Agricultural Productivity in India

Why in news?

India's agriculture productivity has been stagnated when compared to other countries that led to low contribution to economy over the years.

What is agricultural productivity?

- **Agricultural productivity** –It is measured as the ratio of agricultural outputs to agricultural inputs.
- It can be defined as a measure of efficiency in an agricultural production system which employs land, labour, capital and other related resources.

Status of Agricultural Productivity in India

• **Low yields** – It remain far below global standards.
• Over the past two decades, crop production in India has made minimal progress.

Crops (yield per hectare)

Crops	India	Other nations
Cotton	479 kilograms	China-1990 kgs
Maize	6100 kilograms	U.S.- 11,000 Kgs
Soybean	1200 kilograms	Brazil-3600 kgs

• **Modest improvement** – In 2010, *soybean* yield was 1006 kilograms per hectare, increasing to 1200 kilograms by 2024.
• **Marginal growth** – *Pulses* rose from 625 kilograms per hectare in 2010 to just 776 kilograms by 2020.
• **Bare minimal growth** – In 2004, cotton production stood at 470 kilograms per hectare, and by 2024, it had barely shifted, reaching just 446 kilograms.

> *Agriculture employs more than 50% of India's workforce but it accounts only 14% of India's GDP, and about 13 % of exports.*

What are the reasons for stagnated/ low productivity?

- **Increase in small land holdings –** Larger amount of agricultural area has been *fragmented into smaller pieces of land*, which makes capital-intensive technology improvements difficult.
  - *Over 92% of Indian farmers* work on tiny and marginal land of approximately 1-2 acres per farmer.
- **Overdependence on monsoon** - Nearly 60% of Indian agriculture is dependent upon unpredictable monsoons.
  - Only about 51% of the agricultural area cultivating food grains is covered by

irrigation.

- **Slow Adoption of High Yielding Varieties** – While the Indian agriculture market is full of high-quality, high-yielding, and climate-resilient seeds, they are not utilized to the fullest potential.
    - As per data research, *only 35-40% of farmers are using* these seeds due to a lack of awareness and high prices (Because of the monopoly).
- **Imbalance in use of fertilizers –** It may lead to a loss of fertility in the soil over a period of time, affecting productivity
    - Chemical fertilizers that *use nitrogen instead of potash/phosphorus decrease efficiency* over time, which, in turn, requires more significant doses for equal effects.
- **Outmoded yields forecasts** – *Lack of accurate weather forecasting* makes agriculture prone to disasters.
- **Subsistence agriculture –** It limits the capacity of the country's full potential in agricultural productivity and opportunities for farmers to generate income and contribute to broader economic development.
- **Lack of access to quality seeds –** Quality seeds is another input necessary for agricultural productivity.
    - Good quality seeds account for 20%-25% of increased crop productivity
- **Inadequate storage facilities –** Every year, nearly 40% of India's fruit and vegetable output is wasted before consumption due to a lack of refrigerated transport or processing facilities near production sites.

How genetically modified crops can improve crop productivity?

- **Resist pests** – It protect the crops from infestation and ensure better yield.
- **Endure harsh weather conditions** – They are highly tolerant to high temperature and heavy rainfall
- **Extends shelf life** – They do not get spoilt easily.
- **Increase crop production** – Wider acceptance of GM technology could lead to doubled or even tripled production across various crops.
    - It could boost crop production by 100% to 150% in India.
- **Saves money** – It reduce input costs and ultimately increase farmers' profits.

Status of GM Crops in India

• **Research activities** – Since 1986, the Indian government has granted approvals and allocated funds for GM research.
  - For example, Indian Council of Agricultural Research (ICAR) is conducting research in this field.
• **Breakthrough development** - Development of GM mustard by Dr. Deepak Pental from Delhi University.
• **Regulatory body** - *Genetic Engineering Appraisal Committee (GEAC)* oversees the research.
• It functions in the Union Ministry of Environment, Forest and Climate Change as per the Rules, 1989, under the Environment Protection Act, 1986.
• **Crops** – Indian government approved GM Bt Cotton in 2002.
• **Challenges** – There is greater opposition to GM crops fueled by misinformation and unfounded fears.
• Outdated policies prevent the adoption of cutting-edge technology like GM seeds.

> *Using GM technology, China have achieved cotton yields of 1900 kilograms per hectare, while American farmers produce 11,000 kilograms of maize per hectare through the use of GM seeds.*

To know more about GM crops, click here

Why agricultural productivity is important?

- **Ensures food security** – It is essential for domestic consumption.
- **Efficient livestock management** – It is needed for preparing animal feed.
- **Promotes clean economy** – Agricultural residues can be used to prepare ethanol that can blended with petrol and diesel.
- **Increase exports** – It helps in making India trade surplus and improve Forex reserves.

What lies ahead?

- Create public awareness to reduce fear on misconception about GM crops.
- Focus on promoting advanced agricultural technologies and encouraging investments in the sector.
- Formulate right policies to overcome agricultural stagnation, enhance crop yields, and to secure a stronger position in the global agricultural trade.

Reference

Telangana Today| India's Agricultural Stagnation

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