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Community-based Rights and IPR Regime: Revisiting the Debate

**Srividhya Ragavan
Jamie Mayer**

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Community-based Rights and IPR Regime: Revisiting the Debate

*Srividhya Ragavan & Jamie Mayer**

Abstract: This paper examines whether the Protection of Plant Varieties and Farmers Rights Act 2001 along with the proposed Seed Bill fulfills India's obligations under Article 27.3 of TRIPS. Further, the paper analyzes the benefits India is likely to derive from fulfilling these obligations. Thus, Part I examines Article 27.3 of TRIPS to analyze the constituents of the "effectiveness" requirement of the article. In analyzing whether the *sui generis* system in UPOV is effective, Part II details that UPOV's effectiveness is questionable considering that it has diluted eligibility standards, exaggerated scope of breeders' rights, and limited exceptions to breeders' rights. Part III, examines the *effectiveness* of PPVFA and the proposed Seeds Bill. This part concludes that India should refrain from enacting the Seeds Bill but should, instead, strengthen the PPVFA by plugging existing loopholes to achieve national objectives. The conclusion highlights PBRs *per se* can potentially lead to increased research in agriculture despite the resulting privatization/monopolization.

At the time of independence, Winston Churchill referred to India as a mere 'geographic expression.' India's emergence as a strong economy is the result of rigorous planning to balance economic with social justice. From a country where everything '*foren*' was shunned, the Indian *Yatra* is now ready to take on foreign ownership in all fields, including agriculture. As a mark of its

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willingness to liberalize, India attained membership to the WTO by taking on a package of trade obligations. The term “trade obligations” refer to obligations of nations arising out an agreement, countries signed in 1995 to establish and create membership to the World Trade Organization (WTO). As part of the WTO’s objectives to promote trade, minimum standards for intellectual property protection were established under the TRIPS agreement¹ as a means to reduce barriers to international trade.

India, with a view to fulfill its TRIPS obligations, in 2001, passed the Protection of Plant Varieties and Farmers Rights Act 2001² (PPVFA). The Act represents a *sui generis* attempt to balance the rights of farmers with breeders considering the huge farming population in the country. The term *sui generis* refers to systems engineered to the unique needs of a particular country or nation.³ The TRIPS agreement blesses such a form of protection for plant varieties by deviating from the norm of harmonizing intellectual property (IP) rights.⁴ Thus, article 27.3 of TRIPS embodies flexibility to protect plant varieties via “patents or by an *effective sui generis* system or by any combination thereof.”⁵

Between developing and developed member nations though, the flexibility of Article 27.3 has been a source of confusion. Developed nations construe a model codified as the International Union for the Protection of New Varieties of Plants (UPOV)⁶ as the minimum standard for establishing a *sui generis* system.⁷ Though UPOV is an example of a *sui generis* system of protection, developing nations, including India, refuse to treat it either as the only option or as setting minimum standards for TRIPS compliance on the grounds that it fails to adequately protect farmer’s rights. UPOV, developing nations believe, is more suited to developed nations, where farming is essentially large scale, dominated by breeders and seed industries.⁸ In developing nations, modernization and mechanization are exceptions rather than a rule in the cultivation centric style of life. Hence, developing nations construe the term *sui generis* as allowing them the discretion to determine the type and design of plant protection regime.⁹ Such a construction of the term *sui generis* would enable developing nations to promote innovative plant breeding while preserving national objectives like protecting biodiversity, traditional farming, and food security.¹⁰ For developing nations, the ability to weigh the benefits of Plant Breeders’ Rights (PBRs) in the context of socio-economic issues to accommodate public interest exceptions serves as an important incentive.

In enacting the PPVFA, India, like other developing nation counterparts, took advantage of the Article 27.3 flexibilities by embracing a *sui generis*

regime. India’s PPVFA was noticed by the rest of the world for two reasons. First, it highlighted the complexity of farming in the developing world which requires balancing the interests of variety actors involved in agricultural trade.¹¹ Second, flaws notwithstanding, the PPVFA presented an alternative model to UPOV for poorer nations. Presumably, the PPVFA was passed because India hoped to benefit from introducing plant breeder’s rights. With a view to compliment the PPVFA, the Ministry of Agriculture introduced a Seeds Bill in 2005 to encourage seed trade to promote the Seed industry, boost exports, and protect seed quality.¹² While TRIPS does not require governments to regulate seed trade, the passing of the PPVFA perhaps necessitated a review of the existing framework governing seed trade.

This paper examines whether the PPVFA along with the proposed Seed Bill fulfills India’s obligations under Article 27.3 of TRIPS. Further, the paper analyzes the benefits India is likely to derive from fulfilling these obligations. Thus, Part I examines Article 27.3 of TRIPS to analyze the constituents of the “effectiveness” requirement of the article. In analyzing whether the *sui generis* system in UPOV is effective, Part II details that UPOV’s effectiveness is questionable considering that it has (1) diluted eligibility standards, (2) exaggerated scope of breeders’ rights, and (3) limited exceptions to breeders’ rights. Part III, examines the *effectiveness* of PPVFA and the proposed Seeds Bill. This part concludes that India should refrain from enacting the Seeds Bill but should, instead, strengthen the PPVFA by plugging existing loopholes to achieve national objectives. The conclusion highlights PBRs *per se* can potentially lead to increased research in agriculture despite the resulting privatization/ monopolization. However, any benefits that India might potentially derive, if at all, are questionable until India takes on a bigger role in the WTO forum to aggressively reduce agricultural subsidies. Otherwise, introduction of PBR in a market that is closed, could lead India towards a path of food insecurity.

1. The Effectiveness Requirement in Article 27.3 of TRIPS

*[M]embers shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof.*¹³

By leaving “plant varieties” undefined, TRIPS implies effective protection of all plant varieties. Members can choose *any one* of the three regimes being (1) patents, (2) a *sui generis* system, or (3) a combination of both patents and the *sui generis* system to protect plant varieties.¹⁴ Without setting substantive

standards of protection, Article 27.3 narrows members' choice of regime by the effectiveness requirement.¹⁵ The purposefully open-ended language creates a flexible standard of protection sympathetic to developing nations' socio-economic priorities, provided the *effectiveness* requirement is satisfied. The flexibility presents a range of possibilities from systems like the plant patent regime of the United States or specific variety protection systems of the European Union, to the possibility of customized plant protection regimes suited to the needs of developing nations.¹⁶

Effective Protection: The term "effective" which is the only standard outlined in TRIPS for protecting plants, is left undefined. Article 31 of the Vienna Convention which states the interpretive rules for undefined terms in international agreements requires treaties to be read in light of their objectives and purposes.¹⁷ Such an objective based reading of the agreement is supported by the terms of the subsequent clarification made to TRIPS in the Doha Declaration.¹⁸ The Declaration outlines, "the TRIPS Council shall be guided by the objectives and principles set out in Articles 7 and 8 of the TRIPS Agreement and shall take fully into account the development dimension..."¹⁹ Similarly, the Declaration on Public Health asserts that, "[i]n applying the customary rules of interpretation of public international law, each provision of the TRIPS Agreement shall be read in the light of the object and purpose of the Agreement as expressed, in particular, in its objectives and principles."²⁰ Thus, the term *effective* in Article 27 should be read in light of the objectives of TRIPS.

The objectives of TRIPS in Article 7 details that enforcement of Intellectual Property (IP) mechanisms should "contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge..."²¹ Technology, Article 7 requires, should to be promoted "in a manner conducive to social and economic welfare and to a balance of rights and obligations."²² Thus, the objective of TRIPS is to balance members' IP protection obligations with their rights to promote social and economic welfare.²³ The Principles under which the Objectives of Article 7 work are discussed in Article 8.²⁴ Entitled *Principles*, Article 8 recognizes members' right to adopt public health and public interest measures, provided they are consistent with the provisions of TRIPS.²⁵ An *Objective* based interpretation of TRIPS necessitates that the Article 7 requirement that IP mechanisms balance members' rights and obligations be read with the Article 8 Principles, which vests on members the right to prioritize their national public interest.²⁶

In light of Articles 7 and 8 of TRIPS, the *effectiveness* of a plant protection regime established under Article 27 must be judged by its ability to accommodate local/ national welfare and economic goals. Such a reading of the *effectiveness* requirement fits more comfortably with the other sub-sections of Article 27 which provides that members *may* choose to protect biological or microbiological materials. Member's flexibility to establish an *effective* system increases when using a national yardstick. Therein, perhaps lies the benefit of the Article 27.3's use of the expression "*an effective sui generis*" system as opposed to *the* effective system.

For developing nations using a national yardstick, an efficient system would provide adequate rewards to stimulate successful research and development of plant varieties without compromising national welfare goals.²⁷ A developing country might, for instance, consider "expressly reserving the right of a farmer who legitimately purchased protected seeds to save enough from her harvest to replant her fields the following season."²⁸ Similarly, biodiversity protection and promotion along with recognition of interests of local and indigenous communities need not be sidelined to successfully implement TRIPS.²⁹ Thus, members may either choose to tilt the balance in favour of farmers considering their food security and other national objectives, or balance the rights of breeders and farmers. In effect, countries that associate over-emphasizing breeders' rights with loss of genetic diversity and shifting of agriculture trade from farmers to multinational corporations can structure a *sui generis* option that best serves their local needs.³⁰ Other countries, like developed nations, can fashion a system to promote breeders exclusively as a means to promote agricultural trade. The efficiency of the system will not be compromised by any one of the choices above, provided the system vests sufficient protection. Both over-protection and under-protection detrimentally affect trade and would therefore fail the sufficiency test. Over-protection would affect trade in developing nations and could lead to food security issues if farmers are sidelined. At the same time, inadequate protection can also erode away the incentive to innovate.³¹ Food security itself would be better tackled by promoting innovation rather than stifling it.

For most developing nations, promoting agricultural trade is an important goal but it trails behind the most imminent priority agenda of achieving food security. Under protection, on the other hand, can stifle innovation in plant breeding which is also needed to tackle the issue of food security. Hence, the important of the sufficiency requirement to strike the appropriate balance to structure a regime that caters to national goals. An *effective sui generis* system

for plant varieties protection must provide incentives to the breeder of new varieties, without necessarily sidelining farmers.³² Viewed from this angle, of all the choices in article 27.3 of TRIPS, a *sui generis* regime can best associate social welfare requirements, like environmental, farmer's rights, etc., to plant protection – an association otherwise lacking in the formal patent mechanism.³³ Considering the benefits, a majority of developing nations has been satisfying its TRIPS obligations via *sui generis* systems.³⁴ As of March 2000, twenty-one (out of 47) developing country members of WTO have introduced a *sui generis* form of plant variety protection.³⁵

2. The Effectiveness of the UPOV Regime

Historically, the genesis of UPOV can be traced to the breeding industry. In the early 1900s, the breeding industry furthered the idea of plant breeders' rights and lobbied for enhanced protection in exchange for quality seeds.³⁶ Although Europe witnessed a strong sentiment against plant variety protection for fear of creating monopolization over food, national certification schemes provided for breeders' rights.³⁷ Meanwhile, at the invitation of the French government, twelve western European nations met to agree on a unified mechanism to promote seed trade.³⁸ Protecting plant varieties, the signatories envisioned, would prevent rather than promote monopolization over new plant varieties.³⁹ Consequently, the national certification schemes for providing breeders' rights were integrated into UPOV, 1961 with the specific objective of encouraging private sector commercial breeding.⁴⁰ Although UPOV originally attempted to distinguish itself from patents due to the European sentiment against patenting plant varieties, the UPOV Conventions have been styled akin to the patent regimes and based on western IP philosophy to provide incentives for long-term, breeding activities.⁴¹ The UPOV Convention, for instance, sought to promote "equity between breeders, authors and inventors" in order to develop seed trade.⁴² To date, UPOV retains its original quality as an instrument of the breeders. The subsequent revisions of the Convention in 1978 and later in 1991 increased the scope of breeder's rights.⁴³ UPOV's bias towards breeders, however, has resulted in developing nations' skepticism against adopting the model as the choice *sui generis* system.⁴⁴

UPOV's bias towards breeders does not affect its stature as a model *sui generis* system. Several developed nations prefer to fashion a *sui generis* regime of plant protection sympathetic to breeders. However, the low standards for eligibility; excessive rights for breeders; and inadequate exceptions to breeders' rights, discussed below, result in the UPOV, 1991 model providing

insufficient and imbalanced protection. Consequently, the following section asserts that the UPOV, 1991 model fails the *effectiveness* test of Article 27.3 of TRIPS.

2.1 Eligibility for Protection

UPOV vests breeders' rights over uniform, stable, new and distinct varieties.⁴⁵ Each of the eligibility requirements, detailed below, are based on exactly the same premises as IP rights but have a lower threshold for protection. The low standard for eligibility, it is argued, can result in vesting rights over miniscule innovations that can potentially shift plants in public domain to private domain.

A. Novelty Requirements

Article 6 of UPOV deems a variety as "new," if, "at the date of filing of the application for a breeder's right, propagating or harvested material of the variety has not been *sold* or *otherwise disposed of to others*, by or with the consent of the breeder, for purposes of exploitation of the variety."⁴⁶ Prior sale or disposal of the application material is the standard for determining novelty of the application material. The standard excludes public knowledge, prior cultivation, and limited publication from affecting novelty. The standard for novelty in UPOV tracks the same standard for patentability of inventions. Hence, the standard is limited to sale or disposal in territory – plants that have not been sold in the territory would still be considered *new* even though the plant has been sold in another jurisdiction or territory. To that extent, the definition justifies the criticism against UPOV as being an imitation of the utility patent regime for plant varieties. In order to be protect able, such new varieties should clear the others requirements for protection.

Farmers' exchanging seeds for non-commercial or experimental purposes will not defeat novelty since public knowledge does not preclude classifying a variety as new.⁴⁷ To that extent, known varieties may still become eligible for protection as new. Similarly, a commonly cultivated plant in remote parts of the world can be deemed "new," provided it has never been disposed of or sold since prior cultivation does not defeat novelty. For example, the Tulsi plant is a commonly found herb in India. Owing to its abundant availability, the Tulsi plant is rarely sold, and it is commonly found in most backyards. Because of local faiths and beliefs, Tulsi plants and leaves are also commonly exchanged between people. Nevertheless, under UPOV, the Tulsi plant may qualify as new, (assuming that there is no proof of Tulsi lacking novelty because

it was sold or disposed of). In essence, known plants that are not necessarily subject to sale or disposal have a danger of qualifying as new under UPOV.⁴⁸ The bottom line is, the fact that Tulsi or any other known plant is commonly exchanged between people may not bar novelty unless the exchange fits within the definition of sale or disposal. Moreover, an existing variety may qualify as new, where a country extends UPOV protection to a genus or species covering that variety for the first time, even if it has been sold one year before the date of application in the country of application, or before four years in any other country.⁴⁹ Instead of contributing towards innovation in plant breeding, the diluted novelty requirements could potentially result in plants in public domain clearing the novelty threshold.

B. Distinctiveness Requirement

A uniform and stable variety fulfilling the novelty test must be distinctive to become eligible for protection. All plants belonging to a specific genotype and possessing characteristics of that genotype fall within the definition of a variety. Under Article 7 of UPOV, a variety is distinct if “it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of filing the application.”⁵⁰ Distinguishing the application material from another “variety whose existence is a matter of common knowledge” determines distinctiveness.⁵¹ Under Article 14 of UPOV, a variety is a matter of common knowledge if it has been the subject “of an application for the granting of a breeder’s right” or “has been entered in the official register of varieties, in any country.”⁵² The Examination Guidelines released by the UPOV Secretariat in 2002 specify that the filing of an application for the grant of a breeder’s right renders that variety a matter of common knowledge if the application leads to a grant of a breeder’s right.⁵³ Common knowledge can also be established from commercialization or a publication with a *detailed description* of the variety.⁵⁴ What would amount to a detailed description is very unclear and is left undefined. The important aspect to note is that common knowledge of application material (or application variety) is inconsequential for a finding of distinctiveness or novelty. Application materials have to be compared with *varieties in common knowledge* (i.e., registered or published) in order to pass the distinctiveness bar. In effect, only if the application material is indistinguishable from a registered or published variety, the application would fail the distinctiveness test. Thus, application materials (even those that are themselves commonly known), can pass the test of distinctiveness provided it is distinguishable from another variety that is *a matter of common knowledge*. Similarly, application materials can qualify as distinct even if they are indistinguishable

from well-known or commonly cultivated materials that are not officially registered. Both commonly cultivated and well-known varieties that are indistinguishable from other widely known species can qualify as “distinct” so long as close cousins of the variety do not fall within the statutory definition of *commonly known* by the process of registry or by application for breeders’ rights.

The distinctiveness requirement in UPOV operates as a highly diluted version of the non-obviousness requirements of the utility patent system. For instance, the Tulsi plant from the above example will also qualify as “distinctive” under Article 7 of UPOV so long as it is distinguishable from a variety for which an application has been successfully made or has been entered in the official register. Tulsi will pass the distinctiveness bar even if it is indistinguishable from a commonly cultivated and well-known Plant *B*, provided that no application for protection or registry has been successfully made for Plant *B*. In essence, common knowledge, use, or even repeated cultivation of the application material is not an impediment for qualifying as “new” and “distinct” under UPOV.

Even with this low standard of distinctiveness, the Examination Guidelines specify that a systematic individual comparison may not be required with all varieties of common knowledge.⁵⁵ For example, the 2002 Guidelines specify that where a candidate variety is sufficiently different in its characteristics, it is unnecessary for a systematic individual comparison with varieties in that group to determine distinctiveness of the candidate variety.⁵⁶ It is adequate if just one quality distinguishes the application material from similar varieties of the same genus or specie.⁵⁷

The low standard of novelty and distinctiveness may result in both well-known varieties and those trivially different from them being considered distinct. When read with the standard for novelty, a commonly cultivated and well-known variety can be novel and distinct under UPOV, as long as it has not been sold or disposed of within the statutory periods, and is distinguishable from other varieties that appear in a registry or for which an application has been made. UPOV notwithstanding, attempts to monopolize well-known varieties by using various IP tools has already resulted in rampant erosion of the public domain. The patenting of Ayahuasca, a brew known as the yage or Yaje in Colombia, Ecuador, Peru and Brazil, prepared from a plant called the *vine banisteriopsis caapi* serves as an example. U.S. Plant Patent No. 5751 and 5752 (issued on June 17, 1986) on Ayahuasca to Loren Miller of

the International Plant Medicine Corporation was revoked in 1999.⁵⁸ Additional examples like the patents on turmeric and neem, both used in India for several years, substantiate the need to close any loopholes that facilitate any form of protection for varieties in the public domain.

The disadvantage with the low standard of novelty and distinctiveness is that, UPOV can elevate miniscule innovations to the level of an invention. Protecting miniscule innovations unjustly enriches the breeders by depleting prior art, which in this case, is biodiversity material. The danger is that it could result appropriating genetic material from the public domain and protecting them as premium innovation. Countries that seek to prioritize biodiversity protection would have to tailor a regime with higher standards of novelty and distinctiveness than those envisaged in UPOV, 1991.

C. Uniformity & Stability

A variety that is novel and distinct should also be “uniform” and “stable” in order to qualify for protection.⁵⁹ A variety is uniform if, “subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics.”⁶⁰ The Guidelines add that UPOV links this uniformity requirement to the particular features of a variety’s propagation.⁶¹ After successive production or propagation, if a new variety retains its essential characteristics, then it is taken to be stable.⁶² In effect, uniformity is achieved if all plants of the same variety possess identical characteristics and stability is achieved if these characteristics remain unchanged during propagation. The criterion of uniformity and stability have been included to ensure that the same variety can be reproduced in later generations.

On the other hand, protecting only stable and uniform varieties UPOV-type protection would result in a loss of genetic diversity. Hence, countries whose national objectives include sustainable use of biodiversity or equitable benefit sharing among peoples cannot benefit from UPOV styled legislation.⁶³ Developing country signatories of the CBD highlight UPOV’s inconsistency with the CBD objectives of conserving biological diversity.⁶⁴ Moreover, Article 15 of the CBD requires “sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources.”⁶⁵ Embracing UPOV would run counter to the CBD doctrine of equitable sharing of the technology of indigenous or local communities and traditional knowledge.⁶⁶ Furthermore, genetic diversity is also important for farmers who generally depend on the

stability and dependability of production offered by genetic heterogeneity.⁶⁷ Critics point out that uniformity could result in vulnerability to pests. While the IP of plant breeders should be protected, such protection can be made to the detriment of traditional farming techniques.⁶⁸ Traditional farming promotes adaptability of crops to many different conditions by selecting seeds tailored to many different microenvironments.⁶⁹ Selection diversifies the plant varieties available in a given area. Essentially, the criticism is that UPOV promotes commercially profitable, rather socially valuable varieties.⁷⁰ Ultimately, UPOV’s step-motherly treatment towards farmers, leave the core concerns of developing nations unaddressed.

2.2 Exaggerated Scope of Protection

The low threshold for eligibility standards are coupled with excessive rights for the breeder. Breeders’ rights, by virtue of article 14 (5)(a), extends to both the protected variety and “varieties not clearly distinguishable” from the protected variety.⁷¹ The rights conferred in the article afford breeders rights over varieties that are clearly indistinguishable from the protected and harvested materials. Further, Article 14(5)(b) extends breeders’ rights to “essentially derived varieties.”⁷² “Essentially derived varieties” are those that are predominantly derived either from the initial variety, or from another variety that is predominantly derived from the initial variety and is clearly *distinguishable* from the initial variety.⁷³ Thus, breeders’ rights extends to clearly indistinguishable (by virtue of Article 14(5)(a)) as well as over clearly distinguishable (when read with Article 14(5)(b)) derivatives of the protected variety.⁷⁴

The only meaningful exception in UPOV is that the use of a protected variety for experimentation will not amount to infringement. But, even here, if the experimentation on a protected variety results in another variety, the breeder (of the protected variety) has rights over the resulting variety (even if it is clearly distinguishable from the protected variety). Assume, for example, that Farmer, using the personal experimentation allowance under Article 15, derives Berry Y, which is clearly indistinguishable from the protected variety, Fruit X. Then, the Farmer derives Pea Z from Berry Y. Even if Pea Z is clearly distinguishable from both Fruit X and Berry Y, breeders’ rights over Fruit X under UPOV extend to both Berry Y and Pea Z. Thus, it provides scope for breeders to claim rights over the experimented varieties of other farmers and breeders even where the result is clearly distinguishable from the protected variety.⁷⁵

2.3 Exceptions to Breeder's Rights

A. Farmer & Researcher Exceptions

UPOV's biggest flaw is the lack of any recognition of farmer's rights. In countries with a large agrarian society the UPOV type mechanism would amount to statutory marginalization of farmers. There are two important issues with reference to a farmer's rights. The first relates to traditional rights of farmers like the right to re-sow, applicable for new varieties. The second relates to the rights farmers who provide source information that result in a new and protected variety.

UPOV, unfortunately, is fashioned as a mechanism that breeder's rights and therefore treats "rights" of other players in agricultural trade as exceptions to the breeders' right.⁷⁶ Thus, farmer's rights is dealt as part of the exceptions to breeder's rights under Article 15 of UPOV which discusses two types of exceptions: compulsory and optional.⁷⁷ Compulsory exceptions include acts done (by farmers or researchers) for private, non-commercial purposes and experimental purposes. Breeders, however, can override these exceptions by conditioning initial access to the protected variety on forfeiture of those rights. In developing countries where literacy among the farming community is limited, it can result in farmers forfeiting more rights than they intend to. Unfortunately, the forfeitable rights are important for farmers and farming communities to maintain agro-biodiversity conservation and innovation at the local levels.⁷⁸

Furthermore, Article 15 of UPOV limits the ability of governments to provide for farmers' rights. Governments may provide farmers' rights only "within reasonable limits and subject to the safeguarding of the breeder's legitimate interests."⁷⁹ These limitations prevent governments from making concessions to farmers that would allow sovereign nations to balance welfare with trade. In failing to balance welfare and trade, UPOV defies the basic reason why developing countries embraced a *sui generis* system. Nowhere is such a balance more imminent than in agrarian third world countries where farmers generally belong to the poorer societal classes.

B. Public Interest Exception

Article 17 of UPOV 1991 provides a weak public interest exception. The term "public interest" is not defined, nor does the treaty indicate who determines when the "public interest" is affected. Whether a welfare issue detrimentally affecting farmers *per se* qualifies as a public interest requirement remains moot,

even assuming a substantial population is dependant on agriculture. Determining the limitations of breeders' rights in "public interest" using clear definitions is critical to avoiding the maladies that developing nations previously faced with the issue of pharmaceutical patents. Based on the obstacles that the pharmaceutical patents dispute continues to present to developing nations, these nations have a potent interest in demanding term clarifications under UPOV.⁸⁰

UPOV's biggest deficiency is its inability to move away from a model that is not independent of the patent regime. The IP style protection tends to reflect a bias in favour of large-scale commercial agriculture.⁸¹ The model in UPOV over appreciates the role of breeders, which could disadvantage farmers, biodiversity management and traditional knowledge protection.⁸² Styled as a softer patent regime, UPOV, 1991 represents a shopping list of what farmer and local communities do not want.⁸³ For instance, UPOV does not recognize community innovations and prevents brown bagging (re-sowing) protected varieties. Furthermore, UPOV's *ineffectiveness* is also owed to the eligibility standards which are unsuitable for nations desiring to protect farmers' rights. While critics may question the conclusion of UPOV's *ineffectiveness* based on the above, it would be unwise for developing nations to embrace a model whose effectiveness, is at best questionable, especially when there is a choice to structure a national regime. After all, no sovereign would like his country to become an experimental station to determine the effectiveness of UPOV. Developing nation would be well advised to establish a self-serving *sui generis* regime that treads a balanced approach to plant protection.

3. India's Plant Variety Protection Regime

After independence, the government of India adopted the model of confining plant breeding to the public sector to address food security issues of the population.⁸⁴ The model succeeded when at the end of the 1970s, India graduated from being an importer to achieving self-sufficiency in food.⁸⁵

India's move towards promoting agricultural trade was partly prompted by the entry of foreign seed corporations into the Indian market in the early 1980s which gave rise to demands for IP protection.⁸⁶ Thus, the Protection of Plant Varieties and Farmer's Rights Act (PPVFA) is generally perceived as an outcome of the pressures from India's membership to the WTO as well as entry of foreign corporations into the market.⁸⁷ India, however, chose a *sui generis* structure to protect plant varieties with a view to balance the interests of all

players in the Indian agricultural trade. The following part examines whether India's PPVFA fulfills the *efficiency* test under Article 27.3 of TRIPS. In doing so, the paper also examines the Seeds Bill that was tabled in the parliament in 2005. The Bill's highlight perhaps is its notoriety owed to allegations that it attempted to dilute the benefits of the PPVFA.

3.1 The Efficiency of India's Protection of Plant Varieties & Farmers' Act 2004

The central tenet of the PPVFA is to address India's national concerns in protecting the rights of traditional farming communities, while at the same time promoting plant breeding by vesting IP protection. Thus, the PPVFA lumps plant varieties into three protectable categories: (a) New Variety, (b) Extant variety, which refers to an existing variety discovered for the first time, and (c) Farmer's Variety, based on community property concepts.⁸⁸ The *efficiency* of the PPVFA can be examined by understanding the layers of protection and determining whether the deviations from UPOV falls within the ambit of TRIPS flexibilities.

A. New Variety

A variety would be eligible for protection provided it is novel, distinct, uniform and stable.⁸⁹ The requirement for novelty is similar to UPOV. Varieties not "sold or otherwise disposed of" in India more than a year prior to filing or outside India for more than four or six years depending on the type of plant can pass the novelty test.⁹⁰ Becoming "a matter of common knowledge" on the application date, by methods other than by sale or disposal shall not affect the novelty for protecting new varieties.⁹¹ Like novelty, the definitions of distinctiveness, uniformity and stability also track UPOV.⁹² Any breeder, farmer, group, or community of farmers may apply for registration of a new variety.⁹³

The distinction of PPVFA lies in the registration regime which enables protection for new varieties while at the same time recognizing the role of local farmers. For instance, every application for registration must include a denomination to the variety and describe (1) the geographical origin of the material, and (2) all information regarding the contribution of the farmer, community, or organization in the development of the variety.⁹⁴ Further, the application must state that all genetic or parental material used to develop the variety has been lawfully acquired.⁹⁵ Moreover, section 40 necessitates the breeder to disclose information "regarding the use of genetic material conserved by any tribal or rural families in the breeding or development of such [new]

variety."⁹⁶ The information in the application is meant to facilitate benefit sharing, a system discussed below, introduced to protect farmers rights. Unlike UPOV, the PPVFA bears a set of public interest exceptions to registration of a new variety. A new variety, for instance, becomes unregistrable if it is likely to deceive the public, hurt the religious sentiments of any class or section of Indians, or cause confusion regarding the variety's identity or is not different from every denomination which designates a variety of the same botanical species or of a closely related species registered under the Act.⁹⁷

While the farmer's role is protected by the benefit sharing arrangement, the breeder's rights are protected using a combination of exclusive rights and harsh penalties for infringement. Once registered, the owner-breeder retains exclusive commercial rights over the variety, including licensing, production, sales, marketing, distribution and importing/exporting.⁹⁸ The stringent penalties for infringement, at rupees 50,000 or imprisonment for a minimum of three months, offer breeders incentives for innovation without fear of infringement.⁹⁹

B. Extant Variety

The introduction of farmers' variety and extant variety is meant to breeder's rights with rights of other players in agricultural trade. The *extant variety* typology itself was introduced to protect traditional knowledge and indigenous farmers.¹⁰⁰ The extant variety register serves as a compilation of matters known and existing in the public domain. In essence, an extant variety encompasses a farmers' variety, or a variety about which there is common knowledge, or a variety in the public domain and any variety notified under Section 5 of the Seeds Act.¹⁰¹

Considering that the *extant variety* register is a log of materials in public domain, the registration requirements are not rigorous. For instance, extant varieties need not be novel, although the requirements of distinctiveness, uniformity, and stability are regulated by administrative notifications.¹⁰² By making *farmers' variety* a subset of *extant variety*, the PPVFA facilitates farmers to register varieties they have cultivated for years to ensure that it cannot be appropriated. The most important benefit is that registration or compilation of extant varieties creates a higher standard for distinctness/non-obviousness for registering "new" varieties. Thus, it prevents protection of miniscule innovations by breeders. To that extent the PPVFA deviates from UPOV by creating a more rigorous mechanism to maintain the ingenuity of the protected varieties.

An *extant variety* may be registered by a breeder, farmer, a community of farmers, a university or a public sector.¹⁰³ Although a breeder can register an

extant variety, in order to gain exclusive rights over the variety, the breeder has to establish his rights over the variety (in which case it should be a new variety).¹⁰⁴ Section 28 of the Act provides that the Government, as the owner of the extant varieties, enjoys the rights to determine production, sale, marketability, distribution, importation or exportation of extant varieties.¹⁰⁵ The objective is to protect biodiversity by empowering the government to negotiate with entities that require biodiversity materials for creating biotechnology innovations. Interestingly, section 24 creates a right similar to easement right over the extant variety for a term of up to 15 years from the date of publication.¹⁰⁶ Since any person can make an application for registration of an extant variety under section 16, the idea is that government will grant rights to the applicant over the variety for a specified period. Unfortunately, however, restraining the term of protection for extant varieties create the impression that matters in public domain is not available in perpetuity. The other disadvantage is allowing anyone to register an extant variety could presumably leave some species in the public domain unregistered. Plants that are not commercially usable or being used may never be registered, leaving the registry incomplete. In any case, it seems impossible to expect that the system would result in registration of all plants in the public domain.

C. Farmers' Variety

The PPVFA defines the term *farmer* from a community rights perspective as those who “cultivate crops by cultivating the land,” and those who supervise cultivation directly or indirectly through other people, or anyone who “conserves and preserves, severally or *jointly*, with any other person through selection and identification of their useful properties”.¹⁰⁷

The manner of stylizing protection of farmer's variety reflects a keen sense of consideration for community and traditional rights by including provisions for benefit sharing, community compensation, immunity from prosecution for innocent infringement, and the creation of a Gene Fund to collect breeders' annual fees.¹¹⁰ Each of the rights (discussed below), not only represents a deviation from UPOV but also showcases rights contoured to suit unique national conditions.

Critics point out that separately categorizing a *farmers' variety* creates economic inefficiency in prosecuting claims for registration because farmers may be breeders and *vive-versa*.¹¹¹ However, while a farmer can be a breeder qualifying to register a new variety, a community of farmers that creates a new

variety will not qualify for registration of the breeder's variety. The breeders' variety is based on the western notion of IP rights. The important aspect of a farmer's variety is not to appease farmers but to create community property rights in contrast to the breeders' variety. The critics, however, may be vindicated when considering that farmers' variety is a subset of extant variety. While the extant variety encompasses everything in public domain, farmer's variety is limited to materials traditionally cultivated by farmers or over which farmers possess common knowledge. To that extent, creating two different systems of registrations give rise to operational questions later.

D. Other Deviations from UPOV

The most significant features of the PPVFA lies in areas where it deviates from UPOV. The exceptions, discussed below, highlights why they contribute towards increasing the efficiency of PPVFA

(i) *Protecting Biodiversity*: The emphasis under the PPVFA on protecting traditional farming practices is ultimately meant to protect biodiversity. Farmers are encouraged under the statute to conserve and improve of genetic land resources. A Gene Fund has been established to reward farmers whose existing variety/material is used as a source to create a new variety.¹¹² The Gene Fund is a common fund created by the Central Government for the benefit of the farmers. The amount collected as royalties, funds collected for benefit sharing, and other sums that become due to farmers will be credited into the gene fund. The Central government will use the fund towards expenditures for supporting the conservation and sustainable use of genetic resources including *in-situ* and *ex-situ* collections and for strengthening the capability of the village Panchayats for carrying out such projects.¹¹³

Moreover, any new variety that results from a farmer's existing variety may also be subject to benefit sharing or community rights obligations, which will also benefit farmers. The underlying assumption is that genetic diversity is enhanced when varieties are adapted using process of selecting, sharing to changing environments.¹¹⁴ Thus, the statute promotes innovation while at the same time rewarding the farmers and protecting biodiversity.

(ii) *Right to Resow*: The PPVFA's *sui generis* stamp is showcased in the allowing farmers to retain their traditional right to save and re-use seeds from their harvests.¹¹⁵ Farmers to “save, use, sow, re-sow, exchange, share or sell his produce” including non-branded seed, even if it is a protected variety.¹¹⁶ With a view to facilitate the use of the right by farmers, Section 18 further specifies that every application be submitted along with an affidavit swearing that the

protected variety does not contain any gene or gene sequence involving terminator technology.¹¹⁷ The caveat to brown-bagging is that the farmer cannot use the breeder's brand name when reselling second generation produce.¹¹⁸ While, the objective is commendable, the poorly drafted language of the section can lead to misuse of the provision. For example, extant seed varieties or farmer's varieties (which can be re-sowed) can be branded to prevent reuse by farmers. Considering the high level of illiteracy, whether a farmer can differentiate between new varieties and extant varieties is unclear.

Termed as brown bagging, farmers' traditional right to reuse protected varieties (for re-sowing) has been controversial. UPOV does not recognize the right to brown bag (as discussed in the previous section.)¹¹⁹ Breeders insist that farmers re-using protected varieties take away a part of their rightful compensation for the second generation seed. The breeder's lobby and the seed companies have opposed the right to re-sow on the grounds that it is contrary to principles of western IP systems.¹²⁰ Farmers, on the other hand, treat brown bagging as their natural right. Non-governmental organizations¹²¹ (NGOs) like Gene Campaign assert that the right to resell is important for farmers to maintain their livelihood and for the nation, to remain self-sufficient.¹²² Farmers account for 87 per cent of the Indian seed production.¹²³ Denying the right to resow would result in private corporations displacing farmers as the country's major seed producer. In countries like India where the farming population is considerable, it is important to make welfare exceptions to maintain the balance between trade and welfare. In introducing the right to brown-bag, the PPVFA removes the most crippling impediment to introducing formal plant variety protection in developing nations. The exception represents a balance between fully allowing re-sowing on the one hand, and the UPOV position of preventing brown bagging altogether.

(iii) *Community Rights*: Another significant deviation from UPOV lies in introducing a right to community compensation in recognition of traditional knowledge contributions. Every first year intellectual property text book explains the philosophy behind the western system by bringing the example of a researcher's invention resulting from cues provided by indigenous people (educating the researcher of healing properties of strange plants). Western IP establishes that the indigenous people are entitled to no compensation either based on the Lockean philosophy or the utilitarian philosophy that rewards the ultimate innovation.¹²⁴ The community property rights forms an exception to the western philosophy and provides some community rights to the tribe or tribesman or farmer as the case is. Section 43 reflects community property

philosophy by providing that "[b]reeders wanting to use farmers' varieties for creating essentially derived varieties cannot do so without the express permission of the farmers involved in the conservation of such varieties."¹²⁵ Thus, communities can stake a claim of contribution from breeders if a new variety is derived from information or contribution made by the local community.¹²⁶ If the communities' claim for compensation is established, the breeder must deposit the compensation in the Gene Fund.¹²⁷ Similarly, farmers and communities are allowed control the derivatives of their variety, unlike in UPOV which discusses only the rights of breeders to derivatives of the protected variety.

(IV) *Benefit sharing*: The concept of *benefit sharing* is close to the community rights concept detailed above. In fact, the statute mandates that before registering any new variety, the statutory authority should invite claims for benefit sharing.¹²⁸ Persons or groups can respond based on two criteria: a) the extent, nature of the use of genetic material in the development of the new variety and, b) the commercial utility and demand in the market of the new variety.¹²⁹ Only citizens of India or firms or organizations formed or established in India are eligible to claim benefits.¹³⁰

Some commentators claim the benefit sharing rewards are too disconnected from the farmers, and too cumbersome to implement.¹³¹ The solution probably is to streamline farmers' access to the Gene Fund. Critics assert that farmers may not be vigilant in applying for benefits considering social, economic, and educational conditions of the local communities.¹³² Consequently, critics asserts, communities will be left uncompensated for breeder appropriations. Moreover, the dearth of regional offices among the local communities could pose procedural complications for farmers to apply to remote offices.¹³³ The practical solution is for organizations to authorize NGOs or government bodies to apply for benefit sharing on their behalf.¹³⁴ Finally, Dr. Gopalakrishnan points out that protection for local communities is inadequate because the breeder is not required to show prior, informed consent from the community where he obtained the traditional knowledge.¹³⁵

(V) *Compensation for spurious seed*: To protect farmers from overly enthusiastic breeders, the Act requires breeders to disclose the expected performance of any varieties sold to farmers.¹³⁶ Should the varieties fail to perform as disclosed, farmers may seek compensation from the breeder.¹³⁷ A statutory authority determines whether the breeder has made spurious claims, whether the farmer is entitled to compensation.¹³⁸ The objective is to ensure that quality is not

compromised in the zeal to market new varieties. The advantage of the provision is that it forces breeders to conform to minimum quality specifications and reduces the natural tendencies of big breeders to over advertise.¹³⁹ Critics have, however, opined that the clause vests unlimited discretion on the statutory authority.¹⁴⁰ In reality, however, the statutory authority's discretion may in fact be limited by the language of the breeder's terms of license (which presumably, will embody adequate exceptions).

(VI) Protection against innocent infringement: Another important protection outlined in Section 42, is against innocent infringement. Proof of lack of knowledge or awareness of the protected status of the material at the time of infringement can be a defense against infringement.¹⁴¹ The exception is important considering: (a) farmers in third world countries tend to be illiterate, with limited knowledge of their rights and no knowledge of intellectual property mechanisms, and (b) breeders are generally ruthless in prosecuting infringement innocent or otherwise. The case of a Percy Schmeiser – Canadian farmer from Bruno, Saskatchewan-demonstrates the point.¹⁴² In 1998 the agro-business giant Monsanto sought \$145,450 in damages from Schmeiser for illegally planting its patented “Roundup Ready” canola seed.¹⁴³ Unmoved by Schmeiser's claim that the seeds blew onto his farm without his knowledge from the surrounding farms, the Canadian Federal Court agreed with Monsanto and awarded damages based on Schmeiser's 1998 profits and the amount of technical fees for contracted use of the seed.¹⁴⁴ The court reasoned that Schmeiser had a duty to destroy the protected variety once he became aware of the infringement.

Imposition of a duty to destroy would be extremely unfair considering the lack of sophistication among the farming communities in poor countries. Moreover, local cultures in most poor countries promote sharing, and it could take generations to change cultural attitudes. Protection against innocent infringement is required to maintain social welfare and trade, considering poverty levels of the community.

Section 42 does away with the duty to destroy innocently infringed materials, perhaps considering harvest's nexus with the farmer's livelihood. The innocent infringement exception creates a level of economic efficiency considering that Indian courts are already over burdened. Furthermore, the Canadian style suits can generate huge protests from farmers.¹⁴⁵ The exception is outstanding with a unique national flavor. The right to resow coupled with the exemption from accidental infringement provides protection for farmers' way of life.

(VII) Research Exemptions & Essentially Derived Variety: The PPVFA promotes research on protected varieties by allowing anyone to use a registered variety for “conducting experiment or research” or as an “initial source of variety for the purpose of creating other varieties.”¹⁴⁶ The statute, however, requires authorization from the initial breeder to derive the second-generation variety.¹⁴⁷ Breeder authorization is required only where “repeated use of such variety as a parental line is necessary for commercial production of such newly developed variety.”¹⁴⁸ The provision promotes research while preventing the premature exploitation of protected varieties in the name of research.

PPVFA takes a position different from that of UPOV, which vests rights for up to two generations of essentially derived varieties on the breeder. While the definition of what is essentially derived is similar to that of UPOV, unlike UPOV the rights over the derived variety are vested on the farmer/breeder (second generation breeder) who derived it and not on the breeder of the initial variety.¹⁴⁹ Thus, the essentially derived variety can be registered as a new variety of the breeder who derived it.

(VIII) Public Interest Exceptions & Compulsory Licensing: The public interest exception is wider than in UPOV and covers protection of “public order or public morality or human, animal and plant life and health or to avoid serious prejudice to the environment.”¹⁵⁰ Similarly, varieties embodying technology (including genetic and terminator technology) which may be harmful to the public, or animals are rendered unregistrable under the statute.¹⁵¹

Tied closely with the public interest exceptions is the extensive compulsory license provision. The provision is styled very similar to Section 84 of the Patent Act, 1970. At the end of three years, any protected variety can be subject to compulsory licensing if the “reasonable requirements of the public for seed or other propagating material of the variety have not been satisfied or that the seed or other propagating material of the variety is not available to the public at a reasonable price.”¹⁵² Price shall also be a consideration to determine whether the reasonable requirements of the public satisfied. The objective is to use compulsory licensing as deterrence to keep market prices of protected materials low.

While the PPVFA is not flawless, the statute showcases that farmers' and breeders' rights can be adequately and concurrently protected.¹⁵³ In a country like India, ensuring food security by providing farmer's rights is important for economic stability.¹⁵⁴ The PPVFA's *efficiency* lies in catering to the needs of

nations that prefer to promote innovations without threatening the farmer's livelihood.¹⁵⁵ TRIPS grants members the flexibility to prioritize its farmers in shaping a policy for plant variety protection. The PPVFA is exemplar in its ability to capitalize on the flexibilities in TRIPS. India should now work on eliminating the loopholes in the PPVFA. Strengthening the conceptual framework of the PPVFA can result in an efficient *sui generis* model for plant protection tailored towards national objectives.

4. The Seeds Bill, 2005

Historically, the seed sector in India was governed by the Seeds Act of 1966, the Seeds Control Order, 1983, and Seed Policy of 1988.¹⁵⁶ The Seeds Act of 1966 provides a regulatory framework laying down minimum quality standards. An elaborate institutional set up consisting of Central Seeds Committee, Seed Certification Agencies, Central and State Seed Testing Laboratories, Seed Analysts and Seed Inspectors implemented this law.¹⁵⁷ Only notified seed varieties fall within the scope of the Seeds Act, 1966. Unnotified varieties fall outside the scope of the legislation. Seed certification is a voluntary not a mandatory process.¹⁵⁸

The emergence of the private seed sector rendered the Seeds Act inadequate in several ways, prompting the New Seed Policy in 1988 and later, in 2002.¹⁵⁹ The Policy proposed to improve seed distribution networks,¹⁶⁰ establish adequate infrastructure,¹⁶¹ and facilitate biotechnology initiatives and private participation.¹⁶² As part of the proposal, the Seeds Policy of 2002 sought to "regulate the sale, import and export of seeds ..."¹⁶³ During the same time, State governments' had began new initiatives to enact local legislations to regulate the seed industry because of a increase in sale of spurious seeds. Consequently, the Indian Agricultural Ministry, in 2004, introduced the Seeds Bill to regulate the market by replacing the earlier enactment.¹⁶⁴

The Bill requires all commercial producers, dealers of seed to register any commercially sellable seed.¹⁶⁵ Transgenic seeds require additional clearance under the Environment Protection Act although no specific disclosure requirements are included to qualify for registration.¹⁶⁶ The lack of separate disclosure requirements for transgenic seeds can potentially diminish the distinction between existing and new (protected) varieties. It can result in seeds in the public domain being packaged with fancy brands, which by itself is agreeable. But the problem is when interacting with the PPVFA farmers would be prevented from brown bagging seeds that are in public domain.

Furthermore, the Bill requires all dealers of seeds to be registered.¹⁶⁷ Generally, over 80 per cent of all seed used in India is grown, saved, stored, exchanged and bartered by local farmers.¹⁶⁸ Unwittingly, the Seed Bill punishes what has been a natural right for farmers for hundreds of years.¹⁶⁹ Moreover, it is unclear, whether one seed producer may sell a seed registered by a *third* producer.¹⁷⁰ On a general reading, the statute disassociates the registration requirements of the seeds from the dealer implying that any registered dealer can sell any registered seed. However, no viable mechanism is being contemplated for a registered dealer to determine whether a seed is in fact registered. Hence, the right of a third dealer to sell seeds registered by other dealers or producers remains unclear.

The Seed Bill's biggest flaw is that it has not been fully harmonized with the PPVFA. For instance, the Bill does not take into account the complexities from benefit sharing arrangements proposed by the PPVFA. Hence, the Bill has not full addressed the issue of whether registered seeds of an existing variety and farmer's variety can be sold without sharing the benefits with the community or the farmers. Similarly, the Seed Bill, unlike the PPVFA, does not embody a provision for pre-grant opposition.¹⁷¹

As for public interest exceptions, the Bill specifies that registration may be refused¹⁷² or cancelled in public interest.¹⁷³ The Bill, however, lacks a provision to control price and regulate supply of seeds under public interest conditions unlike the PPVFA which has a relatively detailed compulsory licensing provision. Moreover, the Bill provides for a possible (maximum) term of 36 years of protection. Although registration under the Bill does not grant any IP property protection, it vests marketability on the seed.¹⁷⁴ Considering this, a 36 year period of (market) protection based on the application information (i.e., results of multi-locational trials) seems gregarious. Importantly, under the PPVFA, the multi-locational trials are conducted by the statutory authority.

The Seeds Bill vests jurisdiction for initiating disputes regarding seed quality and compensation for failure of expected performance over the consumer court by implicating the Consumer Protection Act (CPA).¹⁷⁵ Interestingly, the PPVFA vests jurisdiction on the National Authority for issues relating to seed failure. If the PPVFA has to operate with the Seed Bill, it could create a procedural mess since issues of seed quality under the PPVFA would be determined by the National Authority and the same issues under the Seeds Act would go to the consumer courts. If the issue implicates both the

enactments, it is unclear which Authority will take up the matter or how the question would be divided. Other commentators have criticized the idea of vesting jurisdiction over the consumer courts as disadvantaging farmers by requiring them to prove that the underperformance of a crop is based solely on the poor quality of seed rather than as a combination of factors (such as environmental conditions, fertilizer, etc).¹⁷⁶ Such a requirement is a daunting task for the farmer. Furthermore, the critiques assert that the district forum or the State Council created the CPA has limited expertise in agriculture.¹⁷⁷

In short, the Seed Bill is a shoddy piece of legislation that fails to tie in several aspects of the Seed trade with the PPVFA. To the extent that one of the objectives of the Seed Bill is to maintain a balance between farmers and breeders, the provisions fail for want of clarity. The Seeds Bill creates an unnecessary parallel system of registration along with the PPVFA. Creating a parallel system can result in negating the entitlements and protections previously granted to farmers under the PPVFA.¹⁷⁸ NGOs have rightly pointed out such flaws in their attempt to thwart the Seed Bill.¹⁷⁹ Against the background of the PPVFA, which balances IP protection for plant breeders, farmers, and indigenous communities, the Seed Bill is an ill conceived legislative attempt lacking a clear purpose or even the ability to tie in with already established provisions of the PPVFA.

5. Conclusion

From the time India gained independence, the various governments have not lacked a vision to achieve national goals. The means India used, like promoting public sector research has worked well to achieve its national objectives. India's strength lies in choosing a balanced approach that does not sacrifice national welfare and food security for political expediency. Hence, India should continue to boldly embrace a system that works within the confines of its national objectives. National considerations like biodiversity protection, sustainable use and the recognition of community-based rights are important issues that need not be sidelined to accommodate to commercial breeders.¹⁸⁰ At the same time, commercial breeders need not be shunned just because they are breeders. India should now strengthen the loopholes in the PPVFA and tailor a Seeds Policy that compliments to the PPVFA. The enactment of the PPVFA signifies what can be termed as cautious opening up of the agricultural market with a view to privatize agricultural trade.

While some amount of privatization may result in more choices of food for consumers, an over-zealous attempt at privatization may have several

unintended consequences. Aggressive privatization can result in marginalizing those who practice traditional farming which in turn would increase the divide between the rich and the poor. It could also lead to a monopoly over one or some important foods by one or more private players. In order to derive the full benefits, privatization should be timed to compliment with the opening up of the international agricultural markets for existing players. Unfortunately, as long as negotiations in agricultural subsidies fail, developed nation subsidies are likely to displace the markets of farmers from poorer countries. Developing nations like India have already showed their commitment to the trade agenda by enacting the Patent Act, 2005 and the PPVFA, 2004. Now, powerful developing countries should step up to ensure that rich developed nations do not renege on their obligation of reducing agricultural subsidies for local political reasons.

Notes

- ¹ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments – Results of the Uruguay Round, 33 I.L.M. 1197 (1994) [hereinafter TRIPS]. The TRIPS agreement, signed as part of the agreements that established the WTO, introduced intellectual property rules to the multilateral trading system for the first time. The term WTO refers to the World Trade Organization, the only global organization dealing with the rules of trade among nations. The WTO was created by the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, 33 I.L.M. 1125 (1994). *See also* Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, 33 I.L.M. 1144 (1994).
- ² The Protection of Plant Varieties and Farmers' Rights Act, No. 53 of 2001; INDIA CODE (2001) available at <http://indiacode.nic.in/fullact1.asp?tfnm=200153> (last visited Aug. 2, 2006) (Hereinafter, PPVFA). The President of India has assented to the PPVFA but the enactment has come into force as of Jan, 2007.
- ³ Dr. Gerard Bodeker, *Traditional Medical Knowledge, Intellectual Property Rights & Benefit Sharing*, 11 CARDOZO J. INT'L & COMP. L. 785, 790 (2003).
- ⁴ TRIPS *supra* note 3 at Art. 27.
- ⁵ *Ibid.*
- ⁶ The term UPOV refers to the Union for Plant Variety Protection, a convention that was first signed in 1961 and later, amended in 1972 and 1991. International Convention for the Protection of New Varieties of Plants, *opened for signature* Dec. 2, 1961, 33 U.S.T. 2703, 815 U.N.T.S. 109 [hereinafter UPOV 1961]; *revised by* 33 U.S.T. 2703 (1978) [hereinafter UPOV 1978]; *revised by* 815 U.N.T.S. 89 (1991) [hereinafter UPOV].
- ⁷ *For a Full Review of TRIPS 27.3(b)*, (Genetic Resources Action International (GRAIN), Spain), Mar. 2000, http://www.grain.org/briefings_files/tripsfeb00.pdf (last accessed Feb. 18, 2006) [hereinafter GRAIN briefing]; *The Notion of Breeder and Common Knowledge*, UPOV Position Paper, (UPOV Council, Geneva, Switzerland), Apr. 19, 2002; *see also* Susan K. Sell, *Post-TRIPS Developments: The Tension Between Commercial and Social Agendas in the Context of Intellectual Property*, 14 FLA. J. INT'L L. 193, 203 (2002).
- ⁸ *See* Ratnakar Adhikari and Kamallesh Adhikari, *UPOV Faulty Agreement and Coercive Practices*, (South Asia Watch on Trade, Economics & Environment Kathmandu), No. 5, 2003, (citing that developed nations' farmers constitute merely "one to five percent of their total population.") [hereinafter SAWTEE brief], (on file with author), available at <http://www.sawtee.org/pdf/upov%20policy%20brief.pdf>.
- ⁹ *Ibid.*
- ¹⁰ *see generally*, Press Release, Action Aid Int'l and Gene Campaign, *Why we oppose UPOV and why it is urgent that developing countries enact their own plant variety protection laws*, (Oct. 17, 2002) (on file with author), available at <http://www.consumersinternational.org/Templates/Internal.asp?NodeID=91097&int1stParentNodeID=89651&int2ndParentNodeID=89689&int3rdParentNodeID=90171&int4thParentNodeID=90171&int5thParentNodeID=90171&int6thParentNodeID=90171&int7thParentNodeID=90171&int8thParentNodeID=90171&strSubSite=1&strLHSMENU=89651>.
- ¹¹ The three actors considered in this paper are: (1) breeders, (2) indigenous farmers, and (3) indigenous farming communities.
- ¹² The Seeds Act, 2004, No. 52, Acts of Parliament, 2004 [hereinafter Seeds Bill 2004] available at http://rajyasabha.nic.in/bills-ls-rs/2004/LII_2004.pdf (last visited Aug. 2, 2006). The Seeds Bill 2004 is an enactment by India's Ministry of Agriculture. The Bill was introduced in the Rajya Sabha on Dec. 9, 2004, and has been referred to the Committee on Agriculture.
- ¹³ TRIPS, *supra* note 3, Art. 27.3.
- ¹⁴ *Ibid.* *See also* Doris Estelle Long, *The Impact of Foreign Investment on Indigenous Culture: An Intellectual Property Perspective*, 23 N.C.J. INT'L L. & COM. REG. 229, 263-64 (1998).
- ¹⁵ TRIPS, *supra* note 3, Art. 27.3.
- ¹⁶ Joseph Straus, *Bargaining Around the TRIPS Agreement: The Case for Ongoing Public-Private Initiatives to Facilitate Worldwide Intellectual Property Transactions*, 9 DUKE J. COMP. & INT'L L. 91, 100 – 101 (1998).
- ¹⁷ Vienna Convention on the Law of Treaties, § 3, *opened for signature* May 23, 1969, T.S. No. 58 (1980), 1155 U.N.T.S. 331.
- ¹⁸ WTO, Ministerial Declaration of 14 Nov. 2001, ¶ 17, WT/MIN(01)/DEC/1, 41 I.L.M. 746 (2002) [hereinafter Doha Declaration].
- ¹⁹ *Ibid.* ¶ 19.
- ²⁰ WTO, Doha Declaration on the TRIPS Agreement and Public Health, 14 November 2001, ¶ 5(a) WT/MIN(01)/DEC/2, 41 I.L.M. 755 (2002) (recognizing the correct interpretation of TRIPS includes the flexibility to enable countries to protect both intellectual property and the public health).
- ²¹ Paul J. Heald, *Mowing the Playing Field: Addressing Information Distortion and Asymmetry in the TRIPS Game*, 88 MINN. L. REV. 249, 286 (2003) (quoting TRIPS, art. 7).
- ²² TRIPS, *supra* note 3, Art. 7.
- ²³ *Ibid.*
- ²⁴ *Ibid.* Art. 8.
- ²⁵ *Ibid.* "Members may, in formulating or amending their laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socioeconomic and technological development, provided that such measures are consistent with the provisions of this Agreement."
- ²⁶ *See Ibid.*
- ²⁷ Heald, *supra* note 23.
- ²⁸ Heald, *supra* note 23, at 287.
- ²⁹ GRAIN Briefing *supra* note 9.
- ³⁰ Press Release, Gene Campaign, *Oppose UPOV! Save Farmers!* <http://64.233.167.104/search?q=cache:SVEEPiPZleWJ:www.genecampaign.org/Publication/OPPOSEUPOV!SAVEFARMERS!.pdf+Gene+Campaign+Seed+Bill+Delhi+High+Court&hl=en&gl=us&ct=clnk&cd=2> (last visited July 5, 2006).
- ³¹ "[W]hen a subsequent user of agricultural technology developed by another simply applies it without paying the inventor *and* without enhancing the technology we can easily perceive how this sort of expropriation could erode incentives to develop technology." Chen & Kershen, *LAW, AGRICULTURE, AND BIOTECHNOLOGY*, 63 (2005).
- ³² Press Release, United Nations Conference on Trade and Development, *New Treaty Preserves Global Food Security and Strengthens Farmers' Rights: UNCTAD Meeting Discusses Implications*, http://r0.unctad.org/trade_env/test1/meetings/plants/pressrelease2itpgrfa.doc (last visited July 1, 2006).
- ³³ David Vaver, *Invention in Patent Law: A Review and a Modest Proposal*, 11 INT'L J.L. & INFO. TECH. 286, 293 (2003); Doha Declaration, *supra* note 20.
- ³⁴ GRAIN briefing, *supra* note 9
- ³⁵ *Ibid.*
- ³⁶ Andre Heitz, *The History of the UPOV Convention and the Rationale for Plant Breeders' Rights*, 1991 Seminar on the Nature and Rationale for the Protection of Plant Varieties

Under the UPOV Convention p. 25–26 (1994). *See also* SAWTEE brief, *supra* note 10.

- ³⁷ Heitz, *supra* note 38, at 23; *see also* Justice Rajagopala Ayyangar, Government Of India, *Report On The Revision Of The Patents Law* (1959) at 1-8 (quoting Lord Parker's address to the Chartered Institute of Patent Agents).
- ³⁸ Heitz, *supra* note 38, at 33.
- ³⁹ Philippe Cullet, *Plant Variety Protection in Africa: Towards Compliance with the TRIPS Agreement*, 45 J.AFRICAN L. 97, 99 (2001); *see also* Heitz, *supra* note 38, at 34.
- ⁴⁰ UPOV, *supra* note 8. *See also* Press Release, Action Aid, *Plant breeders' rights and food security*, (Mar. 2000) (on file with author).
- ⁴¹ Remigius N. Nwabueze, *Ethnopharmacology, Patents and the Politics of Plants' Genetic Resources*, 11 CARDOZO J. INT'L & COMP. L. 585, 610 (2003).
- ⁴² Heitz, *supra* note 38, at 34.
- ⁴³ UPOV, *supra* note 8; *see generally* UPOV Conventions of 1961 and 1978, available at <http://www.upov.org/en/publications/conventions/index.html> (last visited May 22, 2006).
- ⁴⁴ Press Release, GRAIN, *Beyond UPOV: Examples of developing countries preparing non-UPOV "sui generis" plant variety protection schemes for compliance with TRIPS*, (July, 1999) <http://www.grain.org/briefings/?id=127> (last visited Aug. 6, 2006).
- ⁴⁵ *See* UPOV, *supra* note 8.
- ⁴⁶ *Ibid.* at art. 6. The application material should not be sold with the breeder's consent in the country of application for one year before the date of application, or four years in any other country.
- ⁴⁷ Mark Hanning, *An Examination of the Possibility to Secure Intellectual Property Rights for Plant Genetic Resources Developed by Indigenous Peoples of the NAFTA States: Domestic Legislation Under the International Convention for the Protection of New Plant Varieties*, 13 ARIZ. J. INT'L & COMP. L. 175, 235 (2004).
- ⁴⁸ In modern days, Tulasi can be procured in flower markets. Such sales would defeat novelty for Tulasi.
- ⁴⁹ UPOV, *supra* note 8, art. 6(2). *See also* Remigius N. Nwabueze, *Ethnopharmacology, Patents and the Politics of Plants' Genetic Resources*, 11 CARDOZO J. INT'L & COMP. L. 585, 615 (2003).
- ⁵⁰ UPOV, *supra* note 8, Art. 7.
- ⁵¹ *Ibid.*
- ⁵² *Ibid.* Art. 14.
- ⁵³ General Introduction to the Examination of Distinctness, Uniformity, and Stability, and the Development of Harmonized Descriptions of New Varieties of Plants, TG/1/3, §5.2.2.1 (Apr. 19, 2002) [hereinafter UPOV Guidelines].
- ⁵⁴ *Ibid.*
- ⁵⁵ *Ibid.* § 5.3.1.1.
- ⁵⁶ *Ibid.*
- ⁵⁷ Nwabueze, *supra* note 51.
- ⁵⁸ Estelle Doris Long and Antony D'Amanto, INTERNATIONAL INTELLECTUAL PROPERTY 1056 (West Group 2000).
- ⁵⁹ UPOV, *supra* note 8, art. 8-9.
- ⁶⁰ *Ibid.* art. 8.
- ⁶¹ UPOV Guidelines, *supra* note 55, § 6.3.
- ⁶² Nwabueze, *supra* note 51.
- ⁶³ Cary Fowler, *By Policy or Law? The Challenge of Determining the Status and Future of Agrobiodiversity*, 3 J. Tech L. & Pol's 1, 23 (1997).
- ⁶⁴ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79, 31 I.L.M. 818 (1992) [hereinafter CBD]. *See Ibid.* art. 1, 1760 U.N.T.S. at 146, 31 I.L.M. at 823.

⁶⁵ *Ibid.* art. 15.7.

- ⁶⁶ *Ibid.* art. 8(j) ("Subject to its national legislation [each party shall] respect, preserve, and maintain knowledge, innovations and practices of indigenous or local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promise their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.")
- ⁶⁷ *Ibid.*
- ⁶⁸ *Ibid.*
- ⁶⁹ 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, 941 (1996).
- ⁷⁰ Charles R. McManis, *The Interface between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology*, 76 WASH. U. L.Q. 255, 276 (1998).
- ⁷¹ UPOV, *supra* note 8, Art. 14, § 5(a).
- ⁷² *Ibid.* § 5(b).
- ⁷³ *Ibid.*
- ⁷⁴ *Ibid.* Art. 15, § 1(ii).
- ⁷⁵ *See Ibid.* Art. 14.
- ⁷⁶ Robyn Ott, *Protection of Plant Varieties and the Farmer's Rights Act*, 2 OKLA. J. L. & TECH. 14 (2004).
- ⁷⁷ UPOV, *supra* note 8, Art. 17.
- ⁷⁸ Dr. Philippe Cullet & Radhika Kolluru, *Plant Variety Protection and Farmers' Rights—Toward a Broader Understanding*, 24 Delhi Law Review 41, 55 2002 (2003) available at <http://www.ielrc.org/content/a0304.pdf>.
- ⁷⁹ UPOV, *supra* note 8, Art. 15, § 2.
- ⁸⁰ *See generally* Srividhya Ragavan, *Dying to Dine: International Trade Barriers Affecting Food Rights* (forthcoming 2006) (manuscript at 20-21, on file with author).
- ⁸¹ Cullet, *supra* note 41, (highlighting that in the 1991 version of UPOV, the distinction between PBRs and patents is blurred). *See also* Nwabueze, *supra* note 51, (highlighting that UPOV provides monopoly rights that are more watered-down than patents but are based on exactly the same premises).
- ⁸² *See* Susan K. Sell, *Industry Strategies for Intellectual Property and Trade: The Quest for TRIPS, and post-TRIPS Strategies*, 10 CARDOZO J. INT'L & COMP. L. 79, 106 (2002) (UPOV "is very generous to the corporate plant breeder and sharply curtails farmers' rights.") [hereinafter Strategies].
- ⁸³ Booklet, *Global Trade and Biodiversity in Conflict*, Issue No. 2, May 1998, published by Gaia Foundation and Genetic Resources Action International, available at www.grain.org/publications/gtbc/issue2.htm.
- ⁸⁴ Dr. N.S. Gopalakrishnan, *Protection of Traditional Knowledge—Need for a Sui Generis Law in India*, 5 J. OF WORLD INTELL. PROP., 725 (2002).
- ⁸⁵ India—Economic Development, *Evolution of Policy*, Sept. 1995, <http://www.country-data.com/cgi-bin/query/r-6093.html> (last visited Sept. 15, 2006).
- ⁸⁶ *Ibid.*
- ⁸⁷ Bill No. 123 of 1999 dated 3rd December, 1999; PPVFA, *supra* note 4.
- ⁸⁸ PPVFA, *supra* note 4, § 15(2).
- ⁸⁹ *Ibid.* § 15.
- ⁹⁰ PPVFA, *supra* note 4, § 15(3)(2)(a).
- ⁹¹ *Ibid.* § 15 (3) proviso.

⁹² *Ibid.* § 15.
⁹³ *Ibid.* § 16(1)(d).
⁹⁴ *Ibid.* § 18(1)(e).
⁹⁵ *Ibid.* § 18(1)(h).
⁹⁶ PPVFA, *supra* note 4, § 40.
⁹⁷ *Ibid.* §15(4)
⁹⁸ *Ibid.* § 28.
⁹⁹ *Ibid.* § 70.
¹⁰⁰ *Ibid.* § 14(b).
¹⁰¹ *Ibid.* § 2(j).
¹⁰² *Ibid.* § 15(2).
¹⁰³ *Ibid.* § 14, (“Any person specified in section 16 may make an application to the Registrar for registration of any variety...”).
¹⁰⁴ *Ibid.* at § 28.
¹⁰⁵ *Ibid.* § 28 proviso, (“[I]n the case of an extant variety, unless a breeder or his successor establishes his right, the Central Government, and in cases where such an extant variety is notified for a State or for any area thereof under section 5 of the Seeds Act, 1966 (54 of 1966), the State Government, shall be deemed to be the owner of such right.”).
¹⁰⁶ *Ibid.* at § 24(6)(ii).
¹⁰⁷ *Ibid.* § 2(k) (emphasis added).
¹⁰⁸ *Ibid.* § 2(l)(i-ii).
¹⁰⁹ *Ibid.* § 15(3)(a) proviso.
¹¹⁰ PPVFA, *supra* note 4, §§ 39-46.
¹¹¹ Memorandum from Vasudha J. Mehta, ALG India Law Officer, *UPOV, India and the World—Common Knowledge and Uncommon Wisdom*, 2 (on file with author).
¹¹² *Ibid.* § 39.
¹¹³ *Ibid.* § 45(2)(c).
¹¹⁴ *Ibid.*
¹¹⁵ Sell, *supra* note 84, at 203.
¹¹⁶ PPVFA, *supra* note 4, § 39(1)(iv).
¹¹⁷ *Ibid.* at § 18
¹¹⁸ *Ibid.* § 39(iv) “[A] farmer shall be entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this Act in the same manner as he was entitled before the coming into force of this Act: provided that the farmer shall not be entitled to sell branded seed of a variety protected under this Act.”
¹¹⁹ *See infra* § II(3)(A).
¹²⁰ *See generally* Mehta, *supra* note 114, at 2-3.
¹²¹ These organizations - known as “non-governmental organizations” or “NGOs” - are often the most effective voices for the concerns of ordinary people in the international arena, particularly at the United Nations.
¹²² Suman Sahai, *India’s plant variety protection and Farmers’ Rights Act, 2001*, CURRENT SCIENCE, Feb. 10, 2003, at 409.
¹²³ *Ibid.*
¹²⁴ Peter Menell *et al.*, *Intellectual Property in the New Technological Age* (3rd ed. 2003).
¹²⁵ Sahai, *supra* note 124.
¹²⁶ PPVFA, *supra* note 4, § 41.
¹²⁷ *Ibid.* § 42.
¹²⁸ *Ibid.* § 26.
¹²⁹ *Ibid.* § 26(5).
¹³⁰ *Ibid.*
¹³¹ *See* Sahai, *supra* note 124, at 409-410.

¹³² Gopalakrishnan, *supra* note 86.
¹³³ *Ibid.*
¹³⁴ *Ibid.*
¹³⁵ *Ibid.*
¹³⁶ PPVFA, *supra* note 4, § 39.
¹³⁷ *Ibid.*
¹³⁸ *Ibid.* § 39(2).
¹³⁹ *Ibid.* §39.
¹⁴⁰ Sahai, *supra* note 124, at 410.
¹⁴¹ PPVFA, *supra* note 4, § 42(i).
¹⁴² Jill Sudduth, *Where the Wild Wind Blows: Genetically Altered Seed and Neighboring Farmers*, 2001 DUKE L. & TECH. REV. 15, available at <http://www.law.duke.edu/journals/dltr/articles/2001dltr0015.html>.
¹⁴³ *Ibid.*
¹⁴⁴ Monsanto Canada Inc. v. Schmeiser, [2001] F.C. 256.
¹⁴⁵ *See generally*, Press Release, Gene Campaign, *Monsanto Wins in Canada: Can it in India?* (May 27, 2004), <http://www.genecampaign.org/News/news-monsantocanada.htm>.
¹⁴⁶ PPVFA, *supra* note 4, § 30.
¹⁴⁷ *Ibid.* § 28.
¹⁴⁸ *Ibid.*
¹⁴⁹ *Ibid.* § 23(6) (“The rights of the breeder of a variety contained in section 28 shall apply to the breeder of essentially derived variety.”).
¹⁵⁰ *Ibid.* , § 29.
¹⁵¹ *Ibid.* , § 29(3).
¹⁵² *Ibid.* , § 47; *see also* Patents Act of 1970, 27 India A.I.R. Manual 450, § 53(1)(a) (2d ed. 1979).
¹⁵³ For a criticism of the PPVFA *see* Gopalakrishnan, *supra* note 86.
¹⁵⁴ Suman Sahai, *India’s New Plant Variety Protection and Farmers’ Rights Law*, GENE CAMPAIGN, 2001, <http://www.genecampaign.org/Publication/Article/Farmers%20Right/Indias%20new%20plant%20variety%20protection%20and%20farmers%20rights%201a.pdf>.
¹⁵⁵ *Ibid.*
¹⁵⁶ *Ibid.* *See also* Milind Murugkar, Bharat Ramaswami and Mahesh Skelar, *Librelization, Biotechnology and Private Seed Sector: The Case of India’s Cotton Seed Market*, Discussion Paper 06-05, Indian Statistical Institute (Jan, 2006).
¹⁵⁷ The Seeds Act, 1966, No. 54 Acts of Parliament 1966 (Dec. 29, 1966) available at <http://agricoop.nic.in/sublegiseed1966.htm#The%20Seeds%20Act,%201966> (last visited Sept. 15, 2006); Kavitha Kuruganti, *This Seeds Bill Must Go*, India Together (Jul. 6, 2006), <http://www.indiatogether.org/2005/aug/agr-seedbill.htm> (last visited Aug. 2, 2006).
¹⁵⁸ The Seeds Act, 1966, *supra* note 14.
¹⁵⁹ National Seeds Policy 2002, sec. 4, <http://agricoop.nic.in/seedpolicy.htm> (last visited Aug. 2, 2006).
¹⁶⁰ *Ibid.*
¹⁶¹ *Ibid.* § 5.
¹⁶² *Ibid.* § 6.
¹⁶³ *Ibid.* § 3.1.
¹⁶⁴ Seeds Bill of 2004, *supra* note 14. *See also* M.R. Madhavan & Kaushiki Sanyal, *The Seeds Bill 2004*, India Together (June 4, 2006), available at <http://www.indiatogether.org/2006/jun/law-seeds.htm> (last visited Aug. 2, 2006).
¹⁶⁵ Seeds Bill of 2004, *supra* note 14, sec. 1(3); *See also Ibid.* § 13.

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¹⁶⁶ *Ibid.* § 14.

¹⁶⁷ *Ibid.* § 22(1) ("Every person who desires to carry on the business of selling, keeping for sale, offering to sell, bartering, import or export or otherwise supply any seed by himself, or by any other person his behalf" must be registered as a dealer).

¹⁶⁸ See Srilata Swaminathan, *The Seeds of Our Destruction*, Liberation Index, http://www.cpiml.org/liberation/year_2005/August05/seeds_bill.htm (last visited Aug. 2, 2006).

¹⁶⁹ Seeds Bill 2004, *supra* note 14, § 22(1).

¹⁷⁰ Madhavan & Sanyal, *supra* note 169.

¹⁷¹ Suman Sahai, Presentation, Indo-US Exchange, *Intellectual Property In Agriculture* (Dec, 2006).

¹⁷² Seeds Bill 2004, *supra* note 14, § 18.

¹⁷³ *Ibid.* at § 16.

¹⁷⁴ See *Ibid.*, at § 13 (No seed of any kind or variety shall, for the purpose of sowing or planting by any person, be sold unless such seed is registered under sub-section (2)...)

¹⁷⁵ Seeds Bill 2004, *supra* note 14, § 20.

¹⁷⁶ Madhavan & Sanyal, *supra* note 169.

¹⁷⁷ Press Release, Gene Campaign, *The Controversial New Seed Bill*, (on file with author).

¹⁷⁸ See generally Anicar Aravind, *Is this Government Anti-Farmer?* IMC India (Mar. 3, 2005) <http://india.indymedia.org/en/2005/03/210193.shtml> (last visited Aug. 2, 2006).

¹⁷⁹ *Ibid.*

¹⁸⁰ GRAIN briefing, *supra* note 9.

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