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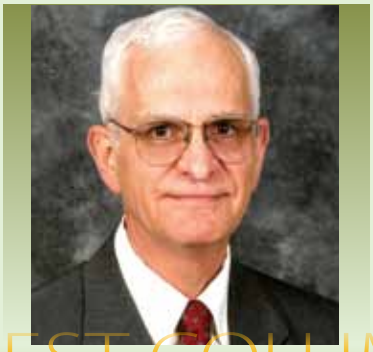
Breeding for Improved Cotton Fibre Quality



GUEST COLUMN

Dr. Fred Bourland

Professor and Centre Director University of Arkansas, U.S.A

Dr. Fed Bourland received B.S. (1970) and M.S. (1974) degrees from the University of Arkansas, and Ph.D. (1978) degree from Texas A&M University. Dr. Bourland's graduate school studies and career have focused on cotton breeding. He has developed several selection techniques, a cotton management program (COTMAN), and has released 79 cotton germplasm lines and four cotton cultivars. He also conducts cotton variety trials and serves as the Center Director of the Northeast Research and Extension Center. He has authored or co-authored 87 refereed publications, 25 book chapters, 218 non-refereed publications and 108 abstracts. He received the ICAC International Cotton Researcher of the Year Award in 2010.

Development of cotton cultivars that produce both high fibre quality and high yields has been elusive. In the 45 years that I have been involved with cotton breeding as a student and professional, improvement of fibre quality has received relatively little attention. Most breeders have concentrated on improvement of yield, maturity, and pest resistance – then simply maintained fibre quality within "acceptable" ranges. Breeders have recently placed a higher emphasis on the improvement of fibre quality. This higher emphasis has been fueled by improved means to measure fibre quality, means to handle these data, and by market demands for higher fibre quality.

Fibre Testing Methods

Evaluation of cotton fibre quality has evolved from subjective determination of fibre quality by a cotton classer to sophisticated machine classing used throughout the industry today. The cotton classer would visually determine a grade for a cotton lint sample based color and trash. Fiber length was estimated by touch rather than sight. Micronaire, a measure of fineness of fiber based on resistance to airflow through a specified sample, became a part of the USDA Official Classification procedure in 1966. Carefully prepared standards for grade, length and micronaire were prepared and approved by Cotton Division, AMS, USDA.

Cooperative efforts by USDA and equipment manufacturers began in the mid-1960's to develop High Volume Instrument (HVI) systems for classing cotton. USDA began classing allU.S. cotton samples provided to the department with the HVI system in 1991. Today, HVI data are accepted throughout

the world and is the foundation on which cotton is traded. HVI-measured traits normally include micronaire, fibre length, length uniformity, strength, elongation, and short-fibre index.

The Advanced Fiber Information System (AFIS) was developed by the cooperative efforts of USDA Agricultural Research Services at Clemson, SC, and Schaffner Technologies, with research beginning in 1982. AFIS provides data regarding about 20 fibre properties based on individual fiber analysis, but does not include measurement of tensile properties of the fibre. AFIS requires extensive and careful preparation of samples, and considerable time to evaluate a sample. Thus, turnover and cost of obtaining AFIS data are much greater than obtaining HVI data.

Selecting for High Fibre Quality

The relatively inexpensive measurement of fibre quality by HVI has increased the priority of high fibre quality in most cotton breeding programs. AFIS provides more detailed information regarding fibre length distribution, but it is generally not practical to evaluate a high number of samples by AFIS. Kelly et al. (2012) found that improvement in fibre length could effectively be done using either HVI or AFIS data, and that differences in fibre quality improvement were minimal between the two fibre testing methods.

Ideally, breeders would like to have one parameter to characterise fibre quality. To address this desire, Bourland et al. (2010) developed "Q-score", a simple numerical index based on up to six HVI fibre parameters. Fibre properties and their relative contributions to Q-score calculations initially used included fibre length (50%), micronaire (25%), fibre length uniformity (15%) and fibre strength (10%). These weights were based upon perceived demands of the current cotton market, and were particularly weighted in favor of fibres desirable for ring-spinning technology. Users of Q-score may change the relative weights of the HVI parameters and add weights for elongation and short fibre content. The HVI parameters of elongation and short fibre content are seldom be employed in Q-score calculations.

Q-score can be effectively used throughout the breeding process beginning with evaluation of non-replicated data from individual plant selections (IPS) and progenies and ending with replicated data used in the release of a genotype. A primary benefit of Q-score with regard to IPS and progeny is the reduced time and effort required to make selections. Breeders typically make hundreds or thousands of IPS each year. Discarding IPS based on relative values for multiple fibre property traits is a daunting task. Without the use of an index, a breeder must examine each fibre parameter value for an IPS, and determine whether each value is within some arbitrary tolerance limit. Frequently, the breeder then mentally assigns weights to the different parameters to determine which IPS to discard. Sorting the data by Q-score facilitates rapid discard of lower quality lines and recognition of high quality lines. Once Q-score is calculated in a spreadsheet, the IPS can be sorted by their relative Q-score. Lines having low Q-score values can be quickly and painlessly discarded.

Without consideration of trash or color, Q-score does not completely define fibre quality. Meaningful measures of trash and colour are typically not available from small samples that are taken and processed by breeders. Colour is primarily affected by field conditions after boll opening and prior to harvest, and by conditions during storage and ginning. Since colour has little genetic basis, breeders have little opportunity to improve colour grades of cotton.

By reducing plant hairiness, breeders can effectively reduce trash content in ginned fibre. Breeders may consider both leaf and bract pubescence ("hairiness") and give preference to breeding lines and cultivars having lower pubescence on leaves and bracts. Reduced pubescence on cotton leaves has been associated with improved seed cotton cleaning efficiency and low foreign matter levels in harvested lint, and thus higher leaf grades in ginned cotton (Novick et al., 1991). To assist with characterising leaf pubescence, Bourland et al. (2003) developed a rating system that could be easily used to identify less pubescent genotypes. Using this rating system, plants from progeny rows and replicated plots may be characterised for leaf pubescence by examining the abaxial side of a fully-expanded main stem leaf. By making these ratings near the time of physiological cutout, work fatigue (due to bending over to examine younger plants) is lessened and sampling of partially senescent leaves is avoided. Since genotype by location interaction is not strong, these evaluations are

usually performed at only one location. Based on these characterisations, off-type plants can be removed from seed increases. We also characterise stem pubescence using this rating system by examining plants after they are defoliated and harvested.

Pubescence on cotton bracts has received relatively little attention. Bracts are modified leaves surrounding the flower buds and bolls of the cotton plant. Morey et al. (1976) found that bracts are a major contributor to "leaf trash" in harvested cotton. This seems reasonable since bracts are in closer proximity to the cotton fibers than are plant leaves, and most leaves are removed from the plant prior to harvest if defoliation is successful. By examining variation in marginal bract trichomes ("hairs") on different canopy positions and cultivars as well as over time and environments, sampling methods were established by Bourland and Hornbeck (2007). They found that glabrous leaf genotypes tended to have lower marginal bract trichome density than did hairy leaf genotypes, but there was some overlap of bract trichome density among glabrous and hairy leaf genotypes. Of all the Upland cotton genotypes that we have examined, none were found to have glabrous marginal bract surfaces. Hornbeck and Bourland (2007) found significant, but low magnitude (r = 0.33 to 0.35), correlations between trichome density on abaxial leaf and marginal bract surfaces. This suggests some degree of independence of the two traits. We determine bract trichome density for all replicated tests at one location. Selection preference is given to lines with low bract trichome density – regardless of their leaf pubescence rating.

Overcoming Negative Associations

Negative relationships between improved yield and fibre quality traits have long existed. If improved yield and fibre quality were positively related, fibre quality would be improved as breeders have selected higher yielding cultivars. This obviously has not been the case. Using data sets from both Australia and U.S., Clement et al. (2012) showed that negative associations still exist

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between yield and fibre quality parameters. In each set of data, they found that fibre length and strength had significant negative associations with yield; fibre maturity had a positive association with yield, while associations of micronaire and fineness with yield were inconsistent. Progress toward weakening the strong negative associations appears to be occurring in the Australian cotton breeding program.

Placing a high priority on fibre quality traits in early generations is an approach that appears to help break the negative relationships of fibre quality and yield. As noted above, Q-score greatly facilitates the process of discarding individual plant selections and progeny based on fibre quality. Evaluation on the basis of Q-score can be accomplished with little prejudice since limited other data are available and relatively little time and effort have been invested in the genotype. In addition, discarding individual plants prior to planting decreases the time and space required for field evaluation of progeny. Using high selection pressure for fibre quality in early generations insures that only high fibre quality lines will be advanced in a breeding program. The goal then is to find the best yielding line among the selected high fibre quality lines.

The relative yield and fibre quality of 'UA48' documents the success of this approach. Over years, UA48 produced lint yields equal to two standard conventional cotton cultivars. Its fibre quality greatly exceeded either check cultivar. Moreover, UA48 matures earlier than the two standard cutivars, both of which are considered to be early maturing cultivars. This combination of early maturation, competitive yields, and exceptional fibre quality is unprecedented. Additional information on this cultivar is available in its registration publication (Bourland and Jones, 2012).

Market Demands for High Fibre Quality. Improved fibre quality does not always guarantee higher prices, but does insure that fiber will move more quickly through the market. Although the first priority for evaluating a cultivar must be its ability to produce competitive high yields, high yields have less value if the cotton is difficult to market. Marketing of low quality cotton may be subject to high price discounts and delayed cash flow. Adverse environmental conditions will always provide an ample supply of low quality cotton. Historically, marketing of low quality cotton has often been supported by governmental marketing loans. Re-structuring or elimination of these loan programs will further weaken marketing opportunities for low quality fibres. Consequently, the development of cotton cultivars possessing enhanced cotton fibre quality is essential for sustaining long-term cotton production in any region. Cultivars possessing a genetic capacity for higher fibre quality can build and sustain greater marketability and price. Even with harsh growing conditions, such cultivars will maintain a better quality than cultivars without a high capacity for quality.

References

Bourland, F.M., R. Hogan, D.C. Jones, and E. Barnes. 2010. Development and utility of Q-score for characterizing cotton fiber quality. J. Cotton Sci. 14:53-63.

Bourland, F.M., J.M. Hornbeck, A.B. McFall, and S.D. Calhoun. 2003. A rating system for leaf pubescence of cotton. J. Cotton Sci. 7:8-15.

Bourland, F.M. and J.M. Hornbeck. 2007. Variation in marginal bract trichomes on Upland cotton. J. Cotton Sci. 11:242-251. Available at http://www.cotton.org/jounal/2007/11/4/242.cfm

Bourland, F.M., and D.C. Jones. 2012. Registration of 'UA48' cotton cultivar. J. Plant Registrations 6:15-18.

Clement, J.D., G.A. Constable, W.N. Stiller, and S.M. Liu. 2012. Negative associations still exist between yield and fibre quality in cotton breeding programs in Australia and USA. Field Crops Res. 128:1-7.

Hornbeck, J.M., and F.M. Bourland. 2007. Visual ratings and relationships of trichomes on bracts, leaves, and stems of Upland cotton. J. Cotton Sci. 11:252-258.

Kelly, C.M., E.F. Hequet, and J.K. Dever. 2012. Interpretation of AFIS and HVI fiber properties in breeding for cotton fiber quality improvement. J. Cotton Sci. 16:1-16.

Morey, P.R., P.E. Sasser, R.M. Bethea, and M.T. Kopetzky. 1976. Variation in trash compositionin raw cottons. Am. Ind. Hyg. Assoc. J. 37:407-412.

Novick, R. G., J. E. Jones, W. S. Anthony, W. Aguillard, and J. I. Dickson. 1991. Genetic trait effects on non-lint trash of cotton. Crop Sci. 31:1029-1034.

(The views expressed in this column are of the author and not that of Cotton Association of India)

Sir Purshottamdas Thakurdas Memorial Annual Cricket Tournament

The Cotton Association of India is organising the Sir Purshottamdas Thakurdas Memorial Annual Cricket Tournament in the memory of our illustrious Past President, the late Sir Purshottamdas Thakurdas.

This year, the cricket tournament will be held on Saturday, the 4th April 2015 on P. J. Hindu Gymkhana Ground, Netaji Subhash Road, Marine Drive, Marine Lines, Mumbai 400 020 from 9.00 a.m. to 4.00 p.m.

The details of the programme are as follows:-

Time	Programme
8.00 a.m. to 8.45 a.m.	Breakfast
9.00 a.m. to 12.30 p.m.	Cricket Match
12.30 p.m. to 1.15 p.m.	Lunch
1.30 p.m. onwards	Balance Match/Final Match
3.45 p.m./4.00 p.m.	Price distribution and Tea

We cordially invite all our members to actively participate in the event. The registration form may kindly be sent to this office duly filled in and signed so as to reach the office of the Association latest by 2.30 p.m. on Saturday, the 28th March 2015.

The Committee reserves right to disqualify any application received for participation in Tournament without assigning any reason.

For further information, members are requested to contact
Mr. D. J. Thanawala (Mobile No. 9987275861)
or Mrs. Sujata Sawant at Office Tel. No.022-30063400.

We solicit your kind co-operation in the matter and request you to remain present in large number with family to grace this occasion. We shall appreciate if your kindly confirm your participation.

COTAAP Corner

It has been a tradition of COTAAP Research Foundation, Chopda Unit, to conduct a pre-sowing and post- harvest Kisan-Mela every year. This year too, COTAAP conducted a post-harvest Kisan-Mela successfully on Sunday, 1st March 2015, from 09:00 a.m. to 1:30 p.m. at the Municipal Auditorium, Chopda. More than 1,000 farmers attended the Kisan-Mela.

The initiatives at Kisan-Mela:

i) The Krushi-Darshan agriculture information diary, published by the Mahatma Phule Krishi Vidyapeeth, Rahuri was distributed free of cost to the farmers;

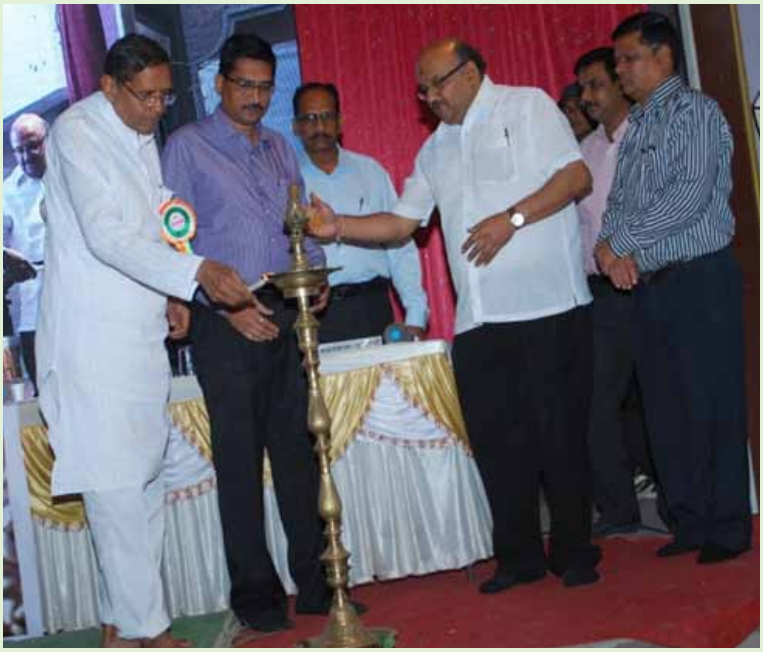
ii) Arvind Ltd., Ahmedabad, distributed cotton bags to the farmers to promote contamination free cotton initiative amongst them;

iii) To encourage best practices, COTAAP awarded five farmers for harnessing top production;

iv) As a process for continuous improvement, COTAAP distributed feedback forms to the farmers. These feedback forms help in formulating schemes and models, best suited to them.

v) A delicious lunch buffet was also made available for the farmers.

The Hon. Shri. Arunbhai Gujarathi, former speaker, Maharashtra State presided over the Kisan-Mela. He appreciated COTAAP's role in farmers' upliftment and appreciated its devoted team for transferring technology down to the grass roots. He also appreciated the initiatives taken by the partners (Mahyco, Arvind Limited, Ahmedabad and the Agriculture Department of the Government of Maharashtra) involved in the HDP-PPP project.



The Kisan-Mela is inaugurated by Hon. Shri. Arunbhai Gujarathi.

The Kisan-Mela was honoured by the presence of scientists, representatives from CICR, who had come at the behest of Dr. Keshav Kranthi, Director, CICR, Nagpur. Dr. Wasnik, scientist, CICR, gave insights of their e-kapas-initiative which is connecting thousands of farmers; while another scientist from CICR, Dr. Meshram, gave inputs on HDP plantation based on Brazil cotton production model involving various straight varieties and also expressed his interest in working on a joint project with COTAAP.

COTAAP had invited renowned Group Farming Expert, Shri. Nathrao Karad from Parali

Dr. Wasnik, CICR

Dr. Meshram, CICR

Shri Nathrao Karad, Group Farming Expert

Mr. Pradip Patil Deputy Director of Agriculture, Marketing Federation, Pune

Felicitation of farmers for maximum production of cotton

Vaijnath as a guest speaker. He gave insights on integrated and market oriented farming which were highly appreciated. Shri. Karad showed video clips regarding strength of unity and also shared his experience in farm management and gave important tips on reducing cost of cultivation and better labour management. Most importantly, Shri. Karad explained the crucial role of women in agriculture, which would lead to better on farm and off-farm management.

The Government of Maharashtra is an important partner in the PPP project with COTAAP. Shri. Pradip A. Patil, Deputy Director of Agriculture, Marketing Federation, Pune, specially attended the Kisan–Mela and gave a presentation to the farmers on the various schemes for group farming offered by the State Government. This was a laudable attempt of taking the Government schemes directly to the farmers. Some of the key points shared by Shri. Patil included:

1. Change of attitude from 'Marketing of Produce' to 'Production for Market'. This envisages prior connectivity with the buyer and proper planning as per his demands.

2. To take benefits of this enabling environment, farmers need to be united and form farmer producer companies

3. Shri. Patil also explained in brief, the procedure for forming producer companies and legal compliances.

4. Information on various financial support schemes was also shared including- Venture Capital, Equity Grant and Collateral Security, NABARD loans and capacity building support, ATMA and small infrastructures and MAHAFPO which is a state level federation.

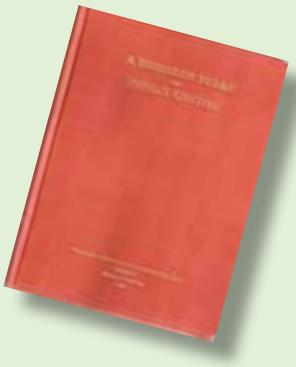
In turn, Shri. Pradipbhai Gujarathi, Trustee, COTAAP Research Foundation, Mumbai, gave a detailed introduction to COTAAP. He reviewed activities conducted by COTAAP Research Foundation and touched on the success of HDPs technology and PPP project. He also spoke about the impact of COTAAP activities especially in adoption of improved practices from year 2005 and of the awareness drive for farmers regarding contaminations in cotton and how to avoid it by using harvesting bags provided by Arvind Ltd. He concluded by sharing the future plans of COTAAP-PPP-HDPS, ELS, CICR-Technology and envisioned to empower farmers to the next level of farm mechanisation.

Technical Advisor Shri. R. A Patil gave a vote of thanks and facilitated the tour of all the guest.

Great attendance and active participation of farmers

A Hundred Years of Indian Cotton

By Professor M.L. Dantwala



CHAPTER VIII: THE GATEWAY OF COTTON

(Continued from Issue No.43)

Advantages of the Depot at Mazagon

(i) It will be connected by the railway with docks which will allow all consignments being more expeditiously transported to the docks than is possible from the present Green where the only means of transport available are sailing boats and bullock carts.

(ii) The cost of transport in such cases will be less, and on a rough estimate, the saving in respect of exports may be taken at about a lakh of rupees per annum, at the least, on a normal trade.

(iii) The storage area being more compact and accessible everywhere to siding, the labour and cartage charges would be greatly reduced. And it will be probably feasible to charge a considerably reduced rate for storage in the open as compared with that now charged at Colaba.

(iv) The site is much more convenient to the local mills which consume half the crop .... There are only three mills at Colaba near the present Green, whereas the remaining seventy-seven mills lie close to the proposed site, or to put it in another way, seventy to seventy-five of these mills are situated at a distance of four to seven miles from the existing Cotton Green, while they are close to, and many lie within one mile of the new site. Seeing that about 120,000 carts are required to transport the cotton from the Green to the mills, and that the distance is so much less, the charges must result in a large saving under this head also, supposing the saving to be annas four per cart, it would amount to Rs. 30 000 a year.

(v) The warehouses at Colaba are said by the Chamber to be greatly scattered which causes inconvenience, especially in the rains. Those to be erected on the new site will be together and close to the open ground used for storage in the fair season and will, in construction and fire appliances, comply with the requirements of the insurance offices so as to entitle the occupiers to the most favourable rates. A further and considerable economy may be anticipated in this respect as the rates at Colaba vary from annas six to ten annas per cent, whereas at the dock warehouses the rate for the same risk, i.e., full pressed bales, is only 2 annas per cent and the rents will certainly be no more than those charged at Colaba which, it may be observed, are as high as are charged for substantial warehouses like the Ryan Grain Market on the Elphinstone Estate.

(vi) There will be a wharf adjacent to the site where the imports of country craft may be unloaded.

(vii) And the cotton landed at the docks from steamers may readily be railed up at less cost than the present cost of carting to Colaba."

But it was not before 1923 that the cotton market was finally shifted from Colaba to Sewri. On 3rd July 1923, a meeting of all persons connected with the cotton trade of Bombay was held under the chairmanship of Sir Purshotamdas Thakurdas for discussing the problems involved in the transfer of the cotton market. In his address, Sir Purshotamdas said, "the shifting of the Cotton Green from Colaba to Tank Bunder was practically decided upon years back on various grounds. The principal one, however, was the location of the cotton trade nearer the docks and the mill area than at present. Bombay is a centre for consumption of roughly one-third of the total cotton it receives and for distribution by export of two-thirds of its annual import. Prima facie, therefore, it may be conceded that the location of the cotton godowns nearer the docks and the mill area, and in addition, nearer to up-country markets even by two miles, is a reasonable proposition."

Accordingly, in 1923, the cotton market was shifted to Sewri (Tank Bunder – Mazagon), not far from the mill area in the north of Bombay. The formal opening ceremony of the completed Depot was performed on 1st December 1925. There the cotton trade has occupied 127 acres of reclaimed land, on which are erected warehouses, jaithas, business quarters, and a Trading Hall.

There are 178 warehouses, arranged in 17 groups of ten, and one of eight. The groups are separated by roads or "avenues" wide enough for loading and unloading. Each warehouse has a floor-space of 111 ft. by 43 ft., and a height of 30 ft. The total storage capacity of all the warehouses is over three-fourths of a million bales.

Along the side of the several warehouse-groups there are jaithas, i.e., spaces with raised plinths, 225 in number, where a quarter million bales can be piled up during the dry season.

At one end of the Depot, and separated from the warehouses by a wide road, stands the "Cotton Exchange" — the business quarter of the trade. It is an imposing three-storeyed building, having a frontage of 1,800 ft. on the north and 650 ft. on the east. It was built at a cost of over Rs. 1,800,000 and contains 120 Buyers' rooms and 80 Sellers' rooms, most of which are occupied. On the third storey are the Arbitration and Appeal rooms, capable of handling 300/350 surveys and appeals per hour. There is a library for the use of the members of the trade, and accommodation for keeping records.

The Railway Station appropriately named "Cotton Green" is built close by the Depot by the G.I.P. Railway. A special Sub-Post and Telegraph Office is located in the "Exchange" itself.

Within the angle made by the two frontages, stands the Trading Hall — the "Ring", which, however, as has already been mentioned in an earlier passage, is no longer in use.

Let us have a look at the actual handling of cotton bales. To-day the bulk of this work is performed by labourers coming from the Deccan. Here, too, there has been an evolution. The early Cutchi traders who came to the city handled their own bales. It is on record that the forefathers of some of the leading cotton merchants of to-day, themselves did all the manual work involved in the trade. The successive generations became progressively more refined, and all that they need handle to-day is the telephone. But the Deccani Maratha had no such ambition. "The Ghati has no ambition but to work. Wherever he is employed he is always useful and his labour is fully worth the wage he receives His best qualities are seen in the great godowns of the city. He manages heavy loads of bales .... with the intelligence and skill of one to the manner born, and his physical powers of endurance during the hottest weather have often excited the wonder and admiration of the employers," says the Gazetteer of Bombay City and Island.

Between 1,000 and 1,500 labourers are employed at the Sewri Cotton Depot, the higher number being employed during the busy season from December to May. Requirements vary from time to time, with the result that the number of permanent and casual labour is almost equal. In addition to the hamals, there are some 750 clerical men working for the Spot Traders at Sewri, besides some 500 men, whose work is to mark the bales and take out samples. The clerical work arising out of the Futures Trade at the Exchange Building in Marwari Bazar is done by nearly 2,000 men.

The Bombay Cotton Merchants and Muccadams' Association maintains a charitable dispensary for the benefit of labourers and others employed on the Cotton Green. The Bombay Presidency Infant Welfare Society runs a centre at the Depot, towards which the trade donates Rs. 3,000 annually. Three Trust Funds, namely, the Cotton Servants' Relief Fund (amounting to about Rs. 25,000), the Maneckjee Merwanjee Nanpuria Trust Fund (amounting to about Rs. 25,000), and the Seth Shivnarayan Nemani Charitable Trust Fund (amounting to Rs. 1,01,000) provide financial help to the needy employees in the cotton trade. A night school for labourers is conducted under the auspices of the East India Cotton Association at Sewri. There is also a library and reading room, managed by the Committee of Management of the Cotton Servants' Relief Fund.

An important step for the benefit of the workers was taken in 1938 by the East India Cotton Association in appointing a permanent Labour Officer for attending to all labour questions. The Association prescribed rules for the administration of labour, appointed a Labour Supervision Committee, and fixed minimum rates and wages for various kinds of labour. No labour contractor is allowed to work in the Cotton Depot unless he has a licence and has deposited with the Association a sum equal to the average monthly wages payable by him to his employees, as a safeguard against his failure to pay them.

Hours of work are regulated and provision is made for attendance for overtime work. Liability under the Workmen's Compensation Act is imposed on the principal employers and in addition to compensation, permanent workers are given wages for the first seven days after they have had an accident, although there is no such liability prescribed under the Act. Child labour is prohibited. In deserving cases, old workers who have no means of livelihood are provided with a small pension from the funds of the Cotton Dealers' Association; and workers who might be in distress owing to unemployment or prolonged illness, are given help from the Cotton Servants' Relief Fund. The Co-operative Society (started in 1939) lends money at a moderate rate of interest. Facilities are granted to workers for the celebration of religious festivals in the Trading Hall. In 1940 a temple was built near the Exchange Building by the well-known Nemani firm in memory of the late Seth Shivnarayan Nemani.

The beneficial results of the labour administration have been appreciated both -by labourers and merchants. There are three trade unions among the workers; one, of labourers and workers at Sewri, known as the Cotton Kamgar Sangh; another, known as the Ready Cotton Staff and Workers' Association mostly consisting of the clerical staff; and the third, known as the Cotton Brokers' Staff Union, consisting of the clerical staff of the brokers at Kalbadevi. The last union is comparatively more active; it runs a dispensary and a library for the benefit of its members. The East India Cotton Association has provided it with rooms for a library and a dispensary, free of charge.

Production of fibres

(In Mn. Kg)

As on	Raw Cotton (Oct.-Sept.)	Synthetic			Cellulosic	Sub Total
		PSF	ASF	PPSF	VSF	
2000-01	2380	566.42	99.43	2.26	236.17	904.28
2001-02	2686	551.42	94.84	2.38	185.28	833.92
2002-03	2312	582.13	105.27	2.46	224.61	914.47
2003-04	3043	612.58	117.00	2.74	221.01	953.33
2004-05	4131	644.16	127.61	2.88	247.95	1022.60
2005-06	4097	628.15	107.81	3.08	228.98	968.02
2006-07	4760	791.99	97.13	3.52	246.83	1139.47
2007-08	5219	879.61	81.23	3.43	279.90	1244.17
2008-09	4930	750.12	79.50	3.44	232.75	1065.81
2009-10	5185	872.13	90.45	3.38	302.09	1268.05
2010-11	5763	896.33	79.48	3.74	305.10	1284.65
2011-12	5899	829.74	77.71	4.08	322.64	1234.17
2012-13	--	848.05	73.59	4.26	337.49	1263.39
2013-14 (P)	--	845.95	96.12	3.71	361.02	1306.80
2014-15 (P)						
April	--	70.24	8.52	0.38	29.91	109.05
May	--	70.79	7.48	0.36	31.30	109.93
June	--	70.62	8.32	0.36	28.62	107.92
July	--	81.56	6.26	0.33	30.72	118.87
August	--	74.63	8.67	0.36	30.68	114.34
September	--	68.45	7.82	0.40	30.14	106.81
October	--	72.14	8.35	0.36	31.16	112.01
November	--	70.08	7.57	0.40	30.21	108.26
December	--	75.14	8.46	0.44	31.58	115.62
January	--	79.00	6.04	0.40	31.47	116.91

(P)= Provisional

Source : Office of the Textile Commissioner

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UPCOUNTRY SPOT RATES

(Rs./Qtl)

Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	Spot Rate (Upcountry) 2014-15 Crop MARCH 2015 16th	17th	18th	19th	20th	21st
	Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]											
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15	8605 (30600)	8605 (30600)	8605 (30600)	8605 (30600)	8605 (30600)	
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	8745 (31100)	8745 (31100)	8745 (31100)	8745 (31100)	8745 (31100)	H
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	6243 (22200)	6214 (22100)	6214 (22100)	6214 (22100)	6214 (22100)	
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	7508 (26700)	7311 (26000)	7171 (25500)	7171 (25500)	7171 (25500)	O
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	7733 (27500)	7592 (27000)	7592 (27000)	7592 (27000)	7592 (27000)	
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	8942 (31800)	8970 (31900)	8998 (32000)	8998 (32000)	8998 (32000)	
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	7789 (27700)	7761 (27600)	7733 (27500)	7705 (27400)	7705 (27400)	L
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	7902 (28100)	7874 (28000)	7845 (27900)	7817 (27800)	7817 (27800)	
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	9055 (32200)	9083 (32300)	9111 (32400)	9111 (32400)	9111 (32400)	I
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	8014 (28500)	7986 (28400)	7958 (28300)	7930 (28200)	7930 (28200)	
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	8323 (29600)	8295 (29500)	8267 (29400)	8239 (29300)	8239 (29300)	
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	9167 (32600)	9195 (32700)	9223 (32800)	9223 (32800)	9223 (32800)	D
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	8548 (30400)	8520 (30300)	8492 (30200)	8464 (30100)	8520 (30300)	
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	8605 (30600)	8577 (30500)	8548 (30400)	8520 (30300)	8492 (30200)	A
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	8717 (31000)	8689 (30900)	8661 (30800)	8633 (30700)	8689 (30900)	
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	8745 (31100)	8717 (31000)	8689 (30900)	8661 (30800)	8633 (30700)	
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	9083 (32300)	9055 (32200)	9055 (32200)	9055 (32200)	9055 (32200)	Y
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	9476 (33700)	9448 (33600)	9448 (33600)	9448 (33600)	9448 (33600)	
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	9786 (34800)	9729 (34600)	9729 (34600)	9729 (34600)	9729 (34600)	
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	11248 (40000)	11248 (40000)	11248 (40000)	11248 (40000)	11248 (40000)	

(Note: Figures in bracket indicate prices in Rs./Candy)