



Global Excellence in Cotton Technology Monthly Bulletin, Volume 02, February 2026

Visit of Dignitary

Dr. Mangi Lal Jat, Secretary DARE and DG, ICAR, visited ICAR-CIRCOT, Mumbai on February 22, 2026. A Start-Up Exhibition featuring about 25 start-ups supported under RKVY-RAFTAAR Agri-business Incubator was organized. During the visit, the Hon'ble DG interacted with staff and start-ups, witnessed the signing of one MoU for licensing the technology "Nano-zinc oxide finished cotton textiles," and released three institute publications.



Technology of the Month

Microbial Enzyme-mediated Delinting Process for Cotton Seeds

Conventional cotton seed delinting methods such as acid delinting are environmentally harmful, while mechanical methods are energy intensive. Acid delinting also generates wastewater that contaminates soil and groundwater. To develop a greener alternative, a microbial cellulase enzyme-based delinting process was developed. Experiments were conducted to optimize process conditions for efficient removal of linters from cotton seeds. In the developed process, fuzzy cotton seeds were treated with commercial cellulase enzyme in sodium citrate buffer (pH 4.8) in the ratio of 1:10 and incubated at 50 °C in a shaking water bath at 120 rpm at different time intervals from 1 h to 6 h. The enzyme concentration was varied from 10–50% (v/v). After incubation, the seeds were washed and dried at room temperature. The results showed that more than 90% delinting was achieved with 10% enzyme concentration in 3 hours, which is comparable to the conventional sulfuric acid-based process. Germination tests indicated that the viability of enzyme-treated seeds remained unaffected under these conditions. This technology provides a sustainable and eco-friendly alternative to chemical delinting of cotton seeds using microbial cellulase.

Skill Development Program



ICAR short course on “Advances in Nanotechnology Applications for Agriculture” was organized during February 2–11, 2026, at ICAR-CIRCOT, Mumbai. Twelve participants attended the programme.



A three-day specialised training programme on “Fibre Reinforced Composites and Their Applications” was organized from February 16–18, 2026. Fourteen participants attended the programme.



A three-day training programme was organized at GTC Nagpur on “Post-harvest Processing of Cotton and value addition to its by-products”, from February 25-27, 2026, for field officers from Ambuja Foundation, Nagpur. Twenty-nine participants attended the programme.

Award / Recognition



Dr. S. K. Shukla, Director, ICAR-CIRCOT, received the Aashirwad Gaurav Award 2025 for excellent official work in Hindi from the NGO Aashirwad, during the Aashirwad Suvarna Mahotsav held at ICAR-CIRCOT, Mumbai, on February 24, 2026.

- Dr. G. T. V. Prabu received the Best Oral Paper Award for his research paper titled “Smart Electrospun Nanofibre Based System for Precision Agriculture” at the National Conference on Advanced Technological Interventions for Enhancing Sustainability in Agricultural Production and Value Chain, held at Dr. PDKV, Akola (MS) during February 27–28, 2026.
- Dr. Himanshushekhar Chaurasia delivered an invited talk on “Application of AI in Plant Phenomics” at the INDIA AI IMPACT Pre-Summit 2026, held at the Institute of Science, Banaras Hindu University, Varanasi, during January 27–28, 2026.
- Dr. K. Pandiyan delivered a speech as Key Advisor (Pramukh Margadarshak) on “Importance of Cotton Quality Parameters and Best Practices for Clean Cotton Production” during a Kisan Mela organized by Ambuja Foundation (Better Cotton) and Sultania Oil Industries Pvt. Ltd. on February 11, 2026, at Selu (Kalmeshwar), Nagpur.

Events Organised

- The Annual Review Workshop of the CRP on Natural Fibre was held on February 4, 2026, under the chairmanship of Dr. S. N. Jha, DDG (Agricultural Engineering). Dr. Narasiah Kairam, ADG (Process Engineering), ICAR, co-chaired the meeting. The Directors of ICAR-CIRCOT, Mumbai and ICAR-NINFET, Kolkata, along with Principal Investigators (PIs) and Co-PIs of various sub-projects, attended the workshop and presented their progress.
- The NABL External Audit for renewal of the institute’s accreditation was successfully conducted on February 07–08, 2026, by Ms. Meena (Lead Assessor) and Mr. Mitul Saha (Technical Assessor).
- The Surveillance Audit of the institute under ISO 9001:2015 QMS was successfully conducted by the Bureau of Indian Standards (BIS) on February 19–20, 2026.
- Ginning Training Centre, Nagpur organized an awareness programme and webcast of the National Launch of BharatVistaar – Digital Public Infrastructure (DPI) for AI in Agriculture on February 17, 2026.
- The inaugural session of the CIRCOT KSHITIJ Incubation Programme was conducted on February 17, 2026, at ICAR-CIRCOT, Mumbai, in hybrid mode with participation from scientists, experts, and 23 selected start-ups.
- ICAR-CIRCOT organised Aashirwad Suvarna Mahotsav in collaboration with Aashirwad NGO on February 24, 2026 at Mumbai.

Publication

Research Paper

- Murmu, S., Krishna, J., Chaurasia, H. and Jha, G.K., (2026). HMRPred: A Machine Learning-Based Web Resource for Identification of Heavy Metal Resistance Proteins. *Journal of Molecular Biology*, p.169659. (NAAS :10.5, [IF: 4.5])
- Raj Singh, Kumar Shivam, Shekh Mukhtar Mansuri, Akuleti Saikumar, C Nickhil, Laxmikant S. Badwaik, Sankar Chandra Deka, Pankaj B. Pathare (2026). Estimation of Mass and Volume of Freshly Harvested Naga King Chilli (*Capsicum chinense* L.) Using Computer Vision: Exploring Changes During Different Storage Days. *Food Physics*, 100087.

Technical / Popular Article

- Shukla SK, Arude VG, Raja ASM, Jalgaonkar K, Patil S. (2026). Mechanization of Cotton Harvesting in India: Challenges and Way Forward. *Seed Times Magazine*, Published by National Seed Association of India, Volume 17, Special Issue, 2025, pp: 23-34.
- हिमांशुशेखर चौरसिया, एन षण्णमुगम, कनिका शर्मा, अलका अरोड़ा एवं स्नेहा मुर्मू, 2026. कपास प्रसंस्करण में कृत्रिम बुद्धिमत्ता द्वारा विकासशील परिवर्तन. अंबर 2025, भ.कृ.अनु.प.–कपास प्रौद्योगिकी अनुसंधान संस्थान, मुंबई.
- स्नेहा मुर्मू एवं हिमांशुशेखर चौरसिया, 2026. कपास फसल प्रौद्योगिकी में जैव सूचना विज्ञान और कृत्रिम बुद्धिमत्ता के नवाचार. अंबर 2025. भ.कृ.अनु.प.–कपास प्रौद्योगिकी अनुसंधान संस्थान, मुंबई.
- जी.टी.वी. प्रबु, जी. कृष्ण प्रसाद, टी. सेंथिल कुमार, पी जगजानंथा, मनोज कुमार महावर, 2026. इंजीनियर्ड कॉटन मास्क: आसान और प्रभावी सुरक्षा के लिए समाधान.अंबर 2025. भ.कृ.अनु.प.–कपास प्रौद्योगिकी अनुसंधान संस्थान, मुंबई.

Patent Granted

- A patent titled “Novel Chemo-Mechanical Method for Preparation of Nanosulphur” has been granted with Patent No. 581434.

Presentation and Participation in the Conference

- Dr. G. Krishna Prasad presented a paper titled, “Sustainable development of para-aramid and naturally colored cotton blend gloves with enhanced protective performance”, at the 8th International Conference on Technical Textiles and Nonwovens (ICTN 2026), held on February 06-08, 2026 at IIT, New Delhi.
- Dr. GTV Prabu presented a research paper entitled “Smart Electrospun Nanofibre based System for Precision Agriculture” at the National Conference on Advanced Technological Interventions for Enhancing Sustainability in Agricultural Production and Value Chain, held at College of Agriculture, Dr. Punjabrao Deshmukh Krishi Vidyapeeth (PDKV), Akola (MS) during February 27-28, 2026.

Conference Attended

- Dr. Manoj Kumar and Dr. Himanshushekhhar Chaurasia attended the India AI Impact Summit 2026, held during February 16–20, 2026, at Bharat Mandapam, New Delhi.
- Dr. S. K. Shukla, Dr. Sheshrao Kautkar, Dr. Manoj Kumar, Dr. Ajinath Dukare, Dr. Jyoti Dhakane Lad, Dr. Himanshushekhhar Chaurasia, and Dr. Kanika Sharma attended the Global Conference on AI in Agriculture and Investor Summit 2026 held at Jio Convention Centre, BKC, Mumbai, during February 22–23, 2026.

MoU & Consultancy

- An MoU was signed with M/s. VSK Textiles, Kovilpatti, Tamil Nadu, on February 22, 2026, for licensing the technology “Nano-zinc oxide Finished Cotton Textiles.”
- ICAR–CIRCOT conducted GoT trials in 20 ginneries across India under a consultancy project of the Cotton Corporation of India, with the objective of improving cotton processing efficiency and quality.

Technology Demonstration

- Dr. V. G. Arude participated in a demonstration of mechanical harvesting of cotton (two-row spindle type cotton picker) under the High Density Planting System (HDPS) held at Akola on February 12, 2026. The event was organized by M/s Rasi Seeds and M/s Tirth Agro Technologies Pvt. Ltd., with participation from farmers, academicians, researchers, and industry experts.
- Dr. V. G. Arude also participated in the demonstration and launch of the ‘Two Row Cotton Stripper Harvester’, jointly developed by ICAR-CIAE, Bhopal; ICAR-CIRCOT, Mumbai; and ICAR-CICR, Nagpur. The harvester was launched by Hon’ble Shri Shivraj Singh Chouhan, Minister of Agriculture & Farmers’ Welfare, at ICAR-CIAE, Bhopal, on February 15, 2026.

Participation in Events

- Dr. S. K. Shukla, Director, ICAR–CIRCOT, participated as the Guest of Honour at the International Conference on “Leveraging Information Technology for Sustainability in Agriculture and Healthcare – AI for Bharat@100”, held on February 07, 2026, at Thakur Institute of Management Studies, Career Development & Research, Kandivali, Mumbai. On the occasion, he delivered a keynote address on “Futuristic AI-Based Technologies in Cotton Processing”.
- Dr. S. K. Shukla, Director, participated in the workshop on “Mechanisation of Cotton Harvesting in India” at ICAR-CICR, Nagpur on February 27, 2026 and delivered a keynote address on “Defoliation and Ginning of Mechanically Harvested Cotton”.

Capacity Building

- Ms. Mita Sudhakar Satam, M.Sc. II-year Microbiology student from S.S. and L.S. Patkar Varade College, Goregaon, Mumbai, completed her dissertation titled “Development and Characterization of Antimicrobial Silver Nanoparticle-Functionalized Cotton Fabric” at ICAR-CIRCOT under the guidance of Dr. Ajinath Dukare, during November 03, 2025 – January 31, 2026.
- All staff of the Ginning Training Centre, Nagpur were imparted training under the Rashtriya Karmayogi Jan Seva Program at ICAR–Central Citrus Research Institute, Nagpur, on February 10, 2026.

ICAR- West Zone Sports Participation

Twenty-nine staff members participated in the ICAR Zonal Sports Meet held at CSWRI, Avikanagar, Rajasthan, during January 31–February 03, 2026. The institute bagged three gold medals in various event.



लोकशाही वार्ता

कापूस उत्पादन आणि प्रक्रिया क्षेत्रातील आव्हानांवर मंथन

जिनिंग ट्रेनिंग सेंटरतर्फे हितधारकांची बैठक : गुणवत्ता आणि बाजारमूल्य वाढीवर भर

लोकशाही वार्ता/नागपूर

देशाच्या अर्थव्यवस्थेत महत्त्वाचा वाटा असलेल्या कापूस क्षेत्रापुढील आव्हाने आणि भविष्यातील संघीचा वेध घेण्यासाठी 'जिनिंग ट्रेनिंग सेंटर'तर्फे नुकतीच एक विशेष हितधारक बैठक आयोजित करण्यात आली होती.

आयसीएआर-केंद्रीय कापूस तंत्रज्ञान संशोधन संस्थेच्या नागपूर केंद्रात पार पडलेल्या या बैठकीत कापूस उत्पादन, प्रक्रिया आणि विपणन या क्षेत्रातील प्रमुख समस्यांवर सविस्तर चर्चा करण्यात आली. कापसाची गुणवत्ता सुधारणे, उत्पादकता वाढवणे आणि जागतिक बाजारपेठेत भारतीय कापसाला योग्य मूल्य मिळवून देणे, हा या बैठकीचा मुख्य केंद्रबिंदू होता. या



महत्त्वपूर्ण बैठकीत उद्योग आणि कृषी क्षेत्रातील दिग्गजांनी सहभाग नोंदवला. सीआयटीटी-सीडीआरए महाराष्ट्राचे प्रकल्प समन्वयक जी. एच. वैराळे, वजाज स्टील इंडस्ट्रीजचे मुख्य कार्यकारी अधिकारी डॉ. एम. के. शर्मा, विदर्भ कॉटन असोसिएशनचे अध्यक्ष भावेश शहा आणि संजीवनी अॅग्रोचे

संजय शीरसागर यांनी कापूस उद्योगातील व्यावहारिक अडचणी मांडल्या. तसेच सुपरव्हायजिंग डिसीप्लिनचे अतुल पानट, विदर्भ सेल्सचे अनिल चौक आणि अर्पण सेवा संस्थान, जयपूर येथील तज्ज्ञांनी कापूस प्रक्रियेतील आधुनिक तंत्रज्ञानाच्या वापराबाबत मार्गदर्शन केले.

बैठकीच्या सुरुवातीला जिनिंग ट्रेनिंग सेंटरचे प्रभारी अधिकारी व वरिष्ठ शास्त्रज्ञ डॉ. के. पांडियन यांनी बैठकीची रूपरेषा स्पष्ट करत सर्व उपस्थितांचे स्वागत केले. यावेळी सीआयआरसीओटी, मुंबईचे संचालक एस. के. शुकला यांनी आपल्या प्रास्ताविक भाषणात कापूस क्षेत्रासमोर असलेल्या ज्वलंत समस्यांकडे लक्ष वेधले. कापूस क्षेत्राच्या सर्वांगीण विकासामाठी शेतकरी, प्रक्रिया उद्योग आणि तंत्रज्ञान संस्थांमध्ये समन्वय असणे काळजीची गरज असल्याचे त्यांनी यावेळी नमूद केले.

या बैठकीत केवळ उद्योजकच नव्हे, तर विदर्भ कॉटन असोसिएशनचे प्रतिनिधी आणि प्रगतशील शेतकऱ्यांनीही आपली मते मांडली. कापसाचे बाजारमूल्य वाढवण्यासाठी प्रक्रियेत कोणत्या सुधारणा अपेक्षित आहेत आणि शेतकऱ्यांना या साखळीचा कसा फायदा घेता येईल, यावर या बैठकीत एकमत झाले. या चर्चेतून समोर आलेले निष्कर्ष कापूस उद्योगाला नवी दिशा देणारे ठरतील, असा विश्वास बैठकीत व्यक्त करण्यात आला.

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