

# Farmers' Rights and their Role in Plant Variety Protection: Current and Future Perspectives

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## Abstract

The Primary objective of this study is to determine the nature of rights privileged to Indian farmers in accordance with FAO: Food and Agriculture Organization of the United Nations (1989) resolutions. This paper surveys the issues related to rights privileged to the farmers and registration of experimented and produced new crop varieties to gain the benefits announced by the Government under the said Act. For the current study total of 27 different sources are utilized to gather information regarding farmers' rights and the protection of plant varieties. However, several issues pertaining to registering varieties by farmers are found during the survey which need core attention by the Government for a better future for both entities. Further, our study is limited to analyzing the data due to the unavailability of information regarding the use of farmer's varieties, and their role in the agriculture sector. It is further revealed that efforts are required to measure the problems and other evaluation matrixes in examining plant variety protection mechanisms in the agriculture sector. In rural India, there are issues regarding the harmonies of the new system linked either economically or politically with the legislation and also among the people working in the agriculture sector.

**Key words:** Trade-related aspects of intellectual property rights, Farmers' rights, Plants protection, Agricultural innovation, Aromatic crops

The Indian economy has been dominated by the agriculture sector due to its pivotal role in progressing. 54.6 % of the country's workforce belongs to this sector directly or indirectly in the allied sub-sectors events or accomplishments (Census 2011) and resultantly it has contributed 18.8% in the country's GVA for the fiscal year 2021-22. Due to its great

importance, the agriculture sector has become the focus of the Indian Government and numerous actions has been initiated for future growth and benefits from this sector [1]. The main steps are focused on increasing of the farmers' income for better sustainability [2]. The below table presents latest information regarding GVA growth.

Table 1 GVA growth rate statistics (%)

Year	Total economy	Agriculture and allied sector	Crops	Livestock	Forestry and logging	Fishing
2016-17	8.0	6.8	5.3	10.0	5.5	10.4
2017-18 <sup>\$</sup>	6.2	6.6	5.4	7.9	5.4	15.2
2018-19 <sup>#</sup>	5.9	2.6	-1.6	8.5	7.9	9.0
2019-20 <sup>@</sup>	4.1	4.3	4.0	7.0	0.3	1.0
2020-21 <sup>*</sup>	-6.2	3.6	Will be released on 31 <sup>st</sup> January 2022			
2021-22 <sup>**</sup>	8.6	3.9	Will be released in January 2023			

Source: National Statistical Office, MoSPI

Note: \$ Third revised estimates; # Second revised estimate; @ First revised estimate

\* As per provisional estimates of 2021

\*\* As per first advance estimates of national income, 2021-22 released on 7<sup>th</sup> Jan 2022

For the purpose to facilitate the farmers, Government of India has launched The Government has developed an online web portal to provide door step facility to the farmers using advanced communication technologies for collection of updated information from them about types of seeds they need, fertilizers at low rates, pesticides, future steps, and suggestions for improving the agriculture sector as well as life style of them

to meet the daily needs in a decent way [3]. This facility can be utilized by using the friendly structure of the portal encompassed with the Map of India; which has been placed on the main page for easy reference and is shown in below (Fig 1).

In order to make efforts for encouraging modernization in agriculture sector, Indian Government has made two kinds of legislation through a bill namely; PPVFRs Act 2001 and GIG

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Act 1999. The first one, is to facilitate the registration of newly introduced crops by farmers to ensure benefits to them and utilized them on commercial basis while the second one Geographical indications of goods certify registration as well as

endorsed protection of their rights; further, it promotes the marketing of those goods which originate quality and geographical characteristics of the origin [3-4].



Source: <https://farmer.gov.in/>

Fig 1 Farmer's portal

The legal right of farmers to register crop varieties was established by the Protection of Plant Varieties and Farmers' Rights act, a law that was enacted in 2001 and which came fully into operation in 2007 [5]. As a signatory to the Trade Related Aspects of Intellectual Property Rights (TRIPs) Agreement of 1994, India was obliged to enact legislation that brought plant varieties to enact an intellectual property law on plant varieties that brought the concerns of farmers within its ambit. The legislation, called the Protection of Plant Varieties and Farmers' Rights Act, 2001, (PPVFR Act) began substantially to be implemented from 2005 [6].

The issue of plant variety protection [1] is significant and can be understood in two ways: first, in the narrow sense where protection of plant variety is important to provide an incentive to commercial breeders for developing new plant varieties; and, second, in the broader sense where plant variety protection has direct linkages with the rights of the farmers who have traditionally been breeding plant varieties as per their local conditions, accessibility to Plant Genetic Resources (PGR) and concerns related to food security. Farmers have played an important role in the conservation of PGR and will continue to do so in the future as well [7].

Individually the legislations either PPVFR Act 2001 or GIGs Act 1999 boost the scientific and technical revolution and

also encourage transfers of technology to farmers. For this purpose, above four hundred farmers were selected to be part of a survey to find out their technological needs for modernizing the agriculture sector, in terms of making them aware of novel advancements in technology, and laws and educating them about utilizing their skills in the market to have maximum benefit in reward of their efforts made under shelter of provided rules and regulations [3].

### Background

According to the definition of 'farmer's rights' made by the United Nations specialized agency namely; Food and Agriculture Organization (FAO) established in 1989, states in its resolution No. 5/89 that "farmers are privileged to conserve, improve and encourage to ensure availability of plants to be utilized as genetic resource [8] in all times; particularly in the centers of origin" [9]. FAO has described two reasons in support of farmers' rights protection [10]. At first, to encourage incentives for the farmers in order to preserve genetic resources which is known as "Conservation argument"; i.e. To provide a structure of incentives to the farmer community to utilize it for retention of valuable plants [5]. And secondly, by protecting the farmers' rights is an attempt to enable them to understand intellectual property rights especially in developing countries

and this term is known as “Equity Rationale” [11]. Based on the literature, it has been observed that there is an irregularity in rewards to the farmers who make their efforts in protecting the plants labeled as genetic resource and those who contribute their energies in producing new varieties as product of research. The FAO has also ensured in its charter to protect the farmer’s rewards dissemination on a performance basis under separate circumstances and conditions [1], [12].

The Indian Government has setup a division known as Plant Protection, which acts like a regulatory body and also monitors, observe HRM development tasks through a sub-mission or sub-division whose major responsibility is to ensure plants protection. This submission is given the title Plant Protection and Plant Quarantine (SMPPQ) under the umbrella of the mega project titled Green Revolution (*Krishonnati Yojana*). This sub-mission is primarily focused on minimization of the loss in quality in order to produce agricultural crops that are caused by ravages of insects, pests, plant diseases, weeds, etc., and to safeguard biosecurity from the intrusion and alien species blowout [13]. It also monitors agricultural commodities export to international markets and sponsors good, novel practices adapted for protecting plants by using advanced technologies and techniques. For this purpose, an Act has also been passed by Indian Government formally known as Destructive Insect and Pests Act, 1914 and the Insecticides Act, 1968 for providing legal charter to practice governing reforms. It has four important sub-components namely; Strengthening and Modernization of Pest Management Approach (SMPMA), Strengthening and Modernization of Plant Quarantine Facilities (SMPQF), Monitoring of Pesticide Residues at National Level (MPRNL) and, National Institute of Plant Health Management (NIPHM).

#### *The protection of plant varieties and farmers’ rights Act, 2001*

In the preamble of the PPVFR Act, the objectives are specified as (i). According to contributions, the farmers should be given respect in terms of acknowledging their efforts for conserving, improving and making plant genetic resources in order to develop new varieties. (ii). Further for protecting the plant breeding rights to put agriculture progress across the country in fast track;(iii) to encourage the private and public sector to come forward for investments in the Research and Development particular in agriculture sector for introducing new plant varieties especially native or inhabited to the Indian soil and environment;(iv) to make progress in seed industry for availability of improved quality seed and modern equipment for the farmers;(v) to gain full benefit of Section (b) of the article 27(3) of the TRIPs agreement.

In the instant PPVFR Act, plant protection should be granted to a person whose definition is given in section 2-C of the act; whereas it has been defined that a person who has raised, grew and industrialized a new variety will be known as “breeder” and must be protected under the Government rules. For this purpose, Section 2(1) describes the farmers’ varieties protection scheme wherein it has been given that a farmer’s variety will be traditionally cultivated and grown in their fields or in the base land of the variety introduced by the farmers [14].

In Section 2-K of the Act, the term “Farmer” has been defined as “A person who himself cultivates crops by developing self-encouragement and supervise the farming by making a group of persons for the purpose to conserve, preserve wild species or seasonal traditional varieties and also do some experimentation to find their useful properties”.

The Section 39 of the act is specific to the completion of registration process of the varieties produced by the farmers and Section 24(1) ensures issuance of certificates to that farmer. After receiving the certificates, individual or group of individuals can claim their benefits linked with registration process of the crop varieties. While evaluating the claims made by the farmers, the authority under sub-section 5 of the Section 26, finds nature and extent of the claim, its commercial demands and utilization in the market. Similarly, Section 26 needs the amount of benefit to be shared further must be deposited by the breeder in the National Gene Fund (NGF) established under the Act *ibid* [15].

#### *Community and farmers’ rights*

According to PPV&FR 2001 Act section 39 includes rights for farmers who develop new varieties of plants. National gene fund includes some awards and rewards for farmers who are involved in protecting plants, lands, plants and their genes [16]. According to the above-mentioned act following rights are provided to farmers in India: develop or bred new variety of plants. Farmers can sell their registered seeds which are produced in their own farms, farmers can register the variety under the act which is developed, bred or cultivated y their own in their own farm, and no fees will be charged for any inspection to the farmers. Farmers will be compensated if registered variety failed to provide expected performance. In addition, any member of the community can claim for compensation if they significantly contributed in evolution, development and bred of variety [17].

#### *Breeders, researchers, and community rights*

Those farmers who bred some new variety could sell, export, and import the variety and for this purpose, they can appoint some agent for this purpose. Moreover, researchers can also use the variety for their study, experiment, and research purposes. They have to get permission prior to the experiment. Furthermore, the village, community, and any individual who has significantly contributed towards any specific breed can claim benefits [18].

#### *Method for plant variety registration*

If variety is novel and distinct it fulfills the criteria then it can be registered. That variety should have at least one distinct characteristic from existing varieties. Seed Act 1966 allows the farmers to register their new varieties with name essential derived varieties and common knowledge farmers’ varieties [19]. These steps include filling application form, evaluation and assessment of the application via different tests, and publication of data in an Indian journal i.e. Plant Variety Journal of India followed by issuance of a registration certificate (Fig 2).

Table 2 Fee charges for registration of different varieties

S#	Type	Fee
1	Variety of Farmer	No charges
2	Novel/Extant/Essentially derived Variety	Single Rs7 thousand Commercial Rs 50 thousand Academic Rs 10 thousand
3	Act 1966 section 5 Extant variety	Rs 2 thousand

In addition, farmers and applicants have to pay DUS test fee and it is decided by competent authority and must be mentioned in PVJI



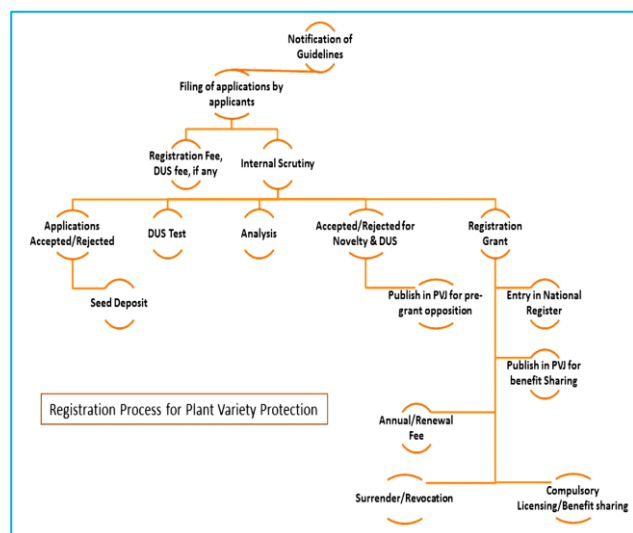


Fig 2 Plant variety registration process

### Intellectual property vs farmers' rights

The main component of intellectual property rights (IPR) in plants is it must be distinct and different from existing plant varieties. Then it will be considered as innovative and novel variety. In non-biological domains complete new crops are never invented but they are developed from pre-existing crops [21]. The standard criterion for new variety of plant and crop is consists of two things one is novel process to combine the pre-existing and other one and use and knowledge of pre-existing varieties [22].

### Balance between breeders and farmers

There is direct relationship between plant genetic resources (PGR) and poverty in India. Some entities do not realize the importance of PGR. The national gene fund (NGF) help and protect rights of farmers by insisting breeders to share benefits and fairly among farmers [23]. As per the community biodiversity management there must be liberal rights given to farmers over each and every variety developed by them. Along with these rights there must be technical support monetary and moral and ethical support given to farmers. These rights must be given equally to every farmer on priority basis [24].

### Farmers rights provisions and its consequences

There are certain benefits as well as implications of farmers' rights to educational and research institutions. The first implication is licensing fee it will slow down the process of invention and development of new variety [25]. Second implication is its transaction cost. If access to pre-existing and parental varieties are paid then it will badly affect the development of new varieties. Breeders have to obtain consent for use of all parental varieties so it will significantly increase the transaction cost. There is long method of sharing benefits and claim of compensation for breeders [26].

### Indian "plant variety protection (PVP)" bill

August 09 2001 Indian Lok Sabha passed a bill named PVP. This bill is one of the pioneers in the history of farmers' right protection for introducing new plants varieties. The benefit of this act is to protect the unauthorized use of extant and newly developed plants varieties. Before this act was passed there was only one 1970 act for patent available [27]. The main problem with the patent act was that it did not allow to get horticulture and agriculture methods to get registered or patented. Farmers were only allowed to get register their new varieties under the 1966 Act of seeds. India got membership in TRIPS and World Trade Organizations and it was crucial to

have an act to protect farmers' rights and newly developed and introduced plant types.

Back cross and hybridization was the only way to discover new plant species before the industrial and technological revolution and it does not have any guarantee for the protection of new plants. It is very easy to copy and replicate the process and methods used in the biotechnology fields. As per the statement given by the United Nations development program for human development due to market pressures technology is invented and technology is not invented to meet the demands and needs of the poor public from the above statement it is clear that Western nations and economies are not interested to invent new techniques for the general public but only want to follow and implement TRIPS and IPR regulations in the field of agriculture.

The concept among farmers was developed to buy new good quality seeds back sixty years ago. New seeds mean that seeds saved from last year's crops were replaced by old seeds by Indian farmers. Saving seeds is not the best practice from a scientific view. In India government agencies provide farmers with healthy and clean seeds at nominal charges/rates. Farmers do not have the capacity to buy new seeds every year due to poor economic conditions and some farmers have spiritual affiliation attached to the grains.

## MATERIALS AND METHODS

For systematic review PRISMA preferred items reporting and systematic Meta analysis were used. For this purpose, Scopus, web of science, Google scholar, United Nations reports, Indian local journals and international journals were searched. For the current study total 27 different sources are utilized to gather information regarding farmers' rights and protection of plants varieties (Fig 3).

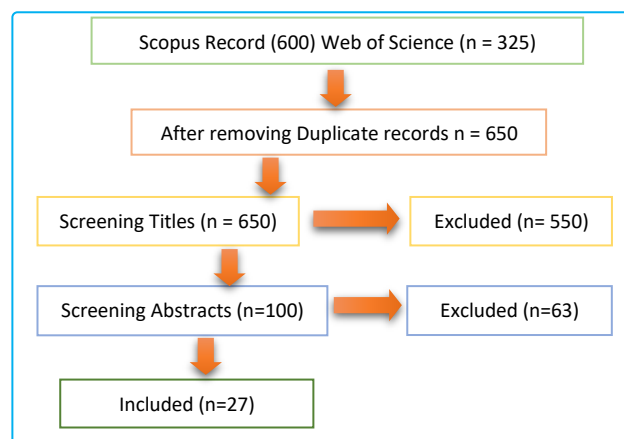


Fig 3 PRISMA for systematic review

## RESULTS AND DISCUSSION

According to annual report 2021-22 published by Government of India, according to annual report 2021-22 published by Government of India, the revenue and quantity gained from the wide-ranging horticulture sector, where in fruits, vegetables, flora and all other medical related plants and their species are included; is better in terms of per unit area. 27.59 million hectare is occupied for the purpose of harvesting the above-mentioned plants to contribute in the country's economy; for this purpose, 32.17% increase has been found while in year 2009-10, only 20.88 million hectare was occupied. Similarly, due to increase in harvesting area, production has also been increased to 331.05 million tons; which is significant increase of about 48.39% in the year 2020-21. As a results of

increasing area, harvesting several varieties of plants, productivity has also been affected and is increased by approx. 12.25% in the mentioned period.

Table 3 Year wise productivity with respect to production

Year	Area	Production	Productivity
2009-10	20.88	223.09	10.69
2010-11	21.83	240.53	11.02
2011-12	23.24	257.28	11.07
2012-13	23.69	268.85	11.35
2013-14	24.20	277.35	11.46
2014-15	23.41	280.99	12.00
2015-16	24.47	286.19	11.69
2016-17	24.85	300.64	12.10
2017-18	25.24	310.67	12.30
2018-19	25.74	311.05	12.09
2019-20	26.48	320.47	12.10
2020-21 (3 <sup>rd</sup> advance estimates)	27.59	331.05	12.00

In order to promote innovation trends of cultivation especially rice among farmers, the survey was carried out to examine or determine the effectiveness of the clauses mentioned in both the legislations likewise PPVFR and GIs Acts. The outcomes of the survey reveal numerous reasons that have been analyzed on the basis of collected information. Among these, a dominant explanation was about awareness among farmers while selecting a variety on their own choice. The farmers expressed their views about lusciousness, yielding huge quantity of straw, and likeness of rice straw by cattle has been made better choice for them to cultivate traditional rice varieties [16]. Besides, the farmers are still unaware of the support which is extended to them by Government for cultivation of different experimented new varieties as per information presented in the following table. However, Government is trying to make them aware of these legislative support to the farmers through media. Which has resulted a better image among the farmers to know about it and benefits associated with the legislative support. By doing so, farmers are satisfied and getting in touch with the new varieties and also encouraging their siblings to follow Government directives. On the basis of gathered data, it is an emerging trend that more area has been cultivated by the below 45 years young age farmers; and among these 25% have preferred to cultivate rice. Which still needs that Government may encourage and extend its media campaign to make more population aware of cultivating different varieties [17-19]. This study has also revealed that after too much efforts made by the Government, there are huge number of farmers who are not aware about the support extended by the Government to those through legislation. According to collected and analyzed data, 70% declined have been seen during the years 1960 to 1961 and 2009 to 2010 in the cultivation and having benefits by those farmers. Further, constraints are also identified by the rice growers.

In the same way, three other NGO representatives were also interviewed for the purpose of identification of legislative support to be allowed to workers who make innovations in the agriculture context. Consequently, an NGO named MSSRF utilized the Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001 support and shifted his focus to conserving rice within privileges and guidelines granted in the IBD Act 2002 [20]. Another NGO namely Thanal has focused on the organic rice cultivation another part of the country i.e. Kerala and counseled the farmers to have Government support to grow traditional varieties keeping in mind the needs of the population and their preferences. For this purpose, they insisted

people to use PDS, PHS for storage and processing at local level. Similarly, Thirunelly Agri Producer Company focused on yearly production and its marketing on lower prices to be guaranteed by the Government. This strategy was failed because it didn't have legal backing of the Act as had no reference of it in their campaign. Collectively all the three NGOs have supported the legislative support to the farmers by the Government for meeting their daily needs in terms of producing new and traditional rice varieties and their effect on country growth.

#### *New agriculture reform bills*

On September 27, 2020, the President of India gave his ascent to the three farm bills, namely, the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020 (FPTC), the Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill, 2020 (FAPAFS), and the Essential Commodities (Amendment) Bill, 2020.

The agricultural bills aim to remove market limitations and barriers and intermediaries apart from promoting the participation of the corporate sector in procurement and storage of agricultural produce to ensure better price discovery and price recovery so as to make the farming occupation more remunerative. This is in chime with the Indian government's commitment to double farmers' income by 2022. The farmers of Uttar Pradesh, Punjab, and Haryana are angry with the provisions of these Bills as they are afraid that these Bills may be the platform that the government (at the Centre) is setting up for the replacement or scrapping of the otherwise robust support system prevalent in their states for the purchase of their crops. They fear that the Minimum Support Price (MSP) guarantee that was their safety net since the Green Revolution of the 1960s kicked in, maybe snatched away from under the pretext of giving the farmers more playing ground and better platforms.

#### *The farm laws repeal bill 2021*

After long time conflict between farmers and government, finally all three-farm law bill are repealed. The Prime Minister Shri Narendra Singh Modi Ji had announced that the three farm laws will be repealed on November 19 and urged farmers staging protests to end the stir and go back to their homes and fields. Parliament clears Farm Laws Repeal Bill without a debate. The Farm Laws Repeal Bill passed in both House of Parliament.

## **CONCLUSION**

In accordance with changes in the domestic policy due to international pressure, India's Government has carved out the legislative measures in terms of introducing rights to the farmers, who introduce new varieties to meet the agriculture needs of the country. The main purpose behind this legal support was to encourage the population to progress the agriculture sector for pushing back economy of the country. The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001 an example of these steps toward economic growth. In this study, we have analyzed the registration process under the said Act. This article is known to be synthesized report covering the legislative progress and then its consequences to be reviewed and updated on regular basis. According to the outcomes of the study, it is needed that farmer's right of registration must be supported with ownership to have benefits as breeders or innovators. It is further revealed that efforts required to measure the problems and other evaluation matrixes in examining plant variety protection mechanisms in the

agriculture sector. In the rural India, there are issues regarding harmonies of the new system linked either economically or politically with the legislation and also among the people working in the agriculture sector.

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