Institutions and Capacity Building for the Evolution of Intellectual Property Rights Regime in India: IV– Identification and Disclosure of IP Products for their IPR Protection in Plants and Animals*

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The recognition that plants and animals can provide commercial opportunities in agriculture and industry, and their inclusion as patentable subject matter in the TRIPS Agreement necessitates finer analyses and understanding of IPR protection of plants and animals and their products in agriculture. This paper attempts to analyse the scenario of a possible dual protection of indigenous plants and animals including farmers’ varieties under the *sui generis* IPR protection as varieties/breeds on the one hand and the geographical indications on the other hand.

**Keywords:** IPR, *sui generis*, geographical indications, GI, PPV&FR

The recognition that plants and animals can provide commercial opportunities in agriculture and industry constituted an important basis of the global trade and tariff negotiations in the late eighties in order to take care of developing a level playing field for the international players. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), as a result, set the foundation for legalizing grant of patents on plants and animals, and microorganisms; and processes, including essentially biological, non biological and microbiological processes, related to their production and use. Nevertheless, as the national dominion to determine and enforce their own intellectual property rights (IPR) related laws is held supreme, the agreed provisions had to be incorporated into the respective legal systems of the member countries.

Further, despite the TRIPS Agreement, the world has been divided over the issue of giving exclusive patent rights on higher biological organisms, particularly genetically modified organisms (GMO). Considering the ethical principles of jurisprudence, a law should not command something that is ethically wrong or forbid what is ethically right. Nevertheless, the term ‘ethics’ is subjective. Further, considering that in trade ‘commercial ethics’ are highly relevant, there has been a spurt in interest in IPR area the world over ever since the TRIPS Agreement came into effect.

The holders of IPR titles in the WTO member countries clearly have the opportunity to globally encash from the exclusive right obtained by them over a particular IP in a given jurisdiction to begin with under the respective national IPR law, for the entire term of its protection. It is, therefore, appropriate that the developing countries maximize the opportunity to their nationals for the identification, disclosure and protection of IP in plants and animals in agriculture. This paper attempts to discuss the issue in the Indian context.

**R&D in the Post TRIPS Era**

In the post TRIPS era, interest in IPR started in the developing countries, more with curiosity and apprehension rather than otherwise. The 10-year transition period for the developing countries has been challenging but most of the WTO members have updated or enacted their IPR laws in harmony with the TRIPS Agreement. Accordingly, the IPR regime has evolved; graduating to a need-based compulsion, and desire to play and participate. IPRs now constitute important parameters influencing R&D, commerce and trade. Like in other fields, it is expected that in

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agriculture a large number of IP rights would be generated and protected in various countries all over the world including India. Technologies are changing rapidly and commerce and industry are witnessing huge competitiveness. Investments on R&D are seen from two opposite directions, namely (i) R&D for the synthesis of new molecules, and (ii) R&D based on the biologicals with known properties. Researches tend to thrive on open access to the biological and genetic resources for R&D whereas the technological advances are rendered increasingly monopolistic.

As a result, advance R&D is marred by the (i) ‘Tragedy of Commons’ or depletion of the biological and genetic resources in the absence of simultaneous concerted efforts by the R&D houses on their conservation for sustainable use, and (ii) ‘Tragedy of Anticommons’ or unavailability of effective privilege for all to use in R&D the scarce yet invaluable proprietary research tools, thereby amounting to an under use of such advance tools for the betterment of humankind. It is apparent that the exclusive rights of IP owners cannot strengthen unless those of the users are reduced, and vice versa. This, however, could not be the motive of providing IPR grants under the law and, therefore, the course of evolution of the IPR domain needs to be guided in a right perspective.

The IPR laws provide for the grants of ownership against public disclosure of IP so that the technology is available to the public at large. Further, the sui-generis IPR laws, such as, the Protection of Plant Varieties and Farmers’ Rights (PPV&FR) Act, 2001, particularly tend to balance the rights of IP owners and those of the users. The PPV&FR law protects the ownership rights in tangible products of IP such as plant varieties while promoting the conventional free use of the farm saved seed by the predominant marginal and small farmers. Farmer varieties in India may also be protected under the Geographical Indications of Goods (Registration and Protection) Act, 1999 and, further, this Act also allows registration and protection of live animals or the animal breeds/strains.

To acclimatize in the IPR regime, there is a need that the R&D focus is on the IPR portfolio management in a holistic way rather than laying emphasis on individual IPR titles. The content of intellectual property bundles rather than clarity of rights in each case may provide better opportunity for the transfer or commercialization of IP and know-how. Because of the global nature and consequences of IPR laws at large, which can have a direct bearing on the registrability and IP protection of Indian protected plant varieties or animal breeds in other countries, greater attention and importance should be given to the identification, disclosure and protection of IP under respective Indian laws and their enforcement as a bundle of IPR within the country and abroad. Also, there is a greater need to work on jurisprudence area, taking together the patent, plant variety protection and geographical indication as a package for the IP protection of plants and animals in agriculture.

**IP Protection of Animals**

Article 27.3(b) of the TRIPS Agreement allows exclusion of plants and animals from patentability. Also, it is silent about IP protection over animal varieties/breeds. A majority of the WTO member countries have not legalised IP protection on animals in their jurisdictions. There are, however, some countries which protect animals as patents or by sui-generis variety (breed) protection. For example, in Bulgaria, Law on the Protection of New Plant Varieties and Animal Breeds, 1996 provides IP protection to all plant genera and species as well as animal breeds. Also, in Russian Federation, an application for IP protection for any species of plant or animal can be filed with effect from 23 April 2001. Nevertheless, animals, including the genetically modified organisms, can be patented in some industrially advance countries like the United States of America and Canada.

**Indian Scenario**

Animals in India are not patentable as IP. Nor any sui generis IP protection is available to animal breeds, unlike the plant varieties, which can be protected under the PPV&FR Act, 2001. However, live animals are classified as goods in Class 31 of the Fourth Schedule under the Geographical Indications of Goods (Registration and Protection) Act, 1999 and, further, this Act also allows registration and protection of live animals or the animal breeds/strains.

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Genetic Resources in India, highlights the prospects of identifying and registering several indigenous breeds of animals or their products as the Indian geographical indications.

Indigenous Animal Breeds of Economic Importance

A broad status of various animal genetic resources in the country is presented in Table 1. This includes number of documented breeds of important animal species, population estimates of these species in 2003, and lists of breeds characterized using the FAO recognized microsatellite based DNA markers. The availability of a sizeable number of documented breeds for different species (Table 1) together with further availability of undocumented populations in several pockets in the country provide ample opportunity for the identification of GI based goods and products for their registration and protection in India and abroad.

Assessment of Various Use Wise Groups

On the basis of use, livestock population in the country may be broadly classified into various groups, namely (i) milk group, (ii) draught group, (iii) meat group, (iv) wool group, and (v) egg group. However, there are several other characteristics and uses that may be attributed to individual breeds, which can be harnessed as their geographical indications. The milk group comprises of cattle, buffalo and goat. Camel and sheep also contribute to some extent, although very little. Total provisional milk yield in the country for the year 2002-03 was 89.38 million tones out of which share of cow, buffalo and goat was 42, 54 and 4% respectively. In draught group, which comprises of work bullocks, buffalo, camel, horses, ponies, mules, donkeys and yak, the cattle and buffalo constitute the major draught animal species in the farming sector, accounting for nearly 90% of the total work output. Although the contribution of draught animals to total power availability to agriculture has declined due to use of tractors, from 61% in 1971 to 23% in 1991, the absolute contribution has remained unchanged at about 30,000 megawatts. Also, the draught animal power intensity has increased from 4.12 ha/animal pair in 1976-77 to 5.03 ha/animal pair in 1986-87.

The meat group comprises of buffalo, cattle, goat, pig, sheep and poultry. Rabbit, yak and mithun also contribute to a smaller extent. Meat production in India has grown from 0.85 million tonnes in 1981 to 5.90 million tonnes in 2003. Beef and veal, buffalo meat, poultry meat, pig meat, goat meat, and mutton and lamb accounted for 25.3, 24.9, 27.1, 10.7, 8.0 and 4.9% respectively of the total meat produced in the year 2003. The wool group mainly consists of sheep but good quality wool and mohair also come from pashmina and angora goats, respectively. The egg group comprises mainly of fowls and ducks. Some of the indigenous breeds of poultry are better known for their resilience and disease resistance.

Species Wise Assessment

A species wise assessment shows that the cattle breeds are of 3 major types as per their utility. These are milch breeds, including the Sahiwal, Gir, Rathi, Red Sindhi; the draught breeds such as Amritmahal, Bachaur, Bargur, Dangi, Hallikar, Kangayam, Kenkatha, Kherigar, Khillari, Malvi, Nagori, Nimari, Ponwar, Umblachery, Red Kandhari, Siri; and the dual-purpose breeds like Deoni, Gaolao, Hariana, Kankrej, Krishna Valley, Mewati, Ongole, Thrapparkar. Besides, there are dwarf breeds, namely, Vechur and Punganur. In addition, some stable cattle populations in different regions of the country

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of documented breeds</th>
<th>Population* in 2003 (million)</th>
<th>Molecular characterized breeds using microsatellite based DNA markers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffalo</td>
<td>10</td>
<td>96.62</td>
<td>Murrah, Jaffarabadi, Nili Ravi, Mehsana, Bhadawari, Toda, Pandharupuri, Surti, Tarai</td>
</tr>
<tr>
<td>Cattle</td>
<td>30</td>
<td>187.38</td>
<td>Sahiwal, Hariana, Red Kandhari, Umblachery, Kangayam, Ongole, Gir, Deoni</td>
</tr>
<tr>
<td>Sheep</td>
<td>40</td>
<td>61.79</td>
<td>Garole, Jaisalmeri, Pugal, Gaddi, Nali, Chokla, Muzzafarnagri, Karnah, Gurej</td>
</tr>
<tr>
<td>Goat</td>
<td>20</td>
<td>120.10</td>
<td>Black Bengal, Chegu, Gaddi, Parbatsari, Osmanabadi</td>
</tr>
<tr>
<td>Poultry</td>
<td>Chicken = 18 Duck = 5</td>
<td>440.70</td>
<td>Aseel, Nicobari, Miri, Kashmir Favorolla</td>
</tr>
<tr>
<td>Camel</td>
<td>9</td>
<td>0.64</td>
<td>Jaisalmeri, Bikaneri, Kachchhi, Double Humped</td>
</tr>
</tbody>
</table>


*17th Livestock Census 2003.
namely, Alambadi, Binjharpuri, Ghumsuri, Pullikulam, Kumauni, Ladakhi, Malnad Gidda, Mampati, Manipuri, Motu, Red Purnea, Shahabadi, Gangatiri, ThoTho, and Tarai significantly contribute to the food and agriculture production of the respective region.

India possesses the richest source of buffalo germplasm. The best dairy breeds, domesticated in north-western India include large sized breeds namely, Murrah, Nili Ravi and Jaffarabadi; and medium sized breeds such as Mehsana, Marathwada, Nagpuri, Pandharpuri, Bhadawari, Surti and Toda. Murrah is the best dairy breed and is most sought after. In addition, a number of buffalo populations, not defined as breeds as yet, also exist in the country.

Goat breeds of temperate Himalayan region namely, Changthangi and Chegu, possess the finest quality undercoat called cashmere or pashmina. Those found in north and north-western region such as Jamunapari, Marwari, Zalawadi, Beetal, Kutchi, Sirohi, Barbari, Mehsana, Surti, Jhakrana and Gohilwadi are large in size and primarily used for meat and milk purpose. In southern and peninsular India, goats with dual production of meat and milk are found; these are known as Sangamneri, Osmanabadi, Kanai Adu and Malabari. In the eastern region, highly prolific meat breeds such as Ganjam and Black Bengal are found. Some other populations also found in different parts of India are Andaman Feral goat, Barren goat, Teressa in the Andeman and Nicobar Islands; Bidari in Karnataka; Assamese hill goat in Assam; and Attapady Black in Kerala. Wild relatives of domesticated goat are also prevalent in the country, which include Markhor, Himalayan Ibex, Himalayan Tahr and Nilgiri Tahr.

Sheep breeds known for their unique characteristics include Magra for lustrous wool; Changthangi for fine wool; Garole for high fecundity; Chokla and Pattanwadi for best carpet quality wool; Mandya for mutton; and Marwari, Decanni, Hassan, Jaisalmeri and Chokla for their hardiness and capability to travel long distances. Some other population groups available are Kheri and Mumjal in Rajasthan, Biangi in Himachal Pradesh and Dumba in Gujarat.

India and the neighbouring countries in the east are considered to be the original home of the well-known Red Jungle Fowl (*Gallus gallus*) from which the present day domestic birds have descended. Indigenous breeds like Aseel, Kadaknath, Kashmir Faverolla, Miri and Nicobari are well documented. Most of the breeds have been identified on the basis of morphological characters while the information on molecular characterization of a few breeds is also available (Table 1).

### Fish and Aquaculture

India houses a large diversity of fish resources in varied ecosystems of the country. A total of 2165 species are reported to exist, including 157 species in the coldwater ecosystem, 456 in warm water ecosystem, 182 in brackish-water ecosystem, and 1370 in marine ecosystem. Accordingly, there are ample prospects and opportunities of identifying geographically linked processes and products as marketable goods of fish and aquaculture from coastal regions and around inland water bodies for facilitating their registration and protection as GI, and to ultimately extend the benefits to farmers/fishermen as the registered users of the respective goods.

### IP Protection of Plants

Plants or genes in plants or plant varieties, including the transgenes incorporated through the biotechnological means; do not constitute patentable subject matter in India as per Section 3 of the Patents Act, 1970. However, protection to plants or plant varieties may be available under the PPV & FR Act, 2001 and the Geographical Indications of Goods (Registration and Protection) Act, 1999. The *sui generis* plant varieties protection Act also provides protection to farmers’ (indigenous) varieties. On the other hand, the farmers’ varieties can also be protected as geographical indications (GI). Soam and Nagarajan gave illustrative accounts of the prospects of registration and protection of various agricultural goods and farmer varieties, respectively, under the GI Act.

Soam in his original study based on different attributes, ranked various GIs of agricultural goods of India for the priority of their registration and protection. Salient findings as summarized in Table 2, may be relevant for further developing the understanding of GI law in the country and its application by the interested stakeholders.

### Opportunities for GI Registration of Indian Agricultural Goods

A perusal of Schedule IV of the GI Act shows that out of 34 classes, Class 1 (chemicals used in science, agriculture, horticulture, etc.), Class 30 (coffee, tea, rice, tapioca, mustard, spices, etc.), Class 31
**Table 2—Matrix of GIs and rated attributes for ranking GIs for registration**

<table>
<thead>
<tr>
<th>Geographical Indications of agricultural goods</th>
<th>Rating (ri) of attributes with respect to GI (none = 0, medium = 1, high = 2)</th>
<th>Attributes* and their weight# (wi)</th>
<th>Σwi.ri</th>
<th>Rank**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (2)</td>
<td>B (3)</td>
<td>C (1)</td>
<td>D (4)</td>
<td>E (2)</td>
</tr>
<tr>
<td>Darjeeling tea</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Nagpur orange</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Alphonso mango</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Pokkali rice</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Banarasi paan</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Kadaknath chicken</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Basmati rice</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jeerakasala rice/Gandhaksala rice</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Navara rice</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Feni</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Desi ghee</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Kesari mango</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ashvagandha/Vasak/Safed musli</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chegu goat meat</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bhadawari milk</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Makhana</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Triphala</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Soam, 2005

** Missing ranks i.e. 6 and 10 were attributed to goods other than the agricultural goods in the original table which have been excluded here.

Notes: * Attributes  # Weight of attributes (wi)
A. Association with geographical name  1. Reasonable importance
B. Restricted to geographical limits  2. Moderate importance
C. Specific characteristics  3. High importance
D. Contribution of natural factors (geo-climatic)  4. Very high importance
for specific characteristics
E. Contribution human (local skills) factors for specific characteristics
F. International trade potential


*17th Livestock Census 2003.

(agricultural, horticultural and forestry products, grains not included in other classes, live animals, fresh fruits and vegetables, seeds, natural plants and flowers, foodstuffs, for animals, malt, etc.), Class 33 (alcoholic beverages except beers), Class 34 (tobacco), etc. may be more relevant for the purpose of exploring identification of relevant GIs for their registration and protection.

The Act requires relevant stakeholders’ associations or export promotion organizations to apply for the registration of GIs in India. In this context, the export development authorities for agricultural and processed food products (APEDA) and marine products; Export Promotion Councils for Indian silk, wool and woolen, shellac, and cashew; and Commodity Boards for coffee, spices, tea, tobacco, etc. are already in place, and they need to take lead in the promotion of their respective commodities in the domestic and global markets. This promotion would also include any proactive efforts towards registration and protection of respective commodity goods as GI of particular localities in the country. However, other stakeholder associations/organizations are also eligible to take similar initiative.

Status of Protection of GI of Agricultural Goods

A total of 13 agricultural goods have been registered in India between 2003 and 2008, out of 61 GIs registered so far. These include Navara rice, Palakkadan matta rice, Malabar pepper, Alleppey green cardamom, Coorg green cardamom, Allahabad surkha (guava), Coorg orange, Nanjanagud banana,
Mysore betel leaf, Darjeeling tea (word & logo), Kangra tea, Monsooned Malabar Arabica coffee, and Monsooned Malabar Robusta coffee. Thus, only two of the GIs early studied and prioritized by Soam, i.e., Darjeeling tea (priority rank # 1) and Navara rice (priority rank # 5) have been actually registered so far. This indicates that there may be several non-descriptive factors at the local level, other than mere facilitation from outside, that would ultimately determine the registration and protection of a GI.

**Case Study: Registered GI of Rice of Palakkad district, Kerala**

There are two registered GIs of rice of Palakkad district of Kerala, namely, the Navara rice, and the Palakkadan matta rice. These two case studies are relevant to understand relationship between GI and varietal component in the geographical location, besides other features. First, the GI of ‘Navara rice’, registered as per Certificate No. 40 dated 20 November 2007 by the GI Registry, Chennai, covers two varieties of Navara rice namely, black glumed and golden yellow glumed. This GI consists of medicinal rice used in Ayurveda treatment. Registered proprietor of the GI is the Navara Rice Farmers Society, Karukamanikalam, near Chittur, Kerala. The two varieties are distinct from each other for their glume colour only, which may or may not be a sufficient parameter for their registration as two different farmer varieties under the PPV&FR Act, 2001. Thus, more data would be required for that purpose.

The second GI is for ‘Palakkadan matta’, a popular rice variety, bold red rice with a unique taste because of its special geographical area and peculiar weather of eastern wind. The registered proprietor for this GI is Palakkad Matta Farmers Producer Company Ltd. There are 10 varieties covered under this GI namely, Aryan, Aruvakkari, Chitteni, Chenkazhama, Chettadi, Thavalakanna, Eruppu, Poochamban, Vattan Jyothy, and Kunjukunj. However, registration is flexible for the varietal component as it is also stated that more rice varieties with matta properties cultivated in Palakkad can be added to this list after detailed examinations. The possibility of registration of different varieties constituting the GI may have to be separately explored under the respective law.

**Relationship between Farmers’ Varieties and GI**

Nagarajan observed that there has been a drive for improved agriculture in the last hundred years that has replaced farmers’ varieties in several crops with new varieties developed by the formal plant breeding. Yet farmer varieties are still predominant, according to the author, in several crops such as pulses, vegetables, melons, etc. Further, GI for agricultural goods like Basmati rice, coffee, tea, wine, etc. revolve around consumer preferences for the palate feeling, aroma and physical appearance that enhances the appetite. An ideal mixture of all these attributes raises the value of the product due to reasons of consumer preference. The author suggests that India should seriously examine GI for its agricultural produce like Basmati rice, Alphonso mango, etc., to give it a comprehensive protection of the plant material as farmer variety under the PPV&FR Act, 2001 and at the same time GI protection for produce such as rice, mango fruit and fruit products, etc. Such a double coverage will enable IP protection of the plant material and market advantage to the quality produce through GI. Nevertheless, there are implications of this theory, which need to be further studied and clearly understood on a case-to-case basis before deciding to enter into a double protection.

First and foremost implication is the fact that seeking protection as GI would mean confining the area of production of a particular farmer variety. Therefore, this should be resorted to only if there is a clear and transparent acceptance of localized area cultivation of the varietal component along with a higher commercial advantage of its protection as GI. The other implication is that there is advantage of registering a farmer variety as GI since this form of IPR protection can be indefinitely maintained under the law. A GI registration in India may be renewed after every 5 years on payment of requisite fee, after the initial term of 10 years is over. On the other hand, a farmer variety of a field crop registered under the PPV&FR Act, 2001 will become generic and enter public domain only after completion of 15 years of the term of protection.

In cases where the global commercial prospects of certain farmer varieties are likely to be good, these varieties should be got registered and protected under the PPV&FR Act. Nevertheless, there is no guarantee that any other country plant variety office would accept the priority date of the farmer variety for protection in that country, once already protected in India. Such refusal could be due to, for example, lack of commercial novelty of the variety because of the knowledge that the farmer variety already existed in commerce (sold or offered for sale) for more than a year.
The GIs are essentially collective marks and are put to use for the collective benefit of the producers in a given region. The traceability of the raw material that yields the GI produce is important and details of the growers and their track record details are a matter of detailed documentation.

Case Study of Darjeeling Tea
The case study of Darjeeling tea GI is aptly documented by the World Intellectual Property Organisation. The tea production under the GI is confined to 85 tea gardens covering an area of 17400 hectare in Darjeeling (India), with an annual production of 11.5 million kilogram of tea that has export (value) of more than US $ 30 million. Varietal component is not described in the GI of Darjeeling tea. Key buyers for this premium GI product include Germany, Japan, UK, USA, and some other countries in the European Union (EU). The Darjeeling Logo was created in 1983, and it has been registered in India, UK, USA, Canada, Japan, Egypt, and Some other EU countries. In India, the logo and word ‘Darjeeling’ both have been registered as certification mark under the Trade Marks Act, 1999 and also as GI under the GI Act. Nevertheless, there are spurious sales and the tea sold under same name around the world measures nearly 40 million kilogram i.e. more than 3.5 times the production estimates registered with the GI registry. To protect and enforce the GI, the legal and other costs incurred by Tea Board, India, in a period of 4 years, exceeded US $ 200,000.00. Therefore, it would be prudent to view and consider protection and exploitation of IPR, irrespective of any form, on an economic balance sheet.

Notwithstanding the case of GI registration Basmati rice, which does not catch enthusiasm due to multiple factors, some of the grey areas that still remained to be further understood for availing the right opportunity in the current IPR regime, include the augmentation and management of a competitive technology portfolio. The disclosure requirement (best mode), anticipation of prior art, and sufficiency of disclosure in case of inventions related to plants and animals, etc., are also inadequately understood so far. At this stage, it is still difficult to harmonize IPR theory with practice. For example, it may be difficult to apply absolute theory of patents in several jurisdictions that do not provide for protection and enforcement of patents on genes, which are otherwise granted elsewhere. It is still difficult to minimize the knowledge gap, and also the gap in rights enjoyable on the same invention in different jurisdictions.

Conclusion
Even with the legal supremacy of patent system among various forms of IPR, it may not be clearly discernible as to how patent on genes in developed countries can match the IPR titles on plant varieties under a sui generis Act in the developing countries. The possibilities of international disputes are indeed high but so far the Doha round had restrained the developed countries from referring to the Dispute Settlement mechanism of the WTO in the matters concerning application of IPR in developing countries. Rather, developed countries were encouraged to allow and support developing countries to build their institutional capacity and aptly train their human resource so as to be able to ultimately handle their IPR matters in the spirit of the TRIPS Agreement as well as their national requirements and needs.

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References
2 According to TRIPS Agreement Article 27.3(b), the WTO Members may also exclude from patentability plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof.
3 The developing countries, which did not have their product patent regime in place for food and chemical substances, completed the requirement of harmonizing their IPR legislations with the provisions of the TRIPS Agreement by 31 December 2004.
The TRIPS Agreement Article 27.3(b) itself did not insist upon member countries to grant patents on plants and animals, and rather it specifies that they may provide it only as an option. The EU Directive on patenting in biotechnology respects ethical issues, which is widely referred to on this subject.

http://www.upov.int/ : Legal Resources.

The term of GI protection in India is initially 10 years which can be indefinitely extended for a period of 5 years each time on the payment of renewal fees as specified in the GI Act.


Ayyappan S, Indian Fisheries – Road and Mode (Presentation), 2007, Indian Council of Agricultural Research, New Delhi.


