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Seed Sovereignty and Biodiversity Conservation: Unpacking Vandana Shiva's Advocacy

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Abstract
Dr. Shiva's dedication and commitment to ecological integrity and sustainable practices in agriculture highlights the importance of seed sovereignty for biodiversity to ensure global food security. Her robust approach in her discourse criticizing industrial agricultural practices, patenting of seeds, genetic engineering, and corporations taking over seeds is commendable. Dr. Shiva illuminates the intricate connections between seed sovereignty and preserving indigenous agricultural practices. She opines that the local farmers must be given the basic rights to control their seeds, preserving the indigenous knowledge thereby fostering agroecological approaches to cultivation. The socio-economic complex consequences of her work would potentially empower the farmers and local communities at large that will more resilient and equitable agricultural system. By unpacking the subtle distinction of her advocacy, this paper fosters a fine distinction and understanding of the opportunities and challenges in connection with seed sovereignty and the preservation of biodiversity. The paper ultimately concludes with a comprehensive approach that can inform policies and practices that promote sustainable agriculture and protect our ecosystem. The research paper "**Seed Sovereignty and Biodiversity Conservation: Unpacking Vandana Shiva's Advocacy"** also reflects and studies an approach to make sure that humans will fulfill their roles and responsibilities in this intricate web of ecosystem ensuring every existence has its own identity and right to live. Shiva's central thought in "Who Feeds the World" asserts agriculture justice. Shiva's thirty years of study and research in this field draw genuine sustainability which could be practiced and incorporated. Vandana Shiva is against large-scale monocropping and genetic modifications but instead advocates agricultural practices, biodiversity, and indigenous farming techniques to solve the food crisis. The research paper will study the theories like biodiversity, symbiosis, biocentrism, anthropocentrism, interconnectedness, and ecocentrism. This research paper examines critically the multifaceted relationship between seed sovereignty, conservation of biodiversity, and the works of Vandana Shiva who has advocated through her works and influenced all towards a better ecosystem.

Keywords: Biocentrism, Anthropocentrism, Biodiversity, Ecocentrism, One foot-bowl theory

1. Introduction

Agriculture is the backbone of our country. It is such an incredible phenomenon that we have been practicing since time immemorial. This not only provides food to all but it constitutes around 38 to 45 percent of the world's labour force**.** This is the first practice wherein humans have come in close acquaintance with nature and assumed that extraordinary power to take control over it. This gave rise to an anthropomorphic perspective and thus subsequently started the overutilization, and destruction of the ecosystem in the name of civilization and development (Mgbeoji, Ikechi. 2006). At present

agriculture is taken for granted and very few understand the importance of it. We should understand the two realities that man is unaware of: agriculture has altered how we connect with nature and it is the prime source for the production of food.

Millions of people in the Third World have agriculture as their occupation and thus any issues related to agriculture affect not only the farmers at large but also the nations. The Third World countries to a certain extent follow indigenous practices but because of the poor economic conditions, these countries are easily exploited and fall victim to the developed countries. One such country is our nation which became prey to the theory of the Green Revolution. In the year 1961, when India was facing serious famine, the then Indian government and father of the green revolution in India Mr. M S Swaminathan welcomed Dr. Norman Borlaug, the plant scientist to understand this concept. At that point, India had no other choice but to accept as people were dying of hunger. The five states were chosen Punjab, Maharashtra, Andhra Pradesh, Karnataka, and Tamil Nadu.

Anthropologists have been studying, and analyzing agricultural practices and have made this their business. Man for his selfish gain has always put the rest at risk. The theory of Anthropology means human-centric. Humans consider themselves to be the supreme and take control of everything. On the contrary, people and organizations are working hard to bring harmony, to balance the interconnectedness between the species and the ecosystem. In the past few decades agrarian societies, human interaction with the ecosystem, the domestication of plants and animals, the importance of biodiversity, importance of food and resources are the burning topics that are studied intensively across the globe.

The present significant phenomena like seed patents, genetically modified crops (GMO), and monocultures are significant in reflecting the future of our ecosystem and planet.

This study aims to understand how genetically modified seeds, monocropping, and patenting of seeds are causing harm to agricultural practices.

1.2 Research Objectives

- To study the current state of seed sovereignty and its historical evolution as it can be examined with the conceptual framework and the importance of a sustainable food system.
- To study and understand how intellectual property rights have impacted the access, control, and patenting of seeds.
- To study the impact of seed patents on biodiversity and farmers' rights. The access the farmers and local people can have to exchange, save, and grow their own seeds.

1.3 Review of Literature

- According to Futo, Timija; Nasehi, Elnaz entitled “The Seeds of Vandana Shiva (2021): A Credible Actor of Change”, explains how Vandana Shiva, an environmental activism who speaks from an ecofeminist point of view, at the same time has introduced several concepts from related to women, farmers, ecology and reductionist society. The research paper also elaborates on different strategies that can be adopted to preserve native seeds and promote changes so that everything is balanced. The study throws insight into taking care of the ecosystem keeping other factors in mind.
- According to Vandana Shiva in the research paper titled “Satyagraha: The Highest Practise of Democracy and Freedom” published in SAGE journals in 2021, reflects how the national seed movement has gained momentum in preserving the seeds and spreading across the nation. The research paper explores how the salt satyagraha that was against the salt and how the champaran satyagraha which was against the cultivation of indigo motivated her to begin the Bija Satyagraha at Navdanya. This was Vandana Shiva’s Seed Freedom Movement. She is of the view that seeds exist in nature and it is free. They are a gift from nature and were taken care of by our ancestors. Thus, it becomes our responsibility to protect them and preserve them. The study explores about the

monocultures who claim that seed is a commodity and they have invented it, thus it can be patented. Such false claims are harming the farmer's rights and depriving them of their rights.

- As per Di Paolo, P. F. (2019). Seeds of Knowledge, Seeds of Being. Journal of Integrated Studies, 12(1), reflects how GM Bt cotton has commodified the seeds within the field of agriculture. The research study explains how the farmers are forced to adapt to the new industrial agriculture leaving the traditional practices. With the introduction of GM seeds, the death rate of farmers committing suicide also drastically increased. The paper reveals how the traditional and indigenous practices benefitted not only the farmers but also the land, biodiversity, organic farming methods, and ecosystem. Traditional farming practices have taken care of the seeds and have been passed on to generations. The monoculture minds destroy the seed, the human life, and do not give the feeling of social belonging thereby disrupting the social network.

1.4 Research Gap

Tremendous studies and discussions have been done related to Vandana Shiva's advocacy for seed sovereignty and biodiversity conservation yet there is a gap when we speak about the effectiveness and implications of her ideas and claims. A lot of study has been done on the framework laid down by Vandana Shiva and her ideologies but the gap exists when we critically evaluate the challenges of her advocacy and the practical outcomes. The books and study present Dr. Shiva's work from her perspective but the practical approach of implementing policies and the socio-political connections are the important factors that support her ideas.

The research gap needs to be filled by studying the impact and result of Vandana Shiva's ideologies that advocate for biodiversity conservation and seed sovereignty. A thorough understanding of her thoughts helps in promoting the policies, the agricultural practices and supporting farmers. Also, to study the implications that could be faced when her ideas are applied in a diverse group of communities. The socio-political and socio-ecological contexts should be considered. Not much study has been done in the field where technological advancements, global frameworks, and knowledge are combined to handle the crisis that is related to food security and agricultural practices. Considering the above, Vandana Shiva's ideologies and advocacies are essential to understanding the agriculture development and protection of farmers, biodiversity, and the environment towards sustainability.

1.5 Research Methodology

The present study is qualitative. The research objectives can be attained or achieved through thorough reading and analysis of both the primary as well as secondary sources. The methodological framework for the research will be textual analysis. The information is collected from the secondary data. The data is collected from various research papers from different journals. The research will be confined to selected non-fiction works. The research proposes to use the theory of ecocriticism, anthropocentrism, biocentrism, Ecocentrism, and biodiversity.

1.6 Background and Context

William Rueckert introduced the term ecocriticism in his essay "Literature and Ecology: An Exercise in Ecocriticism" in 1978. This term remained unused until 1989. In 1989 a conference of the Western Literature Association was held where Cheryl Glotfelty, a graduate student and later worked at the University of Nevada, Reno, as Assistant Professor of Literature and Environment revived the term Ecocriticism. The scholars studying in this field of literary theory did not study much till the beginning of 1990. The study took a leap when the Association for the Study of Literature and the Environment (ASLE) was introduced in the year 1992.

Gillian Rudd states in The Oxford Handbook of Ecocriticism (2014)

Without Rachel Carson's Silent Spring there might be no ecology movement and

thus no ecocriticism. So much is a truism; fifty years 10 after publication, the power of her opening lyrical paragraph with its nightmare scenario of a season devoid of birdsong lives on. It taps into the same sense of place as Keats's "Belle Dame Sans Merci," whose line "And no birds sing" seals the mood of things being badly amiss in its romanticized medieval landscape. (27)

William Howarth explains the etymology of the word Ecocriticism in the chapter "Some Principles of Ecocriticism" written in the book The Ecocriticism Reader(1996):

> Ecocriticism is a name that implies more ecological literacy than its advocates now possess unless they know what an embattled course ecology has run during its history. Eco and critic both derive from Greek, Oikos, and kritis, and in tandem, they mean "house judge," which may surprise many lovers of green, outdoor writing. A long winded gloss on ecocritic might run as follows: "a person who judges the merits and faults of writings that depict the effects of culture upon nature, with a view toward celebrating nature, berating its despoilers, and reversing their harm through political action." So the oikos is nature, a place Edward Hoagland calls "our widest home," and the kritos is an arbiter of taste who wants the house kept in good order, no boots or dishes strewn about to ruin the original decor. (Howarth, 69)

Navdanya is an organization that was founded by Dr. Vandana Shiva to preserve the seeds and to work towards sustainable agriculture. According to the website, "Navdanya is a network of seed keepers and organic producers spread across 16 states in India. Navdanya has helped set up 54 community seed banks across the country, trained over 500,000 farmers in seed sovereignty, food sovereignty, and sustainable agriculture over the past two decades, and helped set up the largest direct marketing, fair trade organic network in the country. Navdanya is actively involved in the rejuvenation of indigenous knowledge and culture. It has created awareness of the hazards of genetic engineering and defended people's knowledge of biopiracy and food rights in the face of globalization and climate change. Navdanya is a women-centered movement for the protection of biological and cultural diversity." (Navdanya Trust)

Dr. Shiva founded and established the Research Foundation for Science, Technology, and Ecology (RFSTE) in India in the year 1987. She was very much perturbed by the violence in Punjab and the Bhopal tragedy that took place in the year 1984. No doubt the introduction of the green revolution gave more yield but the disasters were also overwhelming. In the year 1984, a very shocking and tragic accident took place in the pesticide plant in Bhopal at the Union Carbide India Limited, Madhya Pradesh. Thousands of people were affected by this accident, inhaled the chemicals and many died. The after-effects of the Green Revolution were such that the farmers were in heavy debt because of the high costs of pesticides which was the reason for the riots in Punjab in the year 1984.

Dr. Shiva wanted a paradigm shift for the welfare of the farmers. As it is mentioned in the Navdanya pamphlet, "The violence demanded a paradigm shift in the practice of agriculture". Her journey with the Chipko movement. During her student life while pursuing her PhD, whenever she visited her native, she would go to the fields and spend time there. She was shocked when she saw the water level in the river was depleting, the apple orchids had gone. It was at this time she decided that she would be part of Chipko whenever she visited India. She was very much moved by these ladies who had no schooling but had complete knowledge about the ecosystem. They were so courageous that despite threats and warnings by the authorities, they never stepped back fearing their lives. They just hugged trees to protect them without thinking of the consequences that would take away their lives.

Dr. Shiva never believed in the anthropomorphic worldview. Her humble upbringing wherein her father worked as a forest conservator who imbibed the qualities of self-rule. They believed in the preachings of Gandhiji. She also believed that all species have equal rights on this planet and human beings are at par when compared to other species on Earth. All life that exists on this planet is

dependent on each other and they are interconnected. The notion that humans are superior or have an upper hand over other species is false. Man can be safe and happy only when the well-being of other organisms is taken care of. Man cannot bestow upon himself the supreme power that exceeds the natural powers.
Dr. Shiva started her exploration by visiting the fields, spending time with farmers, and trying to understand their life and their connection with the fields. Eventually, she started raising the fund and every small step she took was in turn a discovery that led to her success. This way she decided to dedicate and devote her life to protecting the farmers, their rights, and nature herself. Vandana Shiva explains in her book 'Staying Alive' why it is so important to understand the concept of working on the farm, the importance of farming, the biodiversity, and the life of farmers.

"Making and creating is the deeper philosophy of Swadeshi. [It also means] self-reliance of course, but even more [it means] reclaiming our deeply human identity in the act of making. And that's why for us Bija Vidyapeeth is a very important place because it allows all of you to be engaged in the recovery of your potential as producers, makers, and creators of food. And you are no longer just buyers of food off a supermarket shelf but engaging with the soil, engaging with the seed. You find that – my god- I can grow food. I have that capacity".
(Shiva – 125).

1.7 Origin of the Green Revolution

In the year 1969, the issue of hunger was widespread due to famine, drought, and economic depression around the world. The call was very immediate to react to the situation by President April George Harrar of the Rockefeller Foundation. To address hunger many world leaders gathered along with the foreign bodies with the agrarian department to sort out the issue of hunger. Lowell S Hardin was also one of the leaders to address the gathering and later he recorded the incident in one of the books 'Meeting that Changed the World: Bellagio 1969: The Green Revolution'. The developing nations were shouldering the issue and they started supporting the Rockefeller Foundation. The meeting took place in Italy, Bellagio briefed on the crop yielding issues, and with new innovative techniques the poverty of hunger could be cut off and later it can get eradicated. The plant scientist from US Norman Borlaug initiated and started growing a new breed of seeds that yielded quick growth of the plants that was highly responsive to pesticides. In 1969 a conference was held to develop organization mobilization plans to increase the production of food grains and cereals that was later termed as 'Green Revolution'. The theory of the Green Revolution spread across many countries to control food scarcity including India. The concept of the Green Revolution created gap between the communities and farmers. The large gap that widened between the small farmers and the big landowners was a concern; there was also a concern with regard to the depleting of soil and water resources (Hardin 2008).
India suffered a setback because of poverty and malnutrition. People starved to death and malnutrition was on rise. Like India many other countries also suffered the same. To control this issue, the Green Revolution was introduced in India in the 1960s to enhance food production. This introduction of industry agriculture resulted in good yield of the crop. This was introduced in five states. With more use of pesticides and fertilizers the problem of scarcity of food came in control. However, there was a negative impact on the farmers, people, regions and organisations. This resulted in the widening of the gap between the people and communities. The small farmers were the worst hit. It was to the extent of losing their land and life.
The decision to initiate and implement Green Revolution created an unevenness across socio-economic classes, life of farmers and geographically. The life of small farmers was miserable hit as they could not enjoy the fruits of Green Revolution technology. The government did not extend any kind of support was to the small farmers and this led to social disparity. This technology of industrial farming replaced many traditional practices. The indigenous methods were slowly replaced by the

industrial farming methods with unsustainable monoculture cropping. This had a major impact on the small farmers who could not afford to invest in commercial practices and hence had to face the loss to the extent of losing their land. This agriculture method which involved excess use of chemicals, fertilizers, changed from biodiversity to monocropping left the farmers in debts which in turn resulted in the increase of suicide cases in farmers. Green Revolution had a negative impact on the environment, land and the country. The excess use of pesticides, chemical fertilizers and water had adverse impact on the ecosystem. The excess use of fertilizers, pesticides resulted in soil fertility, water pollution and soil degradation. Excess use of ground water resulted in the decline of water table thus depleting the water resources in many places. More attention was given to the quick and high yield variety of crops which led to the decline of indigenous practices. This led to the demand of monoculture of crops thus giving up on biodiversity. The yield of the crop solely depended on pesticides, fertilizers and hybrid seeds and this was the major concern for the small and marginal farmers. The cost of buying the seeds, pesticides and fertilizers increased the financial burden which put them in to debt and created the inequality in the community. This further led to regional disparities between the farmers and regions as the benefit of the Green Revolution was not the same in all the regions. Further the widespread use of chemical fertilizers affected the nutrients of the seed which further affected the health of the consumers.

1.8 Seed Patenting

Fritz Machlup, an economist defined a patent is "that which confers the right to secure the enforcement power of the state in excluding unauthorized persons, for a specified number of years, from making commercial use of a clearly defined invention" (Mgbeoji 2006:16). Patents are not universal. We see that everything from cereals to genes is patented, in other words, it is the ideology to control and take over the ownership. This is a capitalist ideology where ownership, patents, and intellectual innovation are considered at large. The increase in patents is related to two factors of socioeconomic: "the rise of individualism and the development of capitalism" (mgbeoji 2006:17).

The farmer has complete rights to seeds. A farmer cannot be deprived of this, it is like asking a mother to give away her breast milk. Vandana Shiva considers this to be highly unethical. She says the seed is a gift of nature, a plant grows from seed, and in turn, we get food. It is against the law of nature to ask a farmer to give away his seed which is the only source of his livelihood. The corporate and industry giants want to patent the seed and take the credit of this invention which is wrong as this seed is nature's gift to the farmers. Vandana Shiva mentions that 80% of the seeds used in India and Africa are shared and saved. Seeds represent the cultural knowledge, tradition of selective breeding, ancient practices, and adaption to the land. Patenting of seeds or any restrictions would destroy heritage and end the ancient knowledge in turn causing problems for farmers leading to starvation and poverty.

According to Vandana Shiva, the Third World farmer has been impacted by the idea that patenting life and treating it like a commodity will have more political and economic repercussions (Shiva 1997). The farmers are now more at risk as a result. Traditionally, farmers supplied traditional food, but these days, they also supply multinational companies. Dr. Shiva writes in her book "Who Feeds the World": that for innovation the protection of patents is very essential but it is important only if it is giving profit to the corporates. The seed invention is from ages by the farmers and it has been like a public institution for decades without a trace of patent protection or property rights.

Navdanya is an anti-GM group that works on the understanding and proclaims that biodiversity is the basic and the essential indigenous practice that was founded by our ancestors for the food security. The farming was only organic with diverse crop growing at a time or crop rotation and pests were controlled in organic way. The farmers had the liberty to choose their seed, exchange the seed with other farmers, develop and cultivate their seed depending on the climate. The colonizers and the capitalists did not recognize the wealth and knowledge the farmers had. They underestimated the sources during their rule in India. The western capitalist failed to understand the experience the

farmers had in cultivating the crops, preserving the seed based on the climatic cycles in all seasons. They viewed India as an underdeveloped country with no systematic agriculture system. The land of richness was used as a market to sell the hybrid seeds gradually selling genetically modified seeds.
Vandana Shiva opines that Indian farmers' approach is indigenous, practices are traditionl and the same is implemented in agriculture to plant and cultivate different crops. The concept of biodiversity is to ensure harvest in all seasons irrespective of the pests' attack or weather conditions. In situations when one crop fails because of the weather or pests, the other crop survives. Biodiversity also took care of the nutrition of the seed as well as soil. There is no excess use of pesticide. The cultivation of diverse crops makes the soil healthy by giving nutrients. The seed trading is very common among the farmers which build the community and strengthens the network. Shiva links seeds, traditional ecological knowledge and life at an ontological level:
"Seeds are not just the source of life, they are the very foundation of our being. For millions of years seeds have evolved freely, to give us diversity an richness of life on this planet; and for thousands of years farmers, especially women, have bred seeds freely, in partnership with each other and nature, to further increase the diversity of that which nature gave us and adapt it to the needs of different cultures. Biodiversity and cultural diversity have mutually shaped one another. (Shiva, 2016)
Dr. Shiva is of the opinion that biodiversity strengthens life and supports the society whereas the monoculture minds damages the human life, environment and social connections. The seeds have been grown, developed and exchanged from generations in the Indian society. Vandana Shiva quotes Rabindranath Tagore, Bengali writer and philosopher who writes about the complex nature of the Indian society and about their identity
"India's best ideas have come where man was in communion with trees and rivers and lakes, away from the crowds. The peace of the forest has helped the intellectual evolution of man. The culture of the forest has fuelled the culture of Indian society. The culture that has arisen from the forest has been influenced by the diverse processes of renewal of life, which are always at play in the forest, varying from species to species, from season to season, in sight and sound and smell. The unifying principle of life in diversity, of democratic pluralism thus became the principle of Indian civilization."
The seventeenth century colonizers, the British considered India to be underdeveloped and failed to understand the richness and most importantly did not realise the importance of diverse land. They saw the country with a Eurocentric lens and expected one ruling elite controlling the whole nation with one religion and one culture. For Shiva, the monoculture of crops is a continuation of the societal monoculture the British imposed on India (Shiva, 2016).
The establishment of Monsanto that focussed on monocrops and GM crops was later taken over by Bayer in 2018 is the second coming of the colonization rule that was started by the British in the seventeenth century. Monsanto introduced Bt cotton in the year 1998 without any approval. They had not been given any official approval to test the seeds and thus continued until 2002. Many government entities agreed to sue Monsanto for the damage that was being caused because of crops that contained the microorganisms which contaminated the soil.

1.9 Genetically Modified Organisms (GMO)

The world's leading seed corporations like Monsanto, Syngenta, ChemChina, and Dow also rule the global pesticide market. Many crops that are grown from these seed corporations require the minimum input of such specific chemicals or pesticides. Few seeds are so genetically designed that they grow with such chemicals only. Monsanto's BT cotton changed the cotton world by replacing organic cotton with genetically modified cotton.

1.10 Biodiversity

The quantity of crops or creatures that are grown in a particular area as well as the variety of crops with genetic variations make up biodiversity. Regarding agriculture, it refers to the range of crops that are planted on the land. Indigenous farming methods from long ago show that farmers raised

several crops at once, which not only produced high-quality crops but also maintained the health of the soil. The connection, between the biotechnology industry, monocultures, modified organisms, and seed patenting is closely related to the decline in biodiversity. This decline is primarily driven by the prevalence of monocultures. These monocultures tend to benefit farmers who can afford pesticides while poorer farmers face challenges in affording them. As a result, traditional varieties and native practices are being phased out. Crop diversity plays a role, in adapting to soil types, climates, and cultural factors. Beyond its benefits biodiversity also helps protect against pests and diseases. We need to recognize that the loss of biodiversity poses one of the challenges to humanity. The preservation of biodiversity and the survival of our species are deeply interconnected. Jack Harlan, author of Crops and Man mentions in his book, "These resources stand between us and catastrophic starvation on a scale we cannot imagine. The line between abundance and disaster is becoming thinner and thinner"

Vandana Shiva reflects on the situation in her book "One Who Feeds the World" saying the erosion of biodiversity is a chain reaction. The existence, disappearance, and extinction of species are all interrelated. The existence of species is connected to several endangered and extinct species through the web of food. The loss of biodiversity is not only a threat to life and livelihoods of people but also responsible for the extinction of plants, seeds, and animals.

Vandana Shiva's highly considers the interconnectedness and intrinsic roles and values of biodiversity. Dr. Shiva has advocated for seed sovereignty, agroecology and ethical farming practices and she considers the interconnectedness of all the living species. She is with a vision towards sustainable agriculture that goes parallel with the theory of biocentrism. She also emphasizes to be in harmony with all the species and nature, ecological resilience and social justice. The sustainability of our ecosystem depends on the evolution of seeds. The future lies in the seeds that are pure and healthy. A healthy seed is a symbol of healthy life subsequently the planet will be healthy. Dr. Shiva has mentioned about the patenting of seeds, the conservation of seeds, seed banking and the farmers first rights on seeds. In conclusion the maintenance of seeds and preserving them should be given to those who use them i.e the farmers. For the development of seeds the strategies should include the experience of farmers and food communities. Their active participation and input should be considered for the scientific study and development of seed and plant breeding. The farmers should be educated, trained on using of modern technology and freedom to select seeds, breeding and preserving. The aim is to preserve water, soil and biodiversity by embedding the agricultural production to agro-eco-systems. Thus, the result will be such that the ecosystem can withstand any changes that come in the surroundings. Care should be taken to reduce the emission of the harmful greenhouse gases which is the major cause for the climate changes. Use of synthetic chemical fertilizers, fuel and pesticides should not be used or rather minimum application should be done. The greenhouse emission should depend on renewable energy and soil biological resources. The toxicity of food and environment should reduce by shifting from chemical application to agro ecological practices in breeding seeds. The development of seed should give way to natural diversity and reduce the susceptibility of pests. A demand for homogeneity of varieties of seeds to be reviewed. The holistic approach in quality of seed, food that includes taste, nutritional value should be given the top priority and concern for preserving and developing of seeds and plants in future.

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Dr. Shiva has extensively worked on the manifestations of ecofeminism, that refers to the male domination and maldevelopment society. She is a staunch activist to fight for Intellectual Property Rights (IPR) and biopiracy issues. The lead she has taken in fighting Neem campaign and Basmati campaign along with other initiatives are awe inspiring. She has addressed on various issues of environment, economic development, feminism, ecofeminism, biopiracy, globalization etc. She has also lectured on these topic at various universities across the globe. She is also a part of advisory board to the government of India and other nations. Dr. Shiva is a part of NGO's that include Women's Environment and Development Organisation, International Forum on Globalisation and

the Third World Network.

1.11 Conclusion

The nexus between the patenting of seeds and seed sovereignty is an intricate web that defines the future of our ecosystem and food system. The paper is a study that reveals the importance of seed sovereignty which is the most needed for agricultural practices. The impact of seed patenting is an eye opener and a threat to the farmer's rights, biodiversity, and lives of local communities in handling their seeds. The study concludes with an ethical and policy framework, there can be opportunities for a better tomorrow, focussing on a balanced approach towards farmers' rights at the same time understanding intellectual property rights. The results of the socio-economic state address the corporate influence, seed pricing, and monocultures of the minds. The study concludes by proposing recommendations on policy-making and encouraging strong connections with the stakeholders to preserve the seeds. There is a need to call for immediate action where the farmers get complete rights over the seeds and this remains a powerful force to shape an equitable and sustainable food system. This way the seeds can be preserved and shared.

In conclusion, the study of seed sovereignty and conservation of biodiversity reveals an intricate connection between agriculture sustainability, social justice, and the ecosystem. Vandana Shiva's advocacy on indigenous practices, farmers' rights, and conservation of biodiversity resonates with a broader aspect on a global platform challenging agricultural practices and sustainability. The study suggests the interconnectedness between the culture, ecosystem, seed, and farmers which in turn emphasizes a community-centric approach to protect seed and the environment. The study also seeks attention to the adverse impact of monocultures, GMOs, industry agriculture, and corporate control on the seed, farmer's rights, and the environment. However, Vandana Shiva's advocacy not only criticizes the existing practices but also wants to bring in transformative changes by mobilizing grassroots movements at the community, national, and global levels. The study concludes by reconsidering the interconnectedness between the man and ecosystem, the knowledge and the agricultural systems to handle the ecological crisis and help us towards sustainability. In the end, seed sovereignty is very important for biodiversity conservation, preserving indigenous practices, and taking care of our ecosystem. She is the beacon of hope to all of us especially the farmers for a sustainable future.

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