# 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