EDITORIAL ANALYSIS

Time: 10 min **Date: 19-10-2023**

MS Swaminathan: Indian Agriculture Lacks Today

Syllabus: GS2/ Government Policies & Interventions, GS3/ Indian Agriculture

In News

- India needs more minds like MS Swaminathan to deal with the current issues faced by Indian Agriculture.

Agriculture in India

- India is one of the major players in the agriculture sector worldwide and it is the primary source of livelihood for ~55% of India's population.
- **India:**
  - Has the **world's largest cattle herd** (buffaloes),
  - Has **largest area planted to wheat**, **rice, and cotton,** and
  - Is the largest producer of milk, pulses, and spices in the world.
  - It is the **second-largest producer** of fruit, vegetables, tea, farmed fish, cotton, sugarcane, wheat, rice, cotton, and sugar.
- Agriculture sector in India **holds the record** for **second-largest agricultural land in the world** generating **employment for about half of the country's population**.

Role of MS Swaminathan Indian Agriculture

- **The Green Revolution:**
  - In India, the green revolution was launched under the guidance of geneticist **Dr. M. S. Swaminathan**.
  - The Green Revolution was a period that began in the 1960s during which agriculture in India was converted into a **modern industrial system** by the adoption of technology, such as the use of **high-yielding variety (HYV) seeds, mechanised farm tools, irrigation facilities, pesticides** and **fertilizers**.
  - **Primary aim:**
    - The green revolution's primary aim was to introduce high-yielding varieties (HYVs) of cereals **to alleviate poverty and malnutrition.**
- **Introduction of Mexican Wheat varieties in India:**

    - Norman Borlaug, an American agronomist, had bred the semi-dwarf wheat varieties in Mexico.
        - These were the less tall varieties with strong stems that responded to high-fertiliser doses.
    - Encouraged by their yield performance at the multi-location trials, Swaminathan proposed that Borlaug's varieties be planted in the fields of Indian farmers, especially smallholders, in the ensuing **1964-65 rabi season.**
    - He sought 1,000 such "national demonstrations" in India.
- **Doubling of wheat production in Droughts:**
    - In 1965-66 and 1966-67, India suffered back-to-back droughts.
        - As foodgrain production fell to 72-74 million tonnes (mt), from the previous five years' average of 83 mt, imports soared and touched 10.4 mt in 1966.
    - Swaminathan now pushed for the **import of 18,250 tonnes of seeds** of the two Mexican varieties.
    - As the imported seeds got planted on a large scale, foodgrain output crossed 95 mt in 1967-68 and 108.5 mt by 1970-71.
        - Wheat production alone more than doubled from 11.4 mt to 23.8 mt between 1966-67 and 1970-71.
- **Master strategist & cautionary:**
    - He had flagged the **risks of pathogen and pest attacks from mono-cropping** ("a single variety grown in large, contiguous areas")
    - He also warned about the **unscientific tapping of underground water** (leading to) the rapid exhaustion of this wonderful capital resource left to us through ages of natural farming.

<u>Issues faced by the sector</u>

- **Food inflation:**
    - Despite the success in terms of production that has ensured food security in the country, food inflation and its volatility remain a challenge.
- **Crop productivity:**
    - In India, the crop productivity is much lower than other advanced and emerging market economies due to various factors, like fragmented landholdings, lower farm mechanization and lower public and private investment in agriculture.
- **Environmental hazards:**
    - Current overproduction of crops like rice, wheat and sugarcane, has led to rapid depletion of the ground-water table, soil degradation and massive air pollution raising questions about the environmental sustainability of current agricultural practices in India.

- **Overutilization of fertilisers:**
    - The government spends well **over ₹1-lakh crore per annum** towards **fertiliser subsidy** translating into **approximately ₹7,000 per farmer**.
        - This led to **indiscriminate use of fertilisers** resulting in irreparable **ecological damage, soil infertility, and a toxic food chain**.
        - Soil position in Punjab is unhealthy as 246 kg of fertilisers are used per hectare compared to the national average of 135 kg.
- **Manures, Fertilizers and Biocides:**
    - Indian soils have been used for growing crops over thousands of years without caring much for replenishing. This has led to depletion and exhaustion of soils resulting in their low productivity.
- **Irrigation:**
    - Although India is the second largest irrigated country of the world after China, only one-third of the cropped area is under irrigation. Irrigation is the most important agricultural input in a tropical monsoon country like India.
- **Conventional method of cultivation:**
    - In spite of the large scale mechanization of agriculture in some parts of the country most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools and implements like wooden plough, sickle, etc.
- **Agricultural marketing:**
    - Agricultural marketing still continues to be in a bad shape in rural India. In the absence of sound marketing facilities, the farmers have to depend upon local traders and middlemen for the disposal of their farm produce which is sold at throw-away price.

<u>Suggestions & way ahead</u>

- **Crop Diversification:**
    - Agriculture in green revolution states cannot be saved unless a substantial part of rice cultivation is moved from there to eastern states.
    - States want to diversify to other crops, but they do not want their income to fall in the process.
    - And that can be done only when the State builds robust ecosystems for alternative crops as it had done for rice and wheat.
- **Supply-side interventions:**
    - The need is supply-side interventions such as higher public investment, storage infrastructure and promotion of food processing.
- **Climate-resistant crops:**

    - Addressing the challenges like water & air pollution would require agricultural production focussed on the water-energy nexus, making agriculture more climate resistant and environmentally sustainable.
- **Technological interventions:**
    - Wider use of digital technology and extension services will be helpful in information sharing and generating awareness among the farmers.
- **Need of Green Revolution 2.0:**
    - India needs a second green revolution along with the next generation of reforms with a view to make agriculture more climate-resistant and environmentally sustainable.

Daily Mains Question

[Q] India needs more minds like MS Swaminathan to deal with the current issues faced by Indian Agriculture. Examine in context of MS Swaminathan's role in India's Green Revolution.