative India; innovative India: The national IPR-Policy lays down seven objectives:

1. IPR-Awareness: outreach and promotion – to create public awareness about the economic social and cultural benefits of IPRs among all sections of society.
2. To stimulate generations of IPRs
3. Legal and legislative framework: to have strong and effective IPR laws, which balance the interest of owners with larger public interest.
4. Administration and management: to modernise and strengthen service oriented IPR administration.
5. Commercialization of IPR: get value for IPRs through commercialization.
6. Enforcement and Adjudication: to strengthen the enforcement and adjudicatory mechanisms for combating IPR infringements.

7. Human capital development: to strengthen and expand human resources, institutions and capacities for teaching training, research and skill building in IPRs.

Implementation

Though IPR in India is regulated by several laws, rules and regulators under the jurisdiction of different ministries/departments, the present IPR-Policy aims to integrate IP as a policy and strategic tool in national development plans.

Impact of International Treaties on Indian IP Laws

India is a signatory to all the International Agreements accept UPOV. TRIPS Agreement is administered by WTO that sets down minimum standards and regulations for many from Intellectual Property (IP) as applicable to WTO member nations. Nations seeking to obtain easy access to the numerous international markets opened up by WTO must enact the strict IP laws mandated by TRIPS. To fulfil the obligations to international community India had to enact new legislations and also to amend various legislations to be in line with the minimum requirements specified by the Agreements

The details of different legislations and amendments in Acts & rules and regulations looking to the need from time to time, which are concerned with IPR are as follows:

1. The Copyright Act, 1957 as amended in 1983, 1984, 1992, 1994 and 1999 along with Rules 1958 and the International Copyright Order, 1999, 2000 (Copyright Act)

2. The Patents Act, 1970 as amended in 1999, 2002, 2004 (Ordinance), 2005 and 2006 along with Rules 2005 (Patents Act)
3. The Trade Marks Act, 1999 along with Rules 1999 (Trade Marks Act)
4. The Designs Act, 2000 along with Rules 2001 (Designs Act)
5. The Geographical Indications of Goods (Registration and Protection) Act, 1999 along with Rules 2002 (GI Act)
6. The Semiconductor Integrated Circuits Layout-Design Act, 2000 along with Rules 2001 (IC Layout-Design Act)
7. The Protection of Plant Varieties and Farmers' Rights Act, 2001 along with Rules 2003 (PPV&FR Act) as amended by (Amendment) rules 2015, regulations, 2006 as amended by (Amendment) regulations, 2015, Criteria for Distinctiveness, Uniformity and Stability for Registration, Regulation, 2009, the Plant Varieties Protection Appellate Tribunal (Applications and appeals) Rules, 2010, Recognition and Reward from the Gene Fund) Rules, 2012 as amended by (Amendment) Rules, 2015, use of denomination of Registered Variety) Rules, 2012, the Protection of Plant Varieties and Farmers' Rights scheme, 2015
8. The Biological Diversity Act, 2002 along with Rules 2004 and notifications specifies procedures for access to biological/genetic materials for agricultural research and their IPR protection.

Impact of International Treaties on Protection of Plant Varieties & Farmers' Rights

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 farmers' rights compared to the provision of the International Union for the Protection of New Varieties of Plants (UPOV). With intensive and extensive national level consultations and dialogues, the Government of India enacted the "Protection of Plant Varieties and Farmers' Rights Act (PPV&FR Act)" in 2001. The Act seeks to address the rights of plant breeders and farmers on equal footing. The PPV&FR Act, 2001 is unique to benefit the national situations yet matching with the larger global commitment. The PPV&FR Act protects both the variety and the denomination assigned to the variety. Another special feature of this legislation is that the protection accrues to a person from the date of filing of application for it gives priority and provisional protection. The Act, provides an exclusive right on the breeder or his successor or his agent or licensee, to produce, sell, market, distribute, import or export the variety registered under the Act. A breeder may authorize any person to produce, sell, market or otherwise deal with the variety registered under this Act. The Act also provides researcher to use any of the variety registered under this Act for conducting experiment or research. However, authorization of the breeder of a registered variety is required where repeated use of such variety as parental line is done for commercial production of other newly developed variety. India is the first country to provide substantial rights to farmers and registration of their varieties is one of them. The PPV&FR Act recognizes the rights of farmers with respect to their contributions made in conserving, improving and making available PGR for

the development of new plant varieties and also evolvers of farmers' varieties. The Act provides for farmers to be informed about the expected performance of the registered variety. The right of compensation, if the registered variety does not perform up to the promised level, community rights are also protected, if any village or community has made significant contribution in the evolution of any variety and if such variety is registered by any other person then the said village or community can claim compensation. The community/individual person can also claim benefit sharing if their genetic material used in the development of a registered variety. The compulsory licensing is also granted to the competent person when a registered variety falls short of public demand after three years of its registration.

The Indian PPV&FR Act has made efforts to incorporate the features of UPOV and ITPGRFA along with certain distinctive features of its own as per requirement of farmers (Table-1) (Chawla, 2013). The rights provided to the farmers (section-30) in the Indian PPV&FR legislation to save, use, sow, re-sow, exchange, share or sell his farm produce including seed of a Protected Variety in unbranded form, restrict the Indian membership to UPOV convention. Negotiations are on within the frame work of PPV&FR Act to obtain UPOV membership for recognizing the protection of varieties as per Indian legislation (PPV&FR Act) in all UPOV member countries. Indian Act also provides an opportunity to register extant variety notified under section-5 of the Seeds Act, 1966 and Variety of Common Knowledge (VCK) which is not permissible as per UPOV. PPV&FR Act also complies with the provisions of Article 9 of ITPGRFA, where in it recognizes the enormous contribution of the farmers particularly those in the centres of origin and crop diversity in the Conservation and Development of PGR.

Table 1: Rights Provided to Farmers in PPV&FR Act, 2001

Type of Rights	Description of Rights	Available in ITPGRFA or UPOV
Farmers' right	1. Rights to seeds	ITPGRFA, UPOV
	2. Right to register varieties	UPOV
	3. Right to reward and recognition as conserver	ITPGRFA
	4. Right to Information about expected performance and compensation for under-performance	-
Other rights	5. Right to Benefit Sharing	ITPGRFA
	6. Right to compensation for undisclosed use of traditional varieties	ITPGRFA
	7. Right to adequate availability of registered material	UPOV
	8. Right to free services	-
	9. Protection from innocent infringement of breeders' rights	-

Achievements of PPV&FR Authority

In a record time, the Authority facilitated in notification of 114 crop species. The Authority is also in the process of notification of another 63 crops species shortly and brought many amendments in rules and regulations. New scheme was also brought to facilitate smooth implementation of the Act, which is in accordance to National IPR Policy. Last three years the Authority conducted huge number of awareness programs viz., Take it to “The Farmers-The Farmers’ Rights through Awareness” and “take it to the Plant Breeder-The Breeders’ and Researchers’ Rights through Awareness” has brought great success in receiving the applications for registration (Table 2a & 2b) and also granting PVP entitlements (Table 3a & 3b). As a result of awareness programs the Authority also succeeded in receiving application in more number of crop species (Fig-1) and applications for Plant Genome Saviour Awards.

Table 2a: Institution wise details of Applications received in different categories of plant varieties for registration (IPR entitlement)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Public	287	322	193	31	125	129	141	136	89	182	1635
Private	143	220	368	505	295	266	534	420	420	151	3322
Farmer	2	5	127	4	941	304	1002	1964	1957	647	6953
Individual Breeder	0	0	0	0	0	0	0	0	2	0	2
Total	432	547	688	540	1361	699	1677	2520	2468	980	11912

Table 2b: Details of Applications received in different categories of plant varieties for registration (IPR entitlement)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Extant	359	390	384	106	274	254	255	196	181	182	2581
New	71	133	162	397	133	143	350	340	329	150	2208
EDV	0	19	16	33	15	0	71	22	2	1	179
Farmer	2	5	126	4	939	302	1001	1962	1956	647	6944
Total	432	547	688	540	1361	699	1677	2520	2468	980	11912

Table 3a: Details of Registration Certificate Issued in different categories of plant varieties

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
New	-	-	2	-	15	26	53	108	65	39	308
Extant	-	-	163	49	101	182	205	266	120	35	1121
Farmer	-	-	3	-	-	3	46	459	200	131	842
EDV	-	-	-	-	-	1	-	-	0	0	1
Total	0	0	168	49	116	212	304	833	385	205	2272

Table 3b: Details of Registration Certificate Issued in different categories of plant varieties

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Public	-	-	149	49	95	154	154	250	63	20	934
Private	-	-	16	-	21	55	104	124	122	54	496
Farmer	-	-	3	-	-	3	46	459	200	131	842
Total	0	0	168	49	116	212	304	833	385	205	2272

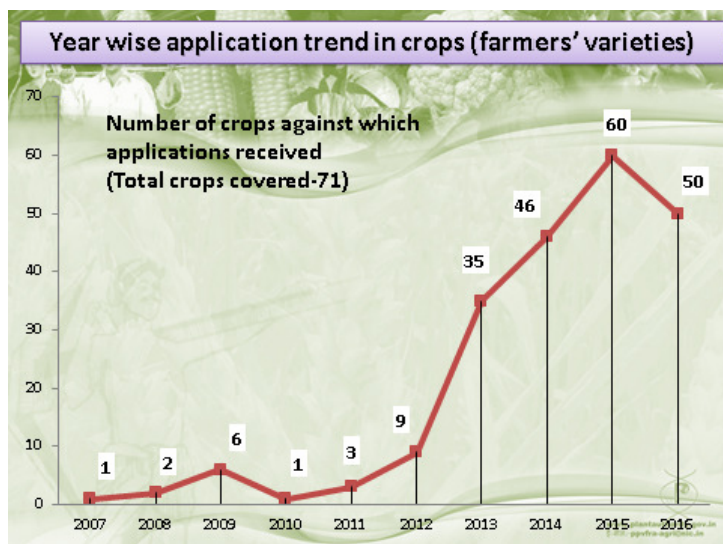


Table 4: Geographical Indications (GI): Certificates Granted To Different Crop Varieties

S. No	Application no.	Geographical indications	State
1.	1&2	Darjeeling Tea (word & logo)	West Bengal
2.	25	Kangra Tea	Himachal Pradesh
3.	33	Coorg Orange	Karnataka
4.	34	Mysore Betel leaf	Karnataka
5.	35	Nanjanagud Banana	Karnataka
6.	69	Mysore Jasmine	Karnataka
7.	70	Udupi Jasmine	Karnataka
8.	71	Hadagali Jasmine	Karnataka
9.	17	Navara Rice	Kerala
10.	36	PalakkadanMatta Rice	Kerala
11.	49&56	Malabar Pepper	Kerala
12.	50	Allahabad Surkha	Uttar Pradesh
13.	85	Monsooned Malabar Arabica Coffee	Karnataka
14.	114	Monsooned Malabar Robusta Coffee	Karnataka
15.	72	Spices –Alleppey Green Cardamom	Kerala
16.	78	Coorg Green Cardamom	Karnataka

17.	110	Eathomozhy Tall Coconut	Tamil Nadu
18.	81	Pokkali Rice	Kerala
19.	111	LaxmanBhog Mango	West Bengal
20.	112	Khirsapati (Himsagar) Mango	West Bengal
21.	113	Fazli Mango grown in the district of Malda	West Bengal
22.	109	Naga Mircha	Nagaland
23.	116 & 117	Nilgiri (Orthodox) Logo	Tamil Nadu
24.	115 & 118	Assam (Orthodox) Logo	Assam
25.	124	Virupakshi Hill Banana	Tamil Nadu
26.	126	Sirumalai Hill Banana	Tamil Nadu
27.	125	Mongo MalihabadiDusseheri	Uttar Pradesh
28.	130 & 141	Vazhakulam Pineapple	Kerala
29.	131	DevanahalliPomello	Karnataka
30.	132	Appemidi Mango	Karnataka
31.	133	Kamalapur Red Banana	Karnataka
32.	142	BikaneriBhujia	Rajasthan
33.	143	Guntur SannamChilli	Andhra Pradesh
34.	154	Mahabaleshwar Strawberry	Maharashtra
35.	186	WayanadJeerakasala Rice	Kerala
36.	187	WayanadGandhakasala Rice	Kerala
37.	163	Central Travancore Jaggery	Kerala
37.	165	Nashik Grapes	Maharashtra
38.	129	Byadagichilli	Karnataka
39.	185	GirKesar Mango	Gujarat
40.	192	Bhalia Wheat	Gujarat
41.	199	UdupiMattuGullaBrinijal	Karnataka
42.	228	GanjamKewdaRooh	Orissa
43.	229	Ganjumkewda Flower	Orissa
44.	238	Madurai Malli	Tamil Nadu
45.	211	Bangalore Blue Grapes	Karnataka
46.	205	Kalanamak Rice	Uttar Pradesh

47	438	Tezpur Litchi	Assam
48	435	Karbi Anglong Ginger	Assam
49	465	Khasi Mandarin	Meghalaya
50	374	Tree Tomato (<i>Cyphomandra betacea</i>)	Nagaland
51	466	Kachai Lemon (<i>Citrus jambheri</i>)	Manipur
52	437	Memong Narang(<i>Citrus indica</i>)	Meghalaya
53	377	Mizo Bird eye Chilli	Mizoram
54	376	Sikkim Large Cardamom	Sikkim
55	375	Arunachal Orange	Arunachal
56	436	Tripura Queen Pineapple	Tripura

Impact of International Treaties on Biological Diversity

India is rich in PGR and is considered as one of the 17 biodiversity rich countries in the world with more than 49000 plant species occurring. India is also primary/secondary/tertiary centre of origin to many economically important crop species. The CBD convention addresses the issues related to the origin, value, rights and benefit associated with PGR and development of Traditional knowledge. India is a party to the convention and has passed the “Biological Diversity Act” in 2002 to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge. The Act also provides the inventors making use of Indian biodiversity will have to seek prior approval of the National Biodiversity Authority for any applications of IPR both inside and outside India. The authority can oppose the grant of IPR outside India on any biological resources obtained from India.

Impact on registration of crop varieties under GI tag

The TRIPS prescribes minimum standards of protection of GIs that WTO members must provide. India, in compliance with its obligation under TRIPS, has taken legislative measures by enacting the Geographical Indications of goods (registration and protection) Act, 1999, which come into effect on September 15, 2003. Nearly 240 agricultural varieties/products have been registered under GI tag in India and a few are presented in Table -4 (http://ipindia.nic.in/girindia/treasures_protected/registered_GI_18November2015.pdf).

Impact of National IPR Policy on implementation of Protection of Plant Varieties and Farmers' Rights Act-2001

The National IPR Policy in its document has appreciated the efforts of PPV&FR Authority for providing effective leadership in filing of plant varieties application and granting registration certificates in record time period which is as per the time line prescribed in the Act. To move forward quickly the national IPR Policy has assigned the following responsibilities:

The Protection of Plant Varieties and Farmers' Rights Authority will:

- Support increased registration of new, extant and essentially derived varieties of plants and streamline procedures;
- Facilitate development of seeds and their commercialization by farmers;
- Establish links between the Authority and Agricultural Universities, Research Institutions, Technology Development & Management Centers and Krishi Vigyan Kendras;
- Coordinate with other IPOs for training, sharing expertise and adopting best practices;

- Augment awareness building, training and teaching programs;
- Modernize office infrastructure and use of ICT

The way forward

There is a great scope for taking the message quickly on benefit sharing and community rights. The present progress in plant varietal development in India is also because of the availability of huge PGR/Farmers' varieties. But benefit has to be shared by the breeders with farmers/farming communities is need of the hour. So far though public effort, since 1966 about 8148 varieties have been notified by Govt. of India and from 1992, (From this year the varieties are eligible for registration) about 5125 varieties are notified and only 849 varieties are protected which works out to be 16.50 percent. This indicates IPR-illiteracy. Hence there is a need for capacity building in NARS system. For the success, effective linkage between the Authority and all public/private/NGO/Farmer organization is needed so that India can achieve ever sustainable food, nutritional and Health security through effective PGR management.

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