

Green Revolution, Plant Biodiversity and Eco-Feminism

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Abstract

Green Revolution is a unique event in the agricultural history of Independent India. It has saved us from the disasters of hunger and starvation. But higher yields and greater food security came at the expense of higher inputs of pesticides and fertilizers. The agricultural systems created by the Green Revolution are dependent on a handful of varieties for its major crops. The loss of biodiversity and traditional knowledge is detrimental for food security, nutritional security and also endangers health of peoples. The central tenet of ecofeminism is that social and environmental issues are not separate. The simultaneous emergence of women and environmental movements raises a question about the relationships between feminism and ecology.

Keywords: Green Revolution, ecofeminism. Biodiversity loss, monoculture

1. Introduction

In the long period of farming history before the twentieth century, the agricultural production of the world was mainly based on natural colonies of landraces or farmer's varieties. After the Green Revolution, single-genotype varieties of crop plants including inbreds and hybrids have been fully predominating in the entire agricultural production. The extensive adoption of these scientifically developed crop varieties that are high yielding and seemingly pest resistant, together with the intensive and monocultural managements of them, has contributed tremendously to the world's food security.

When the British left India in 1947, India continued to be haunted by memories of the Bengal Famine which resulted in the death of an estimated 1.5 to 3 million people out of Bengal's 60.3 million population during 1942-43 in eastern India (which included today's Bangladesh). It was therefore natural that food security was one of the main items on free India's agenda. This led to the Green Revolution in India. Green Revolution is a unique event in the agricultural history of Independent India. This has saved us from the disasters of hunger

and starvation and made our peasants more confident than ever before. It is well known that agriculture, especially the crop sector, of British colonial India stagnated or even experienced slightly negative growth through the entire first half of the 20th century¹, but this pattern reversed following independence in 1947. Food grains (defined in India as cereals plus pulses) production registered a high growth rate of 4.13 percent on average during the period 1951-52 to 1960-61.²

2. Monoculture

The dominance of crop single-genotype varieties enhanced the productivity and changed the overall perspectives of agriculture in the last century. However higher yields and greater food security have come at the expense of higher inputs of pesticides and fertilizers, which have brought along a long pollution chain from fields to dining tables. The sustainability of such a development model in agriculture has been questioned by a mounting number of agronomists.³ The new farm technology adopted by farmers since mid sixties required heavy investment of capital in the form of farm machinery, irrigation equipments and other inputs like chemical fertilizers, pesticides/insecticides, etc.^{4, 5} The Green Revolution favored expensive technological investments for the “best endowed farmers in the best endowed areas, and directed away from resource prudent options of the small farmer in resource scarce regions”.⁶ In reality, cereal yields have continued to rise on average across Asia since the Green Revolution era, but annual growth rates are slowing⁷. This is confirmed by more careful, micro based studies of wheat and rice yields in the Indo-Gangetic Plain⁸ in India’s major irrigated rice growing states.^{9, 10}

3. Loss of Plant Biodiversity

But by the time agronomist Norman Borlaug who launched the Green Revolution received the Nobel Peace Prize in 1970 the Green Revolution already had produced an extensive controversy about the applicability of Western agricultural models. While the Green Revolution remained for many observers the triumph of high science over hunger, the critics began to attack its economic, social and environmental effects.¹¹ A growing awareness of these environmental problems has led a few Green Revolution critics to argue for a drastic reversal to the traditional technologies that dominated Asia before the Green Revolution^{12, 13} Cooper *et al* in 1992 wrote that the Green Revolution not only “destroyed” diversity, but “Las the new seeds replaced the old traditional varieties and their wild relatives,” the future raw material of plant breeding programs was “lost.”¹⁴ The displacement of native plants and agricultural systems that had developed over centuries of local knowledge by modern techniques resulted in decentralized knowledge of traditional farming techniques, causing further fissures among the farming communities. Farming was their livelihoods and the way that they connected with each other.

There are four important effects of the spatial and social disparities caused by the Green Revolution in India. These are: the change from traditional sustainable methods to monocropping and unsustainable practices; violence and dissolution of the sense of

community among farmers; the loss of many small farmers' landholdings to large commercial farmers; and increased suicide rates of small farmers.^{15, 16}

The agricultural systems created by the Green Revolution are shockingly dependent on a handful of varieties for its major crops. The high yielding varieties (HYVs) of seeds had a narrow genetic base, and the farmers were sowing all of their fields with just one type of seed. This resulted in the displacement of thousands of locally indigenous species as well as agricultural systems that have been build up over generations on the basis of knowledge accumulated over centuries.⁶ The most successful and highly distributed crops were rice, maize and wheat, which needed areas that had high rainfall or sufficient irrigation.⁵

The Green Revolution has been a paradoxical process. According to Vandana Shiva If on the one hand, it offered technology as a substitute to both nature and politics in the creation of abundance and peace. On the other hand, the technology itself demanded more intensive natural resources use along with intensive external inputs.¹¹ As a result; new relationships between the state and cultivators, between international interest and local communities within the agrarian society developed.⁶ The Green Revolution had become conflict-producing instead of conflict- reducing.

4. Women and Loss of Biodiversity

Women world-wide, are often the first ones to notice environmental degradation. Women are the first ones to notice when the water they cook with and bathe the children in, smells peculiar: they are the first to know when the supply of water starts to dry up. Women are the first to know when the children come home with stories of mysterious barrels dumped in the creek: they are the first to know when children develop mysterious ailments.¹⁷

The loss of biodiversity and traditional knowledge is detrimental not only for the women but for food security, nutritional security and also endangers health of peoples. It also destroys families. This ultimately threatens the future of traditional agriculture based on diversity. Women are responsible for food and nutritional security of their families and themselves. However, local food security is based on both the availability of biodiversity and access to these.

5. Ecofeminism

Ecofeminism grows from the idea that a woman's ethics are closer to nature than a man's and it revalues feminine traits. Women are seen in sync with nature, working in union with it, while men have a hierarchical relationship with nature in which their actions try to dominate it. The simultaneous emergence of women and environmental movements raises a question about the relationships between feminism and ecology. Ecology and feminism have an interrelated lexis, and hence similar policy goals.

The central tenet of ecofeminism is that social and environmental issues are not separate, that the causes for the mistreatment of women, people of color and the environment stem from the

same place. Therefore, from an ecofeminist perspective, it is best to view all of these issues collectively. Furthermore, anthropologists today commonly agree that the domestication of plants was developed by women. The ancient civilizations that humanity is built upon were not founded by war mongering and oppression, and evidence suggests that women and nature were highly regarded in many cultures. Many ancient civilizations were peaceful, and both men and women lived in harmony with one another and nature.

Ecofeminism puts forth the idea that life in nature is maintained through cooperation, mutual care and love.¹⁸ It is an activist and academic movement, and its primary aim is to address and eliminate all forms of domination while recognizing and embracing the interdependence and connection humans have with the earth. Many environmental critiques have shown how control over and exploitation of nature is linked to control over and exploitation of human beings especially the women.¹⁹ Ecologically damaging issues have more of a detrimental effect on women than on men, particularly as women tend to be more involved in family provisions and household management. Such problems include sustainable food development, deforestation, desertification, access to safe water, flooding, climate change, access to fertile land, pollution, toxic waste disposal, responsible environmental management with in companies and factories, land management issues, non-renewable energy resources, irresponsible mining and tree felling practices, loss of biodiversity (fuel, medicines, food). It has been found that in times of economic crisis, it is the women who shoulder the burden and they are the first to go without provisions such as food, medicine and education.^{20, 21}

Many texts compare the term ‘ecofeminism’ to a woven tapestry or of a complex quilt made up of diverse ideas and beliefs, yet united together under a common principle of female interaction within the environment. On a very basic level, ecofeminists are unified in the exploration of the commonalities between gender oppression and environmental degradation mainly caused by male Western dominance. The link between women and the environment was consolidated, internationally, at the 1995 4th United Nations Conference on Women in Beijing. The resulting Platform for Action identified ‘Women and Environment’ as one of the critical areas of concern.

6. Green Revolution, plant biodiversity and eco-feminism

Cultural and spiritual values are intertwined with biodiversity and traditional knowledge. Traditionally agricultural varieties and knowledge were shared among women, farmers and indigenous peoples for generations through village fairs, harvest festivals, and religious ceremonies that gave them the opportunity for enhancing varieties. However, modernization and commercialization of agriculture adopted a top-down approach where farmers were told what species were good for cultivation. Traditional agriculture was disregarded. The new High yielding varieties (HYVs) seeds were built on the displacement of genetic diversity and were not well adapted to the microbiology of local soils.⁶

The net effect of the Green Revolution package depleted natural fertility, increase pest damage, dry up aquifers and reduce agrobiodiversity. In doing so, the Green Revolution

increases environmental risk and exacerbates the economic vulnerability of poor farmers. Green Revolution has also led to serious “genetic erosion”—the loss of traditional varieties from agroecosystems and drastic cutback in the number of crop varieties. These were the two side-effect byproducts produced in this great Green Revolution. In comparison, old agriculture of 100 years ago, based on the traditional multi-genotype heterozygous landraces and low-input cultivation, prevailed thousands of years and still exists now in subsistence farming in marginal areas in spite of its low productivity.

Dr. R. H. Richharia, an agronomist and former director of India’s Central Rice Research Institute began to study traditional methods of farming in the 1970’s. He did his research in remote regions of Madhya Pradesh where farmers had not adopted Green Revolution Technology. He was astonished by the high skill levels of the farmers in this region as well as the vast knowledge the people had about the different indigenous species of rice they were growing. Their yields were equal to if not greater than those of the high yielding varieties being used in other parts of the states.¹¹ They also had a variety of species, each regarded for different specialties such as high yield, superior cooking quality, or taste, among other traits. The solution to malnutrition lies in growing nutrition, and growing nutrition means growing biodiversity, it means recognizing the knowledge of biodiversity and nutrition among millions of Indian women who have received it over generations as “Grandmothers’ Knowledge.”²²

7. Conclusion

There is now growing recognition that the crop biodiversity following Green Revolution was vastly diminished following the introduction of the high yielding varieties (HYVs). This affected the livelihoods of resource-poor farmers and threatened the future of agricultural development. Now, post Green Revolution high priority is on the efficient resource utilization and conservation so that past gains can be sustained and further enhanced. As a technological innovation, the Green Revolution replaced one way of life with another within a short span of two decades. It provides a striking case history of the ambivalence of technology and its unforeseen impacts. As loss of plant biodiversity continues to affect all corners of the world, it is becoming more and more important that our views of the environment and our relationship to the planet begin to evolve into something more holistic. Ecofeminsm provides an additional alternative to ecological thought and social organizing.

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