Private rights in living objects have always been controversial. Agriculture provided the first wave in human civilization. Therefore, agriculture including plant breeding and agricultural methods pre-dated any form of IPR protection unlike industry and commerce. Traditionally, IPR was not applied to agriculture. In recent times, this position has changed and increasingly agriculture is seen as an industry that cannot survive without research and development and astute investments. This has made it necessary that IPR in all its forms be extended to agriculture.

Keywords: IPR, agriculture, plant variety protection, patent, PPV & FR Act

The initial patent legislations were not in favour of providing patent protection for plants, agricultural produce and agricultural and horticultural methods. Even today, some patent legislations, for instance, the Indian Patents Act, do not recognize plants and agricultural methods as appropriate subject matter for patent protection.

The debate on patent protection for plants in the USA was temporarily set to rest by the coming into force of the general patent act called the Utility Patent Act or UPA in the United States until the need for patent protection for plants was raised again at the end of the 1970s. This debate was settled once and for all in the United States in 1985 in favour of patent protection for plants.

The debate temporarily ceased in Europe in 1983, but resumed in 1995. The reason for this renewed debate was that the Technical Boards of Appeal of the European Patent Office (EPO) had decided to stop granting patents for plants.1

Keeping in view the ongoing uncertainty and ambiguity as to protection of plants under various intellectual property rights (IPR), this paper discusses various aspects of intellectual property (IP) available for agricultural products, particularly plants.

Patent Protection - Agricultural Aspects

In several countries, patent legislations were established as early as the nineteenth century. In these legislations, it was specified that patent protection would be offered only to certain categories of inventions. The general patentability requirements were similar at the basic level in most national patent acts which required inventions to be novel and industrially applicable. The non-obviousness or inventive step requirement was established later on initially by case law in the mid-nineteenth century and subsequently by codification.

The 1930 US Act introduced a special kind of plant patent for vegetatively propagated materials, but in the US, standard utility patents can also now be granted on plant varieties. Therefore in the US, there exists today a dual system of protection; plants can be protected by a sui generis Plant Protection Act as well as by the Patent Act.

Ever since the first-generation patent acts, patent protection for plants has always been questioned. Between 1790 and 1970, plants patent protection was denied on the ground of non-compliance of the plant invention with the legal requirements of patentability. In Europe and the US, the legal requirements that were not fulfilled by the plant inventions were conception, novelty, inventive step (or non-obviousness), industrial applicability (or utility) and adequate disclosure. In India, patents are available for new processes in respect of agriculture but not to all products per se.2 Patents may be obtained in agriculture for processes related to agrochemicals, growth promoters and regulators, vaccines, drugs, hides and wool, dairy technology, food technology, fuel and biogas production, bioreactors, standardisation of various laboratory protocols,
there are certain restrictions under Section [3(h), 3(i) & 3(j)] of the Patents Act, 1970 related to grant of agricultural inventions.

Nature of Objections- Plant Inventions

Product-of-Nature Doctrine

One of the major objections was that plant breeders’ products, including those which were artificially bred, were not the result of a creative process, which is the main criteria of patentability and hence not considered as inventions. This is referred to as the ‘product-of-nature doctrine’.

In Europe, plant inventions are not granted patent for the same reason that plant products such as fruits, flowers or vegetables and other products such as marble and ivory are largely nature’s work with minor human intervention.

In United States, similar to Europe, patents for plants were denied because of the product-of-nature doctrine. The argument used to deny plant patents was that patent protection for plant life would be like granting patents for the use of natural powers, which would prevent progress.

Living Organisms as Subjects

Another objection to plant patenting was that plants were considered living organisms and therefore ethically not good subject matter for patent grant. Thus, breeder’s products were excluded from patent protection not because they lacked creative step, but because the created products were living in nature. This argument was dismissed by the Belgian, German and Dutch patent acts.

In the United States, the living organism objection remained relatively dormant until 1973, when the USPTO Board held patentable only those subject matter categories specifically enumerated in the statute, deciding that living organisms did not fall within the scope of any of the categories listed.

Lack of Novelty

Another objection that was put forth against patent protection for plants was that they were unable to comply with the requirement of novelty. However, in Germany, Netherlands, and the US no fundamental conflict between breeder’s products and the patentability requirement of absolute novelty was felt.

Non-Inventiveness/Obviousness

In Europe and the US, objection was also raised against plant patents that the plant varieties developed by traditional breeding methods did not involve inventive step and the new varieties were obvious to one with ordinary skill in the art. However, this argument was countered by the possibility that the application of a known process could result in a new goal or in a special effect.

Lack of Industrial Applicability/Utility

In Europe and the US, a major objection to plant patents was that breeder’s products lacked industrial applicability and utility. However, it was counter argued that agricultural inventions should not be excluded from patent protection, since some agricultural products, such as fertilizers and agricultural machines, could be defined and patent protection could be extended to them, while for others such as agricultural activities or processes, patent protection could not be extended since they lacked industrial character.

Plant Protection Legislations in Various Countries

United States

A first initiative in the US in 1930 was the introduction of the Plant Patent Act (PPA), allowing patent protection for asexually reproduced plants typically, asexually reproduced cultivars (except tubers). This removed the product-of-nature objection related to plants. In 1970, patent protection for plants was extended to sexually reproduced plants by the enactment of the Plant Variety Protection (PVP) Act. IP protection was extended by the enactment of patent protection for plants under the Utility Patent Act in the US as a result of the ‘Chakrabarty judgment’ of the Supreme Court in 1980. The variety to be protected was required to be uniform, stable, and distinct from all other varieties. The exclusions from PVP protection were fungi, bacteria, first generation hybrids and varieties sold or used in the US for longer than one year or more than four years in a foreign country.

Europe

In Europe, plant protection provisions were established in several countries. The Netherlands enacted a Plant Variety Protection Act in 1942, followed by Germany in 1953. In Europe, a patent can only be obtained if the technical feasibility of the invention is not limited to the specific variety for which protection is sought. In other words, it must be possible to reproduce the invention in more than one variety. The national regimes were extended to other countries by establishing the International Convention
for the Protection of New Varieties of Plants of 1961, creating a Union for the Protection of New Varieties of Plants, or UPOV (Union pour la Protection des Obtentions Végétales). The UPOV Convention called for the adaptation of existing breeder’s rights regulations in the contracting states. The IPRs of plant breeders were recognized now on an international basis. In Germany, a new plant variety protection act was adopted in 1968. Similarly, in the Netherlands, a new breeder’s rights law was enacted in 1967. The European Patent Convention (EPC) was established in Europe for patent protection. Article 53(b) of the EPC states that ‘European patents shall not be granted in respect of plant or animal varieties or essentially biological processes for the production of plants or animals.’ This exception excludes from patentability matter which was protectable under independent plant variety protection acts. The EU Biotechnology Directive, while not permitting the patenting of plant varieties, provides for a farmer’s exception where a patent on genetic material would otherwise prevent reuse on the farm. It also contains a provision for compulsory licensing, subject to certain conditions, where a breeder’s use of material would otherwise infringe a patent right.

India

According to the Indian Patent Act, 1970 and subsequent amendments, patents could be applied mainly for agricultural tools and machinery or the processes for the development of agricultural chemicals. However, methods in agriculture or horticulture, life forms of other microorganisms like plant varieties, strain/breeds of animals, fish or birds as well as products derived from chemical/biochemical processes, and any process for medicinal, surgical, curative, prophylactic or other treatments of animals or plants to render them free of diseases or to increase their economic value or that of their products as such, earlier did not constitute patentable subject matter. Inventions except for method inventions relating to substances prepared or produced by chemical processes including alloys, optical glass, semiconductors and inter-metallic compounds and substances intended for use or capable of being used as drug and food were not patentable till the beginning of 2005. From 2005, inventions related to agrochemicals as products could be patented according to the Patent (Amendments) Act, 2005. Earlier, in India, there was no legislation to protect plant varieties. However, after becoming a signatory to TRIPS Agreement, need for such legislation was felt since Article 27.3(b) of the TRIPS Agreement made it mandatory to provide protection for plant varieties either by patents or by an effective sui generis system or by any combination thereof, the choice having been left to the signatory states.

In India, a sui generis system for protection of plant varieties was developed, integrating the rights of breeders, farmers and village communities. Sui generis enables designing of one’s own system of protection for plant varieties as an alternative or addition to a patent system for protecting plants. As a result of this legislation, in India IPR protection came into being for new plant varieties, in the shape of the Protection of Plant Varieties and Farmers’ Rights (PPVFR) Act in 2001. This development created favorable legal conditions for international partnerships in biotechnology R&D.

Countries such as USA having a strong R&D base in plant genetic engineering have chosen a robust Plant Utility Patent Legislation. India is certainly not inclined to adopt patent protection regimes for its plant varieties, rather it has shown inclination to adopt a sui generis legislation which is non-patent, ostensibly for reasons that India is predominantly agricultural and has a strong R&D base in conventional plant breeding. While Plant Utility Patents Act provides for broad patents over plant varieties, traits and genes and even the physical parts of the plants, plant breeder’s rights provide IPR only over varieties.

The UPOV affords protection to those plant breeders who produce plant varieties fulfilling the criteria of distinctiveness, uniformity and stability (DUS). However, the current version of the UPOV in 1991 had added additional criteria of ‘new’ to DUS thus rendering DUS as NDUS.

Differences between Patent and Plant Variety Protection

Patents and PVP are two different forms of IPR, both providing exclusive monopoly rights over the creation of a new plant variety for commercial purposes over a period of time. Whereas, patent is a right granted to an inventor to exclude all others from making, using and/or selling the patented invention for 20 years for those inventions which fulfill the patentability criteria of novelty, non-obviousness and utility; PVP provides rights to plant breeders for protecting the genetic makeup of a specific plant variety having novelty, distinctness, uniformity and stability.
Restrictions with respect to Agriculture Related Inventions in India

The restrictions on protecting inventions relating to agriculture and all life forms have been a part of the Indian patent system. Section 3(j) of the Act specifies that ‘plants and animals in whole or any part thereof other than microorganisms but including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals’. Though Section 3(j) did not exist till 2002, and was introduced to refuse a case of patenting of a life form, today Sections 3(h), 3(i) and 3(j) together further restrict the scope of patenting in the area of agriculture. Section 3(h) states that ‘a method of agriculture or horticulture’ is not patentable. Section 3(i) states that ‘any process for medical, surgical, curative, prophylactic, diagnostic, therapeutic or other treatment of human beings or any process for similar treatment of animals to render them free of disease or to increase their economic value or that of their products’ is not patentable. Further, Section 3(j) prohibits patenting of conventional techniques/processes such as plant breeding methods such as tissue culture techniques and the like. The implication is that any new plant variety, arising out of an innovative use of conventional techniques or modern biotechnological methods, is not patentable subject matter. In the present scenario, such a view is shortsighted and presupposes that Indian agricultural scientists are not capable of developing inventions in this field or should not be allowed to protect their inventions.

Legal Framework Affecting Farmers Individually and Inhibiting Economic Growth

The existing Indian legal framework under the PPVFR Act, 2001 allows farmers to save, sow, re-sow, exchange, share or sell farm produce, including seeds of the protected variety. However, the farmer in India is not entitled to sell ‘branded’ seed of a protected variety. This is inhibitory, since as long as the farmer continues to be just a ‘grain producer’ and is not given the right to be called a ‘commercial seed seller’ of the developed plant, he would lose his rights as an innovator.

The legal right to the exclusive ownership, provided by a patent for a finite period of time, ensures that entities who invest heavily in research and development have an opportunity to earn those costs and are provided a return for their investors through subsequent marketing. Patents are the strongest form of IP protection which allows the right holder to exert control over the use of patented material by limiting other’s rights to sell, or reuse seed they have grown, or other breeders to use the seed.

The patenting of plant varieties is important because the owner of the patented variety can prevent others from using it for breeding purposes which is significantly different from PVP. However, it is more difficult and costly to prove that a developed variety meets the criteria for patentability than obtaining PVP, where the criteria for protection are not as stringent. Nevertheless, patents provide broader protection and may include claiming the gene, the vector or carrier for effecting the transformation and a number of potential varieties or crops incorporating the gene which provides umbrella protection if protection of the whole plant is sought.

Also, patent protection extends these broad yet closely knit rights to its owners without any loose ends. If patent protection for newly developed plants is incorporated in the Indian legal framework, it would provide farmers and breeders their long lost credit and well deserved rights. This would encourage them to develop improved varieties which they could protect by the way of patent and thus proportionally affect the economic growth of the country. If this is implemented, of course with specific exceptions, it would provide an edge to rural agricultural development.

Plant Variety Protection

History of Plant Breeding - Foundation for Plant Variety

Before the origin of modern technology in the agricultural sector, inventions relating to the breeding or propagation of new plant varieties were considered to be in the realm of natural and obvious evolutions or discoveries which were not entitled to any patent or other IPR protection. Innovation in biotechnology requires substantial investment but once these are commercially developed, the end results can be replicated with ease. Without adequate protection for the innovation and therefore little chance of proper returns, commercial enterprises will be loath to invest in the field of development of new plant varieties.

In the eighteenth century before the introduction of systematic plant breeding by selection, plants grown by farmers were the result of thousands of years of partly conscious, partly unconscious selection. Farmers breed new varieties of plants and conserve
biodiversity in the flora around them as a natural corollary to and as an extension of their profession generally, without the expectation of any returns or revenue benefits. For them it has largely been a passion to give expression to their creativity. On the other hand, farmers often develop new varieties of plants on a need to do basis because they want to develop sturdier plants that are resistant to disease or give better and quicker yields or just because they want better looking or bigger fruit. Their entire labour in the research and development in agriculture was hitherto seen as being spent for the public good rather than as an activity for commercial gain.

The demand for extending IP protection to agriculture in developing countries has often been met with considerable resistance on the one side by individuals who believe that these innovations are developments in rem and therefore deserve no private protection with counterclaims from investors for protection of plant varieties and breeder’s and farmers’ rights.

Innovative farmers realized in the eighteenth century that systematic selection could lead to substantial progress and the business of plant breeding developed. In the twentieth century, contribution of Mendel’s laws of inheritance led to the establishment of plant breeding on a scientific basis.

Breeding creates genetic variation in a species which could be inherited in a stable fashion. The plant breeders’ final selection of superior plants forms the basis of one or more plant varieties.

The difficult challenge for a breeder is to produce an improved plant variety. Firstly, this involves many characteristics or traits controlled by complex and unknown interactions of large number of genes. Secondly, to arrive at such an improved plant, a large number of plants need to be examined over many different seasons and under different growing conditions. Thus, the breeding of a plant variety takes place over many years and is complicated and risky.

Need for Plant Variety Protection

Agriculture, in the early twentieth century, in the United States and Europe, became economically less important therefore governments reduced their involvement in the development and supply of seeds to farmers. This led to the development of private sector seed industries. This development was curtailed by the nature of seeds which could often be reused for several generations by farmers, once purchased. This window led to the introduction of a legal protection for plant varieties.

New varieties of plants are developed after contributing number of years to the selective inheritance of traits which provide improved yields, higher quality, and better resistance to such plant varieties. Newer technologies of plant production need to be developed for obtaining high-performing varieties.

The tremendous progress in agricultural productivity in various parts of the world is principally based on these improved high performing plant varieties, which in turn is a decisive factor in improving rural income and overall economic development.

Since, the process of plant breeding is long and expensive; it is not possible to have sustained breeding efforts unless there is a chance of reward for the investment in time and labour. It is, therefore, vital to provide an effective protection system of PVP, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

Protection of Plant Varieties and Farmers’ Rights Act, 2001

The immediate trigger for the introduction of a PVP regime in India was the obligation imposed on all countries undertaken in the WTO, specifically under Article 27.3 (b) of the TRIPS Agreement for the introduction of some form of IP protection for plant varieties. By the year 2000, PVP was also seen as required from the perspective of commercial breeders, farmers and agro-biodiversity conservation, particularly, to promote food security.

The need for a sui generis system for PVP in India was to enable the nation to protect and preserve its farmers’ rights on the one hand and at the same time grant rights to plant breeders on the other hand. Following were some of the declared advantages for developing a sui generis system for PVP in India:

(i) It allowed for superior planting material, leading to increased agricultural production.

(ii) It facilitated investment by private sector enterprises in the development of superior plant varieties and also gave an impetus to the building up of infrastructure for the seed industry.

(iii) It encouraged competition between the private and the public sector in the field of plant breeding effectively and efficiently in the larger national interest.
(iv) It enabled India to meet its national obligations under the international agreement on tariffs and trade (GATT).

India is one of the first countries in the world to have passed a legislation granting rights to both breeders and farmers simultaneously under one Act. It is the only legislation in this area that grants formal rights to farmers in a way that prevents their self-reliance from being jeopardized while at the same time recognizing the efforts of the plant breeders in developing new plant varieties. By giving protection to the farmers’ plant variety, the act recognizes the farmer as both a cultivator and a conserver of the agricultural plant variety.

The objectives of the Act include an effective system for protection of plant varieties, protection of rights of farmers and plant breeders; accelerate investment for research and development in growth of the seed industry, thereby ensuring the availability of high quality seeds and planting material of improved varieties to farmers and other growers such as horticulturists.

The Act seeks to protect farmers from exaggerated claims by seed companies regarding the performance of their registered varieties. The Act also seeks to ensure that the seeds of these new varieties are of good quality, or at least that farmers are adequately informed about the quality of seed they buy. In addition, safeguards are provided against innocent infringement by farmers. It establishes a system for an effective means of protecting plant varieties and the rights of farmers and plant breeders, while at the same time encouraging the development of new plant varieties ensuring farmers’ rights to save, use, exchange and sell seed in this way must be seen as a success with regard to this component of farmers’ rights.

The PVP law in India benefits the registered breeder to save, use, sow, re-sow, exchange and share or sell his new variety and the breeder who obtains registration of a new plant variety can stop any person who sells, exports, imports or produces such variety without his permission. He can also prevent the use, sale, export, import or production of any variety deceptively similar to his registered variety.

A plant variety application which is not capable of identifying such variety or consists solely of figures or is liable to mislead or to cause confusion concerning the characteristics, value, identity of such variety, or the identity of breeder of such variety or is likely to deceive the public or cause confusion in the public regarding the identity of such variety; or comprises any matter likely to hurt the religious sentiments respectively of any class or section of the citizens of India; or is prohibited for use as a name or emblem for any of the purposes; or is comprised of solely or partly of geographical name in not registrable under the Act.

The essence of granting legal protection to creators is to (i) reward the creators of new and beneficial plant varieties for use by farmers and consumers in order to encourage commercial plant breeders so that they are willing to invest their resources, labour and time needed in creating new plant varieties or improving existing plant varieties, and (ii) provide access to information of the created products and the methodology of creation for the enhancement of social welfare.

The idea behind the grant of exclusive rights to breeders is that in its absence, the dangers of free riding by third parties would be considerable since one of the most important characteristics of the new varieties that specify their distinctive and commercially valuable features, is their genetic material. This genetic material is naturally self-replicating that may be realized by reproduction of seeds or other propagating material which makes such material particularly susceptible to exploitation by parties other than the innovator. Again, in the absence of such rights, plant breeders are forced to work secretly and future workers will be denied access to the details of experiments and research.

Farmers’ Rights

A counter challenge to IPR concerned the relationship between farmers’ rights and IPR in plant varieties which was important in order to reflect the contributions that traditional farmers, particularly in the developing world made in the improvements of plant genetic resources. FAO Council Resolution 5/89 defines farmers’ rights as ‘rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in centre of origin/diversity.’ One approach was to try to modify existing IPR laws so as to permit farmers themselves to claim exclusive rights in the plant varieties they cultivate informally. Another approach was through the benefit sharing mechanisms, such as payments and technology transfers that would compensate farmers for their contributions to plant genetic diversity.
Other Forms of IP Protection in Agriculture

Marks used in commerce can be applied to both agricultural and industrial products and services. Trademarks for example may be applied to market seeds or spraying services. The crucial purpose of a trademark is to distinguish the goods and services of one enterprise from another, thus preventing the consumer from deceptive products. Such protection prevents the wrongful use of commercial marks and is not limited in time, although registration may have to be renewed from time to time.

A category of commercial marks that are more often used in agriculture than industry are geographical indications (GI). These are marks associated with products originating from a country, region or locality where the characteristics of the product are essentially attributable to its geographical origin. Many GIs relate to agricultural products or those derived from them. Famous examples are: ‘Darjeeling’ for tea from this district in India and ‘Devgad or Ratnagiri’ for mangoes, ‘Tasgaon’ for grapes. Those plant varieties that have been developed using traditional knowledge and are associated with a particular region can also be protected as GI with an advantage of not having time-limited protection as is the case with plant patents or plant breeders’ rights. But in the case of GI, commercial benefits can be derived only when the name of a place becomes associated with an agricultural product.

Trade secret protection can be used by the agricultural sector to protect, for instance, hybrid plant varieties. In the United States, there are separate trade secret laws at the State level. Unlike patents, protection of trade secrets is not time-limited, and also there is no obligation to disclose the inventive or creative ideas to society, however the disadvantage of such protection is that it is lost the moment it is discovered independently by a third party.

Biodiversity in Agriculture

According to Indian Biological Diversity Act, 2002, biological diversity means the variability among living organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and of ecosystems. Biodiversity is the most ecologically sustained form which maintains soil fertility and ensures food security. It helps farmers control their farm economics and seeds.

India belongs to the group of mega-diversity centres of the world with around 167 crop species and around 320 species of wild crop relatives and several other species of domesticated animals.

The Convention on Biological Diversity’s (CBD) objectives are to conserve biological diversity, to promote the sustainable use of its components, and to achieve fair and equitable sharing of the benefits arising out of the utilization of genetic resources. These objectives in some way or the other are affected by IPR. IPR are relevant for developing mechanisms in order to protect and enforce control over information conceived which may be new crop, plant varieties, pharmaceuticals, herbicides and pesticides or new biotechnological products and processes. The recognition of the economic, ecological and cultural importance of genetic resources and biological derived materials particularly, after coming into force of the CBD has given place to a new scenario where IP protection has been given great importance.

IPR vis-à-vis Biodiversity

The most important impact of IPR specifically patents, on biodiversity is that the rights of countries over their genetic resources lead to direct or indirect misappropriation of biological and genetic resources, particularly, the traditional knowledge, which has also been called as ‘biopiracy’. But if the biodiversity of a region is not protected, it can also lead to negative impacts, particularly in the area of agrobiodiversity, some of which may include displacement of native and traditional crops, restriction on exportation of traditional medicinal plants impacting in situ conservation and most importantly the restrictions on saving, using and selling farm saved seeds by small farmers and indigenous communities.

Benefit Sharing

The use and economic exploitation of genetic resources has brought economic benefits to both the developing as well as developed countries. However, while enjoying the benefits, it is important to critically control and balance out the use of IPR over biological and genetic resources as the progress relies on the same. Therefore, it is also important to effectively share the benefits among the users and providers of these biological materials.

Conclusion

It is appropriate that the government should make such amendments in the Acts which effectively and adequately safeguard and protect the interest of
individuals and do not exclude domestic industries, farmers, scientists and market and at the same time are in the interest of the larger section of society. Patent rights must be seen as an incentive system, in which the attraction of temporary monopoly encourages the innovator to develop new technologies and publicly disclose his resulting innovations. However, if the patent incentive is offered indiscriminately, it may not attract innovators to disclose his innovation with any significant benefit. The impact of disclosing the innovation largely depends upon its nature; some innovations have undesirable consequences and some are beneficial. If the former are given patent incentive without regard to their harmful impacts, it may result in the development of harmful technologies and may slow the development of safer alternatives. Grant of even a temporary monopoly may restrict access only to the wealthy which would conflict with basic notions of fairness and human rights. This may particularly hold true in respect of pharmaceuticals, medical methods and devices, and agricultural methods and products. Therefore, the scope of patentable subject matter should be shaped in such a manner that it counteracts the aforesaid problems.

The amendment of the Patents Act, 1970, particularly on the patenting of biotechnological inventions should be made more transparent. Involvement of all stakeholders such as agricultural and other scientists, farmer groups, private sector seed companies, lawyers, NGO activists in this endeavour would be worthwhile. IPR protection in agriculture should keep in mind the mechanisms for improving enforcement, access to resources and technology, benefit sharing, equity and justice in order to give effect to the national agricultural policy and the inherent basic principles of the Indian Constitution. Mechanisms of providing the much needed incentive to genuine innovators by the central and state governments must be developed and elaborated. It is also important to note that developed economies benefit greatly from an organized IPR system due to their inherent capabilities to capitalize on such opportunities. The target for various agricultural commodities having export prospects should be — enhanced competitiveness together with increased production particularly for high value commercial crops, animal breeds products, spices, and medicinal and aromatic plants.

There is a need to develop a policy and law to create new tools and instruments which could effectively ensure countries of origin asserting their rights over their genetic resources, guarantee that there is equitable sharing of benefits arising out of the use of these resources, and more importantly adequately protect the indigenous people performing intellectual efforts. Whereas the Indian legislation should not be contradictory to international treaties, at the same time, it should not ignore Indian citizens like the farmers, and grass root innovators who provide economic growth of the country through agriculture. Farmers should be given their well deserved rights and incentives as well as protection of their developed variety. Trademark protection today is skewed in favour of the traders who buy the farmers’ produce. If it is conceived and further designed to allow farmers to brand their production and reap the benefits of their labour and innovation, then the farmers and other innovators would develop products with better yield and quality.

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