International Intellectual Property Rights Regarding Plants Native To India:

Texmati = Basmati?

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I. Introduction

In the age of global markets and the resulting development of international intellectual property rights, conflicts arise between industrialized nations seeking to develop new products from plants, and developing nations seeking to capitalize on their indigenous flora. One example is the conflict over basmati rice. Long identified as originating in the Indian sub-continent, basmati rice is prized for its distinctive aroma, flavor, and long, slender, fluffy grains. The connection between India and basmati seemed threatened when the United States ("U.S.") patented Texmati, described as an American basmati rice. The Indian government seeks to have the U.S. revoke the patent as part of its plan to protect its rice industry. This article explores this situation with an eye towards understanding what rights the patent provides Texmati and how it affects, if at all, India's rice industry.

II. Intellectual Property

A. Patents

A patent for an invention is a grant of a property right by the government to the inventor.[1] The patent term is twenty years from the date on which the patent application was filed in the U.S.[2] The right granted by the U.S. patent extends only throughout the U.S. and its territories and possessions.[3]

The patent rights are, in the language of the statute, “the right to exclude others from making, using, offering for sale, or selling” the invention in the U.S. or “importing” the invention into the U.S.[4] What is granted is not the right to make, use, offer for sale, sell or import, but the right to exclude others from making, using, offering for sale, selling or importing the invention.[5]

B. Trademark

A trademark includes any word, name, symbol, or device, or any combination, used, or intended to be used, in commerce.[6] The trademark identifies and distinguishes the goods of one manufacturer or seller from goods manufactured or sold by others.[7] In short, a trademark is a brand name.[8]

A certification mark is any word, name, symbol, device, or any combination, used, or intended to be used, in commerce with the owner’s permission by someone other than its owner. The certification mark certifies regional or other geographic origin, material, mode of manufacture, quality, accuracy, or other characteristics of someone's goods or services. A certification

mark can also demonstrate that the labor on the goods or services was performed by members of a union or other organization.[9]

A collective mark is a trademark or service mark used, or intended to be used, in commerce, by the members of a cooperative, an association, or other collective group or organization, including a mark which indicates membership in a union, an association, or other organization.[10]

C. Plant Variety Protection

The Plant Variety Protection Act[11] (PVPA), enacted in December of 1970, and amended in 1994, provides legal protection, similar to patents. The right holders are breeders of new plant varieties which are sexually reproduced (by seed) or are tuber-propagated. Bacteria and fungi are excluded. The United States Department of Agriculture ("USDA") administers the PVPA.[12]

A Certificate of Protection is awarded to a breeder if the USDA agrees that the plant variety is new, distinct from other varieties, genetically uniform, and stable through successive generations. The certificate is valid for twenty years for most crops and 25 years for trees, shrubs, and vines. The breeder has exclusive rights to multiply and market the variety's seed.

The owner must prove the distinctness, uniformity, and stability of the new variety. The applicant may: list the single variety he or she believes is the one most similar to the new variety and describe how the new variety differs from it; list a group of varieties to which the new variety is similar, and

describe how it differs from that group; or, describe how the variety differs from all other known varieties. A statement of uniformity must report the level of variability in any characteristic of the variety.

The PVP Office maintains databases for crops of both public and private varieties. The plant variety examiner uses these and other sources to determine which, if any, varieties are indistinguishable from the new one. If the examiner finds varieties which appear to be indistinguishable from the application variety, the applicant will be notified that supplemental data are necessary. To obtain additional data, applicants may use DNA profiling or other analyses to show distinctness. The USDA does not perform tests to confirm a variety's distinctness.

III. International Trade Agreements

A. World Trade Organization ("WTO") and General Agreement on Tariffs and Trade ("GATT")

The GATT is an international agreement that sets the rules for conducting international trade in goods only.[13] The WTO is an international organization that incorporates the GATT. The WTO updates the agreement to include services and intellectual property.[14]

B. Trade Related Aspects of Intellectual Property (TRIPs)

The WTO's TRIPs Agreement is an attempt to harmonize intellectual property rights globally and provide a dispute

settlement system.[15] TRIPs covers copyrights, trademarks, patents, integrated circuit designs, trade secrets, industrial designs, and geographic indications.[16]

WTO member countries may refuse a patent for an invention if its commercial exploitation is prohibited for reasons of public order or morality.[17] A country may also exclude plants and animals (except microorganisms), and biological processes for producing plants or animals (except microbiological processes).[18] However, if the country does not allow plant patents, the country must provide some protection.[19] One permitted alternative is providing plant breeder's rights[20] under the International Union for the Protection for New Varieties of Plants ("UPOV").[21] If a country did not protect plants before 1 January 1995, it may delay plant protection until 1 January 2005.[22]

Articles 22 to 24 of TRIPs refer to protection of indicators of geographic origin.[23] This portion of TRIPs protects geographic indications which identify a product as originating from a member-state where a reputation is attached to that geographic origin.[24] Member-states may pursue legal recourse to discontinue the use of misleading geographic indications.

C. Provisions For Developing Nations

TRIPs includes special transitional provisions for the introductory period of TRIPs.[25] Normally, members' laws and procedures needed to comply with TRIPs by 1 January 1996.[26] Developing countries have until 1 January 2000 to adopt the TRIPs

provisions.[27] The least developed countries have until 1 January 2006 to comply with TRIPs.[28]

D. The International Union for the Protection of New Varieties of Plants -- UPOV

The UPOV is an intergovernmental organization based in Geneva, Switzerland.[29] Its purpose is to accord exclusive property rights to plant breeders in nations that are members of the UPOV convention.[30] A plant variety may receive protection if the variety is distinct from commonly known varieties, uniform, stable, and novel.[31] The plant variety must not have been commercially used before certain dates measured from the application date.[32]

Plant breeders in one UPOV member nation may obtain protection in other UPOV member nations.[33] Plant breeders in non-member nations cannot use the UPOV convention to protect a plant variety. India is not a member-state of this agreement. Researchers are not prohibited from using protected plant varieties for research, including the use of the plant variety to breed new varieties.[34]

IV. Commercial Exploitation of Plants and Plant Products

India has a long history of using herbal products for medicinal or cosmetic purposes.[35] However, India has not attempted to seek commercial gain from this knowledge until recently. Some Indians believe that U.S. companies are seeking to exploit Indian knowledge of plant uses.

A. Neem -- Natural Pesticide

Indian farmers have used neem, a plant native to India, as a pesticide for hundreds of years.[36] The farmers boil the seeds, and then let them soak overnight.[37] The resulting foam is removed and used to kill insects.[38]

Once obscure, the neem tree is now the focus of global commercial and scientific attention.[39] India's Neem Foundation[40] promotes the neem tree as a wonder plant that provides: a natural pesticide;[41] medicine for skin disorders, pain, fever, and infection;[42] firewood;[43] birth control;[44] and a device to protect the Taj Mahal from environmental damage.[45] The U.S. Environmental Protection Agency approves various neem-based pesticides.[46]

Agridyne Technologies of Columbia, Maryland markets a product, "DAZA,"[47] manufactured in a manner similar to the Indian farmers' method.[48]

Environmentalists attempted to convince the U.S. Patent and Trademark Office ("USPTO") to cancel Agridyne’s patent for DAZA based on a lack of novelty.[49] The USPTO refused the request to cancel the patent because the challenge offered little well-documented evidence.[50] Agridyne also claimed that it developed a method to make neem's active pesticide ingredient last longer than the normal two week period.[51] The European Patent Office determined that the neem patent was included in prior art.[52]

B. Turmeric -- Yellow Spice With Pharmaceutical Uses

In 1995, two U.S. scientists,[53] employed by the University of Mississippi Medical Center, obtained a patent for the use of turmeric to help wounds to heal.[54] The USPTO canceled the patent in 1997 after a re-examination determined that the patent application did not satisfy the novelty criterion.[55] The challenge to Agridyne's patent was led by India's Council of Scientific and Industrial Research ("CSIR").[56] The CSIR filed a petition, through a U.S. legal firm,[57] stating that turmeric was used to heal wounds for hundreds of years.[58] The CSIR supported the petition with 32 published papers.[59] The CSIR compared the successful petition to cancel the turmeric patent with the failed attempt in the neem situation.[60] The CSIR's director general, R.A. Mashelkar, said that Indians have nothing to fear in protecting a traditional knowledge base when a patent challenge is well argued and well supported.[61]

C. A Successful Compromise

A conflict exists between plant variety rights protection and biodiversity protection.[62] Biodiversity advocates believe that drug companies cannot take a country's genetic resources without compensation.[63] Some see this clash of plant breeder rights and biodiversity rights as incompatible.[64]

However, this conflict was resolved in Thrivanthpuram, India over a herbal preparation from a medicinal plant, Trichopuszeylamicsu.[65] This plant has been used by the Kani

people in India, for many years, to treat fatigue.[66] The Tropical Botanical & Garden Research Institute ("Institute") found that the plant had properties that enhance the human body's immune system.[67]

Not wanting to wait the lengthy time to obtain an Indian process patent on the medicine, the Institute sought out the Kani people.[68] They negotiated a license to manufacture the medicine from the Trichopuszeylamicsu plant.[69] The Institute then sold its rights to a drug company for a sum plus a royalty for the following seven years.[70] The Institute put fifty percent of the proceeds in a fund for the Kani tribe's welfare.[71] This agreement led to a compromise that ensured that the Kani people were satisfied and private plant breeder rights were awarded.[72]

D. Rice

In the U.S., most people eat and enjoy rice occasionally. In many parts of the world, rice is the chief food of millions of people.[73] Indeed, in many countries, the word for rice is also used as the word for meals or food in general.[74]

Some sources believe that the cultivation of rice started in India.[75] One fact that supports this statement is that the Ganges and Brahmaputra rivers in eastern India overflow each spring, providing rice paddies with necessary water.[76] Also, archaeological evidence suggests that an advanced system of rice cultivation existed in China and India 7,000 years ago.[77]

E. U.S. Rice Industry

The U.S. is a major producer and exporter of rice.[78] Rice is grown in the U.S. mostly in Texas, Louisiana, California, and Arkansas. Many consider the U.S. to have the highest quality rice in the world.[79]

F. Basmati Rice -- Anything Else Is Just Rice

Basmati rice, unlike usual types of rice, is aromatic and has an extra long grain.[80] The aroma is described as nut-like or reminiscent of popcorn. Basmati rice is usually consumed only on special occasions.[81] Basmati rice is indigenous to India and Pakistan.[82] In India alone, at least 400 varieties exist.[83] B

Basmati rice comprises four per cent of India's export earnings.[84] India earns US$800 million annually from basmati rice exports. Ten percent of these basmati exports are consumed in the U.S.[85]

In world markets Indian basmati rice is the most expensive rice available.[86] In Europe the best U.S. rice fetches a price of US$500[87] per metric ton.[88] Indian basmati goes for US$1200 per metric ton.[89] The European Union gives Indian basmati rice a duty discount of US$300 per metric ton.[90] Soon the European Union may cease giving Indian basmati rice a duty discount.[91] In this event, perhaps European consumers will choose quality U.S. rice from companies like Uncle Ben's over Indian basmati rice.[92]

V. RiceTec and Basmati Patent

RiceTec, an international corporation, produces "Texmati" rice which RiceTec calls an "American basmati." Texmati is a

hybrid of aromatic rice and regular long grain rice,[93] sold by RiceTec since 1977.[94] As the name suggests, this variety of rice grows in Texas.

The USPTO granted patent No. 5,663,484 to RiceTec[95] for its variety of basmati.[96] The patent also protected the American basmati plant and RiceTec's method of breeding the plant.

Specifically, one aspect of the invention relates to novel rice lines whose plants are semi-dwarf in stature, substantially insensitive to poor sunlight conditions, and high yielding. The patent claims that the plant produces rice grains having characteristics similar or superior to those of good quality basmati rice. Another patent claim relates to a "starch index" of a rice grain that predicts the grain's cooking properties. The patent also describes a method based on the starch index for identifying grains that can be cooked to the firmness of traditional basmati rice, and to use this method to select desirable segregants in rice breeding. Although RiceTec has not filed for an Indian patent on its basmati, the company has successfully patented three different methods of milling rice.[97] RiceTec also filed an application under the UPOV 1995 Plant Varieties Protection Act for its basmati lines.[98]

VI. Indian Intellectual Property Rights

A. Indian Patents

India's Patent Act differs in certain aspects from the U.S. Patent Act. India does not permit patents for inventions

regarding food, but does allow patents for food manufacturing processes.[99] The food manufacturing patent term is only for five to seven years while other inventions may be patented for fourteen years.[100] Agricultural techniques or methods are not patentable.[101] If RiceTec were to seek an Indian patent for Texmati, its protection would be limited, if not denied. Furthermore, for all patentable inventions, the Indian government may revoke a patent on public interest grounds.[102]

Indian patent offices are known to be inefficient, averaging six years to issue a patent.[103] Although the USPTO is also inefficient, U.S. patents are usually issued in no more than two years.[104] If Indian patents are issued many years after application, the scientist may find it too late to capitalize on the invention.[105]

B. Indian Geographic Indications

India does not have a Geographic Indication Act, which is part of the WTO agreement.[106] The Indian government currently seeks to define "basmati" as a geographic term for a part of the Indian sub-continent. The government claims to have records that prove that "basmati" has been used to denote quality in India a century ago.

VII. India's Efforts To Have USPTO Rescind RiceTec's Patent

India levies a tax on basmati rice to support the country's "Basmati Development Fund."[107] Indian basmati rice farmers pay 50

rupees per ton into this fund.[108] The government will use the tax to support India's efforts to overturn the U.S. patent.[109]

India currently seeks to convince the USPTO to withdraw RiceTec's patent for basmati rice.[110] The Indian Agricultural Research Institute seeks DNA fingerprinting to determine the origin of the germ plasm RiceTec used to develop American basmati.[111] If the Research Institute establishes that the American basmati comes from original Indian lines, the Indian government will claim that the USPTO should revoke the rice patent for lack of novelty.

The Indian government's Technology Information Forecasting and Assessment Council ("TIFAC") believes that it has evidence to counter one of RiceTec's patent claims for its basmati rice.[112] The patent claims a novel process for preparing translucent rice. TIFAC says that the Indian Patent Office granted a 1986 patent for such a process.[113] TIFAC hopes to have the USPTO revoke RiceTec's claim for this process along with the other patent claims.

VIII. Third Country Efforts

RiceTec has registered the "Texmati" trademark in the U.S., Saudi Arabia, Ecuador, Ireland, and other countries.[114] Saudi Arabia, India's biggest market for basmati rice,[115] limits the term, "basmati," to rice from India or Pakistan. However, Saudi Arabian rice importers believe that the quality of Indian basmati rice has deteriorated. In response, the Saudi Arabian government

has enforced several phytosanitary specifications for every shipment imported from India.[116]

The United Kingdom ("U.K.") has a code of practice to define "basmati" as from India and Pakistan.[117] The U.K. government refused RiceTec's application to trademark "Texmati." India's Agricultural and Processed Food Export Development Authority won a lawsuit in Greece over RiceTec's use of the "Texmati" name.[118]

Recently, businesses worldwide are using the term, "basmati," or words derived from "basmati," in trade. This practice occurs even for products not related to rice. Companies use trademarks containing "basmati" in many countries, including Brazil, Chile, Colombia, Jordan, Kuwait, South Africa, Spain, Taiwan, Turkey, and the United Arab Emirates ("UAE").[119] Companies in France, Greece, Taiwan, Jordan, Spain, and Turkey use trademarks including "basmati" for rice that does not come from the Indian sub-continent.[120] France registered two trademarks that use the term, "basmati," for a French company's long-grain aromatic rice.[121] India filed a protest at the French trademark office over these trademarks.[122] One Thai company sells a "Basmalli" rice.[123] In Mexico a business seeks to sell vegetables under the basmati name.[124]

Ironically, a corporation from the world's largest exporter of basmati rice, Pakistan, used "Guard Supreme Basmati" for an assortment of foods.[125] The corporation changed the trademark after pressure from India's Basmati Development Fund.[126] The

Basmati Development Fund is actively involved in opposing the other trademarks.[127]

IX. Possible Methods To Protect Indian Rice Industry

India may safely grant product patents for Western inventions if India speeds up efforts to patent Indian products.[128] What India needs to protect its indigenous plant knowledge is a combination of "scientific mumbo-jumbo and legal savvy."[129] The CSIR formed a team that identified 400 herbs with medicinal uses.[130] Now the CSIR plans to seek patents for these cures to prevent foreign companies from claiming these remedies.[131]

A. Pursue Cancellation of U.S. Patent

The PTO seldom fully cancels a patent once granted.[132] However, the USPTO may cancel a patent for a limited period after issuing the patent.[133] If a patented invention is shown to not be novel, useful, or obvious, then the PTO may cancel the patent.[134]

For RiceTec's basmati patent, India's best point of attack is novelty. DNA fingerprinting may determine whether RiceTec's rice germ plasm originates from a naturally occurring rice.[135] If so, then India could argue that RiceTec's rice contains no substantial differences from a naturally occurring variety, negating the rice's novelty. RiceTec maintains that their patented rice's breeding material came partly from an agricultural seed repository in Idaho that is available to anyone.[136]

If the rice provides no substantial benefits over natural basmati, India may attack the patented rice's usefulness. RiceTec's patent describes the plant as being cultivated in only the Americas and the Caribbean. RiceTec may seek to counter India's claim of a lack of utility. RiceTec could state that the company's rice plant is useful because it grows in a region that does not naturally allow basmati rice to grow.

Indian government officials and rice industry representatives have publicly stated that growers cannot cultivate basmati rice outside of the northern region of the Indian subcontinent. Similar statements have expressed that RiceTec's rice is the same type of rice grown in India for many years. The Indian government should decide on whether RiceTec's rice is the same as Indian basmati or different. If the patent rice is identical to Indian basmati, then RiceTec's invention is not novel. If the rice is not the same, then India may lose a contest on novelty, but may consider geographic indication protection.

B. Plant Breeder Rights

India currently provides no protection for plant varieties. TRIPs only provides plant variety dispute settlement to countries that have national plant variety protection. The Indian parliament unsuccessfully attempted to pass a plant variety protection law in 1994. If India adopts a plant variety patent

law soon, India may pursue international protection of indigenous plants.

However, any protection will only pertain to future acts as TRIPs will not apply plant variety protection retroactively. India cannot use TRIPs to contest foreign plant patents if India does not provide plant variety protection at home. Previous Indian governments did not pass a plant protection act, despite urging by Indian professionals in the environmental, food, and patent fields.[137] If such an Indian plant patent system existed, India would have an easier task of protecting its basmati rice industry today.

Although this avenue is currently ineffective to thwart RiceTec's patent, passing a plant patent act now will be valuable for future disputes. The TRIPs agreement requires that any laws on biodiversity, plant, and microorganism protection be in place before 2000.[138] India has not yet begun enacting such legislation.[139]

C. Trademark, Certified Mark, Co-op Mark

RiceTec has a registered U.S. trademark for "Texmati." The trademark registration claims that RiceTec has used "Texmati" for the previous twenty years. If India cannot refute this statement, passing off is hard to prove.

Again, TRIPs provides no dispute resolution process if a member country does not have a conflicting trademark under its own laws. No Indian trademark exists for "basmati."[140] RiceTec

does not have a registered trademark of "basmati" anywhere. In the U.S., the word, "basmati," is not registered alone, although other companies have registrations for phrases containing the term. These registrations contain disclaimers that no claim is asserted to the word, "basmati." India needs to consider whether "basmati" should be trademarked in India first, then in other countries.

If India is unsuccessful in pursuing trademark protection, certified marks or collective marks may be worth considering. A certified mark may indicate to consumers that the rice was grown in the Himalayan region of India, as Columbia's coffee growers demonstrate through their Juan Valdez marketing promotion. Perhaps India's rice exporting organizations should pursue creation of a collective mark to distinguish rice from India's rice growers.

D. Marketing

Perhaps Indian basmati's greatest disadvantage to American basmati is poor marketing by the Indian rice industry. Today, the two basmatis do not compete directly in the U.S. Currently U.S. supermarkets usually do not stock the Indian product.[141] Normally, Indian basmati sells only in large bags in specialty markets.[142] Specialty markets do not sell the American basmati.

Hopefully, improved marketing can allow Indian basmati to prevail over American basmati. India may benefit by aggressively competing directly with Texmati and other American basmatis.[143]

If store shelves stocked Indian and American basmatis side-by-side, consumers may choose the Indian variety. Informal taste comparisons seem to show that Texmati's flavor and aroma is inferior to the Indian variety. Indeed, one culinary expert described Texmati rice as being starchier and having less aroma than Indian basmati rice.[144] The Indian basmati rice was more fragrant and saliently superior to the Texmati rice.[145] This important distinction, along with Indian rice being generally less expensive, in the U.S., than U.S. rice,[146] should enable India to increase revenue while diminishing RiceTec's market share.

A recent technological development by the Indian Agricultural Research Institute may increase India's basmati rice production.[147] This development, India's first hybrid basmati rice, may give a higher yield than any current Indian basmati rice.[148] If India's new basmati rice successfully competes with RiceTec's Texmati, then India's exploitation of biotechnology could increase the Indian rice industry's profits. If this Indian hybrid is indeed superior to other basmatis, the Indian government can help the Indian rice industry by passing the appropriate patent legislation and pursuing international intellectual property protection for this hybrid rice.

However, bioengineering of food products does not always spell success in the marketplace. For example, U.S. tomato growers breed varieties of tomatoes that resist damage when

hauled in trucks, stay fresh for longer time periods, and even have a square shape to improve the packing arrangement in cans. However, these significant improvements result in a dramatic loss of flavor.

India markets a high-yielding disease-resistant basmati rice variety, "Pusa No. 1," that is not as fragrant or flavorful as traditional Indian basmati rice.[149] Indian basmati rice commands a high price for its delicious traditional flavor.[150] In the eighties Pakistan introduced high-yielding varieties to improve productivity.[151] Some believe that the Pakistani rice industry currently receives a lower price for its basmati rice because Indian basmati rice is perceived as a higher quality basmati rice.[152] Fearing a similar fate, Indian basmati exporters hope that the Indian government designates rices like Pusa No. 1 as "basmati-parentaged" instead of "basmati."[153] They hope that this will help consumers to not become confused by lower quality basmati-like rice.[154]

Even India's food and commerce ministries refuse to recognize Pusa No. 1 as basmati rice.[155] Perhaps the Indian government should also seek to have foreign governments to classify RiceTec's Texmati and similar rices as basmati-parentaged. Such a description may assist consumers in identifying Indian rices and Indian-style rices.

E. Do Nothing

If India were to do nothing regarding RiceTec's patent, India's basmati market may suffer little, if any, damage. RiceTec's U.S. patent provides no advantage over Indian growers. U.S. patent laws do not apply to India.[156]

A patent does not grant the patentee the right to use an invention. A patent merely grants the right to exclude others from using the invention for twenty years. If India successfully convinces the PTO to cancel RiceTec's patent, RiceTec would still be free to use the rice as no other patent exists to be infringed. Canceling the patent only allows anyone to use the rice. Also, India still can continue to sell its basmati worldwide, whether the USPTO cancels the patent or not.

X. Suggested Future Efforts

* Develop home country protection for trademarks, plant variety protection, and geographic indication to take advantage of international agreements.

* Build computer databases to document and protect Indian plants and plant products.

* Employ Indian embassies to monitor patents, trademarks, and other intellectual property rights in foreign countries.

* Follow Malaysia's practice of conducting research and collecting information on traditional Malay medicinal plants with the intention of patenting them for commercial purposes.[157]

XI. Conclusion

Initially, RiceTec's patent seems to misappropriate India's national heritage in basmati rice. However, after learning about the myriad intellectual property schemes, the extent of the Texmati patent rights seems limited. As a practical matter quality Indian basmati rice is still superior to Texmati. It is incumbent upon the Indian rice industry to aggressively ensure that this message reaches the consumer. Concerted efforts between Indian business and government can effectively promote the use of India's large pool of scientific manpower to protect indigenous plants from exclusively foreign exploitation. This technologically-endowed work force provides potential for India to profit from improved intellectual property protection.

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[2] *Id.*
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[6] *Id.* at http://www.uspto.gov/web/offices/tac/tmfaq.htm#DefineTrademark accessed March 7, 1999.
[7] *Id.*
[8] *Id.*
[9] *Id.* at http://www.uspto.gov/web/offices/tac/tmfaq.htm#DefineCertMark accessed March 7, 1999.
[10] *Id.* at http://www.uspto.gov/web/offices/tac/tmfaq.htm#DefineCollMark accessed March 7, 1999.
[11] 7 U.S.C. 2321-2331, 2351-2357, 2371-2372, 2401-2404, 2421-2427, 2441-2443, 2461-2463; 2481-2486, 2501-2504, 2531-2532, 2541-2545, 2561-2570, 2581-2583 (1994).
[12] Website of USDA, http://www.ams.usda.gov/science/pvp.htm accessed March 14, 1999.
[13] Website of WTO, http://www.wto.org/about/facts6.htm accessed April 12, 1999.
[14] *Id.*
[15] *Id.*
[16] *Id.*
[17] *Id.*
[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] "UPOV" is the customary abbreviation based on the initials of its name in French: Union pour la Protection des Obtentions Végétales. *See* website of the UPOV, http://www.upov.int/eng/upov/union.htm accessed April 12, 1999.
[22] Website of WTO.
[23] Business Line, Feb. 20, 1998, Section: Business.
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[31] *Id.*
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[34] *Id.*
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[36] New Scientist, Feb. 8, 1997, p. 11.
[37] *Id.*
[38] *Id.*
[39] Compass Newswire, Jun. 16, 1997, Section: In the News, "Neem Trees Set To Save Taj Mahal."
[40] The Neem Foundation is based in Bombay, India. Compass Newswire, Jun. 16, 1997, Section: In the News, "Neem Trees Set To Save Taj Mahal."
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[42] The Tampa Tribune, Mar. 29, 1997, Section: Home and Garden, p. 1.
[43] *Id.*
[44] Bangor Daily News (Bangor, Maine), Dec. 5, 1997, "'Miracle tree' has promise."
[45] Compass Newswire, Jun. 16, 1997.
[46] The Tampa Tribune, Mar. 29, 1997, Section: Home and Garden, p. 1.
[47] dihydro-azadirachtin
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[79] *Id.* at 35.
[80] The Virginian-Pilot, F5, August 6, 1997.
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[83] FT Asia Intelligence Wire, February 18, 1998.
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[86] Website of The Economic Times, http://www.economictimes.com/060399/06comm02.htm, accessed May 5, 1999.
[87] *Id.*
[88] A metric ton equals 1000 kilograms, approximately 2200 U.S. pounds.
[89] Website of The Economic Times, http://www.economictimes.com/060399/06comm02.htm.
[90] *Id.*
[91] *Id.*
[92] *Id.*
[93] The Virginian-Pilot, F5, August 6, 1997.
[94] Business India, April 20, 1998.
[95] Technically, the patent is issued in the name of the inventors, Eugenio S. Sarreal, et al., with their employer, RiceTec, recorded as the assignee. Almost always, an empoyer holds the complete patent rights to an employee's inventions.

[96] The patent is available from the database on the USPTO website, http://164.195.100.11/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=/netahtml/srchnum.htm&r=1&f=G&l=50&s1='
56 63484'.WKU.&OS=PN/5663484&RS=PN/5663484, accessed May 5, 1999.
[97] Website of Business Line, http://www.indiaserver.com/bline/1998/04/25/stories/1425003a.htm, accessed May 5, 1999.
[98] Business India, April 20, 1998.
[99] Website of Consulta Juris (Indian Law Firm), http://www.cj-law.com/ptc.htm, accessed May 5, 1999.
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] India Today, Sep. 8, 1997, Section: Science, p. 56.
[104] *Id.*
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[106] Business Line, Feb. 18, 1998, Section: Business.
[107] The Nation (Pakistan), April 9, 1999, available on Westlaw Service at 1999 WL 5870950.
[108] *Id.*
[109] *Id.*
[110] BBC Summary of World Broadcasts, Part 3 Asia-Pacific, February 18, 1998.
[111] New Straits Times (Malaysia), April 19, 1998, Section: National, p. 7.
[112] Website of Business Line, http://www.indiaserver.com/bline/1998/04/25/stories/1425003a.htm, accessed May 5, 1999.
[113] *Id.*
[114] Business India, April 20, 1998.
[115] New Straits Times (Malaysia), April 19, 1998, Section: National, p. 7.
[116] Website of Economic Times (India), http://www.economictimes.com/250399/25econ14.htm, accessed May 5, 1999.
[117] Business India, April 20, 1998.
[118] *Id.*
[119] Website of Economic Times (India), http://www.economictimes.com/170399/17econ04.htm, accessed May 5, 1999.
[120] *Id.*
[121] Middle East News Items, September 13, 1998.
[122] *Id.*
[123] Website of India IP, http://www.indiaip.com/main/news/basmati_issue.htm, accessed May 5, 1999.
[124] *Id.*
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[126] *Id.*
[127] *Id.*
[128] BBC Summary of World Broadcasts, Part 3 Asia-Pacific, Aug. 27, 1997, Source: All-India Radio.
[129] India Today, Sep. 8, 1997, Section: Science, p. 56.
[130] *Id.*
[131] *Id.*
[132] *Id.*
[133] USPTO Website, http://www.uspto.gov/web/offices/pac/doc/general/correct.htm, accessed May 7, 1999.
[134] *Id.*
[135] New Straits Times (Malaysia), April 19, 1998, Section: National, p. 7.
[136] The Fort Worth Star-Telegram, May 25, 1998, p. 12.
[137] Website of The Hindustan Times, http://www.hindustantimes.com/ht/nonfrm/230398/demat04.htm, accessed April 8, 1999.
[138] *Id.*
[139] *Id.*
[140] San Antonio Express-News, April 12, 1998, Editorial p. 2, part G.
[141] *Id.*

142 *Id.*

143 Lundberg Family Farms of California also sells its own variety of basmati rice. http://www.lundberg.com/variety.html, accessed May 7, 1999.

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145 *Id.*

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155 *Id.*

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