



**ICAR - CENTRAL INSTITUTE FOR
RESEARCH ON COTTON TECHNOLOGY**

(Indian Council of Agricultural Research)
Adenwala Road, Matunga, Mumbai 400 019



**Proceedings of the First
Meeting of the**

**XXIII
Research Advisory
Committee**

ICAR-CIRCOT, Mumbai

(February 8-9, 2017)

XXIII Research Advisory Committee (2017-19)
ICAR-CIRCOT MUMBAI – 400019

Dr. Nawab Ali Former DDG (Agricultural Engineering), ICAR, Bhopal	Chairman
Dr. G.S. Nadiger Research Advisor (SASMIRA) & Former Director (Textile Committee, Member)	Member
Dr. Anup Rakshit Executive Director, Indian Technical Textile Association, Mumbai	Member
Dr. Narendra G. Shah Professor, Centre for Technology Alternatives for Rural Areas (CTARA), IIT, Mumbai	Member
Dr. Bijay K. Behera Professor & Head, Department of Textile Technology IIT, Delhi	Member
Dr. D. Nag Former Director, NIRJAFT, Kolkata	Member
Dr. P.G. Patil Director, CIRCOT, Mumbai	Member
Dr. S.N. Jha Assistant Director General (PE), ICAR, New Delhi	Member
Dr. V.G. Arude Scientist & Head In-charge MPD, CIRCOT, Mumbai	Member-Sec

Proceedings of the 1st Meeting of the Twenty-Third Research Advisory Committee (RAC) of ICAR-CIRCOT, Mumbai held during February 08 and 09, 2017

The 1st Meeting of the Twenty-third Research Advisory Committee (RAC) of ICAR-CIRCOT was held in Dr. V. Sundaram Committee Room during February 08 and 09, 2017. Dr. Nawab Ali, Chairman, RAC presided over the meeting and the following members of the RAC were present:

- **Dr. G. S. Nadiger**
Research Advisor, SASMIRA & Former Director (Textile Committee)
- **Dr. Anup Rakshit**
Executive Director, Indian Technical Textile Association
- **Dr. Narendra G. Shah**
Professor, Centre for Technology Alternatives for Rural Areas (CTARA), IIT, Mumbai
- **Dr. Debasis Nag**
Former Director, NIRJAFT, Kolkata
- **Dr. S. N. Jha**
ADG (Process Engineering), ICAR, New Delhi
- **Dr. P. G. Patil**
Director, ICAR-CIRCOT, Mumbai
- **Er. V. G. Arude**
Scientist & Member Secretary, RAC, ICAR-CIRCOT, Mumbai

Dr. B.K. Behera, Member, RAC could not attend the meeting due to some unavoidable circumstances. All HoD's and scientists of the Institute attended the meeting. List of participants and the agenda are given in Annexure 1 & 2, respectively.

1. Welcome and Opening Remarks

Er. V. G. Arude, Scientist and Member Secretary, RAC, welcomed the Chairman and the members of the XXIII RAC on their first meeting and requested the Chairman to conduct the proceedings of the meeting. Dr. P.G. Patil, Director, ICAR-CIRCOT presented the salient achievements and activities of the institute during the present plan period. He said that feasibility report of processing mechanically harvested cotton vis-à-vis hand-picked one has been prepared and as of now mechanical harvesting of cotton is in the nascent stage in India and there is a need

for a concerted and cooperative efforts by cotton breeders and agricultural engineers to make mechanical harvesting of cotton, techno-economically feasible, in India. He also briefed about the progress made in respect of comfort index for textile materials; compilation & analysis of fibre quality data of standard varieties; ripening index of mangoes based on different sizes packaging having elector-spun sensor; development of protein isolates from cotton seed proteins and modified starch from cellulose; pilot-scale establishment of farm to fabric value chain and commercialization of various cotton technology developed by the CIRCOT. He also briefed about vacant positions of scientific and technical position and the efforts being made.

Dr. Nawab Ali, Chairman in his opening remarks mentioned that mechanization of cotton farming should be given priority so that technology developed is translated into benefit for the farmers. Being the PI of AICRP on Cotton for Quality, the institute should take lead in promoting mechanization of cotton harvesting through mission mode approach in collaboration with CICR, Nagpur and CIAE, Bhopal. The institute may also provide necessary inputs to the cotton breeding programme to develop amenable varieties for mechanical harvesting. The institute should try to assess the impact that it has created among the stakeholders and come out with success stories of the technologies developed. The chairman said that the institute should maintain the database of the IP protected technologies to have an insight on its performance.

2. Action Taken Report on Proceedings of XXII RAC

The Action Taken Report on the Proceedings of 22nd RAC was presented by Er. V.G. Arude, Member Secretary, RAC and the same was accepted with some suggestions from the Members and it was also advised to submit a detailed action taken report to ADG (PE) & the Chairman, RAC, within 3 months.

3. Release of CIRCOT Publication

On the occasion Dr. Nawab Ali, Chairman RAC, released the following two publications, namely,

3.1 ICAR-CIRCOT – A Profile (Annexure-3)

3.2 Antimicrobial Cotton Bed Sheets (Annexure-4)

4. Presentation of Progress of the Research Work

The progress of research activities carried out in the institute under different core areas during the period 2016-17 were presented by the respective heads/Incharges, as per details given below:

4.1 Pre-ginning and Ginning

Dr. S. K. Shukla, Sr. Scientist & Officer In-charge, GTC, Nagpur

4.2 Characterization–Cotton and other Natural Fibres, Yarns and Textiles

Dr. P.K. Mandhyan, Sr. Scientist, and In-charge, QEID

4.3 Mechanical Processing, Technical Textiles and Composites

Shri V.G. Arude, Scientist and In-charge, MPD

4.4 Chemical and Biochemical Processing & Biomass and By-product Utilization

Dr. Sujata Saxena, Principal Scientist and In-charge, CBPD

4.5 Entrepreneurship and Human Resource Development

Dr. C. Sundaramoorthy, Sr. Scientist, TTD.

4.6 Consortia Research Project (CRP) on Natural Fibres

Dr.A.S.M.Raja, Sr. Scientist, & Coordinator, CRP on Natural Fibres.

5. Discussion and Recommendations

5.1 Dr. Nawab Ali, Chairman 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 and 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. He reiterated that the technology generated through the project should take a logical end by means of further refinement (through new RPP I) or transferring it to the targeted beneficiaries (through RPP IV). As a prelude to the scientific audit, the load of scientist should be properly assessed and ensured that 80 per cent time is allocated for research and 20 per cent for institute building activities. The chairman suggested to hold the RAC meeting for three days henceforth for detailed deliberation of the research work being undertaken in the institute.

5.2 Dr. Anup Rakshit said the institute should focus on non-conventional application of cotton and develop products in the area of technical textiles such as medical textiles, wipes and conventional bandages. He also requested the scientist to explore the use of cotton stalks as bio-energy source and also for the development of bio composites. He asked the institute to explore technologies like spun lace process for development of technical textiles for diversification of cotton application.

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- 5.3 Dr. G.S. Nadiger** has expressed that the research work should focus on improvement in quality, energy and water conservation and improvement in efficiency for protection of environment. He urged for the need to interact with the Cotton Corporation of India to tackle the problem of high moisture content in the raw cotton. He emphasized that there is a potential application of agro-textiles in cotton farming which can be realised by joint working of CIRCOT, CICR and SASMIRA. He said that the industry involvement can be explored in the research using Supercritical Carbon-Di-Oxide in textile finishing. He also stressed that the institute should get accreditation for its CRM.
- 5.4 Dr. D. Nag** indicated that there should be an inter-institutional collaboration and co-operation among the institutes working for natural fibres. He emphasized that the use of cotton in technical textiles should be improved and expertise available at NIRJAFT may be used. He asked to open up a sales counter for the products developed by the institute.
- 5.5 Dr. Narendra Shah** stressed that the scientist while developing the product or technology should have the application in focus, so that experiment may be appropriately designed to develop a viable technology. The institute should be committed towards creation of Skill development in cotton processing sector.
- 5.6 Dr. S.N. Jha, ADG (PE)** expressed that the institute should bring out the success stories of the technology developed by the institute and also establish contact with the industry. He also asked the institute to prepare the proposal for special grant to get the additional funds to upgrade the instruments and equipment. He emphasized that institute should focus on industry sponsored projects.

6. Major Recommendations

6.1. Research Issues

- 6.1.1. Evaluate the comfort index of the cotton/bamboo blended T-shirt and also obtain the feedback on the comfort behavior of use of Cotton/Bamboo T-shirt
- 6.1.2. Initiate collaborative research programmes to develop indigenous fibre and yarn testing equipment.
- 6.1.3. Work out the techno-economic feasibility of microbial, enzymatic and chemical methods of absorbent cotton production.
- 6.1.4. Cost comparison for activated carbon from cotton stalks vis-à-vis coal be done.

- 6.1.5. Effect of Bt residue in the cottonseed, oil and cotton stalk for the Bt varieties which are grown since last 10 years to be ascertained.
- 6.1.6. Improve the durability of the mosquito repellent finishes and explore the development of mosquito repellent blankets/clothes for tribal and defense people.
- 6.1.7. In Supercritical carbon dioxide treatment for finishing of blended textiles, explore the possibility of sublimation process followed by chemical bonding.
- 6.1.8. Spun-lace process for preparation of nonwovens for applications in wipes and conventional bandages need to be explored.
- 6.1.9. Demonstrate the importance of moisture management while cotton trading at market yards with the help of CCI.

6.2. Administrative Issues:

- 6.2.1. Without sufficient scientific and technical manpower, it is difficult to carry out the mandated activities of the institute. Hence all out efforts should be done to recruit scientific and technical manpower in consultation with ICAR/ASRB.
- 6.2.2. NABL accreditation for preparation of standard reference material to be obtained.
- 6.2.3. Have consultation with the currency paper manufacturing establishment and printing press at Hoshangabad (M.P.) for seeking help on preparation of specialty grade paper from lint and other natural fibres.
- 6.2.4. Explore the possibility of application of agro-textiles in cotton farming. A joint meeting of CIRCOT, Mumbai, CICR, Nagpur and SASMIRA. Mumbai may be called.
- 6.2.5. Strengthen the collaboration between the institutes working on cotton and natural fibres.
- 6.2.6. Organize the industry and CIRCOT interface meeting periodically and regularly and monitor the action taken on the recommendations.

6.3. Policy Issues

- 6.3.1. Cotton breeding research programmers need to be initiated for developing varieties that are amenable to mechanical harvesting, matures uniformly so as to enable the mechanical harvesting of cotton. It should be a collaborative programme with cotton Breeder and Agricultural Engineers. Mission mode approach is needed for mechanization of cotton harvesting involving all the

stakeholders. Hence ICAR institutes viz. CICR, Nagpur, CIAE, Bhopal and CIRCOT, Mumbai should work together on this issue. Alternately, a consortium project may be made for the purpose and Director CIRCOT should initiate the matter with all stakeholders.

- 6.3.2. Regional unit at Surat has very less activities, hence it may be shifted either to Rajkot or Surendranagar, as these are cotton clusters and have wide scope for expansion of activities in the area of ginning, khadi and by-product utilization.
- 6.3.3. CIRCOT is more than ninety year (1924-2017) old Institute. Most of the textiles testing equipment and machines are getting obsolete and spares are not readily available. To provide continuous service as a referral laboratory, new instrument and equipment with recent and advanced technology should be purchased. A proposal for one time financial grant for purchase of new and advanced fibre and textile testing equipment may be prepared and submitted to the Council for budgetary provision.
- 6.3.4. Open sales counter at CIRCOT as an outlet for its products and exchange of products developed by NIRJAFT and CIRCOT for mutual promotion.

6.4. General Issues

- 6.4.1. Database on number of patents filed, granted, active and seized during the last 10 years be prepared.
- 6.4.2. Impact assessment of technologies commercialized by the institute to be taken up to know the benefits gained by the stakeholders/farmers.
- 6.4.3. Success stories of the ICAR-CIRCOT technologies transferred to the users be prepared.
- 6.4.4. Notional income to be calculated for services rendered towards farmers/stakeholder to quantify the quantum of work done by the institute.
- 6.4.5. Approach industries for taking up sponsored research projects
- 6.4.6. CIRCOT interventions to improve farmer's income under MeraGaonMera Gaurav (MGMG) programme is required.
- 6.4.7. Rationalize the project undertaken and time spent by each scientist on research and other institutional activities.

7. Visit to Various Research Laboratories and Exhibition Room

Chairman and members of RAC visited various research laboratories and facilities of the institute which include Nano-cellulose pilot plant, Kawabata Evaluation System, XRD, SEM, Spinning, High Volume Instrument, Advanced Fibre Information System, Yarn Testing, Chemical and Bio-chemical Processing Lab, Test House, PME and Incubation Cell, Exhibition Room etc.

The RAC meeting ended with a vote of thanks proposed by Shri V. G. Arude, Member Secretary, RAC, CIRCOT Mumbai

N. G. Arude

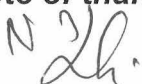
Brainstorming Session On Challenges in Cotton Sector and Role of ICAR-CIRCOT, Mumbai held on 8th February, 2017

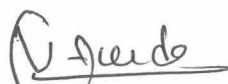
ICAR-CIRCOT organized a brainstorming session on Challenges facing Cotton sector and Role of ICAR-CIRCOT at Mumbai on 8th February 2017. The session was organized as part of the 23rd Research Advisory Committee meeting of the institute to figure out the challenges ahead in cotton sector for the next 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 discussions were:

- *Need of a machine for removal of contamination from lint*
- *Development of extra-long staple cotton varieties for fine fabrics*
- *Development of short staple varieties for denim fabric*
- *Development of suitable machine for mechanical harvesting of cotton*
- *Regulatory mechanism for controlling moisture content in cotton trading and processing*
- *Promoting testing of sample from each bale of cotton produced in a ginnery*
- *Promotion of pricing of cotton based on quality parameters*
- *Creation of a world class ginning training centre at Nagpur*
- *Research work on processing of machine picked cotton using double roller gin*
- *Creation of awareness about scientific processing of cottonseed*
- *Creation of awareness among farmers on prevention of contamination in cotton during harvesting and post-harvest processing/management.*
- *Explore diversified utilization of cotton to enhance farmers income*
- *Research work on development of varieties to get higher ginning percentage*
- *Efforts to reduce the usage of water in textile processing*
- *Development of water stress/drought resistant varieties*
- *Research work on development of arboreum varieties, its processing and uses*
- *Life cycle assessment of cotton to ascertain the environment cost in comparison to polyester*

- *Mimicking the qualities of polyester to cotton so as to increase its utilization*
- *Cotton to be assessed for toxic effluent compared to other synthetic fibres*
- *Promotion of lint trading at village level for better remuneration to farmers*
- *Inclusion of ginning percentage as one of the parameter in deciding the Minimum Support Price of Cotton. Issue to be taken up with the Textile Commissioner*
- *Engage rural youth in entrepreneurship of collection and supply of cotton stalk for briquetting, pelleting and power generation industry.*
- *Development of indigenous instruments and machines for textile testing and processing*
- *Emphasis on research work on Khadi for its promotion*
- *Development of smart textiles and its applications*
- *Policy to scrap out or ban the usage of old machines for ginning and processing having poor efficiency*
- *Research work should focus on improvement in quality, energy and water conservation and improvement in efficiency for protection of environment*
- *Skill development in cotton processing sector*
- *Collaborative research programmes with trade association like, cotton federations and cotton seed crushers association and Indian Natural fibre society should be taken up.*
- *Industry sponsored research need to be strengthened.*

The Brain Storming Sesssion was coordinated by Er. V.G. Arude, Member secretary of RAC and Dr. A.S.M. Raja, Sr. Scientist. The session ended with a vote of thanks proposed by Dr. C. Sundramurthy.


 (Dr. Nawab Ali)
 Chairman, RAC


 (Er. V.G. Arude)
 Member Secretary, RAC

List of Participants in RAC

1. Dr. Nawab Ali, *Chairman, RAC*
2. Dr. S. N. Jha, *Member, RAC*
3. Dr. G. S. Nadiger, *Member RAC*
4. Dr. Anup Rakshit, *Member RAC*
5. Dr. N.G. Shah, *Member RAC*
6. Dr. Debasis Nag, *Member RAC*
7. Dr. P. G. Patil, *Member RAC*
8. Shri V. G. Arude, *Member-Sec RAC*
9. Dr. Sujata Saxena, *Pr. Scientist*
10. Dr. P. K. Mandhyan, *Sr. Scientist*
11. Dr. S. K. Chattopadhyay, *Pr. Scientist*
12. Dr. A. S. M. Raja, *Sr. Scientist*
13. Dr. P. S. Deshmukh, *Sr. Scientist*
14. Dr. S. K. Shukla, *Sr. Scientist*
15. Dr. S. V. Ghadge, *Sr. Scientist*
16. Dr. N. Vigneshwaran, *Sr. Scientist*
17. Dr. Syamal Kumar Dey, *Sr. Scientist*
18. Dr. Virendra Prasad, *Sr. Scientist*
19. Dr. C. Sundaramoorthy, *Scientist*
20. Shri. A. Arputharaj, *Scientist*
21. Dr. R. Guruprasad, *Scientist*
22. Shri. G. Krishna Prasad, *Scientist*
23. Shri. T. Senthilkumar, *Scientist*
24. Dr. P. Jagajanantha, *Scientist*
25. Ms. Varsha Satankar, *Scientist*
26. Smt. Archana Mahapatra.....
27. Smt. Sujata Koshy.....
28. Shri. S. V. Kasabe.....
29. Shri. M. Mohan, *ACTO*
30. Shri B.R. Pawar, *ACTO*
31. Shri. Narayanan K, *STO*
32. Smt. Hemangi Pednekar, *STA*



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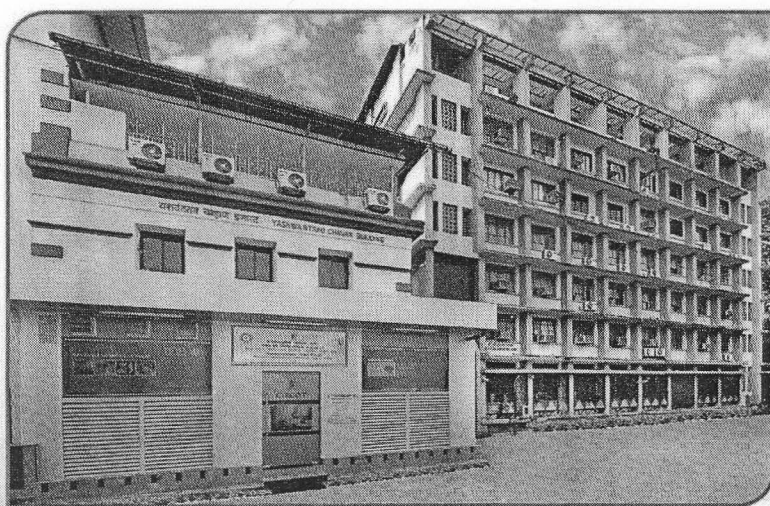
TWENTY THIRD RESEARCH ADVISORY COMMITTEE
Feb 8 & 9, 2017
AGENDA/PROGRAMME SCHEDULE

Feb 8, 2017	
Time	Agenda item
9.00 am	• Visit to Various Research Laboratory and Exhibition Room
Venue : Jubilee Hall	
10.30 am	• Brainstorming session on “ <i>Challenges Facing Cotton Textile Sector-Road Ahead</i> ” (All RAC Members, Invitees, HODs, Scientists & Technical Staff T5 and above)
1.30 pm	• Lunch
Venue: Dr. V. Sundaram Committee Room	
2.30pm	• Welcome address and briefing of major achievements and activities of the institute for the period from April 2016 to January 2017, possible contributions to government, and current human resource position (Scientific) and challenges ahead: - Dr. P. G. Patil, Director
3.00pm	• Opening remarks by Members and Chairman
3.30pm	• Action Taken Report on the Proceeding of 22 st RAC meeting held on March 16 & 17, 2016: - Er. V. G. Arude, Member Secretary, RAC & In-charge, PME
4.00pm	• Presentation of research highlights and achievements for past one year and R&D action plan for the next one year as per core areas
	I. Pre-ginning and Ginning - Dr. S. K. Shukla, Senior Scientist and Officer In-charge, GTC, Nagpur
	II. Mechanical Processing, Technical Textiles and Composites – Er. V. G. Arude, Scientist and Head (In-charge), MPD
	III. Characterisation – Cotton and other Natural Fibres, Yarns and Textiles- Dr. P. K. Mandhyan, Senior Scientist and Head (In-charge), QEID
	IV. Chemical and Biochemical Processing Biomass & By-product Utilisation – Dr. Sujata Saxena, Principal Scientist and Head (In-charge), CBPD
	V. Entrepreneurship and Human Resource Development – Er. A. K. Bharimalla, Senior Scientist and Head (In-charge), TTD
	• Presentation on Platform Project on Natural Fibre and Nanotechnology – Dr. A. S. M. Raja, Sr. Scientist & Co-ordinator, CRP on Natural Fibres
Feb 9, 2017	
10.00 am	• Discussion and Remarks of RAC Members and Chairman on ICAR-CIRCOT's Achievements
11.30 am	• Specific Recommendations – RAC Members & Chairman
12.30pm	• Concluding Remarks – RAC Members & Chairman
1.00 pm	• Vote of Thanks – Er. V. G. Arude, Member Secretary, RAC
1.30 pm	• Lunch



ICAR-CIRCOT

- A Profile




ICAR-Central Institute for Research on Cotton Technology
Adenwala Road, Matunga, Mumbai- 400 019


October 2016

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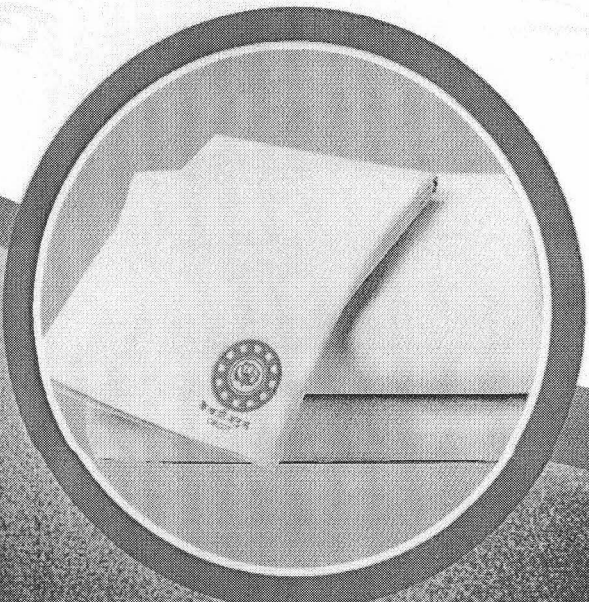


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Antimicrobial Cotton Bed Sheets



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