

**Proceedings of 27<sup>th</sup> Meeting of the  
RESEARCH ADVISORY COMMITTEE (RAC) of  
ICAR-CIRCOT, Mumbai**

**Held on Virtual Platform on 1<sup>st</sup> and 2<sup>nd</sup> June, 2021**

**Chairman and Members of RAC (2020-2023)**

**Dr. N. C. Patel, Chairman**

**Dr. M. K. Sharma, Member**

**Prof. (Dr.) U. J. Patil, Member**

**Prof. (Dr.) S. R. Shukla, Member**

**Dr. N.N. Mahapatra, Member**

**Dr. Narendra G. Shah, Member**

**Dr. S. N. Jha, Member**

**Dr. Sujata Saxena, Member**

**Dr. V. G. Arude, Member Secretary**



**ICAR-Central Institute for Research on Cotton Technology Adenwala  
Road, Matunga, Mumbai-400019, M.S., India**

**June, 2021**

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## **Proceedings of 27<sup>th</sup> Research Advisory Committee (RAC) Meeting held on Virtual Platform on 1<sup>st</sup> and 2<sup>nd</sup> June 2021**

**The 27<sup>th</sup> (Twenty Seventh) meeting of the Research Advisory Committee (RAC) of ICAR-CIRCOT, Mumbai** was held on virtual platform on 1<sup>st</sup> and 2<sup>nd</sup> June 2021. **Dr. N. C. Patel**, Former Vice Chancellor, Junagarh Agricultural University and Anand Agricultural University and Chairman, RAC presided over the meeting and following members were present.

- **Dr. M. K. Sharma**, Whole Time Director & CEO, M/s. Bajaj Steel Industries Ltd, Nagpur
- **Prof. (Dr.) U. J. Patil**, Head, Department of Textiles, D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji
- **Prof. (Dr.) S. R. Shukla**, Former Professor, Institute of Chemical Technology (ICT), Mumbai
- **Dr. N.N. Mahapatra**, Business Head (Dyes), Shree Pushkar Chemicals & Fertilizers Ltd, Mumbai
- **Dr. Narendra G. Shah**, Professor, Centre for Technology Alternatives for Rural Areas (CTARA), IIT, Mumbai
- **Dr. S. N. Jha**, Assistant Director General (Process Engineering), ICAR, New Delhi
- **Dr. Sujata Saxena**, Director, ICAR-CIRCOT, Mumbai
- **Dr. V. G. Arude**, Senior Scientist & Head (In-charge) and Member Secretary, RAC, ICAR-CIRCOT, Mumbai

**Dr. V. G. Arude**, Member Secretary, RAC greeted the Chairman and all the honorable members of Committee and other participants.

**All Head of Divisions and scientists of the institute attended the meeting. List of participants are given in Annexure-1.**

**The meeting proceeded as per the agenda items (Annexure-2).**

### **1. Welcome to Chairman and Members of RAC**

**Dr. Sujata Saxena**, Director, ICAR-CIRCOT welcomed the Chairman & Members of RAC for the 27<sup>th</sup> meeting, the second meeting of present committee with the tenure of three years (2020-23). She expressed that due to COVID -19 pandemic we are meeting on virtual mode for the second consecutive year. She asked the RAC members to review the progress of research work and provide valuable comments and suggestions on the progress of research work and guidance for formulating future course of research

projects and institute activities to be taken up based on the current national and international scenario and future prospects in cotton postharvest processing sector.

## **2. Presentation of Major Research Achievements of the Institute**

Dr. Sujata Saxena, Director, ICAR-CIRCOT, made a presentation of major research achievements and other activities undertaken by the institute during last year as also during last plan period (2017-20) to seek guidance in formulating activities for the next plan. She spoke about the status of cotton sector in India, cotton value chain, processing and value addition of cotton and cotton by products, major activities undertaken in research and AICRP on cotton, skill development programmes organized, incubation and commercial services facilitated and the impressive revenue generation by the institute during the past three years with revenue of generation of over Rs. 300 lakhs during last year in spite of the pandemic. She briefed about the establishment of “National Laboratory for Advanced Material Characterization” in the institute and further highlighted that institute had been conferred with prestigious Sardar Patel Outstanding ICAR Institute Award 2019. She briefed about the priorities of institute for next plan 2021-2026 and mentioned that the institute will be celebrating its centenary in 2024 and hopes to establish three centres of excellence on nanotechnology, ginning and cotton classing and grading through grant of special centenary fund. She also made a mention of the shortage of scientific, technical, administrative and skilled support manpower at the institute.

## **3. Release of Publication**

On this occasion, a flip book ‘*FAQs on Nanotechnology*’ was released.

## **4. Opening Remarks by Chairman and Members**

**Dr. N. N. Mahapatra**, in his opening remarks appreciated the plan for establishment of three centers of excellence in the next five year plan. He stressed upon putting efforts to create a brand for Indian cotton and bring it at par with Egyptian cotton so as to compete globally. Work done by CIRCOT may be compiled and circulated among the leading Textile manufacturing units and corporates. Industry may be informed about CIRCOT capabilities in various areas and research projects based on problems faced by Textile mills may be taken up. Business promotion of CIRCOT may be done via advertisement in leading Textile magazines and journals.

**Prof (Dr.) U. J. Patil**, mentioned that nonwoven technology is an emerging field and suggested that CIRCOT should take up research on development of cotton based nonwoven products and may include the same in SFC document. He advised to develop linkages and collaborations with international organisations/Universities in textile sector for development of cotton based product. He urged to take up research work on application of IoT, AI, Robotics, Mobile app etc. in cotton post- harvest processing during the next five year plan.

**Dr. M. K. Sharma**, in his opening remarks congratulated the Director for taking initiatives for establishment of three centres of excellence and opined that these will help to make

India a world leader in cotton sector. He said that CIRCOT has successfully addressed the national concern of spread of Pink bollworm from cotton ginneries by developing suitable mechanical interventions. It has been working to reduce trashes from ginned cotton and should now take up the issue of removal of contamination from seed cotton. He congratulated CIRCOT for its notable work in capacity building in ginning sector. He promised to provide all necessary support to the institute in research and developmental activities.

**Dr. N. G. Shah**, said that it is a special occasion for an institution to celebrate its centenary and ICAR should support the institute in this celebration. Regarding the proposed Centre of excellence in Nano technology, he informed that IIT Bombay has a Centre of Nano Science and Technology and the institute can conduct a joint meeting with the centre to explore new ideas/avenues and exchange of knowledge for mutual benefit.

**Prof (Dr.) S. R. Shukla**, in his remarks said that CIRCOT research achievements are commendable looking into the overall scenario and the unpredictable pandemic period. The book, FAQ on Nanotechnology is worth publicizing all over. He suggested that important days like Science Day/ Technology Day/ Engineers day may be observed on which interaction with academics as well as from industries need to be organized. MoUs signed with academic institutions for promotion of research and interaction of scientists should be kept alive and enhanced further, which will act as a good outreach for CIRCOT. He advocated for motivating scientist to bring out good research publications.

**Dr. S. N. Jha**, ADG (PE) appreciated institute staff for their excellent work and for receiving Sardar Patel Outstanding ICAR Institute Award 2019. He congratulated all RAC committee members for guiding the institute and the scientists of the institute for their sincere efforts to take the institute to the present height. He expressed that his expectation is to see the institute, which is best performing institute in the SMD to grow still higher. He expected that CIRCOT should score A+ in the ICAR ranking of the institutes in the forthcoming years and every scientist should work for it. He mentioned that scientific posts in certain disciplines related to CIRCOT have been recreated and urged the RAC members from textile field to motivate students to appear for ARS examination. He pointed out that most of the revenue of the institute is from nonscientific activities, it should try to generate more revenue from scientific activities/technology licensing and royalty. He suggested to focus on research publications and patents. He asked the RAC members to suggest new areas for the research. He asked the scientists to work for better utilisation of by products and undertake work on developing food from fibre and building materials from cotton stalks.

**Dr. N. C. Patel** Chairman, RAC congratulated Dr. Sujata Saxena for taking over as Director and extended best wishes on behalf of RAC members. In his opening remarks he expressed his happiness on the progress made by the institute and admitted the concern about the dwindling staff position and mentioned that it may not improve in short time and hence stressed that upcoming five year plan should keep into

consideration the available man power and collaboration with Agricultural Universities and institutes should be undertaken to augment the human resources. Online meetings may be conducted to facilitate interaction. He appreciated the third party evaluation report of the institute. He asked the institute to work on improving impact of research and obtaining awards and recognition in order to secure more than 90 marks in institute ranking. He applauded the excellent fund utilisation by the institute despite the pandemic situation and reiterated that the institute should focus to generate more revenue through research and technology based activities rather than from testing activities. He emphasised the need for more frequent interaction among the Scientists, Heads of Divisions and Director for motivating scientists and creating synchronised working environment. Technicians and supporting staff may also be involved in interactions. He urged scientists to develop technologies for the benefit of farmers and stakeholders. He said that non-destructive evaluation of cotton ginning percentage and cotton traceability are areas worth exploring.

#### **5. Presentation of Action Taken Report (ATR) on Proceedings of 26<sup>th</sup> RAC**

**Dr. V. G. Arude, Member Secretary, RAC**, presented the Action Taken Report (ATR) on the proceedings of 26<sup>th</sup> RAC which was held on June 8, 2020. The ATR was accepted by the RAC with comments and suggestion on following recommendations.

##### **Pilot project on village level cotton ginning and marketing of lint and seed:**

Dr. M. K. Sharma opined that in the existing situation, the logistics of trading the loose lint and transportation of cottonseed are not economically viable. Scientists working on this aspect also opined that at present village level processing by farmers is not feasible as baling of lint is costly affair and selling of loose lint is not practiced in our country. Further trading of loose lint may increase contamination and deteriorate cotton quality. It was further stated that after the launch of Technology Mission on Cotton (TMC) in 2000; most of the co-operative ginning factories were closed due to non-availability of baling presses in its premises and transportation of loose lint increased contamination levels. Hence the very purpose of producing contamination and trash free cotton will get defeated by adopting village level cotton ginning. Prof. Narendra Shah added that the scale effect and techno-economic sensitivity analysis can be carried out theoretically to find the optimal solution for village level processing and the same can be implemented. Chairman suggested that the Agro processing centre type pilot scale model for village level cotton processing may be initiated by tapping the potential of co-op societies of farmers along with other stakeholders like CCI. He suggested to explore the use of fodder presses for partial pressing of lint. He reiterated that though it's difficult and challenging, the institute can accomplish this task.

**Formulate and propose a research programme to work on production of edible starch from cotton stalks:** In ATR it was mentioned that due to non-availability of sufficient funds this work could not be taken up. RAC suggested to take up this work under CRP on Natural fibres.

**Document impact of five prominent institute technologies adopted by stakeholders and keep impact assessment document ready for centenary celebration:** RAC suggested that while conducting impact assessment, convert all parameters to monetary terms. Family, social and health benefit to workers, manufacturers and end users should also be considered while conducting impact assessment.

**Calculate institute output per unit of the investment i.e. budget allocation and output per scientist based on some ten important points such as revenue generation, publications, technology, patents etc. and compare cost-benefit ratio with institutes like IARI and NDRI:** RAC suggested to calculate output per unit of the investment per scientist and for whole institute.

**Mass scale advertising to popularize institute activities and technologies developed by institute should be done through media and digital platform:** RAC commented and suggested to make a note of counts of public downloads of Mobile Apps developed by the institute. RAC further suggested to popularise institute technologies through mass media, TV channels and through digital platforms by preparing small videos clips

#### 6. Presentation of Progress of Research Work

The progress of research activities carried out in the institute under different core areas of research during the period 2020-21 were presented by the respective Heads/ /Coordinator, as per details given below:

**6.1 Core Area-I: Pre-ginning and Ginning:** Dr. S. K. Shukla, Principal Scientist & Officer In-charge, Ginning Training Centre of ICAR-CIRCOT, Nagpur

**6.2 Core Area- II: Mechanical Processing, Technical Textiles and Composites:** Dr. V. G. Arude, Senior Scientist & Head (In-charge), Mechanical Processing Division (MPD)

**6.3 Core Area –II: Characterization-Cotton and other Natural Fibres, Yarns and Textiles:** Dr. P. K. Mandhyan, Principal Scientist, & Head (In-charge), Quality Evaluation and Improvement Division (QEID).

**6.4 Core Area –IV Chemical and Biochemical Processing & Biomass and By-product Utilization:** Dr. N. Vigneshwaran, Principal Scientist, Chemical and Biochemical Processing Division (CBPD).

**6.5 Core Area –V: Entrepreneurship and Human Resource Development:** Dr. A.K. Bharimalla, Senior Scientist & Head (In-charge), Transfer of Technology Division (TTD).

**6.6 Consortia Research Project (CRP) on Natural Fibres:** Dr.A.S.M. Raja, Principal Scientist, CBPD & Coordinator, CRP on Natural Fibres

**7. Discussion on Progress of Research and Recommendations by RAC**

The extensive discussion took place on the progress of research work carried out by scientists as well as on the skill development, incubation, commercialization and consultancy works undertaken by the institute. The committee deliberated on the work being done and provided valuable inputs and directions for future course of research and institute developmental activities.

The recommendations are summarised as follows.

1. An interactive meet to deliberate on 'Machine modelling and design work' may be arranged with experts from CIRCOT and Department of Mechanical Engineering, IIT, Bombay to help in design of machines being developed by the institute scientists.
2. Proposal for strengthening the GTC, Nagpur with necessary provision for its up-gradation in terms of infrastructure and manpower may be included in the institute EFC.
3. Project MP-97: Nonwoven fabrics may be attempted along with woven fabrics for use as filtration fabrics for indoor decontamination as woven fabric layers change their porosity considerably after every washing which is less likely with nonwovens. Compare developed filtration fabrics with existing filtration fabrics available in the market and conduct study on aspects such as surface area, working life, reusability of developed filtration fabrics.
4. Project MP-88: Characterisation of material used in development of sanitary pad may be carried out. Compare the performance of developed sanitary pads with commercially available pads.
5. Project QE 110: Cotton farmer/area/region wise traceability is not possible with the outcome of the project. It may be suitable only for branding purpose. Hence result statements under this project to be modified accordingly.
6. Project CH-99: Work on blending of cottonseed oil with groundnut oil may also be taken up.
7. DST sponsored project: Compare quality of protein isolated from cottonseed with the protein available in the market and work out cost economics of cottonseed protein isolation and compare with commercially available proteins. Promote entrepreneurship on cottonseed protein based products.
8. BRNS sponsored project: Research may be undertaken to reduce gossypol by combined treatment of irradiation techniques followed by chemical method. During irradiation, gossypol may get degraded/ converted into different compounds which may be carcinogenic and hence that also needs to be investigated.
9. Project TT-9: Coating of fruits in demand and having handling issues and short self-life should be studied. Work out cost economics of coating, cost of coating should be compensated by increased self-life.
10. Project TT-10: Composting technique and microbes developed by Agricultural Universities/ICAR institutes may be tried and best may be recommended.



11. Project TT-11: Many factors are responsible for plant growth and hence statistically isolate the influence of Nano sulphur on plant growth/output by keeping other factors constant.
12. Project TT-12: While conducting impact assessment, convert all parameters to monetary term. Family, social and health benefit to workers, manufacturers and end users also should be considered while conducting impact assessment. Refer IARI and CIAE documents for impact assessment.
13. Project CRP 07: In-Vivo testing of developed PPE suits and cooling belt should be carried out by contacting ICMR and obtaining ethics permission. Testing can be carried out at different temperatures.
14. Outcome of the preliminary consultancy project with Cotton Corporation of India namely '*Study of moisture loss in cotton bales during storage*' after verification on a larger scale may be projected on national level and help in formulating policy in this regard. Council should be apprised of any further developments in the matter.
15. Different spin finishes can be tried to give cohesion to fibres for spinning of dyed cotton fibres to facilitate efficient working on carding and other spinning machines.
16. Work on effluent management and pollution control in cotton processing industry may be taken up.
17. A good review of the technologies developed in the past should be undertaken to see if some of these can be suitably modified to meet the current requirements of stakeholders.

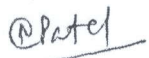
## **8. Concluding Remarks**

In the concluding remarks, Dr. N. C. Patel, Chairman, RAC appreciated Director and scientists for carrying out excellent research work and impressive revenue generation during the past year despite difficult phase of COVID -19 pandemic all around. He congratulated all presenters for nice presentations but urged to manage presentations within stipulated time limit. He appreciated RAC members for their valuable suggestions and guidance provided to the scientists. He advised to focus on utilization of cotton by-products and development of commercially viable value added products. He emphasized

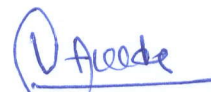
to work on effluent management and pollution control in cotton processing industry. He mentioned that there is great scope for cotton woven/nonwoven based medical and filtration textiles and research may be undertaken to develop cost effective products on this line. He emphasized to review the technologies developed by institute in the past and work on small interventions or modifications which can get these commercialised. Scientist can work on development of BIS standards for machinery and products wherever these are not available. He stressed to focus on technology based revenue generation. He advised better advertising to increase the number of applications for pre-seed stage and seed stage funding under CIRCOT R ABI. This information should also be circulated to Agricultural Universities and State Department of Agriculture. He urged all scientists to work on increasing the impact of research and to get rewards and recognition to the institute. He appealed to work with enthusiasm and motivate each other and strive to achieve top ranking of the institute in ICAR. He thanked each and every one for sharing their valuable time and inputs.

**9. Vote of Thanks:**

The meeting ended with a formal vote of thanks by Dr. V. G. Arude, Senior Scientist and Head (In-charge) MPD and Member Secretary, RAC.



(Dr. N. C. Patel)  
Chairman, RAC



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

## Annexure – 1

### List of Participants of the 27<sup>th</sup> RAC Meeting Held on 1-2 June, 2021

1. **Dr. N. C. Patel**, Former Vice Chancellor, Junagarh Agricultural University and Anand Agricultural University, Vadodara
2. **Dr. M. K. Sharma**, Whole Time Director & CEO, M/s. Bajaj Steel Industries Ltd, Nagpur
3. **Prof. (Dr.) U. J. Patil**, Head, Department of Textiles, D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji
4. **Prof. (Dr.) S. R. Shukla**, Former Professor, Institute of Chemical Technology (ICT), Mumbai
5. **Dr. N.N. Mahapatra**, Business Head (Dyes), Shree Pushkar Chemicals & Fertilizers Ltd, Mumbai
6. **Dr. Narendra G. Shah**, Professor, Centre for Technology Alternatives for Rural Areas (CTARA), IIT, Mumbai
7. **Dr. S. N. Jha**, Assistant Director General (Process Engineering), ICAR, New Delhi
8. **Dr. Sujata Saxena**, Director, ICAR-CIRCOT, Mumbai
9. **Dr. V. G. Arude**, Senior Scientist & Head I/C, MPD and Member Secretary, RAC,
10. **Dr. A. K. Bharimalla**, Senior Scientist & Head I/C TTD
11. **Dr. P. K. Mandhyan**, Principal Scientist & Head I/C QEID
12. **Dr. D. M. Kadam**, Principal Scientist
13. **Dr. S.K. Shukla**, Principal Scientist
14. **Dr. A. S. M. Raja**, Principal Scientist
15. **Dr. N. Vigneshwaran**, Principal Scientist
16. **Dr. S. V. Ghadge**, Principal Scientist
17. **Dr. P. S. Deshmukh**, Senior Scientist
18. **Dr. C. Sundaramoorthy**, Senior Scientist
19. **Dr. A. Arputharaj**, Scientist
20. **Dr. T. Senthilkumar**, Scientist
21. **Dr. G. T. V. Parbu**, Scientist
22. **Dr. G. Krishna Prasad**, Scientist
23. **Dr. P. Jagajanantha**, Scientist
24. **Dr. Kirti Jalgoankar**, Scientist
25. **Dr. Manoj Mahavar**, Scientist
26. **Dr. K. Pandiyan**, Scientist
27. **Dr. S. S. Kautkar**, Scientist
28. **Dr. Sharmila Patil**, Scientist
29. **Dr. Archana Mahapatra**, Scientist
30. **Dr. Manoj Kumar Puniya**, Scientist
31. **Dr. Jyoti Dhakne**, Scientist
32. **Dr. Kanika Sharma**, Scientist
33. **Dr. Himanshu Chaurasia**, Scientist
34. **Dr. Ajinath Dukare**, Scientist
35. **Shri Narayanan K**, Assistant Chief Technical Officer
36. **Shri. Anand Jadhav**, Technical Assistant
37. **Shri. Yogesh Nagpure**, Technician

**Annexure-2**  
**ICAR-CENTRAL INSTITUTE FOR RESEARCH ON COTTON**  
**TECHNOLOGY**

Adenwala Road, Matunga, Mumbai 400 019

**TWENTY SEVENTH (27<sup>th</sup>) RESEARCH ADVISORY COMMITTEE MEETING**  
**1-2 June, 2021 on VIRTUAL PLATFORM**

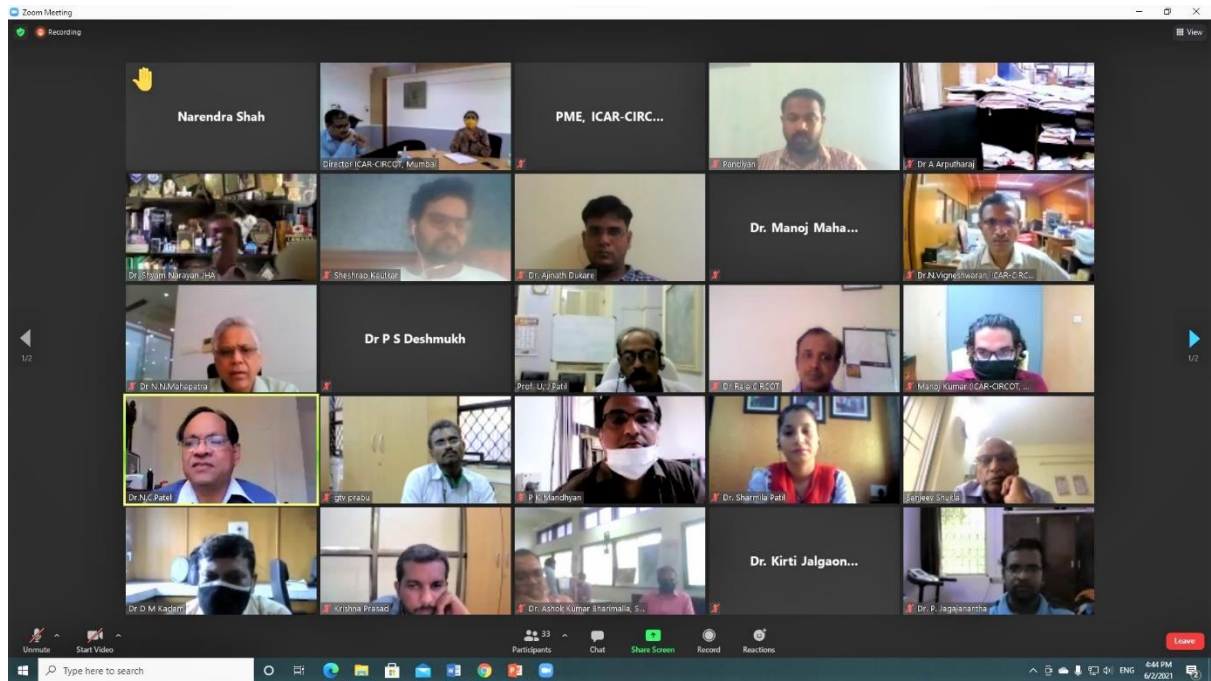
**PROGRAMME SCHEDULE**

<b><u>Day 1: 1<sup>st</sup> June 2021</u></b>	
<b>Time</b>	<b>Agenda item</b>
4.00 pm	• ICAR Song
4.02 pm	• Welcome address and briefing of major achievements and activities of the institute for the period from April 2020 to March 2021 - Dr. Sujata Saxena, Director (Acting)
4.25 pm	• Release of Publications
4.30 pm	• Opening Remarks by RAC Members and Chairman
5.15 pm	• Action Taken Report on Proceeding of 26 <sup>th</sup> RAC meeting held on June 8, 2020 by Dr. V. G. Arude, Member Secretary, RAC
.30 pm	• <b>Presentation of Research Achievements : Core-area wise</b>
	I. <b>Pre-ginning and Ginning:</b> Dr. S. K. Shukla, Principal Scientist & Officer In-charge, Ginning Training Centre, Nagpur
	II. <b>Mechanical Processing, Technical Textiles and Composites:</b> Dr. V. G. Arude, Senior Scientist and Head (In-charge), MPD
	III. <b>Characterisation of Cotton and other Natural Fibres, Yarns and Textiles:</b> Dr. P. K. Mandhyan, Principal Scientist and Head (In-charge), QEID
6.30 pm	Closing first day programme
<b><u>Day2: 2<sup>nd</sup> June 2021</u></b>	
4.00 pm	<b>Presentation of Research Achievements : Core-area wise</b>
	IV. <b>Chemical and Biochemical Processing Biomass &amp; By-product Utilisation:</b> Dr. Sujata Saxena, Director (Acting) & Principal Scientist and Head (In-charge), CBPD
	V. <b>Entrepreneurship and Human Resource Development:</b> Dr. A. K. Bharimalla, Senior Scientist and Head (In-charge), TTD
	• <b>Presentation of Research Achievements of Consortia Research Platform on Natural Fibre:</b> Dr. A. S. M. Raja, Principal Scientist & Co-ordinator, CRP on Natural Fibres
5.00 pm	• Discussion and remarks of RAC Members and Chairman on ICAR-CIRCOT's progress of work and guidance on the future course of research work and institute activities to be taken up by the institute
5.45 pm	• Finalising Recommendations and Concluding Remarks by RAC Members & Chairman
6.25 pm	• Vote of Thanks: Dr. V. G. Arude, Member Secretary RAC.
6.30 pm	• Closing second day programme

**Dr. V. G. Arude, Member Secretary, RAC**

## Annexure – 3

### **PHOTO-GALLERY** (27<sup>th</sup> RAC Meeting)



**View of Virtual RAC Meeting**



**Presentation by Dr. Sujata Saxena, Director**



**Release of publication: Flip book on “FAQs on Nanotechnology”**



**View of Virtual RAC Meeting from Video Conferencing Room, ICAR-CIRCOT, Mumbai**