The Negative Consequences of Green Revolution in India

Amrita Abhisikta Pusti[1]*, Manisa Hota[2] and Jeebanjyoti Behera[3]

[1,2]M.Sc. Research Scholar, [3]Asst. Professor, Department of Extension Education, College of Agriculture, Odisha University of Agriculture and Technology, Bhubaneswar 751003, Odisha

Corresponding Author
Amrita Abhisikta Pusti
Email: amritaabhisikta2000@gmail.com

OPEN ACCESS

Keywords

Agriculture, Green revolution, Fertilizer, Pesticide

How to cite this article:

Pusti, A. A., Hota, M. and Behera, J. 2025. The Negative Consequences of Green Revolution in India. *Vigyan Varta* 6(1): 29-31.

ABSTRACT

The term "Green Revolution" refers to a series of technical agricultural research projects that began in the 1940s and 1960s and raised agricultural output globally. The green revolution had great success with agricultural production and food varieties. However, the Green Revolution has some negative effects on the environment in addition to its positive ones. Deforestation, declining water resources due to pollution and salinity, loss of biodiversity, increased greenhouse gas emissions and global warming, and an increase in human and livestock diseases are some of the negative effects of farmers using agricultural technologies excessively to ensure the success of the Green Revolution. Other negative effects include land degradation, such as loss of soil fertility, soil erosion, and soil toxicity; and deforestation. This present article highlights the negative impacts of green revolution in India.

INTRODUCTION

Following its independence, India faced numerous difficulties including poor socioeconomic status, a dearth of medical and educational resources, and above all a scarcity of food to feed the world's expanding population. Up until 1960, we were dependent on food supply and international aid to feed the population. Under the direction of Dr. M.S. Swaminathan, India's agricultural sector underwent a revolution in the 1960s,

with the main goals being to increase food grain output and reduce poverty and hunger. The term "green revolution" refers to the agricultural revolution that took place in the late 1960s in India, which increased foodgrain production and turned the nation from one that was food insecure to one that exported food. The utilization of HYVs, intense cropping, fertilizer and pesticide application, and irrigation were the key elements. Even though it was expensive, it was able to achieve its objective.

1. **Over use of pesticides** – India is among the biggest producers of pesticides in all of Asia as a result of the sharp rise in pesticide usage. This has led to an increase in the pesticide's residual activity. Pesticides are present in large quantities in soil and waterbodies, which contaminate the ecosystem (Ameen & Raza, 2017). Pesticide resistance brought on overuse is another problem upsetting the food chain.

2. **Air pollution** – In northern India air pollution due to stubble burning is alarming. The residue of pesticides also led to pollution of surrounding air (Baron et al., 2017).

3. **Soil degradation** – Soil organic matter is lost in intensive farming systems because crop wastes and organic matter return to the soil less frequently. Farmers apply more fertilizers as the soil quality decline in order to fulfil the demands of new seed varieties. Depletion of nutrients and soil water is another effect of intensive agriculture (John & Babu, 2021). Beneficial pathogens are being destroyed by the buildup of heavy metals and hazardous chemicals in the soil. Scientists are very concerned about how future production and food security in the epicentre of the green revolution will be impacted by waterlogging, salinity, soil erosion and fall in the groundwater table due to brackish water and alkalinity.

4. **Impact on water** – The enormous demand for fresh water for agricultural activities has resulted in water scarcity in intensive agriculture areas (Ameen & Raza, 2017). Cropping patterns are changing in key green revolution areas due to a decrease in the ground water table. In addition, a major contributor to water pollution and a severe hazard to aquatic life is the widespread use of pesticides and other chemicals.

5. **Extinction of indigenous varieties** - India lost about one lakh native rice types as a result of the green revolution. There has been a decrease in the cultivation of native kinds of rice, millets, lentils, etc. since the green revolution. As a result, more hybrid crops were produced, and these crops would grow more quickly. The manufacturing of HYV seeds and an expansion of these crop production areas were the causes of the increase in some crops. Farmers' preferences have also evolved with regard to crop farming. crops that have been cultivated and consumed historically, such as millets, thrive in arid and semi-arid environments due to their low water requirements. However, farmers switched to rice and wheat since high-yielding millets were no longer available. Major commercial crops like cotton, jute, tea and sugarcane were left almost untouched by the Green Revolution (John & Babu, 2021).

6. **Impact on human health** - According to data from the Food and Agriculture Organization (FAO), millets have been produced less frequently between 1961 and 2017 while rice and wheat have increased. As a result, the nation's basic diet consists of rice and wheat. The green revolution raised calorie intake even though it guaranteed food security and did not result

in nutrient security. It has been noted that ongoing exposure to toxic chemicals causes the body to retain more pesticide than the detoxifying system can handle. Farmers who are exposed to organophosphates over an extended period of time may acquire cancer. In India, DDT was a widely used insecticide that is currently prohibited worldwide as it is found to bioaccumulate and cause severe harmful effects on human beings (Baron et al., 2017).

7. **Limited Application of HYVP:** The High Yielding Variety Programme (HYVP) was limited to the following five crops: maize, wheat, rice, jowar, and bajra (ESCAP, 2020).

8. **Regional Disparities**: The technology of the Green Revolution has led to an increase in the differences in economic development across and within regions. Just 40% of the entire cropped area has been impacted thus far, and 60% of it is still unaffected (ESCAP, 2020).

CONCLUSION

India saw great success with the Green Revolution, which also provided an unparalleled degree of food security for the country. It stood for the scientific revolution's effective transfer and adoption in agriculture. Less focus was, however, placed on aspects other than guaranteeing food security such as the environment, the underprivileged farmers and their education regarding the use of such chemicals. Therefore, in order to guarantee that farmers profit more directly from new technologies and that these technologies are more environmentally sustainable, governments must pay closer attention to farmers.

REFERENCES

Ameen, A., & Raza, S. (2017). Green revolution: a review. *International Journal of Advances in Scientific Research*, *3*(12), 129-137.

Baron, G. L., Jansen, V. A., Brown, M. J., & Raine, N. E. (2017). Pesticide reduces bumblebee colony initiation and increases probability of population extinction. *Nature Ecology & Evolution*, *1*(9), 1308-1316.

ESCAP, U. (2020). Fourth South Asia forum on the sustainable development goals: fostering sustainable and resilient recovery from COVID-19 in South Asia, virtual meeting, 2-3 December 2020, report.

John, D. A., & Babu, G. R. (2021). Lessons from the aftermaths of green revolution on food system and health. *Frontiers in sustainable food systems*, *5*, 644559.