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Green revolution

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Why is in news? Mankombu Sambasivan Swaminathan, popularly known as M.S. Swaminathan, the legendary agricultural scientist and a key architect of the country's Green Revolution, passed away at his residence in Chennai.

About:

In the **year of 1965**, the India Indian initiated the Green Revolution under the supervision of a geneticist, who is also known as the **father of the Green revolution** in India M.S. Swaminathan.

Revolution within India **leading to an increase in food grain production**, mostly in the region of Punjab, Haryana, and Uttar Pradesh.

Major landmark in this undertaking was the **development of high-yielding varieties (HYV) seeds of wheat, and rust resistant strains of wheat**.

Green revolution:

The rapid gains in wheat and rice yields in developing nations caused **by improved varieties and increased fertiliser and other chemical input use** are known as the "Green Revolution," which has had a significant influence on incomes and food supplies in many of these nations.

The phrase "green revolution" was coined by **William Gaud**.

Norman Borlaug is regarded as its founder due to which he was honoured with **Nobel Prize in 1970** for developing High Yielding Verities of Wheat.

Green Revolution in India:

Green Revolution in India is the **process of boosting agricultural output** using contemporary methods and instruments.

It was during this period that the **nation's agriculture was transformed into an industrial system** by the **adoption of modern agricultural practices** such the use of high yielding seed varieties, tractors, irrigation systems, herbicides, and fertilizers.

Up until 1967, the government's main focus was on enlarging the agricultural areas.

However, the rapidly growing population demanded drastic and fast action to enhance yield, which manifested itself in the form of the Green Revolution.

In India, the Green Revolution was **mainly led by M.S. Swaminathan**.

In 1961, M.S. Swaminathan invited Norman who suggested a revolution like what has happened in Mexico, Japan, etc in Indian agriculture.

Green Revolution was introduced with the **Intensive Agriculture District Program (IADP)** on an experimental basis in 7 districtin India.

In 1965-66 the HYV program was started which is the starting point of the Green Revolution in India.

Objectives:

The revolution was launched to **address India's hunger crisis** during the second Five Year Plan.

The long term objectives included overall agriculture modernization based on rural development, industrial development; infrastructure, raw material etc.

To **provide employment** to both agricultural and industrial workers.

Producing stronger plants which could withstand extreme climates and diseases.

By spreading technology to non-industrialized nations and setting up many corporations in major agricultural areas.

Important Crops in the Revolution:

Main crops were Wheat, Rice, Jowar, Bajra and Maize.

Non-food grains were excluded from the ambit of the new strategy.

Wheat remained the mainstay of the Green Revolution for years.

Positive impacts:

The crop area under high-yielding varieties of wheat and rice **grew considerably** making India one of the world's biggest agricultural producers.

The import of goof grains reduced as **India became self-sufficient in food grains**, rather India started exporting at times.

The **per capita net availability** of food grains has **increased**.

The **level of income of farmers increased** as agricultural productivity improved. It **promoted capitalist farming** as big land owners profited the most.

The **large-scale mechanization of farms** created a demand for machinery like tractors, harvesters, threshers, combines, diesel engines, electric motors, pumping sets, etc. Demand for chemical fertilizers, pesticides, insecticides, weedicides, etc. also increased considerably.

Several agricultural products came to be used as raw materials in various industries giving rise to agro-based industries.

The **demand for labour force increased** rural employment, and the industrial workforce at the same time.

Negative Impacts:

It **mostly focused on food grains and excluded other types of agricultural products**. Although all food-grains including wheat, rice, jowar, bajra and maize have gained from the revolution, other crops such as coarse cereals, pulses and oilseeds were left out of the ambit of the revolution.

Major commercial crops like cotton, jute, tea and sugarcane were also left almost untouched by the Green Revolution. This ultimately **led to the dangerous trend of Monocropping**.

The Green Revolution has **displaced the agricultural labourers**, leading to rural unemployment. The mechanical innovations like tractors have displaced agricultural labourers.

The overuse of chemical fertilizers to get high yield causes **physical and chemical degradation of the soil** by altering the natural microflora and increasing the alkalinity and salinity of the soil

It led to **growing disparities in economic development** at inter and intra-regional levels.

Only 40 percent of the total cropped area benefitted while the rest was left untouched by it. The most benefitted areas are Punjab, Haryana and western Uttar Pradesh in the north and Andhra Pradesh and Tamil Nadu in the south.

Environmentalists and others have studied the **long-term repercussions** of the green revolution and claim that it exacerbated **sociological, economic, and environmental issues** like farmer suicides, rural indebtedness, and droughts.

Constraints on the spread of High Yielding Varieties:

High Yielding Variety Programme (HYVP) was **restricted to only five crops**: Wheat, Rice, Jowar, Bajra and Maize.

Therefore, **non-food grains were excluded** from the ambit of the new strategy.

The HYV seeds in the non-food crops were either not developed so far or they were not good enough for farmers to risk their adoption.

The **benefits** of Green Revolution were **primarily reaped by the rich farmers as they had large land area**, high amount of funds to invest in buying fertilizers, machines, HYV seeds etc.

Majority of farmers on the other hand had small land holdings, with less funds to invest; hence they could not be benefited much from Green Revolution. In this way, GR further widened the gap between the rich and the poor farmers.

The high yield crops **require more water and fertilizers as compared to the normal varieties of crops**. This constrained it to resource rich states and arid states could not benefit. Moreover, high input usage also led to decrease in its reach throughout India.

Evergreen Revolution:

The term "Evergreen Revolution" was **coined by Dr. M. S. Swaminathan** to describe a strategy for improving output and productivity **without compromising short- and long-term food production goals**.

The objective is to **produce more using fewer resources**—less water, less pesticide, and less land—and to achieve sustainable agriculture, there must be an evergreen revolution.

The productivity of farms can be increased by **introducing modern information and communication technology** (ICT) to Indian farmers.

Through **networking on weather alerts**, planting season, and produce prices, ICT projects can address important issues in the agricultural value chain.

One of the pillars of the Digital India initiative, **e-Kranti**, focuses on technology for farmers and offers real-time pricing updates, online input ordering, and mobile banking for payment.

Conclusion:

Overall, the Green Revolution offered India, a level of national food security that had never before been possible. It symbolized the effective transfer of the same agricultural scientific revolution that the industrialized nations had previously grabbed for themselves. Taking into account the lessons learned from the past, it must be made sure that such initiatives cover all of the beneficiaries across all regions rather than focusing only on a small area.