



INTELLECTUAL PROPERTY RIGHTS IN RELATION TO PLANT BREEDING

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ABSTRACT

Numerous inventions in physical and biological sciences have produced unbelievable technologies for the exploration and control of life processes and other phenomena of the universe. Both public and private industry that contributed to these inventions frequently enjoys some legal protection in the form of Intellectual Property Rights to avoid infringement and monopolize the production and sale of their inventions for financial gains and the enhancement of their scientific capabilities. This type of provision increased awareness among intellectuals working with plant materials to protect their intellectual property. The inherent potential of all the major crop plants has been tremendously enhanced to attain the existing agricultural production levels. Though all the productivity gains cannot be ascribed to genetic improvement, at least 50 % increase in yield is attributed to improvements through plant breeding. It is in light of such amazing contributions of crop improvement that plant breeders have been driven to avail the legal protection of their intellectual property i.e. varieties and germplasm.

INTRODUCTION

The product/process/idea that is the outcome of a person's brain and can be used on a commercial scale for the benefit of human kind is called intellectual property. The right to intangible property that is the human intellect is known as Intellectual Property Rights. It is the legal rights provided to an inventor to derive economic benefits from his invention/innovation. Plant Breeders Rights refers to the set of statutory provisions that empower a breeder or an originating institute of a variety to regulate the multiplication and marketing of seeds of protected variety.

THE ESSENTIAL CRITERIA FOR PLANT BREEDERS' RIGHTS (PBR)

1. **NOVELTY:** The patented variety must be new and has not been previously commercialized and known publicly. It should have easily distinguishable characteristics so that it can be identified from the existing varieties.
2. **UNIFORMITY:** All the individuals of the variety express their distinguishing characteristics or other features for which variant types are properly described, predictable, and commercially acceptable. The variety can be reproduced through multiplication of its seed without noticeable changes.

3. ***DISTINCTNESS***: Variety is distinctly different from other cultivated varieties and clearly distinguished by one or more identifiable characteristics from the existing variety.
4. ***STABILITY***: The variety must be true to its characteristics as defined the breeder during the life cycle of the variety.

Plant Breeders' Rights in the form of Patents or other Acts provide legal protection to the breeder from infringement in multiplication and sale of the protected variety. The PBRs are granted for a specified period for varieties as a whole and not individual features of a variety. The PBRs thus provide a minimum form of protection to traditional breeders against resale of the seed of protected variety but permit the use of that seed as a source of developing new varieties through breeding. The provision of research exemption implies the use of a protected variety to produce new variety by inserting even a single gene through mutation, backcrossing or genetic engineering to produce and protect a new variety without rewarding the original breeder.

FORMS OF INTELLECTUAL PROPERTY PROTECTION FOR PLANTS

1. ***PLANT PATENTS***: The Plant Patent Act, 1930 of the USA provides protection of asexually propagated varieties other than those produced by tuber and plant found in uncultivated state. A variety to be governed by this Act must be new, distinct, and non-obvious. The Plant Patent Act restrains others from asexually reproducing the plant or selling or using the plant so produced. The requirement of variety to be new refers to the fact that the plant did not exist previously in a capacity to reproduce itself. The distinctness comes through easily distinguishable characters of the variety to be patented. The non-obvious criteria require that variety does not reflect an obvious extension of what already exists. There must be human intervention in the inventive process rather than the simple discovery of something existing in nature. A Plant Patent Act provides the breeder a legal right to regulate multiplication and sale of variety for specified period.
2. ***PLANT VARIETY PROTECTION ACT (PVPA)***: It is patent-like protection obtained from an extension of the Plant Patent Act to cover the sexually reproduced varieties of seed-bearing plants, excluding fungi, bacteria and first-generation hybrid variety. A variety to be protected under this Act must be novel, distinct, uniform and stable (DUS). A plant variety protection certificate is granted to a protected variety that prohibits others from sexually multiplying and marketing the variety and using it to produce another variety. However, the Act does not prohibit other breeders from using the protected variety for developing the new variety, which is distinctly different from the protected variety. The Act also does not protect the distinguishing characteristic of the variety as another variety with the same character can be developed if it meets the DUS requirements. The protected variety can be used as a parent for hybridization, mutation, or other basic and applied research. The use of protected variety to produce a hybrid, however, is an infringement of Act. Similarly, the Act does not prohibit the farmer from saving and growing the seed for the next crop or even selling the seed provided his primary occupation is not seed production and sale services. The Act thus has a provision of 'breeder's exemption' and 'farmer's exemption' within specified limits. The Act provides

all the relevant legal rights to the owner for a period of 18 years, after which variety can be multiplied and sold by any individual or agency.

3. **UTILITY PATENTS:** Patents in the industry are usually granted for inventions and products that are novel, industrially non-obvious and subject to enabling disclosures. The acceptance of Patents for inventions even in living materials through major human interference opened the scope of Utility (industrial) Patents for products consisting of plant materials and processes related to the use of plant material. The most notable requirements of a utility patent are enablement disclosures and non-obviousness. The requirement of non-obviousness demands the plant not to be an obvious variant of the known art. This provision restricts the application of such general-purpose patents to plant varieties because it is difficult to describe precisely the steps so that another equally competent breeder can reproduce the product i.e., the same variety. The provision of compulsory deposits in plants is also anticipated to invite practical problems that further restrict the use of these patents for plant varieties. These patents afford protection to a broad category of plants or a part of plant material and plant varieties. Any part of plant-like flower or fruit if patented, debars the use of plant from cultivation. Unlike PVPA there is no provision of research exemption, farmer's exemption, and mandatory license. Since a product of nature is not patented, any variety discovered from wild or cultivated areas cannot be protected under Utility Patent unless the 'hand of man' is established to create the product.
4. **TRADE SECRETS:** A trade secret is any information that can be kept secret to give a competitive advantage to the owner over those who do not know it. Secret trading is a common practice for industrial products where the inventors keep a secret of the composition, manner and process of making the product. The inbred parents of first-generation F_1 hybrids provide an opportunity for the breeder to maintain secrecy about the composition of hybrid variety so that fresh F_1 seed of the hybrid remains under the control of originating breeder. The breeder does not need any patent as he has biological protection in such cases. Unlike PPA and PVPA there is no subject matter criteria for trade secrets as any information can be a trade secret. It is wonderful protection that gives unlimited monopoly for inventors but has nothing to seek compensation for infringements of this nature's trade secret especially if someone else discovers it by proper means. The use of trade secrets led to the development of numerous research-based seed companies, especially /concentrating on the development of hybrids where trade secrets are most effective. Hence, PPA, PVPA, UPOV Act, application of Utility Patents to plants, Trade Secrets are some ways to provide ensured profits from investment in plant breeding research.

ADVANTAGES OF PLANT BREEDERS' RIGHTS

1. The inventors shall improve their scientific capability through enhanced financial resources.
2. Private investment from resourceful organizations shall be encouraged and this would speed up the crop improvement research.
3. It shall reduce dependence on public sector institutes for plant breeding research.
4. Shall increase access to foreign varieties and germplasm for use in crop improvement.

5. Availability of good quality seed to farmers at faster rates and sufficient quantity shall be ensured.

DISADVANTAGES OF PLANT BREEDERS' RIGHTS

1. Farmers, especially in developing countries, would be burdened by the recurring cost of seed, especially without 'farmer's exemption' in PBR.
2. Farmers would be deprived of local germplasm developed over generations being used as landraces from which locally adapted types are being developed.
3. It shall restrict the free flow of germplasm especially developed through biotechnology.
4. Germplasm may be locked in the hands of private companies that shall reduce its utility by public sector institutions.
5. It would lead to excessive use of a limited part of outstanding germplasm that would narrow down crop plants' genetic base, posing the potential danger of epidemics.
6. Monopoly by multinational companies shall increase the cost of seed.
7. Small companies may not survive the competition and shall be absorbed by big companies.
8. The private sector may concentrate on materials and varieties that require excessive use of their own agrochemicals like weedicides and pesticides, thus leading to the enhanced cost of cultivation.
9. The private sector may not undertake breeding work for specialized situations of resistance to biotic and abiotic stress and
10. The patented genes and stocks shall be available at higher rates for the public research.

CONCLUSION

Both public and private industry that contributed to these inventions frequently enjoys some legal protection in the form of Intellectual Property Rights to avoid infringement and monopolize the production and sale of their inventions for financial gains and the enhancement of their scientific capabilities. This type of provision increased awareness among intellectuals working with plant materials to protect their intellectual property. The inherent potential of all the major crop plants has been tremendously enhanced to attain the existing agricultural production levels. Though all the productivity gains cannot be ascribed to genetic improvement, at least 50 % increase in yield is attributed to improvements through plant breeding. It is in light of such amazing contributions of crop improvement that plant breeders have been driven to avail the legal protection of their intellectual property i.e. varieties and germplasm.

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