

GREEN REVOLUTION

The term green revolution was first used by **William Gaud**. The beginnings of the Green Revolution are often attributed to Norman Borlaug, an American scientist interested in agriculture. **Norman Borlaug** is the Father of the Green Revolution. In the 1940s, he began conducting research in Mexico and developed new disease resistance high-yield varieties of wheat. By combining Borlaug's wheat varieties with new mechanized agricultural technologies, Mexico was able to produce more wheat than was needed by its own citizens, leading to them becoming an exporter of wheat by the 1960s. Prior to the use of these varieties, the country was importing almost half of its wheat supply.

Due to the success of the Green Revolution in Mexico, its technologies spread worldwide in the 1950s and 1960s. The United States, for instance, imported about half of its wheat in the 1940s but after using Green Revolution technologies, it became self-sufficient in the 1950s and became an exporter by the 1960s.

In order to continue using Green Revolution technologies to produce more food for a growing population worldwide, the Rockefeller Foundation and the Ford Foundation, as well as many government agencies around the world funded increased research. In 1963 with the help of this funding, Mexico formed an international research institution called **The International Maize and Wheat Improvement Center**.

Countries all over the world, in turn, benefited from the Green Revolution work conducted by Borlaug and this research institution. India, for example, was on the brink of mass famine in the early 1960s because of its rapidly growing population. Borlaug and the Ford Foundation then implemented research there and they developed a new variety of rice, IR8, that produced more grain per plant when grown with irrigation and fertilizers. Today, India is one of the world's leading rice producers and IR8 rice usage spread throughout Asia in the decades following the rice's development in India.

In the year 1965, the government of India launched the Green Revolution with the help of a geneticist, now known as **the father of the Green revolution (India) M.S. Swaminathan**. The movement of the green revolution was a great success and changed the country's status from a food-deficient economy to one of the world's leading agricultural nations. It started in 1967 and lasted till 1978.

The Green Revolution within India led to an increase in agricultural production, especially in Haryana, Punjab, and Uttar Pradesh. Major milestones in this undertaking were the development of a high-yielding variety of seeds of wheat and rust-resistant strains of wheat.

Green Revolution

The Green Revolution is referred as the process of increasing agricultural production by incorporating modern tools and techniques. It is associated with agricultural production. It is the period when agriculture of the country was converted into an industrial system due to the adoption of modern methods and techniques like the use of high yielding variety seeds, tractors, irrigation facilities, pesticides, and fertilizers. Until 1967, the government majorly concentrated on expanding the farming areas. But the rapidly increasing population than the food production called for a drastic and immediate action to increase yield which came in the form of the Green Revolution.

The method of green revolution focused on three basic elements, that are:

1. Using seeds with improved genetics (High Yielding Variety seeds).
2. Double cropping in the existing farmland and,
3. The continuing expansion of farming areas

Features of the Green Revolution

- The introduction of the HYV seeds for the first time in Indian agriculture. These seeds had more success with the wheat crop and were highly effective in regions that had proper irrigation. So the first stage of the Green Revolution was focused on states with better infrastructure – like Punjab and Tamil Nadu.
- During the second phase, the HYV seeds were given to several other states. And other crops than wheat were also included into the plan
- One basic requirement for the HYV seeds is proper irrigation. Crops from HYV seeds need alternating amounts of water supply during its growth. So the farms cannot depend on monsoons. The Green Revolution vastly improved the inland irrigation systems around farms in India.
- The *emphasis* of the plan was mostly on food grains such as wheat and rice. Cash crops and commercial crops like cotton, jute, oilseeds etc were not a part of the plan
- Increased availability and use of fertilizers to enhance the productivity of the farms
- Use of pesticides and weedicides to reduce any loss or damage to the crops
- And finally the introduction of technology and machinery like tractors, harvesters, drills etc. This helped immensely to promote commercial farming in the country.

Impact of Green Revolution in India

- ***Increase in Agricultural Production:*** Food grains in India saw a great rise in output. It was a remarkable increase. The biggest beneficiary of the plan was the Wheat Grain. The production of wheat increased to 55 million tonnes in 1990 from just 11 million tonnes in 1960.
- ***Increase in per Acre Yield:*** Not only did the Green Revolution increase the total agricultural output, it also increased the per hectare yield. In case of wheat, the per hectare yield increased from 850 kg/hectare to an incredible 2281 kg/hectare by 1990.
- ***Less Dependence on Imports:*** After the green revolution, India was finally on its way to self-sufficiency. There was now enough production for the population and to build a stock in case of emergencies. We did not need to import grains or depend on other countries for our food supply. In fact, India was able to start exporting its agricultural produce.
- ***Employment:*** It was feared that commercial farming would leave a lot of the labour force jobless. But on the other hand, we saw a rise in rural employment. This is because the supporting industries created employment opportunities. Irrigation, transportation, food processing, marketing all created new jobs for the workforce.
- ***A Benefit to the Farmers:*** The Green Revolution majorly benefited the farmers. Their income saw a significant raise. Not only were they surviving, they were prospering. It enabled them to shift to commercial farming from only sustenance farming.

Besides the positive impact, the revolution had a gloomy side too. Some of the negative effects of the Green Revolution are stated below:

- Retardation of agricultural growth due to inadequate irrigation cover, shrinking farm size, failure to evolve new technologies, inadequate use of technology, declining plan outlay, unbalanced use of inputs, and weaknesses in credit delivery system.
- Regional dispersal of the evolution created regional inequalities. The benefits of the green revolution remained concentrated in the areas where the new technology was used. Moreover, since the revolution for the number of years remained limited to wheat production, its benefits were mostly accrued only to wheat-growing areas.
- Interpersonal inequalities between large and small scale farmers. The new technologies introduced during the revolution called for substantial investments which were beyond the means of a majority of small farmers. Farmers having large farmlands continued to make greater absolute gains in income by reinvesting the earnings in farm and non-farm assets, purchasing land from the smaller cultivators, etc.

