

Minutes of the 48th Meeting of Research Advisory Committee held on 24th July, 2018 at CSR&TI, Berhampore, West Bengal

The 48th meeting of Research Advisory Committee of CSR&TI, Berhampore and the 3rd meeting of the reconstituted RAC, was held on 24th July, 2018 at CSR&TI, Berhampore.

Due to sudden emergency work, Chairman of the RAC, Dr. Chirantan Chattopadhyay, Vice Chancellor, Uttar Banga Krishi Viswavidyalaya, Coochbehar, West Bengal couldn't attend the meeting. The Director (Tech), CO, Bangalore and the members of RAC unanimously nominated Dr. S. Nirmal Kumar, Former Director, CSR&TI, Berhampore to chair the meeting.

Dr. D. Pandit, Scientist-D welcomed Dr. S. Nirmal Kumar, Acting Chairman RAC, distinguished members, Invitees, Scientists of the Institute, nested RSRs and other participants in the meeting.

Dr. Kanika Trivedy, Director, in her introductory remarks, expressed sincere thanks to Dr. S. Nirmal Kumar for accepting to grace the chair. She also expressed her gratitude to Mrs. Madhumita Choudhuri, Commissioner, Govt. of West Bengal and all the members for participating in the RAC. At the outset, Director requested all the members of RAC for active interaction and to provide suitable suggestions to the scientists of the Institute. Director congratulated all the RAC members, scientists' and appreciated their efforts in achieving RFD score of 96 % by the Institute during 2017-18. Thereafter, she presented the highlights of the R & D interventions and achievements made during last six months *from* January, 2018 to June, 2018 by the scientists of the Institute and nested RSRs.

Dr. S. Nirmal Kumar, Acting Chairman, RAC in his opening remarks expressed his gratitude to all the members for giving him the opportunity to chair the meeting. He also complimented Dr. Kanika Trivedy, Director, CSR&TI, Berhampore and Member-Convenor, RAC for her brief R&D presentation and vibrant leadership. Further, he thanked the State Sericulture Departments and the Scientists of the Institute for their untiring efforts in R&D interventions benefitting the stakeholders resulting in progressive improvement of the sericulture industry in this region. He also emphasised that increase of bivoltine silk yield should be prioritised. He was glad to note that the institute is making efforts to transfer different technologies to the end-users.

List of participants are appended in **Annexure – I**.

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

ITEM NO.1: Confirmation of the Minutes of 47th meeting of Research Advisory Committee (RAC) held on 9th January, 2018 at CSR&TI, Berhampore

As no comments were received from the members of the committee, the minutes were confirmed.

During the meeting, the following were released:

- The mulberry mobile android app *Resham Bandhu (in Hindi & Bengali)*
- A report on Seri Resource Centres, Volume-II (2017-18)
- PGDS Year Book (2017-18)
- Estimation of mulberry acreage and foliage crop condition in major sericultural areas of West Bengal using geospatial techniques

The technologies developed in collaboration with industries were briefly presented and discussed.

- **PUSHTI:** liquid multi-nutrient foliar spray –by Dr. Anil Pappachan, Sci-B, Mulberry Pathology Section.
- **NEMOTONASHA:** Root Rot Nematode Management - by Dr. Anil Pappachan, Sci-B, Mulberry Pathology Section.

- **POLLUSRI:** Bed disinfectant for controlling silkworm diseases- by Shri K. Rahul, Sci-B, Silkworm Pathology Section.
- **GHAR NIRBIJAN:** Broad spectrum disinfectant- by Shri K. Rahul, Sci-B, Silkworm Pathology Section.
- **SUVARNA:** An improved motorized charaka for economizing reeling cost & production of superior weft yarn- by Shri N.B.Kar, Scientist-D, Reeling & Spinning Division.
- **SOURONEER:** A solar water pre heater for economizing fuel consumption & improvement of raw silk quality. - by Shri N. B. Kar, Scientist-D, Reeling & Spinning Division.

The house appreciated the efforts of the scientists in developing these need based technologies in collaboration with the private entrepreneurs. However, the following suggestions were made :

- ✓ To furnish adequate trial data along with the trial locations in support to each claim
- ✓ To mention the chemical constituents of the products in required cases
- ✓ To work out the economics and specify the novelty / superiority of each product(s)
- ✓ To fine-tune the products if required to increase the efficacy
- ✓ To compare the new technologies with existing ones, if any.
- ✓ To perform necessary field trials before recommending the products at grassroots level

[Action: Concerned scientist(s)]

ITEM NO. 2: REVIEW OF FOLLOW-UP ACTION TAKEN ON THE RECOMMENDATIONS/ DECISIONS OF 47TH MEETING OF RAC HELD ON 9TH JANUARY, 2018.

- Director (Tech), CO Bangalore pointed out that concluded report pertaining to DBT funded collaborative project on validation of SCAR markers for powdery mildew resistance has not been received by the CO, Bangalore from Dr. Ramesh Agarwal (CCMB) coordinator & PI of the project. Necessary steps to be taken to ensure submission of the same.

[Action: Dr. S. Chattopadhyay, Sci.D, Biotechnology]

ITEM NO. 4: APPROVAL OF NEW RESEARCH PROJECTS.

No new research projects were presented in the meeting.

ITEM NO. 5: REVIEW OF CONCLUDED PROJECTS / PROGRAMMES / PILOT STUDY

Seven projects were concluded during the period as per the time schedule. One project PPF-3598 was concluded premature as arsenic concentration was not found to be lethal and thus, 47th RAC suggested to conclude the project immediately. However, following suggestions were made for future plan of work.

1. **PPS 3559: Testing of carbon capturing potential of mulberry in different locations.** –by Dr. Ranjit Kar, Scientist-D, RSRS, Kalimpong.

The project has been concluded as per the milestones. However, the following suggestions were made for future plan of work:

- ✓ The standard unit for carbon capturing potential should be expressed in giga ton hectare.
- ✓ Pooled analysis need to be considered with 'common error' for better inference of location effect
- ✓ Carbon capturing potential need to be estimated, in total biomass, roots and soil.

[Action: Shri. D. Chakravarty, Sci-D, Coordinator, Mriculture and Shri Ranjit Kar, Scientist-D, RSRS, Koraput]

2. **PPF 3598: Arsenic contamination in mulberry sericulture of Bengal Plain and its alleviation through application of zinc in soil** - by Dr. V.Vijay, Scientist-B, Agronomy & Soil Science Section.

The project has been concluded as the results indicated that arsenic concentration is not found to be lethal and further studies are not necessary.

[Action: Dr. V.Vijay, Sci.-B, Agronomy & Soil Science]

3. PPA 3499: Evaluation of field level performance of Vishala mulberry variety in different locations under irrigated conditions in West Bengal - by Shri G. C. Das, Scientist-D, SwPhy. & RTI and Bv Cell.

The project has been concluded as per the milestones.

Results should reflect increased cocoon yield resulting from higher dfls consumption per unit area due to the biomass improvement as presented.

[Action: Shri G. C. Das, Sci.-D, SwPhy. & RTI and Bv Cell]

4. AIB 3545: Authorization trial of silkworm hybrids in Eastern and North Eastern India -by Dr. A. K. Verma, Sci-D, Silkworm Breeding & Genetics Section.

The project has been concluded as per the milestones. However, the following suggestions were made for future plan of work:

- ✓ The performance of newly developed hybrids should be evaluated by supplying additional dfls at different locations and seasons.
- ✓ Cocoon price per kg and economic analysis should be presented to reflect the advantage of adoption of new hybrids.

[Action: Dr. A. K. Verma, Scientist-D, SBG]

5. PRE-3533: Incidence of whitefly in Mulberry germplasm accessions - by Dr. S. Chanda, Sci-D, Entomology Section.

The project has been concluded as per the milestones. However, the following suggestions were made:

- ✓ Identified accessions should be considered in further breeding programs of MBG section
- ✓ Establish the correlation of incidence of whitefly with stomatal frequency & Acyl sugar levels.

[Action: Dr. S. Chanda, Scientist-D, Entomology]

6. ARP-3522: Isolation, cloning and characterization of antibacterial protein (s) from silkworm, *Bombyx mori* [Collaborative Project with SBRL, Kodathi, Bangalore] - by Shri Rahul K, Sci-B, Silkworm Pathology Section.

The project has been concluded as per the milestones. However, the following suggestions were made for future plan of work:

- ✓ Explore the utility of the outcome of the study.

[Action: Shri Rahul K, Scientist-B, Silkworm Pathology]

7. MTS 3599: Study on mulberry sericulture production in West Bengal: A statistical approach –by Dr. Manjunatha, G. R, Sci-B, PMCE Division.

The project has been concluded as per the milestones. However, the following suggestions were made for future plan of work:

- ✓ It is required to establish as to which technology has played a prominent role in vertical growth. To find out the growth rate over the years by addressing the conceptual issues.
- ✓ Studies may be taken-up for other regions giving due consideration for integrated components such as intercropping, animal husbandry and reeling activities.

[Action: Dr. Manjunatha, G. R., Sci.-B, PMCE]

8. MOT 3601: Skill Gap Analysis and Capacity Building of Sericulture Extension Workers and Farmers in Traditional and Non-Traditional States- by Mr. Shafi Afroz, Sci-B, Extension & Publicity / Dr. Manjunatha, G. R, Sci-B, PMCE Division.

The project has been concluded as per the milestones. However, the following suggestions were made:

- ✓ The outcome of the study should be taken as a bench mark, based on which Training division may conduct skill upgradation programs.
- ✓ Identify the correlation between skill level of farmer and cocoon productivity, from the available data.

[Action: Mr. Shafi Afroz, Sci-B, Extension & Publicity /Dr. Manjunatha, G. R, Sci.-B, PMCE]

ITEM NO. 6: REVIEW OF PROGRESS OF ON-GOING PROJECTS / PROGRAMMES / PILOT STUDY**MAIN INSTITUTE****MULBERRY BREEDING & GENETICS SECTION:**

Progress of following **05** on-going research projects was reviewed.

1. **PIB 3505:** Development of drought tolerant mulberry variety for rainfed sericulture.
 - ✓ Justify inclusion of well water condition in the study.
2. **PIB 3610:** Preliminary evaluation of newly evolved mulberry genotypes for mulberry improvement.
 - ✓ It was found to be as per the milestone.
3. **PIB 3576:** Evaluation of new mulberry genotypes for improvement in productivity and quality.
 - ✓ It was found to be as per the milestone.
4. **PIC 3554:** Candidate gene based molecular marker(s) for screening promising recombinants in mulberry.
 - ✓ The PI was advised to approach SBRL, Bangalore for studies that cannot be performed at CSR&TI, Berhampore and to finish the work in time. Based on the SBRL response, the Chairman RAC will decide for granting of extension of the study duration in next meeting.
5. **PIB 3627:** Development of superior mulberry (*Morus* spp.) genotypes through Polyclonal Seed Orchard.
 - ✓ It was found to be as per the milestone.

[Action: Shri K. Suresh, Scientist-B and Shri D. Chakravarty, Scientist-D MBG Section]

AGRONOMY AND SOIL SCI. SECTION:

Progress of following **three** on-going research projects was reviewed.

1. **PPF 3585:** Application of Growing Degree Days as a model driver for developing mulberry yield weather model.
 - ✓ Determination /tabulation of bio-fixation rate is essential for different commercial crops (at least one favourable and one unfavourable season) of West Bengal.
 - ✓ While computing GDD, days with above upper cardinal temperature should also be deducted.
 - ✓ To synchronize date of bio fixation and silkworm brushing.
2. **PPA 3588:** Evaluation of low cost drip fertigation systems on yield and quality of mulberry leaves.
 - ✓ The PI was advised to maintain recommended shoots (8-10) per plant.
 - ✓ Regarding the extension in the timeline of the project, as requested by the PI, the house advised to continue the study and present before the next RAC, based on which further decision will be taken.
3. **PPS 3600:** Soil health card preparation for mulberry growing soils in Eastern and North-eastern India.
 - ✓ It was found to be as per milestone.

[Action: Dr. R. Mahesh, Scientist-B, Agronomy & Soil Science]

[Action: Shri D. Chakravarty, Scientist-D, Moriculture Division]

SILKWORM BREEDING AND GENETICS SECTION:

Progress of following 04 on-going research projects was reviewed.

1. **AIB-3602:** Development of thermo-tolerant Bivoltine Breeds / Hybrids of Silkworm, *Bombyx mori* L through Marker Assisted Selection.

✓ It was found to be as per milestones.

[Action: Dr. N. Chandrakanth, Sci-B, SBG]

2. **AIB 3616:** On farm trial of the multivoltine silkworm breeds/ hybrids developed for high shell percentage and neatness of silk filament.

✓ The PI was advised to recheck the yield per 100 dfls.

✓ Proper precaution should be taken before promoting the white multivoltine.

✓ The PI may consider performing studies in other villages of Jharkhand state in consultation with the concerned DoS and accordingly dfls supply may be increased.

3. **AIB 3619:** Development of silkworm (*Bombyx mori* L.) congenic breeds from a gene pool with higher genetic plasticity.

✓ The PI was advised to recheck the data, since distribution appears skewed and PI may consider increasing population size.

[Action: Dr. A.K. Verma, Sci-D, SBG]

4. **AIB 3617:** Identification of region specific bivoltine hybrids suitable for highly fluctuating and seasonally variable climatic conditions of eastern and North-Eastern India (Phase-II).

✓ Level of heterosis in FCs and double hybrid should be depicted

[Action: Dr. V. Lakshmanan, Sci-D, SBG Section]

SILKWORM PHYSIOLOGY AND REARING TECHNOLOGY INNOVATION AND BV CELL

Progress of following 03 ongoing research projects was reviewed.

1. **ARP3605:** Validation of the DNA markers in silkworm breed developed by introgression of DNA markers associated with NPV resistance using Marker Assisted Selection breeding and large scale field trial of the breed. [DBT funded Collaborative Project with Seri biotech Research Laboratory (SBRL), Bangalore, CSR&TI, Mysore & CSR&TI, Pampore]

✓ It was found to be as per milestones.

2. **AIB-3577:** Evaluation of multivoltine germplasm to identify potential parents for developing cross breeds suitable for Southern and Eastern India.

✓ SR % should be matching while selecting a hybrid as control.

✓ Reason for very less ERR should be addressed properly

3. **AIB-3578:** Evaluation of exotic bivoltine silkworm breeds to identify promising parental genetic resources.

✓ The PI was advised to improve the rearing management practices since the ERR at institute level is too low.

✓ Cocoon selection should be random while performing different analysis

[Action: Shri G.C. Das, Scientist-D, SWPhy & RTI and BV Cell]

BIOTECHNOLOGY DIVISION:

Progress of following 02 ongoing research projects was reviewed and was found to be as per the milestones.

- **PIB 3548:** Evaluation of bacterial leaf spot resistant improved progenies of mulberry for field utilization.
- **PRE-3589:** Assessment of designed antimicrobial peptides for mulberry protection against brown leaf spot and root rot: a biotechnological approach

[Action: Dr. Soumen Chattopadhyay, Scientist-D, Biotechnology]

SILKWORM PATHOLOGY SECTION:

Progress of following two ongoing research projects was reviewed and was found to be as per the milestones.

- **ARP 3590:** Studies on the efficacy of phototrophic bacterial extracts as feed supplement for management of diseases in silkworm, *Bombyx mori* L
- **ARP 3630:** Development of room and silkworm bed disinfectant through screening of potential chemicals.

[Action: Shri K. Rahul, Scientist-B, Silkworm Pathology]

REGIONAL SERICULTURAL RESEARCH STATIONS:

RSRS, Jorhat:

Progress of following ongoing research project was reviewed and found that

- **PPA 3622:** Popularization of high bush mulberry plantation technology in Majuli, river island of the Brahmaputra, Assam. PI was advised:
 - ✓ To speed up the work, so that the objectives may be achieved within the stipulated time.
 - ✓ To maintain the height of the plantation, as per the standard recommendations for tree plantation by CSB.

[Action: Dr. S.N. Gogoi, Sci-D]

RSRS, Koraput:

Progress of the following four ongoing research projects was reviewed and following suggestions were made.

- **PPA 3560:** Studies on High Bush mulberry plantation under rainfed condition of Odisha.
 - ✓ Reported yield appears to be too low for high bush plantation. Necessary action may be taken-up to improve the yield levels.
 - ✓ The fertilizer dosage per acre remains same in different spacing adopted. Hence, working out package of practice for high bush plantation may not be feasible.
 - ✓ Help of subject matter experts may be sought to avoid /modify the broadcasting of fertilizers and soil reclamation process.
- **MOE 3604:** Yield gap analysis in mulberry leaf and cocoon production-A study in Eastern Ghat Highland zones of Odisha.
 - ✓ Progress was found to be as per milestones.
- **AIB 3614:** Studies Evaluation and Identification of Suitable Bivoltine Hybrid for Odisha.
 - ✓ Progress was found to be as per milestones.
- **PPA 3613:** Studies on drum-kit drip irrigation with hydrogel on yield and water use efficiency of mulberry.
 - ✓ PI was advised to speed up, as the progress was found to be lagging behind the milestone of the study.
 - ✓ Since system has now installed, the PI may request the CO, Bangalore for one year extension with proper justification.

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

General suggestions

- ✓ While developing any technology, bench mark yield should not be compromised.
- ✓ Further, soil pH and texture should be taken into consideration while conducting field experiments.
- ✓ In-charge of RSRS Jorhat was advised to prepare a ToT programme for evaluation of Dun6 x Dun22.
- ✓ All the PIs are advised to achieve the progress as per milestone proposed in the studies.

[Action: In charge, RSRS Koraput and Jorhat]

EXTENSION AND PUBLICITY DIVISION:

Progress of the extension activities was not presented separately as it was already presented by Director in her opening presentation.

[Action: In-charge, Sci-D, Extn. Division]

BIVOLTINE CPP:

The salient activities of **BV CPP** were also presented by the Director in her presentation.

[Action: In-charge, Sci-D, SWPhy & RTI and BV Cell]

TRAINING DIVISION:

Progress of the training activities was not presented separately as it was already presented by Director in her presentation.

[Action: In-charge, Sci-D, Training Division]

Comments of RAC Chairperson and Members:

Dr. D.C. Ghosh, Former Professor of Agronomy, Viswa Bharati University, Member RAC, complimented the scientists for their hard efforts. As regards to the products developed in collaboration with private parties/industries, he advised – a) to specify the chemical constituents of plant /animal based studies, b) Scientists to give emphasis on the development of cost effective sericultural technologies which will benefit the end users and boost their economy, and c) analysis of B:C ratio is required for all agronomy projects.

Dr. Subrata Mukhopadhyay, Principal Scientist & Head GIS&RS, ICAR-NBSS&LUP, Member RAC, thanked the Director and appreciated the efforts of the scientists. He suggested the Director to prepare a research data bank where in the data generated from the various research activities should be collected, aggregated and stored. Scientific community should have access to mine the data for possible use in future research projects. It will also help to avoid the duplication of research studies. He appreciated efforts of the Director and scientists in launching the futuristic App “Resham Bandhu” but suggested a few improvements for effective utilization. The app should operate in dynamic mode and data should be updated periodically. Location specific information should be incorporated which will serve as a reference to the farming community.

Shri Sourav Majumder, Sci-D (I/c), SCTH, Malda, Member RAC, thanked the Director and appreciated the efforts of the institute’s scientists. He appreciated the latest technology “Souroneer” that was developed in collaboration with private entrepreneurs. He requested the Director to take necessary steps in expansion of reeling units in non-traditional zones to overcome marketing issues. He also advised to popularize the reeling technologies that were developed at the farmers’ level by introducing the same in all the possible schemes.

Shri. Zakir Hossain, ADI, Seri. (Rep. Director, Directorate of Handloom & Sericulture, Govt. Of Bihar), thanked the Director, CSR&TI, Berhampore for her co-operation with respect to the training activities conducted in the state. He expressed that similar coordination must continue between the DoS and the Institute for development

of Sericulture at Bihar. He also assured to establish two reeling units at Supaul and Kishanganj immediately which will partly solve the problem of cocoon marketing.

Shri. Lakshman Munda, ADI, Seri. (Rep. Director of Textiles & Handlooms, Govt. of Orissa), appreciated the research efforts of the Institute. He requested to find out the technology adoption gap among the farmers of Odisha. He urged to develop suitable silkworm breeds and mulberry varieties for Odisha region. He requested to depute extension workers for monitoring crops during commercial rearing.

Md. Samsul Haque, Rearers Representative, Member RAC, expressed his satisfaction towards untiring efforts of the institute in development of sericultural technologies. He pointed out that there was a gradual crop improvement due to shifting of rearing silkworm breeds/hybrids from Multi or Nistari to Multi x Bi and bivoltine. Similarly, the yield of mulberry has also increased from 12-14 mt/ha to 40-45 mt/ ha due to the R&D interventions. He expressed that he has practically experienced nearly 60% more income generation in sericulture when compared to agriculture crops.

Md. Ebarat Ali, Reelers Representative, Member RAC, expressed his happiness over participating in the meeting. He appreciated the scientist's efforts in introducing the two reeling technologies "Suvarna" and "Souroneer". He requested to popularize the above technologies for the benefit of the reelers by introducing the same in all the possible schemes.

Shri R. Baghel, Addl. Director, DoS, Chhattisgarh requested the Chairman for organizing long term effective training programmes for development of Sericulture in the State. He assured all the necessary help from the DoS in development of Sericulture in coordination with the Institute. He also assured to develop a potential mulberry sericulture zone at Kanker and Surguja.

Shri Sudhir Kumar, AD (S), DOS, Jharkhand expressed his happiness over participating in the meeting. He requested the Chairman to ensure that the farmers' selection for any trial rearing in Jharkhand should be uniformly distributed throughout the state as climatic conditions vary among different regions. He expressed that it would be better if farmers' selection is done in consultation with DoS for any trail rearing being performed. He requested the Institute to suggest suitable silkworm breeds/hybrids and mulberry varieties for different seasons and regions of the State. He also advised to perform a study to identify skill gaps in the region.

Mrs Madhumita Choudhury, IAS, Commisioner of Agriculture, West Bengal expressed her happiness over participating in the meeting. She appreciated the Director, CSR&TI, Berhampore for her constant support and coordination with the DoS. She expressed that a balance is observed between field and lab oriented studies.

Dr. R. K. Mishra, Director (Tech.), CO Bangalore, Member, RAC complimented the Scientists for their outstanding research activities. He mentioned that as per the guideline of MOT, the CSB will slowly handover the extension activities to the state government. He advised that: a) scientists of the institute should make efforts to collaborate with other reputed institute for basic research projects b) tie up with KVKs for transfer of technology and extension related activities, and c) try to strengthen collaboration with local entrepreneurs to develop technologies to increase cost-effectiveness and accuracy of the technologies.

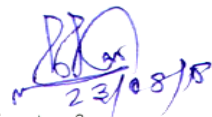
Dr. Nirmal Kumar, Member, Acting Chairman, RAC expressed his sincere thanks to the Hon'ble Chairman, CSB, RAC members, the Director of the Institute, Collaborators, farmers' representatives, scientists of the Institute and Invitees for their participation and active interaction in the meeting. The following suggestions were made during his concluding remarks.

- ✓ The outcome of the concluded projects should be projected clearly and must be more informative and lucid.
- ✓ Productivity level in respect to benchmark should not be compromised
- ✓ Data should be analyzed statistically for better inference
- ✓ To formulate need based studies to cater the seri community
- ✓ Suggestions by the House should be complied meticulously.


- ✓ Stress should be given to delineate unit area productivity and returns at the farmer's level.
- ✓ Emphasis should be given to shift farmers from rearing Multi x Bi to Bi x Bi to enhance their income generation.
- ✓ Clearly identify priority outputs with measurable indicators for assessing the progress.

Shri H.K.Hanumantharayappa, Hon'ble Chairman, CSB expressed his sincere thanks to the acting RAC Chairman & Members, the Director of the Institute, Collaborators, farmers' representatives, scientists of the Institute and Invitees for their participation and active interaction in the meeting. He opined that 60 years of Central silk Board's research have an outstanding impact on the silk industry. However, we are far behind from China both in quality or quantity. He urged the researchers for upgradation of the silk quality to reduce the silk import. The institute should emphasize on the popularization of already evolved technologies at the field in much faster ways to improve the socio-economic status of marginal farmers of the zone.

The meeting was ended with the vote of thanks.


 ✓ Director &
 Member Convenor, RAC

Approved


 (Dr. S. Nirmal Kumar)
 Acting Chairperson, RAC
 CSR&TI, Berhampore

ANNEXURE -I**LIST OF PARTICIPANTS IN THE 48TH MEETING OF RESEARCH ADVISORY COMMITTEE (RAC) HELD ON 24.07.2018 AT CSR & TI, BERHAMPORE, WEST BENGAL**

Sl. No.	Name	Designation
1.	Shri H.K.Hanumantharayappa, Chairman, Central Silk Board	Chief Guest
2.	Dr. S. Nirmal Kumar, Former Director, Central Silk Board, Bangalore	Acting Chairman
3.	Dr. Kanika Trivedy, Director, CSR&TI, Berhampore	Member Convenor
4.	Prof. Dulal Chandra Ghosh, Former Professor of Agronomy, Viswa Bharati University, Bolpur, Birbhum, West Bengal.	Member
5.	Dr. S. Mukhopadhyay, Principal Scientist & Head GIS&RS, ICAR-NBSS&LUP, Bidhan Nagar, West Bengal.	Member
6.	Dr. R. K. Mishra, Director (Tech.), Central Silk Board, Bangalore	Member
7.	Mrs Madhumita Choudhury, IAS, Commisioner of Textiles & Sericulture, West Bengal	Member
8.	Dr. Rajesh Baghel, Addl. Director, Chhattisgarh	Member
9.	Shri. Zakir Hossan, ADI, Bihar (Rep. DOHS, Bihar)	Member
10.	Shri. Lakshman Munda, ADS, Keojhar, Odisha (Rep. DOS, Odisha)	Member
11.	Shri. Sourav Majumder, Sci-D, Incharge SCTH, Malda	Member
12.	Shri Sudhir Kumar, ADI, Jharkhand (Rep. DOS, Jharkhand)	Member
13.	Md.Samsul Haque, Rearing Representative, Nabagram, Murshidabad, West Bengal	Member
14.	Md.Ebarat Ali, Reelers Representative, Kajigram, Malda, West Bengal	Member

Absentee:		
1	Dr. Chirantan Chattopadhyay, Vice Chancellor, Uttar Banga Krishi Viswavidyalaya, Pundbari, Coochbehar, West Bengal.	Chairman
2	Dr. S. Bhattacharya, Professor, Bidhan Chanadnra Krishi Viswavidyalaya, Mohanpur,Nadia, West Bengal	Member
3	Prof. S. R. Bhat, Ex. Principal Scientist, NRC on Plant Biotechnology, New Delhi	Invitee, RCC Member
4	Director, DOS, Assam	Member
5	Director, Directorate of Sericulture, DoS, Mizoram	Member
6	Director, Directorate of Sericulture, DoS, Manipur, Imphal	Member
7	Director, DoS, Gangtok, Sikkim	Member
8	Director of Sericulture & Weaving, Government of Meghalaya, Shillong	Member
9	Director of Handloom, Handicrafts & Sericulture, Government of Tripura, Agartala, Tripura	Member
10	Director of Textiles and Handicrafts, Government of Arunachal Pradesh, Itanagar	Member
11	Director of Sericulture, Government of Nagaland, Kohima	Member
12	Director of Sericulture, BTC Assam	Member

LIST OF SCIENTISTS/ PARTICIPANTS ATTENDED THE MEETING

Sl.No.	Name	Designation	Address
1.	Smt. Chandna Maji	Scientist-D, Training Division	CSR&TI, Berhampore
2.	Mr. N. B. Kar	Scientist-D, R & S Division	CSR&TI, Berhampore
3.	Dr. Subhra Chanda	Scientist-D, Entomology Section	CSR&TI, Berhampore
4.	Dr. T. Dutta (Biswas)	Scientist-D, Extension & Pub. Division	CSR&TI, Berhampore
5.	Dr. V. Lakshmanan	Scientist-D, SBG Section	CSR&TI, Berhampore
6.	Dr. S. Chattopadhyay	Scientist-D, Biotechnology Division	CSR&TI, Berhampore
7.	Dr. A. K. Verma	Scientist-D, SBG Section	CSR&TI, Berhampore
8.	Dr. Dipesh Pandit	Scientist-D, PMCE Division	CSR&TI, Berhampore
9.	Shri D.Chakravarty	Scientist-D, Moriculture Division	CSR&TI, Berhampore
10.	Shri Gopal Ch. Das	Scientist-D, SWPhy & RTI and BV- Cell	CSR&TI, Berhampore
11.	Dr. S. N. Gogoi	Scientist-D, RSRS	Jorhat, Assam
12.	Dr. Ranjit Kar	Scientist-D, RSRS	Kalimpong, West Bengal
13.	Shri S.K.Misro	Scientist-C, RSRS	Koraput, Odisha
14.	Dr. Sukhabrata Sarkar	Scientist-C, Training Division	CSR&TI, Berhampore
15.	Shri G.K.Samanto	Deputy Secretary (Tech.)	RO, Kolkata
16.	Dr. V. Vijay	Scientist-B, Agronomy and Soil sci. Section	CSR&TI, Berhampore
17.	Dr. Manjunatha, G. R	Scientist-B, PMCE Division	CSR&TI, Berhampore
18.	Dr. R. Mahesh	Scientist-B, Agronomy and Soil sci. Section	CSR&TI, Berhampore
19.	Dr. Anil Pappachan	Scientist-B, Mulberry Pathology Section	CSR&TI, Berhampore
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