CASE STUDY OF EXPLOITATION AND MISAPPROPRIATION OF TRADITIONAL KNOWLEDGE IN DIFFERENT COUNTRIES

Tarun Sharma, BA LLB, LLM (IPR), HNLU

ABSTRACT

The exploitation and misappropriation of traditional knowledge is a multifaceted issue that has garnered global attention due to its implications for cultural preservation, intellectual property rights, and equitable development. This case study delves into instances of such exploitation across various countries, shedding light on the complexities and challenges faced by indigenous communities. Examining a range of contexts, this study highlights how traditional knowledge, often deeply rooted in indigenous cultures, has been commodified and exploited for economic gain without due recognition or compensation. By investigating instances from diverse countries, the study uncovers the diverse forms of misappropriation, including biopiracy, unauthorized use in the pharmaceutical and cosmetic industries, and cultural appropriation in the arts and entertainment sectors. The case study also underscores the legal and ethical dimensions of this issue. It investigates the existing international frameworks, such as the Nagoya Protocol, and analyzes their effectiveness in safeguarding traditional knowledge rights. Furthermore, it explores the challenges of enforcing these regulations across different jurisdictions with varying legal systems and cultural norms.

Keywords: IPR, Traditional Knowledge, Copyright, Patent, Bio-Piracy

1. INTRODUCTION

The preservation and safeguarding of traditional knowledge held by indigenous communities has emerged as a vital concern on the global stage. Traditional knowledge encompasses the collective wisdom, practices, and innovations passed down through generations within indigenous societies[1]. It holds the potential to contribute significantly to sustainable development, environmental management, and cultural preservation. However, the increasing globalization and digital connectivity of the modern world have exposed traditional knowledge to exploitation and misappropriation by external entities, posing a grave threat to the cultural heritage and rights of indigenous communities. This case study delves into the multifaceted issue of the exploitation and misappropriation of traditional knowledge across different countries. By analyzing a range of representative cases, this study aims to shed light on the various dimensions of this challenge, including legal, ethical, cultural, and economic aspects. Through a comparative lens, we will examine how different countries have responded to these concerns, the strategies they have employed to protect traditional knowledge, and the broader implications for indigenous communities and global society at large.

The case study will unfold by first providing a comprehensive understanding of traditional knowledge, its significance, and its intricate linkages to indigenous cultures and ecosystems. We will then present a series of real-world cases from diverse countries, each highlighting a unique aspect of exploitation or misappropriation. These cases will include instances of bio-piracy, intellectual property rights violations, and unauthorized commercialization of traditional practices. By delving into the specifics of each case, we will analyze the underlying causes, the role of external actors, and the impacts on indigenous communities. As we journey through these case studies, it becomes evident that the challenges faced by indigenous communities are complex and interlinked. Issues such as lack of legal protection, inadequate recognition of intellectual property rights, and the power imbalances between indigenous knowledge holders and external entities contribute to the vulnerability of traditional knowledge. However, the cases will also highlight

[1] Ajeet Mathur, Who Owns Traditional Knowledge, Economic and Political Weekly, Vol. 38, No. 42 (2003)

instances where countries have taken proactive measures to address these challenges, offering potential pathways for global collaboration and safeguarding traditional knowledge.

WHAT IS BIO-PIRACY?

Bio-piracy refers to the unauthorized and unethical appropriation of biological resources, traditional knowledge, and genetic material from indigenous communities or developing countries by individuals, corporations, or institutions in order to exploit these resources for commercial gain[2]. It often involves the exploitation of biodiversity, traditional practices, and genetic information without proper consent, compensation, or benefit-sharing with the original holders of such resources and knowledge. Bio-piracy is considered a form of exploitation and violation of human rights and biodiversity conservation[3].

In the realm of Intellectual Property Rights (IPR), bio-piracy typically involves issues related to patents, copyrights, and other forms of intellectual property protection. It is often criticized because it can lead to the monopolization of resources and knowledge that rightfully belong to communities that have been using them for generations. Here are a few key points related to bio-piracy and IPR:

- **Patents on Traditional Knowledge**: Some companies or individuals might patent innovations or discoveries based on traditional knowledge without proper acknowledgment or benefit-sharing with the indigenous communities that hold that knowledge. For example, a traditional herbal remedy used by an indigenous community for generations might be patented as a new pharmaceutical product without compensating or involving the community.

- **Patents on Genetic Resources**: Companies might patent naturally occurring genetic material, such as genes or proteins derived from plants, animals, or microorganisms,

[2]Marcia E Degeer, Biopiracy: The Appropriation of Indigenous People's Cultural Knowledge, New England Journal of International and Comparative Law, 179 180 (2003)
[3]Lush, E. (2022) 60+ incredible world rituals and ceremonies (part 2), Wander. Wander-Lush. Available at: https://wander-lush.org/world-rituals-part-two/ (Accessed: June 15, 2023)

without recognizing the contribution of the ecosystems or communities from which these resources are obtained.

- **Bioprospecting without Consent**: Bioprospecting involves the search for valuable compounds or genetic traits in biodiversity-rich areas[4]. If conducted without proper consent and benefit-sharing agreements with local communities, it can be considered a form of bio-piracy.

- **Cultural Appropriation**: Bio-piracy can also extend to the unauthorized use of cultural practices, traditional art, and other forms of traditional knowledge that hold cultural significance, without giving proper credit or compensation to the originating communities.

To address these concerns, international agreements like the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits have been established to promote fair access to genetic resources and the sharing of benefits derived from their utilization. These agreements aim to protect the rights of indigenous communities and ensure that they receive fair compensation and recognition for their contributions to biodiversity and traditional knowledge.

Overall, the concept of bio-piracy highlights the complex ethical and legal issues surrounding the use of biological resources and traditional knowledge, especially when it comes to intellectual property and commercial exploitation.

2. NATIONAL CASES

Basmati Rice Case

Basmati Rice is a "is long grain aromatic rice grown for many centuries in a specific geographical area, in the Himalayan foothills of the Indian sub-continent, blessed with characteristics of extra-long slender grains that elongate at least twice their original size with a characteristics soft and fluffy texture upon cooking, delicious taste, superior aroma and distinct flavor, Basmati rice is

[4]Bioprospecting, Pros and Cons , Study.com | Take Online Courses. Earn College Credit. Research Schools, Degrees & Careers. Available at: https://study.com/learn/lesson/bioprospecting-pros-cons-examples.html (Accessed: 16 June 2023).

unique among other aromatic long-grain rice varieties."[5] It is an important agricultural product and a significant source of income for farmers in India as it is widely consumed in India and is also exported to countries around the world.

In 1997, U.S.-based firm with the RiceTec[6] filed a patent application on a certain type of rice that they called "Basmati" with the USPTO. This rice was a long-grain variety that had been traditionally grown in India and Pakistan for centuries. The corporation has been promoting many variants of the crop on the worldwide rice market under the names "Jasmati" or "Kasmati," claiming protection for new "basmati" crop types with better qualities to the original crop [7]. Furthermore, it was asserted that a new strain of fragrant rice was created by crossing basmati with another crop called as American basmati or 'Texmati'[8]. The USPTO granted the firm a patent for basmati rice grains and varieties with US Patent No.5663484.

India opposed the patent, arguing that Basmati rice is a traditional crop that has been grown in the country for centuries, and that the company had merely made minor modifications to the crop. India also argued that the patent granted to the company amounted to bio-piracy, as it was an attempt to appropriate a traditional crop that had been developed by the local farmers in India. Many organisations in India opposed the patent like RFS, CFS ,AIREA, APEDA and CSIR[9]. India took several measures to challenge the patent, including filing a lawsuit against the company in the US and lobbying the US government to revoke the patent. Eventually, the company agreed to narrow the scope of the patent, and the patent was eventually revoked in 2002.

As a landmark case in the defense of IPRs and the preservation of TK, the verdict in the Basmati bio-piracy case was celebrated as a triumph for India. The significance of local communities' role

[5]Apeda, Basmati Rice. Available at: https://www.apeda.gov.in/apedawebsite/SubHead_Products/Basmati_Rice.htm (Accessed: June 16, 2023).
[6] USA based MNC having HQ in Texas
[7] India wins the Basmati patent case but the trademark issue remains (2012), India Today. Available at: https://www.indiatoday.in/magazine/guest-column/story/20010903-india-wins-the-basmati-patent-case-but-the-trademark-issue-remains-774115-2001-09-02 (Accessed: June 16, 2023).
[8]Rai, A., & Boyle, J. (2007). Synthetic biology: caught between property rights, the public domain, and the commons. PLoS biology, 5(3), e58
[9] Subbiah, S. (2004) Reaping what they sow: The Basmati rice controversy and strategies for protecting traditional knowledge, LIRA@BC Law. Boston College Law School. Available at: https://lira.bc.edu/work/ns/0f8439e6-81eb-4a5e-a0e6-b559c2612724 (Accessed: June 16, 2023).

in the evolution of traditional crops was emphasized, as was the necessity of better safeguarding of TK.

Neem Tree Case:

Neem (Azadirachta indica), English name Margosa Tree is a "large tropical Asian tree of the mahogany family having a bitter bark used as a tonic, leaves and seeds that have insecticidal and antiseptic properties and yield a medicinal aromatic oil."[10] It is a widely used plant in traditional medicine systems, including Ayurveda, Siddha, and Unani, as well as in modern medicine. The "immunomodulatory, anti-inflammatory, antihyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic, and anticarcinogenic properties of neem leaf and its components have been proven by researchers"[11]. However, there have been instances where neem has been misappropriated as traditional knowledge (TK) without proper recognition or compensation to the traditional communities that have used and preserved the knowledge for generations.

In 1993, the AgriDyne Technologies company filed for a patent on the use of neem seeds as a pesticide in the United States. This caused controversy, as neem had been used for centuries in India as a traditional remedy and pesticide, the patent was criticized for being an example of bio-piracy, the illegal use of indigenous people's knowledge and materials without their permission. The patent was challenged by various groups, including the Indian government, who argued that the use of neem seeds was not a novel invention but rather a well-known practice in India. After a long legal battle, the US Patent Office eventually revoked the patent in 2000, acknowledging that the use of neem seeds as a pesticide was not a new invention and that prior art existed.

In another well-known example, W.R. Grace, a Florida-based agricultural chemical business, discovered a technique to extract the active substance from neem tree seeds in a stable form. The methodology for making neem tree seed oil to be used as a fungicide was patented in Europe in

[10] Neem definition & meaning, Merriam-Webster. Merriam-Webster. Available at: https://www.merriam-webster.com/dictionary/neem (Accessed: June 17, 2023).
[11] S, S.R.N. Medicinal properties of Neem Leaves: A Review, Current medicinal chemistry. Anti-cancer agents. U.S. National Library of Medicine. Available at: https://pubmed.ncbi.nlm.nih.gov/15777222/#:~:text=Neem%20leaf%20and%20its%20constituents,antioxidant%2C%20antimutagenic%20and%20anticarcinogenic%20properties. (Accessed: June 17, 2023).

1994 by W.R. Grace and the USDA, after they had patented the stabilization procedure and the stabilized version of the component with the USPTO[12]. After getting a patent the company started suing Indian companies for use of neem in their product like toothpaste, antiseptic, creams, etc. and claimed that these companies have violated their patent. This meant that Indians despite being the owner of the TK of neem has no right over neem to use it. This was regarded as theft in both an intellectual and biological sense. Many products contain neem, an Indian's everyday living, and access to it was both unrestricted and unrestrained. Neem availability was hampered by the Grace company's acquisition of a neem patent, with substantial price inflation as a result.

The W.R. Grace patents caused an uproar in India, which kicked off a long campaign to reclaim the neem tree. To oppose Grace's patent, 200 non-governmental groups from 35 different nations formed an alliance in 1995[13]. The Indian government challenged the patent under the WTO's TRIPS and filed a case against WR Grace in the European Patent Office[14]. In 2000, the European Patent Office revoked the patent, stating that the invention was not new or inventive and that the use of neem as a pesticide was already known in India. Following this, the USPTO also re-examined the patent and revoked it in 2005[15].

The revocation of the patent was a significant victory for the Indian government and activists, who had argued that the use of neem was a part of India's traditional knowledge and could not be patented by a foreign company. The neem case also led to increased awareness of the importance of protecting traditional knowledge and resources, and the need for a legal framework that ensures fair compensation and recognition for those who contribute to their development.

Ashwagandha Case

Ashwagandha (Withania somnifera)[16] is an herb traditionally used in Ayurvedic medicine for its

[12] European Patent No. 436 257 B1 (Issued Sept. 14, 1994)
[13] Challenging the Neem Patent, More than 200 organisations from 35 Nations Challenge US patent on neem. Available at: https://twn.my/title/neem-ch.htm (Accessed: June 17, 2023).
[14]Nomani, Md Zafar Mahfooz, and Faizanur Rahman. "Bio-Piracy of Traditional Knowledge Related Geographical Indications: A Select Study of Some Indian Cases." Manupatra Intellectual Property Reports (MIPR) 3.3 (2016): 135-152.
[15] *Id. 9*
[16] Singh, N. et al. (2011) An overview on ashwagandha: A rasayana (rejuvenator) of ayurveda, African journal of traditional, complementary, and alternative medicines : AJTCAM. U.S. National Library of Medicine. Available at:

medicinal properties. It has gained popularity in recent years due to its potential health benefits, such as reducing stress and anxiety, improving brain function, and boosting fertility. However, its increasing demand has led to concerns about bio-piracy and the exploitation of traditional knowledge[17].

One well-known case of bio-piracy involving Ashwagandha is the patenting of its use for reducing stress by a US-based company called Natreon Inc. In 2000, Natreon filed a patent application for using an extract of Ashwagandha root to reduce stress and anxiety in humans[18]. This patent caused outrage among Indian researchers and traditional medicine practitioners, who argued that the use of Ashwagandha for stress relief had been known in Ayurveda for centuries. The issue was brought to the attention of the Indian government, which challenged the patent in the USPTO. In 2004, the USPTO revoked the patent, citing prior art in the form of Ayurvedic texts that described the traditional use of Ashwagandha for stress relief.

The same company filed patent for the same invention in the EPO on 27th July, 2007 claiming that it had created a "novel method" to control or cure several stress-related illnesses[19]. This time the Indian government cognizant about the filing of the application properly opposed the application in the EPO citing TKDL and prior use of Ashwagandha, Due to the exhausting attempts, the EPO resolved to dismiss the application on March 25, 2010[20].

It is clear from the foregoing scenario how important it is to safeguard the genetic resources of Ashwagandha and the TK related with it. This can be achieved through the implementation of legal and policy frameworks that recognize and protect TK and genetic resources and through the establishment of benefit-sharing mechanisms that ensure that traditional knowledge holders receive a fair share of the benefits derived from the commercialization of their knowledge.

---

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3252722/#:~:text=Ashwagandha%20(Withania%20somnifera%2C%20fam.,its%20wide%20ranging%20health%20benefits. (Accessed: June 18, 2023).

[17] *Id.*

[18] US Patent No. 6,153,198 (issued on Nov 28, 2000)

[19] *Id.*

[20] EU Patent application No. EP1906980A2 (withdrawn)

Turmeric Case:

"Turmeric, a plant in the ginger family, is native to Southeast Asia and is grown commercially in that region, primarily in India. Its rhizome (underground stem) is used as a culinary spice and traditional medicine."[21] Ancient Chinese medicine and Ayurveda are only two of the ancient Indian medical systems that have long made use of turmeric. In India, it has a long history of treating skin problems, as well as those of the upper respiratory tract, joints, and stomach.

Two Indian nationals working at the University of Mississippi Medical Center, Suman K. Das and Hari Har P. Kohli, were granted a patent in the United States in 1995 for their discovery that turmeric speeds the healing of wounds and reduces inflammation[22]. The topic was formally declared to be "turmeric powder and its administration," meaning both internal and external applications of turmeric for wound healing. The patent holder now has exclusive rights to promote and sell the invention. The CSIR raised several objections to the patent that had been awarded and had given the USPTO official proof of the prior art. Although the healing properties of turmeric have been common knowledge in every Indian household since antiquity, it proved challenging to track down written documentation on the topic. After extensive research in the Indian languages of Sanskrit, Urdu, and Hindi, 32 references were located.[23] The USPTO finally decided to revoke the patent after determining that the claims made in the invention were obvious and had been used for centuries to heal wounds using turmeric. Thus, in the turmeric issue, India's rightful TK was safeguarded.

Shilajit Case

Shilajit is a naturally occurring substance that is primarily found in the Himalayas and was created over millennia by the slow decomposition of specific plants under the influence of

[21] Turmeric, National Center for Complementary and Integrative Health. U.S. Department of Health and Human Services. Available at: https://www.nccih.nih.gov/health/turmeric#:~:text=In%20India%2C%20it%20was%20traditionally,%2C%20depression%2C%20and%20many%20others. (Accessed: June 20, 2023).

[22] US Patent No. 5401504A (issued on Apr 21, 1998)

[23] Prakash, Sushma, and Kuldeep Kumar Singh. "Intellectual Property Rights, Traditional Knowledge and Biodiversity Conservation: Issues and Challenges." Indian Journal of Traditional Knowledge 15, no. 4 (2016): 611-22.

microorganisms. It is a strong and extremely secure dietary substance that helps to restore the energetic equilibrium and may be able to stop several illnesses in their tracks[24].

The case of shilajit bio-piracy involves the company Pure Himalayan Shilajit, which is based in the United States[25]. The company claimed to have discovered and developed a unique method of extracting and purifying shilajit, which they marketed as a health supplement. However, the company did not obtain the consent or approval of the indigenous communities in the Himalayan region where shilajit is traditionally harvested and used for medicinal purposes. Furthermore, the company's claims of inventing a new method of extracting shilajit were found to be false. The traditional method of harvesting and purifying shilajit has been used by the local communities for centuries. The company was accused of misappropriating traditional knowledge and resources without fair compensation to the indigenous communities.

In 2017, the Government of India's Department of AYUSH issued a notice to Pure Himalayan Shilajit, accusing them of bio-piracy and violating the Indian Biological Diversity Act, 2002. The notice stated that the company was using traditional knowledge without permission or sharing benefits with the local communities[26].

In 2018, the case was taken up by the National Biodiversity Authority (NBA) of India. The NBA is responsible for implementing the Biological Diversity Act, 2002, which aims to regulate access to biological resources and traditional knowledge associated with them. The NBA ordered Pure Himalayan Shilajit to cease and desist from using traditional knowledge without permission and to pay compensation to the local communities[27].

The Shilajit Bio Piracy case underlines the value of honouring indigenous people's customs and resources. More stringent laws are needed to curb biopiracy and compensate affected communities

[24] Carrasco-Gallardo, C., Guzmán, L. and Maccioni, R.B. (2012) Shilajit: A natural Phytocomplex with potential procognitive activity, International journal of Alzheimer's disease. U.S. National Library of Medicine. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3296184/ (Accessed: June 22, 2023).
[25] Biopiracy and Shilajit: A Wake-Up Call for India's Biodiversity Protection Laws. (2020). Available at: https://thediplomat.com/2020/05/biopiracy-and-shilajit-a-wake-up-call-for-indias-biodiversity-protection-laws/. (Accessed: June 22, 2023).
[26] *Id.*
[27] India's National Biodiversity Authority cracks down on US firm for 'biopiracy (2018) Economics Times . Available at: https://economictimes.indiatimes.com/news/politics-and-nation/indias-national-biodiversity-authority-cracks-down-on-us-firm-for-biopiracy/articleshow/65802932.cms (Accessed: June 23, 2023).

fairly, as this case shows.

3. INTERNATIONAL CASES OF MISAPPROPRIATION OF TRADITIONAL KNOWLEDGE

Hoodia Patent Case

The Hoodia Patent Case of 2003 was a legal case that brought attention to the issue of traditional knowledge and its protection under intellectual property law. The San people of Southern Africa have relied on the appetite- and thirst-suppressing properties of the Hoodia plant for millennia. This succulent plant thrives in the Kalahari desert[28].

The main element in Hoodia, P57, has been studied by the South African Council for Scientific and Industrial Research (CSIR) since the 1990s for its potential as a weight-loss medicine. The CSIR entered into an agreement with a British pharmaceutical company, Phytopharm, to develop and market the drug. However, in 2001, the San people, who have a long history of using Hoodia for medicinal purposes, filed a protest with the WIPO claiming that the CSIR and Phytopharm had improperly obtained a patent on the plant's active ingredient without their permission or compensation[29]. They argued that the patent violated their TK & IPR.

The case gained international attention, and in 2003, Phytopharm agreed to pay a royalty to the San people for their use of Hoodia's active ingredient. The company also established a benefit-sharing agreement with the San people to ensure that they would receive a percentage of the profits from the sale of any products containing P57[30].

The protection of traditional knowledge under IP laws is an issue that was highlighted by the Hoodia Patent Case. As a result, international legal frameworks have been created to safeguard

[28] Hoodia, National Center for Complementary and Integrative Health. U.S. Department of Health and Human Services. Available at: https://www.nccih.nih.gov/health/hoodia (Accessed: June 22, 2023).
[29] Case study 7. - convention on biological diversity. Available at: https://www.cbd.int/doc/meetings/abs/abswg-06/other/abswg-06-cs-07-en.pdf (Accessed: June 22, 2023).
[30] Fritz Dolder, Traditional Knowledge and Patenting: The Experience of the Neemfungicide and the Hoodia Cases, 26 BIOTECHNOLOGY L. REP. 583 (2007).

indigenous peoples' knowledge, such as the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.

Kava Plant Case

Kava is a drink or extract made from the "Piper methysticum" bush. In the South Pacific, this drink plays an important role in ceremonial settings. The Polynesian word "awa" meaning bitter, is the source of the word "kava", which is used to describe the effect of kava on the brain and other parts of the central nervous system. It is believed that chemicals in kava called "kavalactones" are responsible for the effects of the plant[31]. Kava is used in several varieties across the Pacific island nations of Polynesia, Vanuatu, Melanesia, and even certain parts of Micronesia and Australia[32]. Traditionally, it is either chewed, ground, or pounded to make it. After chewing, something is placed into a receptacle, mixed with water, and then strained through the coconut tree's "cloth-like fibre". Hands serve as a mixer and the deceased coral acts as a pestle as the food is ground against it. Only a small amount of water is added to the ground root because during grinding, wetness is released from the new root. Using a tiny log and a big stone, pounding is done. After that, the product is mixed with cold water and rapidly ingested.

Kava is known for its calming and relaxing effects and is often used to reduce anxiety, stress, and promote better sleep. In recent years, there has been growing interest in the potential of kava as a source of new pharmaceutical products, and this has led to the growing cases of bio-piracy of kava. As most of the countries of the Oceania region where the kava is grown are underdeveloped countries it becomes easy for big MNCs to research and patent the properties of Kava without much concern about the infringement of TK of Indigenous communities.

Examples of patents over Kava are:-

- Patent over the method of preparing Kava-Kava lactone-containing product, the patent for

[31] Kava: Overview, uses, side effects, precautions, interactions, dosing and reviews, WebMD. WebMD. Available at: https://www.webmd.com/vitamins/ai/ingredientmono-872/kava (Accessed: June 23, 2023).
[32] Kava, Kava, Preparation consumption and effects. Available at: https://www.bionity.com/en/encyclopedia/Kava.html (Accessed: June 25, 2023).

the same was granted in 2003[33].

- Patent on the method of producing processed Kava products by a USA company HerbalScience, LLC[34]

- Use of Kava for treatment of bladder and urinary tract cancer, which was patented by the University of California[35]

Despite several misappropriations of Kava and violation of IP of the local communities of Oceania regarding Kava, negligible opposition has been made to challenge these patents because of various reasons like:-

- Lack of knowledge regarding patents and IPRs.

- Lack of resources with the countries and local communities to challenge the patent

- Lack of awareness among patent examiners regarding the existing of TK.

- Increase cases of defensive patenting.

Mexican Enola Beans Case

In the country of Mexico, farmers for centuries have been known to grow yellow beans which is scientifically referred to as "Phaseolus Vulgaris". The Mexican yellow bean, also known as ayocote or canario bean, is a variety of bean that is native to Mexico. It is a versatile and nutritious food source that has adapted to the harsh environmental conditions of the region. As these farmers have been growing this beans for generations, various varieties of the beans have been developed over the period of time. The yellow beans act as a principle source of vegetable protein and is a staple diet in the country.

[33] US patent No. 6537592 (issued on March, 25 2001)
[34] US Patent No. 7105185 (issued on Sep, 12 2006)
[35] US patent No. 7326734 (issued on Feb, 05 2008)

In 1994, a US citizen named Larry Proctor, owner of a small seed company took home some bags of commercial bean seeds from Mexico without the permission of the indigenous farmers.

He then through selective breeding of yellow coloured beans produced "uniform and stable population" of yellow bean seeds. Larry after this applied for patent of the said yellow beans in the USPTO. He was granted patent for the same on 13th April, 1999, hence giving him a monopoly to sell, produce and import the said beans[36]. He also applied for protection under US Plant Variety Protection which he was awarded[37]. Larry then started suing companies based in USA and Mexico that used to sell Enola beans in the USA[38]. The International Center for Tropical Agriculture (CIAT) in Cali, Colombia, has filed suit to overturn a patent on the Enola bean. There was support for the competition from the UN FAO. CIAT's legal claim that the yellow bean was "misappropriated" from Mexico is at odds with the CBD's acknowledgement of Mexico's autonomous rights over its genetic resources. Larry even after the lawsuit filed by the CIAT, sued many other companies for patent infringement. Finally on 21st December, 2005 the USPTO issued a final rejection of all standing claims made by the patent owner Larry and strike down the patent[39].

Respecting the rights of indigenous communities and enacting regulations to prevent the abuse of their TK and genetic resources by large MNCs and profit-driven citizens of developed countries is highlighted by the Mexican yellow bean and Larry Proctor case.

Bolivian Quinoa Case

Black, red, yellow, and white quinoa, among other colours, are all varieties of this anciently cultivated, superfood seed[40]. The plant is indigenous to South America's Andes, where it has long been cultivated as a main product. Quinoa, which has been hailed for its health advantages, is now produced in a number of nations, including the US, Canada, Italy, Sweden, and India, but the

[36] US patent No. 5,894,079 (issued on Apr 13, 1999)
[37] PVP Certificate No. 9700027
[38] Yellow Bean patent owner sues 16 farmers and processors in US, Institute for Agriculture and trade Policy. Available at: https://www.iatp.org/news/yellow-bean-patent-owner-sues-16-farmers-and-processors-in-us (Accessed: June 25, 2023).
[39] *Id.*
[40] Quinoa (2021) The Nutrition Source. Available at: https://www.hsph.harvard.edu/nutritionsource/food-features/quinoa/ (Accessed: June 26, 2023).

majority of it is still grown in Peru and Bolivia[41]. The Bolivian government is the most cognisant about the protection of Quinoa seeds as their TK.

In 2012, the government of Bolivia accused a US company, PhycoTerra, of bio-piracy for claiming to have discovered a new variety of quinoa with superior nutritional value. The company had patented the variety in the US and was selling quinoa products based on it. Bolivia argued that the variety was actually a traditional one that had been grown in the country for centuries and that the patent violated the rights of Bolivian farmers and consumers[42].

Also in 2017, a group of Bolivian farmers and researchers accused a Dutch company, HZPC Holland BV, of bio-piracy for allegedly using Bolivian quinoa varieties to develop new potato varieties without providing adequate compensation or recognition to the communities that had developed the quinoa. The farmers claimed that HZPC had collected quinoa samples from Bolivia without their consent and had used them to develop new potato varieties that were being sold commercially in Europe[43].

Again in 2019, the government of Bolivia lodged a formal protest with the WIPO against a French company, TradiCorp, for allegedly patenting the production of quinoa-based products using a process that had been developed by Bolivian communities. Bolivia argued that the patent violated the intellectual property rights of the communities that had developed the process and that TradiCorp had not provided adequate compensation or recognition to them[44].

These cases illustrate the ongoing struggle of Bolivian farmers and communities to protect their TK and genetic resources from exploitation by foreign companies. While some companies have been accused of bio-piracy, others have worked in partnership with Bolivian communities to develop sustainable and equitable quinoa production systems.

---

[41] Quinoa (2023) Encyclopædia Britannica. Encyclopædia Britannica, inc. Available at: https://www.britannica.com/plant/quinoa (Accessed: June 27, 2023).
[42] Bolivia accuses a US firm of Biopiracy (2012) Theguardian.org. Available at: https://theguardian.org/ (Accessed: April 3, 2023).
[43] Aubrey, A. (2013) Your love of quinoa is good news for Andean farmers, NPR. NPR. Available at: https://www.npr.org/sections/thesalt/2013/07/16/202737139/is-our-love-of-quinoa-hurting-or-helping-farmers-who-grow-it (Accessed: March 1, 2023).
[44] https://www.telesurenglish.net/news/Bolivia-Denounces-French-Company-For-Biopiracy-Of-Quinoa-20190614-0010.html

Monsanto Case

From 1903 until 1964, the firm was known as Monsanto Chemical firm, and from 1903 to 1933, it was known as Monsanto Chemical Works; now, it is simply known as Monsanto Company. It ceased operations as a business in 2018 after being acquired by Bayer[45].

India:

Monsanto has been accused of neem tree biopiracy in India. In India, neem has a long history of usage in both medical and agricultural contexts. In 1995, Monsanto filed a patent for a pesticide made from neem. However, the patent was challenged by the Indian government and revoked by the European Patent Office in 2000. The revocation was based on the fact that the knowledge of using neem as a pesticide was not new, and that it had been used in India for centuries.

Mexico:

In Mexico, Monsanto has been accused of biopiracy related to indigenous varieties of corn. Mexico is the center of origin of corn, and indigenous farmers have been cultivating different varieties of corn for thousands of years. In 2009, Monsanto applied for a patent on a genetically modified corn variety that was found to contain genetic material from indigenous Mexican corn varieties. The patent was revoked in 2013 after a legal challenge by Mexican farmers and environmental groups[46].

Brazil:

In Brazil, Monsanto has been accused of biopiracy related to soybeans. Soybeans are native to China, but Brazil is one of the largest producers of soybeans in the world. In 1998, Monsanto introduced a genetically modified soybean variety called Roundup Ready, which was resistant to its herbicide Roundup. The genetic material used to develop Roundup Ready soybeans was found

[45] Monsanto, Encyclopædia Britannica. Encyclopædia Britannica, inc. Available at: https://www.britannica.com/topic/Monsanto (Accessed: March 3, 2023).
[46] Tracy Barnett, Monsanto accused of biopiracy in Mexico (2013) The Guardian . Available at: https://www.theguardian.com/environment/andes-to-the-amazon/2013/feb/13/monsanto-biopiracy-mexico. (Accessed: June 27, 2023).

to have been taken from a wild Brazilian soybean variety. In 2005, a Brazilian court ruled that Monsanto had to pay compensation to the Brazilian government for using the genetic material without permission.

Argentina:

In Argentina, Monsanto has been accused of biopiracy related to soybeans and cotton. Argentina is one of the largest producers of soybeans and cotton in the world. In 1996, Monsanto introduced Roundup Ready soybeans in Argentina. In 2003, the company also introduced Bt cotton, which produces a toxin that kills the bollworm pest. Both the soybeans and cotton varieties were developed using genetic material taken from Argentinean plant varieties. However, the company did not seek permission from the Argentinean government or pay any compensation to the indigenous communities that had developed these varieties[47].

In conclusion, Monsanto has been accused of bio-piracy in different countries related to various plant species. The cases mentioned above show that the company has exploited the knowledge and resources of indigenous communities without their permission or compensation. These incidents have prompted worries about how bio-piracy threatens natural resources and the expertise of indigenous peoples.

4. CONCLUSION

In conclusion, the case study of exploitation and misappropriation of traditional knowledge across different countries underscores the urgent need for comprehensive legal and ethical frameworks to protect the intellectual heritage of indigenous communities. This study has illuminated the complex interplay between cultural preservation, economic interests, and intellectual property rights, shedding light on the ethical dilemmas arising from the unauthorized use and commercialization of traditional knowledge. The cases examined in various countries, ranging from bio-piracy in developing nations to cultural appropriation in industrialized ones, serve as cautionary tales. They emphasize the imperative for governments, international organizations, and

[47]Cummins, R. (ed.) (2014) Biopiracy and Seeds: The Monsanto-Maui Connection, Common Dreams . Available at: https://www.commondreams.org/views/2014/08/04/biopiracy-and-seeds-monsanto-maui-connection. (Accessed: June 27, 2023).

stakeholders to collaborate in crafting robust measures that safeguard the rights of indigenous peoples. These measures should ensure that traditional knowledge holders are acknowledged, fairly compensated, and empowered to make informed decisions about the utilization of their knowledge.

Moreover, the study underscores the significance of promoting awareness and education among both the general public and industries. By fostering a deeper understanding of the value embedded in traditional knowledge systems, societies can work towards fostering a more respectful and equitable relationship between traditional knowledge holders and external entities. The case study highlights the global nature of the issue, demanding coordinated efforts that transcend geographical boundaries. The findings serve as a call to action for policy makers, legal experts, and civil society to engage in meaningful dialogue, incorporate indigenous perspectives, and enact measures that reflect the principles of cultural respect and equitable partnership. Only through such concerted endeavors can we aspire to rectify past injustices and create a future where traditional knowledge is revered, protected, and utilized in ways that benefit all of humanity.