



# ICAR-CIRCOT



## e-Newsletter

### Director's desk.....

**Dear Readers,**



*Cotton is a major commercial crop grown in India mainly for its fibre which is obtained after removal of seed during ginning process. Even though cottonseed is a good source of food, feed and other valuable products and contains about 18% oil and 25% protein it has not been given the importance it deserves.*

*In India, it is estimated that only 5-6 % of cottonseed is processed scientifically. Hence, efforts may be made to exploit the full potential of cottonseed. Our country is losing approximately Rs. 60 billion every year*

*due to non-adoption of scientific processing. It is possible to obtain better profit by scientifically crushing cottonseed and selling the by-products like linters, hulls, cake etc. The high cost of cotton cultivation appears non-remunerative considering only the price of lint. Therefore, the proposition of considering the crop as a composite one is highly rewarding to the industry and in turn to the farmers. I am proud to say that CIRCOT is the only institute who intervenes in all parts of cotton value chain. In this regard, CIRCOT plans to conduct a specialized training programme on "Scientific processing of cottonseed" for the benefit of all stakeholders in the month of November, i.e. Nov 10-14, 2014.*

*CIRCOT organized many events in the month of October, 2014. Hon'ble Dr. S. Ayyappan, Secretary (DARE) & Director General (ICAR), New Delhi visited Nanocellulose pilot plant of CIRCOT and appreciated the developments taking place in the institute. 'Swachh Bharat event' was organized in which all CIRCOTians actively participated to clean the institute premises. Further, I take this opportunity to congratulate all the staff members of the institute for bagging 'Rajbhasha' Awards from 'Aashirwad' for an excellent contribution to implementation and propagation of Hindi in the institute.*

*Dr. Alagusundaram has joined as DDG, Engineering. I on my personal behalf as well as on behalf of CIRCOT staff congratulate Dr. Alagusundaram and wish him all the best.*

**With best wishes**

**Dr. P. G. Patil**

**Director**

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# 1. Technology Highlights

## Durable UV Protection Finishing of Cotton Textiles using Plant Extracts

An eco-friendly process for durable UV protective finishing of cotton textiles using plant extracts of Harda (*Terminalia chebula*), Beheda (*Terminalia bellerica*) and pomegranate rinds (*Punica granatum*) has been developed. The process involves treatment of bleached cotton fabric with aqueous extracts of above plant materials at room temperature for 30 minutes with continuous shaking. The Fabric samples were then treated with alum for 30 minutes at room temperature with continuous stirring. Treated fabrics were washed and air dried. All the treated samples had a light yellow colour and showed excellent UV protection (UPF 50+). The finish was durable to 10 wash cycles equivalent to 50 home launderings and retained the excellent UV protection (UPF rating 50+). Colouration produced on the fabric was also fast to washing as indicated by good colour strength (K/S values).

## Regeneration of Fried Cottonseed Oil

A simple and efficient process for regeneration of fried cottonseed oil using a combination of adsorbents (aluminium oxide + silica gel + activated charcoal) through column chromatography has been developed. About 80% oil fit for reuse can be recovered. The colour value of the regenerated oil was found to be better than the fresh oil while peroxide value was almost same as that of the fresh oil. However, p-anisidine value was 23.7% and conjugated diene value was 16.0% higher than the fresh oil. The free fatty acid value of regenerated oil was about 29% higher than fresh oil and the totox value of regenerated oil which gives the overall quality of oil was very close to fresh oil. Hence, this technology could be used effectively for purification of waste cottonseed oil for reuse or for other applications like biofuel preparation.

## Development of Illustrative Fabrics for Fabric Handle Evaluation

Primary hand values established for shirting fabrics consisted of Koshi (stiffness), Numeri (smoothness), Fukurami (fullness) and Shari (crispness). Currently translating equations are used to arrive at primary hand values from low stress mechanical properties using regression equations which were developed using Japanese expert's opinion. In order to develop a model based on Indian consumer perception, process protocols are needed for subjective assessment of shirting fabrics. For subjective evaluation of fabric hand, exact meaning of primary hand values has to be conveyed to the consumers/participants by providing illustrative fabrics. As consumers do not have experience in grading, their consistency and reliability of results will be better if they use illustrative fabrics during rating. Sixty four shirting fabrics were evaluated for low stress mechanical properties using Kawabata fabric hand evaluation system. These low stress mechanical properties were used to arrive at primary hand values. After this, all the fabrics were categorized into three groups in order of feeling intensity as strong, medium and weak.

## 2. Training

### Training on 'Double Roller Ginning and Cotton Quality Evaluation'

Ginning Training Centre (GTC) of ICAR-CIRCOT, Nagpur organized a training programme on 'Double Roller Ginning and Cotton Quality Evaluation' during 29<sup>th</sup> Sep to 4<sup>th</sup> Oct 2014 for cotton ginners, traders and gin managers. Trainees from different parts of Maharashtra participated in this programme. A series of in-house and guest lectures on different aspects of cotton quality assessment, grading, cotton marketing, by-product utilization etc. were arranged during the training programme. Hands on training on gin settings, automation, stapling of cotton, etc. were also given. Industrial visits to M/s. Shri Bhagirath Textiles Ltd, Kalmeswar, Nagpur and M/s. Bajaj Steel Industries Ltd, Nagpur were organized for the trainees to get first hand experience about the process of ginning, spinning and machinery manufacturing. Dr. S. K. Shukla, Sr. Scientist and Officer In-charge, GTC, ICAR-CIRCOT was course coordinator of this training programme.



Distribution of certificates to the Participants

## 3. Events

### Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR visited CIRCOT

Hon'ble Dr. S. Ayyappan, Secretary, DARE & Director General, ICAR, visited Nanocellulose pilot plant of CIRCOT on 21<sup>st</sup> October, 2014. Dr. S. Ayyappan eagerly enquired about the purpose and functioning of various establishments like Pulper, Beater, Refiner, Screener, Homogenizer and Freeze Dryer in the pilot plant. Er. A. K. Bharimalla Senior Scientist and I/C Head, TTD explained about functioning of all machines in the pilot plant and he also explained about various applications of nanocellulose to the DG in the presence of Dr. P. G. Patil, Director CIRCOT, Mumbai. Dr. Ayyappan whole heartedly appreciated the developments. He also visited Exhibition cum visitors' room of CIRCOT. Dr. A. J. Shaikh, Emeritus Scientist & Former Director of CIRCOT was also present during DG's visit.



Visit of Dr. S. Ayyappan to Nanocellulose Pilot Plant, CIRCOT & Exhibition-cum-visitor's Room CIRCOT

## Experts committee meeting to finalize ICAR-CIRCOT Vision 2050 document

A meeting was organised to reviewed and revise the Vision 2050 document of CIRCOT on the 10<sup>th</sup> October, 2014. Dr. P. R. Roy Former Group Chief Executive (Textiles) of Arvind Mills Ltd and Chairman, Research Advisory Committee, Dr. R. P. Kachru Governing Body Member, ICAR & Former ADG (PE), Dr. S. Sreenivasan Former Director, CIRCOT, Dr. A. J. Shaikh Emeritus Scientist & Former Director, CIRCOT, Dr. R. H. Balasubramanya Former Emeritus Scientist, Dr. G.R. Anap, Cotton Ginning and Agribusiness Consultant, Shri Sundar Raj, General Manager, Bhadresh Trading Company, Shri Bharat Desai, Senior Executive Vice President, Reliance industries ltd, Shri Avinash Mayekar, MD & CEO, Suvin Advisors Pvt Ltd, Mr.UlhasNimkar, CEO, NimkarTek Textiles

Services, Dr.R.P.Nachane Former Head QEID CIRCOT, attended the meeting and participated in the deliberations. At the outset Dr. P. G. Patil, Director welcomed all the members and made a brief presentation on the Vision 2050 document prepared by the institute and requested all the honourable members to give their comments and suggestion for improvement. All the members gave their valuable inputs on the challenges, operating environment in 2050 and ways and means to face the challenges. In the light of the various suggestions and recommendations the Vision 2050 was revised to achieve the goals and targets of Vision 2050 of CIRCOT. Dr. N. Shanmugam, Senior Scientist & I/C Head QEID proposed the vote of thanks.



Experts are discussing about CIRCOT Vision 2050

## Fifth meeting of Nanocellulose Expert Committee

The fifth Nanocellulose Expert Committee meeting was held on 11th October, 2014 at the Dr. V. Sundaram Committee Room, CIRCOT. Dr. P. G. Patil, Director, CIRCOT chaired the meeting. Dr. R. P. Kachru, Governing Body Member & Former ADG (PE), Dr. S. Sreenivasan, Former Director, CIRCOT, Dr. A. J. Shaikh, Emeritus Scientist & Former Director, CIRCOT, Dr. M.S. Banerji, Former Director, IRMRA, Mumbai, Dr. S. P. Deshmukh, Associate Professor, ICT, Mumbai and other CIRCOT Staff attended the meeting. Dr. P. G. Patil welcomed all the members and Dr. N. Vigneshwaran & Er. Ashok Kumar Bharimalla apprised them about the various activities regarding installation of the pilot plant. The committee also visited the pilot plant and saw the operation of various machines. During the visit the committee made important suggestions so that the pilot plant becomes operational within stipulated time frame.



Dr. R. P. Kachru visiting the Pilot Plant



## Swachh Bharat Abhiyan at ICAR-CIRCOT, Mumbai

On the eve of the Swachh Bharat Abhiyan, a National level campaign of the Government of India, launched by the Honourable Prime Minister of India, Shri Narendra Modi on 2<sup>nd</sup> Oct 2014 which is birth anniversary of Rashtra Pita Mahatma Gandhi ji, ICAR-CIRCOT organised a 'Swachh Bharat event', in which all the employees took part enthusiastically. Dr. P. G. Patil, Director, CIRCOT briefed all the employees about the event and emphasized the importance of maintaining the cleanliness in the institute and the surroundings. On this occasion all the employees of the institute took the pledge to contribute 100 hours per year and 2 hours per week towards cleanliness. Around 200 staff members participated in the event and cleaned the premises of the institute. Similar events were organized at GTC Nagpur of CIRCOT and other Regional stations of CIRCOT.



CIRCOT staff during cleaning the CIRCOT premises

## Vigilance Awareness Week at ICAR-CIRCOT

“Vigilance Awareness Week” was observed in the CIRCOT, Mumbai during 27<sup>th</sup> October to 1<sup>st</sup> November 2014. All the employees of CIRCOT took the pledge on 27<sup>th</sup> October to fight against corruption and bring integrity and transparency in all the activities of the institute. Shri Alok kumar Deputy SP, Anti corruption of CBI, Mumbai delivered a lecture on the theme of this year's vigilance Awareness week i.e. “Combating Corruption - Technology as an enabler”. 'Vigilance Awareness Week' was also observed at GTC, Nagpur.



Shri Alok kumar delivering the lecture

## National Unity Day at ICAR-CIRCOT

National Unity Day was observed at CIRCOT, Mumbai on 31<sup>st</sup> Oct 2014 on the occasion of birth anniversary of Sardar Vallabh Bhai Patel, revered freedom fighter, Iron man of India and the first Home Minister of our country. CIRCOT staff took 'National Unity Day Oath' for maintaining unity, integrity and security and safety of our country. National Unity Day was also observed at GTC, Nagpur of CIRCOT on 27<sup>th</sup> Oct 2014.



CIRCOT staff are taking the oath on National Unity Day

## Dr. P. G. Patil, Director, ICAR-CIRCOT, Mumbai visited the GTC, Nagpur

Dr. P. G. Patil, Director, CIRCOT, Mumbai visited the GTC, Nagpur, on 16<sup>th</sup> Oct, 2014 to take stock of research, training and extension activities at GTC. He discussed in detail about the various activities with the staff of the centre and encouraged them to work hard to transfer the lab research to the field. Dr. S. K. Shukla, Officer In-charge felicitated Dr. P. G. Patil on assuming the charge as I/C Director and briefed him about the progress and status of research, training and extension activities being carried out at the centre.



Dr. S. K. Shukla felicitating the Director at GTC

## 4. Exhibitions/ Field Demonstrations/ Awareness meets

### Rashtriya Kisan Mela on Citrus

Ginning Training Centre of CIRCOT participated in *Rashtriya Kisan Mela on Citrus* organised by ICAR-National Research Centre for Citrus (NRCC), Nagpur during Oct 30-31, 2014. The exhibition was inaugurated by Dr. C.D. Mayee, Former Chairman, ASRB, New Delhi in the presence of Dr. N. K. Krishna Kumar, DDG (Hort. Sci.), ICAR. A large number of farmers and stake holders from different states of India including North-Eastern states visited the stall exhibited by GTC of CIRCOT, Nagpur. Dr. S. K. Shukla, Officer In-charge, GTC explained the initiatives and awareness programmes conducted by the GTC on utilization of cotton stalks to produce value added products.



Dr. C. D. Mayee during his visit to CIRCOT stall

### Demonstrations of GTC activities to farmers

Forty four farmers including 10 'Women Farmers' from Khargone and Badwani, Madhya Pradesh visited GTC, ICAR-CIRCOT through Action for Social Advancement (ASA), Bhopal during the month of October. Dr. S. K. Shukla, Officer In-charge delivered a lecture on clean cotton picking and utilization of cotton stalks for value added products including composting. The farmers were also explained about the logistics for supply of cotton stalks to briquetting and particle board plants. In addition, farmers were also demonstrated the pilot plants for preparation of particle boards from cotton stalks and farmer friendly technologies by GTC staff.



Madhya Pradesh farmers during their visit to GTC pilot plants

## 5. Seminars/ Workshop/ Meets attended

### Director attended ICAR Regional Committee-VII meeting

Dr. P. G. Patil, Director, CIRCOT participated in the 23<sup>rd</sup> meeting ICAR Regional Committee (No.VII) meeting held at College of Agriculture, Indira Gandhi Krishi Vishwavidhyalaya, Raipur, Chhattisgarh during Oct. 17-18, 2014. This meeting was chaired by Dr. S. Ayyappan, Director General, ICAR and Secretary, DARE, ICAR. Dr. S. K. Shukla, Officer In-charge GTC also attended the meeting. Dr. S. Ayyappan appreciated the efforts taken by the CIRCOT in popularization of CIRCOT technologies including Rubber Roller DR gin.

### Participation in NAARM & GFAR-FAO organized workshop on “Open Access to Agricultural knowledge for inclusive Growth and Development”

Er. Ashok Kumar Bharimalla, Senior Scientist & I/C TTD, attended workshop on “Open Access to Agricultural knowledge for inclusive Growth and Development”, organized by NAARM Hyderabad, during 29-30 October, 2014. In collaboration with GFAR-FAO. Distinguished faculties from renowned institutions delivered the lectures on important topics useful for overall development the country.



Er. A. K. Bharimalla during deliberation in the workshop

### ICAR-CIRCOT vision 2050 presented before Secretary DARE & DG, ICAR

Dr .P. G. Patil ,Director, CIRCOT presented the CIRCOT vision 2050 before the Secretary DARE & DG, ICAR on 28<sup>th</sup> October,2014.Dr.AlaguSundaram Deputy Director General (Engineering) ,ADG ( Education),ADG (FE & PE) and all the Directors of Engineering Division were present. Secretary DARE and other officials appreciated the document and suggested changes will be incorporated

### Director, ICAR-CIRCOT attended 16th meeting of Physical Methods of Test Sectional Committee of Bureau of Indian Standards (BIS)

Sixteenth meeting of Physical Methods of Test Sectional Committee (TX 01) of Bureau of Indian Standards (BIS) was held on 09<sup>th</sup> October 2014 at CIRCOT, Mumbai. Dr. P. G. Patil, Director, CIRCOT, Mumbai, chaired the meeting. Representatives from CIRCOT, Mumbai, Bidhata Industries Pvt. Ltd, Mumbai, BTRA, Mumbai, SASMIRA, Mumbai, Garware Wall Ropes Ltd., Pune, Reliance Industries Ltd., Mumbai, Ministry of Defense (DGQA), Kanpur, Office of Textile Commissioner, Mumbai, Texanlab Laboratories Pvt. Ltd., Thane, Textiles Committee, Mumbai, The Raymonds Woollen Mills Ltd., Thane, TUV Rheinland (India) Pvt. Ltd., Gurgaon, Wool Research Association, Thane attended the meeting. Dr. P. G. Patil welcomed all the members present. He called upon all the members for time bound development of standards keeping in view the latest technological development in the field. The committee confirmed the minutes of the last meeting held on 30<sup>th</sup> October, 2012 at Mumbai. Deliberations were made on finalization of draft standards, wide circulation of draft standards, withdrawal of published standards and review of published standards. Shri J. K. Gupta, Scientist “C”, Textiles, BIS Member Secretary of the meeting co-ordinated the event.



## 6. Awards & Recognition

### ICAR-CIRCOT bags Ashirward Award

CIRCOT was awarded the prestigious 'Rajbhasha' second award for outstanding implementation of official Language Hindi in the category of 'small offices' of Government of India from a well known Literary, Socio-cultural organization 'Aashirwad', on 31<sup>st</sup> October 2014 in the 23<sup>rd</sup> Aashirwad Rajbhasha Award function held at Mumbai. Shri. Sunil Kumar, Administrative officer, CIRCOT Mumbai was also awarded the prestigious 'Raj Bhasha Samman' award for his excellent contribution to implementation and propagation of Hindi in the institute. Shri. R.C. Mishra Commissioner of Income tax, Mumbai was the chief guest, Padmashri Amin Sayani and Dr. Damodar Khasade, coordinator Maharashtra State Hindi Sahitya Academy were guests of honour.



Kumar Harivansh Singh, Member of Parliament handing over the award to Dr. P. G. Patil, Director CIRCOT, Mumbai



Shri Sunil Kumar, Administrative Officer receiving Rajbhasha Samman award

## 7. Human Resource Development

Dr. N. Shanmugam, I/C Head, Quality Evaluation & Improvement Division, Dr. R. D. Nagarkar, Assistant Chief Technical Officer and Shri Sunil Kumar, Administrative Officer, attended training on "Reservation Policy of Government of India" held at Bangalore during October 16-18, 2014.

## 8. Personnel

### Superannuation

- ✍ Shri Venu Thanikal, PS to Director has superannuated from the service w.e.f. 31<sup>th</sup> October, 2014. All CIRCOTians wished him happy & prosperous retired life.
- ✍ Mrs. Smita D. Dudam has been promoted as Private Secretary to Director w.e.f. 1<sup>st</sup> November, 2014.

## 9. Up coming events

ICAR-CIRCOT is a pioneering R&D Institute on post-harvest technology of cotton and serving the stakeholders since 1924. The following specialized training programmes are scheduled during the financial year 2014-15.

S. No.	Name of the training	Duration
1	Cottonseed: Scientific Processing & Value Addition	Nov.10-14, 2014
2	Advances in Textile Characterization	Nov.24-28, 2014
3	Basics of Nanotechnology & its Application	Dec.08-12, 2014
4	Training on Cotton Spinning	Jan.05-09, 2015
5	Advances in Microscopy (SEM, AFM, Fluorescent & Polarised)	Jan.19-21, 2015
6	Chemical Characterization of Textile Materials & Auxiliaries	Feb. 02-06, 2015

## 10. Facilities available at CIRCOT for Physical characterization of textiles



**Kawabata fabric evaluation system**



**X-Ray Diffractometer**



**Instron Universal Tester**



**Scanning Electron Microscope**

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