

## A Monthly Insight into the ICAR-CIRCOT

# E - News Letter

March 2017, Vol. 3. No. 12

### In this Issue >>

- ▲ Special News
- ▲ Technology Insight
- ▲ Training Programmes
- ▲ Events
- ▲ Visits
- ▲ Meetings
- ▲ Publications
- ▲ MoU Signed
- ▲ Awards / Recognition
- ▲ CIRCOT-App
- ▲ Promotion
- ▲ Obituary
- ▲ ABI
- ▲ Upcoming Events

### Published by:

Dr. P. G. Patil

Director, ICAR-CIRCOT

### Editorial Board:

Dr. P. G. Patil

Er. A. K. Bharimalla

Dr. C. Sundaramoorthy

Dr. S. V. Ghadge

Dr. Virendra Prasad



Institute received this award at the hands of Sh. Radha Mohan Singh, Hon'ble Union Minister for Agriculture & Farmers Welfare, Sh. Parshottam Rupala, Union Minister of State for Agriculture & Farmers Welfare, Dr. T. Mohapatra, Secretary (DARE) & DG ICAR, Financial Advisor (DARE) and DDG (Edu.) were also present on the occasion.

Institute has utilized 100 % of the sanctioned plan budget allocation of Rs. 304.00 lakhs for year 2016-17. The institute has generated a revenue of Rs. 86.00 lakhs through technology licensing, commercial services, skill development programmes and Agri-business incubation and positioned one of the top revenue generating institutes under ICAR.

During the year 2016-17, the institute has organized around 22 skill development programmes in the area of Roller ginning technology, cotton quality evaluation, Nanotechnology and its application in agriculture and textiles, electrospinning technology, advances in microscopy, XRD, value addition to cottonseed and absorbent cotton technology. CIRCOT was involved in strengthening cotton value chain in Africa under Cotton TAP and established a regional knowledge cluster cum training centre on post-harvest and ginning technology at Bohicon, Benin and has also organized an in-country training programme in Burkina Faso.

Institute has created an Agri-business incubation cell and is having one in-house incubatee. There were 5 Incubatees during the year admitted to the ABI centre. One incubatee has been successfully graduated culminating into an enterprise M/s. Sana Agro Industries producing Degossypolized cottonseed meal for poultry and fish feed using the institute's technology and another in-house incubatee M/S. Greyy has ventured into a new start-up dealing with development of natural fibre based blended textiles. The institute has organized around 10 awareness programmes, 2 exhibitions and one Technology and Machinery demonstration Mela to take the technology to the end users. The institute is regularly organizing demonstrations and awareness meets in the 30 selected villages in Wardha District under MGMG programme.

### Director's Desk...

This year institute was bestowed with "Cashless Institute award" for initiating cashless transaction in the ICAR system. The award consists of certificate and Rs. 5.00 Lakh.



Dr. P. G. Patil, Director ICAR-CIRCOT receiving award at the hands of Shri Radha Mohan Singh, Hon'ble Union Minister for Agriculture & Farmers Welfare & Shri Parshottam Rupala, Union Minister of State for Agriculture & Farmers Welfare, New Delhi

Dr. P. G. Patil  
Director

## Padma Vibhushan Dr. Anil Kakodkar Visited ICAR-CIRCOT

Padma Vibhushan Dr. Anil Kakodkar, Former Chairman, Atomic Energy Commission & Secretary to the Govt. of India visited ICAR-CIRCOT, Mumbai on March 7, 2017. Dr. P. G. Patil, Director appraised him about the multifarious scientific activities of the Institute and took him to various R&D facilities of the Institute. Dr. Kakodkar congratulated Director, CIRCOT and his team for establishing the Nanocellulose Pilot Plant, a first of its kind in India. He suggested that nanocellulose be used as filler in diversified areas to impart biodegradability to the composites besides value addition to cotton.

Later, Dr. Kakodkar graced the ISCI fellowship award function & felicitation of Dr. Keshav Raj Kranthi, Director, ICAR-CICR, Nagpur organized in association with Indian Society for Cotton Improvement (ISCI), Confederation of Indian Textile Industry – Cotton Development Research Association (CITI-CDRI) and South Asia Biotechnology Centre (SABC). Applauding contributions of Dr. Kranthi in the field of cotton development in India, Dr. Kakodkar hoped that he will continue his streak of achievements in his new assignment as the Head of the Technical Information Section at the International Cotton Advisory Committee, Washington, USA.

Dr. C.D. Mayee, former ASRB Chairman and President of ISCI congratulated Dr. Kranthi for the key role played in linking the Government and Industry with the cotton growing farmers. Shri. Suresh Kotak, Trustee of Kotak Research Foundation, Mumbai and Chairman of ISCI, praised the contributions of all cotton researchers and suggested for development of improved methodologies to increase cotton productivity since the land availability is limited in India. Dr. Kranthi, accepting the ISCI fellowship award, thanked all the well-wishers and promised to continue his good work for the progress of Indian cotton community. Dr. A.J. Shaikh, Former Director of ICAR-CIRCOT & Secretary ISCI, proposed the vote of thanks.



**Padma Vibhushan Dr. Anil Kakodkar  
at ICAR-CIRCOT, Mumbai**



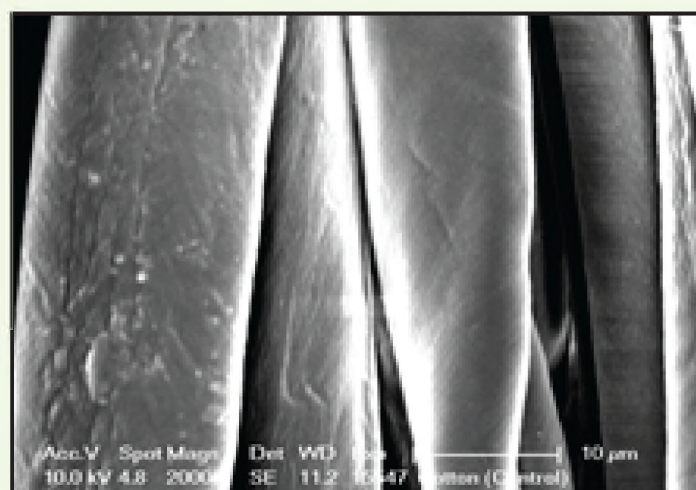
**Padma Vibhushan Dr. Anil Kakodkar along  
with Dr. C.D. Mayee and Dr. Keshav Kranthi  
at the nanocellulose pilot plant**



**Padma Vibhushan Dr. Anil Kakodkar  
felicitating Dr. K. R. Kranthi, Director,  
ICAR-CICR, Nagpur**

## Micro-Encapsulated Herbal Formulation for Mosquito Repellent Textile

Natural products like citronella oil, clove oil and eucalyptus oil are identified to have mosquito repellent properties. Essential oils are complex mixtures of volatile organic compounds present in plants. Due to their volatile nature, the active ingredients tend to evaporate limiting their application in textile finishing. Micro-encapsulation technique using complex coacervation technique using gum arabic as wall material was used to trap the active agents present in citronella oil and then applied on the textiles. The average size of the microcapsules was found to be in the range of 300-600 nm as estimated by particle size analyzer using DLS principle. The citronella based micro-capsules were then applied on cotton fabric using a binder and pad-dry-cure technique. SEM analysis showed uniform distribution of capsules on the cotton fabric. The treated cotton fabric showed 100% mosquito repellence with finish durability up to 5 washes.



SEM images of micro-capsule treated fabric & the control fabric

## Training Programmes

### Training Programme on Work-Opportunities for Development

A training programme on “*Work-Opportunities for Development*” was organized for the skilled support staff of the Institute on March 15, 2017. Shri. Arun Naik, Trainer & Consultant from Astitva Training Institute, Mumbai motivated the staff towards development. He sparked their enthusiasm for developing interest in their routine work schedule and look for more opportunities in work for further development. The training was organized by the HRD cell of the Institute. Dr. P.G. Patil, Director distributed certificates to the participants and interacted with them about experiences learnt during the training programme. He also insisted them to look for various educational and training opportunities for continuous improvement throughout their career.





**Group photo: Participants of the training programme on “Work-Opportunities for Development” organized for “Skilled Support Staff”**

## Training-Cum-Workshop on Scientific and Technical Writing

A full day Hindi training cum workshop on “*Scientific and Technical Writing*” was held on March 18, 2017 for the technical employees of the Institute. Shri. Virendra Kulkarni, Deputy Director, Heavy Water Board, Department of Atomic Energy, Mumbai was the resource faculty of this workshop.



**Training-cum-workshop on “Scientific and Technical Writing” in Hindi**

## Technology Mela

As part of the ICAR initiative on doubling farmers' income through increasing productivity and adoption of latest farm and processing technologies, ICAR-CIRCOT in association with Agro-Plus Foundation, Nagpur organized a Technology and Machinery Demonstration Mela-2017 on "Cotton Processing & By-product Utilization" on Mar 01, 2017 at Ginning Training Centre, Nagpur. Over 150 farmers from 10 villages of Wardha and Nagpur districts, stakeholders from industries scientists from various research organizations attended the program. The program began with welcome address by Dr. S.K. Shukla, Officer-In-Charge, GTC highlighting the theme and objectives of the programme. Dr. K.R. Kranthi, Director, ICAR-CICR, Nagpur in his Chief Guest address appealed the farmers to adopt the technology and machinery developed for crop cultivation and processing for enhancing their farm income. In his guest of honor speech, Dr. M.K. Sharma, CEO, Bajaj Steel Industries, Nagpur mentioned that cotton farmers should give importance to the quality of cotton they produce in order to meet the needs and requirements of ginners. Dr. M.S. Kairon, Former Director, ICAR-CICR, Nagpur in his guest of honor speech suggested ways for improving soil organic carbon by solid wastes recycling. Shri. G.H. Wairale, President, Agro-plus Foundation shared his experience on cotton crop productivity enhancement in Wardha district. He also elaborated the lint based marketing which benefits the farmers.

In the technical session, scientists from CIRCOT, Dr. S.V. Ghadge, Dr. V. Mageshwaran and Er. Varsha Satankar and industry representatives, Shri. Manish Kadu, *Bhakti Biocoal Energy, Katol*, Shri. Sanjay Kshirsagar, *Vidarbha Sales, Nagpur*, Shri. Alpesh Zaveri, *Bayer Cropsciences, Nagpur*, Shri. Vishwajit Bhor, *Shaktiman Cotton Stalk Shredder* and progressive farmer, Shri. Yashonandan Kabra, Ashti, Nagpur shared their views and experiences on reducing the cost of cultivation, increasing cotton productivity, cotton stalk collection and value-addition by preparing briquettes, pellets, compost and oyster mushroom for additional income generation for the farmers.

On this occasion, progressive cotton farmers and budding entrepreneurs were felicitated for their achievements in attaining higher productivity and value-addition to cotton stalks. An exhibition was arranged to display the technology and machinery on cotton processing and by-products utilization for the farmers. Live demonstrations were also arranged on preparation of bio-enriched compost, pellets, particle board and oyster mushroom cultivation using cotton stalk and cotton processing. Farmers were also apprised about the importance of Swachh Bharat Mission, Soil Health Cards, Mera Gaon Mera Gaurav and various other governmental schemes for creating awareness among the farmers.





**Dr. K.R. Kranthi** inaugurating the *Technology & Machinery Exhibition* at GTC, Nagpur on March 01, 2017

**Dr. K.R. Kranthi**, Director, ICAR-CICR, Nagpur and **Dr. M. K. Sharma**, President, Bajaj steel Industries Ltd, Nagpur felicitating a progressive farmer



**Participants** for the technical session on cotton processing and by-product utilization

## Awareness Programme

Under the skill development programme for organic growers, a one-day awareness program on “Cotton stalk processing and utilization” was conducted on March 30, 2017 at GTC Nagpur for a group of seventeen trainees from the Regional Centre of Organic Farming. The trainees were imparted knowledge about collection and logistics of cotton stalks for energy purpose, bio-enriched compost and oyster mushroom production and role of bio-fertilizers in organic farming. Highlighting the importance of bio-enriched compost prepared using ICAR-CIRCOT technology in organic farming of cotton and other crops, live demonstrations were conducted on steps involved in preparation of the bio-enriched compost and oyster mushroom cultivation.



**Group photo of the awareness programme on “Cotton stalk processing and utilization” at GTC, Nagpur on March 30, 2017**

## Mera Gaon Mera Gaurav

Kisan Goshti-cum-Demonstration programme on *ICAR-CIRCOT technologies* was organized in Belghat village of Wardha district on March 9, 2017. Adoption of farmer friendly technologies and best crop management practices can increase the farm income. The programme began with the interaction of farmers with experts from ICAR-CIRCOT led by Dr. Virendra Prasad, Senior Scientist and members of Confederation of Indian Textile Industry, Cotton Development and Research Association (CITI-CDRA), Maharashtra. Farmers were educated about good agricultural practices for achieving substantial increase in cotton productivity, minimizing input cost and monitoring the soil health. The farmers were also briefed about the importance of cotton quality parameters and advised to ensure non-mixing of cotton with other varieties during picking operation to fetch good price for cotton.

Farmers were advised to adopt good practices for picking and storage of cotton. They were also suggested to attend the trainings being organized by ICAR-CIRCOT on utilization of cotton stalk for various uses to increase farm income. During the field visit the experts advised farmers to go for bio-compost from cotton stalk and save input cost of cultivation and to maintain the soil health in the long run.



**The farmers of Belghat village of Wardha district during the Mera Gaon Mera Gaurav programme on March 9, 2017**

## Swachh Bharat Abhiyaan

All the Institute staff members participate enthusiastically in the cleaning activities under the programme. A cleanliness programme was carried out in the Transfer of Technology Division on March 8, 2017 when old files, booklets and materials lying unused were sorted out and removed. Quality Evaluation and Improvement Division (QEID) also conducted cleaning activity under swachh bharat abhiyan on March 27, 2017 and removed the remaining cotton from the test samples bags kept in the store room, stacked in gunny bags which could be disposed off through auctioning.



**Staff members of TTD division clearing old files during Swachh Bharat Abhiyaan held on March 8, 2017**



**Cleaning and storing of cleaned cotton samples in QEID test house under Swachh Bharat Abhiyaan on March 27, 2017**



## Visit of Dignitaries

### Former Secretary (DARE) & DG, ICAR Dr. Panjab Singh visits ICAR-CIRCOT

Dr. Panjab Singh, Chancellor, Rani Lakshmi Bai Central Agricultural University, Jhansi and Former Secretary DARE and DG, ICAR visited ICAR-CIRCOT, Mumbai on March 26, 2017. He was briefed about the major research activities being carried out at the Institute by Dr. P.G. Patil, Director. Dr. Vigneshwaran, Senior Scientist explained the CIRCOT's expertise in nanofinishing of cotton textiles and nanocellulose production technology from cotton wastes and other agrobiosmass. Dr. Virendra Prasad, Senior Scientist gave highlights of the technology being developed at the Institute to prepare security / currency grade paper using a blend of cellulosic raw materials. Dr. Panjab Singh visited the nanocellulose pilot plant, nanocellulose product exhibition room and the visitors' room and appreciated the work done by the Institute. He suggested use of nanocellulose in diversified agricultural applications and advised more work in that line.



**Dr. Panjab Singh, Former Secretary DARE and DG, ICAR at the nanocellulose pilot plant**



**Dr. Panjab Singh, Former Secretary DARE and DG, ICAR in the exhibition-cum-visitors' room being shown miniature ginning machine by the Director**

## Students & Farmers' Visits

- Two groups of trainees consisting of 22 and 18 trainees from Regional Centre of Organic Farming visited GTC, Nagpur on March 22 & 24, 2017.
- A group of 50 Students of second year B.Sc., Botany from PSG-Arts and Science College visited ICAR-CIRCOT Coimbatore Centre on March 28, 2017.



**Sh. S. Mukundan, ACTO explaining cotton testing to students from PSG-Arts and Science College, Coimbatore at Quality Evaluation Unit of ICAR-CIRCOT at Coimbatore**

## Director's Visits

- Dr. P.G. Patil, Director along with senior scientist Dr. A.S.M. Raja attended an annual review workshop of CRP on Natural Fibres and AICRP on Post-Harvest Engineering and Technology held at CIPHET, Ludhiana during March 8-10, 2017.
- Dr. P.G. Patil, Director attended Inaugural Session of the “Krishi Unnati Mela” organized by ICAR and IARI at Pusa Campus, New Delhi during March 15-17, 2017 jointly organized by ICAR and the Ministry of Agriculture & Farmers Welfare.
- Dr. P.G. Patil, Director presented the achievements of CRP on Natural Fibre before Secretary DARE & DG ICAR, Secretary ICAR, Financial Advisor, DARE on March 23, 2017 at Krishi Bhawan, New Delhi.
- Dr. P.G. Patil, Director, presented the combined SFC (CIRCOT & NIRJAFT) before Secretary DARE & DG ICAR, Secretary ICAR, & Financial Advisor, DARE on March 29, 2017 at Krishi Bhawan, New Delhi.



## 117<sup>th</sup> IRC Meeting

The 117<sup>th</sup> Institute Research Council (IRC) Meeting was held under the chairmanship of Dr. P.G. Patil, Director, CIRCOT on March 20, 2017. Dr. G.S. Nadiger, Consultant, SASMIRA & RAC Member, Dr. P.V. Varadharajan, former Principal Scientist, CBPD and Dr. G.R. Anap, International Ginning Consultant were invited as the external experts during the deliberations. A brief presentation was made on the SFC document of the institute for the three year period 2017-20 highlighting the activities to be undertaken by the institute in the next three years. During the IRC meeting the progress of 13 institutionally funded projects and 9 externally funded projects (including CRP on Natural fibres) were reviewed. There were seven new project proposals received from the scientists and deliberated upon in the meeting.



The 117<sup>th</sup> IRC meeting in progress on March 20, 2017

## Publications

- P.K. Mandhyan, P.G. Patil, K. Sankaranarayanan, R.M. Gurjar, S.V. Ghadge and R.P. Nachane (2016), Cotton value chain, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 17-35.
- P.K. Mandhyan, P.G. Patil, S.V. Ghadge and G.T.V. Prabhu (2016), Present Status and Requirement of Quality Cotton, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 36-39.
- V.G. Arude, S.K. Shukla, P.G. Patil and P.S. Deshmukh (2016), Adoption of Rotary Knife Roller Ginning Technology for Indian Cotton, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 40-45.
- S.V. Ghadge, P.G. Patil, S.K. Shukla, V.G. Arude, A.K. Bharimalla, C. Sundaramoorthy, P.S. Deshmukh and P.K. Mandhyan (2016), Performance Evaluation of Trash Analyzer and Opener Blender for Preparing Cotton Lint Samples for Fibre Quality Testing, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 46-48.
- A.K. Bharimalla, S.P. Deshmukh, P.G. Patil, V. Prasad and N. Vigneshwaran (2016), Production of Nanocellulose from Cotton Linters & its Application for Reinforcement in Paper, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 49-54.

- V. Prasad, S.R. Kawlekar, C.R. Raje and R.M. Gurjar (2016), Sodium Dihydrogen Orthophosphate Mediated Non-formaldehyde Durable Press Finishing of Cotton Textiles Using Combination of BTCA and CA, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 55-61.
- V. Prasad, C. Sundaramoorthy, Sudha Tiwari, M.G. Ambare and P.G. Patil (2016), Chemical Sensors for Developing Bio-Sensing Textiles for Health Monitoring, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 62-66.
- Arputharaj, S. Saxena, A.S.M. Raja, S.R. Kawlekar and P.G. Patil (2016), Atmospheric Pressure Plasma Assisted Process for the Processing of Denim Materials, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 67-70.
- Manoj Kumar, Anil Dahuja, Archana Sachdev, Charanjit Kaur, Eldho Varghese, Supradip Saha and K.V.S.S. Sairam (2016), Extraction of Natural Dye from Black Carrot as a Function of Colour Density Using Response Surface Methodology for Dying Cotton Fabric, *Cotton Res. Journal*, Vol. 7 (1), January-June-2016, 71-74.

## MoU Signed

A MoU was signed with Shri. Rupesh Babanrao Malvande, a farmer from village Sarveshree Nagar, Dighori, Nagpur for providing technical assistance in chipping of cotton stalks on March 21, 2017.

## Awards / Recognition

- Institute bagged “Cashless Institute Award” and received by Dr. P.G. Patil, Director at the hands of Shri Radha Mohan Singh Hon'ble Union Minister for Agriculture & Farmers Welfare, New Delhi.
- Mrs. Tereza T. Dsouza, Personal Assistant, MPD won medals in 800 m run, 5000 m walk, at the 37<sup>th</sup> National Masters Athletic Championship 2017 at Nashik during March 24-26, 2017; Juhu Half Marathon on March 5, 2017; Pennant Kalyan Dombivali Marathon on March 12, 2017 and Spirit of Sports Marathon at Goregaon on March 19, 2017.



## App

An app has been developed for providing information on various services rendered by the Institute for its clientele.

## Promotion

Shri. S.A. Telpande, Assistant, GTC, Nagpur was promoted as Assistant Administrative Officer and posted at ICAR-CIRCOT, Mumbai with effect from March 9, 2017.

## Obituary

Dr. N. B. Patil, Former Director, ICAR-CIRCOT left for heavenly abode on March 22, 2017. He had joined the Institute on August 4, 1969 and superannuated on December 31, 1994. All CIRCOT fraternity prayed for peace to the departed soul.



## 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

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

S.No.	Title of Training	Period	Fees (Rs) (excluding Service tax)
1	Instrumental Evaluation of Clothing Comfort	15-19 May, 2017	50,000
2	Value addition to Cottonseed	22-24 May, 2017	12, 000
3	Absorbent Cotton Technology	02-04 Aug., 2017	15, 000
4	Advances in Applications of Nanotechnology	11-15 Sept., 2017	25,000
5	Quality Evaluation & Spinning performance of Indian Cottons using Advanced Techniques	20-22 Sept., 2017	10,000
6	Spinning of Technical Yarn	05-07 Oct., 2017	10,000
7	Basic Statistical Techniques for Textile Research	15-17 Nov., 2017	6,000
8	Characterization of Materials Using X-Ray Diffractometer (XRD)	19-21 Dec., 2017	30,000
9	Advances in Microscopy	16-18 Jan., 2018	15, 000
10	Electrospinning Technologies & their Applications	23-25 Jan., 2018	10,000
11	Fibre Reinforced Composite	07-09 Feb., 2018	10,000
12	Quality Evaluation of Cotton	22-26 May, 2017 24-28 July, 2017 07-11 Aug., 2017 11-15 Sept., 2017 23-28 Oct., 2017 20-24 Nov., 2017 29 Jan.-. 2 Feb, 2018 19-23 Feb., 2018	10,000
13	Double Roller Ginning Technology & Basics of Cotton Grading, GTC, Nagpur	17-22 April, 2017 22-27 May, 2017 19-24 June, 2017 10-15 July, 2017 07-12 Aug., 2017 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
14	Customized training programme for students & academia*	Two days (Dates can be finalized as per the requirement)	2,000
15	Customized training programme for students & academia*	One day (Dates can be finalized as per the requirement)	1,000

## Contact detail

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)