

QUANTITATIVE AND QUALITATIVE REQUIREMENTS OF COTTON FOR INDUSTRY

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Cotton, the 'white gold' is the principal raw material for a flourishing textile industry in India. Among all cash crops, cotton enjoys a pre-eminent position as it provides livelihood for over 60 million people both from the farming sector and industry. India has the distinction of growing cottons of all classes right from the coarsest and shortest fibre to longest and finest and has the maximum area under its coverage.

The quantitative and qualitative requirements of cotton for industry have been postulated here for positive result.

Being a predominantly rainfed crop (65%), the productivity of cotton in India has been one of the lowest. Apart from availability of water during the crucial periods of crop growth, other factors like poor quality of seeds, poor replacement rate for varietal seeds, severe attack of boll worm and sucking pests, fragmented land holdings and the ineffective transfer of modern technologies of production from laboratory to land have been cited as reasons for the poor yield of cotton in the country. However, recent governmental efforts in the form of Technology Mission on Cotton (TMC) through its various mini Missions, viz. Mini Mission (research and development of quality cotton), Mini Mission II (transfer of farm-worthy technologies from lab to land), Mini Mission III (infrastructural upgradation of market yards) and Mini Mission IV (modernisation of ginning and pressing factories) have begun to show positive results. As a result of the developmental initiatives, the productivity of cotton for 2004-05 has risen to 440 kg/ha from a stagnant value of 330 kg/ha for a decade. Cultivated over 9 million ha, the production has also climbed to 232 lakh bales and poised for greater leap upward. Despite all these positive developments, the yield of cotton in India is still far lower than the world average of 680 kg/ha.

An attendant issue to production and productivity is the consumption of cotton by the user Industry. After having remained fairly stagnant around 150-170 lakh bales nearly for a decade, the consumption of cotton has begun to show a rising trend. With production showing a steeply rising tendency responding positively to cotton development programmes, increasing share of transgenic crop etc., unless matching consumption is ensured, cotton cultivation and processing would not be remunerative leading to questions on competitiveness of cotton products from the country in international markets. Burgeoning ending stock unutilized does not auger well for the sector. Enhanced utilization of cotton in apparel sector by initiating appropriate promotion programmes and diversification of cotton into performance textile/industrial arena are issues that need immediate attention. The challenge posed by the ever widening man-made fibre base also needs to be encountered firmly.

COTTON VS MAN-MADE FIBRES

Being a natural fibre endowed with higher moisture absorption, cotton textile provide the right amount of warmth and wear comfort allowing friendly contact between human skin and textile, particularly in a tropical environment. However, internationally cotton has to confront the stiff competition posed by synthetic fibres, particularly polyester. Due to their enhanced durability and aesthetic appeal derived from elegant look and drape, polyester and

polyester-cotton blended textiles have tremendous customer support. Despite the ecofriendliness and biodegradability factor, cotton consumption in terms of its share in the fibre basket has been on the decline world over. The situation in India is also no different. The cotton share has declined from 73% in 1990 to 57% in 2000 and slated to go down and expected to stabilize at 50%. It is pertinent to note here that even the national textile policy envisages an equal share for cotton and man-made fibres. Even the annual growth rate in the recent past the world over for polyester has been about 7% as compared to a meager rate of growth of 1.3% for cotton.

INDIAN VS IMPORTED COTTON

As is well known, about 15% of the cotton consumed by the Indian mills in the recent past has been coming from outside the country mainly from Australia, China, CIS, USA and others. On an average, about 5-8 lakh bales, particularly of the Extra-long staple category is being imported from USA (Supima), Egypt (Improved Gizas) and Sudan (Bakarat). Apart from economic considerations which is of a transient nature, certain quality deficiencies have been slated to be the cause for mills' preference to foreign cottons. CIRCOT on a regular basis carries out fibre quality evaluation of several foreign cotton samples submitted by the trade and industry. Based on CIRCOT experience, the following advantages could be pointed out while handling and processing imported cottons.

- *The contaminants are found to be absent in foreign cotton bales.* In this respect the 'most contaminated cotton' status of Indian cottons was coming in the way. Slowly and steadily the contaminants are on the way out, thanks to vigorous efforts taken by Government of India in strengthening and modernizing the market yards handling cotton and the ginning industry.
- *The trash content as well as microdust is very low.* Some of the Chinese bales have trash as low as 1% or less. For a given length, trash content found in Indian cotton has been rather high (4-6%) which has significantly reduced over the years (2-3%), thanks to on-going efforts under the Technology Mission on Cotton.
- *Foreign cottons pose the problem of stickiness during processing.* Majority of Indian cottons are devoid of this deficiency.
- *Bale-to-bale and lot-to-lot variability in fibre attributes (length, micronaire and strength) is minimal in imported cottons.*
- *The micronaire value of foreign growths in the long and extra long categories is found to be higher indicating optimum maturity.* Indian cottons falling under these classes show lower micronaire value due to immaturity.
- *On the same scale, tenacity values of foreign cottons are higher.*

INDUSTRY'S VISION FOR THE COTTON SECTOR

In the quota-free global trade regime with the distinct possibility of the manufacturing base of textiles shifting to the Asian region, India with its lower manufacturing cost, huge raw material base, expert manpower and entrepreneurial skill is regarded and recognized as the most potent winner in the ensuing period. To provide the competing advantage, governmental efforts in the form of Technology Mission on cotton, Technology Upgradation Fund, setting up of Technology and Apparel Parks are going on strongly.

The Indian Cotton Mills Federation currently known as the Confederation on Indian Textile Industry (CITI) being the apex body of the textile industry in India enjoying the consultative status with the national government and international agencies has set out a vision for the industry. By 2010, the Indian textile and apparel industry can achieve:

- a domestic market potential of US \$45 bn occasioned by an increase in per capita consumption of cloth from the current value of 19 metres to 32 metres
- The export market of US \$40 bn with a 6% share in global trade
- Nearly 60% of the exports to comprise garments
- Over 35% of India's exports to be met from textile
- Over 12 million jobs to be created: five million through direct employment and seven million additional posts in allied sectors.

Co-ordinated participation and timely and strategic action by stake holders that include government and private sector industry associations have been identified as pathways to realize the vision set up by the Industry for the next five to ten years.

QUANTITATIVE REQUIREMENTS

The Sub-group on Textiles and Apparel industry including their raw materials for the Tenth Plan constituted by the Ministry of Textiles has projected the demand for cotton during 2006-07 as around 223 lakh bales. The Indian Cotton Mills Federation has put its requirement of cotton for 2010 at 350 lakh bales. The quantitative requirement postulated in different products like fibre, yarn, fabric etc. are shown in Table 1.

Table 1. Quantitative requirement of fibre, yarn and fabric

Sector	Existing output 2003-04	Output	
		2006-07	2010
Cotton (lakh bales)	177	223	350
Yarn (million kg)	4181	5761	10362
Fabric (billion m ²)	32	59	90
Garments (billion pieces)	4.4		15

Going by the current production figures in different staple groups as per the industry's demand, the staple-wise cotton requirements for 2006-07 and 2010 are given in Table 2.

Table 2. Staple-wise cotton requirements for 2006-07 and 2010

Stable group	Output (lakh bales)		
	2003-04	2006-07	2010
Short (20 mm and below)	18	21	34
Medium (20.5 mm - 24.5 mm)	61	77	121
Medium long (25 mm - 27 mm)	30	42	65
Lon (27.5 mm - 32 mm)	61	70	110
Extra long (32.5 mm and above)	7	13	20
Total	177	223	350

QUALITY REQUIREMENTS

Having gauged the requirement of spinners for hassle-free processing and production of quality yarns and also after understanding the deficiencies vis-a-vis superiority of Indian and imported cottons, the quality norms have been prescribed for future development of varieties/hybrids (Table 3).

Table 3. Quality norms prescribed for future development of varieties/hybrids

Count Range	Range of 2.5% SL (mm)	Minimum value of UR (%)	Minimum Tenacity (g/t) ICC mode	Minimum breaking elongation (%)	Range of Micronaire value	Minimum Maturity Pm (%)
6s-12s	22-23	50	20	6.0	4.5-5.0	80
14s-18s	24-25	50	21	6.0	4.5-5.0	80
20s-24s	25-26	50	23	6.0	4.0-4.5	80
25s-30s	26-27	50	24	6.0	3.8-4.5	80
31s-40s	28-29	50	25	7.0	3.8-4.5	80
41s-50s	29-31	48	26	7.0	3.8-4.5	80
51s-60s	31-33	48	28	7.0	3.8-4.2	80
61s-80s	33-34	48	29	7.0	3.7-4.0	80
81s-100s	35-36	48	31	7.0	3.6-3.8	80
101s-120s	36-38	48	32	7.0	3.5-3.8	80

Additional guidelines, particularly for long cottons have been provided (Table 4).

Table 4. Guidelines for long cottons

Category	Trash (%) level in Indian cottons	Trash content (%) upper limit	
		BIS	TMC
Extra Long (above 32.5 mm)	2.8-7.7	3.0	2.0
Long and medium long (35-32mm)	8-10.0	5.0	3.0
Medium and short (up to 24.5mm)	3.3-8.6	6.0	3.5
Closed boll type	12-18	10.0	6.0

Micronaire value: 3.8 – 4.2 within bale variation $< \pm 0.1$
 Tenacity (ICC): 24g/tex or more
 Length uniformity: Not below 48%
 Seed fragments: less than 15/g
 Nep content: less than 150/g

Apart from this the cotton should be chosen as to have minimum yarn faults and optimum yarn strength in terms of Rkm values irrespective of the count of the yarn.

Since trash content directly affects the commercial value of the lint as well as the quality of the end product, be it yarn or fabric or even finished garment, staple-wise norms for trash content have been fixed.

CONCLUSION

If the issues related to quality addressed here are attended to quickly, then the cost competitiveness and quality worthiness of Indian cottons would match well with international growths and that value-added yarns, fabrics and garments from these cottons would find favour in international markets. This would also help in arresting the influx of textiles from outside. Value-addition to byproducts and processing wastes would also bring in the much needed additional remuneration to both the grower and the processor to make their enterprise much more economically attractive.

2006-07