

**MINUTES OF THE 43<sup>rd</sup> MEETING OF RESEARCH ADVISORY COMMITTEE (RAC) HELD ON  
16<sup>th</sup> – 17<sup>th</sup> MARCH, 2016 AT CSR & TI, BERHAMPORE, WEST BENGAL**

The 43<sup>rd</sup> Research Advisory Committee (RAC) of Central Sericultural Research & Training Institute (CSR&TI), Berhampore was held on 16–17, March, 2016 to review the progress of R&D interventions made by the scientists of the Institute / Regional Sericultural Research Stations (RSRSs) during the last six months. The meeting was chaired by Prof. Saroj Kumar Sanyal, former Vice-Chancellor, Bidhan Chandra Krishi Viswavidyalaya, Nadia, West Bengal.

Dr. S. RoyChowdhuri, Scientist-D, CSR&TI, Berhampore welcomed the Chairman, members of RAC, invitees and the participants for the meeting.

At the outset, Dr. Kanika Trivedy, Director, CSR&TI, Berhampore welcomed Prof. Saroj Kumar Sanyal, Chairman, Dr. S. Nirmal Kumar, Former Director, CSB and Advisor, DoS, Tripura and BTC, Assam, all the distinguished members of the RAC, invitees and officers from Eastern & North-Eastern states and scientists of the Institute, nested RSRSs and RECs, invitees from the collaborative institute and participants, and requested for their valuable suggestions for the benefit of the sericulture stakeholders in the Eastern and North-Eastern regions. Thereafter, the Director presented the highlights of the R&D interventions and achievements.

Prof. Saroj Kumar Sanyal, Chairman, RAC in his opening remarks expressed thanks to Dr. Kanika Trivedy, Member-Convenor, RAC, distinguished members, participants, Director of Sericulture representatives and scientists of the Institute for their presence. He appreciated convening the meeting of RAC in quick succession for taking stock of R&D activities for the development of sericulture industry in the regions. He opined that in two days, only the concluded and the on-going research projects need be reviewed. New project concepts notes after the approval of the Central Office, full-fledged project need to be prepared and sent to the referees and with the referees comments, should be presented in the next RAC meeting.

Dr. S. Nirmal Kumar, former Director, CSB expressing thanks for inviting him as a special invitee for the RAC meeting informed that bivoltine has immense potential in Eastern & North-Eastern regions, which is being popularised through the Bivoltine cluster promotion programme. He also suggested that the technological interventions made by the Institute should be translated to the field for adoption and to the economic benefit of the stakeholders.

The list of participants is appended in **Annexure – I**.

During this occasion, the product, GHAR SODHAN - A fumigant room disinfectant and manuals "**Resham Chashe Kencho Sar wo Vermicompost**" and **GHAR SODHAN** - A fumigant room disinfectant for disinfecting rearing houses and its appliances in vernacular language, and a pamphlet "**Resham kit palan Griha abong Resham Kit Palne ke liea jarurat Samano ka Bisamankram ke Abashyakata**" (in Hindi and Bengali) were released.

Thereafter, agenda-wise items were taken up for discussion.

**ITEM NO.1: CONFIRMATION OF THE MINUTES OF 42<sup>ND</sup> MEETING OF RESEARCH ADVISORY COMMITTEE (RAC)  
HELD ON JULY 9-10, 2015 AT CSR & TI, BERHAMPORE, WEST BENGAL**

As no comment was received from the members, the minutes of the meeting were confirmed.

**ITEM NO.2: REVIEW OF THE FOLLOW-UP ACTION TAKEN ON THE RECOMMENDATIONS/ DECISIONS OF THE  
42<sup>ND</sup> MEETING OF RAC HELD ON 09<sup>TH</sup> & 10<sup>TH</sup> JULY, 2015.**

Altogether fifteen decisions / recommendations of the last RAC meeting were discussed and the action taken report was found satisfactory. However, on the programme, namely prog BKPG (PS) 006: Diagnosis of nutrient constraints and their management in mulberry field at farms and farmers' level at Kalimpong hills", as advised, it was noted with concern that the concerned PI failed to contact Professor (Dr.) D. Mukhopadhyay, Department of Agricultural Chemistry & Soil Science, UBKV, Pundibari, Cooch Behar for suggestions /

guidance. Further, the scientist was advised to contact Dr. D. Mukhopadhyay, immediately for guidance related to soil nutrients in the hills of Kalimpong and Sikkim.

**[Action: Dr. R. L. Ram, Scientist-C and Shri S. Chatterjee, Scientist-D, RSRs, Kalimpong]**

**ITEM NO. 3: DIRECTOR'S REPORTS ON THE R&D PROGRESS MADE DURING JULY TO DECEMBER, 2015**

Dr. Kanika Trivedy, Director, while focussing on the R & D strategies for the development of sericulture in the days to come in Eastern & North-Eastern regions, presented the achievements made on mulberry and silkworm crop improvement, productivity improvement, crop protection, innovations and cost reduction, human resource development, extension activities, developmental activities and achievements.

**ITEM NO. 4: CONSIDERATION OF NEW RESEARCH PROJECT PROPOSALS OF THE MAIN INSTITUTE & NESTED UNITS**

In the Research Council meeting of the Institute, new project proposals / concepts were presented and submitted to the Central Office for approval. Ten more new project proposals / concept notes will be formulated as full-fledged projects and after obtaining comments from the referees, the same will be placed in the next meeting of the RAC for its consideration.

**ITEM NO. 5: REVIEW OF CONCLUDED PROJECTS / PROGRAMMES**

During the period, as per the time schedule, 3 projects and 2 programmes were concluded.

**PIB 3424:** Development of low temperature stress tolerant mulberry genotypes for sub-tropical plains - presented by Dr. M. K. Ghosh, Scientist-D, Mriculture Division.

The concerned scientist was advised to conduct further evaluation study of the selected high yielding seven new mulberry genotypes, C-45, C-108, C-212, C-225, C-232, C-371 and C-384 through Final Yield Trial, the next phase of evaluation trial along with quality. He was suggested to study the physiological and cellular changes in the cold tolerant genotypes and to prepare second phase of the project and submit the same to CSB, Bangalore for allotment of project Code No.

**[Action: In-Charge, Mriculture Division]**

- 1. AIB3531:** Authorization Trial of silkworm hybrids in East and North-Eastern states- presented by Dr. N. Suresh Kumar, Scientist-D, Sericulture Division.

It was observed that the silkworm hybrids studied did not show any significant variations. It was suggested to specify the rendita shell percentage, larval duration, etc., for selection of superior hybrids. The PI informed that the second phase of the project work has already been initiated (Project **AIB-3545**) and is in progress as per time schedule.

**[Action: Dr. N. Suresh Kumar, Scientist-D, Sericulture Division]**

- 2. AIB 3496:** Development of high temperature and high humidity tolerant bivoltine breeds of silkworm (*Bombyx mori* L.) - presented by Dr. N. Suresh Kumar, Scientist-D, Sericulture Division.

It was observed that although the temperature and humidity were fixed, variation among the breeding lines was wide. It was suggested to use appropriate statistical tools especially "t" test to get appropriate results between two lines for temperature and humidity variations. In this regard, the scientist informed that the second phase of the project work has already been initiated (Project **AIB-3547**) and is in progress as per time schedule.

**[Action: Dr. N. Suresh Kumar, Scientist-D, Sericulture Division]**

- 3. BPI (P) 034:** Development, characterization and validation of expressed sequence tag derived microsatellite markers for mulberry *Morus* spp.- presented by Dr. S. Chattopadhyay, Scientist-D, Biotechnology Section.

The RAC suggested to assess the functional significance. The genetic endeavours attempted on mulberry ESTs though has provided clues but their functional relevance remains fragmentary. Concerned scientist was advised to carry out the next phase of work through external funding, especially DBT. In this regard, it was informed that the next phase of work has been approved by the DBT Task Force, submitted by the collaborative Institute (CCMB, Hyderabad), and further studies will be possible after final approval. The Chairman suggested funding from the National Fund for the study.

**[Dr. S. Chattopadhyay, Scientist-D, Biotechnology Section]**

4. **BAI(VP) 014:** Field level testing of the efficacy of surface active agent & wetting agent for the improvement of reelability of cocoons during adverse & favourable climatic seasons – by Shri N. B. Kar, Scientist-D, Reeling & Spinning Division.

The outcome of the study was appreciated by the RAC. The RAC advised the scientist for statistical analysis of data and then submission of the final report. The NBFL data need to be incorporated. It was suggested to initiate the process for patenting and commercialization of the product/ technology evolved through the programme. Further, the scientist should formulate new project in collaboration with CSTR, Bangalore.

**[Shri N. B. Kar, Scientist-D, Reeling & Spinning Division]**

**ITEM NO. 6: REVIEW ON THE PROGRESS OF ONGONG PROJECTS OF MAIN INSTITUTE AND RSRs**

A total of 28 on-going CSB Coded projects were reviewed and progress was as per the milestones.

**MULBERRY BREEDING & GENETICS SECTION**

Progress of six (6) on-going research projects, (1) **PIB 3479:** Development of high yielding mulberry varieties using physiological growth parameters as markers for selection, (2) **PIB 3481:** Evaluation of mulberry varieties suitable for low input soils, (3) **PIB 3505:** Development of drought tolerant mulberry variety for rainfed sericulture, (4) **PIB 3515:** Evaluation of newly developed triploid mulberry varieties under irrigated condition, (5) **AICEM-III:** All India Co-ordinated Experimental trial on Mulberry (Phase-III), and (6) **PIC 3554:** Candidate gene-based molecular marker (s) for screening promising recombinants in mulberry was reviewed and the progress was found satisfactory.

Regarding the project **PIB 3481**, it was observed that the title of the project did not match with the objectives. Therefore, it was suggested to rewrite the title as “**Evaluation of mulberry varieties suitable for low fertility soils**”. Further, for amelioration of soil pH, lime may be applied in the acidic soils at Koraput and Jorhat areas and then assess the nutrient status of the soil and yield potential of the varieties.

**[Action: In-Charge, Moriculture Division]**

Regarding the project **AICEM-III**, it was observed that the study was conducted under wide range of soil pH and nutrients status under irrigated and rainfed conditions and that C-2038 performed better. The concerned scientists were advised to find out the factors responsible for better performance of the variety at different locations. Regarding AICEM trial at RSRs, Kalimpong, the Chairman observed that K<sub>2</sub>O level at Kalimpong was high. Dr. Ram Lakhan Ram, Scientist-C was advised to send the soil samples to UBKV, Pundibari, Coochbehar for cross-check of the analysis.

**[Action: In-Charge, Moriculture Division and Dr. RL Ram, Scientist-C, RSRs, Kalimpong]**

Regarding the new project “**PIC 3554:** Candidate gene-based molecular marker (s) for screening promising recombinants in mulberry”, the concerned scientists were advised to prepare the Memorandum of Agreement (MoA) with Bose Institute, Kolkata and initiate the project as per milestones.

**[Action: In-Charge, Moriculture Division]**

## AGRO-PHYSIO- FARM MANAGEMENT SECTION

Progress of two (2) on-going research projects, (1) **PPA-3499**: Evaluation of field-level performance of Vishala mulberry variety at different locations under irrigated conditions in West Bengal, and (2) **PPF-3532**: Assessment, development and management of area under mulberry in major Sericultural districts of West Bengal using geo-spatial technique, were reviewed and the progress was found satisfactory.

Regarding the project, **PPA-3499**, the RAC advised the concerned scientist to conduct study on quality of leaf of the variety along with bio-assay study following the statistical norms.

**[Action: Shri G. C. Das, Scientist-C, Bivoltine Cell]**

On the Collaborative project **PPF-3532**, it was observed that the data presented by the scientist is not matching with the objective of the project. After threadbare discussion, the RAC suggested that the concerned scientists survey the existing area of mulberry plantation in Malda, along with potential areas. Further, proper interpretation of data should be done to fulfil the objectives envisaged in the project. It was also suggested to contact Dr. D. Dutta, Regional Remote Sensing Station (ISRO), Kolkata for repeat the data capturing. The RAC also opined that surveying and mapping of the data should be accurate and with proper scale; the sequence of data of the GPS on a specific location should be accurate to predict the farmers migrating from sericulture industry. The data obtained from the GPS should be available in the Institute website also.

**[Action: Dr. Monica Chaudhuri, Scientist-D, Agro-Physio- Farm management]**

## SOIL SCIENCE & CHEMISTRY SECTION

Progress of one on-going research project “**PPS-3559** [BPS(P)038]: Testing of carbon capturing potential in mulberry in different locations”, was reviewed and found satisfactory. It was observed that carbon capturing level in leaf at different locations varied. The concerned scientist was advised to correlate the weather factors with carbon captured in the leaf and the soil.

**[Action: Dr. R. Kar, Scientist-D, Soil Science & Chemistry Section]**

## MULBERRY PATHOLOGY SECTION

Progress of two (2) on-going research projects (1) “**CSS-2107**: Forewarning of mulberry diseases of the Eastern and the North Eastern India”, and (2) “**PPS 3504**: Study on root rot disease of mulberry in the Gangetic plains of West Bengal and development of its control measure”, were reviewed and the suggestions made were: (1) project **CSS-2107**: The concerned scientist should correlate the weather factors with specific diseases in all the coordinating centres and find out the conducive factors for the disease prevalence. (2) Project **PPS 3504**: It was observed that the title of the project and the area covered does not match, which needs to be clearly specified. Further, searching of diseases should be done through periodical survey and size of the samples should be sufficient to quantify the severity of the disease incidence.

The RAC suggested that the feedback mechanism should be made well established and practised for the farmers so that the information on disease occurrence reach the scientists in time to for the appropriate remedial measures.

**[Action: Dr. S. K. Dutta, Scientist-D, Mulberry Pathology Section]**

## SILKWORM BREEDING AND GENETICS SECTION

Progress of Six (6) on-going research projects (1) **AIB3466**: Development of region specific bivoltine breeds suitable for highly fluctuating and seasonally variable climatic conditions of Eastern and North-Eastern India, (2) **AIB3547**: Development of high temperature and high humidity tolerant bivoltine breeds of silkworm (*Bombyx mori* L.), (3) **AIB3545**: Authorization Trial of silkworm hybrids in East and North-Eastern states, (4) **AIB3480**: Development of silkworm *Bombyx mori* L. breeds from a gene pool with higher genetic plasticity, (5) **AIB3514**: Development of multivoltine based Congenic / NIL breed of silkworm (*Bombyx mori*, L) through introgression of Id gene and its uses, (6) **AIB3501**: Development of multivoltine breeds with high shell% and neatness were reviewed and the following suggestions made were noted as follows:

- (1) **AIB3466:** The data presented was not satisfactory. The effect of shuttle breeding is missing. Data shown for different parameters at different locations are uniform which is not expected. It was not clear as to how there was no G x E interaction in the breeding lines which needs to be justified. The PI was advised to go through the raw data before presenting the same at the RAC.
- (2) **AIB3547:** PI was advised to present the data on cocoons characters, pupation rate and all important economic traits.
- (3) **AIB3545:** Progress was reviewed and found satisfactory. However, the PI should study the breed performance and present the finding in the next meeting of the RAC.
- (4) **AIB3480:** As the project is going to conclude, the PI was advised to conclude the project within the time schedule.
- (5) **AIB3514:** The RAC suggested the scientists of Biotechnology section to adopt the appropriate methods and Ms. Puja Makawana, Scientist-B should carry out the study. The PI was advised to alter the photoperiod and enhance the time of black boxing for uniform hatching. As the breed is unique in nature, it was suggested to work on how cues and physiological pathways are interconnected *via* gene action and also on the presence/absence of DH and sorbitol.
- (6) **AIB3501:** Progress was reviewed and found satisfactory. The RAC suggested carrying out of individual cocoon assessment for the cocoon traits and effect selection.

**[Action: Dr. Suresh Kumar, Scientist-D, Dr. A. K. Verma, Scientist-D, Silkworm Breeding & Genetics Section and Ms. Puja Makawana, Scientist-B, Biotechnology section]**

### **BIOTECHNOLOGY SECTION**

Two on-going research projects (1) "**PIB 3521:** Assessment of promising powdery mildew resistance lines for perspective commercial use", and (2) "**PIB3548:** Evaluation of bacterial leaf spot resistant improved progenies of mulberry for field utilization" was reviewed and the following suggestions were made. Regarding the project **PIB 3521**, the PI was advised to study the leaf yield potential of the developed mulberry progenies and assess the biomass and biochemical attributes of the resistant progenies. Besides, palatability should also be studied. Further, it was also suggested to ascertain the role of two general classes of genes, based on phenotypic effects, (a) Strain-specific resistance, and (b) adult plant resistance.

Progress of the project **PIB3548** was found satisfactory. The RAC suggested the study of the relationship between the total yield and bacterial spot epidemic development.

**[Action: Dr. S. Chattopadhyay, Scientist-D and Dr. R. Banerjee, Scientist-D, Biotechnology Section]**

### **SILKWORM PHYSIOLOGY & RTI SECTION**

Progress of ongoing research project **AIT3557:** To conduct multi-locational trial on transgenic BmNPV resistant silkworm strains was reviewed and found satisfactory. It was suggested to obtain appropriate permission from the State Biotechnology Coordination Committee (SBSC) of the Government of West Bengal, besides, taking notified cautious measures for disposal of transgenic seri-wastes.

**[Action: Dr. Jayeta Sarkar, Scientist-D, Sw. Physiology & RTI Section and Dr. S. Roy Chowdhuri, Scientist-D, PMCE Division]**

### **ENTOMOLOGY SECTION**

Progress of three on-going projects, (1) **PRE3508:** Studies on standardization of the mass multiplication and field efficacy of *Scymnus pallidicollis* (Mulsant) for the eco-friendly management of Tukra, (2) **PPE3517:** Population interactions of pests and natural enemies in mulberry eco-system, and (3) **PRE3533:** Identification of whitefly resistance in mulberry germplasm accessions, was reviewed and the suggestions were-

- (1) **PRE3508:** The PI was advised to record the initial level of infestation of Tukra before releasing the predators and the predators to be released per unit area. Further, the concerned scientist was advised to contact Smt. N. Lalitha, Scientist-C and submit the logical conclusion.

- (2) **PRE3517:** The PI was advised to correlate the experimental findings with the meteorological data and seek correlation with the pest population and natural enemies.
- (3) **PRE3533:** It was suggested to study the molecular and physiological parameters of the mulberry accessions which have shown the whitefly resistance, with the assistance of the Biotechnology Section. Data need to be taken from the germplasm according to crop schedule in the region.

[Action: Shri D. Das, Scientist-D, Entomology Section]

### SILKWORM PATHOLOGY SECTION

Progress of the on-going project, **ARP 3516:** Studies on synbiotics (combination of probiotic and prebiotic) induction for control of common diseases of silkworm, *Bombyx mori* L., was reviewed and the scientist was advised to mention the concentration of Pro- and Pre-biotics used for preparation of the given synbiotics. It was further suggested the scientist was advised to involve the collaborating Institute for completion of time bound work. Further, it was also suggested to find out the synergistic effect.

While reviewing the project, **ARP 3522:** Isolation, cloning and characterization of antibacterial proteins(s) from silkworm *Bombyx mori* L.,-the progress was found as per the milestone.

[Action: Dr. S. Chakraborty, Scientist- C, Silkworm Pathology Section]

### EXTENSION DIVISION

Progress of one on-going programme, "Institute Village Linkage Programme, Phase IV (ADARSHGRAM/SERI MODEL VILLAGE)" was reviewed and the progress was found satisfactory. The progress of extension activities of 4 RSRs, 12 RECs and 2 Sub-RECs was reviewed. While reviewing the progress of IVLP, the RAC suggested preparing the concluded report in reference to the progress of IVLP farmers with pre- and post-intervention data.

[Action: In-Charge, Extension & Publicity Division]

The progress of **Bivoltine Cluster Promotion Programme** at 15 clusters in Eastern & North-Eastern zones covering eight states (7 clusters in Eastern zone & 8 clusters in North-Eastern zone) was reviewed and the progress was found satisfactory.

### TRAINING DIVISION

Progress of different training programmes - (1) Post Graduate Diploma in Sericulture (15 months) training in two batches of 39 students - are in progress. (2) Technology Orientation Programme (TOP): 15 persons were sensitized. (3) Farmers' Skill Training (FST): 158 stakeholders were taught and (4) North East Training Programme: 51 persons were trained. The RAC reviewed the progress and advised initiation of the Distant Education Programme under IGNOU for sericulture courses. The RAC also suggested revision of the course materials of PGDS course with the e-contents of such course materials made available through internet.

[Action: Dr. Jalaja, S. Kumar, Scientist-D, Training Division]

### REGIONAL SERICULTURAL RESEARCH STATIONS (RSRSs)

Progress of one on-going project of RSRS, Koraput and two projects of RSRS, Jorhat was presented and the suggestions made by the RAC were as follows:

**RSRS, KORAPUT:** On the project, **PPA-3560:** "Studies on high bush and tree type mulberry plantation under rainfed condition of Odisha", the PI was advised to present the package of practices followed for the study. It was advised by the RAC to conduct the study with the existing plantation at different spacings and record the leaf yield and quality parameters of the leaf at different spacings.

[Action: Shri S. K. Misro, Scientist- C, RSRS, Koraput]

**RSRS, JORHAT:** Regarding the project (1) **PRE-3511:** Studies on predatory efficacy of coccinellid (Family Coccinellidae) predator, *Scymnus posticalis* Sicard for management of whitefly on mulberry, the PI was advised to submit the logical conclusion. (2) **APS3539:** Characterization of mulberry growing soils for nutrient management in selected Seri-villages of Golaghat district of Assam, was reviewed and the PI was advised to survey the farmers' field, collect the soil samples with the help of soil scientists and analyze the data statistically. He was also advised to do the multiple regression analysis. Regarding the change of Co-PI in the project from the collaborating Institute, necessary approval may be obtained from the concerned Institute and informed accordingly.

**[Action: Dr. Y. Debaraj, Scientist-D and Dr. S. N. Gogoi, Scientist-D, RSRS, Jorhat ]**

#### **Comments of the RAC Chairperson and the Members**

**Dr. S. Senthil Vinayagam**, Member, RAC, appreciated the presentation of the Scientists and activities of the Training Division for dissemination of technologies developed by the Institute for the benefit of farmers of different regions. He suggested nurturing the innovations of farmers in mulberry plantation as well as silkworm rearing. He also suggested collection of feedback from each farmer / stakeholder through mobile or personal visit to the stakeholders trained by the Institute.

**Dr. M. V. Samson**, Member, RAC, thanked the Director for his her dynamic leadership and guidance to the scientists in R & D interventions. While appreciating the efforts of the scientists, he suggested that all the scientists should visit the field to know the actual situation of sericulture scenario. He also suggested the scientists to go through the literature and prepare the field need-based projects.

**Prof. Kanchan Baral**, Member, RAC, thanked the Director and appreciated the efforts of the scientists of the Institute and nested units. He also suggested the impact study of different technologies for fine-tuning and benefitting the farmers.

**Prof. Sunirmal Maity**, Member, RAC, while expressing thanks, appreciated the efforts of the scientists and suggested to take more projects on Agronomy, in addition to projects on intercropping for additional benefit to the farmers.

**Dr. P. Jayarama Raju**, Scientist-D, [Representative of Director (Tech)], CSB, Bangalore, Member, RAC informed that the scientists should carry out their projects as per the milestones. While preparing new project proposals, more emphasis should be given on quality improvement. He suggested that project period should not be altered without the prior permission of the RAC. He suggested taking up more number of collaborative projects with other Institutes. He also appreciated the extension activities, coordination with DoT (Seri), West Bengal and all DoSs at the field level. He suggested the PIs of Institute coded programmes to conclude their programmes by March 31, 2016 and submit the report to CO (Central Office), Bangalore.

**Shri Ram Mohan Pramanik, Asst. Secretary (Tech.), RO, Kolkata, Member, RAC**, expressed thanks to the scientists for their remarkable performance for the development of sericulture industry in this region.

**Shri G. C. Roy**, Deputy Secretary (Tech.), RO, Bhubaneswar, Odisha, Member, RAC, emphasized the R&D and irrigation system supports required for sericulture farmers in Odisha state.

**Shri R. P. Mandal**, Asst. Secretary (Tech.), RO, Patna, Bihar, Member, RAC, informed that the yield gap in sericulture in Bihar needs to be reduced in coordination with the DoS, Bihar.

**Md. Sufian Ali**, Farmers' representative, Member, RAC, narrated his experience in rearing of Bivoltine dfls and requested for better price for bivoltine cocoons.

**Shri Prafulla Kumar Mandal**, Reelers' representative, Member, RAC, narrated his experience in Bivoltine silk reeling and requested for the remedial measures on the ill effect of pesticides on the mulberry plantation, close to the mango orchards.

**Shri A. K. Pal, Scientist-D** [Representative of Director, CSTRI, CSB, Bangalore, Member, RAC] informed that performance of the Reeling and Spinning Division of this Institute is encouraging for benefitting the sericulture industry.

**Shri A. K. Saha, Scientist-D** [Representative of Director, NSSO, CSB, Bangalore, Member, RAC] appreciated the R&D intervention of the Institute.

**Director, CSR&TI, Berhampore, Member Convenor, RAC:** Dr. Kanika Trivedy, Director expressed her happiness at the active participation of the RAC members, invitees of collaborating units, Directors representative of DoSs and scientists from different units of Central Silk Board. She stated that the interactions were meaningful and effective, particularly with the guiding role played by the RAC, Chairman. She also thanked all the RAC members, invitees for their valuable suggestions. She assured that the suggestions given by the RAC members will be duly followed.

**Dr. S. Nirmal Kumar, Former Director, CSB & Advisor, DoS, Tripura and BTC, Assam:** Expressing thanks to the Chairman, RAC and members for their valuable suggestions and guidance to the scientists, he emphasized the immediate need to reduce the existing yield gap in both mulberry and silkworm by the timely technological interventions. While appreciating the sincere efforts put forth by the scientists both in the laboratory and the field, suggested for the interpretation of research outcome in a logical manner with scientific outlook.

**Prof. Saroj Kumar Sanyal, Chairman, RAC,** expressed thanks to the RAC members, Directors, collaborators, farmers' representative, CSB representatives and Invitees for their participation and active interaction in the meeting. He expressed his happiness and appreciated the quality presentation and efforts made by the scientists. He suggested that the socio-economic study at the farmers' field, especially in the North Eastern region will be helpful in future. He also suggested that the RSRs should catch up and the activities therein should improve. More intensive in-house discussion, suggestion and interpretation are needed to minimize the lapses and improve the quality of work. The Chairman also suggested that subject experts may be called from time-to-time for discussion and suggestions on the projects. Furthermore, he appreciated the excellent rapport with the State Governments for improvement of sericulture industry in the region.

#### **Any other points:**

**Dr. Rajeev Kumar Varshney,** Member, RAC & Director, Centre of Excellence in Genomics (CEG), Applied Genomics Laboratory, Patancheru, Andhra Pradesh is yet to attend any meeting of the present RAC due to his preoccupation at each occasion. Therefore, the Chairman suggested to include one expert on Genetics/ Biotechnology for proper review of the biotechnological projects. Accordingly a proposal should be sent to the Central Office, Bangalore for approval for inviting the concerned expert in the forthcoming meetings of the present RAC.

The meeting ended with the vote of thanks to the Chair.

Sd/-  
(Dr. Kanika Trivedy)  
Director &  
Member Convenor, RAC

Sd/-  
(Prof. Saroj Kumar Sanyal)  
Approved  
(Prof. Saroj Kumar Sanyal)  
Chairperson, RAC, CSR&TI, Berhampore  
Date 30<sup>th</sup> March, 2016



## ANNEXURE - I

LIST OF PARTICIPANTS IN THE 43<sup>RD</sup> MEETING OF RESEARCH ADVISORY COMMITTEE (RAC) HELD ON 16-17.03.2016 AT CSR & TI, BERHAMPORE, WEST BENGAL

Sl. No.	Name	Designation
1.	Prof. Saroj Kumar Sanyal, Former-VC, BCKV, Mohanpur, Nadia, West Bengal	Chairman
2.	Dr. Kanika Trivedy, Director, CSR&TI, Berhampore	Member Convenor
3.	Prof. Kanchan Baral, Dept. of Plant Protection, Palli Siksha Bhavan, Sriniketan, Birbhum	Member
4.	Dr. M. V. Samson, Ex-Director, Central Silk Board, Bangalore	Member
5.	Prof. Sunirmal Maity, Former Professor, BCKV, Mohanpur, Nadia, West Bengal	Member
6.	Dr. P.J. Raju, Scientist-D, Rep. Director (Tech.), Central Silk Board, Bangalore	Member
7.	Dr. S. Senthil Vinayagam, Prof. & Principal Scientist, ICAR-NAARM, Hyderabad	Member
8.	Dr. S. Nirmal Kumar, Former Director & Advisor Tripura and BTC Assam	Invitee
9.	Dr. P.K. Misra, Director, Director, CSGRC, Central Silk Board, Hosur	Invitee
10.	Commissioner, DoT (Seri), West Bengal (Rep. Shri Anath Nath Mandal, Jt. Director)	Member
11.	Director, Do, Govt. of Jharkhand, Ranchi (Rep. Ajit Kumar Sinha, ADS)	Member
12.	Director, DoS, Gangtok, Sikkim (Rep. Shri R.P. Rai, ADS)	Member
13.	Director, CSTRI, Bangalore (Rep. Shri A. K. Pal, Scientist-D, SCTH, Malda)	Member
14.	Director, DoH&S, Govt. of Bihar (Rep. Shri N. P. Verma, ADS)	Member
15.	Director (DoS&W), Meghalaya (Rep. Smt. L. Dhar, Jt. Director)	Member
16.	Director (DoS&W), Meghalaya (Rep. Smt. N. Marak, Manager)	Member
17.	Director, NSSO, CSB, Bangalore (Rep. Dr. A. K. Saha, Scientist-D, ZSSO, Malda)	Member
18.	Shri Sufian Ali, Farmers Representative, Malda, West Bengal	Member
19.	Shri Prafulla Kumar Mandal, Farmers Representative, Murshidabad, West Bengal	Member
20.	Shri R. P. Mandal, Asstt. Secretary (Tech.), R.O., CSB, Patna, Bihar	Member
21.	Shri Ram Mohan Pramanik, Asst. Secretary (Tech.), R.O., CSB, Kolkata	Member
22.	Shri G. C. Ray, Deputy Secretary (Tech.), R.O., CSB, Bhubaneswar, Orissa	Member
23.	Smt. Chandana Maji, Scientist-D, RSRS, Kalimpong, West Bengal	Member
24.	Dr. S. N. Gogoi, Scientist-D, RSRS, Jorhat, Assam	Member
25.	Dr. N. R. Rao, Scientist-D (I/C), RSRS, Koraput, Odisha	Member
26.	Dr. M. Alam, Scientist-D (I/C), RSRS, Ranchi, Jharkhand	Member
27.	Shri B.K.Handique, Scientist-E, NESAC, Meghalaya	Invitee
28.	Shri Prasenjit Ray, Scientist- NESAC, Meghalaya	Invitee
<b>Absentée :</b>		
1	Dr. R. K. Varshney, Director, Centre of Excellence in Genomics, Applied Genomics Laboratory, Patancheru, Andhra Pradesh	Member
2.	The Commissioner, DoT (Seri), Govt. of Chhattisgarh, Chhattisgarh	Member
3.	The Director, Handloom, Handicrafts & Sericulture, Govt. of Tripura, Agartala, Tripura	Member
4.	The Director of Sericulture, Govt. of Mizoram, Chhittlang, Aizawl, Mizoram	Member
5	The Director of Sericulture, Govt. of Assam, Guwahati, Assam	Member
6.	The Director, Govt. of Manipur, Imphal, Manipur	Member
7.	Joint Secretary (Tech.), R.O., CSB, Guwahati	Member
8.	Director, DoS, BTC, Assam	Member
9.	Director, DoT&Handicrafts, Arunachal Pradesh	Member
10.	Director, DoS, Nagaland	Member
11.	Director, DoT& H, Govt. of Odisha	Member

**List of Scientists/ participants attended the Meeting**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Address</b>
1.	Shri M. K. Majumder	Scientist-E, Reeling & Spinning	CSR&TI, Berhampore
2.	Dr. M. K. Ghosh	Scientist-D, Mori. Division	CSR&TI, Berhampore
3.	Dr. S. Roy Chowdhuri	Scientist-D, PMCE Division	CSR&TI, Berhampore
4.	Dr. U. K. Bandyopadhyay	Scientist-D, PMCE Division	CSR&TI, Berhampore
5.	Dr.Sandip Kr. Datta	Scientist-D, Mulberry Pathology Section	CSR&TI, Berhampore
6.	Dr. N. Suresh Kumar	Scientist-D, Silkworm Breeding & Genectis Section	CSR&TI, Berhampore
7.	Dr. A. K. Verma	Scientist-D, Silkworm Breeding & Genectis Section	CSR&TI, Berhampore
8.	Dr. Jayeeta Sarkar	Scientist-D, RTI & Silkworm Physiology Section	CSR&TI, Berhampore
9.	Dr. Subhra Chanda	Scientist- D, Extension Division	CSR&TI, Berhampore
10.	Dr. Jalaja S.Kumar	Scientist-D, Training Division	CSR&TI, Berhampore
11.	Shri D.Chakravarti	Scientist-D, Training Division	CSR&TI, Berhampore
12.	Shri Zakir Hossain	Scientist-D, Training Division	CSR&TI, Berhampore
13.	Dr.(Mrs) R. Banerjee	Scientist-D, Biotechnology Section	CSR&TI, Berhampore
14.	Dr. S. Chattopadhyay	Scientist-D, Biotechnology Section	CSR&TI, Berhampore
15.	Dr. Ranjit Kar	Scientist-D, Soil Science & Chemistry Section	CSR&TI, Berhampore
16.	Shri. N. B.Kar	Scientist-D, Reeling & Spinning	CSR&TI, Berhampore
17.	Dr. Monica Chaudhuri	Scientist-D, Agro-Physio- Farm Mangement Section	CSR&TI, Berhampore
18.	Shri. Debojit Das	Scientist-D, Entomology Section	CSR&TI, Berhampore
19.	Shri Gopal Ch. Das	Scientist-C, BV- Cell Section	CSR&TI, Berhampore
20.	Dr. Satadal Chakrabarty	Scientist-C, Silkworm Pathology Section	CSR&TI, Berhampore
21.	Dr. Y. Debraj	Scientist-D, RSRs	Jorhat, Assam
22.	Smt. Mina Pamegam	Scientist-D, RSRs	Jorhat, Assam
23.	Shri Uttam Ch. Baruah	Scientist-C, RSRs	Jorhat, Assam
24.	Shri S. Chatterjee	Scientist-D, RSRs	Kalimpong, West Bengal
25.	Dr. Ram Lakshman Ram	Scientist-C, RSRs	Kalimpong, West Bengal
26.	Dr. G. S. Singh	Scientist-D, REC(SU)	Bhandra, Jharkhand
27.	Shri S.K.Misro	Scientist-C, RSRs	Koraput, Odisha
28.	Dr.(Mrs) Tapati Dutta (Biswas)	Scientist-D, REC	Kamnagar, West Bengal
29.	Dr. P. K. Ghosh	Scientist-D, REC	Mothabari, Malda, WB
30.	Dr. Dipesh Pandit	Scientist-D, REC	MPRaj, Jharkhand
31.	Dr. B.N.Chaudhuri	Scientist-D, REC	Aizawl, Mizoram
32.	Dr.G. B.Singh	Scientist-D, REC	Agartala, Tripura
33.	Dr. Anukul Borah	Scientist-D, REC	Dimapur, Nagaland
34.	Dr.L.Somen Singh	Scientist-D, REC	Imphal, Manipur
35.	Shri S.T.Lepcha	Scientist-D, REC	Rangpo, Sikkim
36.	Dr. C.Z. Rentheli	Scientist-C, REC	Shillong, Meghalaya
37.	Dr. D.P. Das Mahapatra	Scientist-C, REC	Deogarh, Odisha
38.	Shri T.N. Sreekanth	A.D. (Stat.), Silkworm Breeding & Genectis Section	CSR&TI, Berhampore
39.	Shri Manjunath G.R.	Scientist- B, BV-Cell	CSR&TI, Berhampore
40.	Shri Anil Pappachand	Scientist- B, Agro-Physio- Farm Management	CSR&TI, Berhampore
41.	Dr. V. Vijay	Scientist- B, Mulberry Pathology Section	CSR&TI, Berhampore
42.	Ms. Pooja Makwana	Scientist- B, Biotechnology Section	CSR&TI, Berhampore
43.	Shri R. Mahesh	Scientist- B, Agro-Physio- Farm Management	CSR&TI, Berhampore
44.	Shri K. Rahul	Scientist-B, Silkworm Pathology Section	CSR&TI, Berhampore
45.	Shri N. Chadra Kanth	Scientist-B, Silkworm Breeding & Genetics Section	CSR&TI, Berhampore
46.	Shri Suresh K.	Scientist-B, Silkworm Breeding & Genetics Section	CSR&TI, Berhampore
47.	Shri Raghavendra K. V.	Scientist B, Entomology Section	CSR&TI, Berhampore,
48.	Md. Safi Afroz	Scientist B, REC	Gumla, Jharkhand
49.	Shri.Subrata Sarkar	Technical Assistant, PMCE	CSR& TI, Berhampore
50.	Shri T.K. Maitra	Technical Assistant, Computer Cell	CSR& TI, Berhampore
51.	Shri Gaurab Ray	Jr. Research Fellow, Silkworm Pathology Section	CSR&TI, Berhampore