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Central Sericultural Germplasm Resources Centre
Central Silk Board, Hosur – 635 109

**MINUTES OF THE 44TH MEETING OF THE
RESEARCH ADVISORY COMMITTEE HELD ON 21ST MARCH, 2023**

The 44th meeting of the Research Advisory Committee [RAC] of CSGRC, CSB, Hosur, was convened on March 21, 2023 under the chairpersonship of Dr.Chandish R. Ballal, Director (Retd.), ICAR-National Bureau of Agricultural Insect Resources [ICAR-NBAIR], Bengaluru. The list of participants is appended as **Annexure I**.

At the outset, Dr. B.T. Sreenivasa, Director, CSGRC, Hosur welcomed all the members of the Research Advisory Committee and all other participants to the 44th RAC meeting. He informed the Committee that the review period of the meeting is from September, 2022 to February, 2023 and then requested the Chairperson for her opening remarks.

The Chairperson welcomed all the participants to the 44th RAC meeting expressed her happiness in chairing the session. She opined that CSGRC has gained importance and identity over the years and congratulated the CSGRC team for their achievements. She appreciated the Director for his efforts in bringing this centre to the forefront. With this, the Chairperson advised the house to commence the meeting and requested for fruitful deliberations.

Director, CSGRC, Hosur, presented an overview of the activities being carried out at CSGRC during the period under report. The committee appreciated the overall progress made during the period and the following suggestions were made by the committee:

- a) Process of outsourcing of manpower can be expedited.
- b) Project assistants recruited for general routine activities should be trained in administrative/ other need-based work besides their allotted responsibilities.
- c) A slide can be made in RCC presentation highlighting issues related to GeM purchases leading to low budget utilization in the projects.
- d) Graphs pertaining to collection and supply of mulberry and silkworm genetic resources to be up-to-date in the presentation.
- e) The date and year of collection of new silkworm/mulberry genetic resources to be mentioned in collection details.
- f) Exploration for mulberry germplasm can be carried out independently. However, NBPGR/IFGTB may be consulted for guidance with regard obtaining permissions / accessibility to the inaccessible areas.

- g) A table mentioning the list of Institutes which have registered their breeds with CSGRC to be given in RCC presentation.
- h) Each scientist should publish atleast one research paper in IF-1/>6 NAAS rated journals in a year and the existing procedures may invariably be followed with regard to publication of manuscripts.
- i) Since re-establishment of MGRs has been taken up at the centre, mulberry accessions resilient/resistant to termites may be identified. Further, evaluation of MGRs for resistance to stemborer and other insect pests may be initiated to identify potential germplasm.

[Action: All concerned]

ITEM NO. I: CONFIRMATION OF MINUTES OF THE 43rd MEETING OF RAC HELD ON 2ND SEPTEMBER, 2022

As no comments were received, the House confirmed the minutes of 43rd RAC meeting.

ITEM NO. II: REVIEW OF FOLLOW-UP ACTION ON THE DECISIONS TAKEN IN THE 43RD MEETING OF THE RAC HELD ON 2ND SEPTEMBER, 2022

Follow-up action on the decisions/suggestions taken during 43rd RAC meeting was presented by Dr. M. Maheswari, Sc-D and following were suggested:

1. Action taken report to comprise atleast the action initiated or the steps taken till date towards compliance of the suggestions.
2. A draft Material Transfer Agreement including scope of commercialization to be prepared and submitted to C.O. at the earliest.
3. Shri Raju Mondal, Sc-C was advised to make publication pertaining to trait-specific germplasm for Current Science journal.
4. Arrangements can be made to provide the link for Mulberry germplasm database on NBPGR website.
5. Seasonal data can be collected from CSRTI, Mysore, CSGRC, Hosur and RSRS, Kodathi towards registration of fruit yielding accession (trait-specific germplasm).
6. Exposure visits to various institutes to be taken up by scientists.
7. For trait-specific germplasm, a local check can be kept. For fruit yielding accessions, a local check, if available, can be identified and planted in the demonstration plots.
8. The institutes where germplasm materials were supplied, but have not given due acknowledgement/ authorship to be listed out and included in RCC slides. Snapshots of such 5 publications without acknowledgement can be given.
9. Dr. Sakthivel, Sc-D, was advised to take up screening of pests on different mulberry accessions at the earliest.

10. Top ten long-term challenges/Opportunities and Strategies of CSGRC to be prepared at the earliest and circulated among all RAC members for their inputs.

[Action: All concerned scientists]

ITEM NO. IV: REVIEW ON CONCEPT NOTES OF NEW RESEARCH PROJECTS

Two new research proposals were reviewed and the following suggestions were given:

1) Studies on the cytological status of mulberry genetic resources (Phase-II)

Shri. Raju Mondal, Sc-C presented the concept note. It was suggested to include a microtome in the proposal. Phase-I results can be shown and gaps to be highlighted to justify the Phase-II proposal. The scientist was advised to submit the concept note to RC for preliminary clearance.

[Action: Shri. Raju Mondal, Sc-C]

2) Evaluation of mulberry genetic resources for forage quality and supplementary animal feed

Dr. M.C. Thriveni, Sc-C presented the concept note. The Committee suggested modification of the title to Evaluation of mulberry genetic resources for fodder quality. The project can be made in collaboration with one of the well-established fodder institutes or ICAR-NIANP. Similar work carried out by CSB institutes and other organizations to be thoroughly reviewed to identify the gaps and relevant background information to be collected prior to submission of the concept note. The second objective is to be modified suitably. With this, the scientist was advised to submit the concept note to RC for preliminary clearance.

[Action: Dr. M.C. Thriveni, Sc-C]

ITEM NO. V: REVIEW ON THE PROGRESS OF THE ONGOING RESEARCH PROJECTS

The ongoing research projects were reviewed and the following decisions were taken:

1. PIG-06004 SI: Studies on cytological status of mulberry genetic resources.

The Committee suggested the PI to publish the data generated from the project in peer-reviewed journals.

[Action: Shri. Raju Mondal, Sc-C]

2. PIT-08004 MI: Study on epigenetic and autophagy modifiers on induction of haploid microspore embryogenesis in mulberry

The Committee suggested the PI to publish the data generated from the project in peer-reviewed journals.

[Action: Shri. Raju Mondal, Sc-C]

3. MTL01025MI: Life Cycle Assessment of Mulberry Silk: A National Assessment.

The house took note of the progress made under the project.

[Action: Shri. Raju Mondal, Sc-C]

4. AIT-06006MI: Marker-assisted screening to identify silkworm genetic resources tolerant to BmNPV and BmBDV

The corrected mortality under bioassay studies may be calculated using Abbott's formula. The qPCR experiments to be limited to 3-4 identified productive accessions. Based on positive results, the bioassay experiments for promising accessions can be redesigned/repeated after the project period as a pilot study, subject to approval by the Central Office.

[Action: Dr. Ritwika, Sc-C & Dr. R. Saravanakumar, Sc-C, SSTL]

5. AIG-06007MI: Molecular characterization and assessment of genetic diversity in silkworm (*Bombyx mori*) germplasm

The RAC complimented the progress of the work and PI was suggested to clarify with Bionivid Technology Pvt Ltd, Bengaluru regarding the difference in the depth of sequencing across the four samples given for whole genome re-sequencing. Further, the PI was suggested to ascertain the sequencing depth and quality of RNA Seq in accordance with the purchase order issued to the company. It was also indicated that basic analysis like genome and transcriptome completeness need to be conducted. Hybrid assembly of the genomes, gene predictions and functional annotation should be conducted using different pipelines to obtain meaningful results for comparative genomics. It was reiterated that the PI should have regular discussions with the analysis team at Bionivid and should involve in the bioinformatics analysis. The PI was advised to expedite the ddRAD sequencing, SNP calling and downstream analysis.

[Action: Dr. G. Lokesh, Sc-D]

6. PIE-06008SI: Exploration, Collection, Characterization, Evaluation, Re-establishment, Conservation and Supply of Mulberry Genetic Resources (MGRs) (Phase-X)

Route map/site of collection may be indicated in the map along with area covered (in kms) while presenting the survey area. Zones from where accessions were collected are to be marked. Terrain maps can be shown for better presentation. Effort may be taken to publish data in reputed peer-reviewed journals. Characterization at species level may be attempted. IC numbers for the new collections may be obtained at the earliest. Dr. N. Sakthivel, Sc-D to be included as one of the investigators in the X phase project of Mulberry division.

[Action: Dr. G. Thanavendan, Sc-C]

7. AIE-06009MI: Collection, Characterization, Evaluation, Conservation and Utilization of Silkworm Genetic Resources- X phase

The annual maintenance fees for renting Cloudspace to be confirmed and included in Annual Action Plan of every year. While floating the bid for digitization work, sellers with authentic registered office in Bangalore may be specified for convenience. The range values given in tables should be given as 'minimum to maximum'.

Smt. G. Punithavathy, Sc-D informed the committee that according to 43rd RAC's recommendation, "Digitization of phenotypic and biological characteristics of silkworm genetic resources" project was created as a sub-project component of the Collection, Characterization, Evaluation, Conservation and Utilization of Silkworm Genetic Resources- X phase and submitted for coding. The scientist is listed as a co-investigator on the X phase project. The scientist can be given Co-PI credit because digitalization calls for a new kind of laborious silkworm characterization method. The chairperson encouraged the RCS section, C.O. Bangalore to evaluate the possibility, look into the matter, and approve the Co-PI since conservation and digitization are two separate activities that require a lot of additional engagement.

[Action: Dr. M. Maheswari, Sc-D, Smt. G. Punithavathy, Sc-D]

ITEM NO. : IV REVIEW ON PROGRESS OF CONCLUDED RESEARCH PROJECTS

AIE-06003 SI: Evaluation of silkworm genetic resources of *Bombyx mori* L. with reference to inbreeding depression and their conservation

The PI was suggested to discuss with Dr. H.K.Basavaraja, Sc-D (Retd), CSB, regarding inbreeding depression. The goodness of fit may be evaluated between the original data and present data by the statistician.

[Action: Dr. M. Maheswari, Sc-D & Dr. G.R. Manjunatha, Sc-C, RCS]

PIG 06005SI- Molecular characterization of mulberry genetic resources for the identification of duplicates and effective utilization

The Committee suggested to re-validate the 14 duplicates identified in the project using vertical PAGE followed by silver staining to confirm the results. It was suggested that the work can be taken up with assistance from the existing project assistants of the centre.

[Action: Dr. M.C. Thriveni, Sc-C]

ITEM NO. V: ANY OTHER POINTS WITH THE PERMISSION OF THE CHAIR

1. After the re-establishment of exotic mulberry accessions in the FGB, the characterization and evaluation can be initiated.
2. Species authentication using DNA barcodes of the mulberry germplasm maintained by the Institute can be initiated.
3. Supply and feedback information of sericultural genetic resources can be obtained from indenters so as to carry out impact assessment.
4. During sorting of cocoons for seed preparation, cocoon characters of the silkworm accessions can be check verified with the preserved cocoon samples in order to maintain original cocoon characters.
5. Name boards for mulberry leaf supply garden and authorized variety plot can be taken up through local service or GeM.

[Action: All concerned scientists]

Dr. B.T. Sreenivasa, Director, thanked all the RAC members for their critical comments and for providing valuable guidance to the scientists in formulation of the projects and scientific activities.

The Chairperson, Dr. Chandish Ballal, appreciated all RAC members for the effective discussion held during the meeting. She appreciated the Director for remarkable improvement of the centre.

The meeting ended with thanks to the chair and RAC members.



Dr. Chandish R. Ballal
Chairperson, RAC

**List of participants for the 44th Meeting of the Research Advisory Committee
Of CSGRC, Hosur held on 21/03/2023**

1. **Dr. Chandish R. Ballal**, Former Director, NBAIR, Bengaluru, Chairperson, RAC.
2. Dr. Anitha Kodaru, Principal Scientist, NBPGR, Hyderabad, Member RAC.
3. Dr. Manjunath Gowda, Professor, UAS, GKVK, Bengaluru, Member RAC.
4. Dr. Ravindra Singh, Scientist-D (Rtd), Central Silk Board, Member RAC.
5. Dr. Modhumita Dasgupta, Scientist-G, ICFRE, Coimbatore, Member RAC
6. Dr. B.T. Sreenivasa, Director, CSGRC, Hosur, Member Convener RAC
7. Dr. M. Maheshwari, Scientist-D & Head, Silkworm & PMCE Division, CSGRC, Hosur
8. Dr. N. Sakthivel, Scientist-D & Head, Mulberry Division, CSGRC, Hosur
9. Smt. G. Punithavathy, Scientist-D, CSGRC, Hosur
10. Dr. G. Lokesh, Scientist-D, CSGRC, Hosur
11. Sh. S. Nazeer Ahmed Sahab, Scientist-D, RCS, Central Silk Board
12. Dr. Ritwika Sur Chaudhuri, Scientist-C, CSGRC, Hosur
13. Dr. G. Thanavendan, Scientist-C, CSGRC, Hosur
14. Dr. M.C. Thriveni, Scientist-C, CSGRC, Hosur
15. Shri. Raju Mondal, Scientist-C, CSGRC, Hosur
16. Dr. Himanshu Dubey, Scientist-C, SBRL, Kodathi
17. Dr. R. Saravanakumar, Scientist-C, SSTL, Kodathi
18. Shri. S. Sekar A.D (Comp), CSGRC, Hosur
19. Smt. Poonam R., Steno (Gr-I), CSGRC, Hosur
