The issue of food security which has gained prominence in the 1970’s has been a topic of debate since then. The theme behind an intellectual property protection is to help protect investments into research and development and stimulate innovation and in recent times patents have been taken on indigenous plants which have been used for generations by the local people, without their knowledge or consent potential. The developing nations have become a potential experimental launch pad of the developed countries. Thus, market of the developing countries is being targeted as safety is lenient and the countries which have a patent protection on plant variety pay a heavy price for these technologies. This paper addresses some of the unresolved issues pertaining to patent and food security, the existing legislation’s shortcomings and fallacies.

**Keywords:** Food security, patent, sui generis

‘Biopiracy and patenting of indigenous knowledge is a double theft because first it allows theft of creativity and innovation, and secondly, the exclusive rights established by patents on stolen knowledge steal economic options of everyday survival on the basis of our indigenous biodiversity and indigenous knowledge. Over the time, the patents can be used to create monopolies and make everyday products highly priced’

-Vandana Shiva

Food security is an issue over which every nation should be concerned as it has serious repercussions on economic, social and political stability. It is all the more important for poorer countries. The World Food Programme Report conceptualized food security, equating it with an ‘assurance of supplies and a balanced supply-demand situation of staple foods in the international market’. The report also emphasized that increasing food production in the developing countries would be the basis on which to build their food security.

Food security pertains to an ideal which are pledged by states at a national or regional or at an international level to reduce the hunger which is one of the problems that has poised serious concerns in the international global scenario. In pursuance of this goal, nations resolved in 1996 to reach the goal of food security. This was further reiterated at the Millennium Summit held at New York, 2000 where countries adopted a declaration containing goals and targets in important areas of human development. The concept of food security in its initial phase, focused mainly on the availability and stability of food. The recent broadly accepted definition has a wide ambit and includes ‘access to adequate food to all people at all times for an active and healthy life’.

Thus, the concept hitherto has undergone change to encompass state of nutritional sovereignty which has the following components: (i) availability, (ii) accessibility (iii) absorption of food and (iv) sustainability. It has been perceived that ‘food security is a common good that is not managed at an international level yet most of the current definitions of food security stress on the management of supply. The Committee on World Food Security of the United Nations Food and Agriculture Organization defines food security as:

‘Food security means that food is available at all times, that all persons have means of access to it, that it is nutritionally adequate in terms of quantity, quality and variety and that it is acceptable within the given culture. Only when all these conditions are in place can a population be considered as ‘food secure’. We aim to achieve last self reliance at the national and household levels. In order to succeed, our initiatives must be founded on the principles of economic viability, equity, broad participation and the sustainable use of natural resources.’
Food security may be indicative by malnutrition, poverty or vulnerability. As per the World Food Summit adopted in 1996, food security is defined as ‘a situation in which all households have both physical and economic access to adequate food for all the members and where households are not at the risk of losing such access. There are three dimensions implicit to this definition--availability, stability and access. Adequate food supply means that, on an average, sufficient food supplies should be available to meet consumption needs. Stability refers to minimizing the probability that in difficult years and seasons, food consumption might fall below consumption requirements. Access draws attention to the fact that even with bountiful supplies many people still go hungry because they are too poor to produce and purchase the food they need. In addition, if food needs are met through exploiting non-renewable resources or degrading the environment, there is no guarantee of food security in the longer term. The World Bank defines food security as ‘access by all people at all times to enough food for active and healthy life’.

The central theme behind an intellectual property protection is to help protect investments into research and development and stimulate innovation by providing incentives to invent progress and develop. In recent times, however, there have been instances of private investments in biotechnology in such a way that patents have been taken out on indigenous plants which have been used for generations by the local people, without their knowledge or consent. The interface between patents in the aspect of achieving food security poses a serious concern to all nations. From the developing nations point of view, such a protection poses a serious threat to the indigenous farmers who would be loaded with the burden of paying royalties to the suppliers of improved variety of seeds who would be the patent owners of the seeds. As illustrations precedence can be cited in patent claims on Basmati and Turmeric in USA and challenged by India. Similar controversies had arisen over Jasmine rice claimed in USA and challenged by Thailand, which has remained unresolved. Whereas, the global rules allow patents on crop varieties, in effect, this has grave implications both for food security and the accessibility of medicines. In striving to achieve food security, it would be imperative that with a patent regime in effect it would alleviate the costs of agriculture, which would be difficult for the traditional farmers to afford. Therefore, there lies an inverse relation between patent and food security. The advocates of a strong IPR regime however, argue that this new protectionism is essential to stimulate both innovation and investment.

The debate on food security being affected by biotechnological patenting is a serious controversial issue which is difficult to resolve because of divergence in both technical as well as political ideological issues. From the developed nations point of view, intellectual property rights protection is a prerequisite of development and caters to the labours of scientific innovation. From the point of view of a developing nation, access to basic needs underlies the nation’s objective. In this instance, if a strict intellectual property regime is adopted, it frustrates the objective of access to essentials and basic amenities of life. As observed by Devlin Kuyek, ‘Patent proponents keep banging on about the importance of IPR for access and innovation. But this is a smokescreen. If access was the issue, then the evidence stands against IPR: it restricts the flow of germplasm, reduces sharing between breeders, erodes genetic diversity, and, all in all, stifles research. What is actually at issue is the question of whose interests’ agriculture R &D should serve. IPRs are suited to the profit strategies of the global seed conglomerates that want to dominate agricultural production worldwide. The transnational seed companies are building vast industrial breeding networks in all major crops and, with their economies of scale and ownership over technology through IPR, they will shut local private and public breeders out of the commercial market. For them, IPR is simply a means for controlling the market and extracting more profit from it.’

The discourse on the inter-linkage between patents and food security will be incomplete without a discussion on the social scenario which may be identified as the determinant for a relationship between intellectual protection and food security. Although the trade liberalization concerning agriculture envisages in alleviating the economic situation of the farmers and patterns of food consumption but in reality, the situation shows a declining pattern. The process of globalization of agriculture has therefore undermined the food security
goals that the states envisage at attaining. Moreover, food security is not restricted to access and equal distribution of food but also the quality of the food. This is an important aspect which needs to be kept in mind while addressing issues that encompass the problems of food security.

**Inter-Linkage between Patent and Food Security**

With the advancement in the field of science and technology, there is now capability to genetically modify a seed with specific characteristics to introduce within the plants and agricultural crops. This has also manifested into a stage where a terminator variety of seeds thus produced could be helpful for further innovation of technology and adequate intellectual property protection, but it also proves detrimental in disrupting the age-old agricultural traditions that have been followed by farmers in the developing nations. While some countries have ratified patenting of life forms and plants, developing nations are facing stiff pressure to incorporate a sui generis system as per Article 27.3(b) of TRIPS Agreement or adopt and comply with the TRIPS Agreement.

At the outset, it is pertinent to mention that food security does not solely imply access to adequate food but access to culturally adequate food. Although, a number of studies show abundance of food supply but it does not necessarily imply adequate food security globally as diverse cultures are rigid and skeptical about alternative food sources which are alien to them. To illustrate with an example, Central American countries have a maize based staple dietary pattern whereas in African countries millet and cassava based dietary consumption is observable. In India and South Asian countries, the staple dietary consumption is rice and wheat. Therefore it would be highly unlikely that the dietary pattern of these countries would change within a short time. Further, the claim by biotechnologists that genetically modified organisms (GMOs)—specifically, genetically altered seeds—are essential scientific breakthroughs needed to feed the world, protect the environment, and reduce poverty in developing countries often disregards the negative externalities that are attached to it.

Although, the default standard of protection under the TRIPS requires all inventions to be patented yet there are exceptions that have not been explicitly interpreted for accommodation of the social concerns and thereby fail to provide flexibility for such accommodation. Where the objective of the exception under the TRIPS was based on a morality basis, the Agreement has not defined as to what constitutes a ‘serious prejudice to the environment’ and similar exclusions from patentability have historically been narrowly interpreted. It has been also argued that the TRIPS regime has failed to acknowledge the significance of UN declarations that espouse human rights. TRIPS requirements may entail farmers to discontinue traditional practices that were associated with fostering their ability to sustain a regular food supply vis-à-vis evolution of adaptable genotypes in their farms.

Most of the intellectual property protection restricts a farmer’s traditional practice of saving harvested crop for subsequent sowing. The technology such as the GURT (genetic use restriction technology) may further render the harvested crop turning sterile. However, in developing countries where the agricultural subsistence is based on traditional methods of farming such a variety of seeds will not aid in alleviating the impoverished condition of the poor farmers. The cost of cultivation due to high input demand may also escalate in such situations. Most of the genetically modified plants come from the developed nations. However, their potential market is targeted in the developing nations. The safety norms in these countries are comparatively lenient, mainly due to inadequate institutional capacity or the regulatory framework or enforcement.

Traditional knowledge is the outcome of an intellectual labour of a particular community, region. However, such knowledge is for the purposes of societal benefit and is mainly in public domain; therefore no protection can be obtained on it as per the intellectual property law. Similarly, traditional methods of farming are distinct and different across the countries. Patents on such breeding knowledge or information may also deny the originators to the traditional techniques of their right to make conscious selections in their crops which could go against the basic underlying principles of intellectual property law and affect the national food security. There could be instances where cross pollination may have also affected the traditional farming methods. While allowing patents on a gene would essentially mean that every plant or crop bearing a patented gene would be subject of litigation and restrict the variety of plants or crops for the pursuance of traditional

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agriculture. The Indian Patents Act does not provide for patents on plants and animals and therefore the varieties bearing a patented gene sequence would also not be covered under patent protection. Under the Plant Variety Protection and Farmers’ Rights Act, the same may be protected. Under the Act, the Authority, not the Registrar of Plant Varieties, will consider granting the certificate of registration for EDVs. Scholars feel that, for registration, EDVs should also pass through the same channel as other new varieties of plants. Basically, EDVs are transgenic crops which are similar to the initial variety except the act of derivation. Instead of providing them separate channel, it is suggested that registration of EDVs should be allowed through the same route. The need is to take effective measures for environmental impact assessment of EDVs before they go to the farmers’ fields.

This has the potential of becoming a complex litigation issue. Hitherto, these issues of concern though identified have not been resolved.

**Policy Framework and Speculations**

It is beyond doubt that with a well planned intellectual property regime agricultural advancement is imminent but with respect to developing nations, the idea will invite speculation though records prove to the contrary. The agricultural policy and the legal regime of nations have been subject to continuous changes bearing the importance of food security. Adopting a specific law or rule that involves the subject matter of food security becomes difficult as laws are varied and diverse and often conflict in their ideologies.

For countries where no form of intellectual property protection in agro-biotechnology had been introduced before 1994, the TRIPS Agreement has been one of the triggers for the introduction of life patents in these countries. It is pertinent to observe in this respect that though the provisions of the TRIPS might conflict with other international agreements, the enforcement mechanism of the TRIPS precedes over other agreements by default. At this level, it is unclear whether the provisions of the Article 23.3 of TRIPS Agreement will still hold weight in the instance it violates a norm of international law.

The international legal system, in particular, the TRIPS Agreement, gives significant guidance to states on the ways in which they must re-orient their IPR policies in the field of agriculture. However, in some areas that are of importance to developing countries, such as, farmers’ rights and protection of traditional knowledge, the international legal framework remains underdeveloped. As a result, developing countries have the twin burden of adapting themselves to their existing international obligations and to adopt legal frameworks in areas that are of special interest to them even where international law is found wanting.

From the context of a developing nation access to potential benefits of plant breeder’s rights can be identified as a potential tool for alleviating the food crisis and hunger. In spite of their potential advantages, the developing nations have underscored necessitating a sui generis national legislation rather than following the lines of the developed nations. This is because agriculture being the mainstay and bearing a close nexus with national economy. Most of the Asian countries practice subsistence farming and are marginally involved in international trade and therefore argue on the distinguishing features of traditional agriculture; and therefore prioritize on national goals when implementing plants breeder’s rights. In this context, privatization in the area of breeding may also give rise to variety of factors - social, environmental and economic, which can be identified as:

- The rights will not necessarily increase investments in food. Though Plants Breeders’ Rights may not individually elevate the R&D costs but may improve the overall system of farming, yet the traditional agricultural practices continue to surmount in the developing countries.
- With the modernization of agriculture, the developed countries have made rapid progress in other sectors as well. Irrespective of that point, investments in the developing countries by private players are rather low. One of the reasons being that such modernization does not match the affordability of small scale farmers and especially in countries where farm holdings are small. Therefore, it is feared that small scale farmers have more stakes to lose in the instance of privatizing the breeder’s rights and thereby may directly affect the welfare goals of the state.
- In the instance where private players are allowed private sector investment, it will be directed towards consumerism rather than addressing the welfare policy of the state and conserving the biodiversity of the nation.
In implementing legal and policy frameworks in the context of food security and IPRs, developing countries face a number of legal and other constraints. An easy route to compliance with international obligations would be by following existing and proposed models. However, these may not be adapted to specific needs and conditions of individual countries. In attempting to devise a regime which is tailored to their specific needs and conditions, developing countries should consider the interests and rights of farmers, conservation and sustainable use of biological and genetic resources, prevention of biopiracy, protection of traditional knowledge, fair and equitable sharing of benefits arising from the exploitation of resources and realization of the human right to food.26

Conclusion
The challenge of enhancing food security for each country and region around the world will require tremendous efforts on the part of all actors involved if malnutrition needs to be eradicated.26 Food insecurity has been a longtime concern for developing nations and introduction of intellectual property protection within the realm of agriculture constitute two related and significant changes in the policy environment for addressing food security. In the context of developing nations, some of these legislations need to be adopted or even if adopted, they are at the stage of inception. Therefore it would be early to predict the implication of IPR protection within these countries. The developed nations have maintained a pro-patent regime for the plant variety protection.30 Ideological assumption for a utopian achievement at a level can be a theoretical study. In reality, it is almost impossible to adopt a strict patent regime and grant a monopoly for the developing nations at this juncture however feasible it may sound. At this level protection through a patent regime in the developing nations is an illusory myopic ideal.

The developed nations have always used the developing nations as a potential experimental launch pad. Considering the Asian market being the largest consumer base there should not be any question about institutional and other pressures. Most of the countries in Asia have ratified TRIPS. The TRIPS Agreement does not give developing countries the possibility to avoid the introduction of plant variety protection. However, the sui generis option constitutes an opportunity that developing countries can use to develop an IPR regime which suits their specific needs and which takes into account all their international obligations, such as, commitments in environmental treaties, agricultural treaties and human rights treaties.26 In fact countries like India, Thailand1 and the Philippines3 have already developed their sui generis plant variety protection laws.

Further, any policy or rights which pervades into the public interests has to be seriously viewed. Food security does not necessarily mean quantity and availability of food but also the availability of quality, nutritious, healthy food. Arguments have been forwarded by many expressing concerns on the nutritional capacity and safety of ‘Frankenstein plants’ or ‘super weed’. Human population of the developing countries should not be allowed to suffer from these experimental processes. It is rather difficult to predict as to what kind of impact food products from GMOs will have on humans. The human rights is an international concern and therefore issues need to be addressed in the right perspective, particularly, sui generis system suitable to the respective developing countries while recognizing the rights.

Protection of traditional knowledge is another aspect which needs to be addressed. Although identified as being important, the implementation and enforcement are rather weak. Further, the food security criteria of countries vary from quantitative, qualitative and nutritional levels. The food consumption pattern also varies from nation to nation. It is therefore necessary to recognize the problems individually and therein lies the efficacy and the need for an effective sui generis system over a strict patent regime.

References
1 Shiva Vandana, Seeds of Suicide, Food Security and Sustainability, in Sustainable Agriculture and Food Security: Impact on Globalization, edited by Vandana Shiva and Gitanjali Bedi (Sage Publications India, B 1/1 Mohan Cooperative Industrial Area, Mathura Road, New Delhi 110 044), 2002.
5 This was resolved in the World Food Summit, 1996 (Rome), Vyas V S, From Elimination of Hunger to Food and Nutrition Security: Performance, Prospects and Policy Options in Selected Asian Countries, Food Security in Asian Countries in the Context of the Millennium Goal edited by Vijay S Vikas [Published jointly by Academic Foundation, New Delhi, and The Asian Development Research Forum (ADRF) and The Thailand Research Fund (TRF), Bangkok, Thailand in cooperation with International Development Research Centre (IDRC), Canada], p. 13-28.


7 Sagar Vidy, Food Security in India, Food Security in Asian Countries in the Context of the Millennium Goals, in Food Security in Asian Countries in the Context of the Millennium Goal edited by Vijay S Vikas [Published jointly by Academic Foundation, New Delhi, and The Asian Development Research Forum (ADRF) and The Thailand Research Fund (TRF), Bangkok, Thailand in cooperation with International Development Research Centre (IDRC), Canada].

8 Availability is defined as aggregate supply, ensured either through sustainable growth in production or through imports or both and encompasses both the inter-temporal and spatial stability of supplies for every section of the population; Accessibility is defined in terms entitlement to adequate food, whether through production, labour, trade or transfer based entitlement, Absorption of food a function of environmental hygiene, nutrition practices and access to primary care and clean drinking water, Sustainability involved conservation and enhancement of natural resources.


12 FAO, Food and International Trade, WFS 96/TECH/8, Provisional, April 1996, p. 5 para:3.1


17 Internal liberalization of agriculture is a pre condition for food security while external liberalization undermines food security, Sustainable Agriculture and Food Security: Impact on Globalization, edited by Vandana Shiva and Gitanjali Bedi (Sage Publications India, B 1/1 Mohan, Cooperative Industrial Area, Mathura Road, New Delhi 110 044), 2002.

18 Under Japanese patent law, both ‘general plants’ and plant varieties can be patented where the general requirements for patentability are met. The most significant breeder countries are: Netherlands, Germany, USA, France, Israel, Denmark, UK and Italy. Hiraki Y, Reality and problems of plant protection under patent law and seed and seedlings law in Japan, in Agricultural biotechnology and Intellectual Property Rights: Seeds of Change, edited by J P Kesav (CABI International Publication, UK, Cromwell Press, Trowbridge), 2007

19 Shiva Vandana, The Hijacking of Global Food Supply, South End Press, p. 3.


22 Universal Declaration of Human Rights, GA Res 217A (III), UN GAOR, 3d Sess, pt. I, Article 27, UN Doc A/810 (1948), International Covenant on Economic, Social and Cultural Rights, adopted 16 December 1966, Articles 15(1)(b) & 15(1)(c), S EXEC DOC D, 95-2, at 18 (1977), 993 UNTS 3, 9 (entered into force 3 January 1976) [hereinafter ICESCR] (recognizing the right ‘to benefit from the protection of the moral and material interests resulting from any scientific literary or artistic production of which he is the author’ and “to enjoy the benefits of scientific progress and its applications’).

23 ‘If agricultural biotechnology is to be targeted towards recourse poor farmers to increase their income, the input costs including expenditure on seed has to be low. This is not possible with patents being allowed on every gene sequence discovered,’ Pental Deepak, Transgenic crops for Indian agriculture: An assessment of their relevance and effective use, Indian agricultural challenges: Reflections on policy and other issues, Center For Trade And Development, p.144.
‘There has been two sets of developments in response to IPRs. One has been extensive litigation costing millions of dollars……’ Pental Deepak, Transgenic Crops for Indian Agriculture: An Assessment of their Relevance and Effective Use, Indian Agricultural Challenges: Reflections on Policy and Other Issues, Center for Trade and Development, p.144.

Singh Harbir, Emerging plant variety legislations and their implications for developing countries: Experiences from India and Africa, www.grain.org (12 January 2008).

Overall 17% of the total populations of developing countries remain undernourished. This figure includes countries with no or hardly any prevalence of hunger such as South Korea or Turkey. This study examines developing countries in general. However, the main focus is on countries where food insecurity is prevalent and not on countries where undernourishment is virtually non-existent. Cullet Philips, Intellectual property rights and food security in the South, The Journal of World Intellectual Property Rights, 7 (3) (2004) 261-286.

Thus, while the Biodiversity Convention reiterates the basic assertion of sovereignty, it qualifies it by conceding that biological resources are a ‘common concern of humankind’, a notion which implies that sovereignty is maintained but with a duty of states to participate in the formulation and implementation of international legal instruments to foster the sustainable conservation and use of biological resources. Cullet, Philips Intellectual property rights and food security in the South, The Journal of World Intellectual Property Rights, 7 (3) (2004) 261-286.

Note however that while international law is one important factor influencing developing countries policy making in these areas, it is by far not the only important trigger for change. Concerning plant variety protection in India, Seshia Shaila, Plant variety protection and farmers’ rights – Law-making and cultivation of varietal control, Economic and Political Weekly, 37 (22) (2002) 2741-2747.

In spite of the advantages of these rights European Union and the Asian Countries have opposed and espoused for plant varieties protection to be kept outside the realm of patent protection. USA and Japan have espoused for the former. On 3 November 2001 the International Treaty on Plant Genetic Resources for Food and Agriculture was adopted by a vote of 116 to 0 with two abstentions (the US and Japan). This treaty, as envisaged, will prevent the patenting of food that has not been genetically modified, so that traditional and public knowledge will remain public. This was one of the most contentious aspects of the text which stated that farmers, researchers etc, ‘shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System.’ Genetic Resources Action International (GRAIN), mentions that ‘The US, Japan, Canada and a few others tried to get this deleted at the last minute [from the final text], but they were outnumbered.’ That is, as reported by the UK Agricultural Biodiversity Coalition, ‘Shortly before finalizing the new treaty, a US proposal to delete this provision altogether lost by a vote of 97-10.’


Philippine Plant Variety Act (PVPA), 2002.