Industrial Quality Requirement of Cotton Vis-à-vis Its Availability- Indian Scenario

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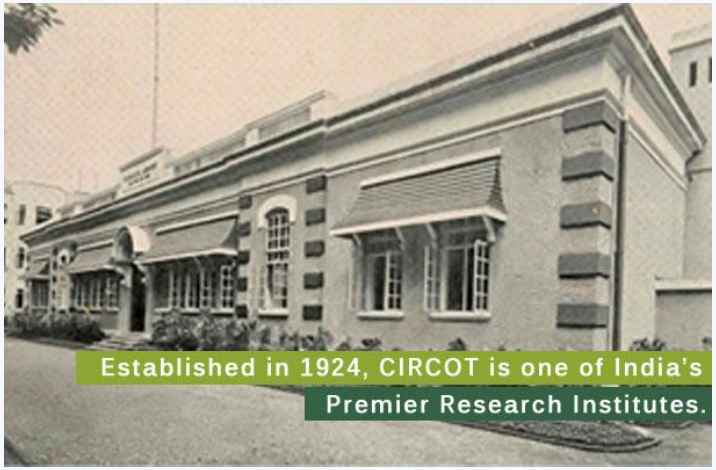
Introduction

- The Britons established Ministry of Agriculture in the beginning of the 19th Century with cotton crop as main focus since the Mills in Britain depend mainly on raw cotton produced in India.
- Established Central Technological Research Laboratory (CTRL) in 1924 at Bombay.
- The partition of the country in 1947, led to serious imbalance between demand & supply of cotton, which resulted in massive imports of cotton for a number of years.



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- Various programmes were run by the Government to boost the quality as well as quantity of the cotton fibres in order to match the demand of the textile mills.
- Presently
  - Highest production of cotton in the world
  - world's second largest spinning capacity,
    - producing over 4700 million kgs of spun yarn of which over 3,400 million kgs is cotton yarn

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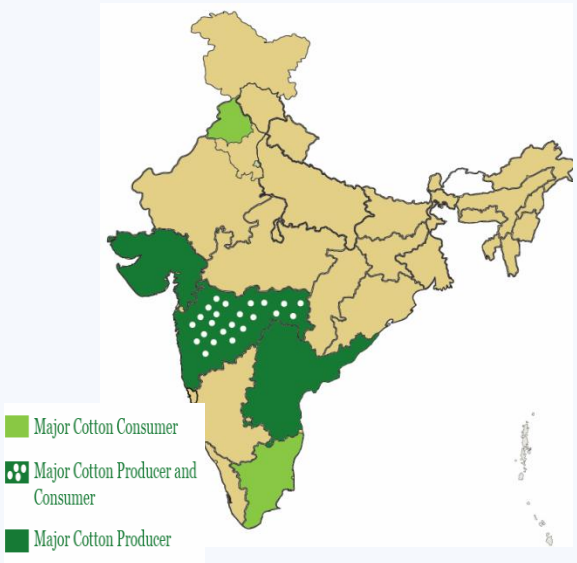
- India became a net exporter from an importer of the cotton after 2003-04.
- The increased production after meeting domestic consumption opened the opportunities of export of raw cotton by India.
- The improvement in quality has been a major achievement in recent years and the textile industry has expressed their satisfaction

Cotton Sector in India

	2015-16	2016-17 (Projected)
❖ Area Under Cotton Cultivation	119 lakh hectares	105 lakh hectares
❖ Cotton Production	338 lakh bales	346 lakh bales
❖ Cottonseed production	11.4 million tonnes	11.6 million tonnes
❖ Cotton Stalk Production	25 million tonnes	26 million tonnes



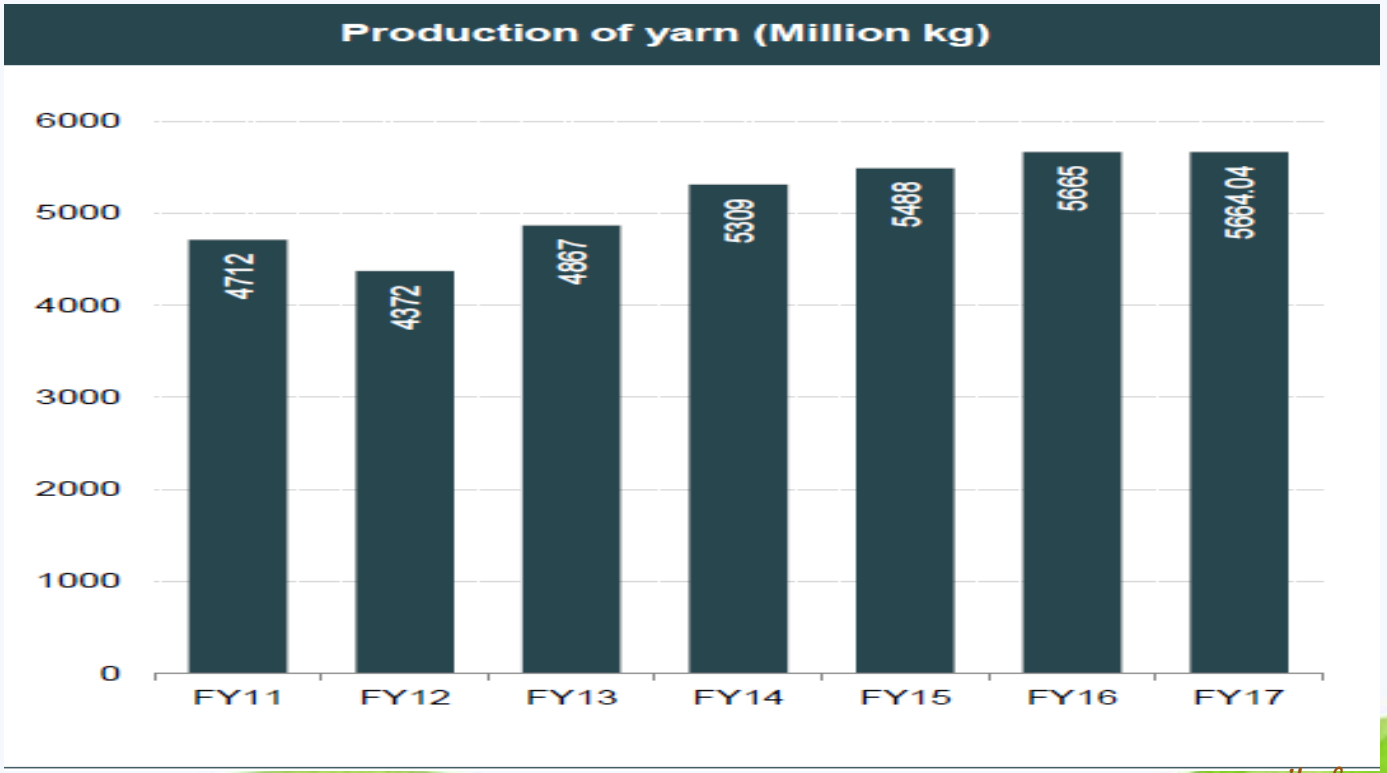
Present Status

- Staple wise production
  - 70-75 % in 27.5mm to 32 mm
  - 2-3 % in ELS
- Consumption
  - 300 lakh bales in 2015-16
- Staple wise consumption
  - 50-60 % in Long staple range for 24s to 36s count yarn
- Import of cotton in India
  - 14 lakh bales in 2015-16 (19 lakh bales in 2016-17 P)
  - United States of America is the largest supplier of Cotton followed by Australia and Tanzania to India.

Source: USDA, http://www.indexmundi.com/agriculture and http://www.infodriveindia.com/india-import-data/cotton-raw-cotton-import-data.aspx, Global Agricultural Information Network, USDA

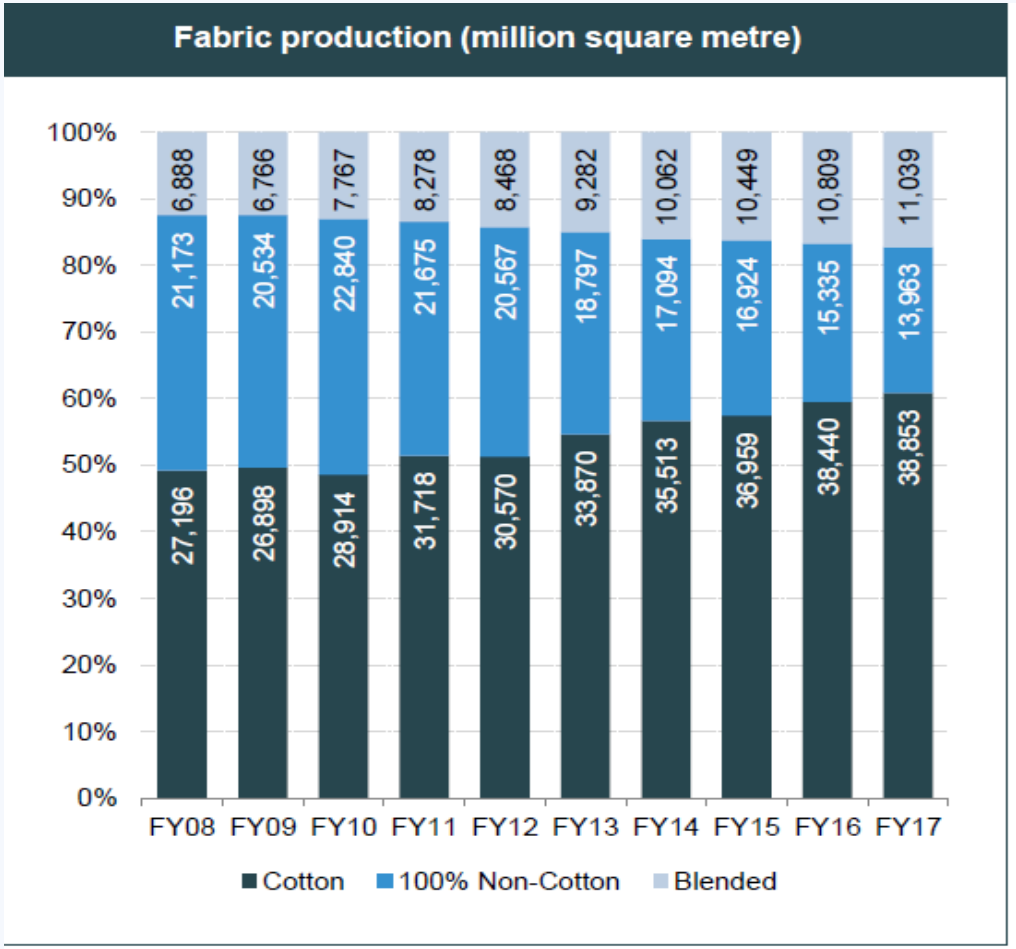
Yarn Production

- Production of yarn grew to 5664.04 million Kgs in FY17. It comprises count range from 1s to above 80s.



Fabric Production

- Fabric production in the country rose to 64,775 million Sq. metre in FY 2016-17
- Cotton Yarn accounted for around 60% share during the period



Count-wise Production of Cotton Yarn*

Count	Production in million kgs.	Requirement of cotton (lakh bales of 170 kg.)
1s-10s	634.39	47
11s-20s	754.27	55
21s-30s	981.05	72
31s-40s	1209.83	89
41s-60s	378.63	28
61s-80s	127.88	9
Above 80s	51.95	4

* During the year 2015-16

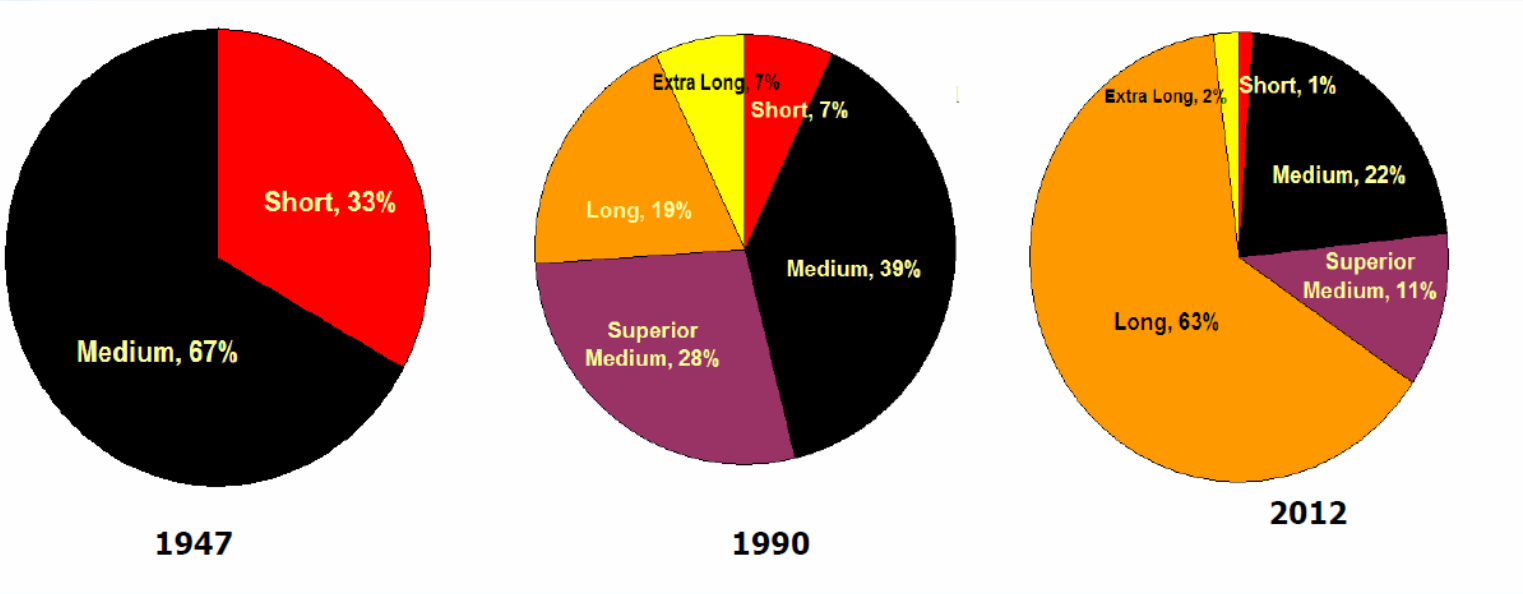
The quality of cotton required to produce different counts of yarn

Count Range	Range of UHML (mm)	Minimum value of UI	Minimum Tenacity (g/t) (HVI mode)	Micronaire Range	Type of Cotton
<14s	<24 mm	-	-	Above 5.0	Short
14s-18s	24-25	81	27.5	3.9-4.7	Medium
20s-24s	25-26	82	28.0	3.8-4.2	Medium Long
25s-30s	26-27	83	29.1	3.4-4.2	
31s-40s	27-29	84	29.3	3.3-4.1	Long
41s-50s	29-31	84	31.3	3.3-4.0	
51s-60s	31-33	86	33.6	3.2-3.9	
61s-80s	33-34	86	36.6	3.2-3.8	Extra Long
81s-100s	34-36	87	38.3	3.1-3.4	
101s-120s	36>	88	40.0	2.9-3.2	

Requirement of the cotton and its availability

Count	Requirement of cotton* (lakh bales of 170 kg.)	Type of Cotton required	% of total requirement	Production (%)
1s-10s	47	Short	15	1
11s-20s	55	Medium	42	32
21s-30s	72	Medium Long		
31s-40s	89	Long	38	65
41s-60s	28			
61s-80s	9	Extra Long	5	2

Changed scenario

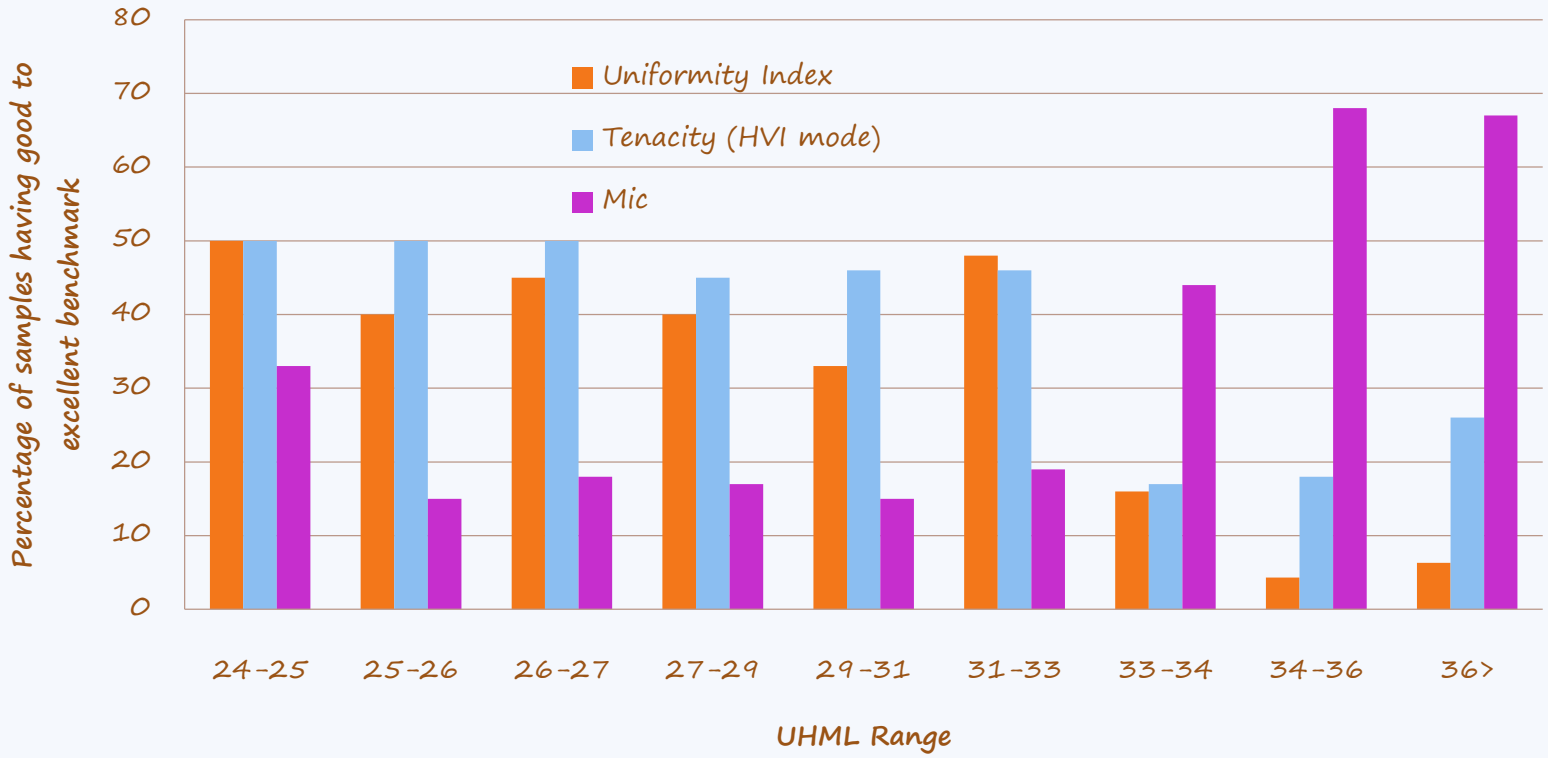


Despite a bumper crop, the mills are forced to go in for some imports, particularly of extra long staple cotton (ELS) as there has been a quantitative & qualitative gap in this category.

Quality parameters of some of the cotton imported into India

- American Pima: 36.5 mm, 3.0-3.4 mic, 36 gpt
- American Upland: 28-29 mm; 4.4-4.5 mic, 30.0-30.5 gpt
- Australia: 29.5 mm, 3.5-4.5 mic, 30 gpt
- Tanzania: 26.7-28.7 mm, 3.5-4.9 mic, 25-29 gpt
- Brazil:28-30 mm, 3.9-4.4 mic, 28-30 gpt
- Egypt (Giza 86): 33-34 mm, 4.2-4.3 mic, 41-42 gpt

Efforts to bridge the gap- Programmes undertaken in AICRP- on Cotton

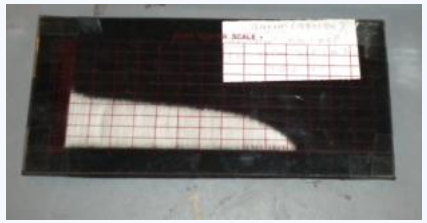


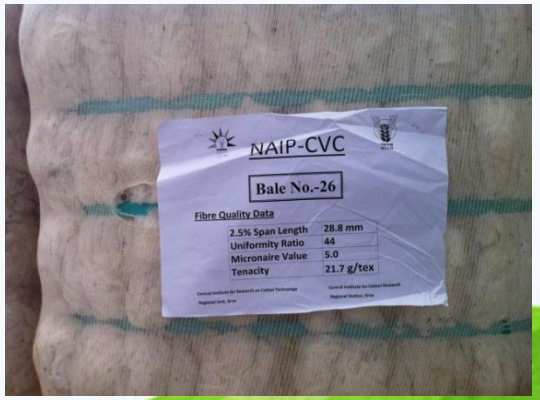
Requirement vis-vis availability of the raw material for the Industry

- Quantity
  - Short Staple – Short Supply
  - Medium Staple- Sufficient
  - Long Staple- Sufficient
  - Extra Long Staple- Short Supply
- Quality
  - Fibre Length – Satisfactory
  - Micronaire – Appropriate micronaire
  - Strength- Strength is not an issue with the spinners
  - Fibre length distribution- Variation to be least possible
  - Trash- Lowest possible
  - Contamination – Lowest possible
  - Elongation- Satisfactory

Issues Reported in order of severity

- Trash
- Fibre Length Distribution
- High Mic
- Contamination
- Implementation of quality attributes tagging of the bales





Climate change and quality

- Rising temperatures will not only have a complex effect on plant growth and yield, depending on the site, but also on fibre characteristics.
- Literature reveals that increased temperatures could result in higher micronaire values.
- Higher micronaire values are not a desirable characteristic when they are already close to the upper limit.

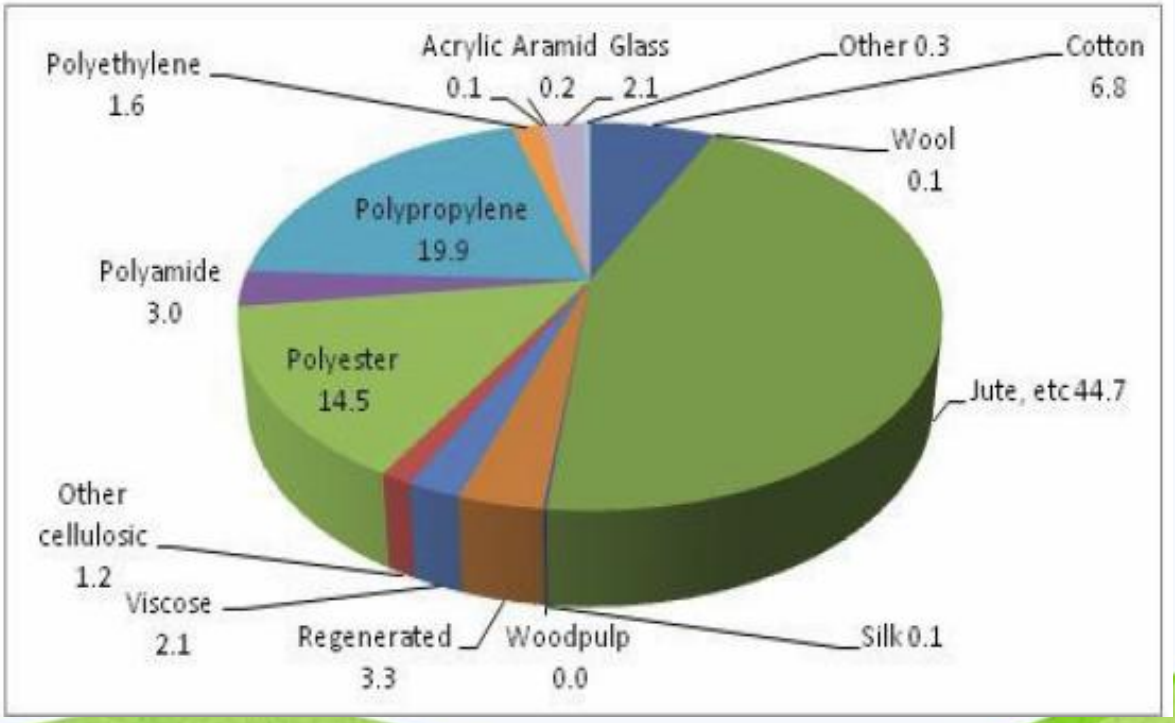
*COTTON AND CLIMATE CHANGE: IMPACTS AND OPTIONS TO MITIGATE AND ADAPT (ICAC, 2007)

Newer avenues for cotton fibre utilisation

- Use of technical textiles, i.e., textiles used for technical performance in non-conventional areas is steadily increasing.
- Growth of Technical Textile market is at 13.5 % CAGR
- The advantage of availability of fibre is opening of export market of technical textiles
  - Cotton/ Polyester fabric for protective wear (work wear)
  - Heavy duty 100 % cotton fabric for coating applications such tents, tarpaulins, etc.
  - Absorbent Cotton, Oil Sorbents, Medical textiles, infant and baby wear etc.

Technical Textiles and Cotton

- In India polypropylene and polyester account for 34%, Jute 45% and cotton 7% rest are other in small quantities of total fibre consumption in Technical Textiles.



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- Spill Clean-up Solutions
- Single use disposable health and hygiene products.
- In the areas of sports wear and gears.
- Zero extensible belts.
- Geo textiles.
- Reusable zero bacteria development fabric.
- Surface modification of fibres to enhance their adhesion strength with matrices.
- Cotton being most skin friendly fibre has large scope in use of infant clothing and hygiene products.

Future requirement

- The government policy aims to achieve US$ 300 billion worth of textile exports by 2024-25.
- Requirement of cotton by 2050- 33.15 M ton
- Tailor made cotton cultivars with targeted fibre quality

Thank you