

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

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Director's Desk...



The world cotton production is projected to grow by 2 per cent to 23.1 million tons in 2017-18 as per the first estimates of International Cotton Advisory Committee (ICAC).

Though the area under cotton is anticipated to increase by 5 per cent (30.4 million hectares) the world average yield is projected to dwindle to 764 kg/ha, as against the yield of 781 kg/ha in 2016-17.

The cotton area in India during 2016-17 was 10.5 million hectares and it is estimated to recover by 7 per cent to 11.2 million hectares as a result of firm domestic prices and the production will increase to 5.9 million tons. The area under cotton in China, which was decreasing for five consecutive seasons in the row is predicted to expand by 3 per cent to 2.9 million hectares in 2017-18 with estimated output of 4.8 million tons. The cotton area in US is likely to expand by 10 per cent to 4.2 million hectares with an estimated production of 3.7 million tons.

The Mill use of Cotton (consumption) at the global level are expected to remain stable at 24.1 million tons during the current year as a result of high cotton prices. The mill use in major cotton consuming countries China, India and Pakistan is expected to remain unchanged, while the mill use in Turkey, Bangladesh and Vietnam are expected to increase by 2, 5 and 7 per cent respectively.

As a result of growth in the mill use of countries that depend on imports, the world cotton trade is projected to increase to 8.2 million tons in 2017-18. India is the second largest exporter of Cotton after US and it is projected that cotton exports for the period 2017-18 will rise by 3 per cent to 0.9 million tonnes.

P.G. Patil

Cashless ICAR Institute Award

ICAR-CIRCOT has implemented Cashless transactions in the institute since January 2017 as per Government's directives to achieve e-governance in the Government offices. Dr. P.G. Patil, Director, ICAR-CIRCOT received 'Cashless ICAR Institute Award' from Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare in Director's Conference held at A.P. Shinde Auditorium, NASC Complex, New Delhi on February 14, 2017. The award comprises of a citation and Cheque of Rs. 5 lakhs.



Technology Insight

Microbial process for preparation of absorbent cotton

High temperature, high pressure chemical method is usually followed for removing non-cellulosic substances from raw cotton and converting it into absorbent cotton. Enzymes such as pectinases have also been used to reduce the input consumption thereby making the process more eco-friendly but the high cost of the enzymes make the process expensive. Instead, direct use of microbes which produce the required enzymes can be an affordable option. CIRCOT anaerobic consortium has shown promising results in this respect but there were issues related to the uniformity and efficacy as proper contact of the microbial culture with all parts of the cotton sample could not be achieved resulting in poor absorbency.

To improve the efficacy and uniformity of the system the cotton samples were pre-wetted with wetting agent and introduced into the digester containing the consortium. A liquid circulation system was created inside the digester for intermittent circulation of the liquor to enable continuous stirring for 48 hours. The bleached cotton was found to meet the criteria prescribed for absorbent cotton by the Indian Pharmacopoeia (IP) and Bureau of Indian Standard (BIS). The Performance parameters of these absorbent cottons are given below:



Photographs of absorbent cotton prepared by microbial and chemical routes

Preparation method	Sulphated ash (%)	Absorbency* (sec)	Sinking time (sec)	Water holding
Microbial 1 st batch	0.43	1.6	2.4	29.9
Microbial 2 nd batch	0.41	1.9	3.3	28.8
Chemical	0.40	1.2	1.9	24.6
Standard	≤ 0.5	≤ 10.0	≤ 10.0	≥ 23.0
Standard- Indian Pharmacopoeia, 1985; *As per BIS- 2369: 1967 (reaffirmed 2000)				

Training Programmes

Training on Advances in Applications of Nanotechnology

A five day's training programme on "Advances in Applications of Nanotechnology" was organized during February 6-10, 2017. The focus of this training was on basics of nanotechnology, preparing nanomaterials through mechanical, chemical and biological means and their characterization and its application in textiles, composites, integrated pest management and effluent management. Also, the participants were sensitized about the life cycle analysis of nanomaterials and their relevance to addressing the issues related to climate change. Twelve participants from Tamil Nadu, Andhra Pradesh, Haryana, Uttar Pradesh, Karnataka, Meghalaya and Maharashtra attended this training programme.

The valedictory function was graced by the presence of Dr. Nawab Ali, Former DDG (Engg), ICAR and Chairman, RAC of ICAR-CIRCOT.

Dr. Nawab Ali, while speaking as the Chief Guest of valedictory function, emphasized the need for nano technological interventions in agriculture and allied sectors to improve the overall efficiency and productivity in farming practices so that the farmers could benefit at the end. Dr. P.G. Patil, Director, ICAR-CIRCOT briefed about the involvement of this institute in the field of nanotechnology in textiles and composites, and the efforts taken to commercialize this technology by establishing nanocellulose pilot plant and incubating startups. Dr. N. Vigneshwaran, Senior Scientist and Course Coordinator congratulated all the trainees and explained the future possibilities in continuing the relationship by collaborative research work and consultancy based on mutual understanding. Er. A.K. Bharimalla, Dr. Virendra Prasad, Dr. C. Sundaramoorthy and Mr. A. Arputharaj were the other coordinators of this programme.



A trainee receiving certificate from the hands of Dr. Nawab Ali, Former DDG (Engg), ICAR and Chairman, RAC of ICAR-CIRCOT



Trainees during the practical session of training on "Advances in Applications of Nanotechnology"



Training on Advances in Applications of Nanotechnology

A five days training programme on “*Quality Evaluation of Cotton*” was conducted at ICAR-CIRCOT, Mumbai during February 6-10, 2017 in which six participants from cotton trade, Industry and farming community participated. This programme focused on basics of cotton grading, quality evaluation and its importance in trading, fibre attributes and their impact on yarn quality, contamination in cotton, marketing and commercial aspects of cotton, ginning & mechanical processing and its effect on cotton economics, harvesting and storage practices. Participants were exposed to fibre testing using High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS). A visit to Cotton Association of India was also arranged to show commercial grading of cotton to the participants.



Trainees with RAC committee: Dr. Nawab Ali (Chairman), Dr. S.N. Jha (Member), Dr. P.G. Patil, Dr. Nadiger (Member), Dr. Nag (Member), Dr. A. Rakshit (Member) and Dr. G. Roy (Director, NIRJAFT)

Training on Seventh Pay Implementation

A five days training programme on “*Quality Evaluation of Cotton*” was conducted at ICAR-CIRCOT, Mumbai during February 6-10, 2017 in which six participants from cotton trade, Industry and farming community participated. This programme focused on basics of cotton grading, quality evaluation and its importance in trading, fibre attributes and their impact on yarn quality, contamination in cotton, marketing and commercial aspects of cotton, ginning & mechanical processing and its effect on cotton economics, harvesting and storage practices. Participants were exposed to fibre testing using High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS). A visit to Cotton Association of India was also arranged to show commercial grading of cotton to the participants.

Training on Compost from Cotton Stalk

Mr. Ashok K. Trimbake, an entrepreneur from Ahmednagar, Maharashtra was given one day training on “*Compost Preparation from Cotton Stalks*” on February 25, 2017 at GTC, Nagpur.

Challenges Facing Cotton Sector and Role of ICAR-CIRCOT

ICAR-CIRCOT organized a brainstorming session on “Challenges facing Cotton sector and Role of ICAR-CIRCOT” at Mumbai on February 8, 2017. The session was organized as part of the 23rd Research Advisory Committee meeting of the institute to figure out the challenges ahead in cotton sector for the next three years and also to finalize the strategy to overcome the challenges. The meeting was chaired by Dr. Nawab Ali, Former DDG (Agri. Engineering) & Chairman, RAC, and co-chaired by Dr. G.S. Nadiger, Former Director (Textile Committee) and Dr. S.N. Jha, ADG (PE). Dr. P.G. Patil, Director, ICAR-CIRCOT welcomed the dignitaries and initiated the discussion with a thematic presentation. Representatives of cotton farmers, traders, industries, members of RAC and scientists attended the meeting.

Different issues related to cotton picking, trading, ginning, yarn, fabric and garment production technologies, sustainable chemical processing and cotton biomass utilization were deliberated. The action points emerged from the brainstorming were adoption of lint quality based marketing, efforts to get higher ginning output (GOT) using better technology, promoting Indian cotton varieties with improved quality attributes, improved yarn realization, blending cotton with other fibres for functional products, promotion of cotton for technical textiles, reducing water requirement for chemical processing of textiles, garments with innovative design & finish and promoting cotton by-products for energy and non-ruminant feed etc. Dr. C. Sundaramoorthy proposed vote of thanks. The meeting was coordinated by Er. V. G. Arude, Member secretary of RAC and Dr. A.S.M. Raja, Sr. Scientist.



Brainstorming session on “Challenges Facing Cotton Sector and Role of ICAR-CIRCOT”



National Productivity Week

ICAR-CIRCOT celebrated National Productivity Week during February 12–18, 2017 to spread the message of productivity amongst all stakeholders. The theme chosen for this year's observance was “From Waste to Profits through Reduce, Recycle and Reuse”. To commemorate the week, Dr. A.S.M. Raja, Sr. Scientist delivered a talk on the theme on February 13, 2017. Essay competitions were organized on the topic “Profit generation from cotton and their by-products” for the scientific and technical staff and on the topic “Conversion of Agro waste to useful products” for skilled support staff. The prizes were distributed to the winners of the essay competition on February 18, 2017. Dr. P.Jagajanantha, Scientist and Shri R.R. Chhagani, ACTO coordinated the celebration of National Productivity Week.



Dr. P.G. Patil, Director, ICAR-CIRCOT addressing staff members on 1st day of National Productivity Week

National Science Day Celebration

ICAR-CIRCOT celebrated 27th National Science Day on February 28, 2017. This day was the golden day in history of India when famous physicist, Sir Chandrasekhara Venkata Raman *invented the “Raman Effect” for which, he received the Nobel Prize for Physics in 1930. To celebrate this success, the Government of India marked the day on February 28 as National Science Day from 1999.* The theme selected by Department of Science and Technology (DST) for this year was “Science and Technology for Specially Abled Persons”. To execute the program, an open day was organized in institute campus for school students. About 50 students from Shardashram Vidyamandir, Dadar, Mumbai visited the institute and explored various research facilities available in the campus such as exhibition room, fiber and yarn testing, mechanical processing division, nanocellulose pilot plant and paper making plants etc. The open day was followed by a lecture from Dr. R. P. Nachane, former Head, Quality Evaluation and Improvement Division, ICAR-CIRCOT on “Application of Science and Technology for Specially Abled Persons” which was attended by the students and institute staff.



Dr. R. P. Nachane, former Head, Quality Evaluation and Improvement Division, ICAR-CIRCOT giving lecture on "Application of Science and Technology for Specially Abled Persons"



Students from Shardashram Vidyamandir, Dadar, Mumbai at exhibition-cum-visitors room of the institute



Students from Shardashram Vidyamandir, Dadar, Mumbai at exhibition-cum-visitors room of the institute



Students from Shardashram Vidyamandir, Dadar, Mumbai while observing lap formation at Mechanical Processing Division of the institute



Students from Shardashram Vidyamandir, Dadar, Mumbai with Dr. P.G. Patil, Director, ICAR-CIRCOT in the institute campus

Swachh Bharat Abhiyaan

- A cleanliness programme was organized at Chemical and Biochemical Processing Division (CBPD) of the institute on February 2, 2017. The basement room was cleaned by arranging the chemical bottles and removing the waste chemical bottles. The staff members of CBPD enthusiastically participated in the cleaning programme.



Cleaning and arrangement of chemical bottles in CBPD under Swachh Bharat Abhiyaan on February 2, 2017

- Another cleanliness drive was organized at Quality Evaluation and Improvement Division (QEID) of the institute on February 23, 2017. The waste cotton samples staggered in store room after testing were collected, cleaned and stored properly for disposal through auctioning.



Cleaning and storing of cleaned cotton samples in QEID test house under Swachh Bharat Abhiyaan on February 23, 2017

ISO Audit

Internal Audit

An internal auditing was conducted by the BIS trained auditors for different divisions of the institute during February 13-14, 2017. The auditors have communicated the observations to the ISO implementation cell. A new check list was prepared on the basis of the requirement of ISO 9001:2015 standard. The institute is gearing up to get the ISO 9001:2015 accreditation.

Visits

At SIRSA Regional Unit

A delegation of Kisan Club, Sirsa led by its Secretary Shri Rajaram, visited Sirsa regional unit on February 8, 2017 for updating their knowledge on compost preparation from cotton stalk and other beneficial technologies developed by CIRCOT. Dr. Hamid Hasan, Officer In-charge, deliberated them in detail about “Preparation of bioenriched compost from cotton plant residues” and “Clean Cotton Picking technology”. They were also made aware of menace of trash and contamination in cotton and how it can be easily reduced at farm level simply by adopting clean cotton picking practices. They were also demonstrated working of various equipment like Cloy Gin, Trash Analyzer, HVI etc.



A delegation of Kisan Club, Sirsa at Sirsa regional unit of ICAR-CIRCOT on February 8, 2017

At GTC, Nagpur

Forty farmers from Agricultural Technology Management Agency (ATMA), Junagadh, Gujarat visited Ginning training Centre, Nagpur on February 24, 2017. Dr. S.K. Shukla briefed them about GTC, ICAR-CIRCOT research activities and elucidated on the collection and utilization of cotton stalks and other agro-residues to increase the farm income. Farmers were also informed about compost and mushroom production from cotton stalks. Farmers visited various facilities at GTC including fiber testing lab, particle board plant and ginning section.



Farmers from Agricultural Technology Management Agency (ATMA), Junagadh, Gujarat at GTC, Nagpur on Feb 24, 2017

Director's Visits

- Director, P.G. Patil, Director, ICAR-CIRCOT and Dr. C. Sundaramoorthy, Senior Scientist attended a meeting organized by SMD (Agricultural Engineering Division) on February 3, 2017 at KAB-II, Pusa, New Delhi, for discussion on preparation of SFC document. The meeting was chaired by Dr. K. Alagusundaram, Deputy Director General (Engg.), ICAR, New Delhi.
- Dr. P. G. Patil, Director, ICAR-CIRCOT, Mumbai visited Sirsa Unit on February 16, 2017. Dr. Hamid Hasan, Officer In-charge extended a warm welcome to him and briefed him about various activities being undertaken at the unit. Director reviewed the progress of the work done at the unit and issued instructions for efficient working and better work output for the benefit of all the stake holders.



Dr. P.G. Patil, Director, ICAR-CIRCOT at Regional Station of CICR, Sirsa, Hisar



Dr. P.G. Patil, Director, ICAR-CIRCOT inspecting Regional Unit of the institute at Sirsa, Hisar

Meeting

23rd Research Advisory Committee Meeting

New RAC Committee has been constituted by ICAR with following Members.

- ▲ Dr. Nawab Ali, Former DDG (Engg.) ICAR: Chairman
- ▲ Dr. G. S. Nadiger, Research Advisor, SASMIRA & Former Director, TC: Member
- ▲ Dr. Anup Rakshit, Executive Director, ITTA: Member
- ▲ Dr. Narendra G. Shah, Prof., CTARA, IIT, Mumbai: Member
- ▲ Dr. Debasis Nag, Former Director, NIRJAFT: Member
- ▲ Dr. S. N. Jha, ADG (Process Engineering), ICAR: Member
- ▲ Dr. B. K. Behera, Prof. & Head, Dept. of Textile Technology, IIT, New Delhi: Member

The 23rd Research Advisory Committee (RAC) of ICAR-CIRCOT was held in Dr. V. Sundaram Committee Room during February 8-9, 2017. Dr. P.G. Patil, Director, ICAR-CIRCOT presented the salient achievements and activities of the institute during the present plan period. Dr. Nawab Ali, Chairman in his opening remarks suggested that the utilization of the cotton in the global scenario is dwindling and hence the institute should focus on the diversification of cotton application to improve the utilization of cotton and its value addition for the benefit of farmers and other stakeholders. Further efforts should be made to take the technologies developed in the institute to the stakeholders so that the benefit of the research could be harnessed. The committee felt that the research work should focus on improvement in quality, energy and water conservation and improvement in efficiency for protection of environment.

The committee was of the opinion that the institute should focus on industry sponsored research and establish close linkage with stakeholders. The progress of research activities carried out in the institute under different core areas during the period 2016-17 were presented. On the occasion of RAC, Dr. Nawab Ali, Chairman released two publications namely 1) ICAR-CIRCOT – A Profile and 2) Antimicrobial Cotton Bed Sheets. Er. V. G. Arude, Scientist and Head I/C (MPD & Member Secretary RAC coordinated the proceeding of the RAC meeting.



RAC meeting in Dr. V. Sundaram Committee room during February 8-9, 2017

Conference /Seminar /Workshop

- Dr. A.S.M. Raja, Sr. Scientist attended a meeting at Textile commissioner office convened for discussing "*Best Global Practices for a sustainable cotton Roadmap in India*" organized by Textile commissioner, Govt. of India on February 2, 2017.
- Dr. (Mrs.) Sujata Saxena, Principal scientist & Head In-charge, Chemical and Biochemical Processing Division delivered an invited lecture on "*Protective Textiles and CIRCOT R&D in this segment*" at the one day Conference on "*Segments of Technical Textiles: Present Scenario and Opportunities*" organized by Department of Textile and Fashion Designing, College of Home Science, Nirmala Niketan, Mumbai on February 3, 2017.
- Dr. S.K. Shukla, Sr. Scientist and officer In-charge, GTC, Nagpur presented a lead paper on "*Mission mode approach is the way forward for successful adoption of mechanical cotton harvesting in India*" in Indian Seed Congress 2017 held at Kolkata during February 13-14, 2017.

- Dr. P.S. Deshmukh, Sr. Scientist participated and presented a paper on “*Development and study of needle drum type mechanism for arecanut (Areca catechu L.) husk fibre separation*” authored P.S. Deshmukh, P.U. Shahare, J.S. Dhekale, P.G. Patil, G.B. Bhanage, V.G. Arude, A.K. Bharimalla in 51st Annual Convention of ISAE and National Symposium on “*Agricultural Engineering for Sustainable and Climate Smart Agriculture*” held at CCSHAU, Hisar, Haryana during February 16-18, 2017.
- Dr. S.V. Ghadge, Sr. Scientist participated and presented a paper on “*Method of Opening Cotton Lint Samples for Fibre Quality testing*” authored S.V. Ghadge, P.G. Patil, S.K. Shukla, V.G. Arude, A.K. Bharimalla, P.S. Deshmukh and C. Sundaramoorthy in 51st Annual Convention of ISAE and National Symposium on “*Agricultural Engineering for Sustainable and Climate Smart Agriculture*” held at CCSHAU, Hisar, Haryana during February 16-18, 2017.
- Dr. V. Mageshwaran, Scientist participated and presented a paper on “*Compost production and Oyster mushroom cultivation- A potential entrepreneurship for cotton growing farmers*” in National Conference on “*Agro processing Based Entrepreneurship Development for Sustainable Livelihood*” held at PDKV, Akola during February 22-23, 2017
- Miss Varsha Satankar, Scientist, GTC, Nagpur participated and presented a paper in oral presentation on “*Utilization of cotton stalks for preparation of pellets - a source of entrepreneurship development*” in National Conference on “*Agro processing Based Entrepreneurship Development for Sustainable Livelihood*” held at PDKV, Akola during February 22-23, 2017



Human Resource Development

- Dr. V. Mageshwaran, Scientist from GTC attended a ten days training program on “*Microbial identification: A polyphasic approach*” conducted by ICAR- National Bureau of Agriculturally Important Microorganisms (ICAR-NBAIM) during February 1-10, 2017.
- Shri S.V. Kasabe, Assistant Finance & Accounts Officer attended a two days training programme on “*Public Financial Management Systemat*” at Panaji, Goa organized by Institute of Government Accounts & Finance (INGAF), Ministry of Finance, Govt of India during February 22-23, 2017.
- Dr. T. Senthilkumar, Scientist attended a training programme on “*Competency Enhancement Programme for Effective Implementation of Training Functions by HRD Nodal Officers of ICAR*”, organized by ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana during February 16-18, 2017.



- Dr. P.G. Patil, Director, ICAR-CIRCOT, Mumbai, is elected as ***Distinguished Fellow*** of ***Indian Society of Agricultural Engineers (ISAE)*** for the year 2016 in recognition of his valuable contributions to the profession of Agricultural Engineering. The fellowship was conferred upon Dr. P.G. Patil during the 51st Annual Convention of ISAE at CCS Haryana Agricultural University, Hisar, held on February 16, 2017.



Dr. P. G. Patil, Director, ICAR-CIRCOT receiving ISAE distinguished fellow award at the hands of Mr. Yoshisuke Kishida, The Shin-Norisha Co. Ltd., Japan

- Dr. Manoj Kumar, Scientist received gold medal for his outstanding academic performance in Ph.D. (Biochemistry) at I.A.R.I, New Delhi.



Dr. P. G. Patil, Director, ICAR-CIRCOT receiving ISAE distinguished fellow award at the hands of Mr. Yoshisuke Kishida, The Shin-Norisha Co. Ltd., Japan

- Ms. Tereza D,Souza, Administrative staff won three Trophies Award in Woman category of 50-60 age for 53rd 10 km walking race, for Walk-a-Thon 10 km and for Run for Army organized by Bombay Kerla Samaj, Aarey Walkers Club, Goregaon and Edition of Rotary Club of Borivali on February 5, 26 2017.

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



Proposed activities for the year 2016-2017

Seminar/Conference/Industry Academia meet etc.

Name of the programme	Date
Technology Mela	March 1, 2017

Skill Development Programmes

S.No.	Title of Training	Period	Fees (Rs) (excluding Service tax)
1	Instrumental Evaluation of Clothing Comfort	Mar 6-10, 2017	50,000



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



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