



# A Monthly Insight into the ICAR-CIRCOT E - News Letter



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## *Director's Desk...*

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### Published by:

**Dr. P. G. Patil**  
Director, ICAR-CIRCOT

### Editorial Board:

Dr. P. G. Patil  
Er. A. K. Bharimalla  
Dr. C. Sundaramoorthy  
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Er. Archana Mahapatra



The world cotton consumption is projected to grow in 2018-19 as a result of economic expansion globally, an expected acceleration of consumer demand for textiles, growth in the manufacturing of cotton, and rising environmental and production costs for synthetics. The global cotton production is projected to show downward trend in 2018-19 due to expected decline in the harvested area under cotton and also the expectation of lower yield levels. The estimated production levels during 2018-19 is 25.4 million tons while the consumption levels are pegged at 26.5 million tons. The global trade is projected to rise to around 9 million tons.

ICAR-CIRCOT is carrying out basic and strategic research in processing of cotton and its agro residues, development of value added products and quality assessment. Some of the significant research outcome during the last one year include development of cotton feeding system to improve ginning efficiency, mosquito repellent finishing, salt free dyeing process, value-added products from cotton stalks such as activated carbon.

The institute under its skill development activities has organised around 28 training programmes during 2017-18 in the area of post-harvest management of cotton, cotton quality evaluation, double roller ginning technology and specialized training programmes on cotton wear comfort, nanotechnology, fibre-reinforced composites, absorbent cotton technology, value addition to cottonseed and stalks etc. benefitting the farmers, industrial stakeholders, academicians and research scholars. The institute has also organised a capacity building programme for the African nationals in the cotton sector as per the India Africa Forum Summit III.

The institute is committed to continuously render its service to the stakeholders in India & abroad and work towards the sustainability of the sector.

**(P. G. Patil)**  
Director

## Technology Insight

### Preparation of activated carbon from cotton stalk by chemical activation

ICAR-CIRCOT has developed a technology to prepare activated carbon from cotton stalks. The cotton stalks are cut into uniform size, dried and impregnated with phosphoric acid for a period of 24 hours. The acid is decanted and the biomass is carbonized in a muffle furnace in the absence of air at suitable activation temperature and time. The activated carbon thus

obtained is washed with distilled water to remove residual acids present in it and then dried in a hot air oven at 110°C for a period of 4 hours. The process parameters for preparation of activated carbon was optimized so as to maximize the methylene blue number (meso porosity) and Iodine number (Micro porosity).

## Trainings

### Fibre Reinforced Composites

ICAR-CIRCOT organized a three day training programme on 'Fibre Reinforced Composites during February 7-9, 2018. The programme was attended by faculties, research scholars and students from various academic institutions. The training course covered the

basics and advances of fibre reinforced composite production. Industry visit was arranged to Indian Rubber Manufactures Research Association (IRMRA), Thane to explore the rubber composite production and characterization techniques.



Group Photo- Training Programme on "Fibre Reinforced Composites"

## International Short-Term Training Programme (STTP-2018)

An International Short Term Training Programme (STTP - 2018) for the African Nationals on 'Post-harvest Management of Cotton and Value-Addition to Crop Residues' was organized at Ginning Training Centre, Nagpur during Feb 19- Mar 03, 2018. The programme was funded by Ministry of External Affairs, GoI as per the commitment under India Africa Forum Summit (IAFS) III for capacity building of the African Nationals in the sector. The programme was

inaugurated at the hands of Dr. P. G. Patil, Director, ICAR-CIRCOT, Mumbai in the presence of Dr. V. N. Waghmare, Director, ICAR-CICR, Nagpur, Shri G. H. Wairale, former GM, Maharashtra Cotton Federation, Nagpur, Dr. M. K. Sharma, CEO and Whole-time Director, M/s. Bajaj Steel Industries Ltd., Nagpur. There were 15 participants for the training programme from four African Nations, Egypt (3), Ethiopia (7), Nigeria (4) and Sudan (1).



Dr. P. G. Patil addressing delegates during STTP-2018

## Events

### Technology & Machinery Demonstration Mela- 2018

As a part of ICAR initiative on doubling the farmer's income through increasing productivity and adoption of recent farm technologies, Ginning Training Centre, ICAR-CIRCOT, Nagpur organized a 'Technology and

Machinery Demonstration Mela- 2018' on February 15, 2018. Cotton farmers from Wardha & Nagpur, stakeholders from industries & research organizations participated in the programme.

The program was aimed to demonstrate the recent technology and machinery developed in the institute for cotton processing & by-products utilization.

During the inaugural function, Dr. V. Mageshwaran, Scientist welcomed the delegates and farmers and gave the introductory remarks of the program. Shri Hemant Sonare, Chairman, Textile Association of India appealed the farmers to adopt latest technologies and machinery developed by this institute in the area of cotton processing and by-products utilization and to reap additional income. Shri. G. H. Wairale, President, Agro-plus foundation, Nagpur informed the farmers about importance of quality for better market price of cotton. Shri. Manish Kadu, Entrepreneur, M/s Bakthi Coal Industries, Katol detailed about the opportunities for farmers to earn additional income by selling the chipped cotton

stalks to briquetting and pelleting industries. Shri Y. N. Kabra, a progressive farmer from Ashti, Wardha Dist. shared his success story on adoption of ICAR-CIRCOT's technology on composting of cotton stalks under large scale in his farm.

Dr. M. S. Kairon, Former Director, ICAR-CICR, Nagpur chaired the technical session that deliberated on importance of trash and contamination free quality of Indian cotton, rural entrepreneurship in absorbent cotton technology and value-addition to cotton stalks. An exhibition was also arranged to display the technology and machinery on cotton processing and by-products utilization for the farmers. Live demonstration on chipping of cotton stalks, preparation of bio-enriched compost preparation, oyster mushroom cultivation, preparation of pellets and ginning output were conducted for the farmers.



Technology and Machinery Demonstration Mela- 2018 being held at GTC, Nagpur

### Swachh Bharat Abhiyan

A cleaning programme was arranged on February 19, 2018 in the Pulp & Paper lab of CBPD. Old fibre samples were removed, machines were cleaned and other items were arranged in an orderly fashion. Another cleanliness programme was organized by Quality Evaluation and Improvement Division

(QEID) of the institute on February 28, 2018. The waste cotton samples left out after testing in the store room were removed and send to Mechanical Processing Division (MPD) of the institute for proper disposal. All the staff members of the respective divisions participated.



Cleanliness programme at Pulp & Paper Lab, CBPD, ICAR- CIRCOT



Cleanliness programme at Quality Evaluation & Improvement Division, ICAR- CIRCOT

## Shivaji Jayanti

Chatrapati Shivaji Maharaj Jayanti was celebrated in the institute on February 19, 2018. All the staff members participated with enthusiasm in the celebration of Shivaji Jayanti. On this occasion, a portrait of Chatrapati Shivaji Maharaj was unveiled

by Dr. P. G. Patil, Director, ICAR- CIRCOT. Director and other staff members spoke about the great achievements and visionary leadership of Chatrapati Shivaji Maharaj.



Director, ICAR- CIRCOT addressing the staff on the occasion of Shivaji Jayanti

## National Science Day

28<sup>th</sup> National science day was celebrated in ICAR- CIRCOT on February 28, 2018. A lecture on '3D Fabrics and Their Applications' was delivered by Dr.

B. K. Behera, Professor & Head, Department of Textile Technology, IIT, New Delhi on the occasion.



Dr. B. K. Behera giving lecture on "3D Fabrics and Their Applications"

## Visits

### Director's Visits

- Director, ICAR- CIRCOT visited New Delhi during February 1 and 2, 2018 to attend the Divisional Meeting with the Directors/Project Coordinators in respect of the Institutes/AIRCPs/Network Projects/ CRPs under the Agricultural Engineering Division, which was chaired by the Deputy Director General (Agril. Engg.), held at NASC Complex, New Delhi and presented the progress of research achievements and CRP in respect of ICAR-CIRCOT during 2017-18 as per the deliverables given in SFC document for the period 2017-2020.
- Director, ICAR- CIRCOT toured to Dapoli during February 13-15, 2018 to attend Committee meeting as an Expert Member nominated by the Hon'ble Vice-Chancellor, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. He also visited rubber dam constructed at Wakavali Farm of Dr. BSKKV, Dapoli with the help of ICAR-CIRCOT.
- Director, ICAR- CIRCOT visited Quality Evaluation Unit of CIRCOT at Surat with Quinquennial Review Team (QRT) of ICAR-CIRCOT during February 16-17, 2018 to apprise the QRT about the activities of QE Unit. He also visited MANTRA along with QRT members.
- Director, ICAR- CIRCOT was on official tour to Nagpur from February 19-21, 2018 to organize the International Short-Term Training Programme (STTP- 2018) on 'Post-Harvest Management of Cotton and Value Addition to Crop Residue' approved by MEA held during February 19-March 3, 2018. He addressed the delegates on 'Experiences of post-harvest processing sector in India & Africa and India's contribution to the development of cotton sector in African Countries: Highlights of Cotton Technical Assistance Programme (TAP) for Africa' on February 20, 2018.

### Delegates' Visits

- Ten faculty members from K. J. Somaiya Institute of Engineering and Information Technology, Sion visited ICAR- CIRCOT on February 3, 2018 to acquire knowledge about agriculture and cotton technology research and further opportunities involved in cotton technology and agriculture field research.



Faculty from K. J. Somaiya Institute of Engineering & Information Technology, Sion at ICAR- CIRCOT

- Prof. Seshadri Ramkumar, Professor, Nonwovens and Advanced Materials Laboratory, Department of Environmental Toxicology, Texas Tech University, Lubbock, Texas, USA visited ICAR-CIRCOT on February 20, 2018 and interacted with scientist.



**Prof. Seshadri Ramkumar with ICAR-CIRCOT scientists**

## Students' Visits



**Students of St. Joseph High School, Wadala at ICAR- CIRCOT on February 14, 2018**

- About 110 students of Class VIII from St. Joseph High school, Wadala visited ICAR- CIRCOT on February 14, 2018. Students were briefed about the institute activities and were shown a short film on Nanotechnology.

- Thirty students from Rachana Sansad College of Fashion and Textile Design, Prabhadevi visited ICAR-CIRCOT on February 23, 2018.



**Students of Rachana Sansad College of Fashion & Textile Design, Prabhadevi at ICAR- CIRCOT**



## Farmers' Visits

A group of farmers from Gujarat visited ICAR-CIRCOT in two batches as part of their study tour under the "Training in Agriculture Skill Development for Farmers" scheme of Govt. of Gujarat. In the first batch, 42 women farmers

visited on February 27, 2018 and 45 men farmers visited CIRCOT in the second batch on February 28, 2018. The visit was coordinated by Farmers Training Centre, Gandhinagar, Gujarat.



Group photo of farmers at ICAR-CIRCOT on February 27, 2018



Group photo of farmers at ICAR-CIRCOT on February 28, 2018

## Meetings

### QRT Meeting

Quinquennial Review Team (2012-17) of CIRCOT held its meeting at Quality evaluation unit of ICAR-CIRCOT at Surat on February 16, 2018 under the chairmanship of Dr. N. C. Patel, Vice Chancellor, AAU, Anand along with members Dr. G. R. Anap, former World Bank Expert on Ginning; Dr. V. D. Gotmare, VJTI, Mumbai and Dr. Sujata Saxena, Pr. Scientist & Member Secretary, QRT. Dr. P. G. Patil, Director, ICAR- CIRCOT; Dr. C. J. Dangariya, Vice Chancellor, Navsari Agricultural University; Dr. B. G. Solanki, Research Scientist, MCRS, Surat; Dr. P. K. Mandhyan, Sr. Scientist & Head I/C QEID, CIRCOT, Mumbai and Shri G. G. Mistry, Senior Technical Officer & I/c, QEU, Surat were also present for this meeting.

The team inspected the facilities at the Quality Evaluation Unit, Surat and went round the Cotton Museum maintained at the MCRS. The meeting

started with welcome address by Dr. P. G. Patil, Director, ICAR-CIRCOT. Performance of the QEU for the period 2012-2017 was presented by Dr. P. K. Mandhyan followed by presentation of Dr. Solanki about the cotton scenario in Gujarat and contributions of MCRS and support provided by CIRCOT unit therein. QRT reviewed the performance of the unit and held discussions with CIRCOT and NAU officials about its future role and ways to strengthen it.

Smt. Vijaylaxmi Udikeri, Technical Officer, & I/c, QEU, Dharwad also attended the meeting and apprised the QRT members and CIRCOT officials about the performance and future outlook of QE Unit of CIRCOT at Dharwad. The team accompanied by Director, ICAR- CIRCOT then visited MANTRA and had discussions with its Director, Dr. S. K. Basu regarding the future opportunities for CIRCOT QE unit, Surat.



QRT of CIRCOT with officials of NAU and CIRCOT at the laboratory of QEU, Surat

## RAC Meeting

The Twenty-fourth meeting of the Research Advisory Committee (RAC) of ICAR-CIRCOT was held in the Conference Room on February 27 and 28, 2018. Dr. Nawab Ali, Chairman, RAC presided over the meeting in the presence of following members of the RAC- Dr. S. N. Jha, ADG (Process Engineering), ICAR, New Delhi ; Dr. G. S. Nadiger, Former Director of Laboratories (Textile Committee), Mumbai; Dr. Anup Rakshit, Executive Director, Indian Technical Textile Association; Dr. Narendra G. Shah, Professor, Centre for Technology Alternatives for Rural Areas (CTARS), IIT, Mumbai; Dr. B. K. Behera, Head, Department of Textile Technology, IIT, New Delhi; and Dr. Debasis Nag, Former Director, NIRJAFT, Kolkata.

Two new members of the Institute Management Committee Shri Dhruvpatrao Sawale Patil and Smt. Kranti Sandeep Somvanshi were also present in the

meeting. All in-charge HoD's, scientists of the institute, and technical staff of the PME Cell attended the meeting. Dr. P. G. Patil, Director, ICAR-CIRCOT, welcomed the Chairman and the members and presented the salient achievements and activities of the institute during the current year. Then the Action Taken Report of previous RAC and the salient achievements of the research project under different core area were presented. The committee deliberated on the progress of the research carried in the institute and provided valuable inputs and direction for the future course of the research.

During the occasion, publications on five success stories of the institute technologies and an annual training calendar of the institute for 2018-19 was released.



24<sup>th</sup> RAC meeting of ICAR-CIRCOT held during February 27-28, 2018



Publication of success stories and training calendar 2018-19 by RAC members

## Awareness Programmes

### Exhibition on Cotton Stalk Composting Technology

The regional unit of ICAR-CIRCOT at Sirsa guided a young progressive farmer Shri Karan Nehra in adopting the cotton stalk composting technology to prepare compost from 2.5 tons of cotton plant residues at his field in Abubshahar village of Sirsa district in Haryana on February 17, 2018 and exhibited the same to other farmers. Also, the benefits of compost preparation were elucidated and farmers were encouraged to



Exhibition on Cotton Stalk Composting Technology at Abubshahar village, Sirsa on February 17, 2018

adopt the technology as an alternate to Farm Yard Manure (FYM) which is scarcely available nowadays.

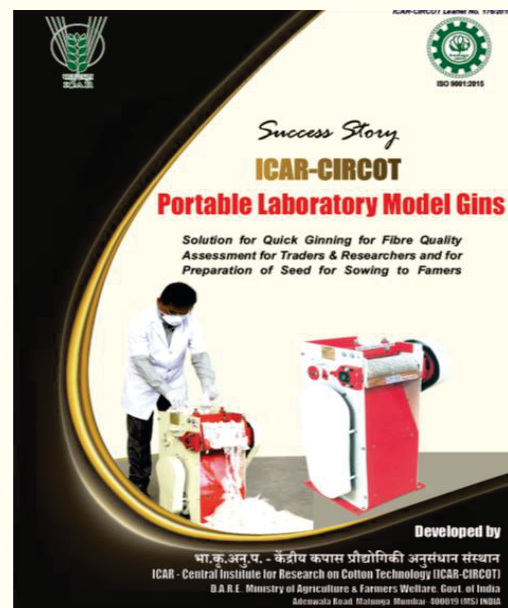
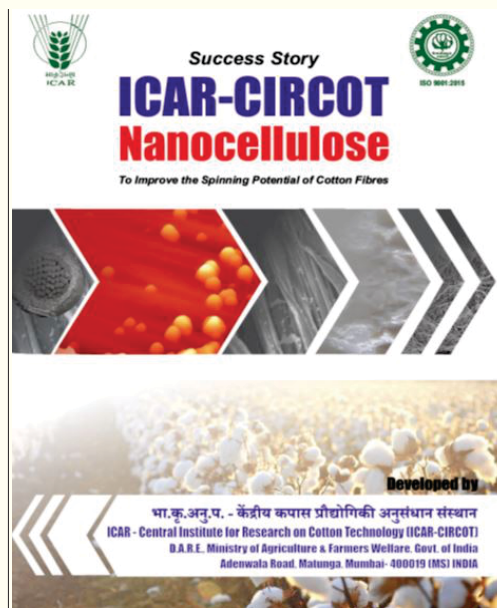
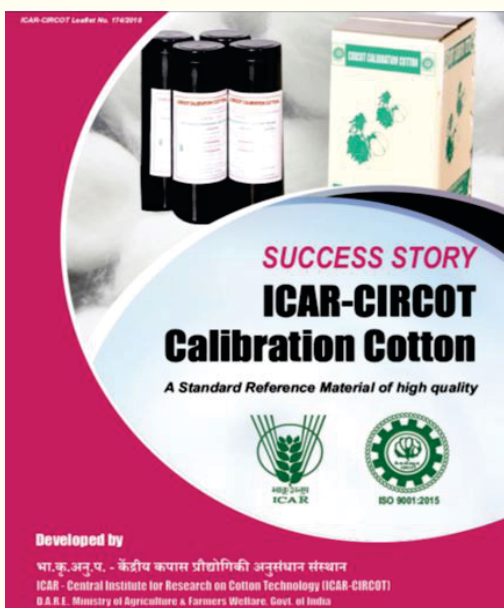
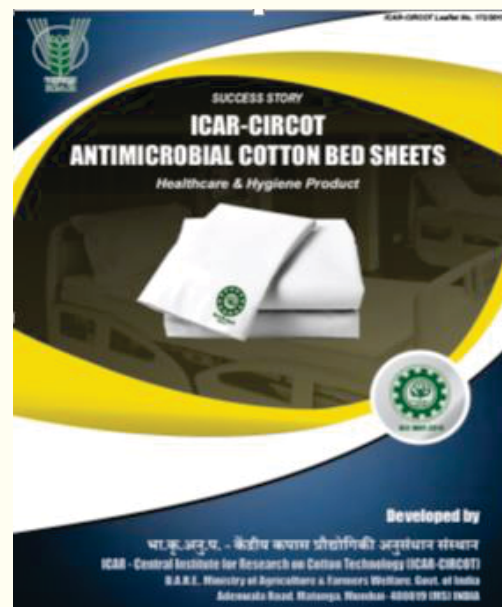
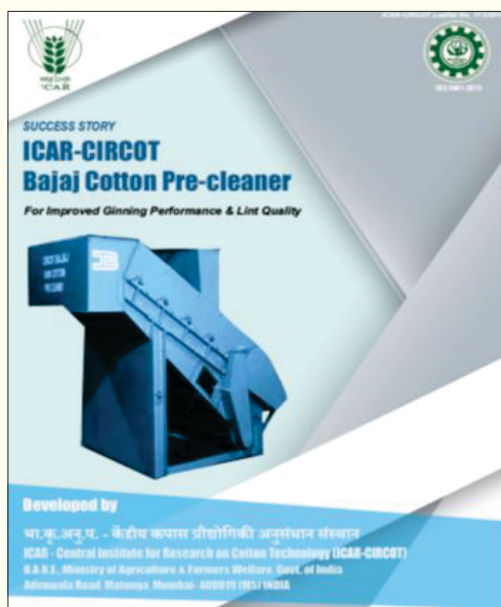
## Publications

### Bulletin

ICAR-CIRCOT - Training Calendar 2018-19

### Success Stories

- ICAR-CIRCOT - Portable Laboratory Model Gins
- ICAR-CIRCOT - Nanocellulose
- ICAR-CIRCOT - Calibration Cotton
- ICAR-CIRCOT - Bajaj Cotton Pre-cleaner
- ICAR-CIRCOT - Antimicrobial Cotton Bed Sheets



## Research Articles

1. Mageshwaran, V., Satankar, Varsha, Hasan, Hamid, Shukla, S. K. and Patil, P. G. - Compost Production and Oyster mushroom cultivation - A potential entrepreneurship for cotton growing farmers, International Journal of Forestry and Crop Improvement, 8 (2), 149-156, December (2017). DOI:10.15740/HAS/IJFCI/8.2/149-156.
2. Saxena, Sujata, Iyer. V., Chaggani, R. R., Ambare, M. G. and Shaikh, A. J. - Effect of mordants on Colour and Colourfastness properties of Cotton Fabrics Dyed with Natural Dye Berberine, Cotton Research Journal, 7 (2), July-Dec 2016 Published February 2018.

## Participation in Seminar/ Sports

- Dr. Sujata Saxena, Principal Scientist & Head I/C , CBPD, Dr. D.M. Kadam, Principal Scientist, Dr. S. V. Ghadge, Senior scientist, Dr. Sharmila Patil, Scientist, Dr. Manoj Kumar, Scientist, Er. Archana Mahapatra, Scientist and Er. Jyoti Dhakane, Scientist attended National seminar on 'Post Harvest Handling, Ambient Controlled Storage and Supply Chain Management' organized by All India Food Processors' Association at ICAR-CIRCOT, Mumbai on February 2, 2018.
- Dr. N. Vigneshwaran, Principal Scientist attended the Seminar on 'Microfluidics Technology for Pharma & Biotech Applications' organized by IDEX Material Processing Technologies, USA on February 20, 2018 at JW Marriott Hotel, Sahar, Mumbai.
- Dr. Sujata Saxena, Principal Scientist & Head I/C , CBPD, Dr. ASM Raja, Principal scientist, Er. A. Arputharaj, scientist & Dr. S. R. Kawlekar ACTO attended a lecture on 'New Developments in Plasma Processing of Textiles' by Dr. Seshadri Ramkumar, Professor, Nonwovens and Advanced Materials Laboratory, Department of Environmental Toxicology, Texas Tech University, Lubbock, Texas, USA at VJTI on February 20, 2018.
- ICAR-CIRCOT participated in the ICAR Inter Zonal sports tournament held at ICAR- NAARM, Hyderabad from February 21-25, 2018 and won 3 silver medals.

## Personnel

### Obituary

Shri Chandrakant D. Achrekar, Skilled Supporting Staff of ICAR-CIRCOT expired on February 27, 2018, due to prolonged illness. He had joined ICAR on June 8, 1992 and worked as Skilled Supporting Staff in the

institute. CIRCOT fraternity deeply mourned the sad demise and prayed for peace to the departed soul in the condolence meet.

## 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 2018-19

S.No.	Title of Training	Period	Fees (Rs) (excluding Service tax)
1	Instrumental Evaluation of Clothing Comfort	15-19 May, 2018	50,000
2	Value addition to Cottonseed	05-08 June, 2018	12, 000
3	Knitting & knit Garments	11-13 June, 2018	10, 000
4	Absorbent Cotton Technology	02-04 Aug., 2018	15, 000
5	Advances in Applications of Nanotechnology	12-29 Sept., 2018	25,000
6	Quality Evaluation & Spinning performance of Indian Cottons using Advanced Techniques	04-07 Sept., 2018	10,000
7	Spinning of Technical Yarn & Quality Management	03-05 Oct., 2018	10,000
8	Basic & Advanced Statistical Techniques for Research	12-15 Nov., 2018	6,000
9	Spectroscopic & Chromatographic Techniques for Material Characterization	12-15 Nov., 2018	12, 000
10	Instrumental Evaluation of Clothing Comfort	10-15 Dec., 2018	50,000
11	Characterization of Materials Using X-Ray Diffractometer (XRD)	27-29 Dec., 2018	30,000
12	Advances in Microscopy	17-19 Jan., 2019	15, 000
13	Basic and Advanced Techniques for Evaluation of Textile Materials	17-19 Jan., 2019	10,000
14	Electrospinning for Nanofibre Production & its Applications	23-25 Jan., 2019	10,000
15	Fibre Reinforced Composite	04-06 Feb., 2019	10,000
16	Quality Evaluation of Cotton	21-25 May, 2018 23-27 July, 2018 06-10 Aug., 2018 24-29 Sept., 2018 22-26 Oct., 2018 26-30 Nov., 2018 21-26 Jan., 2019 18-22 Feb., 2019	10,000
17	Double Roller Ginning Technology & Basics of Cotton Grading, GTC, Nagpur	21-26 May, 2018 18-23 June, 2018 30 July-04 Aug., 2018 24-29 Sept. 2018 22-27 Oct., 2018 12-17 Nov., 2018 17-22 Dec., 2018 21-26 Jan., 2019 11-16 Feb., 2019	10,000
18	Customized training programme for students & academia*	Two days (Dates can be finalized as per the requirement)	2,000
	Customized training programme for students & academia*	One day (Dates can be finalized as per the requirement)	1,000



**For more information please contact:**

Er. A. K. Bharimalla,  
Senior Scientist & Head In- charge, TTD  
ICAR-Central Institute for Research on Cotton Technology, Adenwala Road,  
Matunga (E)  
Mumbai-400019.  
Email: [bpd.circot@gmail.com](mailto:bpd.circot@gmail.com);  
Ph: 022-24127273, Fax: 02224130835, Mob: 9702878249  
Details are available at our Website: [www.circot.res.in](http://www.circot.res.in)



**ADDRESS FOR CORRESPONDENCE**

**The Director**

ICAR-Central Institute for Research on Cotton Technology  
DARE, Ministry of Agriculture, Govt. of India  
Adenwala Road, Matunga (E), Mumbai – 400 019  
Ph: 022 - 24127273/76; Fax: 022 – 24157239  
e-mail: [icarcircot.news@gmail.com](mailto:icarcircot.news@gmail.com)  
[www.circot.res.in](http://www.circot.res.in)

