

**Proceedings of XXIX RAC Meeting  
ICAR-Indian Institute of Natural Resins and Gums, Ranchi**

The XXIX meeting of the Research Advisory Committee (RAC) of the Institute (First meeting of the current RAC constituted *vide* the council letter no. A. Engg.4/11/2021-IA-II (AE) e-file no. 171040 dated December 27, 2021) was held online on February 16-17, 2022 by ICAR-IINRG, Ranchi.

The meeting was presided over by the Chairman, RAC Dr. K. Alagusundaram, former DDG (Engg.), ICAR, New Delhi. The following members were present:

- Dr. Kanchan K. Singh, ADG (FE), ICAR, New Delhi
- Dr. HN Mishra, Professor (Food Technology), IIT, Kharagpur
- Dr. Dandamudi Usharani, Principal Scientist, CSIR-CFTRI, Mysuru
- Dr. N. Kotwaliwale, Director, ICAR-CIPHET, Ludhiana
- Dr. SK Dhyani, Former Director, ICAR-CAFRI, Jhansi
- Dr. Debaraj Behera, Professor & Head, OUAT, Bhubaneswar
- Dr. Kewal Krishan Sharma, Director, ICAR-IINRG, Ranchi
- Dr. NK Sinha, PS, ICAR-IINRG, Ranchi - Member Secretary

**Invitees**

- Dr. Nirmal Kumar, I/C Head, PEM Division
- Dr. Niranjana Prasad, I/C Head, MPE Division
- Dr. Soumen Ghosal, I/C Head, QPI Division
- Dr. MF Ansari, I/C Head, APD Division
- Dr. VD Lohot, In-charge, P MEC

Besides the members and the invitees, all the scientists of ICAR-IINRG, Ranchi also participated in the meeting on the suggestion of the chairman.

The RAC deliberated on the work in progress and thrust areas of research keeping in view the mandate and vision of the Institute and made recommendations. The Agenda Notes and Action Taken Report on the proceedings of the XXVIII meeting of the RAC held on March 04-05, 2021 were circulated beforehand. The detailed Programme of XXIX RAC Meeting is attached as Annexure-I.

At the outset, Dr. NK Sinha, Principal Scientist and Member Secretary, RAC welcomed the Chairman, the members of RAC and the invitees at the 29<sup>th</sup> RAC meeting. He expressed the hope that valuable and critical inputs of the RAC would lead to further strengthening the research & outreach activities of the institute and thanked the ADG (FE), ICAR for the support provided by him for the Institute's growth in terms of research & technology development, HRD and infrastructure development.

**Welcome Address by the Director IINRG**

Dr. KK Sharma, Director, IINRG while welcoming the Chairman and members of the RAC, informed the house that all the major recommendations of the 28<sup>th</sup> RAC had been agreed upon by the Council and appropriate actions have already been initiated at the institute for the proper implementation of these recommendations. He briefed about the achievements of the Institute

and major events organized during the past one year. He informed about the expansion of the mandate of the institute in the light of proposal to change the name of IINRG to National Institute of Secondary Agriculture (NISA) and also presented an overview of global NRG scenario and highlighted the importance of NRG's market export, import, prices and current status of the lac-sub sector.

### **Opening remarks by the Chairman and the members of RAC**

Dr. K. Alagusundaram, Chairman, RAC in his introductory remarks expressed his satisfaction over the scientific work being carried out by ICAR-IINRG, Ranchi. He also complimented the Director and all the staff members on their outstanding accomplishments in the NRGs and stressed the need to accelerate the technology dissemination. He emphasized the need to take up more farmer- friendly research activities on NRGs for the economic prosperity of the tribal people. Chairman suggested to address the gaps in post-harvest and processing of lac.

Hon'ble Members of the RAC opined that (i) concomitant to the proposed mandate expansion and change of name of the institute, provision of improved infrastructure, increased scientific man-power and establishment of Regional Stations should also be made; (ii) to begin with the institute may expand research work to other minor forest produce and use their byproducts for agro-industry; (iii) keeping in view the socio-economic importance of lac and IINRG being the only R & D institute on NRG, lac must remain as one of the focused research program in the expanded mandate of the institute and (iv) a brainstorming webinar should be organized by the institute inviting experts working on important commodities from different agro-climatic regions to set research priorities for the expanded mandate of the NISA.

### **Remarks of Dr. KK Singh, ADG (FE), ICAR**

Dr. KK Singh, ADG (FE) appreciated the research work carried out at IINRG. He suggested that the IINRG should remain prepared to formulate new programs, objectives, work plan and future targets as per the new name and expanded mandate of the institute so that work could be initiated as per expanded mandate as soon as the SFC proposal is approved by the Council. The ADG (FE) expressed optimism for the institute's future with the new mandate. He informed that CRP on Secondary Agriculture maybe relocated from CIPHET, Ludhiana to NISA, Ranchi in due course of time and assured the concerned members that the institute would keep on working on lac / NRGs as mandate is being expanded not changed.

### **Presentation of Research achievements of the Institute during the reported period**

Dr. VD Lohot, Senior Scientist & I/c PME Cell presented the research progress of the Institute and informed about all the on-going institutional, externally funded projects of the Institute.

### **Presentation of ATR of last RAC**

The Action Taken Report (ATR) on the recommendations of the RAC held during March 04-05, 2021 was presented by Dr. NK Sinha, Member Secretary. It was noted that the RAC recommendations have been accepted by the Institute and these are reflected in the ongoing research programs. The RAC accepted the ATR with the observation that ATR on recommendations of the proceedings should be presented with concise and quantifiable data.

### **Progress of Research Divisions:**

- Dr. S. Ghosal, PS & In-charge, Head, Quality and Productivity Improvement Division presented the progress of his Division. The RAC suggested to develop technology of lac

cultivation under protected conditions and also develop techniques for decreasing mortality of lac insect during summer season especially in moisture deficit regions in collaboration with ICAR-CAFRI.

- Dr. N. Prasad, PS & In-charge Head, Mechanization & Process Engineering Division, presented the progress and highlighted the achievements of the Division. The RAC suggested to work more on machinery development for lac production and economics of IR drying of seedlac. While appreciating the successful establishment of Agri-Business Incubation Center at IINRG, the House emphasized to prepare plans for research in accordance with the future expansion of the institute.
- Dr. MF Ansari, PS & In-charge Head, Application and Product Development Division, presented the progress of the division. The RAC suggested that the (i) division should take more works on application of NRGs and its byproducts for value addition especially the nutraceutical and cosmetic industry, (ii) explore the possibility of the use of insect protein in food industry in collaboration with CSIR-CFTRI and (iii) try to develop black colour hair dye formulation from lac / lac dye.
- Dr. Nirmal Kumar, PS & In-charge Head, Production & Extension Management Division, presented the progress. The RAC appreciated the activities of the Division and suggested for conducting impact assessment of the technologies developed by the institute along with the capacity building programme. The committee emphasized that the division should prepare training calendar every year and align it with the lac production activities for practical demonstration. RAC also suggested that the presentation should include a few success stories.

#### **Network Project on HPVA NRGs:**

Dr. N. Prasad, PC presented the progress of the project. The Chairman suggested that the technologies developed by the IINRG should be tested in collaboration with the Network Cooperating Centers for further assessment / transfer to stakeholders.

#### **Network Project on CLIGR:**

Dr. KK Sharma, PC presented the progress of the project. The RAC complimented him for undertaking the huge task of documenting the lac insect biodiversity of the country and suggested to undertake location specific evaluation of the technologies developed by the institute in collaboration with the Network Cooperating Centers. It was also suggested to find out the predominant lac insect species in different agro-climatic regions and their coverage.

#### **Presentation of the Completed Projects:**

Report/ salient achievements of four research projects completed after last RAC meeting were presented by the respective PIs which were finally adopted by the house. These are;

- Mr. NN Rajgopal, Scientist, presented the report on ‘Taxonomic studies of lac insects (Hemiptera: Coccoidea: Tachardiidae) and associated insect fauna’.
- Er. Ranjit Singh, Scientist, presented the report on ‘Studies on Spray Drying of Gum *Ghatti* (*Anogeissus latifolia*)’.
- Dr. NandkishoreThombare, Scientist, presented the report on ‘Development and evaluation of resin/gum based sticky insect trap’.

- Dr. RK Yogi, Scientist, presented the report on ‘Market information support and impact assessment of technological interventions for NRGs’.

### **Presentation of New Project Proposals:**

The following six new Projects/ Concept notes were presented by the respective PIs. After deliberations, the RAC approved the projects / Concept notes with following comments:

<b>Sl. No.</b>	<b>Project title</b>	<b>PI</b>	<b>Comments of RAC</b>
1.	Genetic manipulation in lac host plant ( <i>F. semialata</i> ) to establish better plant lac insect interaction	Dr. J Ghosh, Pr. Sci.	Mention yearly deliverables and brief outputs.
2.	Elucidation of Lac resin biosynthesis pathway in <i>Kerria spp.</i> and its precursors using a structure centric approach	Mr. Sandeep Kumar, Sci.	Explore possibility of LC-MS-MS for lac resin in addition to GC-MS profiling.
3.	Development of Extrusion based Mechanized System for Hot filtration of Seedlac	Dr. S Kale, Sci.	Rheological properties of the seedlac should be evaluated at different temperatures. Focusis needed on (i) specifications of the final product and (ii) possibility of making it portable.
4.	Development of machinery for processing of NRGs and their value-added products	Dr. S Kale, Sci.	Time and energy efficiency of the RW dryer be considered prior to the designing of the machine.
5.	A study on various techniques for identification of commercially important natural gums	Dr. N Thombare, Sci.	Try to develop a standard protocol, quick methods and gum specific bio-markers for testing of gums.
6.	Management of inimical Entomo-fauna of lac insect through organics and newer insecticidal molecules.	Mr. Asish Rout, Sci.	Precautionary measures should be taken to restrict pesticide residue in the end product.

### **General Recommendations:**

1. Explore the cost effectiveness and economic viability of the encapsulation techniques
2. Explore the potential of natural gum as emulsifier with the gelatinization aspect of food products to replace sugar and fat
3. Quantify the colour index value of the rosin derivative
4. Undertake work on whole genome sequencing of lac insect through out-sourcing for better understanding of molecular aspects

5. Collaborate with CIPHET, Ludhiana for (i) evaluation of lac-based formulation for Kinnow coating and (ii) optical image processing of lac / insect
6. Celebrate 2024 as 'International / National year of NRGs' and also observe 'National Lac Insect Day' every year for celebrating the 100 years of the institute
7. Share the brochures on technology for lac-based Kinnow coating formulation with the SMD
8. Submit the ATR on recommendations of RAC quarterly
9. Encourage scientists to obtain externally funded projects

### **Specific Recommendations:**

1. Prepare a mega project involving multi-disciplinary scientists as per revised mandate, global/ national/ regional needs and Govt. Missions/ schemes targeting external funding with quantifiable/ measurable output/ deliverables/ outcome for stakeholders
2. Develop NRGs-Processing and Value Addition Centre to facilitate rural industry
3. Develop a digital catalogue / decision support system/web page/ App for taxonomical information on lac insects for use in the absence of scientific expertise
4. Develop ergonomic handy tools for tribal lac farmers
5. Transfer /license the sticky insect trap technology to industry
6. Explore possibility of production of bio-ethanol from NRGs by-products
7. Explore application of other minor gums for value addition.

### **Vote of thanks**

Dr. NK Sinha, Member-Secretary, RAC extended sincere thanks to the Chairman and the members of RAC for their valuable scientific inputs to improve further the research programs of the institute.

**ICAR-Indian Institute of Natural Resins and Gums  
Namkum, Ranchi- 834 010**

**XXIX Research Advisory Committee Meeting  
16-17 February, 2022**

**Programme-cum-Agenda**

<b>Date</b>	<b>Time</b>	<b>Item</b>
16.02.2022	10:00-10:05	Welcome- Member Secretary
	10:05-10:15	Address by the Director
	10:15-10:30	Opening remarks by the Chairman, RAC
	10:30-10:50	Presentation of Research Programme of Institute by I/c PME Cell
	10:50-11:05	Presentation of ATR of last RAC meeting-Member Secretary
	11:05-12:00	Discussion on ATR
	12:00-13:00	Progress of research by the heads of the Divisions (Institute and Externally funded projects)
	<b>13:00-14:00- Lunch break</b>	
	14:00-14:15	Progress of Network Project on Harvesting, Processing and Value Addition of Natural Resins and Gums by the Project Coordinator
	14:15-14:30	Progress of Network Project on Conservation of Lac Insect genetic Resources by the Project Coordinator
	14:30-15:00	Presentation of concluded projects by the PIs
	15:00-15:30	New Project proposals by the PIs
	15:30-16:00	Views of the Members of RAC on progress and approach of research
16:00-16:30	Views of the Chairman of RAC on progress and approach of research	
17.02.2022	10:00-11:00	Interaction with Scientists
	11:00-12:00	Discussion and finalization of recommendations
	12:00-12:30	Concluding remarks by Members and the Chairman
	12:30-12:40	Vote of thanks