

Weekly Publication of



**Cotton
Association
of India**

COTTON STATISTICS & NEWS

Edited & Published by Amar Singh

2018-19 • No. 38 • 18th December, 2018 Published every Tuesday

Cotton Exchange Building, 2nd Floor, Cotton Green, Mumbai - 400 033
Phone: 3006 3400 Fax: 2370 0337 Email: cai@caionline.in
www.caionline.in

Cotton - Its Journey from Yarn to Fabric

Dr. T.R. Loknathan has a Ph. D. in plant breeding. He is currently working as a Principal Scientist in the Division of Crop Improvement at ICAR-CICR, Nagpur. He is pursuing his research on genetic enhancement of cotton.

Introduction: The preparation of yarn has been covered in the earlier article on spinning. Once the yarn is created, the cloth manufacturers take those finished yarns of varying textures suiting different cotton goods for final fabric construction.

The process of spinning is as ancient as spinning and weaving got initiated with hand weaving as depicted in the historical account which follows. The appropriate combination of the devices of warp and weft led to the construction of a loom.

These manually operated looms gave way to further advancement in automation in looms. This aided in increasing the pace of operations in the textile industry. The present article echoes the basic principles involved in weaving, preceded by a brief history and further

application of weaving for the construction of fabric.

History of Weaving

Weaving is a process of accumulation and combination of yarns to accomplish fabric formation. This is mentioned in earlier times when Columbus discovered this native art prevalent among Cubans who designed in nets called 'hamacas' synonymous with the English word hammock. People of Bahamas brought gifts of cotton yarns in exchange of Caritian trinkets. Cuban women wore cotton dresses. In a single loom there were approximately 12000 pounds of yarn on spindles.



GUEST COLUMN

Dr. T.R. Loknathan

*Principal Scientist, Division of crop improvement,
ICAR-CICR, Nagpur*

In Cuba, Haiti and Guadalupe, even the idols were made of cotton, reminding one of the sacred associations of this plant among ancient Hindus. When Fernando Megulan visited Brazil in 1520, he found Brazilians using mattresses stuffed with cotton tint. In fact, the extensive Spanish explorations proved that the cultivation and manufacture of cotton had evolved independently on the South American

continent, reaching a notably high development in extremely remote times among the elite people of Mexico.

When Cortes entered the city of Cholulu in 1519, he was especially awestruck with the costumes of the higher classes who wore fine embroidered cotton mantles similar to the Moorish cloak in both cloth and pattern. The Spaniards were particularly impressed with the elegant garb of their own generous hosts. The tilmatti or cloak thrown over the shoulders and tied around the neck was made of cotton of different degrees of fineness according to the status of the wearer. The women wore shirts with highly ornamented borders and over these loose robes made of cotton which was often of delicate texture. These were richly dyed and embroidered. Cotton tapestry was placed on the ground before the emperor, so his feet would not touch the soil.

In the markets of Mexico, you could see cotton piled up in bales, or made into quilted doublets and dresses as well as articles for domestic use like tapestry, curtains coverlets and hoods. Cortes, imitating the Mexicans, protected his soldiers from hostile arrows by quilting their jackets with lint. He presented Emperor Charles V, some cotton mantles, some were all white, while were a mix of white and black or red, green, yellow and blue; waistcoats, handkerchiefs, counterpanes, tapestries and carpets of extremely fine cotton. From cotton fibres, the Mexicans learnt to manufacture paper and even to use it as a form of money.

The rich culture of Peruvian Incas also included the high development of the cultivation and manufacture of cotton. While Peruvian cotton could not be surpassed for strength, and although its length was pretty long, its length was exceeded by Egyptian and sea-island products. Although unlike the Mexicans who used cottons exclusively, the Peruvians also used the wool of Alpacas, llamas, sheep and other animals in the manufacture of clothing. They also produced coloured cotton cloths with complicated and elegant pattern.

Pizzaro reported that from time immemorial, the dress of the Incas had always been woven of

cotton by “Virgins of the sun”. Even before the times of the Incas, tribes of “Chimu” inhabiting parts of the coast of Peru, erected temples, tombs and palaces. From their habit of interring mummies along with all of their articles of daily use, much of their customs could be learnt.

Many cotton garments have been exhumed, especially in and around Ancon indicating the existence of a slightly advanced knowledge of weaving. Even spindles with other implements used in spinning and sewing have been recovered from the tombs of the Chimu indicating as stated by Mr. Henry Lee among others, that the cultivation and manufacture of cotton in the so called “New World” had at least co-evolved with the similar use of it in India.

Virginia planter, George Washington, established his weaving establishment in 1767. In this year he manufactured a total of 1556 yards of which about three hundred yards were of cotton. This included cotton striped, cotton plain, cotton filled, cotton bird eye, cotton Jumpstripe and cotton India dimity. These goods were intended for 28 different persons besides himself and Mrs. Washington. However, he spun and wove only forty yards of cotton for his own use.

In 1775, Alexander Hamilton and Tench Cox initiated the first US company “United Company of Philadelphia. In the first half of the 17th century, Fustians Vermillions, Dymetes and other such “stuffes” all made of cotton were sent from Manchester to London. In 1724, Stukeby in his *Itinorarium Cubroosum* mentioned that the people of Manchester had swivel looms, stolen from the Dutch, that worked 24 laces at a time.

The swivel loom was invented by a Dutch, Van Anson in the middle of the 18th century. A simple circular motion was required to keep the swivel looms at work; hence they became the first power looms. The migration of the Flemish wool spinners into Lancashire was the beginning of the Lancashire industry which later moved towards the use of cotton fibres for spinning and weaving.

In early times, the warp yarns or strands were tied to objects on the ground and lifted

separately as the filling was passed under or over them. Later, they were fastened to a stick or pole and hung in an upright position which permitted an easier interlacing of the filling of yarns. Speed was developed by improvement in methods aiding lifting of warp yarns in groups. Thus, these improvements led to the development of a loom.

The Principles of Weaving:

It is mentioned that the art of weaving or the art of interlacing preceded that of spinning. Early methods of interlacing, for example manufacturing of baskets from twigs of suitable thickness, preceded cloth weaving. This was followed by the use of warp and weft in a loom like structure to initiate the process of fabric construction. The processes of weaving in sequential order is as follows:

1) **Shedding:** This is the basic process of passing the shuttle through the warp threads. The alternate movements of lifting and lowering of threads is known as shedding. This results in the formation of sheds.

2) **Picking:** This is the process which involves the throwing of the shuttle through the shed resulting in the formation of pick or weft thread.

3) **Beating up:** It is a process wherein the reed beats the pick which is inserted to the cloth already formed resulting upon a firm and even structure.

4) **Lasting off:** This process results in the unwrapping of the warp beam resulting in the interlacing with the weft to form a cloth.

5) **Taking Up:** It is the winding up on to the cloth beam resulting in the woven cloth.

The following accessory mechanisms are practically necessary to ensure economical and satisfactory work.

The Boxing Mechanism: This is a mechanism by which any required colour of yarn is presented, in its shuttle, on the picking plane and then thrown into the cloth in the

order required. It is quite prevalent in plain and boxing looms.

The Stop-Pod or the Looser-Reed: This is a process often found in circular box looms in which the loom is brought to a standstill if the shuttle fails to reach the box avoiding breakage of threads.

The Weft - Fork Mechanism: This mechanism only permits the loom to go on with its work while the weft is presented to it. Should the weft be broken or absent, the loom is immediately brought to a standstill.

The Warp Stop Mechanism: This brings the loom to a standstill if any warp thread breaks.

The Spool or Shuttling Mechanism: This operates when the cop of yarn placed in the shuttle is finished or about to be finished, either it or the whole shuttle is automatically ejected and a fresh spool or shuttle is pushed in to replace without stopping the loom and in both cases, without the intervention of the attendant (person operating the loom).

Classification of Looms

The classification of looms is based mainly upon the type of shedding mechanism, but sometimes upon the boxing capacity. Thus the looms have been classified as Tappett, Dobby or Jacquard looms.

Tappett looms: These usually require four or six thread twill weave, depending upon colour as usually applied to a good sound structure. The outside tread Tappett is more largely employed in Yorkshire for all classes of simple interlacings including such light weight goods like Orleans, Italians, cashmeres, serges etc. The inside tread Tappett loom is more largely employed in the Lancashire cotton trade for all styles of simple cotton fabrics and in broad looms for heavy Yorkshire woollens. Wood-Croft Tappett - a special form of box tappett placed outside the loom framework- is largely employed in weaving heavy cotton fabrics.

The Dobby loom: This is employed in both Lancashire and Yorkshire for fancy styles which

are not floral but often combining intricate interlacings.

The Jacquard loom: This is employed when elaborate figuring is necessary. In this loom, 100 to 1800 threads may be controlled individually by means of cards with holes cut or uncut to produce the required pattern.

For special purposes, a combinations of the three types of looms are used. In tapestries, for example, the Jacquard is frequently mounted in conjunction with a Tappet or a Dobby; while for shirtings, Tappets and a Dobby are frequently combined.

Types of Weave Required for Fabric Construction

Weaving is a method of fabric construction in which at least two sets of yarns are interlaced at right angles. Primitive people wove from strips of grasses and strips of bark. The manner in which the sets of yarns are interlaced, determines to a great extent the characteristics of the cloth, and a specific manner of interlacing is known as the weave. As per the requirements, the weaves have been grouped under the following heads: plain, twill, satin, figure, gauze, double pile, spot, swivel and tapestry. Plain, twill and satin weaves are considered the basic or fundamental weaves, as every other weave includes one of these as a basis of foundation. Many variations and combinations of the groups mentioned are found in novelty fabrics. Double weaving is a method wherein three or more sets of yarns are used.

The basic fabrics which serve as forerunners of cloth manufacture are:

1. Filling Pile fabrics for corduroys and velveteens come under this category.
2. Warp Pile fabrics for carpets and bath towels come under this category
3. Pile fabrics formed by double weaving for velvets.
4. Terry Pile fabrics for Turkish towels.

Tapestry is a decorative picture or design in tissue which is made by interlacing variously coloured wool threads with undyed warp threads, after the latter have been extended either vertically or horizontally upon a loom. This interweaving is achieved by an implement called as “broche” in France. It is neither a shuttle nor a bobbin.

Some method had to be devised by which one group of yarns, known as warp is held in a parallel manner so that another yarn, the weft or filling, may be interlaced at right angles to these. This was accomplished when a loom was devised. The components of a loom consist of 1. Warp beam 2. Harness. 3. Reed 4. Cloth roll .5. Foot pedals. Later on, power looms were evolved to cater to larger volumes of cotton yarns.

Conclusion

The process of fabric construction involves intricate processes of various mechanisms of weaving inclusive of combination of different types of weaves to generate the desired pattern for cloth construction. Modern weaving trends have made a remarkable dent in the cloth manufacturing processes. The basic aspects of weaving have been widely covered in the classic books viz., “Cotton Weavers Hand Book” (1923) by Henry Brougham Heylin, “Textiles” (1922) by A.F. Barker and “Textile Fibres and Their Use” (1959) by Katherine Paddock Hess which are suggested for further reading.

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



Since 1921, we are dedicated to the cause of Indian cotton.

Just one of the reasons, you should use our Laboratory Testing Services.

The Cotton Association of India (CAI) is respected as the chief trade body in the hierarchy of the Indian cotton economy. Since its origin in 1921, CAI's contribution has been unparalleled in the development of cotton across India.

The CAI is setting benchmarks across a wide spectrum of services targeting the entire cotton value chain. These range from research and development at the grass root level to education, providing an arbitration mechanism, maintaining Indian cotton grade standards, issuing Certificates of Origin to collecting and disseminating statistics and information. Moreover, CAI is an autonomous organization portraying professionalism and reliability in cotton testing.

The CAI's network of independent cotton testing & research laboratories are strategically spread across major cotton centres in India and are equipped with:

- State-of-the-art technology & world-class Premier and MAG cotton testing machines
- HVI test mode with trash% tested gravimetrically

LABORATORY LOCATIONS

Current locations : • **Maharashtra :** Mumbai; Akola; Aurangabad • **Gujarat :** Rajkot; Kadi; Ahmedabad • **Andhra Pradesh :** Guntur, Warangal
• **Madhya Pradesh :** Khargone • **Karnataka :** Hubli • **Punjab :** Bathinda • **Telangana:** Adilabad

UPCOMING LOCATIONS

• Yavatmal (Maharashtra) • Adoni (Andhra Pradesh), Mahbubnagar (Telangana)



COTTON ASSOCIATION OF INDIA

Cotton Exchange Building, 2nd Floor, Opposite Cotton Green Station, Cotton Green (East), Mumbai 400 033, Maharashtra, INDIA.
Tel.: +91 22-3006 3400 • Fax: +91 22-2370 0337 • E-mail: cai@caionline.in • www.caionline.in

Production & Stock of Yarn (SSI & Non-SSI)

(In Mn. Kgs.)

MONTH / YEAR	PRODUCTION OF YARN				STOCK POSITION OF YARN			
	COTTON	BLENDED	100% NON-COTTON YARN	G. TOTAL	COTTON	BLENDED	100% NON-COTTON YARN	G. TOTAL
2012-13	3582.68	828.19	456.75	4867.61	107.92	40.37	21.38	169.67
2013-14	3928.26	896.19	484.99	5309.45	133.80	51.33	23.40	208.53
2014-15	4054.51	920.20	512.92	5487.64	140.60	48.30	22.48	211.38
2015-16	4137.83	972.50	554.79	5664.93	140.68	49.46	22.99	213.13
2016-17	4060.99	1033.50	572.02	5666.51	147.61	57.99	25.47	231.08
2017-18	4063.59	1065.23	551.16	5679.98	139.31	57.86	24.84	222.00
2018-19 (P) (Apr-Sep.)	2116.33	539.82	291.03	2947.18	150.66	53.31	25.49	229.46
2016-17								
April-16	334.30	80.55	46.49	461.35	127.63	48.99	24.26	200.88
May-16	360.75	85.95	53.50	500.20	132.43	54.79	26.25	213.47
June-16	352.00	89.10	50.87	491.97	130.99	50.84	21.46	203.30
July-16	343.34	88.21	48.26	479.81	135.93	56.50	23.91	216.34
Aug-16	334.43	91.29	49.75	475.47	155.65	54.65	22.55	232.85
Sept.-16	326.58	88.40	51.75	466.73	153.30	59.84	24.04	237.19
Oct-16	310.67	83.67	49.21	443.55	167.46	63.94	28.84	260.23
Nov-16	326.48	85.28	44.98	456.74	166.74	70.98	32.91	270.63
Dec-16	342.33	84.16	43.75	470.25	165.62	69.09	28.62	263.32
Jan-17	345.69	86.11	44.49	476.29	147.10	61.40	26.95	235.44
Feb-17	330.98	83.40	42.34	456.73	154.12	61.57	26.75	242.44
Mar-17	353.44	87.37	46.61	487.42	147.61	57.99	25.47	231.08
2017-18								
April-17	339.75	86.83	46.12	472.71	136.53	58.50	25.40	220.43
May-17	344.97	85.48	46.24	476.69	146.95	58.55	24.76	230.26
June-17	337.96	84.47	48.16	470.59	155.54	50.83	22.25	228.61
July-17	341.58	87.85	44.91	474.33	181.91	61.53	26.72	270.15
Aug.-17	330.61	98.10	46.68	475.39	191.92	61.68	32.08	285.69
Sept.-17	325.95	91.48	47.80	465.22	186.19	66.64	34.46	287.29
Oct.-17	326.78	90.47	46.22	463.47	166.77	66.17	30.53	263.47
Nov-17	351.79	90.16	44.31	486.26	144.31	63.62	27.38	235.30
Dec-17	356.83	94.09	47.08	498.00	133.82	65.97	27.81	227.60
Jan-18	345.72	88.93	45.01	479.66	134.94	62.79	26.57	224.30
Feb-18	323.32	81.18	43.78	448.27	138.95	60.35	25.46	224.76
Mar-18	338.34	86.20	44.84	469.39	139.31	57.86	24.84	222.00
2018-19 (P)								
April-18	344.10	85.49	46.78	476.36	126.67	56.32	24.77	207.75
May-18	351.78	86.76	48.39	486.92	129.27	50.76	23.01	203.04
June-18	353.74	89.34	48.68	491.75	139.10	47.58	32.20	218.88
July-18	356.92	94.05	48.74	499.71	147.97	55.22	27.70	230.89
Aug-18	355.89	92.54	48.81	497.24	147.24	52.44	25.60	225.28
Sept-18	353.92	91.65	49.62	495.19	150.66	53.31	25.49	229.46

P - Provisional

Source : Office of the Textile Commissioner

SAVE THE DATES

6th – 8th March 2019



**COTTON
ASSOCIATION
OF INDIA**

Established 1921



presents



INTERNATIONAL CONFERENCE

IN

HOTEL TRIDENT, MUMBAI (INDIA)



UPCOUNTRY SPOT RATES							(Rs./Qtl)					
Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]							Spot Rate (Upcountry) 2018-19 Crop December 2018					
Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPI	10th	11th	12th	13th	14th	15th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15	11670 (41500)	11670 (41500)	11642 (41400)	11585 (41200)	11585 (41200)	11585 (41200)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	11810 (42000)	11810 (42000)	11782 (41900)	11726 (41700)	11726 (41700)	11726 (41700)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	-	-	-	-	-	-
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	10657 (37900)	10657 (37900)	10629 (37800)	10573 (37600)	10517 (37400)	10517 (37400)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	11642 (41400)	11642 (41400)	11614 (41300)	11557 (41100)	11501 (40900)	11529 (41000)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	11895 (42300)	11951 (42500)	11923 (42400)	11867 (42200)	11782 (41900)	11782 (41900)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	-	-	-	-	-	-
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	-	-	-	-	-	-
9	P/H/R	ICS-105	Fine	27mm	3.5-4.9	26	12035 (42800)	12092 (43000)	12063 (42900)	12007 (42700)	11923 (42400)	11923 (42400)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	-	-	-	-	-	-
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	-	-	-	-	-	-
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	12176 (43300)	12232 (43500)	12204 (43400)	12148 (43200)	12063 (42900)	12063 (42900)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	12176 (43300)	12176 (43300)	12148 (43200)	12092 (43000)	12035 (42800)	12063 (42900)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	-	-	-	-	-	-
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	12317 (43800)	12317 (43800)	12317 (43800)	12260 (43600)	12204 (43400)	12232 (43500)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	12570 (44700)	12570 (44700)	12541 (44600)	12485 (44400)	12485 (44400)	12513 (44500)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	12626 (44900)	12626 (44900)	12570 (44700)	12513 (44500)	12485 (44400)	12513 (44500)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	12879 (45800)	12879 (45800)	12823 (45600)	12766 (45400)	12738 (45300)	12766 (45400)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	13104 (46600)	13104 (46600)	13048 (46400)	12991 (46200)	12963 (46100)	12991 (46200)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	16422 (58400)	16422 (58400)	16366 (58200)	16310 (58000)	16281 (57900)	16310 (58000)

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