

PLANT BREEDERS' RIGHTS: ENCOURAGING INNOVATIONS¹

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Introduction

Access to food, availability of food and not merely to stuff the empty stomach but meeting the demands of required calories for the healthy self is the touching stone for any society's happiness and in turn it is the yard stick for a nation's prosperity. To attain this minimal criterion the State has to endeavor for higher production of food which demands continuous development and improvement in the domestic agro-production. This requires higher yielding crops, improved seeds, better agriculture techniques apart from better fertilizers and pesticides, insecticides etc. but the emphasis always remains on developed seeds which brings the difference. To achieve the aforesaid concept of 'Food Security' the modern governments are putting into tremendous efforts for innovation in existing agricultural practices and to develop the qualities of existing varieties of plants. These new varieties of plants and their produce leave a great impact on modern agriculture, horticulture, medicines and industries based on plant produce. New varieties of plants produce improved yields of higher quality and provide better resistance to pests and diseases. They prove to be most cost-effective factor in increasing productivity and quality in agriculture with minimized exploitation of soil and adverse effect upon the nature.

Plant breeding offers wider economic gains as well environmental benefits than just increasing food production. The development of new improved varieties of higher quality increases the marketability of crops in the global market. Also breeding programs for ornamental plants can be of significant profitable consequence for an exporting country. The breeding and utilization of new varieties is a vital factor in enhancing rural income and overall economic development. Furthermore, the expansion of breeding programs for certain species can eliminate the threat to the endurance of the species in the wild. The breeding of new plant varieties continued since the very inception of agriculture and it emerged from spotting of different genetic variants in existing stock, performing different techniques for instance grafting and cross-pollination etc. The modern era saw it to be performed in laboratories through microbiological experiments and very recently through genetic manipulations. The evolution of varieties involves change at the lowest functioning level of differentiation. It has therefore to be distinguished from changes that affect a whole genus or even species. Although the position of species is an imperative botanical categorization, it is clear that the plants within a genus can be very diverse. Farmers and growers require plants which are modified to the environment in which they are grown and which are suited to the cultivation practices employed. Consequently, farmers and growers use a more precisely defined group of plants, selected from within a species, called a 'plant variety'.²

Traditionally, it is the farmers who conserve, improve and exchange the varieties amongst themselves and this phenomenon is universally accepted and therefore the need arises to recognize the efforts of the farmers in conserving and providing plant genetic resources.³ But on the other hand there have been colossal investments both intellect and monetary in developing new varieties in the laboratories which demand equivalent and reasonable protection for the Breeders and Researchers. Though, there is a certain level of universal acceptance that farmers are a vital part of the economic, social and political fabric of society and require support yet consensus on how to realize Farmers' Rights remains elusive⁴. Arguments on whether the Farmers' Rights should be considered as a form of Intellectual Property Rights, as development rights, as measures to promote

²The International Union for the Protection of New Varieties of Plants (UPOV) Convention², 1961 defines a plant variety by stating that it is "a plant grouping within a single botanical taxon of the lowest known rank, ..." This confirms that a plant variety results from the lowest sub-division of the species. However, to understand more completely what a plant variety is, the UPOV Convention (Article 1(vi)) defines it as: "a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be
- defined by the expression of the characteristics resulting from a given genotype or combination of genotypes,
- distinguished from any other plant grouping by the expression of at least one of the said characteristics and
- considered as a unit with regard to its suitability for being propagated unchanged;"

³ In 1989, the FAO Conference affirmed that they are 'rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin/diversity', Resolution 5/89, FAO Conference, 1989

⁴ The 2001 International Treaty on Plant Genetic Resources for Food and Agriculture provides for the recognition of Farmers' Rights, but does not explicitly identify them.

conservation of traditional varieties and farming practices, or as some combination of these remains in vogue. But without urgent attention towards resolving this lack of clarity, Farmers' Rights may become watered down into a hypothetical and improbable concept.

Fortunately, India is among the first countries in the world to have recognized these concerns and has enacted the legislation; THE PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS ACT, 2001 (PPV&FR). India's law is unique in that it concurrently aims to protect all stake holders the Breeders, Researchers and the Farmers. This research paper deliberates on the concept of protection of plant varieties, evaluate the Breeders' stake and to analyse the provisions of the Act which provide protection to the Plant Breeders in India with a brief appraisal of the US laws relating to the protection of Plant Breeders' Rights.

Protection Of Plant Varieties: A Succinct Aide Memoire

The GATT deliberately had kept agriculture and allied products out of its purview but the Uruguay Round brought in new elements into the trade discussion, especially relating to agriculture and allied products. A system for granting property protection to crop varieties was initiated by European plant breeders in the form of 'Union Internationale Pour La Protection Des Obtentions Vegetales' (UPOV) under the auspices of the World Intellectual Property Organization (WIPO). UPOV is an intergovernmental organization with headquarters in Geneva. UPOV was established by the International Convention for the Protection of New Varieties of Plants. The union signed a convention in Paris in 1961 which gave exclusive property rights on developed varieties to the respective breeders of the member states. This was in acknowledgment of the breeder's efforts and achievement, and it also provided means by which the breeder could share the profit made from sale of seeds of the protected variety. The plant breeders right as defined by UPOV is an exclusive right over the commercial production and marketing of the reproductive or vegetative propagating material of the protected variety.⁵ The 1961 convention came into force in 1968 and was subsequently revised in 1972, 1978 and 1991, revised in 1998.

The 1978 Act entitled the breeder for protection even if the variety for which protection is sought is a naturally occurring plant. But under the 1991 Act, the discovery of a naturally occurring plant is not sufficient. The breeder must have somehow developed the variety in order to secure protection. Article 5(3) of the 1978 Act allowed other breeders to use a protected variety for creating new varieties without authorization. The requirements to be fulfilled in order to obtain protection were significantly made more stringent and the scope of the breeder's rights was extended under the 1991 UPOV Act. To be eligible for protection, the varieties have to be; distinct from existing commonly known varieties, sufficiently uniform, stable and new in the sense that they must not have been commercialized prior to certain dates established by reference to the date of the application for protection. The extended scope of the rights includes requiring authorization for any multiplication for production.

The "farmer's right" to store and plant seed was replaced by a "farmer's privilege" requiring authorization of the breeder. The exception for experimentation and creation of other varieties was narrowed to eliminate use to create a variety which is an essential derivation of the protected variety.⁶ It was thought that modern biotechnology allows such close manipulation of genes that there was increasing likelihood for minor variations to be exploited as loopholes to protection of the variety, the so called "cosmetic breeding".⁷

The accession of Bulgaria and the Russian Federation on March 24, 1998 triggered the entry into force of the 1991 Act on April 24, 1998. As of that date, there were thirty-seven members of the Union and seven signatories of the 1991 text.⁸ Since the commencement of UPOV till the 1978 Act was in force, only two exemptions were allowed, namely;

- I. Farmer's exemption: It permits the farmer to save seed from his harvest for next year's planting on his own field.
- II. Breeder's exemption: It allows a breeder to use the protected variety as a parent in his breeding programme.

These exemptions have been withdrawn in the 1991 revision of the UPOV Act and the provisions were made to a certain extent analogous to the provisions of patent regime. It is observed that the 1991 Act is quite similar to the provisions of the patent law in terms of protection provided to the plant varieties. Also it provides countries the option of choosing both patent and PBR systems of protection. Plant breeders' using the techniques of molecular biology such as terminator, verminator and traitor can claim protection under PBR and also obtain patent protection. It is clear that withdrawal of these exemptions will

⁵ Tripathi, Surya Mani, 'Intellectual Property Rights in Agricultural Research System' available at <<http://ssrn.com/abstract=1103168>> (last visited on February 20, 2016)

⁶ Article – 15, UPOV Act 1991

⁷ Graeme B. Dinwoodie, William O. Hennessey, SHIRA PERLMUTTER, INTERNATIONAL INTELLECTUAL PROPERTY LAW AND POLICY, LexisNexis, 2001

⁸ Bulgaria, Denmark, Germany, Israel, Netherlands, Russian Federation and Sweden

not only jeopardize the livelihood of small farmers but will also act as a major bottleneck to the access and benefit sharing envisaged in the provisions of the Plant genetic Resources for Food and Agriculture (PGRFA) Treaty.

The relevance of small farmer is fading fast and the world is moving towards the concept of food production by agribusiness.⁹ Therefore, in developed countries where utility patent protection is allowed for underlying genetic material, the relevance of sui generis protection for plants is questionable. Nevertheless, the American companies are supportive of US entering the 1991 Act, since it achieves the purposes of national treatment in those countries which chooses the option of sui generis system since the TRIPS Agreement, under Article – 27 (3) (b) compels the WTO members to provide for protection of plant varieties either by a patent or by an effective sui generis system or by any combination thereof.

Protection Of Plant Varieties In United States Of America

The Trade-Related Aspects of Intellectual Property Agreement offer for the member countries to choose not to provide patents for plants but they must provide an alternative mechanism which provide a legal right to the partial exclusion of the rights of others in plant and plant products. Many countries do not recognize plants and inventions directed to plants or plant products to be eligible for a patent, but some countries for instance the US of America and Australia afford to have claims to a time-limited right to exclude others from use of plants and plant products, provided that the legal criteria for patentability are complied with. Though the legislations vary but the basic requirements for patentability remains uniform to some extent and the rights conferred under these are substantially similar. For instance under the Utility Patent¹⁰ regime of the United States any living organism that is the product of human intervention such as by some breeding process or laboratory-based alteration qualifies as a composition of matter, which is patentable.¹¹ As a result, plants are patentable subject matter.¹²

In US, protection of asexually produced plants is taken care of by the Plant Patent Act where as the PVPA protects such agriculturally important crops as cereal grains, grasses, and vegetables that are grown from seed.¹³ The PVPA is a certification program run by the Plant Variety Protection Office (PVPO) of the US Department of Agriculture (USDA). The PVPO issues Certificates of Protection for new varieties of plants that are seed reproduced or tuber propagated, upon examination to determine that a plant is a new, distinct variety, and genetically uniform and stable. A Certificate of Protection remains in effect for eighteen years from the date of issuance. The owner may specify that the variety be sold by variety name only as a class of certified seed, as defined in the Federal Seed Act. Once so specified, the designation cannot be reversed.

The Plant Patent Act was enacted by US congress in 1930.¹⁴ It was introduced primarily to benefit the horticulture industry by encouraging plant breeding and increasing plant genetic diversity which provides for patent protection of all asexually reproduced plants except the tuber propagated plants and the plants found in an uncultivated state. Plant patents encompass newly found plant varieties as well as cultivated spores, mutants, hybrids and newly found seedlings on the proviso that they reproduce asexually. Asexual reproduction is defined as any reproductive process that does not involve the union of individuals or germ cells. It is the propagation of a plant to multiply the plant without the use of genetic seeds. Modes of asexual reproduction in plants include grafting, bulbs, apodictic seeds, rhizomes and tissue culture. Patentability requirements for plant patents are similar to those for utility patents but are less stringently applied.¹⁵ A plant patent gives the patent holder the right to exclude others from asexually reproducing, using, selling, offering for sale or importing into the United States the reproduced plant or any of its parts for a period of 20 years. In dissimilarity to utility patents, plant patents only protect a single plant or genome and the protection conferred is quite limited. It does not protect the plant characteristics, mutants of the patented plant nor technologies associated with its cultivation. Because plant patents are granted on the entire plant, it follows that only one claim per plant patent is permitted.¹⁶

In 1970, the Plant Variety Protection Act (PVPA) was enacted, in order to afford protection for the sexual reproduction of new, distinct, stable plant varieties.¹⁷ The breeders are granted a Certificate (not a Plant Patent) to secure up to 25 years of exclusive

⁹ Available at <<http://www.upov.int/eng/newplant/needvar.htm>> (last visited on February 25, 2016)

¹⁰ The term "Utility Patent" is used to distinguish between patents and other specific forms of intellectual property claims that exist in some jurisdictions, "Plant/Petty/Innovation Patents". Utility patents in the United States are comparable to the standard patents that are awarded both in Australia (under the Patents Act (1990)) and in Europe.

¹¹ *Diamond v. Chakrabarty* (1980) 447 US 303

¹² 35 U.S.C. 101

¹³ i.e. via sexual reproduction

¹⁴ 35 U.S.C. 161

¹⁵ Patentability Requirements: Novelty, Non-obviousness or Inventive step, Usefulness(US) or Industrial applicability(Europe, Australia), enablement, claim clarity, written description, best mode(US)

¹⁶ Available at: <<http://www.patentlens.net/daisy/bios/1234>> last visited on 20th February, 2014

¹⁷ 7 U.S. Code § 2321-2582

control over new, distinct, uniform, and stable, sexually reproduced or tuber-propagated plant varieties. The term of protection endures for 20 years from the Certificate issuance date, or 25 years in the case of trees or vines. While a protected variety under PPVA cannot be the basis for a Plant Patent, the U.S. Supreme Court has ruled that a sexually reproduced plant protectable under PVPA also satisfies eligibility requirements for a Utility Patent, under the Patent Act of 1952. Plant seeds are now covered by patent as well. Subsequently, in 1994, the Plant Variety Protection Act was amended; among other things, seeds cannot be sold without permission of the patent holder.

The Scope Of Protection Available Under The Ppv&Fr Act, 2001

The PPV&FR Act stipulate for the registration of new varieties that conform to the criteria of novelty, distinctiveness, uniformity and stability (NDUS),¹⁸ the right of farmer to register their own varieties; right to save, use, sow, resow, exchange, share or sell farm produce including seeds; disclosure requirement and benefit sharing; protection of extant varieties; grounds for challenging the registration and issuance of compulsory licenses (CL).

The Act defines protectable subject matter under Sections – 2 (h)¹⁹, (i)²⁰, (j)²¹, (l)²², 14²³, 23²⁴ and 29 (2)²⁵. The Act uses the expression ‘registration’ for the process of establishing protection, the intellectual property right awarded on a protected

¹⁸ Section – 15(1) of the PPV&FR Act, 2001

¹⁹ Section – 2(h) “essential characteristics” means such heritable traits of a plant variety which are determined by the expression of one or more genes of other heritable determinants that contribute to the principal features, performance or value of the plant variety;

²⁰ Section – 2(i) “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 genotypes of such initial variety;

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

(iii) conforms (except for the differences which result from the act of derivation) to such initial variety in the expression of the essential characteristics that result from the genotype or combination of genotype of such initial variety;

²¹ Section – 2(j) “extent variety” means a variety available in India which is -

(i) notified under Section – 5 of the Seeds Act, 1966; or

(ii) farmers’ variety; or

(iii) a variety about which there is common knowledge; or

(iv) any other variety which is in public domain;

²² Section – 2 (l) “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 or a variety about which the farmers possess the common knowledge;

²³ Section – 14 Any person specified in Section – 16 may make an application to the Registrar for registration of any variety -

(a) of such genera and species as specified under Sub – Section (2) of Section – 29; or

(b) which is an extant variety; or

(c) which is a farmers’ variety

²⁴ Section – 23 (1) An application for the registration of an essentially derived variety of the genera or species specified under Sub – Section (2) of Section – 29 by the Central Government shall be made to the Registrar by or on behalf of any person referred to in Section – 14 and in the manner specified in Section – 18 as if for the word “variety”, the words “essentially derived variety” have been substituted therein and shall be accompanied by such documents and fees as may be prescribed.

(2) When the Registrar is satisfied that the requirements of Sub – Section (1) have been complied with to his satisfaction, he shall forward the application with his report and all the relevant documents to the Authority.

(3) On receipt of an application under Sub – Section (2), the Authority shall get examined such essentially derived variety to determine as to whether the essentially derived variety is a variety derived from the initial variety by conducting such tests and following such procedure as may be prescribed.

(4) When the Authority is satisfied on the report of the test referred to in Sub – Section (3) that the essentially derived variety has been derived from the initial variety, it may direct the Registrar to register such essentially derived variety and the Registrar shall comply with the direction of the Authority.

(5) Where the Authority is not satisfied on the report of the test referred to in Sub – Section (3) that the essentially derived variety has been derived from the initial variety it shall refuse the application.

(6) The rights of the breeder of a variety contained in Section – 28 shall apply to the breeder of essentially derived variety : Provided that the authorization by the breeder of the initial variety to the breeder of essentially derived variety under Sub – Section (2) of Section – 28 may be subject to such terms and conditions as both the parties may mutually agreed upon.

(7) An essentially derived variety shall not be registered under this section unless it satisfies the requirements of Section – 15 as if for the word “variety”, the words “essentially derived variety” have been substituted therein.

(8) When an essentially derived variety has been registered by grounds of opposition Registration of essentially derived variety the Registrar in compliance with the direction of the Authority under Sub – Section (4), the Registrar shall issue to the

variety is termed as plant breeders' rights (PBR). Extant varieties inter alia Section – 5 of Seeds Act, 1966²⁶ and new plant varieties as defined under sub sections 2(j) and (i) are rendered protectable subject matter under Sections – 14 and 15. The Act and Rules do not specify the species or genera of crops, brought under this legislation but empowers the authority to make such qualifications for the purpose of registration of varieties other than extant varieties and farmers' varieties with the Government of India under Section – 29 (2).

There is scope to interpret Section – 29 (2) as it excludes extant varieties and farmers' varieties from the purview of regulation assigned to Government of India. However, Rule – 24 prescribes that registration of extant varieties²⁷ of those specified species and genera, on fulfilment of eligibility criteria, has to be concluded within three years from the date of notification under the Act. Parties qualified to get registration in compliance with Section – 16 are Breeders, Farmers or Group of Farmers or Community of Farmers or Assignees and Universities or Public Funded Agricultural Research Institutions. The legal entity status allowed to these Public Research Institutions under Section – 16 (f) for the purpose of variety registration is not available to Private Research Institutions.

The Act states that a plant variety will be 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 by or with the consent of its breeder or his successor for the purposes of exploitation of such variety.²⁸ As per the Act, a plant variety shall be 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 the application.²⁹ The Act describes that a plant variety will be uniform, if subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its essential characteristics³⁰ and stable if the essential characteristics remain unchanged after repeated propagation.³¹ If these criteria are fulfilled, a plant variety can be registered. Such registration shall confer an exclusive right on the breeder to produce, sell, and market, distribute, import or export the variety.³²

Section – 2 (i) defines essentially derived variety (EDV) as to be dealt as new variety. The Act clearly enumerates other requirements to be met while applying for registration of a plant variety. All applications, except those from farmers, are to complete in respect of the requirements enumerated under Section – 18. These include a sworn affidavit affirming absence of terminator technology³³ in the candidate variety and a declaration on the geographical origin of material used for breeding the candidate variety, when such parental material was accessed from Indian genetic diversity, and that this parental material was lawfully accessed.

Grant of registration (PBR), according to Section – 15, will be only on satisfactory verification of novelty, distinctiveness, uniformity and stability of the variety, as may be applicable, the grant of PBR is to be notified. Thus, the Act has well defined criteria and transparent procedures for determining eligibility of a candidate variety, its registration and publication.

Section – 28 of PPV&FR Act, provides for scope of protection for a plant variety. The issuance of registration confers exclusive right to the breeder, his/her legal successor, agent or licensee to produce, sell, market, distribute, import or export the variety.³⁴ Sections – 23 and 43 stipulates that these rights referred as plant breeder's rights (PBR) shall not be in exercisable in case of EDVs without entering into mutually agreed terms on its commercialization between the PBR holder of the EDV and the natural/legal owner of the initial variety from which the EDV was derived. Further Section – 27 requires breeder of each registered variety to deposit a specified quantity of voucher seed or planting material of the candidate variety and its parental lines at the notified National Gene Bank.

Section – 24 (6) limits the duration of registration for 18 years for varieties of vines and tree species and 15 years for the varieties of rest of the species, which, however, shall be initially allowed for a period of nine and six years, respectively. Maintenance of registration is subject to the annual payment of fee as specified under Rule 39, default of which may forfeit the registration. Sections – 33 to 38 confers power to the Authority that for specified and valid reasons it may revoke and rectify

applicant a certificate of registration in the prescribed form and sealed with the seal of the Registry and send a copy thereof to the Authority and to such other authority, as may be prescribed, for information.

²⁵ Section – 29(2) (2) The Central Government shall, by notification in the Official Gazette, specify the genera or species for the purposes of registration of varieties other than extant varieties and farmers' varieties under this Act.

²⁶ The Seeds Act, 1966, Bill 54 of 1966, Ministry of Agriculture, Government of India

²⁷ Including farmer's varieties

²⁸ PPV & FR Act, 2001, Section – 15 (3) (a)

²⁹ Id, Section – 15 (3) (b)

³⁰ Id, Section – 15 (3) (c)

³¹ Id, Section – 15 (3) (d)

³² Id, Section – 28 (1)

³³ Genetic Use Restriction Technology (GURT)

³⁴ i.e. the planting material of the variety

any registration granted, either suo moto or on request, and a fair opportunity has to be given to the PBR holder to counter the revocation process.

The PBR grant under this Act is exclusive of FR and Researcher's Rights (RR). The RR allows any person to liberally use a right protected plant variety for conducting an experiment or research, including use as a parental variety for creating other varieties and registering such new varieties under this Act. However, Section – 30 restricts RR not to include repeated use of a registered variety as parental line for commercial production of a new variety. RR safeguard against unethical appropriation of genetic diversity represented in a protected plant variety. This discouragement of monopoly on genetic resource is important to developing countries endowed with rich genetic diversity for promoting public participation in conservation.³⁵ A further significant feature of the Act with implications on its scope, imparted under Section – 2 (k), is the lawful designation of farmer as cultivator, conservator and breeder. Breeders' rights recognised under the PPV&FR Act extend, for seed and/or propagating material of the protected variety of production, selling, marketing, distribution, export, and import.³⁶ However, if the breeder's variety protected under the Act is an EDV from a farmer's variety, the breeder cannot give any authorisation without the consent of the farmers or communities from whose varieties the protected variety is derived.³⁷

Conclusion

Research and innovations in 'Plant Varieties' may be incentivized through award of Patent or a protection under the Plant Variety Protection laws and both are two distinct forms of IPRs which provide exclusive rights over the creation of a new variety for commercial exploitation for a limited period of time. Patent is a right conferred upon the inventor to exclude others from making, using and/or selling the patented inventions which meet the criterion of novelty, non-obviousness and utility whereas PVP confers protection to plant breeders for the genetic makeup of a plant variety which satisfies the test of novelty, distinctiveness, uniformity and stability. The Indian Patent Act unambiguously restricts patenting of plants and animals.³⁸ The Protection of Plant Varieties and Farmers' Rights Act, 2001 seems to be a comprehensive legislation to take care and cater to all the stakeholders. The fact that there have been 1067 Extant Varieties, 625 Farmers' Varieties, 256 New Varieties and 01 Essentially Derived Variety registered in India³⁹ with the authorities establish that we are on the right track and the most encouraging is that majority of the varieties are owned by the State Universities. The allegations of falling short of encouraging innovations are indisputably negated and whatever the qualms remain are only hiccups which usually appear in performance of a legislation which not only incentivises but is also of a beneficiary nature than regulatory and moreover is still in a nascent and developing stage. Though the demands of introducing protection similar to the Patent regime for plant varieties lack strong arguments but it would be always be a welcome idea to have some sort of protection may be in the guise of utility patent or some similar protection even for smaller durations if it stimulates research and development in agriculture and also safeguards the national interests of protecting the indigenous farmers, biodiversity and the traditional knowledge.

³⁵ Bala Ravi, S. *Effectiveness of Indian Sui Generis Law on Plant Variety Protection and its Potential to Attract Private Investment in Crop Improvement*, JIPR, pp 533-548, volume 9, November, 2004

³⁶ Section – 28 (1), PPV&FR Act, 2001

³⁷ *Ibid*, Section – 43

³⁸ Section – 3 (j) INDIAN PATENTS ACT, 1970 'The following are not inventions within the meaning of this Act,—plants and animals in whole or any part thereof other than micro organisms but including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals

³⁹ Available at: <plantauthority.gov.in/List_of_Certificates.htm> (last visited on February 22, 2016)