



Intellectual Property Rights for New Seed Technologies: Balancing Farmers' and Breeders' Rights*

Preethi Krishnan

Sociology Graduate Student
Purdue University

Andrew Raridon

Sociology Graduate Student
Purdue University

Leigh Raymond

Professor of Political Science
Director of Center for the Environment
Purdue University

Mangala Subramaniam**

Associate Professor of Sociology
Purdue University

PURDUE
UNIVERSITY

PURDUE POLICY RESEARCH INSTITUTE
Gerald D. and Edna E. Mann Hall, Room 166
203 S. Martin Jischke Drive
West Lafayette, IN 47907
Phone: (765) 494-1050
Email: ppri@purdue.edu
www.purdue.edu/discoverypark/ppri

* Authors are listed in alphabetical order.

** Corresponding author msubrama@purdue.edu

Many cite improved seed technologies as vital to addressing the challenge of food insecurity, especially when faced with combined stresses of global climate change, population growth, and natural resource depletion (Anthony and Ferroni 2012; Lipton 2007). As improved seeds find their way into the developing world, policymakers are struggling to find the appropriate institutional mechanisms to regulate their creation and use. Arguments over intellectual property rights (IPR) are central to this debate. Some activists in the Global South are distrustful of any IPR regime that creates private ownership over seeds, whereas international financial institutions such as the World Trade Organization (WTO) encourage stronger IPR protections for commercial seed breeders creating new plant varieties. Policymakers face two conflicting imperatives in making these policies: (1) promote improved seed development and distribution in ways that will encourage new seed innovations and protect the interests of commercial breeders and (2) protect the interests of farmers who serve as both a source of vital germplasm and as the potential users of these improved seeds. In this policy brief, we consider the sources of these conflicting imperatives for developing nations to protect the rights of commercial plant breeders and small farmers, as well as some examples of national policies trying to balance those demands.

Competing Pressures on Institutional Designs for Improved Seed

Developing nations face two conflicting visions of property rights related to new genetic material in the international agreements related to the development and distribution of improved seed. On the one hand, a more traditional view of private ownership undergirds the IPR system required by the WTO through its Trade Related aspects of Intellectual Property Rights (TRIPS) agreement designed to promote the ownership rights of those creating new hybrid or transgenic seeds. On the other hand, an alternative and more collective view of ownership underlies the requirements to protect the interests of farmers who nurture and maintain traditional seeds that provide germplasm for improved hybrid and transgenic seeds, as codified in another international treaty, the Convention on Biological Diversity (CBD). Each international agreement is critical to understanding the often conflicting impulses that are found in the efforts of many developing nations to regulate the development and use of improved seeds.

1. Trade Related Aspects of Intellectual Property Rights (TRIPS)

Article 27(3) b of the TRIPS agreement requires all WTO

members to adopt a stronger IPR system for protecting new plant varieties developed by plant breeders. The agreement requires either the ability to legally patent new plant varieties, or the creation of a sui generis “plant variety protection” (PVP) law that protects breeder’s rights. Developed countries such as the US and Japan use patent systems for protecting new plant varieties, but most developing countries have created sui generis PVP rules following the Union for Protection of New Varieties of Plants (UPOV) conventions (UPOV 1978 or UPOV 1991). Thus, the TRIPS agreement has led to approaches to protecting breeders’ IPR ranging from the strongest property rights under the patent system to weaker property rights under the UPOV principles, especially the 1978 agreement. According to supporters of the TRIPS approach, following classic economic theory, stronger intellectual property rights over new plant varieties for breeders should speed innovation and diffusion of new improved seed varieties. In practice, however, the TRIPS rules appear to have had mixed results in promoting innovation and in enabling transfer of new seed technologies (Tripp, Louwaars, and Eaton 2007; Kolady, Spielman, and Cavalieri 2012), and may be exacerbating wealth inequalities between the Global North and the Global South (Laxman and Ansari 2012; Srinivasan 2003).

Convention on Biological Diversity

In contrast to the TRIPS agreement, the CBD is a 1993 international agreement that aims for “conservation of biological diversity, sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies...” In this respect, the CBD balances the rights of breeders with a requirement to ensure equitable benefit sharing with farmers, including mutually agreeable terms and prior informed consent for use of local seed lines or germplasm in developing improved seeds. Thus, the CBD argues for the recognition of farmers’ rights, insisting that farmers be rewarded and compensated for their traditional knowledge that may have contributed to the development of new commercial plant varieties. Consistent with this emphasis on benefit sharing and farmers’ rights, the CBD promulgates a more collective form of ownership than TRIPS, conceiving of landraces and indigenous seed lines as genetic resources that are shared assets for the local communities that

develop and nurture them. This approach recognizes that unlike commercial seed development, indigenous plant varieties are often created and maintained through informal and collective knowledge generation, making it difficult to attribute traditional property rights for a local germplasm or seed variety to a particular person or entity (Brush 2007).

Important IPR Terms and Acronyms		
CBD	Convention on Biological Diversity	International treaty protecting global biodiversity and fair exchange of genetic material, requiring informed consent and benefit sharing for any use of local biological or genetic resources.
EDV	Essentially derived varieties	Plant varieties that are sufficiently close genetically to an original, protected seed variety to give the original breeder IPR rights over these varieties.
IPR	Intellectual property rights	Grants ownership over a new process or material, such as a new technique for developing improved seeds, or a new seed variety that meets NDUS standards.
NDUS	Novelty, distinctiveness, uniformity, and stability	Four standards often required for a new seed variety to be eligible for IPR protection under many PVP laws.
PPVFRA	The Protection of Plant Varieties and Farmers Rights Act	India’s primary legislation for TRIPS compliance. Exhibits several features protecting breeder’s rights as well as protecting the rights of farmers.
PVP law	Plant variety protection law	Law that extends private property rights to new plant varieties, usually to commercial plant breeders.
TRIPS	Trade related aspects of intellectual property rights	1995 WTO agreement that extended private property rights to plant varieties and mandated member countries pass PVP legislation.

UPOV (1978 and 1991)	International Union for the Protection of New Plant Varieties convention agreement	International treaties that regulate plant breeders' rights; often used as guide for national PVP laws responding to TRIPS. 1991 version tends to favor commercial breeder rights more strongly.
WTO	World Trade Organization	Intergovernmental organization regulating international trade.

improved seeds (von der Osten 2005). The terms of this sharing of genetic resources is a complex part of any IPR policy for improved seeds. The CBD recommends that developing countries should share indigenous genetic resources and import improved seeds or other genetically modified organisms based on the principle of “informed consent” and with significant “benefit sharing” for the communities who provided the original germplasm for any newly commercialized seed line.

Countries take different approaches to these mandates. Consistent with the CBD, many nations require some form of “informed consent” by local communities for any private or commercial use of local seed lines or germplasm, although the mechanisms for obtaining that consent vary significantly. In some cases, countries also require compensation or “benefit sharing” with farmers or indigenous communities for any use of local plant lines or germplasm, raising complex issues of how to organize this transfer of wealth from commercial breeders to local farmers. Depending on the approach, some national legislation on benefit sharing may risk violating the TRIPS requirements to protect the rights of commercial breeders (Laxman and Ansari 2012). Benefit sharing arrangements are also beset by practical challenges such as the difficulty of assigning ownership or credit for a particular “trait” or indigenous seed line within various farming communities, or the difficulties in creating contracts between private sector and farming communities (Plahe 2011). In addition, indigenous communities are often vulnerable when negotiating over benefit sharing due to their lack of political power and awareness of the specifics of PVP rules, or their cultural rejection of the private property assumptions behind such an arrangement (DaVia 2012; Srinivasan 2003).

Protecting Farmer’s Seed Varieties

Finally, some nations use PVP laws to allow farmers to protect their local varieties with their own unique property rights, going beyond the “benefit sharing” paradigm. Such policies allow farmers or communities to legally register their distinct varieties as intellectual property. At the same time, these rules can require that varieties demonstrate “novelty, distinctiveness, uniformity, and stability” (NDUS) in order to receive formal recognition and protection. While these standards are desirable for commercial seed breeders, many farmers prefer variation in their varieties in order to maintain genetic diversity for future breeding and to protect

3. Different Provisions for Balancing Farmer and Breeder Rights

Governments confront a number of specific issues in trying to balance the protection of breeders’ rights required by TRIPS and the protection of farmers’ rights mandated by the CBD. We briefly review some of those key provisions here.

Protecting Collective and Informal Farming Practices in PVP Legislation

Countries vary in how their PVP policies provide farmers’ exemptions to breeders’ rights. Under UPOV 1978, protected new plant varieties can be used by other breeders (including farmers) for creating additional varieties. The 1991 UPOV strengthened breeders’ rights, however, by granting rights over Essentially Derived Varieties (EDVs) from an original seed to the original breeder. This provision is a potential barrier for farmers who have traditionally developed new varieties by breeding indigenous seeds with seeds protected by PVP laws, making the resulting “farmers’ varieties” potentially a violation of the 1991 UPOV rules. In addition, UPOV 1978 allows farmers to engage in collective seed exchange and seed saving even of protected seeds for non-commercial purposes, whereas UPOV 1991 does not allow seed exchange of protected plant varieties. Countries today follow both models, permitting different amounts of traditional seed saving and breeding practices by subsistence farmers.

Informed Consent and Benefit Sharing

According to many analysts, commercial breeders and small farmers can both benefit from the sharing of genetic resources: small farmers in developing countries can gain access to modern seed varieties with improved traits while commercial breeders and plant scientists often need genetic material from traditional varieties to develop

against crop failures—preferences that make it difficult to get their varieties protected unless exceptions are made for farmers' varieties in this regard (DaVia 2012; Salazar et al. 2007).

4. Case Study: India's Attempt to Balance Breeders' and Farmers' Rights.

In this section we describe how a leading nation, India, has balanced the conflicting obligations to breeders and farmers as represented by TRIPS and the CBD in its laws related to the development and use of improved seed. The so-called "Indian model" is often cited as an example for other nations considering these opposing tensions in PVP laws, especially other nations in South Asia. India also offers several original ideas for protecting both farmers' and breeders' rights, making it a useful source of ideas for balancing the TRIPS and CBD imperatives. The nation generally follows the UPOV 1978 model in developing its sui generis PVP system, but seeks a complex balance between breeders' rights and farmers' rights as described below:

Protecting Collective and Informal Farming Practices

India's Protection of Plant Varieties and Farmers' Rights Act (PPVFRA) of 2001 protects farmers' rights to save, sow, resow, exchange, share, use or sell seeds or the produce from seeds, including even protected varieties of seed registered under the law. The only limit on this right is that farmers are not allowed to sell such seeds as "branded" seeds, meaning they cannot label them as being of a variety protected under the law. Thus, India formally allows farmers to engage in commercial use and even sale of protected seeds as long as it is not under a breeder's brand name. Although the Indian law gives commercial breeders the right to register essentially derived varieties (EDVs) from a protected seed, this requires a separate application process for those varieties and remains subject to the strong farmers' exemptions to those commercial rights. In short, India includes very strong protections of farmers' informal practices in its PVP regulations, even while allowing for commercial protection of new improved seed varieties by different commercial breeders.

Informed Consent and Benefit Sharing

Although India may seem to be very strong on farmers' rights in terms of protecting traditional uses and even commercial trade by farmers in protected

seeds, the country's rules are less favorable to farmers in terms of prior informed consent and benefit sharing for the use of local land races or germplasm. The Biological Diversity Act (BDA) of 2002, enacted to meet the CBD mandate, does require anyone seeking to use a "biological resource" or "knowledge associated thereto" for research or commercial development to get permission from the National Biodiversity Authority. In this respect, India's approach to informed consent is more focused on the national government than on local communities, especially compared to other proposed laws in South Asia related to implementing these CBD provisions as discussed below.

In terms of benefit sharing, the Biological Diversity Act requires the National Biodiversity Authority to ensure the "equitable sharing of benefits" from any approved access to biological resources. The law provides a range of options for providing such benefit sharing, including joint ownership of the resulting IPR with the National Biodiversity Authority or another "benefit claimer" such as local farmers, the location of new economic development stemming from the new seed technology, or direct monetary compensation to those seeking benefits as the National Biodiversity Authority determines appropriate. The law also creates a National Biodiversity Fund, where payments for benefit sharing may be deposited before being allocated to the appropriate groups or used for "conservation and promotion of biological resources" in general.

Even India's PVP law incorporates similar provisions for benefit sharing for groups who have contributed "genetic material" used to create a new plant variety being protected. In this instance, however, the burden is on the local farmers or other claimants to seek benefit sharing by filing a claim when a new commercial seed variety is registered. Any required benefit sharing is to be paid to the government's National Gene Fund, to be used either for direct payments to claimants, or for "supporting the conservation and sustainable use of genetic resources" in the field and in seed banks, as well as other programs related to "breeding, discovery or development of varieties" of seeds.

In both laws, therefore, benefit sharing is structured more as a negotiation of claims adjudicated by the government agency rather than a right of local communities. The PVP law puts the burden on local communities or other sources of original germplasm to file a claim for benefit sharing

when a new variety is registered, rather than on the commercial firms doing the registration. While the legislation requires authorities to advertise the registration of new varieties, it may be difficult for indigenous groups or subsistence farmers to keep track of such registrations and file claims within that period. In sum, both the Biodiversity and PVP laws offer a weaker version of benefit sharing for farmers who contribute local germplasm to a new commercial seed variety compared to the very strong protections offered for traditional farmer uses of seeds, including improved seeds.

Protecting Farmers' Seed Varieties

In contrast to its benefit sharing approach, India provides fairly ambitious opportunities for farmers to protect their local seed varieties with formal property rights. The PVP legislation encourages farmers to register their own “farmers’ varieties” of seeds with the government, giving them a similar level of protection to the registered seeds of commercial seed breeders. Thus, India’s PVP law includes an ambitious attempt to allow farmers to secure their own IPR for their locally-created seed varieties, even as it incorporates relatively weaker provisions for other forms of benefit sharing for giving farmers other compensation for the use of their local seed lines in the creation of new commercial seeds.

5. Implications of the Indian Model

As noted, India was the first nation in South Asia to enact formal laws to address both the TRIPS and CBD mandates to protect breeders’ and farmers’ rights. Other nations in the region have debated similar proposals with different degrees of emphasis on farmers’ or breeders’ rights. Bangladesh, for instance, has debated a biodiversity act that is even more protective of farmers’ rights, including a benefit sharing provision that requires that at least 50% of the “net monetary gain” from any commercial use of a biological or genetic resource goes to the relevant local community. Sri Lanka, meanwhile, remains in major conflict over balancing breeders’ and farmers’ rights as represented by a 2013 draft seed law that proposes more stringent limitations on farmers’ uses of protected seed varieties. Thus, other nations continue to struggle with how to balance these two imperatives, in some cases looking at India as an example.

At the same time, implementation of the Indian rules is complex, and has led to mixed results. Although some research argues that the PPVFRA has helped increase private seed innovation and

higher yields for several crops (Kolady et al. 2012), others are less sanguine about the effects of the new law. Many farmers in India are mistrustful of any IPR protections for seeds, seeing those property rights as foreign to their culture and imposed by external actors like the WTO. This means farmers are often reluctant to register their seed varieties as permitted under the Indian PVP law. In addition, the bureaucratic complexities of both seed registration and applications for benefit sharing make these “farmers’ rights” difficult for many rural farmers to negotiate or access (Plahe 2011; Ramprasad and Clements 2016). Registrations of farmers’ varieties have increased significantly in the past two years: as of March 2015, 539 farmers’ varieties had been registered for IPR protection under the Indian law (Bhutani 2015). Most of those registrations happen, however, only because of the work of “intermediaries”—individuals and groups who encourage farmers to register their varieties and help them negotiate the significantly complex process to do so (Bhutani 2015; Ramprasad and Clements 2016). What benefits will accrue to farmers from registering these protected varieties, however, remains unclear. In addition, it is evident that the actual system of seed production and distribution proceeds in India, as in other nations, according to a wide range of informal rules that are often inconsistent with the formal rules of the PPVFRA or the BDA, and that informal networks of seed distribution do not strictly adhere to the rules of the formal seed IPR system (c.f. Herring 2007). Thus, changes in formal PVP rules may have limited or surprising effects on some long-standing practices for seed distribution and use.

6. Conclusion

Those promoting improved seed technologies as a mechanism for increasing food security and access to nutrition face an important set of tensions regarding the appropriate property rights arrangements for such technologies. Current international institutions offer important and apparently conflicting requirements for national policies to balance the rights of commercial breeders and local farmers. There is passionate disagreement about the best way to balance these rights, with some arguing for the better incorporation of benefit sharing and informed consent provisions in TRIPS based PVP laws stressing improved property rights for even farmers’ seed varieties, and others rejecting an IPR-based approach to this problem in favor of other alternatives to protect

farmers and promote food security without relying on stronger property rights. Meanwhile, developing nations continue to struggle to identify policies that can meet the conflicting international mandates for farmers' and breeders' rights. Any future progress on the equitable use of improved seeds to address food security issues will require creative thinking about the role of IPR in such a system, as well as a recognition of the problematic relationship between formal PVP and "access and benefit sharing" rules as enacted and their actual implementation, as the Indian experience has shown.

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Further reading:

Overview of seed laws globally: GRAIN, <https://www.grain.org/article/entries/5153-infographic-seed-laws-around-the-world>