



A Monthly Insight into the ICAR-CIRCOT

E - News Letter

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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

Dr. S. V. Ghadge

Dr. Virendra Prasad



Director's Desk...

The current cotton price in the domestic front is higher due to the slow arrival of the cotton in the market impacted by the demonetization, despite the estimate of increased cotton production at 350 lakh bales in 2016-17.

At the Global front, the current season started with a large shrinkage in stocks, particularly from countries in the Southern Hemisphere, which saw ending stocks in 2015-16 fall by 21% to 1.6 million tons.

The cotton Stock to use ratio of the world (excluding China) is expected to increase from 50 to 53 per cent with the estimated consumption of 24.1 million tonnes as against the production of 22.8 million tonnes. According to International Cotton Advisory Committee (ICAC), the likely closing stock in 2016-17 is expected to be 17.9 million tonnes, as against the 19.3 million tonnes at the beginning of the season, causing a moderate pressure on cotton prices in second half.

Bangladesh is forecast to be the largest importer in 2016-17 followed by Vietnam and China. Substantial increases in exports are likely from the United States and Australia, which are expected to be the first and third largest exporters in 2016-17. Exports from the United States are forecast to rise by 31% to 2.6 million tons, and in Australia by 38% to 850,000 tons. However, exports from India, the second largest cotton exporter, are expected to fall by 29% to 891,000 tons.

P.G. Patil

ICAR-CIRCOT, Mumbai

Micro Fibrillated Cellulose (MFC) as furnish additive for kraft paper strength improvement

Micro fibrillated cellulose (MFC) extracted from cotton linters by bio-mechanical process has been evaluated as strength additive in unbleached kraft paper prepared by handmade paper machine. The z-directional tensile strength was found to improve on addition of the MFC. Integrating z-directional stress-strain curve, the inter-fiber bond strength (IBS) of the Kraft Paper with and without MFC was derived to be 120.658 J/m² and 29.165 J/m² respectively. Burst factor, which shows the tolerance of the material to pressure before it ruptures, significantly increased from 11 in case of control to 14 for addition of 10% MFC. Use of MFC helps to reduce the requirement of imported virgin pulp and acts as agro-biomass based renewable source of raw material.

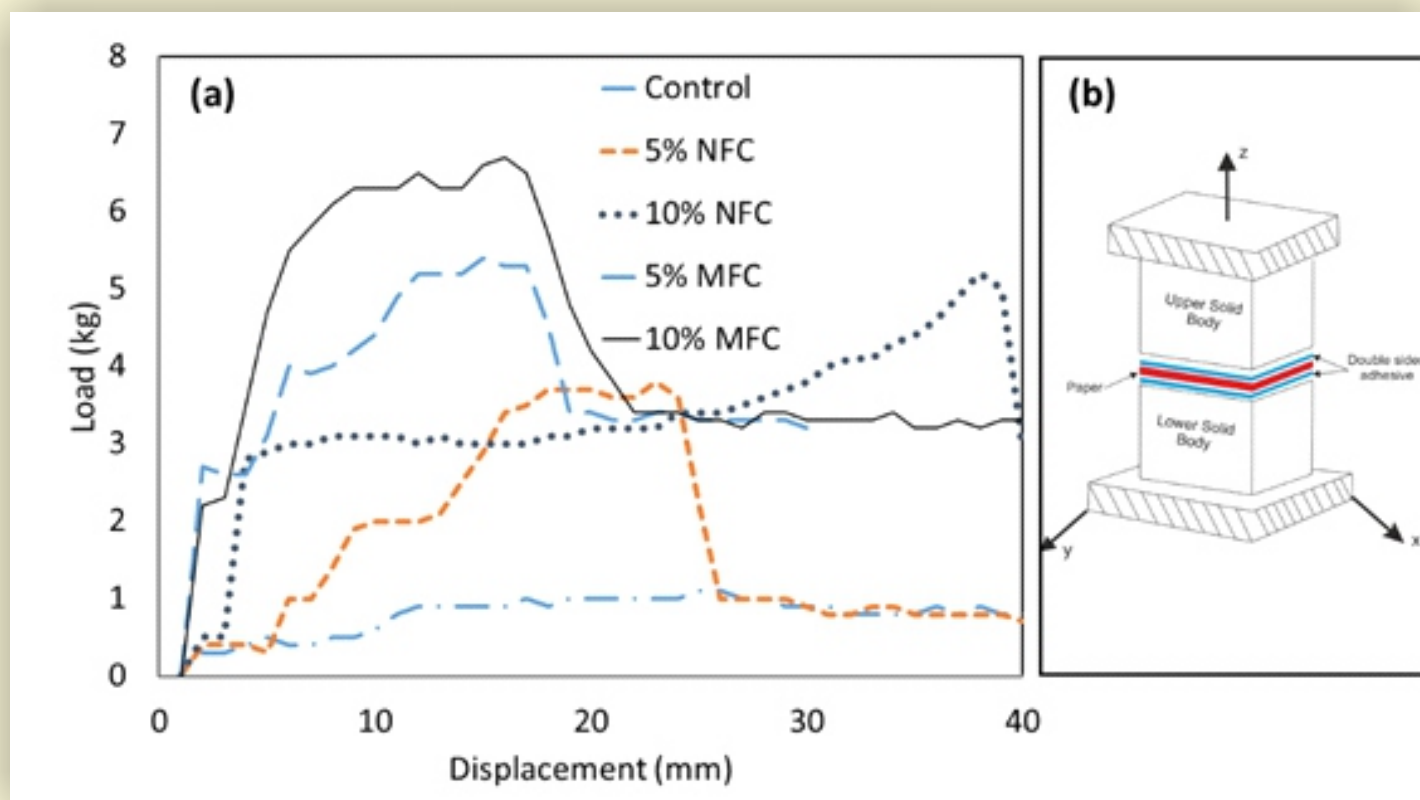


Figure: z-Directional tensile strength curves of MFC/NFC reinforced hand sheets (a) and its corresponding experimental setup (b).

Trainings

Specialized Training on Characterization of Materials using X-Ray Diffractometer (XRD)

A three day training programme on "Characterization of Materials Using X-Ray Diffractometer (XRD)" was conducted at ICAR-CIRCOT, Mumbai during 19-21 December, 2016. A total of 11 participants from educational and R&D institutions participated in this training programme. X-Ray Diffraction (XRD) is a high tech, nondestructive technique for analyzing a wide range of materials. The topics covered under the training included principles and types of XRD, which provided information on structures, phases, preferred crystal orientations (texture) and other structural parameters, such as average grain size, crystallinity, strain, and crystal defects. Hands on training of XRD testing was provided including preparation of sample, analysis of polymer materials and nano materials. The trainees were enlightened with the critical applications of XRD in diverse areas of science and technology including geology, environmental science, material science, engineering and biology.



Group photo of specialized training programme on
"Characterization of Materials Using X-Ray Diffractometer (XRD)" during 19-21 December, 2016

Events

Foundation Day & Krishi Shiksha Diwas

ICAR-CIRCOT celebrated its 93rd foundation day on December 3, 2016 along with Krishi Shiksha Diwas. Dr. V. M. Mayande, the former Vice Chancellor of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola was the chief guest on the occasion. Students from Sitaram Parikh High School, Wadala, Mumbai, were invited for the open day at the Institute and had a glimpse of the various Institute research activities, products and technologies developed. The students were also elucidated on the different career avenues available in the field of agriculture and allied sciences. The chief guest in his inaugural address highlighting major achievements of ICAR, emphasizing its contribution in bringing self-sufficiency in food grains, particularly in wheat and rice. However, he warned against any complacency, due to current levels of buffer stock of food grains which stand at 30-35 million tonnes against the consumption levels of about 20-25 million tonnes, as in the years to come India is projected to become the largest populated country in the world with the need for about 100 million tonnes of good quality food grains every year. He expressed concern about several challenges agriculture is passing through especially the lack of qualified manpower to apply scientific and technological knowledge. He encouraged educated people to come to agriculture for more growth in this sector and urged students to opt for agricultural education which has immense potential and has become lucrative like other sectors. He also highlighted the potential scope of other allied sectors like poultry, fisheries and dairy which along with agriculture is still a large employment provider with about 55% employment whereas much talked IT sector only provides hardly 2% employment.

Dr. P. G. Patil, Director, ICAR-CIRCOT acknowledged the contributions made by present and ex-employees of the Institute including former Directors and Heads of Divisions. The saga of development over the past 93 years was narrated highlighting the importance of the Institute in the cotton sector, which provides jobs to millions of people in the country. All the staff were asked to gear themselves for the future and achieve much more in the wake of challenging scenario ahead. Chief Guest Dr. V. M. Mayande gave away 'best employee' awards to the selected employees from amongst technical, administrative and supporting categories. He advised brainstorming for right direction in the future as the Institute starts preparing for the upcoming centenary celebrations in the year 2024. The programme ended with an enchanting cultural evening of music and dance.



Dr. V. M. Mayande, former Vice Chancellor of PDKV, Akola addressing during celebration of the 93rd Foundation day & Krishi Shiksha Diwas



Krishi Shiksha Diwas and the 93rd foundation day celebration of ICAR-CIRCOT on December 3, 2016



Students from Sitaram Parikh High School, Wadala, Mumbai Research laboratory on the occasion of Krishi Shiksha Diwas

Mera Gaon Mera Gaurav

Demonstration cum Awareness Programme

A one day demonstration cum awareness programme on preparation of bio-enriched compost and cultivation of oyster mushroom using cotton stalks was conducted under MGMG scheme at Amgaon village, Selu taluk, Wardha Dist on December 23, 2016. A group of experts from Ginning Training Center, Nagpur comprising scientists - Dr. V. Mageshwaran and Ms. Varsha Satankar and Technical Officers - Mr. U.D. Devikar and Mr. S.N. Hedau conducted the meeting. A large number of farmers actively participated in the programme. Dr. V. Mageshwaran addressed the farmers and insisted that cotton stalks generated in the field could be effectively utilized for preparation of compost and mushroom cultivation. He informed that from one acre of land, a cotton farmer can earn minimum of Rs. 2, 000/- if he prepares compost from stalks and Rs. 10, 000/- if he opts for oyster mushroom cultivation. Protocols involved in oyster mushroom cultivation and compost formations from cotton stalks were explained and demonstrated to the farmers.



Demonstration for preparation of different value added products from cotton stalks at Amgaon, Selu, Wardha

Awareness cum demonstration program on preparation of bio-enriched compost and oyster mushroom cultivation using cotton stalks was also conducted at Sirasgaon, Selu, Wardha on December 31, 2016. The ICAR-CIRCOT experts consisting of Dr. P. Jagajanantha and Dr. V. Mageshwaran and team of Technical Officers conducted the programme. A large number of famers along with Ms. Yogita Uike, Sarpanch, Mr. Aglawe, Thalati and Mr. S. C. Tinghse, Gram Sevak participated in the programme. Dr. V. Mageshwaran highlighted a number of viable technologies for effective utilization of cotton stalks generated in the field in order to increase farm income. Dr. P. Jagajanantha explained about the importance of clean cotton picking to have quality cotton. Demonstration for compost preparation and oyster mushroom cultivation using cotton stalks were shown among the participants.



Mera Gaon Mera Gaurav programme at Sirasgaon, Wardha on December 31, 2016

Swachh Bharat Abhiyaan

ICAR-CIRCOT conducts cleanliness drives every month under the Swachh Bharat Mission. A series of cleaning programmes were organized in the month of December 2016. The first cleaning programme was conducted on December 1, 2016 in the Chemical and Biochemical Processing Division (CBPD) where chemical bottles present in the basement of Dr. V. Sundaram building were cleaned and labeled appropriately.



Labelling of chemical bottles in CBPD under Swachh Bharat Abhiyaan on December 1, 2016

A cleaning programme was conducted on the same day at Quality Evaluation and Improvement Division (QEID), where waste cotton, plastic and partition boards present in the old test house of Dr. RLN Iyengar building were removed.



Cleaning of QEID test house under Swachh Bharat Abhiyaan on December 1, 2016



Visit of African Delegation

A team of African Delegation led by Mr. Mathias Knappe, Program Manager, Cotton Textiles and Clothing of the International Trade Centre, Geneva visited ICAR-CIRCOT on December 6, 2016.



African delegation in discussion with Dr. P.G. Patil, Director, ICAR-CIRCOT

Director's Visits

- Dr. P. G. Patil, Director, ICAR-CIRCOT along with Er. A.K. Bharimalla, Sr.Scientist visited village Mandwe, in Satara district for final inspection and selection of site for installation of ICAR-Flexi Check Dam at two different sites and held discussion with the Grampanchayat Members on the plan of work. Later they visited "Babasaheb Deshmukh Shetkari Soot Girni Maryadit, Atpadi, of district Sangli to see the Ginning and Spinning facility where they met the Managing Director & other officials and had discussion regarding Ginning & Spinning scenario of current season & assess the performance of calibration cotton as the firm is a regular user of CIRCOT Calibration Cotton. They visited Ujwal Texprints, Madhavnagar on 1st December 2016 to see different processing facilities to manufacture the antimicrobial bed sheets.
- Dr. P. G. Patil, Director, ICAR-CIRCOT visited ICAR-CCARI, Goa on December 8, 2016 to attend the discussion regarding use of degossypolised cottonseed meal to be used as feed component for non-ruminant animals like Pig, Fish and Poultry. During visit, he also visited the Pig Farm, Fishery Department and had discussion with Director and other scientists.

Student Visits

Two batches of Undergraduate students from DKTE Society's Textile and Engineering Institute, Ichalkaranji visited the Institute on December 3 & 5, 2016. Students visited Mechanical Processing Division, Fibre and Yarn Testing Sections of QEID and were briefed about the spinning process and testing methods for fibre and yarn. A demonstration programme was organized for them on fibre and yarn testing.



Students of DKTE Society's Textile and Engineering Institute, Ichalkaranji, Maharashtra in Mechanical Processing Division



Students of DKTE Society's Textile and Engineering Institute, Ichalkaranji, Maharashtra at Yarn Testing Section



Students of DKTE Society's Textile and Engineering Institute, Ichalkaranji, Maharashtra at Yarn Testing Section

Exhibitions

Technology Demonstrations & Exhibitions

- ICAR-CIRCOT, Mumbai participated in Vigyan Yagnya- 2016 organized at KJ Somaiya College of Science and Commerce, Vidyavihar, Mumbai on December 7, 2016 and displayed the technologies developed by the institute for the visitors.
- The ICAR-CIRCOT participated in the Maha Agro-2016 exhibition organized by Marathwada Sheti Sahayya Mandal during December 24-27, 2016 at Aurangabad. Shri Pandurang Phundkar, State Agriculture Minister and Shri Haribhau Bagade, Speaker of Maharashtra Assembly inaugurated the exhibition. Over 50,000 visitors including farmers, traders, students and entrepreneurs visited during the span of four days. The concluding ceremony was attended by Union Agriculture Minister Shri Radhamohan Singh and eminent water expert Dr. Rajendra Singh.



Vigyan Yagnya- 2016 at KJ Somaiya College of Science and Commerce, Vidyavihar, Mumbai on December 7, 2016

Vigyan Yagnya- 2016 at KJ Somaiya College of Science and Commerce, Vidyavihar, Mumbai on December 7, 2016



ICAR-CIRCOT exhibition stall at Maha Agro-2016 exhibition during 24-27 December 2016 at Aurangabad





Presentation and Participation in Conference / Seminar / Workshop

1. International Conference on "Climate Change Adaptation and Biodiversity: Ecological Sustainability and Resource Management for Livelihood Security" at ICAR-CIARI, Port Blair during 8-10 December 2016

- Dr. P.S. Deshmukh presented a paper on "*Arecaunt (Areca Catechu L.) Husk: From Present Environmental Hazard to Potential Wealth*" authored by P.S. Deshmukh, P.G. Patil, J.S. Dhekale, G.B. Bhanage, V.G. Arude, A.K. Bharimalla
- Dr. C. Sundaramoorthy presented a paper on "*Cotton Crop Residue Management: A Case for Climate Change Mitigation and Livelihood Security*" authored by C. Sundaramoorthy, P.G. Patil, S.K. Shukla

2. 3rd International Symposium on "Coconut Research and Development" held during December 10-12, 2016 at ICAR-Central Plantation Crops Research Institute, Kasaragod

- Dr. T. Senthilkumar presented a paper on "*Production of Fibrillated Coconut Fibre Reinforced Epoxy Composite*" authored by T. Senthilkumar, P. G. Patil, A. K. Bharimalla, C. Sundaramoorthy, Virendra Prasad, N. Vigneshwaran
- Dr. T. Senthilkumar presented a poster on "*Agri-Business Incubation Centre of ICAR-CIRCOT: An Opportunity for Sustainable Entrepreneurship*" authored by A. K. Bharimalla, P.G. Patil, N. Vigneshwaran, V.G. Arude, P.K. Mandhyan, C. Sundaramoorthy, B. R. Pawar, T. Senthilkumar

3. 44th Textile Research Symposium, jointly organized by IIT, New Delhi and Textile Machinery Society of Japan at IIT, New Delhi during 14-16 December 2016.

- Dr. R. Guruprasad presented a paper on "*Analysis of Sportswear Garments for Moisture Management Behaviour and other Performance Characteristics*" authored by R. Guruprasad, G. Krishna Prasad, T. Senthilkumar, V. Prasad and P.G. Patil

4. National Seminar on "Recent Advances in Textile Finishing" held at ICAR-CIRCOT, Mumbai on 17th December 2016 organized jointly by ICAR-CIRCOT and IFS, Mumbai

- Dr. A.S.M. Raja presented a paper on "*Mosquito Repellent Finishing*" authored by A.S.M. Raja, S. Kawlekar, Sujata Saxena, A. Arputharaj, and P.G. Patil
- Dr. N. Vigneshwaran presented a poster on "*Multifunctional Finishing of Cotton Fabrics using Nanomaterials*" authored by N. Vigneshwaran, V. Prasad, A. Arputharaj, A.K. Bharimalla, P.G. Patil
- Dr. Sujata Saxena presented a poster on "*Pesticide Protective Clothing – A New Application for Repellent Finished Fabrics*" authored by Sujata Saxena, R.S. Narkar, A. Arputharaj

5. International Conference on "Emerging Technologies in Agricultural and Food Engineering (ETAE 2016)" held during December 27-30, 2016 at IIT Kharagpur.

- Er. V.G. Arude presented a paper on "*Design of Single Locking Cotton Feeder for Double Roller Gin.*" authored by V.G. Arude, S.P. Deshmukh, S.K. Shukla, P.G. Patil
- Dr. P.S. Deshmukh, presented a paper on "*Engineering Properties of Arecanut Husk (Areca Catechu L) cv. Shreevardhini for Waste to Wealth Conversion*" authored by P.S. Deshmukh, P. U. Shahare, J.S. Dhekale, P.G. Patil, V.G. Arude and A.K. Bharimalla
- Er. V.G. Arude presented a poster on "*Ultra-high Pressure Homogenization Process for Production of Nanocellulose from Cotton Linters*" authored by A. K. Bharimalla, P.G. Patil, S.P. Deshmukh, N. Vigneshwaran, P.S. Deshmukh and V.G. Arude

6. International Symposium on “Chemical Engineering towards sustainable development chemcon” held at Chennai during 27 -30 December, 2016.

- Dr. T. Senthilkumar presented a paper on "*Preparation of Activated Carbon from Agro-waste*" authored by T. Senthilkumar, L. R. Miranda, P.G. Patil, P. Anand Kumar, M. Helen Kalavathi.

7. Dr. Sujata Saxena, Principal Scientist, attended the International Textile Conference on “Make in India-global vision of Indian Textile Industry” organized by The Textile Association of India during December 1-2, 2016

8. Dr. Sujata Saxena, Dr. A.S.M. Raja, Dr. T. Senthilkumar attended the International Conference on “Frontiers in Fibres, Textile & Apparel Processing (Tex Summit 2016)” organized by International Textile Machinery Exhibition 2016 and Institute of Chemical Technology on December 5, 2016 at Mumbai.

National Seminar on Recent Advances in Textile Finishing

ICAR-CIRCOT in collaboration with the Indian Fibre Society (IFS), Mumbai organized a National Seminar on “Recent Advances in Textile Finishing” on 17th December 2016 at the Jubilee Hall of the Institute. Dr. Kavita Gupta, IAS, Textile Commissioner, Govt. of India was the chief guest for the inaugural function. The seminar had three thematic technical sessions on *An Overview of Textile Finishing, Functional Finishing of Textiles and Application of Plant materials for Textile Finishing*. A total of fifteen oral and seven poster presentations were made on various aspects of textile finishing. This seminar was attended by more than 100 delegates from the country representing research organizations, academia, industry, policy makers and media.

Dr. P.G. Patil, Director, ICAR-CIRCOT in his welcome address stressed upon the importance of value addition to textile materials through functional finishing and appraised the audience about the research activities going on in the Institute in the development of fire retardant, durable anti-microbial cotton textiles and application of nano and plasma technology for textile finishing. Three publications *ICAR-CIRCOT – A Profile, Book of Papers* and *Souvenir* were released on the occasion.

Dr. Kavita Gupta in her inaugural address highlighted about the current scenario of Indian textile industry and the importance of value addition to textiles through finishing and emphasized upon being competitive in international as well as domestic markets. She also elaborated about the various schemes devised by the government for the benefit of industry as well as R & D in textiles and appealed the delegates to make use of them. President, IFS Dr. S.N. Pandey presided over the inaugural session and stressed upon the importance of textile finishing in various end uses. The chairman, IFS Dr. R.P Nachane highlighted the activities of the society and the secretary, IFS Shri R. M. Gurjar proposed the vote of thanks.

Events

National Seminar on “Recent Advances in Textile Finishing” on December 17, 2016 at the Jubilee Hall of the Institute



IMC Meeting

The 76th Institute Management Committee Meeting was held on December 06, 2016 under the chairmanship of Dr. P.G. Patil, Director, ICAR-CIRCOT. The confirmation of the proceedings of previous meeting and action taken report on the recommendations of the previous meeting were discussed. Er. V. G. Arude, Head In-charge, MPD presented the achievements of the Institute. The report on the official language implementation and proposal for approval of new items during 2016-17 under plan budget head were discussed in the meeting.



IMC meeting held in Dr. V. Sundaram Committee room on December 6, 2016

MoU Signed

- A MoU was signed on December 6, 2016 with M/s Bajaj Steel Industries Limited, Nagpur for Consultancy on “*Design and Manufacturing of Pre-cleaner, Double Roller Gin, Baling Presses and Feeding Systems*”.



MoU with M/s Bajaj Steel Industries Limited, Nagpur

- A MoU was signed with M/s Bloom Textile, Sivakasi, Tamilnadu for “*Development of Thermal and Bath Blankets Using Cotton And Biodegradable Polyester*” on December 19, 2016

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

Synthesis of nano-zinc oxide particle by novel chemical route

Energy efficient nanocellulose production technology

CIRCOT's Accelerated processing of cotton stalk for manufacture of compost

Gossypol reduction and nutritive quality improvement in cottonseed cake for its use in non-ruminants feed

Design and development of textile through computerized sampling facility with cad

Process for preparation of absorbent cotton

Briquetting and pelleting of cotton stalk

Agri-Business Incubation Activity: Industry Scale Trial

ICAR-CIRCOT technology of imparting antibacterial finish using insitu Nano ZnO treatment to fabrics was taken up for the industrial scale trial by M/s Ujwal Texprintes, Madhavnagar, Sangli (MH) for impregnation of nano-ZnO onto 5000m length of cotton fabrics to produce antimicrobial bed sheets. These finished fabrics are being marketed by M/s Green Globe, Mumbai, an incubatee of the Institute.



ICAR-CIRCOT team during scale up trial at M/s Ujwal Texprintes, Sangli (MH)

Roll of nano ZnO finished cotton bed sheet



Human Resource Development

- Scientists, Shri. Manoj Kumar, Ms. Sharmila Suresh Patil and Ms. Archana Mahapatra attended a training programme on Characterization of Materials using X-ray Diffractometer (XRD) from December 19 – 21, 2016 organized at ICAR-CIRCOT, Mumbai.



Awards



Awards & Recognition

- Dr. T. Senthilkumar received **Best Paper Award** for oral presentation of paper entitled "*Preparation of Activated Carbon from Agro-waste*" authored by T. Senthilkumar, L. R. Miranda, P.G. Patil, P. Anand Kumar and M. Helen Kalavathy at 69th Annual Session of Indian Institute of Chemical Engineers (CHEMCON 2016) held at A. C. college of Technology, Anna university, Chennai during December 27-30 2016.
- Er. P.S. Deshmukh received the **Best Paper Award** for his paper titled on "*Arecaunt (Areca Catechu L) Husk: From Present Environmental Hazard to Potential Wealth*" authored by P.S. Deshmukh, P.G. Patil, J.S. Dhekale, G.B. Bhanage, V.G. Arude, A.K. Bharimalla at the International Conference on "Climate Change Adaptation and Biodiversity: Ecological Sustainability and Resource Management for Livelihood Security" at ICAR-CIARI, Port Blair during December 8-10, 2016

Publications

- Souvenir of National Seminar on "*Recent Advances in Textile Finishing*" organized on 17th December 2016.
- Book of Papers of National Seminar on "*Recent Advances in Textile Finishing*" organized on 17th December 2016.
- Training manual on "*Characterization of Materials Using X-Ray Diffractometer (XRD)*" organized during 19-21 December 2016.



Promotion



- Dr. P.S. Deshmukh, Scientist has been promoted from RGP Rs.7,000 to RGP Rs.8,000 with effect from 20th March 2013.

Proposed activities for the year 2016-2017

Seminar/Conference/Industry Academia meet etc.

Name of the programme	Date
Technology Mela	March 1, 2017

Upcoming Events

Calendar of training cum-skill development programmes for the year 2016-17

S.No.	Title of Training	Period	Fees (Rs) (excluding Service tax)
1	Advances in Microscopy	Jan 16-18, 2017	15,000
2	Advances in Applications of Nanotechnology	Feb 6-10, 2017	25,000
3	Spectroscopic and Chromatographic Techniques for Material Characterization	Mar 1 - 4, 2017	15,000
4	Instrumental Evaluation of Clothing Comfort	Mar 6-10, 2017	50,000
5	Quality Evaluation of Cotton	Jan 9-13, 2017 Feb 20-24, 2017	10,000
6	Double Roller Ginning Technology & Basics of Cotton Grading, GTC, Nagpur	Jan 16-21, 2017 Feb 20-25, 2017	10,000



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; Ph: 022-24127273, Fax: 02224130835, Mob: 9702878249
 Details are available at our Website: 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

www.circot.res.in