केन्द्रीय रेशम जननद्रव्य संसाधन केन्द्र, केन्द्रीय रेशम बॉर्ड ,होसूर-635 109

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

MINUTES OF THE 43RD MEETING OF THE RESEARCH ADVISORY COMMITTEE HELD ON 2ND SEPTEMBER, 2022

The 43rd meeting of the Research Advisory Committee [RAC] of CSGRC, CSB, Hosur, was convened on September 2, 2022 through offline mode 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 43rd RAC meeting. He informed the Committee that the review period of the meeting is from March to August, 2022 and then requested the Chairperson for her opening remarks.

The Chairperson welcomed all the participants to the 43rd RAC meeting and felt that the Research Advisory Committee of CSGRC is unique as it functions to support the scientists wholeheartedly and acts more as a mentoring team. She congratulated the CSGRC team for the focussed and impactful presentation at the RCC meeting. She appreciated the Director for building R&D strength among scientists. 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) Details of the 18 newly added mulberry accessions to be given in CSGRC Overview presentation.
b) Uniform name plates to be put up in Field Gene Bank with uniform colour, size and CSB logo.
c) Good quality photographs to be incorporated in the powerpoint presentations, wherever relevant.
d) Maintenance of duplicates under different agroclimatic conditions, should be explored to prevent extinction of accessions.
e) Revenue generation during the period of report has to be included in the presentation.

f) As the existing mandate does not cover all the activities of the centre, the committee suggested to reframe the mandate as mentioned below.
   1. **Exploration, Collection, characterization, documentation, conservation, and evaluation of sericultural germplasm resources**
   2. **Promotion for sustainable utilization of sericultural resources**
   3. **Creation of awareness and training of stakeholders on conservation, management, and utilization of sericultural germplasm resources**

g) CSGRC should update the statisticallly analyzed data and keep the presentations ready for the forthcoming RCC meeting.
h) With regard to supply of germplasm material, the guideline / terms of reference to be reframed keeping a provision for commercialization.
i) CSGRC to keep track of the germplasm material supplied during the past 10 years, collect feedback from the stakeholders and report / present during the next RAC meeting.
j) Central Office may be requested to write to all CSB and other R&D institutes to share the germplasm material maintained by them with CSGRC, Hosur for further maintenance as it is recognised as the Germplasm Resources Centre.
k) Considering the lesser scientific as well as technical manpower at CSGRC, the committee recommended that Research Fellows may be sanctioned as per need to CSGRC Hosur for smooth conduct of the research projects and the continuous maintenance of the huge collection of mulberry and silkworm germplasm.

[Action: All concerned]

ITEM NO. I: CONFIRMATION OF MINUTES OF THE 42nd MEETING OF RAC HELD ON 24th FEBRUARY, 2022

As no comments were received, the House confirmed the minutes of 42nd RAC meeting.

ITEM NO. II: REVIEW OF FOLLOW-UP ACTION ON THE DECISIONS TAKEN IN THE 42ND MEETING OF THE RAC HELD ON 24TH FEBRUARY, 2022

Follow-up action on the decisions/suggestions taken during 42nd RAC meeting was presented by Dr. M. Maheswari, Sc-D and following were suggested:

1. Registration of trait-specific mulberry germplasm registration is to be carried out for soft protection.
2. A committee has to be constituted for revising and re-looking into the germplasm collection. The silkworm accessions can be kept or discarded based on pre-set benchmarks for traits, so that maintenance of unwanted germplasm can be avoided.

3. Publications in predatory journals should be avoided. Scientists have to focus on publishing their research papers in journals with NAAS ratings of >6/ TR Impact Factor > 1.
4. In reports, inclusion of publications based on research conducted outside CSGRC/CSB should be avoided.
5. Publication on trait-specific germplasm has to be made at the earliest.
6. The colours used in the CSGRC website may be edited and soothing colours may be used for better visual appeal.
7. MGIS database to be linked to NBPGR database for which Dr. Sunil Archak, (National Fellow), NBPGR, New Delhi may be contacted.
8. Whole genome sequencing and transcriptome analysis for *M.laevigata* to be taken up under the mulberry fruit yielding accessions project and if need be, expert advise from Dr. Modhumita Dasgupta may be sought. As already suggested by CO, Bengaluru, the establishment of a demo plot for fruit-yielding mulberry at CSRTI, Mysore may also be proposed besides the already proposed site at RSRS Kodathi.

[Action: All concerned scientists]

ITEM NO. III REVIEW OF FOLLOW-UP ACTION ON THE DECISIONS TAKEN IN THE 66TH RCC MEETING HELD ON 05 & 06-04-2022

1. Gap analysis for exploration needs to be carried out and regions not surveyed should be mapped and annual calendar prepared for survey trips to be taken up in unexplored regions.
2. Country-wise mulberry and silkworm germplasm collections, details of germplasm registered as well as information on germplasm supply are to be presented.

[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) Collection, characterization, evaluation, conservation, utilization of silkworm genetic resources (X-Phase) (Continuous Programme)

Boil off loss (%) may be included for the characters to be evaluated. Objectives are to be modified to make them brief and specific. Under the first objective, all parameters are to be analysed for new collections, if any. Additional manpower in the form of research fellows may be proposed under the project. It was felt that since this proposal is based on a continuous programme, referees' comments are not required. Full-fledged project

proposal may be prepared in the prescribed format and submitted to CO for approval latest by 30th September, 2022.

[Action: Dr. M. Maheswari, Sci-D]

2) Digitization of phenotypic and biological characteristics of silkworm genetic resources

The committee felt that a separate project just for digitalization of the phenotypic and biological characteristics of silkworm genetic resources, is not required and advised the PI to take up the proposed work as a sub project under the proposed project on Collection, characterization, evaluation, conservation, utilization of silkworm genetic resources (X-Phase) with the following suggestions.

- Scale bars of the digitized images are to be indicated.
- Outsourcing can be explored for digital photography or alternately a good resolution camera can be proposed with proper justification.
- Characters that cannot be truly represented by images should not be included in the proposal.

[Action: Dr. G. Punithavathy, Sci-D]

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 and then integrate the data with the MGIS database after completion of the project. The PI was advised to conduct qRT-PCR to confirm the up-regulation of transcripts in *M. serrata*.

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

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

The Committee suggested that the PAGE system should be procured immediately and the investigators were advised to proceed with the 20 selected primers and 10 additional primers to be screened to check if the marker profiles could discriminate the duplicates. With regard to extension of the project period, house decided to review the same in the next meeting.

[Action: Dr. M.C. Thriveni, Sc-C & Shri. Raju Mondal, Sc-C]

3. PIT08004: Study on epigenetic and autophagy modifiers on induction of haploid microspore embryogenesis in mulberry

Information on progress of the overall project along with budget utilization has to be presented in the next meeting.

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

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

Information on progress of the overall project along with budget utilization has to be presented in the next meeting.

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

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

For rejuvenation of low-performing accessions, a few traits can be selected in such accessions. Cocoons with moderate single cocoon weight may be considered for grainage activities. The presentation should be made in a simple and clear manner for RCC meeting. The performance of the accessions is to be evaluated atleast once in 5 years and then selection can be done over few generations to improve their performance.

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

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

The qPCR experiments can be initiated with a few highly productive bivoltine breeds along with identified BmNPV-tolerant breed from the germplasm. Two reference genes may be selected while carrying out qPCR experiments. Data generated under the project can be published. The project has to be revised to include the multi-viral tolerant markers for BmNPV and the project budget to be revised suitably and submitted to C.O. latest by 30th September, 2022. The role of collaborating institute has to be clearly specified in future presentations. The Co-investigator from SSTL Kodathi has to justify the delay in carrying out the bioassay studies and his absence during this RAC meeting.

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

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

The PI has to be in touch with the outsourced company-BIONIVID on a weekly basis to ensure timely accomplishment of assigned works. The term ‘indigenous’ may be

removed from the second objective and the budget utilization under the project has to be improved.

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

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

1) AIE06002MI-Evaluation of bivoltine silkworm genetic resources for tolerance to abiotic stress in selected hotspots

Joint publications have to be prepared and submitted in peer-reviewed journals immediately. While recommending the selected accessions to stakeholders as well as in publications, the National Accession Number (NAN) should be mentioned. A uniform format should be provided to collaborating institutes for data recording in future projects. Data generated can be made available on the website for utilization.

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

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

1) Staff strength to be improved with recruitment of more scientists through general recruitment and additionally Research associates may also be recruited.
2) The Hindi translator should be utilized for administrative work.
3) Study to be carried out for KS-10 silkworm breed supplied by KSSRDI, Bengaluru to understand its diapauses character/ uniqueness.
4) The presentations, publications and the teamwork of the centre were appreciated.
5) More exposure visits and interactions are needed with other institutes.
6) Budget utilization under the projects is to be improved.
7) The centre may look for self-sustenance through resource generation. To enable this, the trait-specific germplasm registration has to be done on priority followed by commercialization.
8) The germplasm needs to be further classified based on specific traits. Collections may be restricted to trait-specific germplasm.
9) While conducting genetic analysis, appropriate statistical analysis is to be conducted to provide meaningful interpretations of data. Gene x Environment interaction, basic as well as biometric analysis to be carried out. Dr. Manjunath Gowda, RAC member can be consulted while subjecting the data to statistical analysis and while interpreting the results.
10) While collecting silkworm germplasm, passport data collection should be mandatory followed by characterization, conservation and evaluation.
11) Biomedical applications under the evaluation of Silkworm germplasm may be explored.
12) The laboratories need face-lifting and all the scientists have to maintain their laboratories neat and tidy and in an organised way.
13) Periodical review meetings with collaborative institutes to be conducted to ascertain progress under the research projects as per the set milestones.

14) CSGRC may keep track of the genetic material supplied to other R&D Institutes and may seek suitable authorship / acknowledgement in all the future publications of such clients / stakeholders. Suitable amendments may be incorporated in the MTA accordingly.
15) Scientists working at CGSRC may be deputed for trainings in their core area of research / focussed areas for greater exposure.
16) Characterization of mulberry germplasm against biotic stresses and management of the serious pests may be taken up.
17) Commercialization of trait-specific accessions can be carried out either directly or through other collaborating Institutes with due credit for the concerned CSGRC Scientist.

[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. He advised all the scientists to dedicate themselves in data recording and analysis and proper documentation.

The Chairperson, Dr. Chandish Ballal, appreciated all RAC members for the effective discussion held during the meeting and specifically for volunteering to mentor the scientific fraternity of CSGRC. And the Chairperson thanked all members for their inputs and suggestions.

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

Dr. Chandish R. Ballal
Chairperson, RAC

Annexure I

List of participants for the 43rd Meeting of the Research Advisory Committee Of CSGRC, Hosur held on 02/09/2022

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

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