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Indian Cotton: The Historical and Magical Fibre

Ms. Roop Rashi, Textile Commissioner belongs to 1994 Batch of IA&AS. She was Director General (Audit) with the Office of Comptroller and Auditor General of India prior to joining the Ministry of Textiles.

She worked as Secretary (Finance - Fiscal Reforms), Govt of Karnataka, Bengaluru facilitating Externally Aided Projects of World Bank and Asian Development Bank, financial inclusion, establishing Integrated Financial Management System (Khajanell), among others. As a Board Director with Coffee Board of India, Ministry of Commerce & Industry, she led initiatives to develop the strengths of the commodity across the value chain in domestic as well as export markets. She closely coordinated with the Specialty Coffee

Borrowing the oft repeated name given to cotton as the White Gold, I dedicate this piece to the magic of this fibre. It has been literally the cradle of the human civilisation and has evolved with the nurture at farm by our producers, handling with care by ginners and provided mankind with a soft fabric, which has fulfilled not only the basic needs of human beings but been part of enhancing esteem

Associations of America, Europe, Japan, Australia and South Korea to strengthen the collaboration of Roasters and Planter Exporters to actualise Farm to Foreignconnect to create a niche space for the unique Coffees of India. She was the Nodal Officer for India at the International Coffee Organisation (ICO) and co-ordinated three India International Coffee Festivals & Conferences in India with about 400 International delegates.

She has traversed a wide set of portfolios gaining experience from Policy and Execution in Development Administration (State Administration) as well as Policy Programme Implementation in the Commodity sector (Commerce Ministry, Govt. of India).

needs too. That it has lent to the imaginations of writers and artists in their journey of self-actualisation, makes it a complete asset in the human enterprise, especially anchoring us, in India, through generations.

Cotton- the amazing fibre- a fibre that enables livelihoods across the value chain- bestowed on us by nature.

EXPERT'S Column



Ms. Roop Rashi (IA&AS)
Textile Commissioner of India

Historical references indicate that the earliest civilization to spin, weave and dye cotton was India and cotton has been in use in India for over 5000 years. The antiquity of cotton in the Indian subcontinent has been traced to the 4th millennium BC. The fabrics dated approximately 3000 BC, recovered from the Mohenjo-daro excavations in Sind (Pakistan), were identified to have originated from cotton plants, closely related to the *Gossypium arboreum* species. Even in the Vedangas, i.e., in Sutra literature ascribed to have been written around 1000 BC, in the principal Apasthamba Grihya Sutra, Manthara Patha, Ekagni Khanda, Prasna 11, Adh 2 Riks 3 and 4, a reference to cotton reads as follows, when translated from Sanskrit.

“O cloth! The Goddess Revati prepared a sliver by beating you out of seeds.

The Goddess Krithika spun you into yarn.

The Goddess Dhee did the weaving.

The Goddess Gna cut and took you out of the loom.

The above goddesses and thousands more made up the ends at both sides of the cloth.

The Goddesses gave the cloth to the Sun (Savitr) God and even as he put it on, its greatness became explicit.

So, too, is the cloth.”

The archaeological evidence showed that the cotton samples retrieved from Mohenjo-daro would have been made around 3000 BC. In these excavations, well-preserved fabrics of cotton were discovered in silver vessels.

That the modern industrial civilisation owes itself to Spinning Jenny, as fulcrum of textile manufacturing by revolutionising cotton spinning is a well-known documented piece of history.

Fast Forward: Today in the 21st century, the concerns around quality of products with

assurance on process along the value chain are getting bigger each day. In addition to the stress on availability of adequate raw material (read Productivity), it is essential that the cotton textile value chain becomes stronger to ensure adequate returns- Can those be enhanced by bringing in a focussed approach to quality? And there comes the need for collaboration among the players in the value chain. A difficult task where market may have its own variables and instruments to foster “Each unto Himself” vis a vis “Each for All”.

In India, the cotton ecosystem comprises of farmers, ginner, cotton traders and mills and value added segments. We did achieve some parameters in First Technology Mission on Cotton which made sustained efforts through Mini Missions to strengthen R&D, Transfer of Technology, market yards, ginning segments, etc. Due to the overall improvement in cotton quality, India became one of the largest producers and exporters of cotton in the world. Modernisation of ginning and pressing factories has significantly reduced the trash content in processed cotton.

Hence to meet the need of collaboration to strengthen the chain further Ministry of Textiles, Government of India on 25.05.2022 has constituted the Textile Advisory Group - an informal body - to deliberate and recommend suitable measures on the issues pertaining to the entire cotton value chain. In Textile Advisory Group (TAG) meetings, deliberations are being held to look at measures needed for long term and short-term measures for cotton textile value chain.

This collaboration has been further strengthened with the initiative of Shri. Piyush Goyalji our Union Minister of Textiles with Shri. Narendra Singh Tomarji, our Union Minister of Agriculture & Farmers Welfare through deliberations held on 24.07.2022 with stakeholders of Cotton Textile Value Chain. The deliberations have strengthened the farmer trade industry connect in our efforts to strengthen the cotton textile value chain and our efforts together with the industry to fulfil dream of our Hon’ble Prime Minister of Five F’s- From Farm to Fibre to Factory to Fashion to Foreign. So, while productivity, quality and collaboration become

the mantra for the cotton stakeholders, synergy among various instruments of Government, academia and research, as same importance as facilitative framework for this fibre.

However, on this momentous occasion of the celebrations of 100 years of the Cotton Association of India, two core questions- we together need to think about and work with urgency are -

- Can the demand side be strengthened, value returns be enhanced without quality, and assurance on the process along the value chain?
- Further with enhanced concerns of sustainability - due to water use (cited as 'misuse' by some experts/ in some segments) in cotton TVC from farm to final product - can the chain remain strong and grow? We need to operationalise the research/ approaches to deal with this in a time bound manner with urgency underlying each action.

The Government is committed to provide all facilitative support to the cotton textile value chain. The solutions and answers to the two questions raised by me are within us, as this is one of the oldest and also the strongest value chain. Our cotton is our strength, and we need

combined concerted action to ensure that India not only combats the concerns, but achieves and retains place of pride in this arena.

I am an eternal optimist and believe that if we approach together, we can. I would like to sum up with few lines I took the liberty to pen down on cotton:

कपास कपास से रेशा,
रेशों से धागे, धागों से रिश्ते,
रिश्तों से परिवार,
परिवारों से समाज,
समाज से संस्कृति,
संस्कृति से राष्ट्र,
हमारा भारत-
-हमारा राष्ट्र,
भारत बने सर्वश्रेष्ठ!
सबकी बिना में है
- कपास रूपराशि
(बिना - foundation.)



Source : CAI Centenary Special 2022

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

Kites Fly High Over CAI

To celebrate Makar Sankranti, many members of the cotton fraternity including CAI President Shri. Atul Ganatra, gathered at the Association on January 14, 2023. Young and old had fun flying kites, with the seniors easily beating the youngsters with their kite flying prowess! This was followed by high tea. Here are a few glimpses of the colourful event.



COTTON ASSOCIATION OF INDIA



**COTTON
ASSOCIATION
OF INDIA**
estd. 1921
ISO 9001:2015

**A CHILD'S CHILDHOOD IS FOR LEARNING
DON'T USE THEIR CHILDHOOD FOR EARNING
SAY NO TO CHILD LABOUR**

Emerging Challenges in Cotton Cultivation in North Zone and Remedies for the Next Season

Continued from Issue No. 42 dated 17th January 2023

EXPERT'S Column



Dr. Dilip Monga

ICAR-Central Institute for Cotton Research (CICR), Regional Station, Sirsa, Haryana

Dr. Monga is a Plant Pathologist by profession. He worked as Head of ICAR-CICR, Sirsa, Haryana, for more than two decades. He also worked as Principal Investigator of Plant Pathology under All India Coordinated Research Project on Cotton for over a decade. He has contributed significantly to generating new technologies and strengthening the research and development network for cotton crop in north zone.



Dr. Rishi Kumar

Dr. Rishi Kumar is working as a Principal Scientist (Entomology) at ICAR-CICR, Sirsa, Haryana. He is also the Principal Investigator (Entomology) in All India Coordinated Research Project on Cotton. He specialises in monitoring resistance and resurgence in cotton insects due to insecticides and devising management strategies for sucking pests and bollworms in cotton. He has over 22 years of experience in research and extension activities in the area of IPM.



Dr. Satish K. Sain

Dr. Sain is a Plant Pathologist, presently working as a Principal Scientist & Principal Investigator, AICRP on Cotton - Plant Pathology at ICAR-CICR, Sirsa, Haryana. He has over 20 years of experience in R&D promotion and capacity-building activities in the area of IPM, biocontrol of insect-pest and diseases, Pest Risk Analysis (PRA), identification of the sources of resistance, home gardening etc. in vegetable and other crops including cotton.



Dr. S. K. Verma

Dr S.K. Verma is presently working as Head(I/c), ICAR-CICR, Sirsa, Haryana. He is a plant breeder by profession. He has more than 25 years of experience for working in cotton. He has released and contributed in the development of *G.arboreum/hirsutum* cotton hybrids and varieties and also registered lines with specific traits in arboreum and hirsutum cotton.

Measures To Be Undertaken in 2023 Season

1. Productivity sustainability and its enhancement

i. Soil health improvement:

The organic matter in cotton cultivation areas of Haryana has been observed from low (less than 0.40) to medium (0.40 to 0.75). In Punjab also it was noted around 0.5% indicating poor fertility status of soils. Soil fertility is an important basic issue and the incorporation of nitrogen-fixing crops like moong and cluster-bean in crop rotations is required. Incorporation of crop residues like decomposed cotton stalks etc can restore organic

matter content in the long run. Saline water issues can be tackled through drip irrigation in certain affected areas. Soil and water conservation principles need to be incorporated in the North zone cotton system on an urgent basis.

ii. Maintenance of proper plant stand:

Maintenance of proper plant stand has always been challenging in the North zone. Sowings are done with seed drill machines which do not maintain the plant-to-plant spacings. The introduction of seed planters can help in the proper maintenance of plant stand. There is around 100mm of rainfall during the pre-monsoon

months of May and June and if there is rainfall within 24-48 hours after sowing, a crust is formed on the soil surface hampering the germinating seedling's emergence process. Re-sowing has to be done in such situations. Usually, there are cyclic high-temperature peaks during the sowing period when the temperature crosses 45 °C. The seedlings emerging during this period show severe burning as the temperature of soil touching the emerging seedlings is even higher by 1-2 °C. The technologies for avoiding crust formation or temperature tolerance in emerging seedlings still need to be evolved. Moreover, the technologies for gap filling through nursery raising of seedlings or paper tubes have been developed but need to be popularised among the farmers (Meena et. al., 2014).

iii. Promoting desi cotton:

There used to be around 25-30% area under desi (*Gossypium arboreum*) cotton till the 1990s. However, there was a slow increase in area under *G. hirsutum* varieties followed by Intra-hirsutum hybrids and Bollgard cotton hybrids. At present, the area under desi cotton hovers around 1-2% only. With the advantage of their good performance in marginal soils and less irrigation water requirement along with their immunity against cotton leaf curl virus disease and tolerance to sucking pests, there is ample scope for an increase in desi cotton area. Desi cotton with good boll weight and shattering tolerance can be promoted successfully in marginal lands.

2. Managing abiotic and biotic stresses:

Para wilt, whitefly, pink bollworm and cotton leaf curl virus disease are important issues at present. Parawilt requires an interdisciplinary approach of agronomy, soil science, plant physiology as well as plant breeding. A workable integrated parawilt management strategy is a must in the package and practices of SAUs within 1-2 years. For management of whitefly and Pink Bollworm, a set of strategies devised by ICAR-CICR are available. With respect to whitefly and Pink Bollworm management, a large number of combination products not recommended for cotton by SAUs or CICR are available in the market and used by the farmers. The pros and cons of these products should be studied and conveyed to the farmers. According to the scientific community, such products are not helping in proper pest management and therefore need to be discouraged. A clear-cut policy with respect to the use of such products is lacking thereby creating confusion among the farmers. A decision on plant protection and other products available in the

market other than those recommended by SAUs/ ICAR needs proper deliberations about their usefulness. Threat from pink bollworm is looming large on the farmers. Large-scale year-round awareness campaigns including involvement of ginning factories are needed. The usefulness of biopesticides and PGPMs has been well researched by ICAR-CICR, AICRP on cotton and SAUs need to be popularised under field conditions as an eco-friendly alternative to the chemicals. The role of pheromone trap-based monitoring needs to be popularized in a big way for PBW management. Area-wide demonstrations on mating disruption technology were conducted in the zone by SAUs, AICRP on cotton through KVKs and South Asia Biotechnology Centre (SABC) in collaboration with Ambuja Cement Foundation and supported by PI industries. Such technologies may become useful in the future for effective management as insecticidal interventions alone do not provide adequate control of the pest. Recommendations of tolerant hybrids, weed eradication and whitefly control are the strategies for CLCuD management and need strict enforcement at the field level.

3. Researchable issues:

Breaking yield barriers through conventional and molecular technologies, high-density planting systems relevant to the North zone, retention of early squares through refined agronomy, GOT improvement in varieties and hybrids and tackling biotic and abiotic stresses coupled with soil health management are the need of the hour. Improving boll weight and shattering tolerance in desi cottons can bring about a large area under these cottons.

Conclusion: Cotton is a very tricky crop and draws attention round the year i.e. during the season and off-season because of its commercial nature and strong value chain. Precise technological interventions are very important for successful cotton cultivation and optimum yields. If a single component from sowing to harvest fails to perform or becomes adverse, it affects the crop yield drastically. So a refined unified package in the form of a capsule starting from the selection of hybrid, sowing, field preparation, plant stand, proper root development, integrated weed, nutrient, abiotic stress and pest management, picking precautions and off-season activities should be ready for the farmers by NGOs, DAC&FW, SAUs, and ICAR-CICR in a collaborative manner.

(The views expressed in this column are of the authors and not that of Cotton Association of 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) 2021-22 Crop January 2023					
Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Gravimetric Trash	Strength /GPT	16th	17th	18th	19th	20th	21st
4	KAR	ICS-103	Fine	23mm	4.0 - 5.5	4.5%	21	16310 (58000)	16450 (58500)	16591 (59000)	16591 (59000)	16591 (59000)	16591 (59000)
								Spot Rate (Upcountry) 2022-23 Crop					
1	P/H/R	ICS-101	Fine	Below 22mm	5.0 - 7.0	4%	15	17884 (63600)	18025 (64100)	18165 (64600)	18222 (64800)	18137 (64500)	18137 (64500)
2	P/H/R (SG)	ICS-201	Fine	Below 22mm	5.0 - 7.0	4.5%	15	18025 (64100)	18165 (64600)	18306 (65100)	18362 (65300)	18278 (65000)	18278 (65000)
3	GUJ	ICS-102	Fine	22mm	4.0 - 6.0	13%	20	12654 (45000)	12935 (46000)	13216 (47000)	13216 (47000)	13216 (47000)	13216 (47000)
4	KAR	ICS-103	Fine	23mm	4.0 - 5.5	4.5%	21	-	-	-	-	-	-
5	M/M (P)	ICS-104	Fine	23mm	4.5 - 7.0	4%	22	17153 (61000)	17294 (61500)	17294 (61500)	17294 (61500)	17153 (61000)	17153 (61000)
6	P/H/R (U) (SG)	ICS-202	Fine	27mm	3.5 - 4.9	4.5%	26	16788 (59700)	16872 (60000)	16984 (60400)	17041 (60600)	16928 (60200)	16928 (60200)
7	M/M(P)/SA/TL	ICS-105	Fine	26mm	3.0 - 3.4	4%	25	-	-	-	-	-	-
8	P/H/R(U)	ICS-105	Fine	27mm	3.5 - 4.9	4%	26	16928 (60200)	17013 (60500)	17125 (60900)	17181 (61100)	17041 (60600)	17041 (60600)
9	M/M(P)/SA/TL/G	ICS-105	Fine	27mm	3.0 - 3.4	4%	25	-	-	-	-	-	-
10	M/M(P)/SA/TL	ICS-105	Fine	27mm	3.5 - 4.9	3.5%	26	-	-	-	-	-	-
11	P/H/R(U)	ICS-105	Fine	28mm	3.5 - 4.9	4%	27	17238 (61300)	17322 (61600)	17434 (62000)	17434 (62000)	17350 (61700)	17350 (61700)
12	M/M(P)	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	16928 (60200)	17013 (60500)	17153 (61000)	17209 (61200)	17041 (60600)	17097 (60800)
13	SA/TL/K	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	16984 (60400)	17069 (60700)	17209 (61200)	17266 (61400)	17097 (60800)	17153 (61000)
14	GUJ	ICS-105	Fine	28mm	3.7 - 4.5	3%	27	17097 (60800)	17181 (61100)	17350 (61700)	17350 (61700)	17181 (61100)	17238 (61300)
15	R(L)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	17350 (61700)	17434 (62000)	17575 (62500)	17575 (62500)	17434 (62000)	17434 (62000)
16	M/M(P)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	17294 (61500)	17378 (61800)	17519 (62300)	17547 (62400)	17350 (61700)	17406 (61900)
17	SA/TL/K	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	17350 (61700)	17434 (62000)	17575 (62500)	17603 (62600)	17406 (61900)	17462 (62100)
18	GUJ	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	17406 (61900)	17519 (62300)	17716 (63000)	17744 (63100)	17519 (62300)	17575 (62500)
19	M/M(P)	ICS-105	Fine	30mm	3.7 - 4.5	3.5%	29	17462 (62100)	17575 (62500)	17716 (63000)	17772 (63200)	17603 (62600)	17659 (62800)
20	SA/TL/K/O	ICS-105	Fine	30mm	3.7 - 4.5	3%	29	17519 (62300)	17631 (62700)	17772 (63200)	17828 (63400)	17659 (62800)	17716 (63000)
21	M/M(P)	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	17575 (62500)	17716 (63000)	17856 (63500)	17912 (63700)	17744 (63100)	17800 (63300)
22	SA/TL/K / TN/O	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	17687 (62900)	17828 (63400)	17969 (63900)	18025 (64100)	17856 (63500)	17912 (63700)
23	SA/TL/K/TN/O	ICS-106	Fine	32mm	3.5 - 4.2	3%	31	17997 (64000)	18137 (64500)	18278 (65000)	18278 (65000)	18137 (64500)	18137 (64500)
24	M/M(P)	ICS-107	Fine	34mm	2.8 - 3.7	4%	33	18419 (65500)	18419 (65500)	18559 (66000)	18559 (66000)	18559 (66000)	18559 (66000)
25	K/TN	ICS-107	Fine	34mm	2.8 - 3.7	3.5%	34	18840 (67000)	18840 (67000)	18981 (67500)	18981 (67500)	18981 (67500)	18981 (67500)
26	M/M(P)	ICS-107	Fine	35mm	2.8 - 3.7	4%	35	18840 (67000)	18840 (67000)	18981 (67500)	18981 (67500)	18981 (67500)	18981 (67500)
27	K/TN	ICS-107	Fine	35mm	2.8 - 3.7	3.5%	35	19262 (68500)	19262 (68500)	19403 (69000)	19403 (69000)	19403 (69000)	19403 (69000)

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