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An Analysis of the Legal Framework for the Protection of Plant Varieties and the Rights of Farmers in India

MD HASANUR ZAMAN SIDDIQUE¹

ABSTRACT

Rapid population expansion poses a huge threat to food security. Unplanned urbanisation contributes to the situation. It's like a double-edged sword, cutting from both sides. The number of people that need to be fed is increasing, while agricultural lands are dwindling. It is becoming more complicated as more food needs to be produced each year on a limited area of agricultural land. New advanced plant varieties, particularly genetically engineered crops, hold enormous potential for food security. It is possible with contemporary plant breeding procedures, which take time, effort, and money. However, once these crops are available in the market, they are easily duplicated. Thus, IPR protection for breeders' rights is critical. In addition to conserving new and advanced plant varieties, traditional varieties also require preservation. Without which biological diversity may become extinct. Farmers have freely shared, replanted, stored, and sold their seeds for centuries. This practice is the cornerstone of agricultural biodiversity and is critical to food security. Without farmers, there would be no food security. As a result, protecting farmers' rights is essential. This article reviews the causes that led to the establishment of plant breeders' and farmers' rights, explores the ideas, traces their origins at the international level, and finally examines the Indian legal framework for plant variety protection and farmers' rights.

Keywords: *Plant variety, food security, breeders' rights, farmers' rights, IPR protection.*

I. INTRODUCTION

By surpassing natural restrictions, humanity has successfully expanded the planet's carrying capacity for its species.² However, population expansion has created several complex challenges in today's world. One of these is hunger. More than 800 million people globally are chronically hungry, whereas 2 billion are micronutrient deficient.³ Food insecurity and poor dietary quality pose major public health risks. Malnutrition causes physical and mental

¹ Author is a PhD Research Scholar at Department of Law, University of Calcutta, India.

² Ulrich E. Loening, "The Ecological Challenges to Population Growth", 87, Supplement 1, *Transactions of the Royal Society of Tropical Medicine and Hygiene* 9-12, 9 (1993).

³ Theda Gödeckea, Alexander J. Steinb and Martin Qaim, "The global burden of chronic and hidden hunger: Trends and determinants" 17 *Global Food Security* 21-29, 21 (2018).

development deficiencies, different infectious diseases, and an unacceptable number of premature deaths.⁴ As the world's population grows, agricultural productivity must maintain pace.⁵ Amid population growth and climate change, new, improved plant varieties are an important and sustainable means of guaranteeing food security. New varieties that are appropriate for the environment in which they are grown broaden the choice of healthy, flavourful, and nutritious meals available for consumption while also providing farmers with a viable source of income. The advancement of research in biotechnology and tissue culture has heralded a new era in agriculture.

Modern plant biotechnology techniques, such as tissue culture and genetic engineering, have resulted in the creation of unique plant types that would not have been conceivable with traditional breeding procedures.⁶ At the same time, developments in recombinant genetics and biotechnology are producing plant and animal species that, by breeding in features such as increased product quality, resistance to pests, illnesses, and stress factors, among other things, deliver consistent high yields at the same or lower prices.⁷

Plant breeders generating novel plant varieties can now apply for a variety of intellectual property rights. However, this was made feasible by a complex historical process that only lately resulted in plants being considered acceptable for intellectual property protection on a global scale. Plant varieties evolved over millennia through the exchange of seeds and the sharing of information among farmers.⁸ It began with the development of agriculture through the domestication of wild species and plant breeding, which fundamentally altered the direction of human civilization. Over 12,000 years ago, the first husbandmen discovered how to prepare grains from wild grasses. Plant breeding is an ancient human technique that has played a significant influence in the evolution of human civilizations. Individuals had to locate and improve plants that met their needs when they shifted from nomadic to sedentary lifestyles. The availability of plant resources for human and livestock use was important to this change. Plant breeding is considered to have started around 10,000 years ago, to select the most productive

⁴ Matin Qaim, "Role of New Plant Breeding Technologies for Food Security and Sustainable Agricultural Development", 42 (2) *Applied Economic Perspectives and Policy* 129–150, 129 (2020).

⁵ Dániel Fróna, János Szenderák and Mónika Harangi-Rákos, *The Challenge of Feeding the World*, 11 (20) *Sustainability* 1, 1-18 (2019).

⁶ T. I. K. Munaweera, N. U. Jayawardana, Rathiverni Rajaratnam and Nipunika Dissanayake, "Modern Plant Biotechnology as a Strategy in Addressing Climate Change and Attaining Food Security," 11 *Agriculture and Food Security*, 1-28 (2022).

⁷ Nicholas Ozor, "Challenges and Impacts of Agricultural Biotechnology on Developing Societies," 7(4) *African Journal of Biotechnology*, 322-330 (2008).

⁸ S. Thippeswamy, "Plant Variety Protection: An Historical Perspective", 7(11) *International Journal of Development Research*, 16839-16843, 16839 (2017).

and useful plant species to meet human and animal needs.⁹

Early plant breeding methods were basic, whereas modern techniques have advanced tremendously. Farmers were the sole plant breeders before commercial seed production began. As the world's population expanded fast, scientific advances and industrial growth altered the agriculture sector. Scientific research and development accelerated, resulting in the formation of private seed corporations and the transition from farmers to breeders. New plant innovations necessitate large R&D investments. Every year, private corporations spend hundreds of millions of dollars on biotechnology and plant breeding research. Effective protection of these new plant products is required to give an incentive for this significant research expenditure.¹⁰

Plant variety rights (PVRs) are intellectual property rights granted to the breeder of a new variety of plants. Such varieties may be useful for a variety of reasons, including better yields, improved resistance to pests and diseases, or simply expanding the range available. Breeding a new type requires talent and time, as well as money. However, once released to the public, a new variety can be easily replicated. This is why plant breeders' rights need to be adequately protected. In addition to conserving unique and advanced kinds, traditional types require preservation. Without this, biological variety may become extinct. Farmers have freely shared, replanted, stored, and marketed their seeds for centuries. This approach is the cornerstone of agricultural biodiversity and is critical to food security.¹¹

II. ORIGIN OF PLANT VARIETY PROTECTION AND FARMERS' RIGHTS UNDER INTERNATIONAL LAW

Mendel's investigations on the laws of heredity were published in 1865, and nearly 70 years later, Corren, Von Teschermark, and de Vries rediscovered his writings in 1900.¹² The emergence of a plant breeding industry was made possible by the publishing of Mendel's theories, which is why it was significant. This industry's transition in agricultural innovation from farmers to corporations is a major factor in food security.

Plant breeders' rights existed at the national level, much before their inception at the international level. It first appeared in the United States and subsequently spread to other

⁹ Arnel R. Hallauer, "Evolution of Plant Breeding" 11 *Crop Breeding and Applied Biotechnology*, 197-206, 197 (2011).

¹⁰ Robert J. Jondle, "Legal Protection for Plant Intellectual Property" 3 *HortTechnology* 301-307, 301 (1993).

¹¹ Emmanuel Kolawole Oke, "Do Agricultural Companies that Own Intellectual Property Rights on Seeds and Plant Varieties have a Right to Food Responsibility?" 25 *Science, Technology and Society*, 142-158, 144 (2020).

¹² M. Simunek, U. Hobfeld and V. Wissemann, "Rediscovery' Revised – the Cooperation of Erich and Armin von Tschermak Seysenegg in the Context of the 'Rediscovery' of Mendel's Laws in 1899-1901", 6 *Plant Biology*, 1-7, 1 (2011).

European countries. Plant patents were originally used to safeguard the rights of plant breeders. The Plant Patent Act of 1930 was the first intellectual property rights law in the United States to exclusively cover biological materials. This Act provided patent protection for asexually generated domesticated plant varieties.¹³ Plant patents were a relatively new concept, despite the fact that patent laws are centuries old.¹⁴ Later, a new concept different from the patent, i.e., “plant variety protection,” was created through the establishment of the UPOV. In 1961, the International Convention for the Protection of New Varieties of Plants (UPOV) was signed.¹⁵ It was revised in 1972, 1978, and 1991.¹⁶ The UPOV Conventions specifically addressed plant breeders’ rights, however, the convention did not address the question regarding ownership of biological/natural resources. The convention failed to recognize the farming community’s rights.¹⁷

Farmers’ rights were mostly eclipsed by plant breeders’ rights from the time the first plant patent law was enacted until the UPOV mechanism was implemented. The rationale for this was that economically developed countries wanted to construct an international legal framework that was biased in favour of their interests. Whatever revisions were being considered for the UPOV 1991 Convention did not adequately articulate two issues: traditional knowledge and farmers’ rights.¹⁸ The first international effort to recognize farmers’ rights took place in 1983 when the FAO Council adopted the non-legally binding worldwide Undertaking on PGRFA.¹⁹ The issue of farmers’ rights came up again during the discussions that led to the Convention on Biological Diversity²⁰ as well as in Agenda 21, both adopted in 1992. These were key points of reference for subsequent talks on the International Treaty. The International Treaty on Plant Genetic

¹³ Cary Fowler, “The Plant Patent Act of 1930: A Sociological History of its Creation”, 82 *Journal of the Patent and Trademark Office Society*, 621-644, 621 (2000).

¹⁴ Donald G. Daus, “Plant Patents: A Potentially Extinct Variety”, 21 *Economic Botany*, 388-394, 388 (1967).

¹⁵ The Convention was adopted in Paris in 1961 and it was revised in 1972, 1978 and 1991. The mission of the Convention is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

¹⁶ Rolf Jordens, “Progress of plant variety protection based on the International Convention for the Protection of New Varieties of Plants (UPOV Convention)” 27 (3) *World Patent Information* 232-243, 232 (2005).

¹⁷ For detailed explanation see Heinrich Reda, “The International Convention for the Protection of New Varieties of Plants of 1961 and the International Code of Nomenclature of Cultivated Plants: Attempt at a Confrontation with Regard to the Variety Denomination,” 21(1) *Taxon*, 51-55 (1973).

¹⁸ Titilayo Adebola, “Access and Benefit Sharing, Farmers’ Rights and Plant Breeders’ Rights: Reflections on the African Model Law”, 9 (1) *Queen Mary Journal of Intellectual Property*, 105-121, 111 (2019).

¹⁹ See Michael Halewood, “What kind of goods are plant genetic resources for food and agriculture? Towards the identification and development of a new global commons”, 7 (2) *International Journal of the Commons* 278-312 (2013).

²⁰ The United Nations Convention on Biological Diversity, informally known as the Biodiversity Convention, is a multilateral treaty opened for signature at the Earth Summit in Rio De Janeiro in 1992. For the issue of Farmers’ Rights in this Convention see, Jeffrey A. McNeely, Martha Rojas and Caroline Martinet, “The Convention on Biological Diversity: Promise and Frustration,” 4(2) *The Journal of Environment and Development*, 33-53, 45 (1995).

Resources for Food and Agriculture²¹ includes provisions on farmers' rights and explicitly states that the responsibility for implementing these provisions rests with the national governments.²² The treaty's preamble asserts that the past, present, and future contributions of farmers in all regions of the globe, particularly those in centres of origin and diversity, in protecting, enhancing, and making available these resources, is the cornerstone of Farmers' Rights.²³

III. ORIGIN AND DEVELOPMENT OF PLANT VARIETY PROTECTION AND RIGHTS OF FARMERS IN INDIA

Plant domestication in India dates back to ancient times. Specimens excavated from the Harappan ruins show that they domesticated various wild species for multipurpose usage, including food.²⁴ To gain more plant specimens, ancient Indian farmers divided spice plants such as turmeric and ginger. This method dramatically enhanced spice production.²⁵ Modern plant breeding began in the early 1900s. Previous research was conducted by British scientists such as Barber in sugarcane and Howards in wheat crops.²⁶ Established in 1905 in Bihar, the Imperial Agriculture Research Institute was the first research institute. The Imperial Council of Agriculture Research (ICAR) was founded in 1929 and subsequently changed to the Indian Council of Agricultural Research. The first agricultural university for research was established in Pantnagar in 1960. Following independence, the state took over plant breeding research, establishing specialised organisations and agricultural universities. This trend began in the late 1950s with the introduction of highly responsive cultivars developed by global agricultural research institutions. The private sector did not begin to play a substantial role in plant breeding until the mid-1980s.²⁷ Therefore, up until that point, neither plant variety protection nor farmer rights protection was necessary. India initially chose not to join the UPOV scheme for this

²¹ The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) is a legally binding agreement that promotes the sustainable use and conservation of plant genetic resources for food and agriculture. The treaty was signed in November 2001 during the 31st session of the United Nations Food and Agriculture Organization (FAO) in Rome and has been in effect since June 29, 2004. The ITPGRFA has 149 Contracting Parties, including India. See: Laurence R. Helfer, "Intellectual Property Rights and the International Treaty on Plant Genetic Resources for Food and Agriculture," 97 *Proceedings of the Annual Meeting*, 33-35 (2003).

²² Article 9.2 of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

²³ Christian Prip, "Farmers' Rights in the Plant Treaty: interrelations and recent interactions with other international regimes and processes" 11 (1) *Development Studies Research* 1-15, 1 (2024).

²⁴ R. B. Mohantya and T. Panda, "Plant Domestication in Indus Valley Civilisation", 55 (4) *Indian Journal of History of Science*, 349-353 (2020).

²⁵ Jim Fang, "Brief History of Plant Breeding (II): From Transplantation, Division, Cutting, Grafting to Primitive Domestication" 14(12) *Molecular Plant Breeding*, 1-5, 2 (2023).

²⁶ Vinay Kumar, Mukul Kumar, and Awaneet Kumar, "Plant Breeders: The Major Contributor of Agricultural Research" 1 *Krishna Science*, 10-13, 12 (2020).

²⁷ C. N. Rao, "Indian Seed System and Plant Variety Protection" 39(8) *Economic and Political Weekly*, 845-852, 845 (2004).

reason. However, the World Trade Organisation (WTO) sought to advance free trade by negotiating international trade regulations. Through the Agreement on Trade-Related Intellectual Property Rights (TRIPS), intellectual property laws were harmonised. The differing political and economic might of its 160 members, however, frequently led to disputes during discussions. For developing nations, the TRIPS clause for protecting plant varieties was especially important.²⁸

(A) Sui Generis Protection Systems

India signed the TRIPS Agreement in 1994. Article 27(3)(b) of the TRIPS Agreement permits members to exclude from patentability non-microbiological plants and animals, as well as fundamentally biological processes for the growth of non-microbiological plants and animals. Additionally, member nations are required by Article 27(3)(b) to protect plant varieties by means of patents, functional sui generis systems, or both.²⁹

Thus, India had to decide whether to accept the privileges allowed to plant breeders by the 1961 International Convention for the Protection of New Varieties of Plants or pass legislation safeguarding farmers' interests.

Agriculture is the primary source of livelihood for approximately 60% of India's population in a developing country like India. It accounts for around 18% of India's GDP,³⁰ while 70% of rural households continue to rely on agriculture for their primary income.³¹

In order to achieve its World Trade Organisation (WTO) requirement, India explored the sui generis option provided in the TRIPs Agreement. For the PPVFR Act, India created a system. This legislation is special because it fully incorporates commercial actors, i.e., farmers and breeders, into the management of plant genetic resources (PGRs).

India is also considering a new seeds law, which, if passed, would replace the present Seeds Act of 1966. The move to establish the new seeds law is significant in light of the PPVFR Act and India's prospective participation in the International Union for the Protection of Plant Varieties (UPOV).³²

²⁸ Rashmi Venkatesan, "TRIPs and Plant Variety Protection in India: Complicating the Globalisation Debate" 9 *Indian Journal of International Economic Law*, 44-61, 44 (2017).

²⁹ See, Christoph Antons, "Sui Generis Protection of Plant Varieties and Traditional Knowledge in Biodiversity and Agriculture: The International Framework and National Approaches in the Philippines and India", 6 *The Indian Journal of Law and Technology* 89-139 (2010).

³⁰ Kekane Maruti Arjun, "Indian Agriculture- Status, Importance and Role in Indian Economy", 4(4) *International Journal of Agriculture and Food Science Technology*, 343-346 (2013).

³¹ *Ibid.*

³² Pradip Kumar Kashyap and Sunit Dwivedi "Plant Variety Protection and Farmers' Rights in India: An Analysis" 2 (4) *Bharati Law Review* 144-158, 145 (2014).

Under the Indian Protection of Plant Varieties and Farmers' Rights Act (PPVFR) 2001, plants are divided into four main categories: new varieties, extant varieties, essentially derived varieties, and farmers' varieties. Only those varieties of plants that meet the four fundamental requirements, i.e., novelty, distinctness, stability, and uniformity can be protected by PBRs.³³

The Act comprises 11 chapters and 97 sections. The first chapter includes the title and the definitions used in the context of the Act. The final chapter focuses on miscellaneous clauses. The remaining nine chapters cover PPVFR authority, plant variety registration, the duration and effect of registration and benefit sharing, certificate surrender and revocation, farmers' rights, compulsory licence, plant varieties protection appellate tribunal, finance, accounts, audit, infringement, offences, and penalties, among other topics.³⁴

(B) Important Definitions under the PPVFR Act

a. Variety

“Variety,” means a plant grouping except microorganisms within a single botanical taxon of the lowest known rank, which can be (i) defined by the expression of the characteristics resulting from a given genotype of a plant of that plant grouping; (ii) distinguished from any other plant grouping by the expression of at least one of the said characteristics; and (iii) considered as a unit concerning its suitability for being propagated, which remains unchanged after such propagation and includes propagating material of such variety, extant variety, transgenic variety, farmers' variety, and essentially derived variety.³⁵

i. Extant variety

A variety available in India that is (i) notified under section 5 of the Seeds Act, 1966, (ii) a farmers' variety, (iii) a variety about which there is common knowledge, or (iv) any other variety that is in the public domain.³⁶

ii. Essentially derived 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 the genotype of such

³³ R M Kamble, “Sui Generis Plant Variety Protection: Indian Perspective” 3 (5) *IOSR Journal of Engineering* 1-4, 2 (2013).

³⁴ For the commentaries of the Act see Pratibha Brahmi, Sanjeev Saxena and B. S. Dhillon, “The Protection of Plant Varieties and Farmers' Rights Act of India” 86 (3) *Current Science*, 392- 398 (2004).

³⁵ Protection of Plant Varieties and Farmers' Rights Act, 2001, Section 2 (za).

³⁶ *Ibid*, Section 2 (j).

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.³⁷

b. Farmer

Farmer means 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 or traditional varieties through selection and identification of their useful properties.³⁸

i. Farmers' variety

Farmers' variety means variety which (i) has been traditionally cultivated and evolved by the farmers in their fields, or (ii) is a wild relative or landrace of a variety about which the farmers possess common knowledge.³⁹

(C) Salient Features of the PPVFR Act

a. PPVFR Authority

Section 3 gives the Central Government the responsibility to establish an Authority to be known as the Protection of Plant Varieties and Farmers' Rights Authority. Accordingly, for this Act, the Protection of Plant Varieties and Farmers Rights Authority was established on 11th November 2005 and is located in New Delhi.

b. Eligibility for Protection

For a variety to be eligible for registration, it must conform to the criteria of novelty, distinctiveness, uniformity, and stability (NDUS)⁴⁰, as described below.

For the purposes of the Act, a new variety shall be deemed to be: (a) Novel, if, at the date of filing of the application for registration for protection, the propagating or harvested material of such a variety has not been sold or otherwise disposed of by or with the consent of its breeder or his successor for the purposes of exploitation of such variety (i) in India, earlier than one year, (ii) or outside India, in the case of trees or vines earlier than six years, or, in any other case, earlier than four years, before the date of filing such applications. Provided that a trial of

³⁷ Id., Section 2 (i).

³⁸ Id., Section 2 (k).

³⁹ Id., Section 2 (l).

⁴⁰ Id., Section 15.

a new variety that has not been sold or otherwise disposed of shall not affect the right to protection. Provided further that the fact that on the date of filing the application for registration, the propagating or harvested material of such variety has become a matter of common knowledge other than through the aforesaid manner shall not affect the criteria of novelty for such variety. (b) Distinct, if it is clearly distinguishable by at least one essential characteristic from any other variety whose existence is a matter of common knowledge in any country at the time of filing of the application. (c) Uniform, if subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its essential characteristics. (d) Stable, if its essential characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle. The variety will be subjected to such distinctiveness, uniformity, and stability tests as shall be prescribed.

c. Application Form

Every application for registration will have to be accompanied with the following information⁴¹ (a) denomination assigned to such variety by the applicant; (b) an affidavit sworn by the applicant that such variety does not contain any gene or gene sequence involving terminator technology; (c) the application should be in such form as may be specified by regulations; (d) a complete passport data of the parental lines from which the variety has been derived along with the geographical location in India from where the genetic material has been taken and all such information relating to the contribution, if any, of any farmer, village community, institution or organization in breeding, evolving or developing the variety; (e) a statement containing a brief description of the variety, bringing out its characteristics of novelty, distinctiveness, uniformity and stability as required for registration; (f) such fees as may be prescribed; (g) contain a declaration that the genetic material or parental material acquired for breeding, evolving or developing the variety has been lawfully acquired; and (h) such other particulars as may be prescribed. The conditions stated above (a–h), shall not apply in respect of application for registration of farmers' varieties.

d. Period of Protection

The certificate of registration issued under section 24 or sub-section 8 of section 23 shall be valid for nine years in the case of trees and vines and six years in the case of other crops, and may be reviewed and renewed for the remaining period on payment of such fees as may be fixed by the rules made on this behalf subject to the conditions that the total period of validity

⁴¹ Id., Section 18.

shall not exceed (i) in the case of trees and vines, 18 years from the date of registration of the variety; (ii) in the case of extant varieties, 15 years from the date of the notification of that variety by the Central Government under Section 5 of the Seed Act, 1996, and (iii) in the other case, 15 years from the date of registration of the variety.

e. Payment of Annual fee

The Authority may, with the prior approval of the Central Government, by notification in the Official Gazette, impose a fee to be paid annually, by every breeder of a variety, agent, and licensee thereof registered under this Act determined based on benefit or royalty gained by such breeder, agent or licensee, as the case may be, in respect of the variety, for the retention of their registration under this Act.⁴²

i. Breeders' Rights

The certificate of registration for a variety issued under this Act shall confer an exclusive right on the breeder or his successor or his agent or licensee, to produce, sell, market, distribute, import, or export of the variety.⁴³

ii. Researchers' Right

The researchers have been provided access to protected varieties for bona fide research purposes. Section 30 of the PPVFRA states, 'Nothing contained in this Act shall prevent (a) the use of any variety registered under this Act by any person using such variety for conducting experiments or research; and (b) the use of a variety by any person as an initial source of a variety for the purpose of creating other varieties provided that the authorization of the breeder of a registered variety is required where the repeated use of such variety as a parental line is necessary for commercial production of such other newly developed variety'.

f. Registration of a Variety

The PPVFR Act as per section 14 has a provision for the registration of extant varieties, including traditional and farmers' varieties, and wild relatives providing flexibility for registration of all the varieties of common knowledge albeit within a specified period. Under the provision for registration of essentially derived varieties, if the basic variety belongs to farmers, consent of the farmers or group of farmers or community of farmers who have contributed to the preservation or development of such variety is required as per sections 40, 41, and 43.⁴⁴ By way of Gazette notification of the PPV&FR Regulations, 2006, an Extant

⁴² Id., Section 35.

⁴³ Id., Section 28.

⁴⁴ Sanjeev Saxena and Anurudh K. Singh, "Revisit to definitions and need for inventorization or registration of

Variety Recommendation Committee (EVRC) was established to periodically meet and evaluate/scrutinize the applications of varieties notified under the Seeds Act, 1966, and recommend to the Registrar those varieties which satisfy registration requirements. EVRC has seven members and the Registrar acts as the member secretary. The Registrar on consideration of the recommendation and other aspects, decides on whether to accord plant breeders rights to the applicant for the residual period or not. The passport data of accepted varieties are published in the Plant Variety Journal of India (PVJ), a monthly publication of the Authority. After publication in PVJ, objection, if any, can be filed by the aggrieved party by submitting in the prescribed format with Rs. 1500 fee. By doing so a higher degree of transparency on the application is kept as well as an opportunity to hear from the concerned parties to place their views before the Registrar. On completing these requirements, registration/protection is granted for the residual period. The breeder of such extant varieties shall enjoy all the rights and privileges granted under the Act, till such a time the annual fee is paid to the Authority.⁴⁵

g. National Gene Fund

National Gene Fund to be constituted under section 45 of the Act. The following shall be credited thereto: (a) The benefit sharing from the breeder. (b) The annual fee is payable to the authority by way of royalties. (c) By the compensation provided to the communities as defined under Section 41(1)(d). Contribution from any national and international organization and other sources. The fund will be applied for disbursing shares to benefit claimers, either individuals or organization, and for compensation to village communities. The fund will also be used for supporting conservation and sustainable use of genetic resources, including in situ and ex situ collection and for strengthening the capabilities of the panchayat in carrying out such conservation and sustainable use.

h. Notification of Crops Species

As a first step towards implementation of the Act, the Government shall have to notify the crops under section 29 (2) of the Act in order to establish the system of listing of plant varieties for registration. The criteria for selecting the crops could be the crops on which we are dependent for food and nutritional security, including major cereals, pulses, oilseeds, vegetables, and fruit crops. Crop species important for India in the world trade, species of Indian origin, crops where India could benefit from the introduction of new germplasm and foreign investment, could be

landrace, folk, farmers' and traditional varieties" 91 (11) *Current Science* 1451-1454, 1452 (2006).

⁴⁵ S. Nagarajan, R. K. Trivedi, D. S. Raj Ganesh and A. K. Singh, "India registers plant varieties under PPV&FR Act, 2001" 99 (6) *Current Science*, 723-725, 724 (2010).

the other priorities for consideration.

i. **Benefit Sharing**

According to section 2 (b) of the Act “benefit sharing”, in relation to a variety, means such proportion of the benefit accruing to a breeder of such variety or such proportion of the benefit accruing to the breeder from an agent or a licensee of such variety, as the case may be, for which a claimant shall be entitled as determined by the Authority under section 26. The authority may invite claims of benefit sharing of any variety registered under the Act and shall determine the quantum of such award after ascertaining the extent and nature of the benefit claim, after providing an opportunity to be heard, to both the plant breeder and the claimer. The Act provides two avenues for benefit sharing. The first scheme allows individuals or organizations to submit claims concerning the contribution they have made to the development of a protected variety. The final decision is taken by the Authority established under the Act which determines the amount taking into account the importance of the contribution to the overall development of the variety and its commercial potential. The second benefit-sharing avenue allows an individual or organization to file a claim on behalf of a village or local community. The claim relates to the contribution that the village or community has made to the evolution of a variety.⁴⁶

IV. FARMERS’ RIGHTS UNDER PPVFR ACT

The Farmers’ Rights movement has witnessed a long and chequered history. India’s ability to be one of the first countries in the world to forge national legislation on Farmers’ Rights is a significant landmark. The Indian case provides important lessons for other countries in establishing Farmers’ Rights and demonstrates the complex and contentious issues that must be tackled to implement Farmers’ Rights.⁴⁷ The main contribution of the Act is the possibility granted under Section 39 to farmers to be offered exactly the same rights as commercial breeders for their varieties. In other words, farmers have the right to save, use, sow, re-sow, exchange, share, or sell their farm produce, including seeds. The only proviso is that these seeds must not be ‘branded’ with the breeder’s registered name. In this way, both farmers’ and breeders’ rights are protected. The breeder is rewarded for his innovation, but without being able to threaten the farmer’s ability independently to engage in his livelihood and support the livelihood of other farmers. In addition, as a part of the farmers’ rights, compensation can be

⁴⁶ Dr. Philippe Cullet and Radhika Kolluru, “Plant Variety Protection and Farmers’ Rights Towards a Broader Understanding” 24 *Delhi Law Review* 41-52, 45 (2003).

⁴⁷ A. Manju Vani and Sri. K. Sripathi Rao, “A Case Study Relating to the Realization of Farmers Rights to Non-Patented Variety of Seeds in India” 3 (2) *International Journal of Innovative Science and Research Technology* 240-276, 243 (2018).

claimed if a variety fails to provide the expected performance under a given condition and leads to crop failure.⁴⁸ A farmer who has bred or developed a new variety shall be entitled for registration and any other protection as a breeder. Since the definition of an extant variety according to section 2 (j) includes a farmers' variety also, which may be a landrace or a wild relative about which farmers possess common knowledge, the uniformity criteria in case of registration of these varieties is difficult to ascertain. Such consideration may have to be included in the DUS guidelines for testing these particular types of varieties. Further, there could be innumerable farmers' varieties (landraces for registration and their data are scattered and sometimes overlapping). A technical questionnaire to bring out unique characters and areas of adaptability could be developed initially to document these varieties. The time frame to be provided for documentation of information relevant to the registration of extant varieties (farmers' varieties or released varieties) under Section 15(2) may be restricted to three years. A farmer/farmer's organization [Section 39(2)] can claim compensation if a variety fails to give the expected performance under given conditions. Such a claim may have to be paid by the breeder as directed by the Authority after giving due hearing to both the parties, namely the farmer and the breeder. Since the variety is to be tested for DUS by the Authority at the time of registration, and if the performance of the variety is not found to be as claimed by the breeder, the Authority can deal with claims of failure of performance and could decide about such claims independently, instead of the courts.

V. CONCLUSION

According to the Food and Agriculture Organization (FAO), India is the world's greatest producer of pulses, accounting for 25% of worldwide output, as well as the world's second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit, and cotton. Agriculture's proportion of the Indian economy has reduced throughout time, with the service sector emerging as a primary driver of the Indian economy. According to the Economic Survey, agricultural and allied sectors' contribution of the country's Gross Value Added (GVA) has decreased from 18.2 percent in 2014-15 to 16.5 percent in 2019-20 at current prices. Despite being the world's largest producer of pulses, India is a major importer of pulses and vegetable oils, importing 1140.76 million US dollars in pulses and 9890.32 million US dollars in vegetable oils in 2018-19.⁴⁹ Plant variety protection is required to strengthen the agriculture sector. The

⁴⁸ Rohan Dang and Chandni Goel, "Sui Generis Plant Variety Protection: The Indian Perspective" 1 (4) *American Journal of Economics and Business Administration* 303-312, 309 (2009).

⁴⁹ See, Suvita Rani, Shubham Singh and Sujit Bhattacharya "Impact of India's Plant Variety Protection Act: Analytical Examination Based on Registrations Under the Act", 25 *Journal of Intellectual Property Rights*, 131-139 (2020).

rights of plant breeders must be safeguarded in order to achieve this. Farmers, on the other hand, are regarded the backbone of India's agricultural economy, and their rights should be equally protected. Although the Act grants farmers progressive rights and legal equality with breeders, a deeper inspection reveals an unspoken bias towards commercial breeders.⁵⁰ For example, breeders and farmers have to satisfy the same three tests: distinctiveness, uniformity, and stability (DUS). Even then the Protection of Plant Varieties and Farmers Rights Act is a commendable achievement for the country. The legislation except few shortcomings is well equipped to carry out its purpose. The efficiency of a law depends on its proper implementation and enforcement. Therefore, strong implementation and enforcement of the PPVFR Act is the key to secure plant variety rights as well as farmers' rights in our country.

⁵⁰ M. S. Swaminathan, "The Protection of Plant Varieties and Farmers' Rights Act: From legislation to implementation," 82(7) *Current Science*, 778-780 (2002).