

## **EXTRA-LONG STAPLE COTTON CULTIVATION IN INDIA: HISTORICAL PERSPECTIVE**

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### **Introduction**

It is gratifying to record that Indian cotton production has touched a new high of 280 lakh bales during the year 2006-07, as compared to 26 lakh bales produced in 1947-48 at the time of independence.

Thanks to the combined efforts of the millions of cotton farmers, talented scientists and technology providers, complementary expertise of private sector research, seed production and marketing strategies and inputs from field extension agencies, India has now emerged as a major global player in the cotton sector.

### **National Cotton Scenario**

The Indian cotton crop is the most diverse in the world, both in terms of botanical status and **fibre quality range**. Three of the species of *Gossypium* contributing to the cottons of trade and industrial consumption viz., *hirsutum*, *arboreum* and *herbaceum* are commercially grown in the country. The fourth, *G. barbadense* which includes the highest quality of fibre with **extra-long staple**, figures as a parent in many of the hybrid cottons, which is a significant feature of Indian cotton scenario. A small area under *G. barbadense* variety Suvin is also currently grown in Tamil Nadu.

### **Staple Length Classification**

The ultimate index of fibre quality in cotton is determined by the spinning performance. Among the fibre properties which contribute most to spinning value are staple length, fibre fineness and strength. The staple length constitutes the basic norm for evaluating quality of cotton in the trade and by the consuming textile industry.

Historically, staple length classification into various categories has undergone changes over the years and different parameters have been adopted in Egypt, U.S.A. and India with marginal differences.

Suffice it to say that the current standards (Sundaram *et al.*, 2002) for staple length classification of Indian cotton are as follows:-



### Staple length categories

S. No	Category	Range of 2.5% Span Length (mm)
1.	Short	20.0 and below
2.	Medium	20.5 to 24.5
3.	Medium long	25.0 to 27.0
4.	Long	27.5 to 32.0
5.	Extra Long	32.5 and above

Normally extra long staple cotton varieties are used for producing fine and superfine counts of yarn. This category of yarn is the main stay of the handloom industry for weaving the traditional Indian apparel of sarees, dhotis, muslin etc. They are also used for knitting high-end varieties of garments, worn close to the skin and kids-wear. There is a steady growth for the products manufactured out of fine and superfine varieties (i.e. yarn, fabric, garment and made-ups) both in the local as well as in export markets. Extra-long staple cotton has therefore assumed considerable economic significance in the cotton production scenario.

### ELS Cotton in the World

Gururajan and Manickam (2005) have reviewed the fibre quality improvement in extra-long staple *G. barbadense* cotton in different countries of the world.

The major countries producing ELS cotton in the world are Egypt, U.S.A., CIS (former U.S.S.R.), Sudan and India. A small crop is also produced in Australia, Israel, Peru and a few other countries.

The popular ELS cottons valued by the industry and traded commercially in export markets are Pima from U.S.A., Giza 70 and Giza 88 from Egypt and Barakat from Sudan. The crop varieties in other countries has originated mainly from Pima.

### ELS Cultivation in India

For over a century, introduction, acclimatization and testing of ELS varieties of *G. barbadense* cotton has been carried out in India. However the most intensive and systematic programme was initiated in the year 1947 by the Cotton Specialist of the Madras State (Balasubramaniam, 1963). A Separate Scheme on the Sea Island Cotton Research was implemented under the auspices of the erstwhile Indian Central Cotton Committee during 1949 to 1956.

As a result of intensive experiments under this scheme, the Sea Island Andrews Variety was identified as a “bread and butter” strain for cultivation in the West Coast Districts of Mysore and Kerala then part of Madras State, as a monsoon season crop.

Thereafter, a five year development scheme was also launched in April 1957 to extend Sea Island Cotton over three lakh acres and produce 2.25 lakh bales.



However, the objectives were not fulfilled due to soil and crop management problems and lack of adequate infrastructure for marketing in the non-traditional cotton growing tracts.

The interest in ELS *G. barbadense* was later revived in 1967 with the launching of the All India Coordinated Cotton Improvement Project by the Indian Council of Agricultural Research.

At the Coimbatore Regional Station of the project, reselection in the Egyptian variety Karnak resulted in the first every Egyptian type of cotton named Sujata which was released in 1969 (Santhanam and Krishnamurthy, 1970). This variety was found suitable for the irrigated cotton tracts in Tamil Nadu and had a spinning value of 100<sup>s</sup> count yarn. However, the Indian Cotton Mills Federation recommended that an ELS variety with better fibre strength than Sujata should be developed to meet the quality requirements of the industry. This was accomplished in variety Suvin released in 1974 and rated equivalent to Giza 45 then imported from Egypt (Krishnamurthy, 1980).

The breeding and release of the extra-long staple *G. barbadense* variety Suvin derived from hybridization of Sujata with Sea Island St. Vincent V 135 variety was recognized as a significant milestone in Indian Cotton Improvement (Santhanam, 1993). With a 2.5% Span Length of 39mm, fibre strength of 37g/tex and micronaire of 3.3 at the time of release, the textile industry acclaimed it as the pride of India and considered it a suitable substitute for the Egyptian cottons imported during the 1970's.

The highest production of Suvin variety was 44,000 bales (of 170 kg lint) achieved in the year 1989-90. Due to a combination of factors *viz.*, instability of yield, long crop duration, variations in fibre quality, competition from hybrid cottons in the potential areas of adaptation for Suvin and other market related distortions in pricing, the area under Suvin has gone down and production in 2005-06 is estimated at less than 2000 bales.

### **Extra Long Staple Hybrid Cottons**

The first interspecific (*hirsutum x barbadense*) hybrid cotton Varalaxmi was released in Karnataka in 1972. This was followed by the extra long staple hybrid cotton DCH – 32 in 1981 and can be considered a landmark in heterosis breeding. TCHB 213 in Tamil Nadu and NBHB 1 in Gujarat are other ELS hybrids which made a mark in mid 1990's.

However, the production of ELS cotton did not keep pace with the requirements of the industry and fell steadily from about 5 lakh bales in 1995 to less than 3 lakh bales in 2006.

The current estimates of National demand and supply projections for ELS cotton may be summarized as follows.



Year	Estimated local production (lakh bales)	Requirement (lakh bales)
2005-06	2.6	8.0
2006-07	2.65	10.0
2011-12	Target Self-Sufficiency	15.0
2015	Target Self-Sufficiency	20.0

The Indian Textile Mills are, therefore, compelled at present to import ELS cotton from countries such as USA, Egypt, Sudan and CIS countries to meet their need. It costs around Rs. 1,300 crores to import 5 lakh bales of ELS cotton varieties (2005-06 estimates).

It is therefore, imperative that domestic cultivation and production of ELS cotton to meet the growing demand of the consuming industry has to be increased by Mission Mode approach for ELS development.

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