The Green Revolution in India

Introduction

In the 1960s, the Green Revolution allowed less developed countries, such as India, to overcome chronic food deficits. Basically, the Green Revolution stands for producing more food and other agricultural products from less land. Modernization is one of the main concepts in the Green Revolution. The practices were made up of using high-yielding varieties of seeds, modifying farm equipment, and substantially increasing chemical fertilizers. This allowed growth and sustainability. At the beginning of the Green Revolution, there was a large growth in Indian agriculture however, instability arose and the Green Revolution was on a rapid decline. In the end, it caused a shortage of water. When water is the primary source of survival, life seems difficult when there is a large shortage of the one thing that can make assurance of life.

Before the Green Revolution was introduced prior to the 1960s, farmer’s main goal was to produce wheat and rice. These varieties had a low yield per hectare, which means that these crops took one year to produce and in order for farmers to increase production, there would have to be a change. The change would have to consist of irrigation facilities, fertilizers, and pesticides. In order for these changes to work properly, there would have to be a sufficient quantity of water and fertilizers. At the beginning, many farmers thought if they could double their production of crops in one season, that they would do whatever they could do increase crop production. Improving high yielding varieties of wheat was a major factor, which finally led to the Green Revolution.
The introduction of high-yielding varieties of seeds and the increased use of chemical fertilizers provided the agriculture industry in India an increase in production. The Green Revolution was thought to pave the way for rapid industrial growth, but in the end it did exactly the opposite. It created a shortage. At the time, when the Green Revolution first began, it was considered one of the most significant technological achievements in the agricultural industry. The Green Revolution dramatically increased global food production over the next two decades, particularly in India.

**Green Revolution Leader**

Mankombu Sambasivan Swaminathan is an Indian genetics and international administrator who took the leading role in India’s Green Revolution. His main goal was to eliminate world hunger and poverty, especially in India by using environmentally sustainable agriculture, sustainable food security and the preservation of biodiversity. He called the preservation of biodiversity the evergreen revolution. Swaminathan was apart of the Indian Council of Agricultural Research and he was the administrator of Agriculture from 1979-1980, which is when his early work was started in the involvement of the Green Revolution. M.S. Swaminathan was hailed as the father of the Green Revolution in India.

**Impacts**

The increase production of wheat fueled a selfsufficiency of food for India. The high yielding seeds and irrigation facilities, brought enthusiasm to many farmers in India. By seeing better profits from the Green Revolution, the farmers
began to enjoy life more with better earnings, knowing that they had the ability to provide for their family. Unfortunately, with the rise in use of chemical pesticides and fertilizers, there were many negative effects on the soil and land.

Despite the early benefits, it became apparent that there were many negative impacts from the green revolution. After the Green Revolution began in India, there was a change in the land use patterns, known as the degradation of land. Whereas primarily there were only one crop planted per year, before the Green Revolution. There were two to three crop rotations every year, the land quality diminished and the land quality had suffered. Due to the impute of heavy chemical fertilizers, a strain on the carbon material within the soils were created. There also has been a loss in bio diversity in farm lands because since there has been an increase in chemical pesticides and fertilizers, many insects have been killed and the birds that create homes in rural areas have found new areas to live because of the negative side effects that the pesticides give off to the environment.

As a result of chemical use in the land, contamination of ground water affected the health of the people who are consuming the agricultural goods that now contained pesticides and chemicals. This directly affected the health of Indians, who were not used to putting such chemicals in their bodies.

It was not only the environmental and health problems that arose; there were also many social problems that occurred in the late 20th century because of the green revolution. Since the farming industry was booming and farmers had higher incomes, there was an increase demand for more land which created
more demand for farm families who took on more farming land that they could manage.

Critics believe that the Green Revolution resulted in environmental degradation, increased income inequality, inequitable asset distribution, and worsened poverty levels in India. The majority of the large farmers were able to adapt to the new technologies because they had better irrigation, fertilizers, and seeds. However, the Green Revolution affected just as many of the smaller farmers during the Green Revolution. It is believed that the Green Revolution encouraged mechanization, which pushed down rural wages and employment, and increasingly impoverished small farmers.

When the Green Revolution occurred, there was a spread only in irrigated and high-potential rainfed areas, which created many villages without sufficient water. Even though there were more employment opportunities and cheaper food, not having a sufficient amount of water in a village is crucial for survival. There was some retreating of water from natural watersheds; this was replenishing water, which was pumped from areas that can be quickly replenished by the rainwater, however, there was not a sufficient amount of water for survival.

Double Cropping

Double cropping was a primary feature of the Green Revolution. The idea was for farmers to have two crop seasons within one year. This meant that the crop production would double within one year. This was based primarily on the natural one monsoon per calendar year. For farmers to have to double the crops
per season there would have to be one artificial monsoon. These were created from a large irrigation facility. Dams were built in rural areas to collect large volumes of monsoon rainwater. Before the Green Revolution, this water was wasted. This was a simple irrigation technique that rural farmers adopted. However, in a year without monsoon, this led to failure.

**Consequences, Damage and Results**

The consequences of the Green Revolution to the rural farming areas, dating significantly from the ‘year of the drought’. There were flaws in the technological achievements, which created this drought in India. The new technologies relied on the monsoon seasons every year for the water supply in reassuring to keep up with increased land use and production. When the monsoon failed in 1972-73, the ‘year of drought’ occurred; this had a major effect on the Green Revolution.

There was much damage caused by the Green Revolution. There was an excessive amount of fertilizers and pesticides used which polluted waterways and poisoned agricultural workers. The beneficial wildlife and insects that lived in the farming areas were also killed which made the land not as healthy for farmers to work with.

There are four main economic results of the Green Revolution. The crops were under high-yield varieties and needed more water, fertilizers, pesticides, and other chemicals. This stimulated growth of the local manufacturing sector. For example, the industrial growth created new jobs and contributed to the country’s GCP. There was an increase in irrigation, which created a need for new
dams to collect the monsoon water. The water was stored and used to create hydro-electrical power. This boosted the industrial growth, created new jobs, and improved the quality of life within the people living in the villages. India paid back all of their loans from the World Bank to create the dams in rural areas. By an outside view, this looks good on behalf of India for paying back such a large loan and it looks good in the eyes of other lending agencies.

Economy

The irrigation and growth of wheat and rice are very important to the economy and production of livelihood in India. These are the main products that most families can afford and live off on a daily basis. Both wheat and rice varieties require carefully controlled irrigation. About 75% of cropped land is devoted to food grains such as rice, wheat, maize, and barley. Rice and wheat contribute to approximately 70%-90% of the food requirements for the people of India. Because of the high yielding varieties, the soils are too dry when the monsoon season fails when the agricultural industry needs an adequate amount of water for the rice and wheat to grow properly, but that water is not available, it poses a great problem to the success of the Green Revolution.

Countries involved in the Green Revolution have subsidies in part with the prices of the fertilizers, pesticides and the production of wheat and rice. At the beginning, there were no problems with the Green Revolution until the farmers and government started to see problems arising.

The sudden change in agricultural techniques developed caused a rapid change creating economic imbalance among farmers, which contributed to large
interregional agricultural disparities. It has been brought to the attention of many farmers that crop productivity needs to increase in order to keep up with the competitive agricultural market. In order to survive the market, may need to increase productivity in order to keep an income coming in for a family. This requires new technology being brought into their farms to succeed in the agricultural industry in India, and yet not all farms can afford this new technology.

There has been an ongoing debate in India surrounding the survival of farmers: whether to increase agricultural productivity or improve food quality. Ever since the Agreement on Agriculture was created in 1999 from the World Trade Organization this has been a topic surrounding not only farmers but this problem affects mostly everyone living in India. This idea was created to replace agriculture price support with direct payments to farmers from production dates.

Protests

One would think that protests to get peoples attention about the growing problem from the green revolution would not be wasting food, however, that is not the case. In the district in Andhra Pradesh, farmers had dumped cartloads of tomatoes on the streets to express their struggles as farmers. With the price of tomatoes increasing for a normal family, it was almost impossible for farmers to keep producing these goods and selling them at a reasonable price. In another instance near Punjab, potato farmers demonstrated their negative views towards the Green Revolution by throwing potatoes onto highways to get people in the community to start talking about the agricultural problem arising. It is believed that the productivity will bring more income to farmers, which will no doubt be
true, however, the factors of the environmental issues because of the over
productivity does not come into place.

**Farmer Suicide**

Suicide has become common in rural farms on the outskirts of major
Indian cities. The pressure farmers have to produce a certain amount of crops
yearly puts many stresses on top of their busy lives. Farmers who cannot
produce a certain amount of crops, they believe that the stress about not being
able to provide for their families, which they believe life not worth living any
longer. In 2002, there were over 1000 suicides reported from 12 districts of
Maharashtra, India. The rising amount of debt that farmers collect from having to
purchase fertilizers and pesticides puts a large strain on themselves. Within the
process of producing the second round of crops within one year, when the
second round does not produce as quickly or they do not have the same quality,
farmers get very distressed that they will not be able to sell these crops. The
government in India has been in denial about the number of suicides that have
occurred since 1987, which has arisen to over 10,000 suicides committed by
farmers. This is within the same time that the Green Revolution began to tumble
and not be as successful.

**Food Security**

At this time in India, during the food crisis, farmers cannot pay the wages.
There is a shortage of farm laborers because of the higher prices that the
farmers need to pay the laborers. The increasing price from seeds, fertilizers and
water, cause the wages to increase and it will make growing food more
expensive. Small farmers cannot afford this especially since they need to provide for their family.

Conclusion

After over forty years since the green revolution, the soil and water in India has been poisoned and infected with pesticides it has caused a major problems to the food security in India. The World Bank supports the green revolution because they wanted to focus on the environment, sustain economic growth, which was not possible without sustainable environment. India borrowed money from the World Bank in support of the green revolution.

In this end, we see that the Green Revolution is not enough. If the population keeps growing in the developing world, it is going to be close to impossible for everyone to get enough nutrients and food for a country such as India. The cost of production is becoming very expensive and as we can see with the Green Revolution, when putting growth hormones in the agricultural industry, there are more political and environmental problems that arise.

Work Cited


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