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Student Research Project Report on the Basmati Patent case

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Abstract

RiceTec Inc, an American company, was granted a patent by the U.S. patent office in late 1997 to call the aromatic rice grown outside India 'Basmati' to which India objected. Since India has been one of the major exporters of Basmati rice, such a grant could negatively affect her trade. This paper is based on review work on the Basmati patent, the implications, and the legal battle that followed. This study was part of a student research project during the lockdown period.

Keywords: Basmati, biopiracy, patent, RiceTech.

Introduction

Intellectual property rights (IPR) are a kind of intangible property created by the mind. This attribute confers a monopoly. By law, the trust is granted to specific owners. Since India's admission to the World Trade Organization in 1995, the country's intellectual property regime has been a hotly contested issue. The World Intellectual Property Organization (WIPO) was established in 1883 as a United Nations specialised agency whose mission is to promote intellectual property worldwide and to manage intellectual property-related treaties. Following 1995, the Plant Variety Protection Act of 2001 and the Geographical Indications Act of 1999 (GI Act) were passed. In addition, previous legislation related to intellectual property in India, such as the Patents Act of 1970, has been modified.

Intellectual Property Rights (IPR) and Types

Intellectual property rights include copyright, patents, trademarks, and trade secrets, to name a few (IPR). These IPRs include discoveries and inventions. It also covers music, literature, words, phrases, symbols and designs of other artistic works. A patent ensures the rights to an inventor by a government to prevent others from making commercial uses of his invention, thus securing a unique identity to that invention. When a patent is issued to ensure the rights for biological entities and products derived from biological resources, it is termed a bio patent. So, Biopatents aim to restrict bio-piracy and eliminate the chance of commercial exploitation or monopolization of biological products or genetically related product.

Bio-prospecting and bio-piracy

When looking for new biological resources, researchers often rely on local people's traditional knowledge of a plant's, animal's, or chemical compound's characteristics. This is called bio-prospecting. When researchers use this traditional knowledge without permission or exploit the cultures they're drawing from, it is called bio-piracy.

Bio-piracy occurs when researchers or research groups steal biological resources from less wealthy nations or disadvantaged populations without official permission. Bio-piracy is the unethical or illegal acquisition or commercial exploitation of biological resources native to a specific nation or territory (such as medicinal plant extracts) without paying a reasonable financial recompense to the people or government of that country or area.

Dr. Vandana Shiva, an Indian environmentalist, defined bio-piracy as "biological theft" defined as "illegal gathering of indigenous plants by companies that patent them for their own use and profit."

According to Dr. Shiva, there is no distinction between bioprospecting and biopiracy since the former's "effect on biodiversity, Indigenous traditions, and local economies is the same as blatant piracy" (Shiva, 2007). As a result, biopiracy refers to the unauthorised use of locally held information by non-local commercial entities. It's most often linked with western biotech firms foraging the fauna of biodiversity-rich developing nations to exploit and sell biological compounds that Indigenous people have utilised for decades.

'Confronting Biopiracy: Challenges, Cases, and International' by Daniel Robinson was published in 2010.

Debates' gave three defining characteristics of biopiracy

1. It is about genetic resources and the knowledge that goes with them.
2. It is about obtaining resources from agricultural and indigenous populations'.
3. It controls and monopolises such resources via patents and other kinds of intellectual property rights (IPR).

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Basmati

Basmati rice is known for being one of the most fragrant kinds of rice on the planet (Weber et al., 2000). Basmati is one of the fragrant rice types that is exclusively used on rare occasions in the Indian subcontinent. Basmati rice is known for its super fine grain. The fragrance of Basmati rice varies depending on the variety (Singh, 2000). 2-acetyl-1-pyrroline is the chemical compound that is said to be responsible for the distinct aroma in Basmati (Buttery et al*.,* 1986).

The cooked rice has a soft texture and extreme grain elongation with the least breadth-wise swelling on cooking.

Traditional Basmati variants grow tall (up to 170 cm tall) and photosensitive (Singh, 2000). Harvesting occurs in November, five months after planting and 35 days after 50% blooming, with an average moisture content of 21%. Basmati rice has been cultivated in the north and north-western parts of the Indian subcontinent for millennia. According to research, Basmati grows best and yields the highest quality grains in warm, humid, valley-like environments (Singh et al., 2000). In addition, when Basmati is harvested, stored, milled, cooked, and eaten, it

produces a distinct fragrance (Jefferson, 1985).

Basmati Patent Case

The United States Patent and Trademark Office (USPTO) awarded RiceTec, a Texas-based business, Patent No. 5,663,484 on "basmati rice lines and grains" on September 2, 1997. RiceTec Inc. was given the right to name the fragrant rice type produced outside of India 'Basmati' in the United States, as well as to label it as such for export. The patent granted the business three rights in total: cultivating rice plants with similar qualities to Basmati, the grains generated by them, and the technique of rice selection based on the starch index test. Basmati is a thin, long-grained aromatic rice type native to India and Pakistan, meaning 'queen of fragrance' or 'fragrant earth'.

The use of the similar term for another variety that is grown outside the original geographical regions leads to confusion among consumers as they failed to distinguish between the original and the new array of Basmati based on their geographic origins. In addition, this patent gave several rights to the company, which included:

1. Exclusive use of the term 'basmati' (term used for the original crop of India and Pakistan)
2. a monopoly on breeding 22 farmer-bred Pakistani basmati varieties with any other varieties in the Western Hemisphere.
3. proprietary rights on the seeds and grains from any crosses

This patent also detailed the breeding procedure for this new variety and the method for determining the cooking characteristics and starch content of these grains. In addition to this, the company had also claimed to produce improved varieties of Basmati, namely Texmati (American style basmati rice) and Kasmati (Indian style Basmati rice), which were of better quality than the original crop. The company had been selling both of these varieties for more than two decades. Therefore, this patent could have impacted the Indian and Pakistani farmers by interfering with the basmati exports from India and Pakistan. Moreover, it would have gained complete control over the basmati seed supplies which would have curbed the rights of the native regions.

As India had been one of the major exporters of Basmati rice, this patent grant would have had an immense detrimental impact on India's trade. Apart from India, Basmati is traditionally grown in Pakistan. So the RiceTech varieties that are claimed to be improved varieties of the original crop are threats towards trade and a violation of the Geographical Indications of Goods (Registration and Protection) Act, 1999. However, this Basmati case is often seen as a case study on the impact of insufficient protection of intellectual property (Mulik and Crespi, 2011).

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The following abstract from the patent application is illustrative.

The invention pertains to new rice lines, plants, and grains derived from these lines and a breeding technique for these lines. The invention also pertains to a new method for evaluating the cooking starch characteristics of rice grains and its use in the identification of suitable rice lines. Novel rice lines that are semi-dwarf in height, significantly photoperiod insensitive, and high yielding, and produce rice grains with qualities comparable to or superior to those of excellent grade basmati rice are one feature of the invention. Another feature of the innovation is the technique for breeding

these new lines and the novel rice grains that result from them. A third aspect of the invention is the discovery that a rice grain's "starch index" (SI) can predict the grain's cooking and starch properties, as well as a method based on it for identifying grains that can be cooked to the firmness of traditional basmati rice preparations, and the use of this method in rice breeding programmes.

Implications of the patent

In 2003 the total world demand for Basmati rice was around 1.18 million tons and was valued at $700 million as reported in A. Padmanabhan article "Basmati is flavour of India Pavilion at N.Y. Fancy Food Show" in an online news magazine desi talk, News India. The trade export of India and Pakistan that produce the traditional Basmati variety would be severely damaged. Two-thirds of India's total production of Basmati rice is exported (Bhattacharjee et al., 2002). Rice export prices according to variety is given in Table 1 according to Food and Agriculture Organization (FAO) of the United Nations.

The firm tried to acquire control of the product by renaming their new rice lines and grains 'basmati,' of which Basmati 867 is a variation, preventing others from using the name even for India and Pakistan's original crop. It may be a criminal violation under the WTO, and exporters from India and Pakistan could be fined if they continue to use the term "basmati," or they could be forced to pay royalties to the business. This case was a violation of the Convention on Biological Variety (CBD), which seeks to promote biological diversity conservation and sustainable use and the fair and equitable distribution of benefits resulting from the use of genetic resources.

The patent took advantage of the contributions of Indian and Pakistani farmers who had been cultivating the crop for centuries while ignoring the work of rice research institutions to enhance basmati quality. Furthermore, the local people contributions to the cultivation of Basmati rice have been ignored.

The patent had given the company exclusive rights and complete control over the commercial profits of previous research. The company was unwilling to share the profits as remuneration or acknowledge the people who had played a key role in growing and evolving Basmati in its natural habitat for years.

The fight for Basmati

The basmati variety existed for a long time and therefore, it could not have been considered an invention; thus, legally, the patent was not novel. Basmati existed in India and Pakistan and is considered to be the staple food of the people and therefore, the patent was challenged on this ground. The Released Lines of Basmati Rice is given in Table 2 (Singth et al., 2000; Bashir et al., 2007; Giraud, 2008). Technically the patent should not have been granted by the U.S. authorities since the imported variety of rice was not suitable to be grown in a completely different climatic condition. The patent granted by USPTO was objected and the Centre filed petitions for Food Safety (an international NGO that campaigns against bio-piracy), the Research Foundation for Science, Technology and Ecology (an Indian environmental NGO), and the Centre for Scientific and Industrial Research (CSIR). They demanded the right to use the term 'Basmati' exclusively for the varieties grown in the regions of India and Pakistan as an amendment of the US rice standards.

The Trade-Related Intellectual Property Rights (TRIPS) Agreement provides the

standard for intellectual property rights globally and is particularly relevant for this biopiracy case. RiceTec's patent on Basmati violates Article 22 of TRIPS, which deals with geographical indications. As defined in TRIPS, geographical indications "...identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or another characteristic of the good is essentially attributable to its geographical origin" [Article 22(1)]. Kranti Mulik of Iowa State University and John M. Crespi of Kansas State University in their study in 2011 made a residual demand curve for estimation for Indian basmati exports. A joint estimation for the four destination markets, United States, Canada, Kuwait and United Kingdom, was performed using the Three Stage Least Squares (3SLS) approach to account for the endogenous quantity and the probable contemporaneous correlation among the error terms of the four equations as given in Table 3. The decline in the Lerner indices after RiceTec's entry is consistent with the story that India lost some of its distinct "brand" power for Basmati in these two key export markets as given in Table 4 (Mulik and Crespi, 2011).

Table 1. Rice export prices according to variety, USD/ton free on board (FAO, 2007 ; Giraud, 2008).

Year	Thailand 100% white	US long grain 2.4%*	Thailand 25%*	India 25%*	Pakistan 25%*	US California medium grain	Pakistan Basmati	Thailand Fragrant
2002	197	207	171	140	159	271	366	306
2006	311	394	269	247	230	512	516	470
March 2007	325	424	293	260	264	551	615	537
2007/2002	165%	205%	171%	186%	166%	203%	168%	175%
* % broken grains					Source: FAO. (2007) ; Giraud, G. (2008).			

Table 2. Released Lines of Basmati Rice (Singth et al., 2000; Bashir et al., 2007; Giraud, 2008).

Major lines (also known as XX)	Other varieties (list not complete)		
Basmati 370	Baldhar B.	B. 6141	Kasturi
Dehraduni B.*	B. 106	B. 6187	Local B.
Type 3	B. 107	B. 6311	New Sabarmati
Punjab B.	B. 123	B. 6813	Pakistani B.
B. 386	B. 134	B. 93	Punjab B. 1
Taraori B.	B. 136	B. D	Rachna B.
Karnal local	B. 208	B. Sufaid 100	Ranbir B.
Amritsari	B. 217	B. Sufaid 106	Sabarmati
HBC 19	B. 2000	B. tall	Seond B.
Haryana B.	B. 3708	Basmoti	Shaheen B.
Pusa B.	B. 388	Champaran B.	Tapovan B.
B. 198	B. 5833	Chimbal B.	-

B. 385	B. 5836	Early B.	-
Super B.	B. 5875	Guarav	-
B. Pak	B. 5877	Hansraj	-
Kernel B.	B. 5888	Kashmir B.	-
* B = Basmati; Source: (Singth et al., 2000; Bashir et al., 2007; Giraud, G. 2008)			

Table 3. 3SLS Estimates for Indian Basmati Rice Exports to the US, Canada and Kuwait. Dependent Variables: Export Price of Indian Basmati Rice Exports in Destination Currency (Mulik and Crespi, 2011).

Variable	United States	United Kingdom	Canada	Kuwait
Constant	59.32*** (21.48)	1.716 (3.45)	1.36 (10.60)	10.56 (10.06)
QUS	-0.0004 (0.0011)	-	-	-
QUK	-	-0.0004*** (0.00006)	-	-
QCA	-	-	-0.0033 (0.0030)	-
QKU	-	-	-	-0.0003*** (0.0001)
PAKUS	-46.73 (54.50)	-	-	-
PAKUK	-	35.04 (45.07)	-	-
PAKCA	-	-	32.06 (42.12)	-
PAKKU	-	-	-	(69.44)
THUS	-172.58 (414.66)	-	-	-
THUK	-	-115.31 (213.04)	-	-
THCA	-	-	-77.76 (255.19)	-
THKU				-235.81 (504.79)
USUK	-	18.18** (7.79)	-	-
USCA	-	-	31.25*** (10.02)	-
USKU	-	-	-	-0.535 (31.52)
WUS	-0.68 (0.55)	-0.181** (0.103)	-0.056 (0.449)	(0.149) -0.242*
WTH	0.81*** (0.73)	-0.392 (0.263)	-	-
WUK	-	-0.195** (0.092)	-	-

WCA	-	-	-0.252*** (0.092)	-
WKU	-	-	-	0.095 (0.699)
D0	-4.32 (6.54)	-6.47*** (2.13)	-7.71 (6.47)	-8.27*** (2.56)
D0US	0.0004 (0.0011)	-	-	-
D0UK	-	0.0004*** (0.00006)	-	-
D0CA	-	-	0.0035 (0.0030)	-
D0KU	-	-	-	0.0003*** (0.0001)
Hausman Test	17.80			
R2	0.775	0.839	0.847	0.661
DW-stat	1.393	1.482	1.479	1.898

***, **, * indicates significance at the 1%, 5%, and 10% levels, respectively. Instruments used include all independent variables, the exchange rate between India and each destination and the wholesale price index in India

Source: Mulik and Crespi, 2011.

Table 4. Lerner Indices (Mulik and Crespi, 2011).

Country	Before entry of RiceTec		After Entry of RiceTec	
	Lerner I[1]	Lerner II[2]	Lerner I[3]	Lerner II[4]
United States	1.93%	2.28%	0.52%	0.86%
Canada	5.99%	4.88%	6.88%	10.59%
United Kingdom	31.54%	52.36%	6.53%	10.57%
Kuwait	35.62%	39.88%	15.89%	25.04%

[1]Calculated using average quantities and prices prior to 1984; [2]Calculated using quantities and prices for each year prior to 1984 and averaged for the period; [3]Calculated using average quantities and prices after 1984; [4]Calculated using quantities and prices for each year after 1984 and averaged for the period.

Source: Mulik and Crespi, 2011

The verdict

The final struggle was over when India gained victory in 14thAugust, 2001, when the title of the invention was changed to Rice Lines Bas 867, RT 117 and RT 121. Originally the patent was granted to these three Pakistani rice lines. The Indian Government and Rice Tec Inc. filed a There-examination form agreed to withdraw its claims in parts.

A re-examination certificate that cancelled claims 1-7, 10 and 14-20 out of the 24 claims was issued by the USPTO on 29th January, 2002

RiceTec is said to have chosen a patent on Basmati because of Indian laws' meek and docile attitude, as well as the government's aversion to patenting its natural resources.

Compared to the Indian and Pakistani varieties, RiceTec's product had more inferior grain quality, less fragrance, lesser volume per elongation, and greater amylose concentration. The National Agricultural Research Council (NARC) in Islamabad conducted experiments to verify this.

Conclusion

Patents and geographically defined rights assist to guarantee that a product has a monopoly. RiceTec's claim on the name of 'basmati' and its control on future breeding of basmati germplasm in the Western Hemisphere could have resulted in potential loss of basmati export earnings which in turn would have a tremendous impact on the livelihood of the farmers of these two countries to which the crop originally belongs. Half of Pakistan's rice export revenues are earned from the margin made from the export of Basmati. About three-quarters of India's total rice exports is Basmati. A more serious threat through this patent, the company could have acquired a monopoly on basmati seed supply to the sub-continent. The legal case was very timely and the verdict revoked many of its claims.

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