

**PROCEEDINGS OF THE 53rd MEETING OF RESEARCH ADVISORY COMMITTEE
of CSR&TI (CSB), Berhampore HELD ON 23rd August 2021 IN DUAL MODE (Physical /
Virtual)**

The 53rd meeting of the Research Advisory Committee (RAC) of the CSRTI (CSB)-Berhampore was held on 23rd August 2021 in dual (Physical / Virtual) mode to review the progress of R&D projects/programmes under the chairmanship of Dr. Chirantan Chattopadhyay, Principal Scientist & Joint Director Academic (Actg.), ICAR-Indian Institute of Agricultural Biotechnology, Ranchi and Former Vice Chancellor, Uttar Banga Krishi Viswavidyalaya, Coochbehar, West Bengal.

At the outset, Dr. D. Pandit, Scientist-D welcomed the Chairperson, all the esteemed members of the RAC (2021-23), invitees, scientists and other participants to the meeting.

Dr. Chirantan Chattopadhyay, Chairman-RAC in his opening remarks greeted and thanked all the participants for assembling together under a short notice. The Chairman appreciated the achievements of the Institute under former Director Dr. V. Sivaprasad and hoped for continuing the same under the new Director Dr. Kishor Kumar C.M. The Chairman emphasised the need of new promising research that lead to solutions for future and to meet requirements of resolving the present problems as well as quality publications and patents. He requested the participants for a fruitful interaction and precise presentation.

Dr. Kishor Kumar, Director, CSRTI-Berhampore and Member-Convenor, RAC presented the R&D highlights and other institutional activities. List of participants is appended in Annexure-I. Thereafter, agenda-wise items were taken up for discussion.

ITEM NO.1: Confirmation of the minutes of 52nd meeting of RAC held on 28th Jan 2021 at CSRTI-Berhampore

As no comments were received from any member of the committee, the minutes of 52nd RAC meeting were confirmed.

ITEM NO.2: Review of follow-up action taken on the recommendations/ decisions of 52nd meeting of RAC held on 28th Jan 2021

The follow up action taken on the decision of the committee were reviewed and the progress was found satisfactory.

ITEM NO. 3: REVIEW OF CONCLUDED PROJECTS

Five projects were concluded during the period as per the time schedule. The following suggestions were made by the RAC after presentation by the respective PI/CI:

1. PIB 3627:Development of superior mulberry (*Morus* spp.) genotypes through Polyclonal Seed Orchard

The RAC suggested to determine whether the generated PCH are polyclonal and to ascertain the lack of cross contamination. It is advised to maintain the Polyclonal Seed Orchard and the superiority as well as sustainability of the genotypes may be analyzed using appropriate statistical analyses like PCA/GGE Biplot analysis in future studies.

[Action: Dr. Yellappa, Scientist-B, MBG]

2. PRP 02003 SI: Studies on the management of mulberry root rot disease in Eastern and North Eastern India

The house recommended the application of *ROTfix* for the management of root rot; a second dose may be applied after 30 days, if required as observed in the experimentation.

[Action: Dr. Khasru Alam, Sci B, Mulberry Pathology]

3. AIB 3602: Development of thermotolerant bivoltine breeds / hybrids of silkworm, *Bombyx mori* through marker assisted selection

It was advised to avoid comparison of developed DH with FCs during further analysis. Instead, it was suggested to evaluate the performance of newly developed thermotolerant DH with double hybrid collected from NSSO. It is further advised to include the comparative performance data of developed DH with FC1 x FC2 (control); justification for comparison of developed DH with FCs (dumbbell parents); data on reeling parameters in the concluded report. The PI was advised to clarify the rationale for fewer differences in the performance of parental population, FCs and DH. Since thermotolerance is a polygenic trait, the PI was advised to explain the retention of 100% trait inheritance in BC6F2 as the parent; the basis / parameters for selection of a few lines and discard others despite the presence of marker. The RAC advised to use more gene markers in future studies as the thermotolerance is multi-gene controlled.

[Action: Dr. N. Chandrakanth, Scientist-C, SBG]

4. PRE02001SI: Management of Pink Mealy bug *Maconellicoccus hirsutus* (Green) of Mulberry with barrier system

The RAC advised to include the data on mealy bug incidence across different seasons; determine and include cost-benefit ratio of neem cake + spinosad 45 SC in the final report. It is suggested to test other combinations such as neem cake for soil and neem oil for plants to determine the efficacy in future studies.

[Action: Dr. Kumaresan, Scientist-D, SBG]

5. ARP3630: Evaluation of new room and silkworm bed disinfectants

The house appreciated developing the environmentally safe silkworm room and bed disinfectants (NIRMOOL & Seri-Win). The Committee suggested supplying Nirmool to ASRs of the institute and NSSO for disinfection and recording the feedback. It is advised to include the cost difference between bleaching powder and Nirmool in the conclusion report. The RAC further advised to continue studies related to testing the efficacy of Seri-Win using more DFLs across different seasons.

[Action: Dr. K. Rahul, Sci-C & Dr. M. Rabha, Sci-B, SWP]

ITEM NO. 4: APPROVAL OF NEW RESEARCH PROJECT PROPOSAL

1. Title: Final Yield Trial (FYT) of newly identified mulberry genotypes for leaf productivity and quality.

Duration: 4 years

Decision: The project proposal was presented by the PI. The Chairman appreciated the proposal and the new project proposal was approved.

[Action: Dr. Deepika & Dr. Yellappa H, Scientist- B, Host Plant]

ITEM NO. 5. REVIEW OF PROGRESS OF ON-GOING PROJECTS

The progress of 08 on-going research projects of main institute and nested units along with ToT/Extension/Training activities were presented by the respective PI/CI; reviewed by the RAC and suggestions made were as follows:

MULBERRY IMPROVEMENT SECTION

1. **PIE 02002 SI: Evaluation of performance of mulberry genotypes C-9 under red and laterite soils**

The RAC observed that the progress of the project was satisfactory and as per milestones.

[Action: Dr. K. Suresh, Scientist-C, MBG]

2. **PIB 02007 SI: Improvement of mulberry leaf longevity in E & NE states of India**

The RAC opined that the progress of the project is satisfactory. The RAC advised the PI for utilizing equipment to measure leaf chlorophyll and photosynthesis rate. The RAC recommended purchasing the portable analyzer for normalized difference vegetation index (NDVI) and Infra-Red gas analyzer (IRGA) for systematic data collection.

[Action: Dr. Deepika, Scientist- B, Host Plant]

3. **PPA 02005 SI: Optimization of spacing and nutrient dose for the newly developed high yielding mulberry variety (C2038) under irrigated condition**

The RAC advised the PI to look into the field applicability and utility of 6 m x 6 m spacing. The Committee found that the progress is satisfactory and as per milestones.

Action: Dr. Yellappa H, Scientist- B, Host Plant]

SILKWORM IMPROVEMENT SECTION

4. **AIT 02008 SI: Identification of high humidity tolerant silkworm breeds/hybrids for E & NE India**

The RAC advised to check for difference between the survival of male and female upon treatment as reproductive potential is affected under the stress conditions. The Committee advised to find the survival of FC upon humidity stress and quantify the variability in comparison with humidity tolerant hybrids. Data on performance of control batches reared under optimum conditions has to be included for comparison. It is further advised to study the stability in survival across generations after the treatment. It is also suggested to continue the study with more genes related to humidity tolerance.

[Action: Dr. Raviraj, Scientist-B, SBG]

5. **AIB 02006 MI: Improvement of Nistari lines for survival & Silk productivity (with CSRTI-Mysore)**

The PI was advised to collect the performance data of various Nistari lines from DoS and compare the same with the developed improved Nistari lines. It is also advised to compare the performance of the improved lines with the original Nistari lines of the Institute across the years. The PI was advised to explain the basis for improvement in various characters and the level of selection pressure in the improved lines. The committee opined that the population size of selected individuals is too less. In addition, selection has to be made based on shell weight as it is correlated to filament length. The committee felt that the progress achieved is satisfactory.

[Action: Dr. Ranjita Devi, Scientist-B, SBG]

6. AIB 02009 MI: Authorization trials of silkworm hybrid, 12Y x BFC1 in Eastern & North East India

The RAC appreciated the efforts on supply and results obtained from different states. However, the Committee advised to collect data on cocoon prices obtained by farmers and include in forth coming reports.

[Action: Dr. N. Chandrakanth, Scientist-C, SBG]

7. AIC 02004 CN: Molecular characterization and assessment of the efficacy of low molecular weight peptides isolated from mulberry leaf against flacherie disease of silkworm (with UNB Siliguri)

The RAC advised to detect sharper bands on SDS-PAGE. The RAC suggested mentioning categorization/role of peptides identified by mass spectrometry. Further, it was suggested to ascertain the interaction of peptides associated with antimicrobial activity. The RAC observed that the progress of the project was satisfactory and as per milestones.

[Action: Dr. Pooja Makwana, Scientist-C, Biotech]

SEEM Division

8. Development of Seri-Entrepreneurship through sericulture chawki business by setting up 02 Chawki Rearing Centers (CRC) as demonstrative units in Murshidabad district, West Bengal [NABARD Funded project]

The PI presented the new project funded by the NABARD. The RAC appreciated the proposal. However, the PI was advised to ensure the availability of leaves suitable for chawki worm rearing; strict monitoring of the chawki rearing practices and caution about fixation of cost for supply of chawki worms were advised. The project is approved by the RAC and the PI was advised to submit the project including the RAC suggestions to CO for coding.

[Action: Dr. Shafi Afroz, Scientist-C, SEEM]

COLLABORATIVE PROJECTS FROM OTHER INSTITUTES

1. PRP 08002 MI: Identification of candidate genes based powdery mildew resistance for utilization in disease resistance breeding in mulberry. [Coll. project with SBRL-Kodathi]

The RAC observed that progress of the project was satisfactory and as per milestones.

[Action: Dr. K. Suresh, Scientist-C, MBG]

2. PIE13001MI: AICEM -IV: All India Co-ordinated Experimental Trial for Mulberry Varieties-Phase IV

It was informed to the house that the propagation studies at different centres will be repeated as the first trial was a failure due to Covid-19 pandemic and other associated disturbances. The PI was advised to go ahead with the same.

3. AIE 06002 MI: Evaluation of bivoltine silkworm genetic resources for tolerance to abiotic stress in selected hotspots (Coll. project from CSGRC-Hosur)

The RAC observed that the progress of the project was satisfactory and as per milestones. However, the CI was advised to look into the low performance of the breeds and also include the control breeds CSR2 and CSR4 of southern region along with SK6 and SK7 in the future trials.

[Action: Dr. N. Chandrakanth, Scientist-C, SBG]

4. AIT 08005 MI: Development and evaluation of Bidsenovirus resistant silkworm hybrids developed from marker assisted breeding lines-Phase II (Coll. from SBRL- Kodathi)

The Co-PI informed the house that homozygous BmBDV resistant lines of SK6 and SK7 were provided by SBRL and are presently under bioassay. The RAC observed that the progress of the project was satisfactory and as per milestones.

[Action: Dr. K. Rahul, Scientist-C, Silkworm Protection]

5. AIB 01009 MI: Evaluation of new Bv Double hybrid, TT21 X TT56 at farmers' level for authorization for commercial exploitation (Coll. project from CSRTI-Mysore)

The CI was advised to compare the performance of TT21 X TT56 with a suitable DH. The RAC observed that the progress of the project was satisfactory and as per milestones.

[Action: Dr. N. Chandrakanth, Scientist-C, SBG]

6. BPP 05014 CN: Standardization of Processing and Production of a Consumable Beverage from Mulberry leaves and Blending with Green Tea. (Coll. project with CSB-Bengaluru, AAU & TTTRI-Jorhat)

The RAC advised to obtain the data generated and the progress achieved till date.

[Action: Dr. Kumaresan, Scientist-D, RSRS]

Trial of technologies

On station trials

1. Nirmool- A general disinfectant for sericulture
2. Validation of new eco-friendly bed disinfectant (SERI-WIN)
3. Low cost drip fertigation for Mulberry
4. Evaluation of High yielding and Low temperature stress tolerant C-01 and C-11
5. Evaluation of high yielding & bacterial leaf spot resistant mulberry variety C-7

The RAC recommended submitting the OST programs for coding

6. On-station (OST) trials of thermo-tolerant silkworm hybrids

The RAC advised to use loose eggs for evaluation and uniform comparison. Further, ruling hybrids SK6.7 and FC1.2 must be used for comparison.

On Farm trials

1. Demonstration of Sampoorana for improved cocoon quality
2. Popularization of Chawki Rearing
3. Popularization of Collapsible plastic Mountage & Shoot feeding (shelf-rearing)

The RAC advised to submit the OFT projects to CO for coding

4. Evaluation of BHP DH

The RAC advised to evaluate economic benefits of the farmers using the new double hybrid

Opinion from Farmer's representative, Shri. Bikas Chandra Roy

Shri B.C. Roy, the farmers' representative at the RAC expressed his happiness over the research contributions of the institute especially on the silkworm breeds and their usefulness in getting the farmers higher yields. He requested for the earlier replacement with NIRMOOL, a general disinfectants in place of Bleaching powder and chlorine di-oxide based ones as they are human hazardous and corrosive. The

The Director (CSR&TI) briefed him about the eco-friendly room and bed disinfectants and assured for the earlier commercial release of Nirmool and Seriwin for benefit of the farmers. He was requested to collect the samples of the same for his use and to provide the feedback.

General Comments of the RAC Members & the Chairperson:

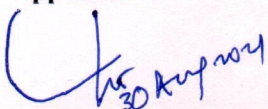
1. Data have to be analysed statistically particularly for concluded projects
2. Emphasis to be given to cocoon reeling parameters of newly developed breeds and hybrids
3. Cost of production and per unit area productivity is to be calculated
4. Suggested to focus on value chain interventions
5. Systematic breed management plan should be brought up for breed development and supply
6. Crop rescheduling should be done in consultation with the concerned DoS
7. Comparative statement for different states to be made to depict the better performing states
8. The developed breeds/hybrids should be evaluated along with the ruling/popular breeds/hybrids of other Institutes
9. Low and medium income group farmers are to be included in extension activities
10. Life cycle of pest / parasites to be related for efficient application of insecticides
11. Combination of tea and mulberry should be given more importance
12. More concepts for new projects should be submitted as target include initiation of 10 more projects
13. OST/ OFT project are to be submitted to CO for obtaining code
14. There is ample need to Improve budget utilization
15. 12Y x BFC1 hybrid exhibited better performance in favourable seasons. However, 12Y as well as other multivoltine races did not perform well in unfavourable seasons
16. Documentation of farmers' data is recommended
17. The Chairman suggested combining micro projects with similar objectives into one Mega project to improve the output, publications and for intellectual property rights (IPR)
18. The RAC enquired the strategy of sharing royalty/ licensing fee or career improvement options for the concerned scientists involved in developing technology/product. Alternatively, the concerned Scientist should get some advantage for creating the IPR in his/ her career advancement. It may be discussed in RCC.
19. The Committee advised scientists to publish scientific papers in high quality journals

The Director expressed gratitude to the Chairperson and all the honourable members of the Research Advisory Committee for a thorough review of R & D activities of the institute. He thanked them for their critical and constructive comments during the deliberations and also for the insightful guidance/ inputs provided by the RAC and assured to follow the advice for further improvements in the R & activities of the institute.

Dr. Chirantan Chattopadhyay, Chairman thanked all the members of the RAC for inputs and suggestions for improving the R&D efforts of CSRTI-Berhampore. He appreciated the scientists for good scientific presentations, efforts to protect and commercialize products/technology developed.

The meeting ended with the vote of thanks.

Approved



(Chirantan Chattopadhyay)
Chairperson, RAC
CSRTI (CSB)-Berhampore
Date: 30 Aug 2021

ANNEXURE -I**LIST OF MEMBERS IN THE 53RD MEETING OF RESEARCH ADVISORY COMMITTEE (RAC) HELD ON 23.08.2021**

#	Name	Designation
1.	Dr. Chirantan Chattopadhyay, Chairman, Former Vice Chancellor, UBKV, Coochbehar, West Bengal	Chairman
2.	Dr. Somnath Bhattacharya, Professor, BCKV Mohanpur, Nadia	Member
3.	Prof. R. Varatharajan, Dept. of Zoology, Manipur University	
4.	Dr. S. Nirmal Kumar, Former Director, CSR&TI, Berhampore	Member
5.	Director (Tech), CSB, Bangalore	Member
6.	Dr. Manthira Moorthy, Sc-D, Rep. RCS, CO, CSB, Bengaluru	Member
7.	Dr. Manjunatha G.R., Sc-C, RCS, CO, CSB, Bengaluru	
8.	Dr. S. N. Bagchi, Sc-D, SSPC, Berhampore Representative, Director (NSSO), CO, CSB, Bengaluru	Member
9.	Shri. Nimai Murasingh Deputy Director(HHF), DoS, Tripura	Member
10.	Shri Bikas Chandra Roy, Rearing's Representative	Member
11.	Dr. Kishore Kumar C.M., Director, CSR&TI, Berhampore	Member- Convenor

Absentee:		
1.	Prof. Debabrata Basu Dept. of Agril. Extension, BCKV	Member
2.	Commissioner, DoS, Govt. of West Bengal	Member
3.	Director, DoS-Manipur	Member
4.	Md. Salauddin Momin, Reelers Representative	Member

LIST OF SCIENTISTS/ PARTICIPANTS ATTENDED THE MEETING

#	Name	Designation
1.	Dr. G. Srinivasa	Scientist-D, SEEM Division
2.	Dr. A.R.Pradeep	Scientist-D, Biotechnology & Silkworm Pathology
3.	Dr. Dipesh Pandit	Scientist-D, PMCE Division
4.	Dr. S. Sarkar	Scientist-D, Training Division
5.	Dr. Satadal Chakraborty	Scientist-D, Farm Management & RTI
6.	Dr. P.Kumaresan	Scientist-D, RSRS, Jorhat
7.	Dr. N. Chandrakanth	Scientist-C, Silkworm Breeding & Genetics
8.	Dr. Shafi Afroz	Scientist-C, SEEM Division
9.	Dr. Pooja Makwana	Scientist-C, Biotechnology
10.	Dr. K. Rahul	Scientist-C, Silkworm Pathology
11.	Dr. Mihir Rabha	Scientist-B, Silkworm Pathology
12.	Dr. Parameswara Naik.J.	Scientist-B, Training Division
13.	Dr. Raviraj V.S.	Scientist-B, Biotechnology
14.	Dr. Thangjam Ranjita Devi	Scientist-B, Silkworm Breeding
15.	Dr. Deepika Kumar Umesh	Scientist-B, Mulberry Physiology
16.	Dr. Yallappa Harijan	Scientist-B, Mulberry Breeding
17.	Shri Khasru Alam	Scientist-B, Mulberry Pathology
18.	Shri Subrata Sarkar	Senior Technical Assistant, PMCE Division
19.	Smt. M. Chattopadhyay	Senior Technical Assistant, PMCE Division
20.	Mr. Srinivas	Jr. Engineer, Maintenance
21.	Ms. Suravi Ghosh	JRF, Biotechnology Section