



## From Director's Desk



The area under the cotton crop is pegged at 12.2 million hectares during 2017-18. The cotton production estimates were revised to around 375 lakh bales, due to the impact of pink bollworm attack in the major cotton growing areas of Maharashtra and Andhra Pradesh. The increased acreage under cotton has resulted in production of enormous amount of biomass.

The cotton stalks production is estimated to be around 30 million tonnes in the current season. The density of cotton stalks are lower and causes serious air pollution due to lower burning rate. If these stalks are densified into briquettes or pellets, the combustion performance is significantly improved and also convenient for transportation and storage. The gross calorific value of the cotton stalks is about 4000 kcal/kg and it can be used as substitute for firewood, coal etc. The densified stalks in the form of briquettes and pellets can be used for industrial as well as domestic purposes such as biomass power plants, industrial boilers, residential area heating etc.

Skill development is very important to develop entrepreneurship and therefore CIRCOT has organized such programmes viz. Knitting and Knit Garments and Advances in Microscopy during January 10-12 and January 16-18, 2018, respectively. Young entrepreneurs, academicians, scientists and persons from private sector are requested to take benefit of these programmes.

I take this opportunity to wish all the readers and the stakeholders a "Happy and a Prosperous New Year 2018".

**P. G. Patil**  
Director

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## Special News

### ICAR-CIRCOT celebrated 94<sup>th</sup> Foundation Day and Krishi Shiksha Diwas

The 94<sup>th</sup> Foundation day of ICAR-Central Institute for Research on Cotton Technology, Mumbai was celebrated along with *Krishi Shiksha Diwas* on December 3, 2017. Many dignitaries from other ICAR institutes, State Agricultural Universities, former directors of the institute and present as well as retired employees along with their families attended the programme.

Dr. P. G. Patil, Director, ICAR-CIRCOT welcomed the gathering and briefed about the importance of *Krishi Shiksha Diwas* and acknowledged the contributions of ex-employees of the institute including former Directors and Heads of Divisions. The saga of development over past 94 years was narrated highlighting the role and achievements of the institute in cotton sector, which provides jobs to millions of people in the country.

The special occasion was graced with the presence of eminent personalities such as Dr. Shankarrao Magar, Hon'ble Ex. Vice-Chancellor, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth (Dr. BSKKV), Dapoli; Dr. Tapas Bhattacharya, Hon'ble Vice-Chancellor, Dr. BSKKV, Dapoli; Dr. Gopal Krishna, Director/Hon'ble Vice-Chancellor, ICAR-CIFE, Mumbai and Dr. V. V. Singh, Head, CMFRI, Mumbai. While addressing the audience, chief guests highlighted about the importance of agriculture education, need for quality improvement and value addition in agriculture and emphasized on the need of group farming in doubling the farmers' income.




Inauguration of Foundation day programme by lighting of lamp



Dr. P. G. Patil, Director, ICAR-CIRCOT addressing during 94<sup>th</sup> Foundation Day

### ISO 9001:2015

Bureau of Indian Standards has awarded the latest certificate to ICAR-CIRCOT for its Quality Management System as per ISO 9001:2015 for three years up to June 11, 2020 based on the external audit conducted on September 7-8, 2017 and CIRCOT became one of the few institutes in ICAR to get this certificate.



**भारतीय मानक ब्यूरो**  
**BUREAU OF INDIAN STANDARDS**  
 गुणवत्ता प्रबंध पद्धति प्रमाणन लाइसेंस  
LICENCE FOR THE QUALITY MANAGEMENT SYSTEMS CERTIFICATION

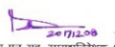
लाइसेंस सं. क्वएम/एल-7004111.1  
 Licence No. QM/L- 7004111.1

1. भारतीय मानक ब्यूरो अधिनियम, 1986 (1986 का 63) द्वारा प्रदान की गई शक्तियों के अन्तर्गत, ब्यूरो  
 By virtue of the power conferred on it by the Bureau of Indian Standards Act, 1986 (63 of 1986), the Bureau hereby certifies to:



<p>आयसीएआर - सेंट्रल इन्स्टिट्यूट फॉर रिसर्च ऑन कॉटन टेक्नोलॉजी                  अडेनवाला रोड, माटुंगा                  मुंबई - 400 019</p>	<p><i>ICAR - Central Institute for Research on Cotton Technology                  Adenwala Road, Matunga                  Mumbai - 400 019</i></p>
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3. यह लाइसेंस 20 सितंबर 2017 से 11 जून 2020 तक वैध होगा और इसका विनियमों के अनुसार नवीकरणात्मक किया जा सकता है।  
 This licence shall be valid from 20 September 2017 to 11 June 2020 and may be renewed as prescribed in the Regulations

सन् दो हजार सत्रह के दसम्बर माह के आठवें दिन हस्ताक्षरित एवं मुद्रित।  
 Signed, Sealed and dated this Eighth day of December Two Thousand Seventeen

  
 वी.एस.एन.राव, उपाध्यक्षनिदेशक (ए.)  
 B. S. N. Rao, D.D.G.W.  
 भारतीय मानक ब्यूरो के लिए  
 for BUREAU OF INDIAN STANDARDS

NOTE: Last operative period of the licence was from 12/06/2014 to 11/06/2017.

पत्रांक III (विनियम 7 (1) D (4) (ब))  
 Form III (Lic Regulation 7 (1) D (4) (b))  
 MSC-PW-4-12

BIS certification issued to ICAR- CIRCOT



## Events

### Inauguration of PME Cell and Gymnasium

The Sports Centre and Gymnasium of ICAR- CIRCOT were inaugurated by Hon'ble Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR on December 24, 2017. Hon'ble Justice Shri B. Sudarshan Reddy (Retd.), Supreme Court of India and Shri Vikas Deshmukh, Secretary to ADF, Government of Maharashtra were present during the occasion.

The Priority-setting, Monitoring and Evaluation Cell of the institute was inaugurated by Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR in the presence of Dr. Gopal Krishna, Director, ICAR-CIFE, Mumbai.



Inauguration of gymnasium by Dr. T. Mohapatra, DG, ICAR



Inauguration of PME Cell by Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR

### Hindi Workshop at ICAR-CIRCOT, Mumbai

With an objective of promoting the use of Hindi as official language and create awareness about the Official Language Act and amendments along with rules and regulations; a workshop was held for the staff of CIRCOT at Jubilee Hall on December 16, 2017. Mr. Prince Grover, Hindi Translator, Nuclear Power Corporation of India Limited and renowned writer was the guest speaker. The workshop focused on more usage of Hindi as an official language and basic learning tips on grammar.



Mr. Prince Grover delivering talk during Hindi Workshop

### Lecture Series

ICAR-CIRCOT and Indian Fibre Society jointly organized lecture series on "Pink Bollworm Management in Cotton-A Multi Stake holder Approach" by Shri Sudhir P. and "Effect of GST on Cotton Value Chain and Textiles" by Shri. Jayesh Gogri on December 18, 2017 at Jubilee Hall of the institute. The lectures were attended by the stakeholders and the scientific & technical staff of the institute.



Lecture Programme at ICAR- CIRCOT on December 18, 2017



## Technology Insight

### Solvent extraction process for low gossypol cottonseed flour for edible/poultry feed purposes

Cottonseed is a rich source of oil and protein. Cottonseed oil is used for edible purposes but protein present in the cottonseed cake or meal is used for ruminant feed only as it contains a pigment gossypol which is toxic to non-ruminants and humans. This pigment is present in free as well as bound form in protein rich kernels of the cottonseed. Free form is toxic but there is a possibility of bound gossypol being converted to free form hence the total amount of gossypol needs to be considered in determining suitability of meal for feed purposes.

Solvent extraction process was attempted to reduce gossypol from the common Bt varieties with total gossypol content of 1.84% and free gossypol content of 0.55%. It was observed that extraction using acetone-water followed by mechanical shaking was most effective in gossypol extraction. Total and free gossypol contents of the extracted kernels were reduced to 0.55% and 0.015% respectively which were well within the prescribed limits for their use as edible flour (1.2% for total and 0.06% for free gossypol respectively) by the Bureau of Indian Standards (IS4876: 1986 reaff. 2015). Protein and lysine contents of the extracted kernels were 38% and 0.99% respectively. Extraction of defatted, powdered kernels under similar conditions resulted in total and free gossypol content of 1.25% and 0.04% and protein and lysine contents of 51% and 1.11%, respectively. Solvent extraction process produced light yellow colored powder.



1. Cottonseed kernel powder



2. Cottonseed powder extracted with acetone



3. Cottonseed powder extracted with acetone- water



4. Cottonseed powder extracted with ethanol

## Visits

### Director's Visit

Director, ICAR-CIRCOT visited Athpadi, Dist. Sangli, Maharashtra to select site for installation of ICAR flexi rubber dam during December 27-29, 2017.

### Delegates' Visits to the Institute

Participants of the AICTE sponsored one week QIP programme on Sustainable Textiles: Production and Applications organized by the Department of Textile Manufactures, VJTI, Mumbai visited the institute on December 21, 2017. They were apprised of various activities of CIRCOT and were shown the nanocellulose pilot plant facility. The visit was coordinated by Dr. Sujata Saxena, Principal Scientist & Head I/C, CBPD who also delivered a lecture titled "Application of Natural Dyes and Sustainability Issues" to the trainees.



Group Photo of participants & VJTI coordinators



Participants being explained about various exhibits in exhibition room



## Students' Visits

- Ten students from College of Agricultural Information Technology, Anand Agricultural University, Gujarat visited ICAR- CIRCOT on December 27, 2017. Dr. R. Guruprasad briefed them about institute and toured them to MPD and YT section to explain about fiber to yarn conversion process.



Students from College of Agricultural Information Technology, Gujarat at ICAR- CIRCOT

- Thirty-five students from Central Agricultural University, Imphal, Sikkim visited ICAR- CIRCOT on December 28, 2017. They were briefed about national and international cotton scenario, history and contribution of CIRCOT in the field of cotton. The students were shown the processing and testing facility of the institute.



Students from Central Agricultural University, Imphal, Sikkim at ICAR-CIRCOT

## Farmers' Visit to GTC, Nagpur

Under Chief Minister's Khet Thirth Yojana, thirty women farmers from Mandala, Madhya Pradesh visited Ginning Training Centre, Nagpur on December 27, 2017. Dr. S. K. Shukla, Officer I/C, GTC, Nagpur explained the farmers about various

activities undertaken at the centre. The farmers were elucidated about ginning, utilization of cottonseed and cotton stalks. Er. Varsha Satankar, Scientist, GTC briefed about compost preparation and mushroom cultivation using Agro-residues.



Women farmers from Mandala Dist. Madhya Pradesh at GTC, Nagpur

## Foreign Deputations

- Dr. C. Sundaramoorthy, Senior Scientist, ICAR-CIRCOT made an expert presentation on "Priority Cotton By-product Activities for Development" in the National Capacity Building Workshop organized by United Nations Conference on Trade and Development (UNCTAD) at Lusaka, Zambia under the UN Development Account project 'Promoting cotton by-products in Eastern and Southern Africa' during December 6-8, 2017.



Dr. C. Sundaramoorthy in the National Capacity Building Workshop at Lusaka, Zambia



- Dr. P. S. Deshmukh, Senior Scientist, ICAR-CIRCOT visited Benin to assess the condition of the Regional Knowledge Cluster cum- Training Centre on post-harvest and ginning technology established in the premises of CRA-CF INRAB at Bohican, Benin under Cotton Technical Assistance Programme (TAP) for Africa as an initiative of Government of India under the aegis of India-Africa Forum Summit (IAFS-II). This facility was created with the technical expertise of ICAR-CIRCOT. An expert team comprising of Dr. P. S. Deshmukh, Senior Scientist, ICAR-CIRCOT and two members from ILFS Cluster visited the Regional Knowledge Cluster cum-Training Centre, Benin during December 17-23, 2017 to take necessary actions to make it operational. The team also had interaction with officials of CRA-CF INRAB.



Dr. P. S. Deshmukh at CRA-CF INRAB, Bohican, Benin

## Meetings

### NABL Audit ISO/IEC17025:2005

The National Accreditation Board for Testing and Calibration Laboratories (NABL) conducted the NABL reassessment audit for ISO/IEC17025:2005 accreditation of ICAR-CIRCOT on December 23-24, 2017. Dr. G. S. Nadigar, Lead & Technical Assessor for chemical testing and Mrs. Ashwini Anil Sudam, Technical Assessor for mechanical testing, conducted audit in Quality Evaluation and Improvement, Mechanical Processing, Chemical & Biochemical Processing Divisions and Test House, which come under the scope of NABL. The assessors expressed satisfaction over reliability of testing and recommended the renewal of accreditation as per ISO/IEC 17025:2005.

## Review of Project titled “Technology for Currency Grade Pulp”

Dr. T. Mohapatra, Secretary DARE & DG, ICAR, New Delhi reviewed the progress on commercialization of “Technology for Currency Grade Pulp” in the Conference Hall of ICAR-CIRCOT, Mumbai on December 24, 2017. The progress of the work was presented by Dr. N. Vigneshwaran, PI followed by inputs from all the Co-PIs. The outcome of the visit made by the ICAR-CIRCOT team to the Bank Note Paper Mill India Private Limited (BNPM), Mysuru was discussed in detail. Dr. Mohapatra has appreciated the efforts being taken by ICAR-CIRCOT for commercialization of the technology and insisted for faster delivery of the results.



Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR reviewing the project titled “Technology for Currency Grade Pulp”

## Awareness Programmes

### Mera Gaon Mera Gaurav (MGMG)

An awareness-cum-demonstration programme on “Pink Boll Worm and Cotton By-products Utilization” was organized by Ginning Training Centre of ICAR-CIRCOT, Nagpur at Satoda village of Wardha district on December 20, 2017 under Mera Goan Mera Gourav (MGMG) scheme. Er. Varsha Satankar, Scientist, Er. D. U. Patil, Chief Technical Officer from ICAR-CIRCOT, Dr. M. S. Kairon, Former Director, ICAR-CICR, Nagpur and Shri G. H. Wairale, President Agro-Plus Foundation, Nagpur were present in the programme. Farmers were briefed and demonstrated about ICAR-CIRCOT technologies



on value addition to cotton by-products such as compost preparation, mushroom production, pellets and briquettes preparation in order to generate additional income for sustainable livelihood. The expert team visited the cotton fields and explained in detail about the causes and remedies of Pink Boll worm attack. Farmers were advised to opt for crop rotation and early maturing cotton varieties. The team also discussed about marketing of cotton to fetch better price. The village development officer and agricultural assistant were also present during the programme.

using various mordanting and dyeing techniques was given to the students. Students expressed their desire to make portfolio garments from natural dyed textiles with support from ICAR- CIRCOT.



**Dr. Sujata Saxena, Head (I/C), CBPD, delivering lecture to the participants**



**MGMG Programme at Village Satoda, Wardha**



**Experiments on dyeing of cotton with manjishtha**

## Workshop

### Workshop on Dyeing of Cotton with Natural Dyes

One day workshop on “Dyeing of Cotton with Natural Dyes” were organized for second year students of Dress Design and Garment Manufacturing Department of Sophia Polytechnic, Mumbai in two batches on December 7 & 8, 2017. Thirty three students along with the Head of the Department, Dr. Jignasa Shah participated in the workshop. Dr. Sujata Saxena, Principal Scientist & Head I/C CBPD delivered a lecture on natural dyes, chemical composition of dyes, application technique on textiles, principle of dyeing and color fastness properties. Hands- on- training on application of natural dyes viz. turmeric, berberin and manjishtha by

### Participation in Meetings/Events

- Dr. Hamid Hasan, Officer In-charge, ICAR-CIRCOT Regional Unit, Sirsa attended the **Mid Term Review meeting on December 12, 2017 at ICAR-CSSRI, Karnal** to review the ATR of the 24<sup>th</sup> Meeting of Regional Committee No. V held during October 3-4, 2016 at ICAR-IARI, New Delhi.
- Dr. Sujata Saxena, Principal Scientist & Head I/C, CBPD participated in the SEA- AICOSCA Cottonseed Conclave- 2017 at Ahmedabad on December 16, 2017 as an expert in the panel discussion on “Marketing Funda for Cottonseed Oil”.



## Human Resource Development

### ■ NABL Training at ICAR-CIRCOT

One day NABL accreditation awareness programme (including notification of Toys testing) was held on December 27, 2017 at ICAR-CIRCOT, Mumbai. The programme was jointly organized by National Accreditation Board for Testing and Calibration Laboratories, New Delhi; Indian Rubber Manufacturers Research Association (IRMRA), Thane and ICAR-Central Institute for Research on Cotton Technology, Mumbai. The objective of the programme was to acquaint the trainees about NABL accreditation and toys testing methods. Forty participants from different NABL accredited laboratories attended the training programme. Fourteen staff members from ICAR-CIRCOT participated in this training program



**NABL Training at ICAR- CIRCOT on December 27, 2017**



### **Participants of NABL training at ICAR- CIRCOT**

Smt. Prachi Mhatre, In-Charge, Library & Smt. Medha Kamble, Senior Technical Assistant attended one day training-cum-awareness workshop on J-Gate@CeRA for Western region (Gujarat, Madhya Pradesh, Maharashtra, Goa, Chhattisgarh) at Central Institute of Fisheries Education, Mumbai on December 23, 2017.

## Publication

- Sujata Saxena, P. G. Patil, Sudha Tiwari and Charlene D'Souza. 2017. Cottonseed oil: Present status and future prospects (English and Gujarati). Book of Background Papers of the SEA- AICOSCA Cottonseed Conclave- 2017.
- Jagatheesan Krishnaswamy, T. Senthilkumar and R. Neelakandan. 2017. Development of breathable and liquid/microbes barrier woven surgical gowns for hospital usage. Indian Journal of Fibre & Textile Research, 42: 453-464.

## Personnel

### Promotion

- Dr. A. S. M. Raja, Senior scientist, CBPD has been promoted to Principal scientist (Textile Chemistry) with effect from June 15, 2016.
- Dr. N. Vigneswaran, Senior scientist, CBPD has been promoted to Principal scientist (Agricultural Microbiology) with effect from September 10, 2017.

### Obituary

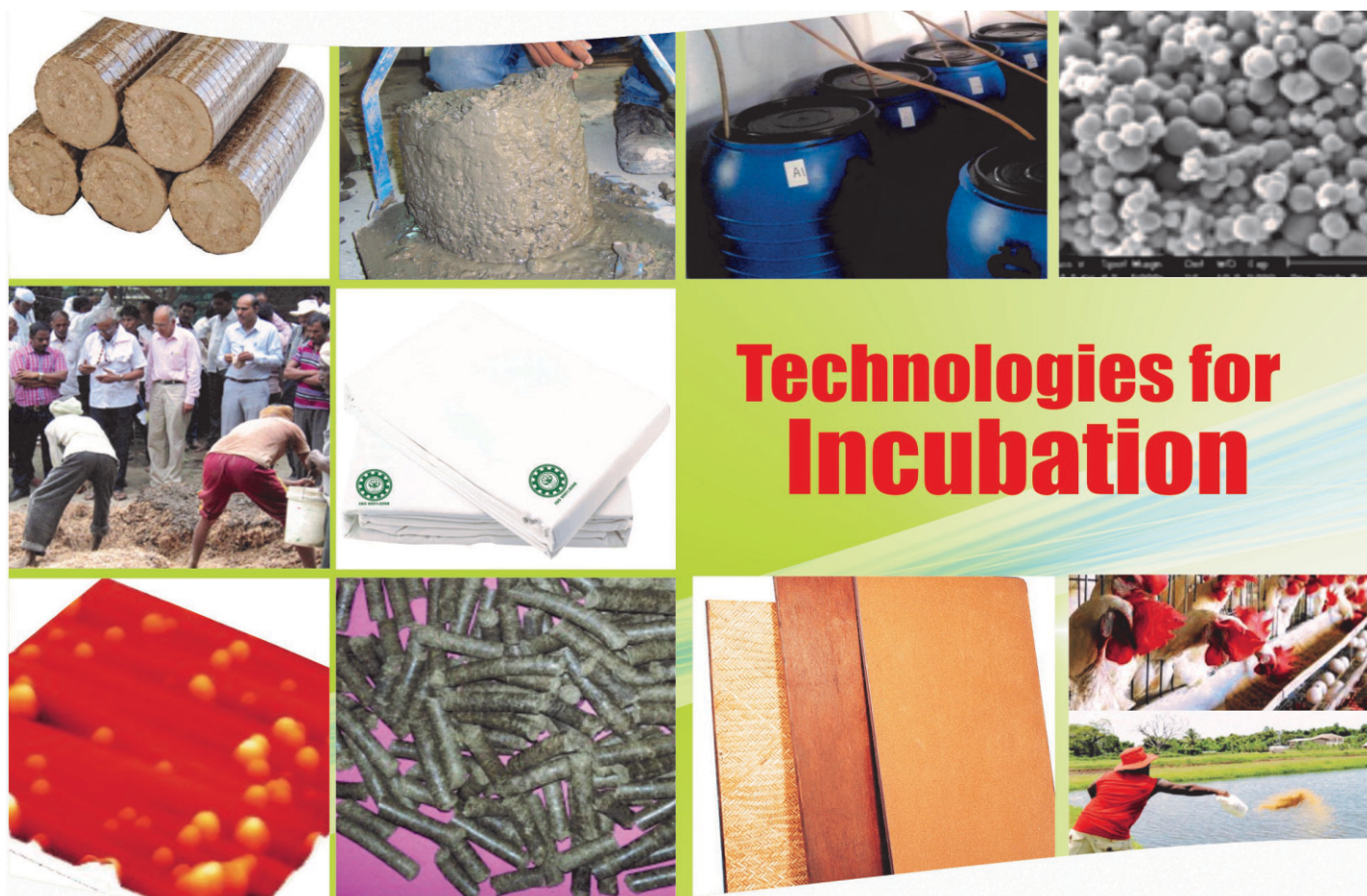
Shri B. R. Satam, ex-employee of ICAR-CIRCOT expired on December 12, 2017. He had joined ICAR on April 4, 1979 and worked as Skilled Supporting Staff in the institute. CIRCOT fraternity deeply mourned the sad demise and prayed for peace to the departed soul in the condolence meet.



## 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



## Technologies for Incubation



## Achievements of CIRCOT in Nanotechnology

- First Institute in ICAR to work on Nanotechnology, way back in 2004
- Commercialized Nano-ZnO production technology in 2007 to M/s. Anabond Chemicals, Chennai.
- Grants received from 2 NAIP projects ( World-Bank funded), 1 NFBSFARA project, 1 DST project and 2 CRP Projects for nanotechnology
- Two patents granted, four patents filed in nanotechnology applications in textiles and composites
- Nanocellulose pilot plant established in 2015 and inaugurated at the hands of Padma Vibhushan Dr. R.A. Mashelkar
- Organized Eleven training programmes in nanotechnology
- Two DPRs ( Detailed Project Reports) are available ( Nano-ZnO, Nano-Cellulose)
- Three Incubatees registered in ICAR-CIRCOT ABI
  - M/s. Green Glob, Mumbai for antimicrobial cotton bedsheets
  - M/s. GREYY, Mumbai for antimicrobial athletic/ leisure wear
  - M/s. TKML, Coimbatore for Nanocellulose application in spinning
- ICAR-CIRCOT represents ICAR in DST's Task Force under Nanomission to evolve a regulatory framework for Nanotechnology in India from 2010 onwards
- ICAR-CIRCOT represents ICAR in Inter-Ministerial Officials Working Group (IMOWG) of DST from 2015 onwards
- Two Young Scientist Awards (One in 2007 from Association of Microbiologists of India, another in 2014 from NASI-SCOPUS, ELSEVIER)



**Inauguration of Nanocellulose Pilot Plant by Padma Vibhushan Dr. R. A. Mashelkar**



**Nanocellulose Pilot Plant, Mumbai**



**Nanocellulose**



**Antimicrobial Cotton Bed Sheets**

**Antimicrobial athletic/ Leisure wear**

**Nanocellulose Products**



## 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	Knitting and Knit Garments	10-12 Jan., 2018	10, 000
2	Advances in Microscopy	16-18 Jan., 2018	15, 000
3	Electrospinning Technologies & their Applications	23-25 Jan., 2018	10,000
4	Fibre Reinforced Composite	07-09 Feb., 2018	10,000
5	Quality Evaluation of Cotton	29 Jan.- 2 Feb, 2018 19-23 Feb., 2018	10,000
6	Double Roller Ginning Technology & Basics of Cotton Grading, GTC, Nagpur	15-20 Jan., 2018 12-17 Feb.,2018	10,000
7	Customized training programme for students & academia*	Two days (Dates can be finalized as per the requirement)	2,000
8	Customized training programme for students & academia*	One day (Dates can be finalized as per the requirement)	1,000

### For more information please contact:

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