

Preamble

Establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants is very important for growth and development of agriculture. It has been considered necessary to recognize and protect the rights of the farmers in respect of their contribution made at any time in conserving, improving and making available plant genetic resources for the development of the new plant varieties. Moreover, to accelerate agricultural development, it is necessary to protect plant breeders' rights to stimulate investment for research and development for the development of new plant varieties. Such protection is likely to facilitate the growth of the seed industry which will ensure the availability of high-quality seeds and planting materials to the farmers. India having ratified the Agreement on Trade Related Aspects of the Intellectual Property Rights has to make provision for giving effect to the Agreement. To give effect to the aforesaid objectives, the Protection of Plant Varieties and Farmers' Rights Act, 2001 was enacted in India and Protection of Plant Varieties and Farmers' Rights Authority was established. Different provisions available in PPVFRA Act 2001 are explained in brief using examples of tropical tuber crops for the benefit of farmers, students and other stakeholders.

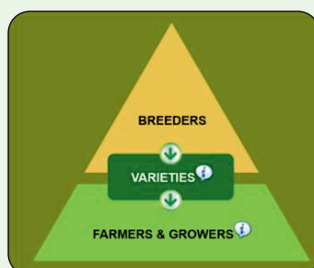
What is plant variety?



The term 'species' is a familiar unit of botanical classification within the plant kingdom. However, it is clear that within a species there can be a wide range of different types of plant. Farmers and growers need plants with particular characteristics that are adapted to their environment and their cultivation practices. A plant variety represents a more precisely defined group of plants, selected from within a species, with a common set of characteristics.

Why do farmers need new plant varieties?

New varieties of plants with features such as improved yield, high quality and resistance to biotic stresses are key elements in increasing the productivity and product quality in agriculture, horticulture and forestry, whilst minimizing the pressure on the natural environment. Many inputs need to be combined with such



varieties in order to deploy their full genetic potential. The tremendous progress in agricultural productivity in various parts of the world is largely based on improved varieties. The recently released varieties of cassava from ICAR-CTCRI with key features and quality traits are given below.

Important new varieties in cassava released by ICAR-CTCRI

Name of the variety Features



- Year of release: 2023
- Duration (months): 9-10
- Yield (t/ha): 40-50
- Starch content (%): 27-28

Important traits: Resistant to cassava mosaic disease, high nutrient use efficiency and drought tolerance.

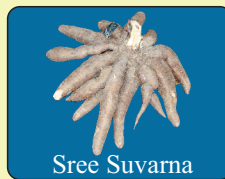
Tall, top-branching variety with silver grey stem, light green petiole, cylindrical tubers with cream skin, cream rind and white flesh.



- Year of release: 2018
- Duration (months): 9-10
- Yield (t/ha): 40-45
- Starch content (%): 27-32

Important traits: Industrial variety and completely resistant to cassava mosaic disease caused by both Indian cassava mosaic virus and Sri Lankan cassava mosaic virus. Drought tolerant.

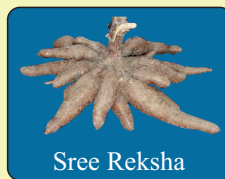
Non-branching variety with dark brown stem, brownish green pubescent emerging leaves, green petiole with brown tinge. Long cylindrical tubers with brown skin, cream rind and white flesh colour.



- Year of release: 2018
- Duration (months): 7-8
- Yield (t/ha): 35-40
- Starch content (%): 25-27

Important traits: Completely resistant to cassava mosaic disease, low cyanogen content.

Erect, top-branching variety with brown stem, dark purple petiole, light brown emerging leaves; conical to cylindrical tubers with brown skin, cream rind and white flesh colour.



- Year of release: 2017
- Duration (months): 8-9
- Yield (t/ha): 40-45
- Starch content (%): 27-31

Important traits: Completely resistant to cassava mosaic disease and tolerant to post-harvest physiological deterioration. Low sugar (1.1%) content. Drought tolerant. Stable yield under organic management.

Tall variety (275-325 cm), non branching with brown stem, dark purple petiole and light brown emerging leaf. Tubers with brown skin, cream rind and white flesh colour.

What is plant variety protection?

Granting of rights to breeders for new plant varieties as an intellectual property right. It is called the breeder's right. In the case of a variety protected by a breeder's right, the authorization of the breeder is required to propagate the variety for commercial purposes. Plant breeding is a long process and expensive. Plant varieties can be easily and quickly reproduced. Breeders require protection to recover investment. Only the breeder of a new plant variety can protect the new plant variety. There are no restrictions on who can be considered to be a breeder: a breeder might be an individual, a farmer, a researcher, a public institute, a private company etc. We need to promote an effective system of plant variety protection, with an aim of encouraging the development of new varieties of plants, for the benefit of society.

The PPVFR Act 2001

Under the TRIPS agreement it is obligatory on part of a member country to provide protection to new plant variety either through patent or an effective sui generis system or a combination of these two systems. India was therefore under an obligation to introduce a system for protecting new plant variety. India opted for sui generis system and enacted the Protection of Plant Varieties and Farmers' Rights Act 2001. However, in many countries such plants can be protected through Breeders' Rights, patents and UPOV Convention. The Protection of Plant Varieties and Farmers' Rights Act 2001 was enacted in India to protect the new plant varieties. Rules for the same were notified in 2003. The Act has now come into force. The Protection of Plant Varieties and Farmers' Rights Authority has been set up and is responsible to administer the Act. The office of the Registrar receives applications for registration of notified crops.

Objectives of PPVFR in India

The objectives of the PPVFR are:

- (i) To stimulate investments for research and development both in the public and the private sectors for the development of new plant varieties by ensuring appropriate returns on such investments.
- (ii) To facilitate the growth of the seed industry in the country through domestic and foreign investment which will ensure the availability of high quality seeds and planting materials to Indian farmers.
- (iii) To recognize the role of farmers as cultivators and conservers and the contribution of traditional, rural and tribal communities to the country's agro biodiversity by rewarding them for their contribution through benefit sharing and protecting the traditional right of the farmers.

More importantly, this act provides safeguards to farmers by giving farmers' rights while providing for an effective system of protection of plant breeders' rights. The Act seeks to safeguard researchers' rights as well. It also contains provisions for safeguarding the larger public interest. The farmer's rights include his traditional rights to save, use, share or sell his farm produce of a variety protected under this Act provided the sale is not for the purpose of reproduction under a commercial marketing arrangement.

Varieties for registration under PPVFR Act

- (i) A new variety if it conforms to the criteria of novelty, distinctiveness, uniformity and stability.
- (ii) An extant variety if it conforms to criteria of distinctiveness, uniformity and stability.

Farmers' Variety as per PPVFR Act, 2001

'Farmers' variety means a variety which-

- (i) has been traditionally cultivated and evolved by the farmers in their fields; or
- (ii) is a wild relative or land race of a variety about which the farmers possess the common knowledge

where farmer means any person who (i) cultivates crops by cultivating the land himself; or (ii) cultivates crop by directly supervising the cultivation of land through any other person; or (iii) conserves and preserves solely 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.

Farmers' rights

The farmers' rights as defined in the Act are:

- (i) A farmer who has bred or developed a new variety shall be entitled for registration and other protection in like manner as a breeder of a variety under this Act
- (ii) The farmers' variety shall be entitled for registration if the application contains declaration as specified in clause (h) or sub-section (1) of section 18
- (iii) A farmer who is engaged in the conservation of genetic resources of land races and wild relatives of economic plants and their improvement through selection and preservation shall be entitled in the prescribed manner for recognition and reward from the Gene Fund. Provided that material so selected and preserved has been used as donors of genes in varieties registrable under this Act;
- (iv) A farmer shall be deemed to be entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this Act in the same manner as he was entitled before the coming into force of this Act.

In addition to the above, where any propagating material of a variety registered under this Act has been sold to a farmer or a group of farmers or any organization of farmers, the breeder of such variety shall disclose to the farmer or the group of farmers or the organization of farmers, as the case may be, the expected performance under given conditions, and if such propagating material fails to provide such performance under such given conditions, the farmer or the group of farmers or the organization of farmers, as the case may be, may claim compensation in the prescribed manner before the Authority and the Authority shall, after giving notice to the breeder of the variety and after providing him an opportunity to file opposition in the prescribed manner and after hearing the parties, direct the breeder of the variety to pay such compensation as it deems fit, to the farmer or the group of farmers or the organization of farmers, as the case may be.

What are farmers varieties?

The diverse germplasm of crops traditionally maintained by farming communities are called farmers varieties/land races/traditional varieties. As a result of the adaptive evolution, landraces constitute a reservoir of genes for nutritive value and tolerance to biotic and abiotic stresses. Traditional varieties are a good source of nutrients and should be promoted for their health benefits. No new variety can be produced/developed without the involvement of basic materials i.e. the parent varieties. These parents are the varieties of farmers which have evolved through generations of continuous growing in their fields with natural and/or conscious selection of plants in the population.



Farmers / traditional varieties of tuber crops

Traditional varieties are donor for many quality traits including high yields of improved varieties of tropical tuber crops

Cassava: About 20 varieties released from ICAR-CTCRI; for most varieties, parents were sourced from traditional varieties.

Variety	Breeding method	Parents	Traits
H 97	Heterosis	Manjavella x Acc. No. 300	Duration: 10 months; Average yield: 25-35 t ha ⁻¹ ; Starch: 27-31%; Cooking quality: Good
H 165	Heterosis	Chadayamangalam vella x Kalikalan	Duration: 8 months; Average yield: 33- 38 t ha ⁻¹ Starch: 23-25%; Cooking quality: Good; Cyanogen: 150-165 mg g ⁻¹
H 226	Heterosis	M 4 x Ethakkakaruppan	Duration: 10 months; Average yield: 30-35 t ha ⁻¹ ; Starch: 28-30%; Cooking quality: Good; Cyanogen: 180-200 mg g ⁻¹

Sweet potato: ICAR-CTCRI has released 21 varieties/hybrids. Local varieties are nutrient rich/weevil tolerance/resistance and these traits are being introgressed for new varieties with high yield coupled with quality and biotic/abiotic stress tolerance.

Variety	Breeding method	Parents	Traits
H 42	Hybridization and selection	Vella Damph × Triumph	Duration: 120 days; Average yield: 22-25 t ha ⁻¹
H 41	Hybridization and selection	Norin × Indigenous cultivar	Duration: 120 days; Average yield: 20-25 t ha ⁻¹
Bhu Sona	Selection	Exotic local source	Yield: 20-24 t ha ⁻¹ ; Maturity: 105-110 days; β-carotene rich: 12-14 mg/100gm
Bhu Krishna	Selection	Exotic local source	Yield: 20-24 t ha ⁻¹ ; Maturity: 105-110 days; Anthocyanin rich: 90 mg/100gm

Greater yam: ICAR-CTCRI has released 10 varieties, mostly clonal selection from local varieties

Variety	Breeding method	Parents	Traits
Sree Neelima	Selection	Clonal selection from local variety	Duration: 9 months; Average yield: 33 t ha ⁻¹ , purple flesh colour

Leaves of traditional varieties of Colocasia and Ipomoea are nutrient rich

Name	Protein (g)	Minerals (g)	Crude fibre (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)
<i>Amaranthus paniculatus</i>	5.9	3.8	2.1	530	60	18.4
Colocasia leaves (black)	6.8	2.5	1.8	460	125	0.98
Colocasia leaves (green)	3.9	2.2	2.9	227	82	10.0
<i>Ipomoea</i> leaves (kolmow)	2.9	2.1	1.2	110	46	3.9



Registration of farmers' variety under PPVFRA 2001

Individual farmer, farmers community and farmers group can apply for registration of farmers varieties with PPVRA Act 2001. Application for farmers' variety by farmers or community of farmers

or group of farmers as contained in the Protection of Plant Varieties and Farmers' Rights Act, 2001 shall be submitted only with an endorsement in Annexure 1 either by the concerned Panchayat Biodiversity Management Committee, or District Agricultural Officer, or Director of Research of concerned State Agricultural University or District Tribal Development Officer. To meet the criteria prescribed for variety protection, Chairperson/Secretary of the Concerned Panchayat, Biodiversity Management Committee or Concerned District Agricultural Officer or Director of Research/Director of Extension of concerned State Agricultural Universities or Concerned District Tribal Development Office /Zonal Project Director (ICAR) shall endorse and facilitate application to be submitted to PPVFRA. The prescribed application is available in the PPVFRA website (<https://plantaauthority.gov.in/sites/default/files/farmervariety2013.pdf>).



For more details

Protection of Plant Varieties and Farmers' Rights Authority,
Ministry of Agriculture & Farmers' Welfare,
NASC Complex, DPS Marg, Opp- Todapur Village, New Delhi – 110012
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