



## Transforming the Ailing Cotton Sector

This editorial is based on “[Cotton: Crying out for change](#)” which was published in the Hindu BusinessLine on 01/03/2023. It discusses the issues with cotton sector in India and related issues.

**For Prelims:** Cotton, Climate change, High Density Planting System, Indian Patent Act , Protection of Plant Varieties and Farmers’ Rights Act

**For Mains:** Issues with the Cotton Sector, Growth & Development

**India is the world's second-largest producer of [cotton](#)**, and the decline in production has the potential to affect global prices and trade dynamics. Cotton production has been a critical component of India's agricultural economy for centuries.

However, in **recent years, the country has experienced a significant decline in cotton production**, causing concerns about the sustainability of the industry and its impact on the economy. The reasons for this decline are complex, with factors ranging from weather conditions to government policies and market forces. **Climate change** induced weather aberration, widespread infestation of boll devouring pink bollworm, new tobacco streak virus disease and boll rot have recently threatened cotton farmers.

The **cotton-based textile industry has been significantly affected by various factors**, including the **increase in domestic market prices, hoarding, and trade-related developments resulting from the US ban** on importing fashion and textile products from China's Xinjiang region. This ban has had a major impact on the industry, as many manufacturers in the region rely on raw cotton sourced from India. Furthermore, the textile manufacturing industry in Turkey has also been hit by an earthquake, exacerbating the situation.

So, **addressing the causes and implications of the decline in cotton production is crucial for policymakers**, farmers, and consumers alike.

### What are the Issues with the Cotton Sector in India?

- **Pest Infestation:**
  - Cotton crops in India are prone to pest infestation, which can reduce the crop yield and quality.
  - There are several reasons of pests infestation in cotton crops such as Lack of crop rotation, Monoculture, Weather conditions, Poor soil quality, Lack of pest management, etc.
- **Low Productivity:**
  - India's cotton productivity per hectare is lower than that of other major cotton-producing countries. This is mainly due to the use of outdated farming practices, inadequate irrigation facilities, and poor seed quality.
- **Lack of Irrigation:**

- Irrigation is essential for cotton cultivation, but many cotton farmers in India lack access to adequate irrigation facilities.
- **High Input Costs:**
  - The cost of inputs such as seeds, fertilizers, and pesticides is high in India, making it difficult for small-scale cotton farmers to afford them.
- **Dependence on Monsoon:**
  - India's cotton crop is largely dependent on the monsoon rains, which can be unpredictable and erratic, leading to crop failure.
- **Farmer Debt:**
  - Many cotton farmers in India are burdened with debt, which can lead to a cycle of poverty and indebtedness.
    - Cotton sustains the **livelihood of an estimated 5.8 million farmers**, with another 40-50 million people engaged in related activities such as cotton processing and trade.
    - Families, especially women and children, are often forced to engage in exploitative forms of work for survival.
    - Farmer suicides triggered by the mounting debt burden in cotton growing areas have also been witnessed.
- **Lack of Market Access:**
  - Many cotton farmers in India have limited access to markets and are forced to sell their produce at low prices to middlemen.

## What are the Key Facts about Cotton Production?

- Kharif Crop which requires 6 to 8 months to mature.
- Drought - resistant crop ideal for arid climates.
- **Occupies 2.1% of the world's arable land**, meets 27% of the world's textiles needs.
- **Temperature:** Between 21-30°C.
- **Rainfall:** Around 50-100cm.
- **Soil Type:** Well-drained black cotton soil (Regur Soil) (E.g. Soil of Deccan Plateau)
- **Products:** fibre, oil and animal feed.
- **Top Cotton Producing Countries:** India > China > USA
- **Top Cotton Producing States in India:** Gujarat > Maharashtra > Telangana > Andhra Pradesh > Rajasthan.
- **Four cultivated species of cotton:** *Gossypium arboreum*, *G. herbaceum*, *G. hirsutum* and *G. barbadense*.
  - *Gossypium arboreum* and *G. herbaceum* are known as old-world cotton or Asiatic cotton.
  - *G. hirsutum* is also known as American cotton or upland cotton and *G. barbadense* as Egyptian cotton. These are both new world cotton species.
- **Hybrid Cotton:** Cotton made by crossing two parent strains that have different genetic characters. Hybrids are often spontaneously and randomly created in nature when open-pollinated plants naturally cross-pollinate with other related varieties.
- **Bt Cotton:** It is a genetically modified organism or genetically modified pest-resistant variety of cotton.

## What should be the Way Forward?

- **Changing Cropping System:**
  - The cropping system of cotton must gradually undergo a systematic change to **High Density Planting System (HDPS)**.
    - HDPS is a **new cropping system of accommodating more plants per unit area** supported by technological inputs for weed management, defoliation and mechanical picking.
  - The new cropping system requires an **entirely new plant type, shifting from hybrid to varietal seeds coupled with new age technologies for machine sowing**, weed management, defoliation and mechanical picking.

- **Farmers currently sow bushy, long duration hybrid cotton seeds in dibbling patterns at a large spacing** accommodating fewer plants per acre and harvest seed cotton three to four times in a season spanning 180 to 280 days.
- **Implementing Evidence-based Policies:**
  - The **government-led policy paradigm on cotton must give way to progressive evidence-based policies on pricing of seeds** and safeguarding intellectual property, not only for biotech traits under [Indian Patent Act](#) but also ensuring the rights of breeders and farmers under the [Protection of Plant Varieties and Farmers' Rights Act \(PPVFRA\)](#).
  - Enforcement of IPR on new varieties suitable for HDPS while ensuring farmers' rights **must be strengthened to attract investment in R&D and breeding of high-density suitable genotypes.**
- **Strengthening Market Linkages:**
  - Strengthening market linkages can **help farmers get a better price for their cotton.** The government can set up a robust procurement system for cotton, create price stabilization funds, and establish cotton grading and standardization mechanisms.
- **Increasing Value Addition:**
  - **Encouraging value addition in the cotton sector can help increase income** and create employment opportunities. This can be done by promoting the production of cotton-based products such as textiles, clothing, and home furnishings.
- **Enhancing Research and Development:**
  - **Investing in research and development can help develop new cotton varieties,** improve pest management practices, and develop innovative technologies to improve cotton farming.
- **Improving Infrastructure:**
  - The government can **improve the infrastructure in cotton-growing areas by building roads, irrigation facilities,** and storage facilities. This can help farmers access markets, transport their produce, and store their cotton until prices are favorable.

### **Drishti Mains Question**

Discuss the challenges and strategies for transforming the ailing cotton sector in India and suggest measures to address the issues faced by cotton farmers and ensure their welfare.

## **UPSC Civil Services Examination Previous Year Question (PYQ)**

### **Prelims**

**Q1. The black cotton soil of India has been formed due to the weathering of**

- (a) brown forest soil
- (b) fissure volcanic rock
- (c) granite and schist
- (d) shale and limestone

**Ans: (b)**

**Expl:**

- Black soil, also known as regur soil or black cotton soil, is ideal for growing cotton. The climatic conditions along with the parent rock material are the important factors for the formation of black soil. Black soil is typical of the Deccan trap (Basalt) region spread over northwest Deccan plateau and is made up of lava flows (fissure volcanic rock).
- The Deccan Plateau includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu. Black soil also covers upper reaches of the Godavari and the Krishna, and the north Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.

- Chemically, the black soils are rich in lime, iron, magnesia and alumina. They also contain potash. But they lack phosphorus, nitrogen and organic matter. The colour of the soil ranges from deep black to grey.
- Therefore, option (b) is the correct answer.

**Q2. Kalamkari painting refers to (2015)**

- (a) a hand-painted cotton textile in South India  
 (b) a handmade drawing on bamboo handicrafts in North-East India  
 (c) a block-painted woollen cloth in Western Himalayan region of India  
 (d) a hand-painted decorative silk cloth in North- Western India

**Ans: (a)**

- Kalamkari is an ancient style of hand painting done on cotton or silk fabric with a tamarind pen using natural dyes in the South Indian States of Telangana and Andhra Pradesh.
- The word Kalamkari is derived from a Persian word where 'Kalam' means pen and 'Kari' refers to craftsmanship.
- This art involves 23 tedious steps of dyeing, bleaching, hand painting, block printing, starching, cleaning and more.
- Motifs drawn in Kalamkari span from flowers, peacock, paisleys to divine characters of Hindu epics like Ramayana and Mahabharata.
- Nowadays, this art is primarily done to create Kalamkari saris.
- Therefore, option (a) is the correct answer.

**Q3. A state in India has the following characteristics: (2011)**

1. Its northern part is arid and semi-arid.
2. Its central part produces cotton.
3. Cultivation of cash crops is predominant over food crops.

**Which one of the following states has all of the above characteristics?**

- (a) Andhra Pradesh  
 (b) Gujarat  
 (c) Karnataka  
 (d) Tamil Nadu

**Ans: (b)**

- Gujarat has varying topographic features, though a major part of the State is dominated by parched and dry region. Out of 8 agro-climatic zones, five are arid to semi-arid in nature, while remaining three are dry sub-humid in nature.
- Deep black to medium black soils dominate the soil types in the State. The average rainfall in the State varies widely from 25 to 150 cm across various zones.
- More than 50% of the total available land is being used for agriculture. The main food crops are bajra, jowar, rice and wheat.
- Major commercial crops or cash crops of the State are groundnut, tobacco and cotton, linseed, sugarcane, etc. Other important cash crops are isabgul (Psyllium husk), cumin, mangoes and bananas.
- The State has notable achievement in production and productivity scenario in cotton, castor and groundnut. Cotton is an important crop of the State which covers 27.97 lakh ha.
- Therefore, option (b) is the correct answer.

**Q4. With reference to the cultivation of Kharif crops in India in the last five years, consider the following statements: (2019)**

1. Area under rice cultivation is the highest.
2. Area under the cultivation of jowar is more than that of oilseeds.

3. Area of cotton cultivation is more than that of sugarcane.
4. Area under sugarcane cultivation has steadily decreased.

**Which of the statements given above are correct?**

- (a) 1 and 3 only  
(b) 2, 3 and 4 only  
(c) 2 and 4 only  
(d) 1, 2, 3 and 4

**Ans: (a)**

- Rice is one of the most important food crop. India has the largest area under rice cultivation.

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Area Under Cultivation of Major Crops				
Crops	Area (lakh hectare)			
	2014-15	2015-16	2016-17	2017-18
Rice	441.10	434.99	439.93	437.89
Coarse cereals	251.70	243.89	250.08	242.05
Oil seeds	255.96	260.87	261.77	246.45
Sugarcane	50.66	49.27	44.36	47.32
Cotton	128.19	122.92	108.26	124.29

- Hence, statements 1 and 3 are correct, and statements 2, 4 and 5 are not correct.
- Therefore, option (a) is the correct answer.

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### **Mains**

**Q.** Analyse the factors for highly decentralized cotton textile industry in India.