

## 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](#)