

Green Revolution and Its Impact on Indian Agriculture

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Abstract: *Green revolution in India was a period when agriculture in India increased its yields due to the use of modern technology in agriculture. Green revolution allowed India to overcome poor agricultural productivity. Green revolution has several positive impacts in the Indian economy like increase in the production of food grains, increase in the productivity of land etc. Due to Green revolution Indian agricultural sector was able to meet the increasing demand of food grains. However, green revolution has certain kinds of negative impacts also. Due to Green Revolution there is an increase in inequalities in the distribution of income between rich and poor farmers. Green revolution also leads to the increase in regional inequalities as it is limited to only certain states of our country.*

1. Introduction

Since the mid 1960's, the traditional agricultural practices are gradually being replaced by modern technology and farm practices in India and a veritable revolution is taking place 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 Program (IADP). Later, the High Yielding Varieties Program (HYVP) was also added and the strategy was extended to cover the entire country. This strategy has been called by various names: modern agricultural technology, seed-fertilizer-water technology or simply Green Revolution. As a result of the new agricultural strategy there was the extensive use of modern technology to improve the agricultural production. In this article an attempt is made to discuss about the different achievements of Green Revolution and at the same time the different weaknesses of the new agricultural strategy or Green Revolution.

2. Objectives

- (a) To focus on the different strategies of Green Revolution.
- (b) To discuss about the achievements of Green Revolution.

- (c) To highlights the weaknesses of Green Revolution.

3. Methodology

For the present study descriptive analysis method is applied and it is based on the secondary sources of data which have been collected from various articles, books, reports, documents journals, newspaper etc.

4. Green Revolution

The period of mid 1960s was very significant from the point of view of agriculture. New high yielding varieties of wheat were developed in Mexico by Prof. Norman Borleng and his associates and adopted by a number of countries. As a result of these high yielding varieties seeds, production of wheat per hector rose to the level of 5000 to 6000 kg in Mexico in 1965. Tiwan also recorded similar increases. These high yielding varieties of seeds required proper irrigation facilities and extensive use of fertilizers, pesticides and insecticides. Accordingly, they had to be introduced in the form of package program. Because of the promise of increasing agricultural production and productivity held by the new varieties of seeds, countries of South and Southern Asia started adopting them on an extensive scale. The new agricultural strategy was put in to practice for the first time in India in the Kharif season in 1966 and was termed as High Yielding Varieties Program (HYVP). Initially it was implemented in a total area of 1.89 million hectares. On the eve of the 4th five year plan, the coverage was estimated to be 9.2 million hectares. The new agricultural technology uses such resources like fertilizers, pesticides, agricultural machinery, etc., which are produced outside the agricultural sector. Green Revolution started in India in the early 1960's and led to an increase in food grain production, especially in Punjab, Haryana and Uttar Pradesh during the early phase. Since 1966, the use of modern agricultural inputs has increased at a compound rate of 10 percent per annum in contrast to the traditional inputs rising at the rate of only one percent per annum during the same period.

5. Positive Impacts of Green Revolution

The period after 1966 saw substantial increase in food grains production especially wheat production. HYVP depended for its success especially on the availability of proper irrigational facilities and various other inputs. Therefore it could be accepted only in those regions which possessed regular irrigational facilities and only by those farmers who could afford to purchase agricultural inputs. As a result of this it is said that green revolution had led to inter regional and inter personal inequalities.

The major achievement of green revolution was that there was a substantial increase in agricultural production. Food grains output increased from 81 million tones in 3rd plan (annual average) to 202 million tones in the 10th plan. In 2008-09, it stood at 233.9 million tones. However, HYVP was restricted to only five crops – wheat, rice, jowar, bajra and maize. Therefore the non food grains were excluded from the ambit of new strategy. The production of wheat had increased from 11.1 million tones from 3rd plan (annual average) to 70.2 million tones in the 10th plan. The production of wheat had touched the high level of 80.6 million tones in 1008-09. The overall contribution of wheat to total food grains has increased from 13% in 1950-51 to 34.5% in 2008-09. Wheat has remained the mainstay of the Green Revolution over the years.

The average annual production of rice also rose from 35.1 million tones in the 3rd plan to 85.6 million tones in the 10th plan. It stood at 99.2 million tones in 2008-09. The green revolution was mainly directed to increase the production of food grains. It did not affect initially the production of commercial crops or cash crops such as sugarcane, cotton, jute, oilseeds and potatoes; these crops did not recorded any significant improvement initially. However, significant improvement in the output of sugarcane took place after 1973-74. Likewise, there was considerable improvement in the production of other cash crops such as oilseeds, potatoes etc. In the year 1960-61 the production of oilseeds was only 7 million tones which was increased to 31.1 million tones in 2009-10. The production of cotton also increased from 6 million tones in 1960-61 to 33.4 million tones in the year 2009-10. Similarly the production of jute increased from 4 million tones in 1960-61 to 10.6 million tones in the year 2009-10. The production of potatoes also increased from 3 million tones in 1960-61 to 36.6 million tones in 2009-10.

The successful adoption of the new agricultural technology has led to continuous expansion in areas under crops, increase in total production and raise in agricultural productivity. Impressive results have been achieved in wheat,

rice, maize, potatoes, etc. The adoption of new technology has also given boost to agricultural employment because of diverse job opportunities created by multiple cropping and shift towards hired workers. At the same time there has been displacement of agricultural labor by extensive use of agricultural machinery. Again the new technology and modernization of agriculture have strengthened the linkages between agriculture and industry. Even under traditional agriculture, the forward linkage of agriculture with industry was always strong, since agriculture many of the inputs to industry; but the backward linkage of agriculture to industry- the former using the finished products of later was weak. Now, however, agricultural modernization has created a large demand for inputs produced and supplied by industries to agriculture and thus the backward linkage has also become quite strong. In this way, the linkage between agriculture and industry has got strengthened.

6. Negative Impacts of Green Revolution

The new agricultural policy has made the farmers market oriented. The farmers are largely dependent on the market for the supply of inputs and for the demand for their products. At the same time, the demand for agricultural credit has also increased as the new technology has increased the cash requirements of the farmers. Besides, modern technology has definitely proved its superiority over the traditional technology only in those areas where appropriate conditions prevail. But as mentioned above the conditions prevail only in selected areas. When the new agricultural strategy was introduced in the early 1960s, it was hoped that trend of raising output of food grains would continue. But sharp fluctuations of food grains output were observed in the later years.

According to a Report on Currency and Finance, 2001-02, inadequate irrigation cover for most of the crops become an important constraints in the process of adoption of new agricultural technology. According to that report only 40% of the gross cropped area in the country was under irrigation in 2002-03. Again the share of public expenditure on irrigation has declined over the years. Irrigation covers across various state is quite skewed, for example, 98% of the gross crop area in Punjab was irrigated in 2002-03, while only 18% of the gross crop area was irrigated in Maharashtra. The distribution of irrigation facilities across crops is equally skewed, for instance, while 88% of area under wheat and 52% area under rice was irrigated in 2002-03, only 14% area under pulses and 22% area under oilseeds was irrigated in that year. The low irrigation cover for various crops

has led to the severe rainfall dependency. Thus Indian agriculture is still a gamble in the monsoons.

Again there was unsatisfactory spread of new technological practices, including adoption of HYV seeds and the uses of fertilizers and pesticides, and inadequate spread of farm management techniques and other practices such as soil conservation and crop rotation. There was unbalance use of inputs. Various subsidies on inputs have resulted in skewed and unsuitable use of inputs. For instance, subsidies on urea have resulted in unbalance use of Nitrogen, Phosphorus and Potassium fertilizers and aggravated deficiency in the use of micro nutrients. Subsidies on electricity and diesel have led to the cultivation of water intensive crops such as rice and wheat leading to unsuitable cropping patterns.

Technological changes in agriculture have had adverse effects on the distribution of income in rural areas. It has contributed to widening the disparities in income between different regions, between small and large farms and between landlords on the one hand and landless labors and tenants on the other. Another manifestation of neglect of agriculture is that the actual expenditure on agriculture, irrigation and flood control as a proportion of actual total plan expenditure is declining rapidly over the plans. It declined from 37% during the 1st plan to 19.8 % in the 9th plan and 18 % in the 10th plan the decline of plan outlay has resulted in gradual deterioration of the rural infrastructure like irrigation, canals, roads, warehouse etc. This has resulted in reducing the potential for future growth.

Some micro level socio economic studies on green revolution areas have revealed certain undesirable social consequences of green revolution. Many large farmers have evicted tenants as they now find it more profitable to cultivate land themselves. Thus a large number of tenants and share cropper have lost their lands and have been forced to join the ranks of agricultural laborers.

7. Conclusion

From the above discussion we can see that there are both positive and negative impacts of Green Revolution on Indian Economy. Due to Green Revolution there was the considerable increase in the food grains production which was extremely necessary for a country like India whose population is increasing day by day. Due to Green Revolution agricultural sector of India is able to meet the increasing demand for food grains. However, Green Revolution also has its negative consequences like due to Green Revolution there was a considerable increase regional and personal

inequality. Green revolution is only limited to certain crops like wheat and rice; and it is also limited to certain areas like Punjab and UP.

8. References

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