

## Impact of Seed Monopolization on Indian Agriculture and Farmer

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### Abstract

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Received on 09.05.2017

Accepted on 23.05.2017

The farmers and agriculture sector contribution towards the conservation and sustainable utilization of the bio-resources are immense and uncountable. In ancient time the practice of agriculture is considered to be great service to the society and this practice was intertwined in their tradition and culture. The current Intellectual Property Rights (IPR) regimes are encouraging commercialization of seed development, monoculture, protection of new plant varieties, microorganisms, and genetically modified organisms. As a consequence, our rich biogenetic diversity is being eroded irreversibly. Earlier, farmers use to get their food grains without any difficulty through traditional method of cultivation, they use to enjoy the freedom of cultivation, crop selling and exchange within and outside their community without any domination in the society and this led to prevail harmony in the society. But, now Genetically Modified Seed/Hybrid Variety is destroying the originality of traditional variety. This paper will analyze how today the culture of seed saving and seed exchange which has been the basis of Indian agriculture is under great threat and how new technologies, like the technologies of the green revolution and biotechnologies, devalue the cultural and traditional knowledge embodied in the seed and eroded the holistic knowledge of the seed from the community.

**Keywords:** Seed Monopoly; IPR; Agriculture and Farmers Right.

### Introduction

Seed is ultimate gift of God and is the first link in the food chain. Therefore, it is considered as the ultimate symbol of food security. It is the embodiment of life's continuity and renewability; of life's biological and cultural diversity. The free exchange of seed among farmers on cooperation and reciprocity has been the basis of maintaining biodiversity as well as food security [1].

Seed not only plays an important part in the rituals and rites of communities, but also represents the accumulation over centuries of peoples' knowledge. Conserving seed is considered as conserving biodiversity, conserving knowledge of the seed and its utilization, conserving culture and conserving sustainability [2].

Seeds have religious significance in most parts of India and are an essential component of most religious festivals. According to Hindu mythology, seed is a gift of *Srushtikarta* (Brahma, the creator), who created seeds in primordial times and it was believed

that the farmers who are near to nature they must be exceptionally close to God.

The *Puranas* refer to people getting *fala* (fruit/reward) by worshipping gods through religious sacrifices. New seeds are first worshipped and then planted. The new crop is worshipped before being consumed. During the festivals, planting and harvest are celebrated in the fields and symbolize people's intimacy with nature. However, due to corporate pressure and seed monopolization, *seeds are under attack everywhere and today conservator's life becomes risky. Under corporate pressure, laws in the country increasingly put limitations on thousand-year-old practice of seed saving* [3].

The culture of seed saving and seed exchange which has been the basis of Indian agriculture is today under great threat. New technologies, like the technologies of the green revolution and biotechnologies, devalue the cultural and traditional knowledge embodied in the seed and erode the holistic knowledge of the seed from the community. This results in the seed itself becoming extinct, as the existence of the seed is tied intimately with its holistic knowledge [4].

#### Creation and Evolution of the Seed Industry

As quoted by Jack Kloppenburg's the seed is both a "means of production, as well as a product" [5], they are used not only by farmers as a means of production, but also by local indigenous people/tribes engaged in shifting cultivation. The seed is therefore a representative of capital, which has one biological obstacle. If it is provided with the appropriate conditions, it reproduces automatically. Plant breeding techniques have countered this phenomenon, and as a result, with the advent of biotechnology, these 'means of production' and 'products' have now taken the form of mere 'raw materials'. Other stakeholders such as farmers, research institutions and scientists are thus dependent upon the companies which are into seed and plant variety production.

For generation of farmers, the seed represented "the alpha and the omega of agricultural life [6]." Kloppenburg also asserted that the emergence of techniques such as hybridization of the seed, led to invasion into the seed itself. He further stated that it broke the unity and continuity of seeds as food grains and as a means of production. It thus led to the creation of the seed as a 'capital' and paved the pathway for private industry [7]. As the seed and chemical companies merge, the dependence on inputs will increase. There is a shift from an ecological process to a technological process.

Activists have asserted that where such technological means fail to prevent farmers from reproducing their own seeds (owing to the automatic reproductive capacity of seeds), intellectual property rights in the form of patents, etc are brought in there has thus been a shift from *terra mater to terra nullis*, by which new biotechnological companies are said to rob the farmers' seeds of life and value by the process that make corporate seeds the foundation for wealth creation. 'Primitive Cultivars' are those indigenous varieties called land races have been evolved through natural and human selection, and are produced and used by the Third World farmers. Those created by modern plant breeders in International Research Centres or by the transnational seed corporations are called 'advanced' or 'elite'.

It is here, where 'germplasm' comes in Companies claim that 'raw Germplasm only becomes valuable after considerable investment of time and money'.<sup>8</sup> As per such interpretation it could be concluded that plant breeding by farmers is not breeding; it is only when the farmers varieties of 'primitive' Germplasm are mixed or crossed with inbred lines in international labs by scientists that 'creation' and 'innovation' are seen to happen [9]. It can be said that man has learnt how to play God, and has converted this 'self regenerative' process into a 'raw material' producing business [10].

With respect to India, it is necessary to trace out the legal protection which is afforded to the seed industry since the advent of the Green Revolution. Most agro based biotech companies are primarily engaged in manufacturing and other related activities. As a huge amount of resource is invested in this field, the companies as well as the individuals are keen on receiving due protection for their works. Most have been engaged in producing new high yielding varieties (HYV) [11] of seeds, like Meta-helix, Monsanto, Karnataka State Agro Corn Products, etc.

As envisaged by Vandana Shiva [12], while the Green Revolution was based on the assumption that the earth is inert, the biotechnology revolution robs the seed of its fertility and self-regenerative capacities and subsequently colonizes it in two major ways namely through technical means, and secondly by property rights. Technical processes refer to 'hybridization', which is said to put an end to the reproduction of the seed itself. Advantage of creating such hybrid seeds lie in the fact that such processes do not create 'true to type' seeds. Owing to such, farmer lie at the mercy of the seed companies, since they would require the same variety for the production of that same species of product.

A few years ago, significant investments in crop breeding were primarily funded by the public sector. Statistics revealed that there has been growing dependence world over in plant breeding that is funded by the private sector. IPR will thus serve as an incentive to such companies which employ huge resources for the said purposes. It could be said that as a result of the increased production, the world's food supply would increase considerably, and there will also be an addition of value to agricultural science owing to the evolution of new products and technology.

### Intellectual Property Protection

When an individual expends intellectual power which results in the creation of a new entity, such as genetically engineered seed, a distinct property interest arises in that creation that is separate and independent from physical ownership of that entity. In the absence of common law or statutory rights, however, an inventor's property rights are limited to the physical entity that embodies the expenditure of intellectual power. As a result, others can freely imitate these inventions.

The creation of statutory intellectual property rights has been the legal answer to protect those who have expended considerable amounts of time and energy in the creation of new varieties of seeds. Intellectual property law restrains the free use and disposition of property and vests in the creator the recognition of property rights in the creation. In this sense, what makes inventions or creations valuable is not their specific physical embodiment, but rather the intellectual protection of the physical embodiment. Indeed, the inventions or creations that are most appealing to intellectual property are those that are easily duplicated.

As in the case of the agro-biotech industries, the seed industry also derives intellectual; property protection from basic three sources, namely (i) patents, (ii) *sui generis* system and plant variety protection, and (iii) trade secrets. Other legal frameworks governing the seed industry in India includes the Seed Act, Rules, and other related Orders under the Essential Commodities Act.

### An Overview of the Seed Industry in India

India emerged with new Intellectual Property Rights legislation in the area of plant genetic resources, partially due to the pressure given by the United States, and also in order to be in consonance with TRIPS agreement of the World Trade

Organization. The United States has always been demanding monopoly protection for Transnational Corporations (TNCs) which control the seed industry. On the other hand, peoples' organizations are fighting to protect the farmers' rights to their biodiversity and their right to survival as well as freedom of scientists to work for the removal of hunger rather than corporate profits. Farmers' organizations, biodiversity conservation groups, sustainable agriculture networks and public interest oriented scientists are trying to ensure that the farmers' rights are protected, and through the protection of farmers' rights, sovereign control over our biological resources and its sustainable use in agriculture production is ensured [13].

There has been a constant conflict between farmers' rights and the seed industry and between the public domain and private profits, between agriculture that produces and reproduces diversity and one that consumes diversity and produces uniformity.

The United States has also been accused of wanting to replace the small peasant and farmer based agriculture economy of India with agribusiness controlled industrial agriculture. Activists have argued that such a change in the agricultural regime in India will imply a shift with a transformation of farmers as breeders and reproducers of their own seed supply to farmers as consumers of proprietary seed from the seed industry. It would also result in a shift from a food economy based on millions of farmers as autonomous producers to food system controlled by a handful of TNCs which control both inputs and outputs. Many have argued that this is an invitation to food insecurity, biodiversity erosion and uprooting of farmers from the land.

IPR becomes an essential part of the package of agribusiness controlled agriculture in which farmers no longer grow native seeds but those supplied by the TNC seed industry. It is then that IPR takes the form of a monopoly that is said to wipe out farmers rights to save and exchange seed. This is said to lead to TNC totalitarianism in agriculture [14]. There is a need to protect the interests of the public, as consumers and producers. New mechanisms and instruments are required to battle the "TNC totalitarianism". This is where the concept of 'community rights' was introduced. Community Rights proved important in balancing the public's interest and that of the seed industry. In the field of food and agriculture, farmers' rights are the countervailing force to breeder's rights and patents on seed and plant material [15]. Farmers rights with respect to monopoly control of the food system become

relevant not just for the farming community, but also for the consumers.

Vandana Shiva is also in the view that without farmers' rights, there is no political mechanism to limit monopolies in agriculture, and that would inevitably lead to displacement, hunger and famine, and would lead to total monopoly control over food production and consumption through the ownership over seed, which is the first link in the food chain [16].

### **Farmers Rights**

It is clear that farmers and local communities form another group of stakeholders in the field of agricultural system. It is necessary to trace the evolution of the concept of farmers' rights, and subsequently establish its relation with the other stakeholders [17].

The CBD was the first international convention that recognized the national sovereign right of countries to their biological wealth. It had also recognized the contribution of indigenous knowledge regarding the utilization of biodiversity. Experts have concluded that such a major shift in the political context of ownership, use and control of genetic resources, especially in the area of agricultural biodiversity, including seeds and plant genetic resources [18].

Since several centuries, seeds of the third world have been considered as a part of the "common heritage" of mankind. In other words, it implies that all countries develop or not, have had access to the biodiversity of the developing countries. Their rich natural resources, comprising of flora and fauna have often been exploited in the name of 'common heritage' [19].

However, after the CBD, it can be interpreted saying that due to the change in ownership, use and control of the genetic resources and germplasm, the seeds of the Third World can no longer be treated as the 'common heritage'. This ultimately limits the once upon a time 'free access' enjoyed by the northern seed corporations.

It has also been gradually accepted that the seeds evolved by the corporations are not the only subjects of intellectual property. Farmers as well as local communities have also sufficiently contributed towards the development of the entire seed industry.

Another concept which has evolved parallel to farmers rights has been 'community rights' [20]. In the case of agricultural biotechnology, community rights and farmers rights are one and the same. They

recognize the creativity of farmers, they protect farmers' livelihoods and they restrict IPR monopolies.

Use of the Terminator Technology to Enforce Intellectual Property Protections for Genetically Engineered Seeds.

Genetically Modified (GM) [21] seeds have become a very important part of American farming. By genetically altering seeds farmers are able to increase yields, reduce pesticide use, and reduce labor costs. In reactions, the Terminator Gene does not allow a seed to germinate, meaning that farmers cannot save seed for the next season to replant [22]. As a result, farmers have to return to the manufacturer to obtain more seed in order to replant the next year.

Plant breeders take a contrary stand with regards to the rights of the farmers. The development of genetically engineered crops and the proliferation in the sale of genetically engineered seeds have raised concerns for seed developers interested in protecting their biological innovations. The saving and replanting of seed by farmers has caused significant concern because seed developers have spent enormous amounts of time and financial resources to develop these genetically engineered crop varieties. Thus, intellectual property protections are important to seed developers because they safeguard the investments made in developing new varieties of genetically engineered seeds [23].

The elimination of a farmer's traditional right to save has upset the long settled expectations of many farmers. In addition, life science companies have demonstrated a willingness to enforce licensing restrictions [24].

### **Impact of Seed Monopolization on Farmers and Agriculture**

New Intellectual Property Rights are being introduced through the WTO in the form of patents or breeders' rights. Patents on plants and seeds imply that corporations which have the patent can claim that a seed or plant or crop variety is their invention and exclude others from making, selling, using, or distributing the seed or crop. The ancient system of saving seed or exchanging seeds freely with neighbors is thus viewed as 'intellectual property theft' under IPR regimes [25]. Companies are already taking farmers to court in industrialized countries for seed saving and seed exchange.

There are two ways in which farmers' rights and freedoms related to agricultural systems and seeds are being eroded. Firstly, seed legislation pushes out farmers' varieties and makes farmers' breeding an



illegal activity. Secondly, farmers are forced to give up their inalienable rights to save, exchange and improve seed. This forces farmer to use only 'registered' varieties. Since farmers' varieties are not registered and individual small farmers cannot afford the costs of registration, they are slowly pushed into dependence on corporations who sell 'registered' seed varieties [26].

Seed is the source of life and control over seed is the first link in the food chain. Monsanto is an agricultural company and 95% of India's cotton seed is under its control. Though the Monsanto's promises on India's website are "Producing more, conserving more and improving farmers' lives." But, year in and year out farmers are losing the seeds from their own plants, and are forced to purchase them a new from seed providers. Monsanto has monopolized the seed market which has significantly limited the variety of plants available on the market. When a corporation controls seed, it controls life, especially the life of farmers. Monsanto's concentrated control over the seed sector in India as well as across the world is very worrying. The consequences of which have had fatal effects on both our environment, and the farmers that harness crops from it.

Getting patents on seed, Monsanto has become the "Life Lord" of our planet, collecting rents for life's renewal from farmers, the original breeders. Basically, patents on seed are illegitimate because putting a toxic gene into a plant cell is not "creating" or "inventing" a plant. These are seeds of deception, the deception that Monsanto is the creator of seeds and life; the deception that while Monsanto sues farmers and traps them in debt, it pretends to be working for farmers' welfare, and the deception that GMOs feed the world. GMOs are failing to control pests and weeds, and have instead led to the emergence of super pests and super weeds. This is what connects farmers' suicides in India to *Monsanto v. Percy Schmeiser* [27] in Canada, to *Monsanto v. Bowman* in the US, and to farmers in Brazil suing Monsanto for \$2.2 billion for unfair collection of royalty.

Therefore, farmers who produce and exchange their own seeds within their own community or with neighboring communities are not in need of laws to govern their actions. The collective rights to use community seeds, which are often oral, are established and respected enough within each community for such use to be regulated. But once the seeds are commercialized on a large scale by companies who produce them with unknown methods and in unknown locations, often beyond national borders, then laws become necessary in order

to combat fraud, counterfeiting, bad quality seeds that do not germinate or that carry diseases, as well as to regulate GMOs. Laws are also necessary to protect local seeds and the social and cultural systems which guarantee the survival of the population's chosen systems of food production [28].

## Conclusion

Ever since the Green Revolution, corporations have deployed a range of strategies to get a complete control over seed sector and they are striving to take control of land, farming, food and the huge market. But seeds have always been the basis of productive, social and cultural processes that have given rural people the resolute ability to maintain some degree of autonomy and to refuse to be completely controlled by big business and big money.

Ever since the establishment of the World Trade Organization almost without exception, all countries of the world have passed laws giving corporations ownership over life forms either through patents or through so-called plant breeders' rights or plant variety protection laws. But most farmers and indigenous peoples have resisted and continue to resist this takeover in different ways. To strengthen this movement, it is very important that as many people as possible, especially in the villages and rural communities that are most affected, understand these laws, their impacts and objectives, as well as the capacity of social movements to replace them with laws that protect farmers' rights.

## References

1. Vandana Shiva, *Patents: Myths and Reality*, (New Delhi: Penguin Books India (P.) Ltd., 2001), p.69-70. A farmer who wants to exchange seed generally gives an equal quantity of seed from his field in return for the seed he gets. Free exchange among farmers goes beyond mere exchange of seeds; it also involves exchange of ideas and knowledge, of culture and heritage. It is an accumulation of tradition, of knowledge of how to work the seed.
2. *Ibid* at 69.
3. La Via Campesina, *Seed Laws that Criminalize farmers: Resistance and Fightback*. Available at <https://www.grain.org/article/entries/5142-seed-laws-that-criminalise-farmers-resistance-and-fightback>. visited on 20/12/2016.
4. *Supra* Note 1.

5. Jack Kloppenburg, *First the Seed*, (Cambridge: Cambridge University Press, 1988), cited in Vandana Shiva, *Captive Minds, Captive Lives*, (New Delhi: Research Foundation for Science, Technology and Natural Resources Policy, 1995) p.47.
6. A. Bryan Endres, *State Authorized Seed Saving: Political Pressure And Constitutional Restraints*, (Drake Journal of Agricultural Law 9 Drake J. Agric. L. 323, 2004), p.324-355. The planted seed commences the crop production cycle and, when harvested, provides farmers the option to plant the seed for the production of more grain, consume for subsistence, or sell the seed to third parties for their own consumption or planting. As noted by Professor Kloppenburg, "the seed is grain: the option to produce or to consume is there in each seed." The practice of saving seeds from year to year served as a natural barrier to the growth of the commercial seed business. The development of hybrid corn in the early twentieth century, however, changed this agricultural paradigm, as seed saved from a hybrid lacks "vigor" and suffers dramatically reduced yields in subsequent years. As a result, farmers must purchase new hybrid corn seed for each growing season. The single-use nature of hybrid corn, in conjunction with the application of the law of trade secrets to protect the parent seed lines, provided seed breeders an intrinsic business model to recover research and development costs for each new hybrid variety, and spurred the commercialization of the seed corn industry.
7. *Supra* note 5.
8. *Supra* note 6. When viewed in the historical context of plant breeding, legal protection in the form of statutory based intellectual property for innovations in plant germplasm is a relatively new concept. Early farmers engaged in unsystematic plant breeding by exploiting chance mutations and selecting seeds from plants with the most desirable traits. Selected seeds were saved and traded among neighbors. Although the actual seeds were subject to ownership as personal property, the farmer-discoverer of the mutation did not regard himself as the owner of the new variety's germplasm, much less subsequent reproductions thereof. Plant germplasm in all forms was considered a natural creation and part of the public domain. Colonial Americans quickly discovered through trial and error which varieties of imported germplasm were adaptable to North American soils and climate. Farmers saved their seeds and traded or sold varieties with their neighbors. Moreover, the newly established federal government recognized the importance of a productive agricultural sector (as well as varied plant germplasm) to the nation's overall economic development.
9. Writ, Stephen, *Biotechnology and genetic Diversity*, California Agricultural Lands Projects, (San Francisco, 1985).
10. The modified seed is ecologically incomplete and ruptured at two level: (i) it does not reproduce itself, while by definition, seed is a regenerative resource. Genetic resources are thus, through technology, transformed from a newable into a renewable resource, (ii) it does not produce by itself. It needs the help of other purchased inputs to produce.
11. "Hybrids result from the deliberate crossing of two different parent varieties from the same species. F1 refers to "first generation off-spring" from these two distinct parent varieties. If you plant seed saved from an F1 hybrid variety, you will not get the same result as the parent plant (will not be "true to type"). The off-spring will revert back to the different traits of the separate parent varieties. In order to produce new seed for hybrid varieties, the parent plants must be crossed each time to create the same combination. Plant breeders began producing hybrids as a way of combining the best traits of separate varieties into one creating what is known as hybrid vigor. It has been said that hybrid varieties offer greater disease resistance, vigor and uniformity than open-pollinated or heirloom varieties." for more details log on to <http://www.homegrown.org/profiles/blogs/what-are-hybrid-seeds> last visited on 12/07/2016.
12. Dr. Vandana Shiva is an Indian activist, author, and founder of the Research Foundation for Science, Technology and Ecology.
13. Vandana Shiva, 'Future of Seeds, Futures of Farmers, Agricultural Biodiversity Intellectual Property Rights and Farmers Rights', 1 (New Delhi: Research Foundation for Science, Technology and Natural Resource Policy, 1996).
14. TNCs will decide what are grown by farmers, what is to be used as inputs, and when they sell their produce, to whom to sell, and what price. They also decide as to what is eaten by the consumers, etc.
15. Farmers' rights are an ecological, economic, cultural and political imperative. Without community rights, agricultural communities cannot protect agricultural biodiversity. This biodiversity is necessary not just for the ecological insurance of agriculture. Rights to agricultural biodiversity are also an economic imperative because without it farmers in our country would lose their freedom and options for survival. Because biodiversity and cultural diversity are intimately linked, conservation of agriculture biodiversity is also said to be a culture imperative also.
16. *Ibid* at 3.
17. Farmers' Rights reflect the recognition of sovereignty in ownership and creativity in traditional breeding by farmers as well as alternative breeding strategies for protection of biodiversity base of agriculture. Without farmers rights the biodiversity rich third world countries cannot assert their sovereign rights to their agricultural biodiversity or in their agricultural

policy. Further without the ownership rights of farming communities, biodiversity cannot be preserved. Ibid.

18. Ibid

19. See Naomi Roht-Arriaza, "Of Seeds And Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities", 17 Mich. J. Int'l L. 919 (Summer 1996) Intellectual Property Laws appropriate indigenous and local scientific knowledge by denying it legitimacy as a protectable interest, thereby allowing others to use it freely. The products of this knowledge are also subject to appropriation. The fruits of indigenous and local knowledge are tagged the "common heritage of humanity", rather than the evolving product of defined living communities. While such "common heritage" resources can be freely collected, those same resources, brought into mostly Northern-controlled seed banks, gene banks, and laboratories, can be "improved" and then given or sold to private interests who treat the results as private property. Of course, a great uncompensated removal and transport of plants from one area to another commenced with Western exploration. The world's great botanical gardens, Italian cuisine, and Irish potatoes, among others, are products of the plant resource movements that accompanied the colonization of the sixteenth through nineteenth centuries. The unrestricted movement of plant genetic resources has improved diets and increased source of food and useful materials throughout the world; toward these ends, farming communities often exchange seed with other communities. The problem is not with the free use and exchange of resources per se, but with the designation of only some resources as "common". The fight over the status of plant genetic resources illustrates the selective use of the "common heritage" principle. Under the auspices of the United Nation's Food and Agriculture Organization (FAO), States negotiated a nonbinding International Undertaking on Plant Genetic Resources (Undertaking) in 1983. The original version of the Undertaking, supported by gene-rich Southern Countries, declared that all plant germplasm, both raw and elite breeders' lines, was equally part of the "common heritage of mankind" and therefore available to all. The original version of the Undertaking thus represented an attempt by Southern countries to place laboratory bred varieties on the same legal plane as their own undeveloped plant genetic resources. Predictably, most Northern countries rejected this version of the Undertaking. By 1989, arguing that the text conflicted with UPOV, FAO members had effectively added protection for breeders' rights. By 1991, amendments to the Undertaking had practically abandoned the "common heritage" principle for improved varieties, while retaining it for farmers' varieties.

The inequality inherent in this use of the "common heritage" principle led to its rejection in the 1992 Convention on Biological Diversity, which affirmed sovereign State rights over genetic and other biological resources. The "common heritage" principle has long been applied to the collection and storage of plant germplasm in seed banks. Seed banks are giant iceboxes where seeds are stored under cold, dry conditions and periodically grown out. Many national agricultural institutions maintain extensive seed collections; altogether, seed banks hold some 4.35 million crop accessions. Sixteen International Agricultural Research Centers (IARCs) collect wild and crop germplasm, including varieties of wheat, corn, rice, potatoes, millet, sorghum, barley, and livestock. The Consultative Group on International Agricultural Research (CGIAR), an informal grouping of mostly Northern donor governments, universities, research centers, and individuals, manages the IARCs. Seed banks and gene banks collect Southern germplasm and distribute it to gene-poor Northern countries; thus a large proportion of commercially used genetic material moves to the Northern countries via the IARCs. Studies estimate, for example, that twenty-one percent of the U.S. wheat crop was derived from material stored at the International Maize and Wheat Improvement Center, the IARC for wheat. Seed companies depend on this germplasm to sustain their genetically engineered and hybrid varieties. Furthermore, the IARCs have sometimes donated raw materials that are subsequently incorporated into protected varieties by multinational seed companies, even though the IARCs' stated purpose is to protect and develop plant genetic resources for all of humanity. Again, the germplasm in the banks is free, considered "common heritage", but the products engineered in laboratories on the basis of this germplasm are protected and must be brought. As a result, farmers from the areas where the germplasm was originally protected and selected may end up "paying for the end product of their own genius".

20. It recognizes creativity and protects the livelihoods of diverse communities and they set limits and boundaries on the domain of monopoly protection shaped by IPRs. 'Community Rights' are necessary countervailing forces for the protection of people's rights in the context of Multinational Corporation Monopolies through IPRs including Breeders Rights, Patents and Trade Marks Farmers' Rights.
21. A genetically modified organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques or when a gene from one organism is purposely moved to improve or change another organism in a laboratory, the result is a genetically modified organism (GMO). It is also sometimes called "transgenic" for transfer of genes.

22. See Ricarda A. Steinbrecher & Pat Roy Mooney, *Terminator Technology: The Threat to World Food Security*, *Ecologist*, Sept. 1, 1998, p.276.
23. Corporations have made a substantial investment in researching and developing these seeds. To protect this investment they have acquired patents on them, which are permitted under United States patent law. These patents provide a legal way for corporations to protect their investment. In 1998, Delta and pine Land Company (D&PL) and the United States Department of Agriculture (USDA) acquired a patent on a genetically modified seed called Technology Protection System. This became known around the World as the "Terminator Technology". Previously, farmers saved seed to use in their next year's crop. In reaction, the terminator Gene does not allow a seed to germinate, meaning that farmers cannot save seed for the next season to replant. As a result, farmers have to return to the manufacturer to obtain more seed in order to replant the next year. This in turn insures the manufacturer's protection of their patent and bolsters their financial investment.
24. A. Bryan Endres, *State Authorized Seed Saving: Political Pressure and Constitutional Restraints*, 9 *Drake J. Agric. L.*323, 2004 for example, by 1999, Monsanto filed more than 475 lawsuits against farmers for patent infringement and violation of technology user agreements. Moreover, the Supreme Court's decision in *J.E.M. Ag. Supply v. Pioneer Hi-Bred* (affirming patentability of genetically modified plants) gives life-science companies greater confidence in enforcing intellectual property rights and may encourage potential farmer defendants to settle before litigation commences. Monsanto's willingness to enforce its patent rights, coupled with global competition from Argentinean farmers who may save Roundup Ready® varieties of soybean seed with impunity, as well as rising seed costs, creates a perceived economic loss to the farmer. Seed pricing structure may also contribute to some farmer resentment. In a typical transaction, the farmer purchases a bag of seed from the seed dealer at a given price. In addition to the seed purchase price, the farmer must pay a "technology use fee" or "license fee". In return for fee payment, the farmer receives a limited license to use the seed's technology for a single growing season. The farmer does not have the option to save the harvested seed and simply pay an additional technology use fee and use the technology for a second growing season. Instead, the farmer must purchase a new bag of seed and pay the accompanying technology fee. Anecdotal evidence suggests that even those farmers who traditionally saved seed would be willing to pay the technology use fee on an annual basis, if they were not required to repurchase seed they could otherwise produce themselves. To the extent saving seed lowers farm costs, an option to purchase a technology license while using farm-saved seed would raise net farm income, while ensuring the patent holder received a reasonable royalty on the invention.
25. The IPR regimes of the west allow corporations to usurp the knowledge of the seed and monopolize it by claiming it to be their private property. Over time, this results in monopolistic corporate control over the seed itself, restricting its free sharing within and across communities.
26. Vandana Shiva, *Patents: Myths and Reality*, (New Delhi: Penguin Books India (P) Ltd., 2001), p.69-73.
27. In *Monsanto v. Percy Schmeiser* a patent infringement case was recently tried in the Canadian courts by alleging that unauthorized saving of GM seeds. In this case, Monsanto Company sued Percy Schmeiser, a local farmer, for saving and planting GM seeds produced from pollen that had blown into his fields from a neighboring farm. Schmeiser himself had no contract with Monsanto. The court held that the defendant planted seed saved from a field into which pollen from GM canola had blown. The court further held that Schmeiser had engaged in these activities knowingly. This violated the patent Monsanto held on the Roundup tolerant seed. Mr. Schmeiser was required to deliver to Monsanto any remaining saved seed and to pay to Monsanto the profits earned from the crops, plus interest. If the parties could not agree on the "quantum of profits," the court stated, Schmeiser would have to pay \$15,450 to Monsanto. This is an example which shows that, under a private contract between a grower and a biotech company, the grower's rights to the purchased seed are significantly limited. Such contracts generally contain a "no saved seed" provision. This provision prohibits growers from saving seed and/or reusing seed from GM crops. In effect, the provision requires growers of GM crops to make an annual purchase of GM seeds.
28. La Via Campesina, *Seed Laws that Criminalize farmers: Resistance and Fightback*. Available at <https://www.grain.org/article/entries/5142-seed-laws-that-criminalise-farmers-resistance-and-fightback>. visited on 20/12/2016.