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THE ROLE OF INTELLECTUAL PROPERTY IN INDIA'S AGRICULTURAL GROWTH

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Abstract

When it comes to living artefacts, private rights have long been a difficult issue. Agriculture was the initial stage in the development of human civilization. As a result, agriculture with plant and agricultural practises, in contrast to business and commerce, has historically predated any sort of intellectual property right (IPR) protection. Agricultural practises have historically not made advantage of the IPR. In more recent times, this perspective has shifted, and agriculture has come to be seen more and more as an industry that cannot persist because it lacks research and development as well as intelligent investment. The preservation of biological resources will be essential to ensuring the continued availability of food for future generations. The origin of a number of important genes is an important piece of biological capital. Researchers hope to generate new plant kinds that can withstand significant changes in the weather, have a higher agricultural yield, and other desirable characteristics. The protection of intellectual property rights in crop species as well as the rights of landowners and other individuals is the topic of discussion in this article. In addition to this, it addresses recent developments and developments in recent IP methods, as well as the application of IP laws in agriculture and forestry.

Introduction

The implications of changing the intellectual property regime in India have assumed vital significance as a result of the context of the negotiations on Trade Related Intellectual Property Rights (TRIPS) during the Uruguay Round of negotiations of GATT (General Agreement on Tariffs and Trade) and the placing of India in the priority list of Special 301 by the USA. Both of these events are related to the context of the GATT negotiations on Trade Related Intellectual Property Rights (TRIPS). There is a common assumption that the pharmaceutical industry will be the one most affected by the repercussions. This,

however, is not the case since there are other industries, such as agriculture, in which the nature of the intellectual property law would have extremely negative repercussions¹.

Studies have shown that the barrier that is raised through intellectual property rights becomes significant in those industries where the technology is relatively easy to access and where other means of erecting barriers against competition, such as economies of scale, lead time, learning effect, and sales network, etc., do not exist. The pharmaceutical business is an outstanding illustration of such a sector, and it is a good example of how intellectual property rights play an important part in determining the success of the enterprises in that sector. 'Yet, there are other fields, like as agriculture, that have tremendous promise for the use of biotechnology, and these fields are home to problems that are analogous to the ones discussed before. As a result, it is of the utmost importance to take into consideration the effects that a new IPR system can have for agricultural advancement in India².

A decision that would have serious long-term impacts on agriculture, particularly in an underdeveloped country like India, is to be made, and it is buried in the technical language of Article 30 of the draught of the agreement on TRIPS (Trade Related Intellectual Property Rights). This decision is to be made before the TRIPS agreement is finalised. This is the decision that will be made about the expansion of intellectual property rights to plants. Before we get into this topic, it would be helpful to take a moment to review the historical context of the debates as well as the fundamental characteristics of intellectual property rights. The General Agreement on Tariffs and Trade (GATT) is basically an agreement to control the trade in products. It obligates the members to provide the other members the most favoured nation (MFN) status, which in practise ensures that they will not be discriminated against and that the benefits granted to one member will also be accessible to all of the other members of the organisation. GATT is not, strictly speaking, the platform for debating issues related to intellectual property; for such topics, there are alternative forums such as the World Intellectual Property Organization (WIPO) (World Intellectual Property Organisation). The United States of America was interested in bringing intellectual property into GATT for the simple reason that doing so would allow them to take retaliatory actions, which they would not have been able to do in any other forum because linking intellectual property with trade makes this possibility available³.

To begin, India did the correct thing when it declined to negotiate on intellectual property under the GATT and instead sought to address solely the concerns of piracy and counterfeiting that may be

¹ Gulati, Ashok and A Sharma (1989): Structure of Effective Incentives in Indian Agriculture

² Singh, Satwinder (1985), Multinational Corporations and Indian Drug Industry, Criterion Publications, New Delhi

³ Menon, Usha (1990), GATT Negotiations Economic Sovereignty in- Jeopardy, National Working Group Patent New, New Delhi.

connected to commerce. Sadly, in 1989, India's role as a leader in the resistance movement in third world countries was no longer viable. In April of that year, the government of Rajiv Gandhi gave its consent to participate in the TRIPS discussions of the GATT to negotiate on the issues pertaining to intellectual property⁴.

Intellectual Property

Given that intellectual property is a public good par excellence, it is very challenging to justify the establishment of intellectual property rights (IPR), which prevents others from using the information for the duration of the right. This is because intellectual property is a public good par excellence. The preeminent economic theory has always had a difficult time justifying the inefficiencies that would arise as a result of the monopoly rights that would be given under the IPR system. The majority of research has likewise failed to reach a conclusion about the proportion of expenses to benefits accrued to society as a result of the patent system.

The opinion of the vast majority of economists regarding patents is reflected in the words of Jewekes, Sawers, and Stillerman, the authors of the classic study on inventions. They stated that "it is almost impossible to conceive of any existing social institution so flawed in so many ways." This is the position that the vast majority of economists hold. It just continues to exist since there does not seem to be anything else available. There is no economic justification for a patent system, it would be wrong to implement such a system if it did not already exist, and since it does exist, it would be equally difficult to find sufficient data to justify its abandonment. This conclusion was reached by the most comprehensive study ever conducted on the economic effects of patents, which was led by Machlup and carried out for the US Senate. In the issue of patents, it would seem that the rule that states those who advocate for monopolies are the ones who are responsible for justifying their stance has not been followed⁵. We have argued in other places that the advancements in our knowledge of the process of technical progress have provided more reasons against the establishment of intellectual property rights. These arguments may be found wherever we have made those arguments. Regrettably, there have not been a lot of studies that have investigated various types of incentives for investing in technologies or the possibility of generating these public goods openly. This is something that has to be done. Patenting has been more widespread despite the lack of any solid proof about the advantages of providing monopoly rights. This is due to the power of

⁴ Abrol, Dinesh and Menon Usha (1990), 'The New Intellectual Property Regime and Scientific and Technological Development', Third World Patent Convention: National Working Group on Patent Laws, New Delhi.

⁵ Heston, Alan (1983): 'National Income' in Dharma Kumar (ed), Cambridge Economic History of India, Vol 2, Cambridge University

entrenched interests, which has contributed to this trend. The most common kind of intellectual property protection, patenting, was until very recently restricted to only those ideas that had practical applications in industry. Even in the nations of the west in the past, society had been successful in preventing this form of knowledge monopolisation from spreading to vitally crucial fields such as the treatment of illnesses and agriculture. Yet, gradually, the concept of intellectual property has been being expanded to include plants as well⁶.

Intellectual Property Rights on Life

If it was ridiculous to apply the idea of property rights to innovations made in industry, then applying the idea to biological things that can reproduce on their own was a complete and utter waste of time. This is something that naturally arises from the essential qualities of the intellectual property systems, at least inasmuch as they constituted the foundation of the patent system.

It was one of the primary goals of the system of providing monopoly rights that the patent system to encourage inventors to publish their innovations and not to keep them as trade secrets. This was one of the fundamental aims of the patent system. When it comes to intellectual property rights for plants, society is being forced to fork out money for something that is self-replicating and so already in its own. In addition, there is no such thing as "teaching of the technical act" when it comes to plants since an individual who cultivates a new variety of plant is not replicating the action of the breeder in any way. Additionally, when a person grows the new variety after having paid for it, he or she is carrying out the legitimate activities related to its normal commercial use. For these activities, even in industrial patents, the permission of the owner of the patent is not required because they are considered to fall under the category of normal commercial use. Hence, if you purchase a machine that makes ice cream and use it to create ice cream, you are not obliged to pay any royalty or obtain permission. You are only need to acquire permission if you build a machine that is comparable to the one you bought. The use of patents to plants is difficult because of a condition known as "exhaustion of rights," which applies when an invention has been bought and sold.

In addition to these legal issues, there were also certain technological challenges to overcome, which were brought on by the very nature of plant breeding. It was believed to be difficult to replicate plants in their precise form, and it was also believed to be difficult to fully describe them in order to satisfy the standards of disclosure. In addition, the requirement that a novel variation be the outcome of an invention — that is,

⁶ Information Notes-United Kingdom Plant Varieties Bill (1983), January 15 (mimeo).

something that a person who is versed in the art would not consider apparent — was also unable to be satisfied.

The opposition from farmers and other groups, as well as the various legal and technical challenges involved in applying industrial patents to plants, led to the development of a unique type of property rights designed specifically for plants. These rights, which are also a milder form of monopoly rights and are known as plant breeders' rights, were given the name plant breeders' rights (PBR). This system, in contrast to industrial patents, allowed farmers to save their seeds for the following year's sowing (breeders' exemption) and allowed other breeders to use the protected varieties as starting material for developing new varieties (farmers' exemption). Both of these exemptions were granted to farmers⁷.

As a result of the multinational corporations' acquisition of the seed firms and the advent of biotechnology, there is now a need for a more robust form of monopoly rights in plants, namely the extension of industrial patents to plants. These two developments have led to this demand. As a result of the application of patents to plants, not only will farmers be banned from conserving seed, but breeders will also be prevented from using the variety in order to generate new kinds over the 20-year period during which the right may be given. Since patents allow for a limitless number of claims to be made, global corporations now have the option to assert ownership over not just specific variations but also traits, and even species and genera. In both the United States and Europe, patents for plants have already been issued; in the United States, this occurred in 1985, and in Europe, it occurred in 1989. Patents are a particularly robust kind of monopoly rights, and the large multinational corporations, notably those from the pharmaceutical industry like Sandoz, Ciba-Geigy, and Pfizer, who have recently acquired seed firms, are eager to get them⁸. The nations in which these multinational corporations have their roots have taken stances in support of the MNCs. But in addition to that, they have to take into account the objections coming from the many other interest groups. Throughout the discussions for the Trade in Intellectual Property Rights (TRIPS) and at the World Intellectual Property Organization (WIPO), the United States has been advocating for the stronger form of monopolies represented by patents to be made applicable to plants and animals. The European Patent Convention specifically excludes plant and animal varieties from its coverage, and farmers' groups and independent seed companies are resistant to the idea of patenting new plant and animal varieties, which makes it more difficult to implement patent protection in the European Community⁹. In spite of the fact that the European patent office has previously given a patent for a plant, that patent is now being contested in court. There are currently no animals that have

⁷ Sharma, H R (1994): 'Distribution of Land Holdings in Rural India, 1953-54 to 1989-92', EPW, January 26, 2023

⁸ Vaidyanathan, A and Chandan Mukherjee (1987): 'Structure Analysis of Agricultural Growth', paper presented at National Symposium on Growth and Instability in Indian Agriculture

⁹ Bent, S A (1987): Intellectual Property Rights in Biotechnology Worldwide, Stockton Press, New York.

been awarded patents. As a result, it is unrealistic to anticipate that the EC would press for the globalisation of patent rights for plants during the TRIPS discussions. Instead, the EC will likely just advocate for the implementation of some kind of intellectual property, which in practise implies plant breeders' rights. TRIPS talks and the globalisation of intellectual property rights in plants are both under further strain as a result of the present danger posed by the United States in accordance with Special 301¹⁰.

Plant breeders have reacted to the desire for more monopoly rights by enhancing those rights granted to them under the system of plant breeders' rights. This was done in response to the demand that increased monopoly rights be granted under the system of industrial patents. These rights were enshrined in a convention that was signed in 1961 by the International Union for the Preservation of New Varieties of Plants (UPOV), and there are now 20 nations that are signatories to this convention. The monopoly rights are going to be expanded as a result of the UPOV Convention being revised. According to the draught proposal that was presented for the Diplomatic Conference for the Revision of the UPOV Convention [UPOV, 1990], the two exemptions for farmers and breeders, which distinguished plant breeders' rights from patents and thus mitigated some of the negative consequences of intellectual property rights in plants, are to be effectively removed. These exemptions distinguished plant breeders' rights from patents and helped mitigate some of the negative consequences of intellectual property rights in plants. In addition, the breeder's rights are expanding to include not only the right to prevent others from propagating, selling, or offering the new variety for sale, but also the right to prevent others from conditioning for propagation, importing, and exporting. Previously, the breeder only had the right to prevent others from selling or offering the new variety for sale¹¹.

The previous form of plant breeders' rights, which included an exemption for farmers as well as an exemption for breeders, has been replaced with a new form following the most recent revision of the UPOV Convention, which specifies the minimum level of protection that must be provided to breeders. This new form of plant breeders' rights is more in line with current standards. Farmers are no longer permitted to show their seeds to other farmers or have them inspected or cleaned by organisations from the outside. Not only is the breeder's permission required for the propagation, sale, import, and export of the breeder's variety, but also the breeder's permission is required for the propagation, sale, import, and

¹⁰ Scherer, F M (1980), *Industrial Market Structure and Economic Performance*, Houghton Mifflin Company, Boston

¹¹ UPOV (1990), *Diplomatic Conference for the Revision of the International Convention for the Protection of New Varieties of Plants*, Geneva, March 4 to 19, 199f, adopted by the UPOV Council on October 19, 1990 (mimeo).

export of any other variety that could be considered to have been essentially derived from the breeder's variety¹².

Indian Options on Agriculture

To this day, India has not acknowledged any kind of intellectual property in plants, and as far as India is concerned, the establishment of any of these types of intellectual property would have very negative repercussions for the country. During the TRIPS negotiations that are taking place in Geneva, the developing countries are being presented with the choice between maintaining the system that they currently use or selecting one of the two different systems of intellectual property rights.

It is now possible, thanks to the Plant Variety Protection (PVP) Act, which was formerly known as the Indian Plant Variety Protection Bill, 2001, to register plant varieties that already exist as well as those that have recently been developed, and to prevent the unauthorised use of plant varieties that have already been registered. Before this Act, India's sole legal protection for patents was the Patent Act of 1970, which explicitly stated that agricultural and horticultural practises could not be patented. A variety has to be "new" (to the market) in order to be eligible for protection under the Plant Variety Protection Act. In addition, it needs to be shown that it is unique, uniform, and stable (the DUS criteria). The proprietor of the right therefore has the exclusive right to market the variety; nonetheless, there are two essential distinctions between this and patent protection. The "farmers' privilege," which should not be confused with the "farmers' rights," grants farmers the ability to store, reuse, and even trade or sell the seed that they have gathered themselves. The phrase "breeder's exemption" refers to the general permission granted to other breeding enterprises and organisations to make use of a protected variety for the sake of further breeding efforts. It is believed that these variations from patent systems are required in order to prevent unnecessary risks to seed supply, which is essential to agricultural production, food security, and rural lives. PVP has its origins in agriculture, and as a result, it has been able to strike a balance between the rights of farmers and the rights of inventors, all the while acknowledging the significance of breeding and seeds for agricultural production and the rural economy. On the other hand, copyrights and associated rights may be registered for databases, bioinformatics, genes and gene sequences, amino acid sequences, antibodies, and so on. This is possible for all of these types of intellectual property and as of now 5112 Certificates issued for crop group-wise by the Protection of Plant Verities and Farmers Rights Authority.

¹² Food and Agriculture Organisation of the United Nations (1998): The State of the World's Plant Genetic Resources for Food and Agriculture, Rome, Italy

There are a great number of people in our country who hold the opinion that India ought to make a concession on the contentious issue of intellectual property in order for the nation to have a chance of gaining some benefits with regard to the issue of the export of textiles. But, the issue that has to be asked is whether or not the future of agriculture in India is so unimportant that it can be sacrificed in exchange for "some" benefits in the textile export market. If the government falls in to the pressure from the developed nations and the multinational companies and embraces the plant breeders' rights regime, the implications for agriculture would be very detrimental. It would be beneficial to identify who requires intellectual property rights in plants and why they need them before we evaluate the effect this will have on agriculture¹³.

The international corporations have their sights set on acquiring full control over the seed production in order to maximise their profits from this profitable industry. The majority of the time, multinational companies do not operate in markets where there is competition, and they also typically do not compete with one another. They seek for markets in which they can exercise at least some degree of monopolistic power so that they may generate very high profits. When it comes to businesses, achieving a dominant position in a market is much simpler and more feasible when the industry can be divided into several segments with relative ease¹⁴. In circumstances like this, it may seem like there are a lot of manufacturers and a significant level of competition, but the truth would be quite different from that impression. Hence, for instance, in the pharmaceutical industry, where the products treat certain diseases, it has been noted that multinational companies have a dominant position in each of the different markets. In the case of seeds, given the similarities in product specialisation, there are also similarities in the opportunities for dominance and the acquisition of super-profits. This is shown by the agreement that was signed between a European seed business called Van der Have and an American seed company called Pioneer Hibred in regard to the market for maize seed. A division of labour has existed between these two enterprises and a number of others operating in the French market ever since the year 1976. In the European market, Pioneer has been focused on grain maize, while Van der Have has been concentrating on fodder maize. Both companies are working to improve their positions in the market. In this battle to achieve extraordinary profits, the rights of plant breeders are significant in two different ways¹⁵.

¹³ Pal, Suresh and Alka Singh (1997): 'Agricultural Research and Extension in India: Institutional Structure and Investments', NCAP Policy Paper 7, New Delhi

¹⁴ Lee, Jeong-Yeon and Edwin Mansfield (1996) 'Intellectual Property Protection and US Foreign Direct Investment', The Review of Economics and Statistics, Vol LXXVIII, No 2, pp 181-86

¹⁵ Ravishankar, A (2020): 'Intellectual Property Rights and Indian Agriculture: Some Issues', Policy Brief No 7, NCAP-ICAR, New Delhi

To begin, it is helpful for seed companies that have been successful in developing a new and important variety to create an artificial monopoly because it will take a much longer time, say about 10 years, before a competitor can come up with an alternate variety that has similar qualities. This will allow the successful seed companies to maintain their monopoly for a longer period of time. They will be able to charge greater prices as a result of this artificial monopoly, which would not be the case if there was open competition.

Second, it assists them in their strategy of non-price competition, which favours them in the long run. The seed businesses often spend a significant multiple of the cash that they dole out for research on their marketing and advertising budgets. No one else will be able to generate varieties that are fundamentally derived from the new variety if the new PBR method is implemented, since it states that they cannot. A variety is considered to be predominantly derived from another variety when the method used to create it maintains the essential characteristics of the genotype of the initial variety. This can occur in the case of the selection of a natural or induced mutant or of a somaclonal variant, in the case of backcrossings, or through the use of genetic engineering to transform the variety¹⁶. In this way, the breeders' exemption has been significantly restricted, and the PBR system has conferred far greater monopolistic privileges. As a result, the seed corporation will be free to continue presenting these derived kinds as "new and better varieties" and continue asking for higher prices, both of which they will be able to do without fear of competition from anyone else. When a variety is very profitable for a company, this strategy will allow the company to prolong the life of the variety in question.

To put it another way, when coupled with the marketing approach, plant breeders' rights turn into yet another tool for raising extraordinary profits. The PBR system is a strong instrument that multinational corporations have at their disposal to enhance both their earnings and their profits. The discussions about TRIPS are intended to improve the functionality of this instrument.

We are going to look at how the PBR affects the revenues of farmers as well as how it affects the availability of seeds throughout the country. The effect that the influence would have on the adoption of new technologies would have severe repercussions for the agricultural industry's long-term prospects. While agriculture is one of the primary justifications for the implementation of these restrictions, we also investigate the ramifications that this will have for the industry¹⁷.

¹⁶ Latour, Bruno and Steve Woolgar. 1979. *Laboratory life: The social construction of scientific facts*. Beverly Hills: Sage Publications.

¹⁷ Swaminathan, M.S. 1987. 'Biotechnology and agricultural betterment in the developing countries', in S. Natesh, V. L. Chopra, and S. Ramachandran (eds), *Biotechnology in agriculture*, pp. 3-11. New Delhi: Oxford & IBH Publishing Co.

Supply of Seeds

The insufficient availability of seeds of a high enough quality is one of the most significant challenges confronting our nation in the modern era. Many of the new and helpful varieties that have been produced are not accessible to the farmers because of flaws in the distribution system. These flaws prevent the farmers from taking use of the new and beneficial kinds. It has not been possible for the governmental institutions responsible for the production and distribution of seeds to meet the demand. Even if there have been a lot of new tiny seed firms founded, most of them use unscientific techniques of manufacturing and other problems. What is necessary is the existence of a big number of seed producers, each of whom must have enough scientific backing from the state in order to double the amount of seeds that are required by the farmers. Seed businesses, farmer cooperatives, and individual farmers might all fall under the category of producer. They are able to be supplemented by the production of seeds in huge organisations. It is possible to build up an alternative system of seed production if farmers have the necessary information and express a desire for it. This system would make it possible for our scientific labs to create many new types of seeds, which would then be made accessible to farmers. To this day, the public sector in India is responsible for the creation of new kinds, just as it was until not so long ago in the United States and other Western nations. The current approach allows for the smaller seed businesses to be in a position to produce more of these seeds.

In addition to this, they are allowed to replicate the seeds created by any other commercial enterprise. The farmers who purchase the seed have the ability to both reproduce it and also sell it to the farmers in their immediate area. Hence, there is the possibility for the seed business to become very successful¹⁸.

Yet, rather than using this potential for the purpose of establishing a robust and broad seed industry, the growth is now in risk of moving in a completely other path. The vacuum that has been left in the seed supply is being filled by a growing number of multinational firms.

It has been seen in other contexts that when large corporations enter the seed production industry and begin their own breeding, the public sector steps in to conduct breeding operations to provide support for the breeding activities of the seed corporations. The public sector is coerced into doing fundamental research, which is then used by these private firms. In the end, the smaller businesses are put at the mercy of the larger businesses, to whom they are obligated to pay royalties regardless of whether or not they

¹⁸ Ramaswami, Bharat (2020)- 'Intellectual Property Rights in Agriculture: Implications and Challenges for Public Research

really multiply the seed but rather only clean and process it. The same logic will apply to the farmers who engage in the production of seed. In circumstances like this, a significant number of the more modest seed enterprises often go bankrupt. The elimination of these businesses will have a significant and negative effect on the availability of seeds¹⁹.

The rise in monopoly that would occur as a direct result of the implementation of a PBR system will have very severe repercussions on the income of farmers. As was previously said, the monopolistic power exercised by the multinational corporations will manifest itself in a variety of various ways. In addition to the information that we have previously shown, the new kind of plant breeders' right that is now being implemented will add another method in which monopoly will be increased.

A seed firm could only restrict other companies from multiplying the same variety as what it had generated under the older system of PBR; however, it could not prevent other companies from generating new kinds that were based on the original variety. In the event that choices could be made from the variety that was being sold, it would have been conceivable to enter the market with a similar variety in a very short amount of time. Because of this, the initial company's stranglehold over the market was diminished. But, if the new PBR system is implemented, it will no longer be feasible for other seed companies to create varieties that are comparable to those offered by the monopoly. As a consequence of this, the seed business will be able to demand very high rates for the new variety, and the farmer will be left with no other option than to pay it²⁰.

For illustration's sake, let's imagine that there is a widespread outbreak of blast illness and that one corporation manages to successfully transfer the gene responsible for blast resistance to rice. Under the terms of the new system, no other business will be allowed to manufacture any kind of that rice that has been altered. Creating a new variety with resistance by crossing it with existing types would take time, and essentially, this implies absolute monopoly for the first breeder; this would be a monopoly considerably greater than what has existed up to this point even in the United States.

Because of this, in practise it implies that due of the legal monopoly of plant breeders' rights, the price that the farmers would have to pay will be greater than it would have been under any other circumstances²¹.

¹⁹ Shiva, Vandana et al (1999): 'Globalism and Threat to Seed Security: Case of Transgenic Cotton Trials in India', EPW, January 6-13.

²⁰ Damodaran, A (1999): 'Regulating Transgenic Plants in India', EPW, January 27

²¹ Benko, Robert. Protecting Intellectual Property Rights Washington, DC: American Institute for Public Policy Research, 1987

To put it another way, the adoption of this legislation will result in a shift of financial resources away from agricultural producers and towards large seed businesses. Since the farmers have no other option, they are compelled to pay for this subsidy out of necessity. In addition, the fact that the farmers are footing the bill for the seed firms' subsidies means that the wealthy are benefiting at the expense of the middle class²².

Not only do plant breeders' rights have an immediate impact on the interests of farmers, but they also have a long-term impact on the national goal of obtaining the benefits of modern technology, in particular the benefits of biotechnology. This is because plant breeders' rights protect the intellectual property of plant breeders. It is not only the very high prices of the technology that are at risk; rather, the very availability of the technology itself is under jeopardy.

A technology does not automatically become accessible just because a corporation imports a seed that has the technology or even if it multiplies the seeds in the nation where it is located. When it is possible to modify the technology so that it is suitable for use in Indian settings, we will be able to state that the technology is accessible. This job will not be able to be completed since the circumstances, under which the technology is being introduced, namely, under the control of multinational companies, are now preventing it. Even a very large market like India is considered by multinational firms to be nothing more than a rest market and the markets in developed nations are used as the basis for determining the worldwide research approach used by major corporations. They would be content with the markets that could be acquired by catering to the need of the relatively more prosperous regions and farmers, and they would ignore the requirements of the remaining portion of the nation. It is quite unlikely that they will take on the challenging job of changing it in order to gain greater acceptance. Due to the fact that the global corporation is the exclusive owner of the newly developed variety, no one else may undertake the adaptation task²³.

In point of fact, this indicates that the majority of farmers will not have access to what is referred to as "modern technology." Since there will be a lot of pressure on the government not to take up the creation of completed varieties and instead focus on fundamental research, this barrier to the adoption of technology will be made much more difficult.

This is a fact that differentiates the agricultural improvements that have taken place in recent times from those that took place during the time of the green revolution. At the time of the green revolution, the

²² Radhakrishna, R and C Ravi (1992): 'Effects of Growth, Relative Price and Preferences on Food and Nutrition', Indian Economic Review, vol 27, Special No, pp 303-23

²³ Government of India. "Paper Presented By India In Uruguay Round Multilateral Talks." Indian Embassy, Washington, DC, 1989 (photocopy).

major technical input, which consisted of the newly developed dwarf types of seeds that were sensitive to fertiliser, was available to the public. The dwarf varieties that were responsible for the beginning of the green revolution were created at worldwide agricultural agencies and were considered to belong to all of humanity. In spite of the fact that the green revolution may have resulted in certain unintended consequences, this particular feature of the green revolution proved beneficial. In contrast, in the application of biotechnology that is taking place right now, the breakthrough is not likely to be the property of public institutions but rather of multinational corporations. As a result, under the new system, the amount of absorption would be cut down by that much farther.

Furthermore, the legitimization of intellectual property rights via the GATT will further bolster the position of large multinational businesses, so making it that much more difficult to absorb new technology.

Export of Agricultural Products

“India is consistently ranked among the top exporters of agricultural products throughout the globe. The country's overall agricultural exports reached 49.6 billion US dollars in 2021-22, representing a 20 percent rise from the 41.3 billion US dollars reported in 2020-21. Agricultural and associated products, marine products, plantation goods, and textile and allied goods are the primary commodities exported by India's agricultural industry. The value of exports of agricultural and related goods reached \$37.3 billion, representing a 17% increase over the previous fiscal year of 2020-21”.

“Rice is the most important agricultural commodity exported from India and accounted for more than 19% of the country's total agricultural exports in the years 2021-22. Sugar, spices, and buffalo meat are among the most widely exported items, each contributing 9%, 8%, and 7%, respectively, to 2021-22 agricultural exports. The value of wheat exports reached \$ 2.1 billion in 2021-22, representing considerable rise above the previous year's value of \$568 million in exports (which was recorded in 2020-21). Realizations have increased for coffee producers in Karnataka, Kerala, and Tamil Nadu as a result of the coffee industry's first-ever crossing of the one billion dollar mark in terms of exports. Farmers in the coastal states of West Bengal, Andhra Pradesh, Orissa, Tamil Nadu, Kerala, Maharashtra, and Gujarat are seeing an increase in their income as a result of higher exports of marine goods, which now total \$7.7 billion”.

The dedication of the government to raise farmers' income may be shown by the large growth that has been recorded in agri-exports as a result of the government's emphasis on increasing exports. The many

actions that the government has done via APEDA, including as hosting B2B shows in a variety of nations and investigating new prospective markets with product-specific and general marketing campaigns, have acted as a catalyst to increase exports. The government of India has built a goods matrix for 50 agricultural items that have a high potential for export and has designated 220 laboratories as being able to offer services for testing a variety of products in order to assist exporters throughout India.

Under such a framework for exports, it is essential for the MNC to be able to assert its entitlement to mono-poly rights inside the PBR legal framework. In such case, the farmers who are responsible for the reproduction of the seeds will be in a position to directly export the seeds²⁴.

In the previous iteration of the PBR system, a breeder was unable to block the importation of a protected variety from another nation, where it ran the risk of being propagated. With the implementation of the new revision, authorization from the breeder is required not only for the multiplication and sale of the animal, but also for its export and import. Due of the modifications that have been made to the system, the farmers now will be able to export seeds of the variant of the Variety that has been changed. As a result, with the implementation of the new IPR system, the previously existing opportunities inside the older system through which sub-contractors might transform into rivals have been eliminated. As a consequence of this, the legal system has also been amended so that multinational corporations may continue to keep their control over their production network around the world²⁵.

The issue that has to be answered is whether or not these kinds of export ports that are dependent on subcontracting are what should be created. In the short term, it might seem like a simple approach to make foreign currency, but in the long run, it could be difficult. Yet, this kind of subcontracting puts a limit on the potential profits that might be produced from the export of seeds. Whether or if it is used as a stepping stone for independent seed exporting is a separate topic altogether²⁶.

Some individuals are concerned that it would not be feasible to receive the new types created in industrialised nations if India does not adopt some sort of intellectual property. This is a fear that is shared by a number of people. The reality is that several businesses have been successful in acquiring new types even without possessing PBR. In addition, subcontracting to multinational corporations is not and should not be the foundation of a robust export trade in seed. It is impossible for it not to be built on an integrated

²⁴ India: Indian Intellectual Property Issues Called Less Problematic Than China's, Int'l Trade Daily (BNA) (January. 9. 2023) Thereinafter Indian Intellectual Provert}

²⁵In addition, foreign industry should encourage its government to adopt a approach to intellectual property protection, rather than adopting an inflexible position Shang, supra note 3

²⁶ Santaniello, V., R.E. Evenson, D. Zeberman, and G.A. Carlson, Eds. Agriculture and Intellectual Property Rights: Economic, institutional and implementation issues in biotechnology,- Hyderabad, University Press, 2021

seed production system that involves breeding, multiplication, and processing of the seeds. Rather of being dependent on monopolies that are mandated by law, a business that deals in exports should be founded on technical prowess and favourable climatic circumstances. In point of fact, rather than building a logical structure for international commerce, these legal monopolies will only serve to distort international trade, in addition to lowering the profits we make from agriculture²⁷.

By making it obligatory for the part of member-nations to extend the scope of monopoly rights to plants, the negotiations on Trade Related Intellectual Property Rights are forcing agricultural development to take place in a particular direction that will be in the interest of multinational corporations. This will be beneficial to the corporations in the long run. At the same time, the imposition of property rights on plants, even if it is merely PBR, will have a detrimental effect on the increase in the supply of seeds, the income of farmers, the absorption of technology, and the possibilities for export revenues²⁸.

CONCLUSION

Conventional agricultural intellectual property rights include patents, particularly on advancements made possible by biotechnology, the rights of vegetarian farmers, trademarks, and geographical indications. Trade secrets are now considered to be components of intellectual property rights, as is the privacy of unknown testing information; these are all elements that are relevant to the agriculture industry as well. Phase one of initial conception includes protecting farmers' liberties and communal intellectual property rights on a global and local scale. India is neither a member of the Paris Convention or the UPOV; but, it is a member of the World Trade Organization (WTO), nor as such, is it obligated to execute the TRIPS Agreement. The majority of the TRIPS obligations on these relevant IPRs, including robust process patents for biotechnological inventions, have to be in place.

In the acts that protect and protect the interests of individuals effectively and appropriately, and not exclude domestic industries, farmers, scientists, and markets, the Government must make such amendments and at the same time serve the interest of a wider group of society in order to protect the interests of individuals effectively and appropriately. Patent law should be seen as an incentive to stimulate the creation of new methods and the public disclosure of the following invention, which is accomplished by garnering temporary monopoly status. Yet, if the incentive to patent is supplied without discrimination, inventions won't be able to display the significant advantages that will come from their

²⁷ Ashoka Mody , New International Environment for Intellectual Property Rights, in Intellectual Property Rights (Rushing & Brown), supra note 4

²⁸ Ganguli, Prabudha. Intellectual Property Rights : Unleashing knowledge economy,-New Delhi, McGraw-Hill, 2022

growth. Both positive and negative effects might be brought about through innovations. The nature of the information mostly determines how the revelation will affect them. If the first to invent something are given patent incentives regardless of the damage they do, then harmful technologies may be developed, and progress towards better solutions may be slowed. To effectively ensure that countries of origin are able to assert their rights over their genetic resources, ensure that the benefits derived from their use are shared equitably, and, most importantly, protect the indigenous population who are doing intellectual work, a policy and a law need to be developed that will create new instruments.

