



**CENTRAL SILK BOARD  
BENGALURU – 560 068**

**MINUTES OF THE 64<sup>th</sup> MEETING OF THE RESEARCH COORDINATION COMMITTEE  
OF CENTRAL SILK BOARD HELD ON 2<sup>ND</sup> & 3<sup>RD</sup> FEBRUARY 2021 AT CSB,  
BENGALURU**

Dr R. K. Mishra, Director [Tech.] and Member Convener of RCC, CSB extended a warm welcome to Dr S. Ayyappan, Chairman of RCC, Sri Rajit Ranjan Okhandiar, Member Secretary, CSB & Vice Chairman of RCC, Members/ Invitees of the RCC and other participants attending the meeting physically and virtually through Webex platform (List of participants is enclosed as *Appendix-I*).

Sri Rajit Ranjan Okhandiar, the Member Secretary of CSB & Vice Chairman of RCC welcomed the newly re-constituted RCC Members and other participants to the meeting. He requested keeping in view the present challenges & also the opportunities, RCC to take into cognizance the R&D achievements in the last ten years and to suggest research strategy for coming next ten years. On the occasion, series of books were released which included-

- i. A manual on Research Management & Technology Dissemination- RCS, CO, CSB
- ii. “Naanu Mathu Reshme (My life with silk)” - Dr. S. B. Dandin
- iii. Mulberry Sericulture Technology Descriptor for East and North East- CSR&TI, Berhampore
- iv. Sericulture Success Stories (Vol. 2)- CSR&TI, Mysuru
- v. Silk Glossary (Revised) in English-Hindi - Official Language Section, CO, CSB

Director [Tech.], briefed the newly constituted RCC about the organization & functioning of CSB Institutes besides presenting the R & D activities of CSB and highlights of achievements made by different CSB institutes in different sectors since the last RCC meeting.

Dr. Ayyappan, Chairperson of RCC and the Chairman of the Committee to formulate the National Silk Policy 2020, made a brief presentation on the salient points of National Sericulture Policy 2020, and requested to all the RCC members, to go through document and provide their views, comments and suggest changes, if any latest by 10<sup>th</sup> February 2021, so as to make necessary modifications in the document before submitting to the Ministry. The suggestions were to be sent by e-mail. He suggested creating group e-mail ID for re-constituted RCC for easy communication, suggestions, inputs etc. The views of the Members/ invitees on the National Silk Policy 2020 were received. However, there were no new suggestions for incorporation.

Later, Dr. S. Ayyappan, Chairperson of RCC, initiated meeting as per the agenda after brief opening remarks.

**Item No.1: Confirmation of the minutes of the 63<sup>rd</sup> meeting of RCC held on 25<sup>th</sup> & 26<sup>th</sup> July 2019 at CSB Bengaluru**

Minutes of the 63<sup>rd</sup> meeting of RCC held on the 25<sup>th</sup> & 26<sup>th</sup> July 2019 at CSB, Bengaluru were confirmed, as no comments have been received from any of the members.

**Item No.2: Follow up action taken on the decisions of the 63<sup>rd</sup> meeting of RCC held on 25<sup>th</sup> & 26<sup>th</sup> July 2019 at CSB Bengaluru**

The follow-up taken on the decisions/ recommendations of the previous meetings held on 25<sup>th</sup> & 26<sup>th</sup> July 2019, were presented by Dr. K. Sathyanarayana, Scientist-D, RCS. While approving the follow-up action taken report, the committee made the following suggestions

- National Silk Policy 2020 may be modified/ improvised incorporating the views/ comments received from the members/ invitees of the RCC. With no new suggestions till 10 February, 2021 from the Members, the draft National Silk Policy-2020 is approved.

**(Action: RCS, CO, CSB)**

- Institutes to document year wise technologies developed, status & list of patent filed & granted (reference no.) with annuity payment details, list of technologies commercialized (with public & private partner) and technologies popularized through ECPs and CBTs programmes (with details of technology, period, coverage in terms of beneficiaries, etc.) since inception of the institute, to assess the reach of various project output to the field and give some direction to IP&BP cell.
- Institutes to document the contribution of each scientist towards research, seed production, training, extension, project management etc., besides publications, at each main institute/ organizations and their nested units to bring in the accountability and also decide on the scientific manpower deployment.
- To bring in more accountability, percent involvement of scientists in various areas, trial of technology programmes (OST & OFT) to be proposed in project mode. While technologies under different areas may be taken up under relevant groups as sub-projects, depending on the technology to be transferred, period etc may also be proposed.

**(Action: All CSB R & D Institutes / Seed Organization)**

**Item No.3: Review of Research and Development Institutes: New projects initiated and concluded during the period of August 2019 – December 2020**

The objectives, methodologies & expected outcomes of the newly initiated projects and outcome & utility of concluded research projects were presented by each institute. After detailed deliberations, the following major suggestions/ recommendations were made by the Committee

- Chairperson, RCC, requested the Member Secretary, CSB to ensure filling up of the posts of the Directors of the CSB R&D institutes/ Seed Organizations earliest, as most of the CSB institutes/ organizations were being handled by Scientists-D as officers in-charge, which would come in way of many administrative decisions/ approval and also slow down the process of research project implementation

- Proper placement/ deployment of scientists from Extension, Economics and Social Science streams which would help in proper assessment and dissemination of technologies developed
- To quickly finalize the extension linkage with ICAR through KVKs, otherwise explore establishing model Resham/ Seri Vigyan Kendra or to request ICAR to post atleast one Scientist with sericulture background in KVKs located in sericulturally potential areas/ major clusters/ zones to cater to seri-extension needs
- In view of the focus on mulberry sector till this time, to concentrate and focus on research for next 5 to 10 years for vanya silks viz., Tasar, Muga and Eri
- To speed up the process for getting up approval for extramural research project funding as areas for inviting project proposals and guidelines under extramural research projects were already finalized by the sub-committee
- Identification, planning and development of incubation centre at CSB Institute for promoting and supporting start-ups by following CSIR / ICAR/ SAUs (State Agriculture University) pattern
- National/ International seminars or webinars to be conducted, for encouraging the scientists and researchers from other organizations to participate in debates on different disciplines/ issues of sericulture
- To scale up indigenous manufacturing of high end machines like ARMs to reduce dependency on China and attaining self-sufficiency under *Atma Nirbhar Bharath*

**(Action: CO, CSB, Bengaluru)**

- Henceforth, projects recommended by RAC to be forwarded to RCC members through group e-mail ID so that the RCC members would convey their views within seven days of their receipt. RCS may take up coding of such projects to save time with concurrence/ ratification of the RCC members so as to meet the targets set for taking up research projects
- To prepare institute wise database of all the concluded projects since inception of CSB R & D institutes/ Seed Organizations, in different core areas of sericulture for reference by the young scientists and also to avoid duplication while proposing new projects
- To coordinate/ conduct impact analysis of various technologies on silk sector and silk industry involving professional institutions in the field

**(Action: RCS, CO, CSB)**

- Applications for registering the host plant variety to be informed to CSGRC under copy to CO, CSB and to be circulated to all the institutes for their ready reference
- To lay emphasis on collaborative and externally funding for research projects on the lines of CSIR, ICAR, etc
- RACs should consider views/ feedback of stakeholders while considering new programmes/ projects

- To avoid small budget projects, pilot studies or sub-projects may be taken up by institutes under a main research project. Necessary guidelines suggested by sub-committee of RCC in the past may be made use of
- To take support of statistician invariably, while formulation and statistical interpretation of experimental data in view of gaps observed now in proper interpretation of data generated
- To study feasibility of multiplication through Root stock, which would help in augmenting high density plantations in mulberry and vanya sectors besides Integrated Farming System (IFS)
- JRF & SRFs need to be encouraged for registration as PhD students under the research projects with project subject specialization to leverage research outcome under the projects
- Sericulture festival may be conducted on the lines of Science Festival to attract more and more students towards sericulture

**(Action: All CSB R & D Institutes / Seed Organization)**

- To work on low cost rearing sheds to promote more farmers in Jammu and Kashmir region
- To complete ongoing research projects on season and region specific silkworm breeds, especially for autumn crop for north and northwest India
- To extend required technical support to DOS in strengthening concept of Adopted Seed Rearers (ASRs) to increase quality silkworm seed production in North and North-West India. They may take support of NSSO units in Uttarakhand/ Jammu

**(Action: CSR&TI, Pampore)**

- Registration of Muga, Eri and Tasar breeds/ eco-races with ICAR institutes (NBPGR/ NBAIR) and CSGRC to support in registration of host plant varieties in vanya sector

**(Action: CTR&TI, Ranchi/ CMER&TI, Lahdoigarh/ CSGRC Hosur)**

- To focus on research projects towards reducing the production cost of Muga (from seed to silk)

**(Action: CMER&TI, Lahdoigarh/ MSSO, Guwahati)**

- To explore cryo-preservation method for sperms in silkworm and pollen in mulberry germplasm conservation
- To maintain Mulberry Germplasm Information System in collaboration with NBPGR
- Focus on the utilization of Germplasm for biotic and abiotic stresses
- To look in to all these aspects for registration of farmers' varieties

**(Action: CSGRC, Hosur)**

- To take up studies on sericin coating to indigenous fruits like guava, custard apple etc, which get spoiled fast due to fast ripening and to explore their export potential

**(Action: CSTRI, Bengaluru)**

- Road Map for SBRL, Kodathi for next 10 years needs to be prepared in consultation with scientists/ experts from various fields/ entrepreneurs / stake holders/ funding agencies/ corporate, etc
- To request Dr. R. Varshney to visit SBRL, Kodathi for his valuable inputs for better field presence, infrastructure, deployment/ training of manpower etc

**(Action: SBRL, Kodathi)**

- Orientation of young scientists in frontier areas needs to be provided effectively, by chalking out suitable capacity building programmes

- Management and communication skill trainings to be imparted to the CSB scientists

**(Action: RCS and CBT, CO, CSB, Bengaluru)**

- Plagiarism need to be checked in scientific publications by CSB scientists

**(Action: Publicity Section, CO, Bengaluru)**

## **INSTITUTE SPECIFIC RECOMMENDATIONS:**

### **CSR&TI, Mysuru :**

1. CSB coded projects viz., AIP 01006SI, PIC 01007SI, PIC 01008SI, AIB 01009MI, PRE 01010MI, AIB 01011SI, ARP 01012SI, BPS 01013CN, PIE 01014SI, PRP 01015SI, PPA 01016SI, PPE 01017SI, PIN 01018SI, AIT 01019SI, and MFM 01020SCN were approved by the RCC subject to the following observations:

- Silkworm digestive system is highly alkaline, so the element of alkaline pH should be considered for identification of probiotics consortium
- Development of organic mulberry leaf/ cocoon/ silk free from any traces of heavy metals need to be ensured for bio-medical research
- DUS characterization to be taken up very seriously with proper phenotyping as per mulberry descriptors
- Finer aspects of amino acids to be studied in by-product utilization project on pupae
- Root rot is very difficult to manage, soil microflora from regions where disease is not manifesting need to be collected to find out the available micro flora for controlling disease in the affected areas
- Use of Neem can be encouraged, since the viability of NPV is not clearly known
- For tree mulberry cultivation, age, size and features of mulberry genotypes to be considered, besides, spray of Sulphate at 1% (Potash) for proper vegetation. To add 4<sup>th</sup> objective as Feasibility of the intercropping system in wider spacing. Economics of Mulberry cultivation to be worked out in the project
- Methodology suggested for studying the economics of mulberry sericulture need to be reframed taking expert advice

2. The concluding projects were approved with the following suggestions:

- In general, budget utilization is below 50%, which needs immediate attention

- Need to take more projects on bio-technology using biomarkers. Transcriptome aspects, marker assisted selection in mulberry and silkworm
- Documentation and publicity of outcome of the projects, is poor which needs to be improved with quality photographs and achievements. Publications in journals with NAAS rating of 6 and above may be encouraged
- Initiate research on climate change situation (enhanced CO<sub>2</sub> and enhanced temperature cultivars) and Zero Budget Natural Farming

#### **CSR&TI, Berhampore:**

1. CSB coded projects *viz.*, PPA 02005SI, AIB 02006 MI, PIB 02007SI, AIT 02008SI and AIB 02009MI were approved by the RCC with the following observations:
  - Long larval duration may be due to stress, which may be relooked into
  - Economic feasibility should be taken into care in cross breed development programme involving Nistari as one of the parents
2. The concluded projects were approved with the following suggestions:
  - PRE 3589: patenting of the technology process need to be completed and commercialization may be explored in consultation with IISS, Bhopal
  - PPA 3622: area under S-1635 may be checked and steps to be taken to increase the area
  - PPS 3600: based on the report generated, soil nutrients to be recommended to farmers/ stakeholders

#### **CSR&TI, Pampore:**

1. Approval of the projects *viz.*, AIB 03002SI, APR 03003SI, AIB 03004SI, ARE 03005SI, and AIB 03006CI were considered with the following observations:
  - Low cost poly-houses can be tried. “Sustainable” word repeatedly used for many short term projects, without understanding the spirit of the word, may be avoided
  - In project title, region specific classification may be categorized
  - Both male and female silkworm breeds to be imported from Uzbekistan for parental line maintenance and utilization in breeding programme, and which may be maintained at CSGRC, Hosur as exotic collection
2. The concluded projects were approved with the following suggestions:
  - PPS 3603: based on the report generated, soil nutrients to be recommended to farmers/ stakeholders
  - AIB 3570: developed 8 autumn specific breeds need to be evaluated
  - AIB 3609: identified 6 foundation crosses to be utilized for breed development
  - ARP 3607: antibody based biosensor kit for early and rapid detection of silkworm virus need to be validated at the field
  - MOE 03001SI: introduction of summer cocoon crop in north west India need to be streamlined, and feedback from farmers/ stakeholder to be collected

### **CTR&TI, Ranchi:**

1. Approval of the projects *viz.*, APS 04003SI, AIE 04004CN, BPC 04005SI, ARE 04006CN, and MOE 04007EF were considered by the RCC with the following observations:
  - Extraction of plant volatiles from tasar host plants to be carried for reduction of retention of egg in female silk moth, in similar line like mulberry, muga & eri
  - Feasibility of production of Cordyceps on waste pupae/ moth need to be studied as Cordyceps has been found to grow on the fresh / healthy pupae in case of mulberry silkworm
  - Pests and predators targeted for control by using botanicals need to be specified. It is better to concentrate on the major pests and predators rather covering all of them. Conduct preliminary studies on botanicals as only some repellents are effective for certain pests
2. The concluded projects were approved with the following suggestions:
  - PPS 4725: recommendations of nutrients for different kinds of soils may be given for reference, application of micronutrients improve the luster of the silk, which may be explored
  - PIP 4716 & ARP 4718: Micro biome associated with the roots of the healthy plants can be utilized for the control of diseases and pests of both silkworm and host plants
  - ARE 4719: IPM package for control of stem borer need to be validated and if found encouraging, it should be disseminated in the field
  - ARP 4714: Grafting may be exploited in case of vanya host plant multiplication
  - CED 4723: Utilization of outcome of the technology need to be taken up

### **CMER&TI, Lahdoigarh:**

1. Approval of the projects *viz.*, AIT 05011EF, AIB 05012SI, AIP 05013SI, BPP 05014CN, ARP 05015SI, and AIT 05016MI were considered by the RCC with the following observations:
  - In muga, as temperature and humidity is very important, temperature humidity index need to be worked out
  - Utilization of Mulberry leaves as drinking beverage/ health drink need to be exploited fully
  - Application of antifungal substance for control of pebrine need to be explored properly Chemicals which are banned/ proposed to be banned should be avoided
  - Development of web accessible database to host the muga sequence data need to be withdrawn as it may lead to exploitation of information by the other institutes/ organization/ researchers
2. The concluded projects were approved with the following suggestions:
  - ARE 4726: for proper understanding of effectiveness of uzi fly trap, dissect uzi fly which are trapped and see whether the egg laying is completed or not. Based on the study, the placement position of traps may be decided
  - PRP 5880, APR 5877, ARE 5891: validation of outcome/ technologies developed need to be taken up

- ARP 5874: to continue forewarning and forecasting of disease and pest occurrence in muga sericulture sector
- PPS 5884: based on the report generated, soil nutrients to be recommended to farmers/ stakeholders
- AIT 5885: exploitation of desulfurizing bacteria for reclamation in petroleum contaminated sites for utilization of affected land

#### **CSGRC, Hosur:**

1. Approval of the projects *viz.*, AIE 06003SI, PIG 06004SI, PIG 06005SI and AIT 06006MI were considered by the RCC with the following observations:
  - Due to subsequent generations if the female sex ratio deteriorates, issues pertaining to inbreeding depression need to be corrected/ rectified with application of proper breeding methods/ strategies
  - Cytological status of mulberry vis-a-vis genotyping to be studied
  - Removal of duplicates needs to be taken up in comparison with proper phenotyping and genotyping. The duplicates to be maintained as separate lines without uprooting from the site
  - All silkworm germplasm need to be tagged/ assigned with percentage of disease and pest tolerant characters/ features
2. The concluded projects were approved with the following suggestions:
  - AIB 3578: Utilization of identified exotic bivoltine breeds as promising parental source may be shared with other R & D institutes for exploitation in hybrid development

#### **SBRL, Kodathi:**

1. Approval of the projects *viz.*, AIT 08003CN, PIT 08004MI, and AIT 08005MI were considered by the RCC with the following observations:
  - Development of protocol for isolation of haploid micropsore from mulberry should be taken up on priority. Experiments need to be taken up with at most care for development of regeneration protocol
  - Silkworm hybrid resistance to BmBDV needs to be checked and validated with proper field data
2. The concluded projects were approved with the following suggestions:
  - ARP 3605: Evaluation of MASN lines need to be taken up effectively
  - ARP 3606: The diagnostic tool for early detection to be circulated among the institute and grainages for its utilization. Further, outcome of the project/ technology developed for control of tiger band disease to be validated effectively



**SSTL, Kodathi:**

1. The concluded project was approved with the following suggestions:
  - APS 3612: Validate the outcome of the project at seed production centres of MSSO and also at CMERTI, Lahdoigarh
  - Silkworm with diapauses features may be compared and studied to prolong the diapauses feature

**CSTRI, Bengaluru:**

1. Approval of the projects *viz.*, CFW 07014MI, BPC 07015CN, CYF 07016SI, BPC 07017EF, CYS 07018SI, and CFC 07019SI were considered by the RCC with the following suggestions:
  - Feasibility of use of sericin in comparison with bee wax or any other material for coating of fruits may be explored along with its cost effectiveness in consultation with SKUAST, Kashmir
  - Recommend silk blends which are more acceptable and affordable by consumers
  - To study suitability of silk fabrics and its blends in relation to weather
  - To convince younger generations to shift towards daily use of silk fabrics, by brand promotion
2. The concluded projects were approved and suggested for validation and utilization of the technologies/ processes developed

**NSSO, Bengaluru:**

1. Efforts to be made to communicate DoS West Bengal to support as West Bengal being the major consumer of Cross Breeds
2. DoS/ Sericulture departments of different states need to clear all the DCB arrears
3. NSSO along with SSTL, Kodathi has to certify the reproductive efficiency of all the races
4. To work towards fixing of uniform rate for silkworm seed among CSB, DoS and Private

**BTSSO, Bilaspur:**

1. Digitalization of microscopic examination needs to be popularized in the field

**MSSO, Guwahati:**

1. Participatory seed production with DoS/ Private Sector in Muga sector with quality control/ certification by CSB to be promoted

**Agenda No.3: Any other subject with permission of the chair**

RCC appreciated the efforts made by the CSB in monitoring and managing production of PPE kits during COVID19 pandemic.

The RCC felicitated Dr R.K. Mishra, Director [Tech.], CSB; Director, NSSO; & Director SBRL; Dr K. Vijayan, Scientist-D, RCS, CSB, Bengaluru; Dr. C. M. Bajpeyi, Scientist-D, In-charge, CTR&TI, Ranchi; and Dr. C. Srinivas, Scientist-D, In-charge, BTSSO, Bilaspur for their contributions to the CSB and RCC, as they would be superannuating before the next RCC meeting.

The meeting ended with thanks to the Chair and participants



Date: 22.02.2021

Place: Bengaluru

[S. Ayyappan]  
Chairperson  
Research Co-ordination Committee  
Central Silk Board, Bengaluru

**CENTRAL SILK BOARD  
BENGALURU - 560 068**

**LIST OF PARTICIPANTS OF THE 64<sup>TH</sup> MEETING OF RCC HELD ON 2<sup>ND</sup> & 3<sup>RD</sup>  
FEBRUARY, 2021 AT CENTRAL SILK BOARD, BENGALURU**

1. Dr. S. Ayyappan, Chairman, RCC
2. Sri. Rajit Ranjan Okhandiar, IFS, Vice Chairperson RCC & Member Secretary, CSB, Bengaluru
3. Dr. S. B. Dandin, Member RCC
4. Dr. Ashok K. Patra, Member RCC
5. Dr. R. S. Deshpande, Member RCC
6. Dr. H. S. Ginwal, Member RCC (Attended through WebEx Platform)
7. Dr. Rajeev K. Varshney, Member RCC, (Attended through WebEx Platform)
8. Dr. R.K Sharma, Member RCC, (Attended through WebEx Platform)
9. Dr. P. G. Patil, Member RCC, (Attended through WebEx Platform)
10. Sri. Manzoor Ahmad Qadiri, KAS, Member RCC, (Represented as DOS, J&K)
11. Sri. K. Shashidhara, Deputy Director, Member RCC, (*Represented as DOS*, Govt. of Karnataka)
12. Dr. M. B. Chetti, Permanent Invitee
13. Dr. Chirantan Chattopadhyay, Permanent Invitee
14. Prof. Nazeer Ahmed, Permanent Invitee
15. Dr. Onkar Nath Singh, Permanent Invitee
16. Prof. P.J. Handique, Permanent Invitee, (Attended through WebEx Platform)
17. Prof. Mangesh D. Teli, Permanent Invitee, (Attended through WebEx Platform)
18. Dr. C. R. Ballal, Permanent Invitee
19. Dr. N. K. Krishna Kumar, Permanent Invitee
20. Dr. P. Jayaprakash, Permanent Invitee
21. Dr. Babulal, Scientist-D Incharge, CSR&TI, Mysuru
22. Dr. V. Sivaprasad, Director, CSR&TI, Berhampore
23. Dr. Mir Nisar Ahmad, Scientist - D, CSR&TI, Pampore
24. Dr. C.M. Bajpeyi, Scientist-D Incharge, CTR&TI, Ranchi
25. Dr. Jalaja S Kumar, Director, CMER&TI, Lahdoigarh
26. Dr. B.T. Sreenivasa, Director, CSGRC, Hosur
27. Dr. Subhas V Naik, Director, CSTRI, Bengaluru
28. Dr. K. M. Ponnuvel, Scientist - D, SBRL, Kodathi
29. Dr. K. M. Vijaya Kumari, Scientist - D, SSTL, Kodathi
30. Dr. K. Sashindran Nair, Scientist - D, NSSO, Bengaluru
31. Dr. C. Srinivas, Scientist-D Incharge, BTSSO, Bilaspur
32. Sri. Borpuzari Prabhat, Scientist - D, MSSO, Guwahati
33. Dr. R.K. Mishra, Director (Tech.) & Member Convener
34. Dr. K. Sathyanarayana, Scientist- D, RCS, CO, CSB, Bengaluru
35. Dr. K. Vijayan, Scientist - D, RCS, CO, CSB, Bengaluru
36. Dr. P. Kumaresan, Scientist - D, CO, CSB, Bengaluru
37. Sri. H. Rudranna Gowda, Scientist - D, CO, CSB, Bengaluru
38. Sri. Joy N John, Scientist - D, CO, CSB, Bengaluru
39. Dr. V. K. Rahamatulla, Scientist - D, CO, CSB, Bengaluru
40. Sh. Nazeer Ahmed Saheb, Scientist - D, RCS, CO, CSB, Bengaluru
41. Dr. Prashanth Sangannavar, Scientist - C, RCS, CO, CSB, Bengaluru
42. Dr. Balachandran, Scientist - D, CSR&TI, Mysuru