

## India's Falling Cotton Production

### Why in news?

The pink bollworm has taken a toll on the fibre crop, even as new “mating disruption” technologies to control the pest are showing promise.

### What is Cotton?

- Cotton is one of the most important *fiber and cash crop* of India and plays a dominant role in the industrial and agricultural economy of the country.
- **Origin** - India is believed to be the home of cotton because the art of making cloth from cotton was first developed in India.
- **Cultivated Species** - There are four cultivated species of cotton viz.
  - **Old World Cottons (or) Asiatic cottons** - *Gossypium arboreum*, *G. herbaceum*,
  - **New World Cottons** - *G. hirsutum* (American Upland cotton), *G. barbadense* (Egyptian cotton)
- *G. hirsutum* represents 94% of the hybrid cotton production in India and all the current Bt cotton hybrids are *G. hirsutum*.

*India is the only country in the world where all the four cultivated species are grown on commercial scale.*

- **Climate & Soil**- Cotton is a semi-xerophyte that is grown in tropical & sub tropical conditions.
- It is grown on a variety of soils ranging from well drained deep alluvial soils to black clayey soils.
- Cotton is a Kharif crop in the major parts of the country and also monsoon based in southern zone.

### Status of Cotton Production & Consumption

- India is having 1<sup>st</sup> place in the world in cotton production.
- Gujarat is the largest producer of cotton in India followed by Punjab and Maharashtra.
- India is also the 2<sup>nd</sup> largest consumer of cotton in the world.
- India stands 1<sup>st</sup> in the world in cotton acreage.
- India is the 3<sup>rd</sup> largest exporter of Cotton.
- Around 67% of India's cotton is grown on rain-fed areas and 33% on irrigated area.
- In terms of productivity, India is on 38th rank with yield of 510 kg/ha.

### What is the significance of cotton?

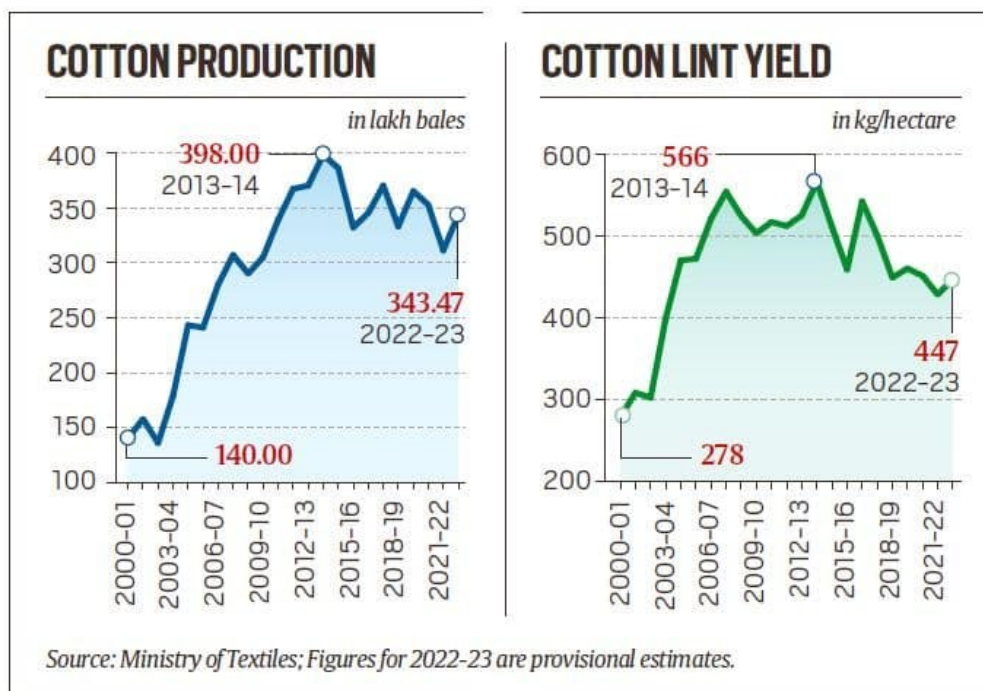
*Ginning is the process of separating the fibres from the seed. The raw un-ginned*

cotton harvested by farmers is called *kapas* which has the white fluffy fibre or lint (36%) and seed (62%).

- Cotton has a roughly two-thirds share in India's total textile fibre consumption.
- It plays a major role in sustaining the livelihood of an estimated 6 million cotton farmers and 40-50 million people engaged in related activity such as cotton processing & trade.
- Cottonseed is the country's 3<sup>rd</sup> largest domestically-produced vegetable oil (after mustard and soyabean)
- Cotton seedcake, a protein-rich feed ingredient for livestock and poultry, is the 2<sup>nd</sup> biggest feed cake/meal (after soyabean).
- Due to its economic importance in India, cotton is also termed as "White-Gold".

### What is the present issue with Cotton production?

- Between 2000-01 and 2013-14, India's cotton production, in terms of lint, almost tripled from 140 lakh to 398 lakh bales of 170 kg each due to Bt technology.
- However, the *Pectinophora gossypiella* or pink bollworm (PBW) have developed resistance Bt toxins over time and to fall in yields.



- This is because PBW is a ***monophagous pest*** that feeds mainly on cotton unlike *American bollworm* that is polyphagous, with alternative hosts.
- The PBW population that became resistant from ***continuously feeding*** on Bt hybrids, therefore, gradually overtook and replaced the ones that were susceptible.
- The ***pest's short life cycle*** (25-35 days) was conducive for it to complete at least 3-4 generations in a single crop season of 180-270 days, further accelerating the resistance breakdown process.

***Bt cotton*** is the only GM crop that is allowed in India. Bt cotton has been genetically modified by the insertion of one or more genes from a common soil bacterium, *Bacillus thuringiensis*.

### Reasons for India's Falling Cotton Production

- Large infestation of Pink Bollworm (PBW) feed on the cotton bolls affecting lint quality and yields.
- Uneven rainfall and agricultural shrinkage in some of the key growing states.
- Rising cost of cultivation.
- Climate induced change in pest dynamics.
- Rampant sale of unauthorised seeds and unchecked pesticides sprays.
- Reduced local prices and declining demand from China.
- US embargo on cotton products from China's Xinjiang province.
- Impact of Russia-Ukraine conflict.

### How to control the bollworm infestation?

- **Spraying insecticides** - Such as profenofos, chlorpyrifos, indoxacarb, and cypermethrin.
- **Mating disruption** - It involves deploying *Gossyplure*, a pheromone signalling chemical which attracts the male adult moths into lures and prevent from mating with females.
- The Central Insecticides Board & Registration Committee under the Agriculture Ministry has approved two mating disruption products.
  - **PBKnot** - It is a dispenser having a 20-cm hollow polyethylene pipe, into which *Gossyplure* is impregnated and gets released from over 90 days and reducing the scope for infestation.
  - **SPLAT-PBW** - A flowable emulsion formulation technology for delivering *Gossyplure*.

### Steps taken to promote Cotton Production

- **Technology Mission on Cotton (TMC)** - It is a Centrally Sponsored Scheme launched during 2000 to increase the production & productivity of cotton.
- **National Food Security Mission- Commercial Crops (Cotton) Programme** - Cotton Development Programme is being implemented under National Food Security Mission - Commercial Crops (NFSM-CC) from 2014-15 for enhancing production and productivity.
- **Rashtriya Krishi Vikas Yojana (RKVY)**- There is no earmarked allocation of funds for cotton under RKVY. However, the States can undertake cotton programme under RKVY.
- **Minimum Support Price (MSP)**- MSP, a guarantee price for the produce is provided for cotton by the Government.
- **Cotton Corporation of India Ltd. (CCI)** - CCI, a central public sector undertaking was established in 1970 under the Ministry of Textiles to engage in diverse activities related to trade, procurement, and export of cotton.
- **CICR** - ICAR has established the ICAR-Central Institute for Cotton Research at Nagpur in 1976.

## References

1. [Indian Express| India's falling Cotton production](#)
2. [NFSM | Cotton](#)
3. [Ministry of Textiles | Cotton](#)

