

Status on Extra Long Staple Cotton in India

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Introduction

Cotton is an important versatile fibre ruling as a principal raw material of the textile industry all over the world. It is used as a source of fiber, food, and feed which constitutes 49 species of the genus *Gossypium*. Among them four are cultivated; *G. hirsutum* and *G. barbadense* which are tetraploid ($2n=4x=52$), and *G. arboreum* and *G. herbaceum* which are diploid ($2n=2x=26$) (Sundram *et al.* 1999; Arumugam *et al.* 2006).

The term 'Extra Long Staple' (ELS) cotton typically denotes a cotton fibre of extraordinary fibre length. The recognized industry standard for the minimum fibre length of an ELS fibre is 1-3/8" or 34.925 mm. But as per the CIRCOT, Mumbai classification, staple length of more than 32.5 mm is considered as ELS category. As well as fibre length, ELS cottons are also recognized for their superior strength and better uniformity. In technical term, ELS includes both all the varieties of *G. barbadense* and varieties of *G. hirsutum* which has the defined staple length.

Gossypium barbadense, L. is commonly known as Egyptian cotton or ELS grown primarily in Egypt, Sudan and CIS countries. It is known as GISA types. Pima cotton of USA also known as extra long staple cotton widely grown in California, Arizona, New Mexico, and southwestern Texas USA which is similar to Egyptian GISA cotton. It is a tropical, frost-sensitive [perennial plant](#) that produces yellow flowers with thick maroon petal spot at the base of the petal and has black seeds. ELS cotton is generally used to manufacture high quality ring-spun yarns. Common enduses of ELS cotton include sewing thread, lace yarns, and high quality dress and shirt fabric. Prior to the development of special man-made fibers, ELS had widespread industrial and military applications, including tire cord, military belting for uniforms and machine-guns, and parachute ribbing. The cultivation and ginning of ELS cotton also are different from upland cotton.

Global status on ELS Cotton

G. barbadense is grown in about 10% of the cotton area and supports about 4% of the world production. The major ELS producing countries are USA, Egypt and Sudan. The quantum jump in cotton production has helped the textile industry to get cotton at a competitive price and also the farming community to get higher income (Sankaranarayanan *et al.* 2010). ELS production accounts for less

than 8 per cent of total world cotton production and is primarily concentrated in 7 countries, USSR, India, Egypt, Sudan, the United States, Peru, and Israel. These countries produce more than 95 percent of the world's ELS crop. According to the International Cotton Advisory Committee (ICAC), and the Foreign Agricultural Service estimates, worldwide ELS cotton production in the current 2020/2025 marketing year is expected to fall by nearly 900,000 bales.

ELS cotton fibers are stronger and finer than upland cotton fibers. Although there are clear genetic differences between the two cotton species, the differences are often blurred by dissimilar cotton classification techniques in ELS producing countries. The current method of estimating ELS production, consumption, and trade is to identify cotton types that are generally longer than upland varieties and report the entire crop of that type as ELS. This technique allows ELS to be described by type. Example ELS types are Pima, (produced in the United States, Peru, and Israel); Egypt's Giza 45, 70, 76, & 70; India's Suvin and DCH-32; China's Xiniang 149; Sudan's Barakat; and the USSR's Tonkovoloknistyi. U.S. exports of ELS cotton totaled over 30 percent of worldwide ELS exports. The leading importer of ELS cotton is Japan, followed by Italy and Germany.

ELS cotton in India

Currently about 2 lakh hectares of ELS cotton are grown in India mostly under DCH-32 in Dharwad, Haveri tract of Karnataka, Coimbatore, Erode, Dindugal districts of Tamil Nadu and Ratlam tract of Madhya Pradesh. The promising variety MCU-5 (Super fine) is grown in summer irrigated tract of Tamil Nadu, costal Andhra Pradesh and Navarangapur district of Orissa. The interspecific hybrids TCH-213, SIMA HB-3 and Sara-2 are grown in parts of Tamil Nadu and Karnataka. Phule-388 occupies negligible area in Western Maharashtra.

The demand for the textile products made out of ELS cotton (32 mm and above) is growing exponentially and the potential for value addition of the products made out of these cotton varieties is very high. Though we have become very comfortable in the supply of indigenous short and medium staple cotton, the position of ELS has reached a precarious stage in our country (Basu, A.K. 2006). The production of ELS cotton has been continuously decreasing as against the increasing demand by the textile industry. Realizing the importance of strengthening the position of textile industry on this front, It is very essential to make the fine and superfine count cotton yarns available to the handloom weavers at a competitive price and also to improve the productivity and quality of the ELS cotton varieties to ensure remunerative price to the farmers. The demand for ELS cotton in India is about 9 lakh bales against the availability of only about 4 lakh bales. The requirement of this cotton is expected to be about 20 lakh bales by 2020. In India the cotton consumption rate is increasing lately at much

faster rate as compared to that of 10 years ago. The shortage of ELS cotton from domestic production has been receiving the attention of the industry for quite some time. All along India has been the pioneer in producing fine and superfine count yarns and has a dominant share in the global textile trade in these varieties. During the last few years, China and Pakistan entered this market using the imported cotton particularly from USA and Egypt and have become the competitors for India.

In order to sustain in the global competition, it is essential to make the cotton available to the mills on par with our competitors. Therefore, it has become essential for India to give priority for increasing the ELS cotton production to retain the market share and also to improve the income of the farming community.

ELS cotton in Tamil Nadu

Two varieties belonging to *G. hirsutum* (MCU-5) and *G. barbadense* (Suvini) and a few hybrids (*hirsutum barbadense*) are presently cultivated in central and southern cotton zones of Tamil Nadu. The hybrids of India are Varalaxmi, DCH-32, TCHB-213, Phule-388, Sima-HB3 and Sara-2. In the next stage, Sujata was crossed with St. Vincent Sea Island seeds and an extra ordinary variety was produced which had a staple length of over 1-1/2 inch, stelo strength of 32 g/tex (equal to 40 g/tex t on HVI). SUVIN was successful till the end of 80's and later the size of the crop dwindled gradually and today is a very small crop of around 1000 to 1500 bales (Gopalakrishnan, *et al.* 2008). Concurrently, the Dharwad centre took up development of other varieties like Varalakshmi, DCH-32, *etc.*

ELS varieties and hybrids under cultivation

Variety/ Hybrid	Fibre quality		
	2.5% Span length (mm)	Tenacity(g/tex)	Fineness(Mic)
Suvini (V)	36-40	32-33	2.9- 3.3
Varalaxmi	32-37	23-28	2.7-3.5
DCH-32	33-38	25-30	2.5-3.4
TCHB-213	32-36	26-31	2.9-3.5
Phule 388	32-36	26-30	3.0-3.6
SIMA-HB3	38	29.3	3.3
SARA-2	35-36	27-29	3.4-3.7
MRC 69 18 (Bt)	36.5	27.6	3.5
RCHB 708 (Bt)	37.7	30.2	2.9
Nav Bharat Kranthi	36.2	27.2	4.1

A significant milestone has been achieved in cotton production in India, with a record crop of over 377 lakh bales during the last two years. However, the country produced only around 1.75 lakh bales of extra long staple cotton varieties during 2017-18 as against the requirement of around 5.34 lakh bales. The shortage is managed with imported cotton. India accounts for about 40% of the global share in the fine and superfine count yarn trade and has already established its brand in the global

market. Therefore, the ELS cotton requirement is estimated to be around 15 lakh bales by 2020 in India. Self-sufficiency in ELS cotton would increase the income of the farming and handloom communities sizably. It is therefore imperative that the ELS cotton production and quality need to be improved by a Mission mode approach.

Vision

- Increase the ELS cotton production in the country from the current annual production of 1.8 lakh bales to 15 lakh bales by 2020.
- Improve the ELS cotton fibre quality parameters on par with the International varieties like Egyptian Giza, US Pima, etc., .
- Increase yield per hectare and area under ELS cotton cultivation and ensure higher income to the farming community.
- Establish Indian ELS cotton brand in the International market.
- Establish an ELS cotton Special Purpose Vehicle (SPV) with public and private sector partnership for promotion of ELS cotton.
- ELS Mission Directorate as a public-private sector partnership enterprise to undertake the ELS cotton promotion project. The Directorate will have a mandate to provide an effective mechanism for co-ordination between all the agencies involved in ELS cotton research and development and the textile industry.
- Considering the scope for export potential, employment potential to the handloom community and enhanced income to the farmers, it is recommended to make a budgetary allocation of Rs.50 crores for the project

Reasons for inconsistent in ELS cotton production

1. Long duration
2. Susceptibility to sucking pest, boll worms and severely to pink boll worms
3. Sterility, poor boll bursting and empty locules in suvin
4. Declining of yield in comparison to release period especially with suvin
5. High Labour requirement for harvesting and drudgery involved
6. Less suitable for rainfed because of longer duration
7. Sensitivity with water logging and Mg deficiency
8. Competition from high value crops and also within the species (*G.hirsutum*)
9. Higher production cost
10. Low and non staple market price
11. Low productivity

Thrust areas

1. Increasing area under ELS cotton

Based on the availability of seeds of ELS hybrids like Varalaxmi, DCH-32, Mayhco MRC 6918 BT; Rasi RCHB-708Bt; Sara-2 of Super Spinning and TCHB-213 of Tamil Nadu Agricultural University and SIMA-HB3, the coverage during the year 2015-20 is expected to be around 4.5 lakh hectares. This may result in a production of about 9 lakh bales of ELS cotton of 34 mm and above against the demand projection over 15 lakh bales. The area under ELS hybrids / varieties may be progressively extended to 8 to 10 hectares by the year 2020-25 to achieve a production level of 15 to 20 lakh bales.

2. Dissemination of technologies on ELS cotton production

- To demonstrate the modern production technology, pure and good quality seeds, essential inputs and credit through networking and link up with concerned agencies including research and development organizations
- To make them to adopt best pre and post harvest practices to minimize contamination

3. Improvement of existing ELS varieties with new fibre quality parameters

- Cotton breeding for varietal improvement is now in progress in several centers under the All India Co-ordinated Cotton Improvement Project.
- A targeted breeding programme could be carried out to develop new barbadense varieties equivalent to the latest foreign ELS cottons mentioned above.
- To induct new barbadense germplasm from Israel, Australia, CIS and Turkey, etc.

Conclusion

A significant milestone has been achieved in cotton production in India, with a record crop of over 370 lakh bales during the last two years. However, the country produced only around 2 lakh bales of extra long staple cotton varieties during 2012-117 as against the requirement of around 9 lakh bales. The shortage is managed with imported cotton, the price of which is likely to increase abnormally in the near future. India accounts for about 40% of the global share in the fine and superfine count yarn trade and has already established its brand in the global market. Therefore, ELS cotton requirement is estimated to be around 15 lakh bales by 2020 and 20 lakh bales by 2025 in India. Self-sufficiency in ELS cotton would increase the income of the farming and handloom communities sizably. It is therefore imperative that the ELS cotton production and quality need to be improved by a Mission mode approach.

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