

Genesis Of Green Revolution And Its Impact

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ABSTRACT

The term Green Revolution has been used to mean two different things. The Green Revolution was introduced in the form of a package programme as it focused on irrigation, fertilizers, high yielding variety seeds and pesticides. The aim of Green Revolution is to promote both agriculture production and productivity. Modern scientific knowledge and technology were thus introduced to Indian agriculture through the Green Revolution. The Green Revolution among other factors has greatly increased the output of Indian agriculture. The Indian economy is primarily an agricultural economy. Agricultural sector formed the backbone of economy of the country as it covers nearly sixty percent of available land for agricultural activities. It provides employment for about 62 percent of working population of country. The very existence of economic activities of the entire people is bound with the state and health of this sector. Agriculture is the dominating sector of the state's economy and contributes in several ways to the state's economic progress. Agriculture throughout the world has been revolutionized by the development of genetic science. Green Revolution refers to a major breakthrough in the application of genetic science to agricultural production during the 1960s, which first produced hybridized dwarf varieties of wheat and rice that were very responsive to high application of fertilizer and produced yields two to three times higher than the varieties they replaced. The high yielding varieties of wheat and rice introduced in the late 1960s certainly contributed to these gains. So did modern varieties of maize and other crops introduced before and after the Green Revolution. Indian agriculture started showing significant diversification with the spread of Green Revolution technology beginning late 1960s. The impact that Green Revolution technologies can have on farming and farmer's decision making is brought to life in the Green Revolution game, a sophisticated gaming simulation of the drama of rural development and technological change in agriculture based on original field work in India.

Key words: Green Revolution - M.S.Swaminathan - food shortage - Indian economy – Agriculture - chemical fertilizers - employment potential – Mechanization - irrigation facilities – better nutrition - hybrid millets.

Introduction:

The Green Revolution was introduced in the form of a package programme as it focused on irrigation, fertilizers, high yielding variety seeds and pesticides. The aim of Green Revolution is to promote both agriculture production and productivity. The term Green

Revolution has been used to mean two different things. Some experts of agricultural geography use it for referring to a broad transformation of agricultural sector in the developing countries to reduce food shortage. Others use it when referring to the specific plant improvement, notably the development of high yielding varieties. Modern scientific knowledge and technology were thus introduced to Indian agriculture through the Green Revolution. Green Revolution Programme was started with the help of the US based Rockefeller Foundation and was based on high-yielding varieties of wheat, rice and other grains that had been developed in Mexico and in the Philippines. The Green Revolution among other factors has greatly increased the output of Indian agriculture.

Agriculture:

The Indian economy is primarily an agricultural economy. Agricultural sector formed the backbone of economy of the country as it covers nearly sixty percent of available land for agricultural activities. It provides employment for about 62 percent of working population of country. The people are very proud of their agrarian heritage. After Independence the Indian government started to give primary importance to the agriculture and food production through the five year plans. Agriculture remained the basis of their economy. The very existence of economic activities of the entire people is bound with the state and health of this sector. In villages above 80 percent of the people earn from cultivation and allied agro-industries. Indian agriculture has been characterized by extensive cultivation during the pre-1965 'Green Revolution' era, and by intensive cultivation in the post-Green Revolution period. There has been a significant increase in the use of modern inputs in Indian agriculture. Output of all crops increased at a compound growth rate of 3.15 percent per annum during 1949-65. However the source of growth has changed from area expansion in the pre- Green Revolution period to yield growth in the later periods. Agriculture remained the basis of their economy. During the pre-independence days the agricultural operations were mostly controlled and regulated by the landlords known as Zamindars. Before

independence, agriculture was followed traditional method of cultivation. Towards the beginning of the last century they began to clamor for an equitable distribution of the land, abolition of tenancy systems, better living conditions and the reorganization of the agrarian relations on the basis of modern socialistic and scientific lines. After independence, there has been a steady development in all aspects of agriculture. A series of legislations were initiated for the betterment of the tillers of the soil. High yielding varieties of paddy has brought about a Green Revolution in agriculture. Agriculture supports 73.37 percent of the rural population. Agriculture is the dominating sector of the state's economy and contributes in several ways to the state's economic progress. Agriculture throughout the world has been revolutionized by the development of genetic science. It was a latecomer in the field of scientific research, but once it had entered into the area of biological research it revolutionized agriculture.

Green Revolution:

In the early 1960s developments in agriculture production, sponsored by international funding agencies, led to what came to be called the Green Revolution. The term "Green Revolution" seems to have been coined in opposition to the notion of "red revolution" and this reflects the political and economical context of the time. It refers to the introduction of new methods in agriculture and the subsequent increase in agriculture production. Green Revolution refers mainly to dramatic increase in cereal-grain yields in many developing countries beginning in the late 1960s, due large to use of genetically improved varieties. The Green Revolution was based on the assumption that technology is a superior substitute for nature, and hence a means of producing growth unconstrained by nature's limits. The bulk of food grain production has come from a relatively small area of so called Green Revolution belt. Green Revolution refers to the development and use of such HYV seeds during the decade of 1960 which led to phenomenal increase in the output of food crops. Green Revolution is the short hand reference to a complex of seed and management improvements adopted to the needs of intensive agriculture that have brought larger harvests from a given

area of farmland. The increase in production of cereal crops in developing countries after the introduction of high-yield varieties and the application of high yield varieties and the application of scientific and planned methods to their cultivation.

Origin:

Green Revolution refers to a major breakthrough in the application of genetic science to agricultural production during the 1960s, which first produced hybridized dwarf varieties of wheat and rice that were very responsive to high application of fertilizer and produced yields two to three times higher than the varieties they replaced. The "Green Revolution" refers to the transfer and adaptation of modern agricultural technology for use in the developing nations. The Green Revolution refers to the great and rapid increase of crop production in the mid-fifties and the sixties of the twentieth century by the combined use of increased chemical fertilizers and high-yielding varieties of grains. Green Revolution signifies all the foods which are rich in colored pigments like red, green, yellow, orange, purple etc., thus providing all the necessary vitamins, minerals, antioxidants and fiber which are required for a healthy body. There was significant increase in agricultural productivity following the introduction of high-yield varieties of grains and improved management techniques. However, the term "Green Revolution" is applied to the period from 1967 to 1978. Green Revolution has created new momentum and many times it was considered that modern technology was the major attributing factor for increased production. This revolution refers to the introduction of genetic manipulation into the life science and in particular to agricultural research. As a result of technological revolution in agriculture, new varieties of seeds, new cropping patterns, new crops and techniques, new fertilizers and pesticides and new implements and machinery are fast appearing on the scene.

Genetic Revolution:

The Green Revolution was as much a social as a genetic revolution. It originally identified the creation of wheat and rice varieties that responded significantly to fertilizer and

water particularly in Asia. With time the words symbolized more generally the ability to increase agricultural yields in many crops in many areas." The term 'Green Revolution' implies a sustained or a continuous increase in agricultural output caused by an increase in yield per area. The Green Movement or as it has been called, "the Green Revolution" is a global phenomenon. It has virtually dealt with every aspect of our lives, every profession and discipline. In short the rapid growth of agricultural output since the mid- 60s is known as the Green Revolution, which implies transformation of traditional agriculture. The 'Green Revolution' and seed fertilizer revolution' have been used to label the package of measures introduced by farmers in the 1960s and after wards to boost production. A movement which included the introduction of high-yielding varieties of seeds after 1965 and the increased use of fertilizers and irrigation is known as the 'Green Revolution'. The problems of inequality and low productivity in agriculture have in recent years been brought to a head by the availability of new high-yielding varieties of cereals and the vision of the Green Revolution.

Spread of Revolution:

Since the mid 1960's the traditional agricultural practices are gradually being replaced by modern technology and farm practices in India also underwent far reaching changes. As such it paved the way for a veritable revolution in our country. Initially the new technology was tried in 1960-61, as a pilot project in seven Districts and was called Intensive Agricultural District Programme. Later the high yielding varieties programme was also added and the strategy was extended to cover the entire country. This strategy has been called by various names like Modern Agricultural Technology, Seed- Fertilizer-Water Technology or simply Green Revolution. The new varieties are of a short-term duration and consequently, instead of growing one crop, two crops and sometimes even three crops are grown. The Agriculture Ministry encouraged farmers to adapt new technology in farming and helped the farmers to improve the breed of animals. Since independence food has remained an extremely important issue on the Indian policy agenda. National policies address primarily the

production and distribution of food grains, but since the mid-1990s a new generation of state level initiatives deals specifically and exclusively with the production and marketing. During the mature Green Revolution, the south performed particularly well. This was consistent with a process of catching up as it had been slow to adopt the technology earlier in the Green Revolution.

The high yielding varieties of wheat and rice introduced in the late 1960s certainly contributed to these gains. So did modern varieties of maize and other crops introduced before and after the Green Revolution. The pace with which diversification is taking place also vary in different regions. Indian agriculture started showing significant diversification with the spread of Green Revolution technology beginning late 1960s. Dry land agriculture has, however, been relatively neglected in the development priorities of the country until recently. Though the Green Revolution of the mid-sixties enabled the country to curtail, if not eliminate, food imports through a significant rise in domestic food grain output, it has still gaps to be filled in terms of the spread of its impact. In 1976, food production self-sufficiency targets were met for the first time. Despite the dramatic population growth, food shortage on a national level is not a problem anymore. The productivity growth of rice and wheat constituted the anchors of Green Revolution in the past. India has had a successful record of having imported the high-yielding variety of seeds and adapting them to local conditions during the Green Revolution in wheat and rice. One of the manifestations of the growing market orientation of agrarian production was the emergence of a totally new kind of mobilization by the surplus producing farmers who demanded a better for the agricultural sector.

New Farmers Movements:

The 'new farmers movements' emerged almost simultaneously in the Green Revolution areas. Though initiated in the late 1970s, these movements gained momentum during the 1980s. The Green Revolution in India offers a significant scope to examine and

analyze technical change both in terms of class and gender relation. Even though Green Revolution was initiated as a new strategy in 1964, it was well under way by 1967, due to failure of monsoons caused agricultural stagnation and chronic dependence upon food aid from the USA with humiliating conditions forced Indian Government to adopt new technology to achieve self sufficiency in food grain production. The strategy was aimed to introduce improved higher yielding varieties of rice and wheat developed in Taiwan and Mexico respectively. India has undergone and is still undergoing a rapid agricultural change, where in the whole process of agriculture is yet to find its roots and adopts innovation. M.S.Swaminathan has greatly contributed to Green Revolution. Both irrigation and power supply are important components of agricultural infrastructure. Because there is little scope for expansion in the area under cultivation, increased productivity from the existing cultivated area is the most viable option to enhance agricultural production. Therefore there is an urgent need to expand irrigation facilities, especially in the area of dry zone cultivation. It was primarily the availability of irrigation facilities that made Green Revolution successful in its early phase.

High Yield Seeds:

The introduction of high-yielding varieties of seeds after 1965 and the increased use of fertilizers and irrigation led to the Green Revolution, which provided the increase in production needed to make India self-sufficient in food grains. The introduction of high yielding variety seeds and perhaps most important of all, the welcome response of the farmers to modernization of agriculture production of foundation seeds of paddy millets, hybrid millets, hybrid maize and the some extent cotton and pulses alone were taken up during the fifth plan. In 1960 the first of a generation of internationally funded and international staffed crop research institute, the International Rice Research Institute was established in the Philippines.

The high yielding varieties would be much more beneficial than the traditional varieties. Mechanization became widespread and necessary and with the introduction of high yielding rice varieties. The post culture and field trials conducted to find out whether green manuring has any direct manorial value for paddy. The high yielding variety programme envisaged a planned approach for the introduction of newly identified high yielding variety of paddy, jower, bajra, maize, etc, application of the inputs at optimum level and provision of credit facilities. The production and distribution of high yielding varieties of paddy and millets including hybrid seed has been included in the States Programme for seed distribution. The object of the distribution of improved seeds scheme is to produce and distribute good quality seeds to the farmers. The possibility of reducing the number of strains of paddy and millets in the state, consistent with farmer preferences and suitability of the varieties for the seasons and agro climatic conditions in the state, is receiving constant attention.

Impact:

The impact that Green Revolution technologies can have on farming and farmer's decision making is brought to life in the Green Revolution game, a sophisticated gaming simulation of the drama of rural development and technological change in agriculture based on original field work in India. The introduction of Green Revolution helped the farmers in raising their level of income. With the increase in farm production earning of the farmers also increased and they became prosperous. The Green Revolution promoted the development of the non farm sector directly, its effects on poverty reduction and overall economic development continued to be further rain fed. The Green Revolution has made a worthwhile impact only on a portion of the national cultivated acreage. High yielding varieties of crops need regular moisture supply and because of this impact of Green Revolution has been very high in regions with developed irrigation facilities. The Green Revolution may lead to impoverishment and malnutrition.

Economic Growth:

The Green Revolution lifted many people out of poverty, started economic growth and saved large areas of forest wetlands and other fragile lands from conversion to cropland. The impact of the Green Revolution on equity was questioned in early critiques. The technology involved can be seen to be selective and biased in favour of resource-rich regions and wealthy farmers. In Tamilnadu a Green Revolution would have reached many remote villages in the Dry Zone. Changes in consumption of diesel pumps and tractors occurred between 1979-80 and 1984-85 in the major states due to the Green Revolution. The result, known as the "Green Revolution, "has been quite remarkable, "miracle wheat" and "miracle rice" are splendid technological achievements in the realm of plant genetics. High agricultural yield achieved by application of high input-high output technology viz use of fertilizers, pesticides and extensive irrigation. Effects of the Green Revolution technology have been positive for agricultural growth and distribution. The major benefits of the Green Revolution were experienced mainly between 1965 and the early 1980s the programme resulted in a substantial increase in the production of food grains mainly wheat and rice. Especially in the 1970s the social scientists have joined the debate with a view to evaluating the impact of Green Revolution on income distribution, employment potential and social differentiation in the countryside.

Conclusion:

The architects of the Green Revolution sincerely tried to ensure the welfare of the farmers. The genesis and spread of Green Revolution is calculated to assist the farmers in enhancing their level of income and standard of life. With the increase in farm production earning of the farmers also increased and they became prosperous. In every successful agriculture sector, the use of largest portion of cultivable area became possible. The lands once left uncultivated due to unfriendly factors were brought under cultivation. Effects of the Green Revolution expertise have been constructive for agricultural growth and distribution.

For the production of quality seeds with genetic purity, physical purity and good germination, a series of quality control procedures are adopted right from selection of variety till it is processed and distributed to farmers. The Green Revolution led to large scale production of the grains, rapid advancement in income, better nutrition and improvement in the standard of living for small and large scale farmers and even for the landless poor. The landlords who invested resources on land were rather enthusiastic to implement new methods of cultivation. They were motivated after more profit.

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