



Inauguration of Nanocellulose Pilot Plant at CIRCOT, Mumbai

A Monthly Insight into the ICAR-CIRCOT

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Published by

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Director's Desk...

As per the recent CAB estimates, India's cotton production in 2014-15 is expected to be 39 million bales with an acreage of 12.97 million hectares. Cotton is used for making various end products that range from high quality shirting fabrics to floor mats. Each product requires particular type quality of yarn and cotton fibre. It is well known that the quality of final product mostly depends on the quality of cotton fibre used. Quality of cotton fibre and yarn is specified in terms of its physical characteristics which determines its commercial value. Hence cotton quality evaluation becomes crucial and important in cotton trade and industry. High Volume Instrument (HVI) is used to find out fibre properties of cotton sample. Cotton fibre properties are tested under two modes in India viz., ICC and HVI modes. Most of the cotton traders and textile industries use ICC mode whereas in cotton producing countries like USA, the HVI mode of testing is in practice. Cotton exporters in India are also familiar with HVI mode of testing as they have to submit HVI mode values to get their produce sold in international markets, where the transactions occur mainly using HVI mode fibre properties.

ICAR-CIRCOT is accredited with ISO:17025 quality systems by the National Accreditation Board for Testing and Calibration Laboratories (NABL), Department of Sciences and Technology (DST), Government of India. Under this accreditation which inter alia is linked to APLAC and ILAC, CIRCOT's test results are valid and acceptable in 26 other countries and need not require retesting. CIRCOT is a Referral Laboratory for testing of Cotton Textiles and has the state-of-art facilities for evaluation of fibre, yarn and fabric quality both in terms of chemical and physical testing.

P.G. Patil



ICAR-CIRCOT, Mumbai



Technology Insight

Development of Universal Flammability Testing Machine

A multiple angle flammability testing machine was designed for testing the flammability of textiles. The machine is fabricated using mild steel metallic arrangement based on diagonal scale concept. It consists of 0°(horizontal), 30°, 45°, 60° and 90°(vertical) flammability arrangement as per IS standard method. One metallic scale is attached on the fabric clamp to measure the burning rate and char length easily. A metallic ash collector is provided at the bottom of the machine to collect the ash materials after burning. Gas burner with green gas pipe is arranged in such a way to provide 38mm flame to the fabric clamped in both horizontal and vertical direction.



Flammability Testing Apparatus

In case of 45° flammability test, one butane lighter and dead weight set up is attached by means of a mechanical arrangement to give the flame for 1second to the underlying fabric. A metallic clip is attached at downward position to test the

flammability of the fabric against match flame in vertical direction. Whole machine is placed inside a thermally stable acrylic sheet with perforations in the roof of the acrylic cover.

Training

Training on Quality Evaluation of Cotton

Two training programmes on Quality Evaluation of Cotton were organised during July 10-14 and July 17-21, 2015 at CIRCOT, Mumbai. The training course was designed for the newly recruited Junior Cotton Purchasers of the Cotton Corporation of India (CCI). The Training programmes were inaugurated by Dr. P. G. Patil, Director, ICAR-CIRCOT, Mumbai. During the training, participants were made acquainted with every aspect of cotton quality and its testing through series of lectures and demonstrations in various in-house laboratories. They were also taken to visit the CCI at Cotton Green, Mumbai to understand international practices in cotton grading systems.



Group Photo: Trainees of Quality Evaluation of Cotton (Batch I, August 10-14th, 2015)



Group Photo: Quality Evaluation of Cotton (Batch II, August 17-21th, 2015)

Training programme on Quality Evaluation of Cotton for Cotton Breeders/Scientists

A training programme was organised on “Quality Evaluation of Cotton for Cotton Breeders/Scientists” during August 25 - 27, 2015. Twenty four cotton breeding scientists from various cotton producing states namely Punjab, Rajasthan, Haryana, Gujarat, Maharashtra, Telangana, Andhra Pradesh, Karnataka and Tamil Nadu participated in the programme. In addition to NARS scientists, cotton breeders from private seed companies- Sri Rama Agri genetics Pvt Ltd, Rasi seeds Pvt Ltd, Seed Works International Pvt Ltd, Tulasi Seeds Pvt Ltd and Zuari Agri Science Ltd also actively participated in the training programme. The course was organized to impart theoretical knowledge and practical skills on quality evaluation using advanced instrumentation. Dr. S.K. Chattopadhyay, Head, Mechanical Processing Division, ICAR-CIRCOT, Mumbai, distributed the certificates to the participants in the valedictory function. This training course was conducted by Dr. N. Shanmugam, Senior Scientist & Head I/C, QEID, Dr. P.K. Mandhyan, Senior Scientist, Dr. S.K. Dey, Senior Scientist and Dr. S. V. Ghadge,

Senior Scientist & Head I/C, TTD as Course Coordinators.



Group Photo: Training programme on Quality Evaluation of Cotton (for Cotton Breeders/Scientists)

Training program on Double Roller Ginning Technology and Cotton Quality Evaluation

Ginning Training Centre (GTC), Nagpur organizes regular training programmes on recent advances in cotton ginning, quality evaluation and by-products utilization for the benefits of ginners, traders, budding entrepreneurs and farmers. In this line, GTC organized two training programmes of one week duration on “Double Roller Ginning Technology and Cotton Quality Evaluation” in the month of Aug 2015. In the first batch, 5 potential and budding entrepreneurs attended the programme while 15 *Junior Cotton Purchasers* from CCI, Warangal participated in the second batch. The programme modules dealt with fibre quality assessment, cotton grading and marketing, DR ginning technology, cotton export and maintaining quality of cotton in ginneries. The programme covered practical aspects of cotton processing like manual grading of cotton, beater and fixed knife settings, automation and humidification in ginning system. Guest lectures on cotton classing, troubleshooting in ginneries and cotton export were

delivered by outside experts. The trainees were also demonstrated the functioning of particle board and scientific cottonseed processing units. They were also taken for industrial visit to M/s Bajaj Steel Industry Ltd, Nagpur.



Group Photo: Training program on Double Roller Ginning Technology and Cotton Quality Evaluation (Batch I)



Group Photo: Training program on Double Roller Ginning Technology and Cotton Quality Evaluation (Batch II)

Awareness and Demonstration Programme

Field Demonstration-cum-Awareness Workshop on Preparation of bio-enriched compost from cotton stalks

Ginning Training Centre, Nagpur organized a large scale Field Demonstration cum Awareness Workshop at Village Tekoda, Dist. Wardha in association with Ago-plus foundation, Nagpur. Mr. Y.N. Kabra, a progressive farmer from this village extended his full

assistance for organization of this workshop, in which about 100 farmers participated. The workshop was organized to create awareness among farmers about on-farm bio-conversion of cotton crop residues into high value compost for soil fertility management. Dr. M.S. Kairon, Former Director, CICR was the chief guest of the programme. He insisted on avoiding burning of crop residues and highlighted the importance of recycling of crop residues generated in the farm for better soil health management. He also shared the best crop production management practices in cotton with the farmers.



Dr. S. K. Shukla, Sr. Scientist and Officer In-charge welcomed the guest and briefed about the objective of the workshop

Shri G.H. Wairale, Former GM, Maharashtra Cotton Federation and President, Agro Plus Foundation, Nagpur explained about the use of cotton stalks and other agro-residues for preparation of briquettes and pellets for energy purpose. Shri Bhagwat Ji Dabhalkar, a progressive farmer from this village shared his experience on cotton farming and insisted on need for immediate action on effective utilization of cotton stalks and other crop residues for preparation of compost. Live demonstration on methodology for



Demonstration of Preparation of bio-enriched compost from cotton stalks

preparation of bio-enriched compost from one ton of chipped cotton stalks was performed by Dr. V. Mageshwaran, Scientist of GTC, Nagpur.

Meeting

Meeting on Research Data Repository for Knowledge Management

A meeting was convened by Dr. R. Guruprasad, Scientist and Nodal Officer for Data Repository for Knowledge Management on August 7, 2015 to brief the outcome of the first workshop on Research Data Repository for Knowledge Management conducted for the Nodal officers at New Delhi on August 4-5, 2015. He explained the various components of Centralised Data Management System, Ownership for the data, PME's role in collection and recording of data, its storage, issues like security, access and sharing of data, retention period, work flow, etc. It emanated from the discussion that all scientists and technical staff should be sensitised on handling data, PME should issue register to each PI of the project, give publications link to KRISHI and use unified communication systems and start collecting META data.

Review meeting of Erection and Commissioning of Nanocellulose Pilot Plant

The eleventh review meeting of sub-committee on erection and commissioning of nanocellulose pilot plant was held on August 7, 2015 chaired by Dr. P.G. Patil, Director, ICAR-CIRCOT. In view of the scheduled inauguration of Nanocellulose Pilot Plant on August 21, 2015, the committee inspected the site and reviewed the status of the pilot plant. Er. A.K. Bharimalla, Senior Scientist briefed the progress made in the pilot plant and the trails taken in production of nanocellulose explaining all unit operations. The results of trails on applications of nanocellulose in paper, cement and plastic films along with the samples were presented by Dr. N. Vigneshwaran, Senior Scientist. The committee critically reviewed the progress and guided the team members to make required arrangements for the inauguration of the pilot plant by Padma Vibhushan Dr. R. A. Mashelkar.

Events

Padma Vibhushan Dr. R. A. Mashelkar inaugurated the Nanocellulose Pilot Plant

ICAR-CIRCOT Nanocellulose Pilot Plant, a unique facility in line with the *Make in India* efforts by Government of India, was inaugurated by **Padma Vibhushan Dr. R. A. Mashelkar** on August 21, 2015. Nanocellulose, a novel nano-sized cellulosic material derived from various agro-biomass, exhibits very high strength, extremely large surface area, novel



rheological property and entirely different optical property. It had proven applications as reinforcing agent in composites and concretes, additives in papers and paints, controlled pesticide release agent, drug delivery agent and in transparent flexible electronics. ICAR, through NAIP, funded the establishment of nanocellulose pilot plant under ZTM-BPD project in 2013 to act as an incubation centre for entrepreneurs and demonstration plant for all stakeholders.

Dr. P. G. Patil, Director, ICAR-CIRCOT delivered a welcome address and presented the detailed report on achievement & progress of this Institute since its establishment in 1924. The programme was presided over by Dr. C. D. Mayee, former Chairman, ASRB, New Delhi and President, ISCI. He felicitated Dr. Mashelkar on behalf of the Indian Society for Cotton Improvement (ISCI), Mumbai along with Dr. K. R. Kranthi, Director, ICAR-CICR, Nagpur. During Keynote address, Dr. S. Sreenivasan, former Director, ICAR-CIRCOT, Mumbai collated the sequential research & development efforts by ICAR-CIRCOT in the field of nanotechnology in general and nanocellulose in particular, from 2004 onwards. Sh. Suresh Kotak, Chairman, ISCI emphasized the importance of high end material research in the field of engineering & technology and compared the current development at ICAR-CIRCOT with the world class research status. Dr. Mashelkar applauded the efforts of ICAR-CIRCOT in establishing such a world class facility that caters to the value addition of farm produce. He delivered the Dr. V.

Sundaram memorial lecture on “Designing an Indian Agriculture Inclusive Innovation System”. He strongly supported the concept of Innovation led growth in agriculture that is essential for sustainability. He emphasized the need of total innovation that includes policy level innovation, business model innovation and technology level innovation, to achieve the overall growth in agriculture. Also, he suggested that three cutting edge technologies, *viz.*, Nanotechnology, Biotechnology and ICT should be made to work for the poor of this country. He concluded with the noting of urgent requirement of inclusive innovation ecosystem in India for achieving *affordable excellence* in all spheres of life.

Dr. Mashelkar released a leaflet on “*ICAR-CIRCOT Nanocellulose Pilot Plant*” and congratulated all the staff of ICAR-CIRCOT for establishing this pilot plant facility and felicitated the core team, Dr. P. G. Patil, Er. A. K. Bharimalla and Dr. N. Vigneshwaran. Dignitaries from ICT Mumbai, VJTI Mumbai, Cotton Association of India, Private Industries, Brihanmumbai Municipal Corporation and other nearby educational institutions and Industries participated in this programme. Dr. A. J. Shaikh, former Director, ICAR-CIRCOT & Secretary, ISCI proposed the vote of thanks.



The Nanocellulose Pilot Plant at ICAR-CIRCOT



Padma Vibhushan Dr. R. A. Mashelkar inaugurating the Nanocellulose Pilot Plant



Padma Vibhushan Dr. R. A. Mashelkar with Dr PG Patil, Director, Er AK Barimalla and Dr N Vigneshwaran



Padma Vibhushan Dr. R. A. Mashelkar at the CIRCOT Exhibition hall



Dr. Mashelkar releasing a leaflet on “ICAR-CIRCOT Nanocellulose Pilot Plant”



Dr. C. D. Mayee, former Chairman, ASRB, New Delhi and President, ISCI, felicitating Dr. Mashelkar

Swachh Bharat Mission

The staff of the Institute formed a human chain and removed old files and papers from the basement of Dr. V. Sundaram Building on August 7, 2015.



CIRCOT Staff at cleaning activities

Sadbhavana Diwas Pledge

Sadbhavana Diwas pledge was observed in the Institute on August 20, 2015. Official staff took pledge to work for “the emotional oneness and harmony of all the people of India regardless of caste, region, religion or language” and to resolve all differences “through dialogue and constitutional means without resorting to violence”.

Independence Day Celebration

The institute celebrated the 68th Independence Day at the Headquarters, Mumbai on August 15, 2015. Dr. P.G. Patil, Director, ICAR-CIRCOT hoisted the Tricolor Flag.



Dr. P.G. Patil, Director, ICAR-CIRCOT hoisting and Saluting the Tricolour on the Independence day

Workshop cum Lecture

A half day workshop cum lecture was conducted on the titled ‘Uncertainty Measurement’ on August 13th at ICAR-CIRCOT. The lecture was attended by Scientist and Senior Technical Officers. The lecture was delivered by external expert Shri R.A. Shaikh, Quality Manager from BTRA. In the training programme participants were acquainted how to measure the uncertainty from the measured data values and also at end of the programme participant were also evaluated by conducting a test.



Shri R.A. Shaikh, Quality Manager from BTRA delivered the lecture

Inception of Hindi Cell

Mrs. Seema Chopra, Deputy Director ICAR, New Delhi, inspected ICAR-CIRCOT official language work. She discussed about the Papers issued in bilingual format under section 3(3), computer Unicode facilities, Website in bilingual format and books purchased for library. Followed by meeting she visited various Administrative section regarding implementation of official language and she appreciated Hindi work of ICAR-CIRCOT



Smt. K.R. Joshi, Senior Technical Officer welcoming Mrs. Seema Chopra, Deputy Director ICAR, New Delhi

Director's Visit

Dr. P. G. Patil, Director and Dr. S. V. Ghadge, I/C, TTD, visited GTC, Nagpur during Aug 3-5, 2015. During their visit at

Nagpur, they inspected the machinery and infrastructure at M/s. Bajaj Steel Industries Ltd., Nagpur meant for the setting up of Knowledge Cluster-cum-Training Centre and Post-Harvest Ginning Technology in Benin under Cotton Technical Assistance Programme (TAP) for Africa. They also attended a meeting at CICR, Nagpur for finalisation of Memorandum of Understanding (MoU) to be signed among CICR, CIRCOT and M/s Mahindra & Mahindra for development of a Cotton Harvester.

Dr. P. G. Patil, Director, ICAR-CIRCOT attended the inaugural function of CIAE Regional Centre and Farmers' Meet at Coimbatore on August 27, 2015. The centre was inaugurated by Dr. S. Ayyappan, Director General, ICAR & Secretary DARE, in the presence of Dr. K. Alagusundaram, Deputy Director General (Agri. Engg.), ICAR, New Delhi. There was a demonstration of various farm as well as processing machineries installed in CICR Regional Centre. He also took part in the deliberations during farmers' interactive meet. Later, he visited Quality Evaluation Unit, ICAR-CIRCOT, Coimbatore and reviewed research activities, also inspected the work of Technical Staff working in the station and guided them for future work. He also visited Nano Technology facilities at Tamil Nadu Agricultural University, Coimbatore.



Release of Publication during Inauguration of ICAR-CIAE Regional Station, Coimbatore & Farmers Meet



Lighting the lamp during the inaugural function of ICAR-CIAE Regional Station, Coimbatore



Dr. S. Ayyappan, DG, ICAR in the presence of Dr. K. Alagusundaram, DDG (Agri. Engg.), ICAR and Dr. P.G. Patil, Director, ICAR-CIRCOT during the discussion at CICR regional Centre.



Group photo: Dr. S. Ayyappan, DG, ICAR with ICAR-CIRCOT & ICAR-CICR Staff

HRD Activity

- (1) Dr. C. Sundaramoorthy, Senior Scientist, attended the two days on-line training programme titled “Life Cycle Analysis(LCA) with SimaPro” on August 12-13, 2015 organised by Simapro India Pvt. Ltd.
- (2) Ms. Varsha Satankar, Scientist, attended twenty one days Summer School Training on Biomass and Biofuel: Technologies, Climate Change and Environment at CIAE Bhopal from July 22 to August 11, 2015
- (3) Smt. P. R. Mhatre, Technical Officer, attended training on Librarian Short course at Telangana University, Hyderabad on July 22-23, 2015.

Workshop/Seminar/Conference

- (1) Dr. R. Guruprasad, Scientist, attended First workshop of Nodal Officers of ICAR Research Data Repository for Knowledge Management at ICAR AP Shinde Symposium Hall, NASC Complex, New Delhi, on August 4-5, 2015.
- (2) Dr. (Smt) Sujata Saxena, Principal Scientist participated in two day's workshop of TMC MM1 project organized by CICR, Nagpur on August 11-12, 2015. In the workshop salient achievements of the progress made in 2013-14 and 2014-15 under MM1.4 project as well as its financial statement were discussed.

Student Visits

Sixty students from SASMIRA visited ICAR-CIRCOT on August 3rd, 2015. Fifteen trainees of Maharashtra Centre for Entrepreneurship Development, Nagpur visited GTC, Nagpur in the month of August 2015 to explore the possibilities of establishing business in field of cotton processing, marketing and value addition to stalks.

Personnel

- (1) Shri. N. V. Bansode, Asst. Chief Technical Officer, Shri S. Vancheswaran, Sr. Technical Officer and Shri. B. R. Satam, Skilled Supporting Staff retired on August 31st, 2015
- (2) Shri Sunil Kumar, Administrative Officer, transferred on Promotion as Senior Administrative Officer to NRC on Onion and Garlic, Pune on August 31, 2015.
- (3) Promotion of the following scientist of this Institute to the next higher grade

Name and Designation	Promotion Grade & Scale of Pay	Effective date of Promotion
Dr. Virendra Prasad Sr. Scientist (Org. Chemistry)	15600- 39100 + RGP 8000	16.04.2014
Dr. C. Sundaramoorthy Sr. Scientist (Agri.Economics)	15600- 39100 + RGP 8000	11.08.2014



Upcoming Events

- (1) ICAR Short course on 'Fermentation Technology for value-addition to Cotton and its by-products and Biomass during September 7-16, 2015.
- (2) Training Course on "Quality Evaluation of Cotton" at ICAR-CIRCOT, Mumbai

Training Calendar for 2015 -16

No.	From	To
1.	14-12-2015	18-12-2015
2.	11-01-2016	15-01-2016
3.	08-02-2016	12-02-2016

COURSE CONTENTS

- Advances in Ginning Technologies
- Introduction and Practical in Cotton Grading
- Cotton Crop By-products
- Fiber Length Measurement using Conventional Instruments
- Demonstration in Fibre Fineness and Maturity
- Cotton fibre Testing using High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS)
- Mechanical Processing of Cotton
- Contamination in Cotton and Marketing & Commercial aspect of Cotton
- Techno Entrepreneurial Activities and Business Planning Development
- Visit to Cotton Association of India, Cotton Green

Course Fee: Rs. 5618/- (Inclusive of taxes)

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Hon'ble Shri Lal Bahadur Shastri ji visiting the Institute Miniature Spinning Lab on
January 15, 1959



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