



### *From Director's Desk...*

The trend in global cotton consumption is exhibiting a gradual rise and the interesting aspect is that the consumption has exceeded the global cotton production during recent years.

The share of cotton in total fibre consumption is around 27 per cent globally. The competition is mainly from man-made fibres, which are cost competitive and also has more application in apparel as well as technical textiles. There is a need to discover novel means to develop different materials with cotton or its blends to suit varied applications so as to ensure the sustainability of cotton value chain.

The Asian region has major producers as well as consumers of cotton in the world that gives prominence to this region in the global cotton map. The cost effective value chain operational in this region gives an edge over developed countries, which attracts huge investment in this region especially for cotton based textile industries. Growth of cotton based textile industries contribute significantly to the GDP of cotton economies in the region and also boost the trade.

The cotton growing countries of the Asian region are facing common challenges in the areas of improving productivity, crop protection, mechanisation of its small sized holdings, processing and value addition besides trans- boundary issues like climate change adaptability and its impact. The Asian Cotton Research and Development Network Meet (ACRDN) is initiated under the aegis of ICAC, Washington, to provide an opportunity for the researchers, policy makers and experts from the industry to deliberate on the challenges faced in the sector and assess the opportunities along the value chain and evolve joint strategies to address the trans- boundary issues faced by the countries in the cotton sector.

ACRDN, an initiation of ICAC, held 1<sup>st</sup> meeting in Pakistan (1991) & subsequent meeting organised in Uzbekistan, India, China, Pakistan and Bangladesh once in three years. The Seventh ACRDN meet is being organised in Nagpur, India during September 15-17, 2017 by the Indian Society of Cotton Improvement (ISCI) in collaboration with ICAR-CICR and ICAR-CIRCOT ([www.isci.org.in](http://www.isci.org.in)). I hope that serious deliberations among scientists will take place in the meeting which will evolve the suitable strategies to address the emerging challenges in Asian cotton sector.

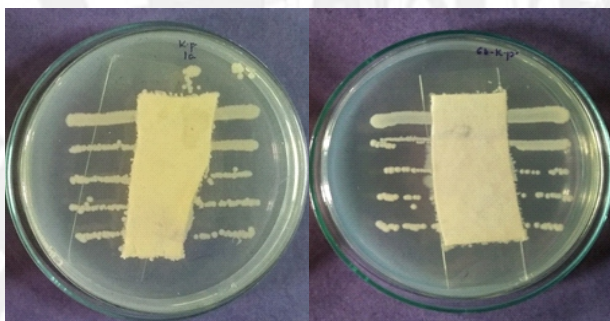
**Happy Independence Day**

**P. G. Patil  
Director**

## Technology Insight

### Durable Antimicrobial Cotton Textile through Fibre Blending

Antimicrobial finishing is given to cotton textile generally at the final finishing stage, but fastness properties of such finishing is not durable. So in order to provide a permanent antimicrobial finishing to the cotton textiles, it is attempted to use antimicrobial polyester fibre for blending with cotton at the blow room stage of spinning. The cotton fibre was blended with antimicrobial polyester fibre using blend ratios of 80/20, 65/35, 50/50, 35/65 and 20/80 respectively. Then, the fibres were spun into yarns using compact ring spinning machine to a count of 40s and knit into single jersey structure with a fabric GSM of 110. The grey knitted fabrics were subjected to chemical pre-treatment process (scouring and bleaching) and tested for antimicrobial activity as per ASTM E2149-10. The cotton/antimicrobial polyester fabric with the proportion 50/50 and above have shown durable antimicrobial properties and can be scaled up for production of apparel and home textiles.



(a)

(b)

Antimicrobial cotton textile through fibre blending (a) 100% cotton and (b) Cotton/Antimicrobial Polyester (50/50)

## Trainings

### Absorbent Cotton Technology

A three-day training programme on Absorbent Cotton Technology was organized at ICAR-CIRCOT during August 2-4, 2017. Ten budding entrepreneurs participated in the training programme. Training programme was inaugurated on August 2, 2017 by Dr. P.G. Patil, Director.

During the training, participants were apprised of the current scenario of absorbent/surgical cotton, raw materials and processes involved in preparation of this product, research developments by the institute in this field, performance specifications for absorbent/ surgical cotton, economics and business prospects of this industry and regulatory and certification issues in setting up of absorbent cotton plant. Practical demonstrations of various processes involved in absorbent cotton preparation as well as product testing according to test methods prescribed by Pharmacopoeia were also given to the participants.



Inauguration of training programme on absorbent cotton technology

### Farmers Training on Cotton Production & Post-Harvest Processing

The four-day training programme on “Cotton Production and Post-Harvest Processing” was organised for the farmers. Three batches of Farmers were provided the training during the month. The training programme covered, through series of lectures, the aspects such as best management practices in cultivation of cotton, precision farming, integrated nutrient and pest management, biological inputs and preparation of briquettes & pellets from cotton stalks. Farmers were given demonstration on preparation of compost and cultivation of oyster mushroom using cotton stalks that will fetch better remuneration. The compost culture and oyster mushroom spawn were distributed to the progressive farmers to further demonstrate these technologies in their villages.



- Fifty-six progressive farmers from Buldhana and Yavatmal districts of Maharashtra participated in the programme organized during August 1-4, 2017
- Twenty-seven progressive farmers from Jalgaon, Maharashtra participated in the programme organized August 8-11, 2017
- Thirty-one farmers (28 from Jalgaon and 3 from Yavatmal) of Maharashtra participated in the programme organized during August 28-31, 2017



Farmers from Yavatmal, Maharashtra participated in the training programme during Aug 1-4, 2017



Farmers from Jalgaon, Maharashtra participated in the training programme during Aug 8-11, 2017



Farmers training conducted during Aug 28-31, 2017 at GTC, Nagpur

## Events

### Sankalp se Siddhi

The staff members of the institute have taken Sankalp to Siddhi pledge at 11.30 am on August 9, 2017 to commemorate the spirit of the completion of 75 years of the launch of Quit India Movement.



ICAR-CIRCOT staff taking Sankalp se Siddhi pledge

### Swachha Bharat Abhiyan

A cleanliness programme was organized in the Technology Transfer Division on August 14, 2017. Basement area of Yashwantrao Chavan Building was cleaned and old files, booklets and materials in the division were arranged properly in the cupboards. All the staff members of the TTD enthusiastically participated in the cleaning activities.



TTD staff cleaning the basement of Yashwantrao Chavan

Annexe



## Visits

### Director's Visits

- Dr. P. G. Patil, Director attended a training programme on “Research Excellence in Organisations” at Administrative Staff College of India (ASCI), Hyderabad from August 6-9, 2017
- Dr. P. G. Patil, Director visited CIRCOT Quality Evaluation Unit at Coimbatore along with Quinquennial Review Team (QRT) during August 29-30, 2017 and participated in stakeholders meet

### Delegates' Visits

Shri. Rataneshwari Prasad Singh, Member, ICAR Governing Body (G. B.) visited GTC, Nagpur on August 28, 2017. He inaugurated the farmers training programme scheduled during August 28-31, 2017. He advised the farmers to adopt Integrated Farming System (IFS) for sustainable agriculture and urged them to have an entrepreneurship activity like mushroom cultivation or vermicomposting to generate additional income. Dr. Phundan Singh, Former Director (Actg), ICAR-CICR was also present on the occasion. Shri. R. P. Singh, G. B. member visited all the research facilities available at GTC, Nagpur and interacted with the staff. He appreciated the work being carried out at the centre in post-harvest technology of cotton.



Dr. R. P. Singh participates in the inauguration of farmers training programme at GTC, Nagpur

### Other Visits

- Dr. K. Pandiyan, Scientist, ICAR-NBAIM, Mau visited GTC, Nagpur during August 7-11, 2017 to gain practical knowledge on preparation of bio-enriched compost using cotton stalks, development of microbial formulations and assessment of quality of compost.

- During his visit, Dr. V. Mageshwaran, Scientist, GTC, Nagpur demonstrated about ICAR-CIRCOT technology on preparation of bio-enriched compost using one ton of cotton stalks, preparation of microbial consortium for faster decomposition of cotton stalks as well as testing of compost quality parameters such as Carbon, Nitrogen, Phosphorus, CN ratio etc. for quality assessment of compost.



Dr. K. Pandiyan receives hands-on-training on mass multiplication of compost culture

- A group of students from Jain International School, Nagpur visited GTC, Nagpur on August 21, 2017. Scientist Dr. V. Mageshwaran explained about various research activities undertaken at the centre and demonstrated the operation of ginning using Lilliput Gin. The students were briefed about processing of cotton with more emphasis on cotton ginning and cottonseed processing.



Students from Jain International School, Nagpur visited GTC, Nagpur



## Awareness Programmes

### Mera Gaon Mera Gaurav

- An awareness programme was conducted in Bhivapur and Waigaon villages of Wardha district on August 8, 2017. The experts- Dr. S. V. Ghadge, Sr. Scientist, ICAR-CIRCOT Mumbai; Sh. V. L. Rangari, Technical Officer, GTC, Nagpur and Sh. G. H. Wairale, CITI-CDRA, Nagpur delivered lectures on cotton cultivation and post-harvest processing technologies. Farmers were advised on the crop care steps to be taken especially during the current growth stage of the healthy crop stand. The present level of cotton mechanization in the district was also assessed during the interactions. Barring land preparation using tractors, almost all the other operations in cotton cultivation right from sowing, interculture, fertilizer application and spraying to picking and storage are carried out manually. The farmers were apprised of the various technology options for inter-cultural operations using manual, animal and tractor drawn tools and implements like hand hoes & weeders; bullock drawn hoes, blade harrows & tyne cultivators and tractor drawn cultivators.



Mera Gaon Mera Gaurav Programme at Bhivapur, Wardha



Mera Gaon Mera Gaurav Programme at Waigaon, Wardha

- Awareness-cum-demonstration program on composting and oyster mushroom cultivation using cotton stalks was organized at Digras village on August 10, 2017. About thirty progressive farmers attended the programme.

- The expert team consisting of Dr. V. Mageshwaran, Scientist and Mr. S. N. Hedau, Senior Technical Officer from GTC, Nagpur and outside experts Mr. G. H. Wairale, President, CITI-CRDA, Nagpur, Dr. K. Pandiyan, Scientist, ICAR-NBAIM, Mau, Mr. Ingle, Agrl. Supervisor, Wardha, Mr. Nawgade, Retired Agricultural Officer, Wardha and Manda Wade, Agricultural Assistant. Dr. Mageshwaran elaborated on usage of various biological inputs such as biofertilizers, biopesticides, neemseed kernel extract and panchakavya for increasing soil fertility and management of cotton pests and diseases. He also demonstrated on preparation of compost and oyster mushroom cultivation using cotton stalks. Mr. Wairale explained about clean cotton picking and marketing of quality cotton for better remuneration. Dr. Pandiyan detailed about the activities of ICAR towards farmers welfare and role of bio-fertilizers in increasing crop productivity. Mr. Ingle described the various cotton production strategies to the farmers. Mr. Nawgade explained about the government initiatives on crop insurance scheme for the benefit of farmers. The programme ended with vote of thanks by Mr. Vasti, Sarpanch, Digras village. The team also visited nearby village Parsodi and interacted with the farmers.



Expert team addressing the farmers during Mera Gaon Mera Gaurav programme at Digras village



Awareness Programmes





Demonstration of oyster mushroom cultivation using cotton stalks in Parsodi village

## Awareness Workshop: How to control contamination in cotton during picking, storage & transportation along with ginning

An awareness workshop under the technical guidance of ICAR-CIRCOT on “How to control contamination in cotton during picking, storage & transportation along with ginning” was organised by ICAL and Mahyco Monsanto Biotech (India) Ltd., under Project Sankalp on August 22, 2017 at DCM Textiles, Hisar. Shri Rakesh Goel, CEO, DCM Textiles, Hisar presided over the workshop. Dr. Hamid Hasan, Officer Incharge of CIRCOT Quality Evaluation Unit at Sirsa was invited to deliver a lecture on the subject and elaborated on how this menace could be controlled right at various stages of contamination. He suggested various measures and steps which need to be taken for clean cotton production. Shri Rakesh Rathi, President, ICAL thanked all the participants for adoption of a resolution for clean cotton production. In the initial phase, 750 farmers of 15 villages were selected for clean cotton picking practices.



Workshop on “How to control contamination in cotton during picking, storage & transportation along with ginning” conducted at Hisar

## Meetings

### QRT Meeting

QRT under the chairmanship of Dr. N. C. Patel, Vice Chancellor, Anand Agricultural University, Anand, and members Dr. N. J. Thakor, Former Head, Department of Agril. Process Engineering, DBSKKV, Dapoli, Dr. V. D. Gotmare, Head of Textile Manufacture, VJTI, Mumbai along with Dr. P. G. Patil, Director and Dr. Sujata Saxena, Pr. Scientist ICAR- CIRCOT & Member secretary, QRT visited the regional quality evaluation unit of the institute located at Coimbatore on August 29-30, 2017 to review its performance and to examine the facilities available there. QRT interacted with various stake holders including representatives of cotton testing and processing machinery manufacturers SIMA, Cotton Research & Development, Coimbatore, Dr. A. H. Prakash, Project-coordinator AICRP on Cotton & Head, ICAR-CICR-RS, Coimbatore, Dr. Kumar, Professor & Head, Department of Cotton, TNAU, Coimbatore and Dr. Jacob Anamalai, Head, ICAR- CIAE-RC, Coimbatore. Dr. S. Venkatkrishnan, ACTO and I/c of the unit presented the activities and achievements of the center during past five years. QRT visited the laboratory and interacted with the staff about the problems faced by the unit and solutions. QRT also visited the Weaving center of Appachi Eco-logic Cotton Pvt. Ltd. at Pollachi where Shri Mani Chinnaswamy, MD of the company and his wife Vijaylakshmi explained the entire farm to fashion approach for cotton being followed by them.



QRT members interacting with stakeholders at QE unit of ICAR- CIRCOT, Coimbatore



Meetings



## Human Resource Development

- Er. Varsha Satankar, Scientist, GTC, Nagpur participated in 21 day CAFT training on "Design and Manufacturing of Agro-Processing Machines" from August 1-21, 2017 at ICAR-Central Institute of Agricultural Engineering, Bhopal



Er. Varsha Satankar, Scientist receiving course completion certificate from Director, ICAR-CIAE, Bhopal

- Mrs. Tereza Theofilo D'Souza, Personal Assistant, MPD, ICAR- CIRCOT attended a specialized training programme on "Enhancing Efficiency and Behavioral Skills" for stenographers Grade-III, PA, PS, PPS and Sr. PPS of ICAR Hq./Institutes organized by ICAR-NAARM, Hyderabad from August 3-9, 2017 at ICAR-CIFE, Mumbai.

## Publications

- Siddhan Periyasamy, Krishna Prasad G, Raja A. S. M., P. G. Patil (2017), "Submicron surface roughening of aliphatic polyamide 6,6 fabric through low temperature plasma and its effect on interfacial bonding in rubber composite", Journal of Industrial Textiles, Doi: 10.1177/1528083717720202



Publications

- Mageshwaran Vellaichamy, Sharmila B. Majee and Kuppusamy Pandiyan (2017), "Isolation and Identification of Potential Gossypol Degrading Fungal Strains from Cotton Growing Soil", Microbiology Research Journal, 21(1), pp 1-6
- Veda Krishnan and Mageshwaran Vellaichamy (2017), "A Simple and Accurate Reverse Phase HPLC-UV Method for Determination of Gossypol and its Degradation Products", Indian Journal of Agricultural Biochemistry, Volume 30 (1), pp 27-32.

## Personnel

### Superannuation

Mr. V. L. Rangari, ACTO, GTC, Nagpur superannuated on August 31, 2017.

## Sports

- Mrs. Tereza Theofilo D'Souza, Personal Assistant, MPD, ICAR-CIRCOT participated in "Sheth Eye Run-10km" organized at Viviana Mall, Thane on August 15, 2017 and "10km Run" at BKC Bandra organized by IDBI Federal Life Insurance on August 20, 2017 and stood 1<sup>st</sup> runner up in both the events.



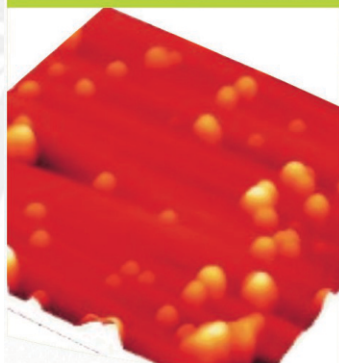
Mrs. Tereza Theofilo D'Souza, ICAR-CIRCOT receiving 1<sup>st</sup> runner up prize at Sheth Eye Run



# Agri-Business Incubation

## Technologies Available for Incubation at the ICAR-CIRCOT ABI Centre

- 1) Ecofriendly preparation of absorbent cotton for medical & hygiene products.
- 2) Nanofinishing Technologies for Cotton Textiles
  - a) Antimicrobial
  - b) UV protection
  - c) Water repellency
- 3) Cotton rich blends for functional textile applications
- 4) Innovation Finishing processes for garments & home textiles: Mosquito repellent, pesticide protection cloths & denim fading
- 5) Software module for non-metameric color matching in textiles
- 6) CIRCOT Calibration Cotton for global outreach
- 7) Sustainable business model for cotton at village level:
  - a) Quality based trading
  - b) Supply chain logistics for cotton stalk (custom hiring)
  - c) Value addition to cotton biomass
  - d) CIRCOT mini card for sliver preparation
- 8) Microbial Degossypolisation cottonseed meal for use as feed in poultry, fish & piggery sectors
- 9) Enhancing farmers and other stakeholders income by Cotton value chain: via startup & entrepreneurship development
- 10) Cotton Trading based on Quality Parameters for better price remuneration by Farmers





## Upcoming Events

### Calendar of training cum-skill development programmes for the year 2017-18

S.No.	Title of Training	Period	Fees (Rs) (excluding Service tax)
1	Advances in Applications of Nanotechnology	11-15 Sept., 2017	25,000
2	Quality Evaluation & Spinning performance of Indian Cottons using Advanced Techniques	20-22 Sept., 2017	10,000
3	Spinning of Technical Yarn	05-07 Oct., 2017	10,000
4	Basic & advanced Statistical Techniques for Research	15-17 Nov., 2017	8,000
5	Characterization of Materials Using X-Ray Diffractometer (XRD)	19-21 Dec., 2017	30,000
6	Basic and Advanced Techniques for Evaluation of Textile Materials	04-06 Jan., 2018	10,000
7	Advances in Microscopy	16-18 Jan., 2018	15,000
8	Electrospinning Technologies & their Applications	23-25 Jan., 2018	10,000
9	Fibre Reinforced Composite	07-09 Feb., 2018	10,000
10	Quality Evaluation of Cotton	11-15 Sept., 2017 23-28 Oct., 2017 20-24 Nov., 2017 29 Jan.-. 2 Feb, 2018 19-23 Feb., 2018	10,000
11	Double Roller Ginning Technology & Basics of Cotton Grading, GTC, Nagpur	18-23 Sept. 2017 09-14 Oct., 2017 13-18 Nov., 2017 18-23 Dec., 2017 15-20 Jan., 2018 12-17 Feb.,2018	10,000
12	Customized training programme for students & academia*	Two days (Dates can be finalized as per the requirement)	2,000
13	Customized training programme for students & academia*	One day (Dates can be finalized as per the requirement)	1,000

# UPCOMING EVENTS



**Contact detail**

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