

Minutes of the 39th Meeting of Research Advisory Committee held on 6th and 7th March, 2014 at CSR&TI, Berhampore, West Bengal

The 39th meeting of Research Advisory Committee of CSR&TI, Berhampore was held on 6th and 7th March 2014 at this Institute to review the progress of R&D interventions made by the scientists of the Institute during the last six months on ongoing and concluded research projects/ programmes, besides consideration of new research project/ programme proposals of the main Institute and its nested RSRSs. The meeting was chaired by Prof. M. Muniyamma, former Vice Chancellor, Gulbarga University, Karnataka and the Chairperson, RAC of this Institute.

Dr. S. Nirmal Kumar, Director, CSR&TI, Berhampore and Member Convenor, RAC welcomed Prof. M. Muniyamma, the Chairperson, RAC and all distinguished members, invitees from DoT (Seri)/ DoS, ZSSO, RO, CSB and scientists of the Institute and its nested RSRSs, RECs, Sub-RECs and participants attending the 39th RAC meeting. He expressed sincere thanks to the RAC members for their dynamic guidance to the scientists for the development of sericulture industry in Eastern and North-Eastern region. It was also informed that ISO certification of this Institute has been continued after ISO surveillance auditing. He further expressed that scientists should take more number of need based research projects for the development of sericulture of this region. Thereafter, an overview of R&D interventions was presented (Item No. 3).

Prof. M. Muniyamma, Chairperson at her opening remarks expressed thanks to Dr. S. Nirmal Kumar, Director of the Institute, distinguished members of RAC, invitees, scientists of the Institute and participants for their effort in R&D interventions and benefitting the stakeholders. The chairperson also emphasized on the need of the stakeholders and appealed the RAC members to take stakeholders economically benefited in consideration while reviewing / commenting on the projects. She appreciated on the upgradation of Biotechnology Laboratory and opening of Technology Museum for educating the stakeholders. She expressed that all scientists should come out with more projects, develop technologies and support and benefit the farmers and also associate in more number of extramural projects. Appreciating the efforts on human resource development, the Chairperson suggested training programmes for farmers/ stakeholders at the Institute and RSRSs. In this occasion, two technical books (i) *Directory of Concluded projects (Part-II)* and (ii) *Sericulture Technologies Developed during XI & XII plan (up to 2014)* were released by the Chairperson. 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 38th meeting of Research Advisory Committee (RAC) held on 12th - 13th Aug., 2013 at CSR&TI, Berhampore

As no comment was received from any member, the minutes were confirmed.

ITEM NO.2: Review of follow up action taken on the recommendations/ decisions of the 38th meeting of RAC held on 12th - 13th Aug., 2013

Smt. C. Maji, Sci-D, RSRS, Kalimpong, PI of the new research project proposal entitled "Development of women sericulturists of Darjeeling and Sikkim hills through updation training programme on different sector of sericulture" was advised to pursue the matter with the DBT for consideration and funding of the project. She was also advised to submit a copy of the project to CSB, Bangalore, immediately for necessary persuasion at that end.

[Action: Smt. C. Maji, Sci-D (I/C), RSRS, Kalimpong and CO, Bangalore]

On the new project proposal entitled “**Poverty alleviation of tribes of Assam through sericulture technology updation**”, it was observed that in spite of instructions, the project was not enriched as per the CSB, Bangalore suggestions /observations. The PI was advised to recast the project as per suggestions of CSB, Bangalore and resubmit the project to DBT for funding. The project should be submitted to the Institute by 31.03.2014 so as to forward to DBT, New Delhi along with a copy to CSB, Bangalore.

[Action: Shri T. K. Biswas, Sci-D (I/C), RSRS, Jorhat]

Inclusion of bench mark values for silkworm breeds in the project proposal was discussed. It was observed that bench mark values for silkworm breeds are well established. Therefore, PI of the project “**Development of multivoltine based congenic / NIL breed of silkworm (*Bombyx mori* L.) through introgression of *Id* gene and its uses**”, was advised to include the bench mark values as suggested by CSB, Bangalore and submit the revised project for code number and early initiation.

[Action: Dr. G. K. Chattopadhyay, Sci-C, SBG Section]

The PI of the project “**Screening of mulberry seedlings for phenotypic plasticity of thermo tolerance**”, was advised to include the thermo-tolerant and other parameters as suggested in the project and initiate the project after obtaining code number from the CSB, Bangalore.

[Action: Dr. Monica Choudhury, Sci- C, Agronomy Section]

It was informed that the prog. “**Collection, characterization and evaluation of indigenous mulberry genetic resources of North Eastern region of India**” has been formulated in consultation with the scientists of CSGRC, Hosur and sent for their further suggestions. Since the project has been envisaged for screening and identification of high yielding and qualitatively superior mulberry accessions, the PI was advised to include the suggestions of CSGRC, Hosur, revise the project and submit to the Institute by 31.03.2014.

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

While reviewing the performance of silkworm breeds / hybrids under the projects **AIB: 3496** and **AIB: 3491**, it was observed that the breeds showed poor performance. The concerned scientists were advised to analyze the reasons for poor performance and submit the report by 31.03.2014. Further, it was also suggested to ensure crop success for the next crops.

[Action: Shri T. K. Biswas, Sci-D (I/C) and concerned scientists, RSRS, Jorhat]

ITEM NO. 3: DIRECTOR'S REPORTS ON THE R&D PROGRESS MADE DURING JULY TO DECEMBER, 2013

The Director of the Institute presented an overview of the R&D interventions made during the period on Crop Improvement, Productivity Improvement, Crop Protection, Cost Reduction, Human Resource Development (HRD), Extension Communication Prog. and Publications, besides, other Developmental activities at the Institute through MG-NREGA.

ITEM NO. 4: APPROVAL OF NEW RESEARCH PROJECTS / PROGRAMMES.

Fifteen new research projects and one programme were critically reviewed by the house and decisions are as follows:

1. Title of the Project: **Development, characterization and validation of expressed sequence tag derived microsatellite markers for mulberry (*Morus spp.*)** - Dr. S. Chattopadhyay, Sci-D, Biotechnology Section.

Duration: 3 years

Observation/ Suggestion: The project found to be an exploratory study and have scientific merit but time consuming. The house suggested that the study may be conducted as per the objectives envisaged except the assistance of JRF. Moreover, a new extramural project may be formulated in collaboration with other Institutes. Bar-coding may be included in the project and sent to DBT for funding. It was suggested that the project may be prepared in consultation with Prof. S. Ghosh, Univ. of Assam, Silchar and Dr. H. K. Majumder, IICB, Kolkata.

[Action: Dr. S. Chattopadhyay, Sci-D, Biotech Section]

Decision of RAC: **Approved** as suggested. Provision of JRF may be excluded from the project. An extramural project in collaboration with other Institutes may be submitted to DBT for funding.

2. Title of the Project: **An integrated approach to study the effect of Potassium humate on soil health, yield and quality of mulberry leaves to promote sustainable sericulture in Sub Himalayan region of Eastern and North Eastern India** – Dr. Ram Lakhan Ram, Sci-B, RSRS, Kalimpong.

Duration: 3 years

Observation/ Suggestion: Initially, the work may be taken up at RSRS, farm for one year as a Pilot study. Thereafter, the results obtained, if found encouraging, may be validated at farmers' field. The concerned scientist was advised to resubmit the proposal accordingly by 31.03.2014 and initiate the work.

Decision of RAC: **Approved as Pilot study.**

[Action: Dr. Ram Lakhan Ram, Sci-B, RSRS, Kalimpong]

3. Title of the Project: **Development of Bivoltine hybrids for hilly region of Darjeeling and Sikkim** - Mrs. Regina Bhutia, Sc-D, RSRS, Kalimpong.

Duration: 5 (Five) years.

Observation/ Suggestion: The project proposal was discussed and it was observed that study may be linked with shuttle breeding programme of the Institute where RSRS, Kalimpong is one of the test centres.

Decision of RAC: **Not approved.** However, the concerned scientist was advised to conduct the study under shuttle breeding programme in consultation with the concerned scientists of the Institute.

[Action: Mrs. Regina Bhutia, Sci-D, RSRS, Kalimpong]

4. Title of the Project: **Standardization of package of practices for mulberry cultivation in sub-tropical hills** - M. D. Maji, Sci-C, RSRS, Kalimpong.

Duration: 4 years.

Observation/ Suggestion: It was observed that standard package of practises for mulberry cultivation in Darjeeling and Sikkim hills are already available. However, Sci-D (I/C), RSRS should guide the concerned scientist to formulate viable projects appropriate for the farmers and resubmit within a month time.

Decision of RAC: **Not approved.** The concerned scientist should take up need based projects for the seri-farmers in hills.

[Action: Dr. M. D. Maji, Sci-C, RSRS, Kalimpong]

5. Title of the Project: **Studies on the efficacy of the Coccinellid predator, *Scymnus posticalis* Sicard for management of white fly on mulberry** - Y. Debaraj, Sc-D, RSRS, Jorhat.

Duration: 2 years.

Observation/ Suggestion: For pest data recording technical personnel may be trained and hence, engagement of JRF in the project is not required. While studying field efficacy, edaphic factors should also be considered during release of bio-control agents. Accordingly, the project may be revised and submitted for Code No. Title of the project may be modified as "**Studies on predatory efficacy of white fly on mulberry.**"

Decision of RAC: **Approved.** The concerned scientist was advised to revise and submit the project, obtain Code No. and initiate the work.

6. Title of the Project: **Evolving growing degree day based integrated sericulture crop calendar** – Dr. Monica Chaudhury, Sci-C, Agronomy Section.

Duration: 2 and ½ years

Observation/ Suggestion: The study needs initial data generation and standardization of crop calendar. Therefore, the work may be taken as a Pilot study for one year. Based on the results, a full fledged project may be taken up later on.

Decision of RAC: **Approved as Pilot study.** The PI was advised to initiate the study as suggested.

7. Title of the Project: **Studies on synbiotics (combination of Probiotic and Prebiotic) induction for control of common diseases of silkworm, *Bombyx mori* L.** - Dr. S. Chakrabarty, Sc- C, SW Pathology Section.

Duration: 2 years

Observation/ Suggestion: The project was discussed and suggested that the treatments should be based on the prevalence of pathogens.

Decision of RAC: **Approved.** The concerned scientist was advised to rewrite the project as suggested and resubmit for clearance from CSB, Bangalore and initiate the work.

8. Title of the Project: **Population interactions of pests and natural enemies in mulberry ecosystem of Eastern & North Eastern India** - Mrs. N. Lalitha, Sc-C, Entomology Section.

Duration: 5 years

Observation/ Suggestion: The house and suggested to include one JRF, subject to ratification by the C.O., Bangalore.

Decision of RAC: Approved. The concerned PI was advised to submit the project for clearance from CSB, Bangalore and initiate the work.

9. Title of the Project: **Evaluation of newly developed triploid mulberry varieties for productivity and quality** - Dr. P. K. Ghosh, Sc-C, MBG Section.

Duration: 3 years

Observation/ Suggestion: The project was an evaluation of mulberry genotypes at yield evaluation level. The house advised the concerned PI to allocate the work scientist-wise.

Decision of RAC: Approved. After necessary modification, the project may be sent to CSB, Bangalore for Code No. and initiate the work.

10. Title of the Project: **Studies on improvement of mulberry productivity through foliar supplementation** - Dr. M. S. Rahman, Sc-C, Extension Division.

Duration: 2 years and 6 months.

Observation/ Suggestion: It was observed that the Institute has already developed and recommended PGR and anti-transpirants for improvement of mulberry leaf productivity and quality. The project being the similar nature, the house did not agree the study as a separate new project. However, the study may be taken as an exploratory programme and conduct at Institute level.

Decision of RAC: Approved as prog.. However, improvement in leaf yield, if obtained, the recommendations may be incorporated as a component under ToT for field use.

11. Title of the Project: **Screening of silkworm breeds/hybrids for BmNPV susceptibility/ non-susceptibility using molecular markers** - Dr. S. Sreekumar, Sci-C, Biotechnology Section.

Duration: 2 years

Observation/ Suggestion: In absence of PI, the project could not be presented and discussed. However, the concerned scientist was advised to send the project proposal to Dr. H. K. Majumder, Member, RAC, IICB, Kolkata for suggestions/ comments for submitting to DBT for funding.

Decision of RAC: Not approved. The PI was advised to rewrite the project as suggested and submit to DBT for funding.

12. Title of the Project: **Integrated effect of certain proven technologies for crop productivity improvement and cost reduction in mulberry cultivation under West Bengal condition** - Dr. Sukhen RoyChowdhuri, Sci-D, PMCE Division.

Duration: 2 years

Observation/ Suggestion: Although the technologies developed by the Institute are under the ToT prog. for farmers use, the concerned PI of the project was advised to study the technologies as a comprehensive package at the Institute under irrigated and rainfed conditions at different spacing and assess the impart on leaf productivity and quality.

Decision of RAC: **Approved as a programme.** The PI was advised to submit the programme for Code No. and initiate the study.

13. Title of the Project: **Development of protocol for mulberry cultivation for organic silk: a new approach** - Dr. S. Rajaram, Sci-D, Agronomy Section.

Duration: 5 Years

Observation/ Suggestion: Organic silk was discussed at length. The house observed that the concept of organic silk is applicable for Vanya silk host plant grown in wild condition. However, the study may be conducted for comparing the quality of silk with the recommended dose of inputs *vis-a-vis* application of inputs of organic resources.

Decision of RAC: **Approved as programme.** The concerned scientist was advised to submit the programme for Code No. and initiate the study.

14. Title of the Project: **Yield gap in mulberry sericulture – A study in West Bengal** - Dr. Dipesh Pandit, Sci-C, REC, MP Raj.

Duration: 2 Years

Observation/ Suggestion: The house suggested that the study should be conducted along with the ToT programmes and there is no need to take-up as a separate programme to assess the yield gaps.

Decision of RAC: **Approved as a programme.** The concerned scientist was advised to submit the programme in consultation with the Extension Division and initiate the work under ToT programme.

15. Title of the Prog.: **Multilocational validation trial for application of cationic micronutrients –**
Dr. R. Kar (Sc-D, CSR&TI, Berhampore)

Duration: 2 Years 3months

Observation/ Suggestion: The findings of the concluded project need validation at farmers' field. The concerned scientist was advised to initiate the study at different locations.

Decision of RAC: **Approved.** The validation study may be taken up under the ToT programme.

16. Title of the Prog.: **Screening and identification of bivoltine hybrids suitable for Jharkhand** - Dr. Ch. Sudhakar Babu, Sci-D, RSRS, Ranchi.

Duration: 2 years 8 months

Observation/ Suggestion: It was observed that the study was envisaged for screening of silkworm hybrids for identifying suitability for Jharkhand state. The house suggested that the scientist should take the authorized hybrids only for the study.

Decision of RAC: **Approved as a programme.** The PI was advised to submit the programme for Code No. and initiate the study.

ITEM NO. 5: Review of Concluded Projects / Programmes / Pilot Study

Four projects and four programmes were concluded during the period as per the time schedule.

1. **PPF 3487: Decision support system initiative through impact assessment of agroclimatic on foliage yield of mulberry (*Morus* sp.) for climate resilient sericulture in Eastern India.**

The project has been concluded as per objective of the project. The PI was advised to validate the finding at different eco-zones.

[Dr. Monica Chaudhury, Sci-C, Agronomy Section]

2. **PIG 3441: Development, validation and utilization of SCAR marker(s) for powdery mildew (*Phyllactinia corylea*) resistance in mulberry. [in collaboration with CCMB, Hyderabad]**

The project has been concluded as per the time schedule. Taking the lead from the project, the concerned PI should formulate new project accordingly and submit to DBT for funding.

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

3. **Development of DNA markers based genetic linkage map of mulberry and QTL analysis for agronomically important *planta* traits [in collaboration with CCMB, Hyderabad]**

The project has been concluded as per the time schedule. However, the new projects on the above lines may be taken and submit to DBT for funding.

[Action: Dr. (Mrs.) R. Banerjee, Sci-D, Biotechnology Section]

4. **ARE 3464: Studies on the biology and feeding efficacy of *S. pallidicollis* for the eco-friendly management of pink mealy bug, *M. hirsutus***

The project has been concluded as per the time schedule. It was observed that a new project has been formulated and submitted for mass multiplication of the predator for management of mealy bug. The PI was advised to initiate the study as envisaged in the new project.

[Action: Dr. M. V. Santha Kumar, Sci-D, Entomology Section]

5. **BPP(VP) 008: Field evaluation of plant growth regulator combination for improvement of quality leaf yield of mulberry especially under cold stress condition.**

The PI was advised to validate the results at farmers' level and study the economic gain by the farmers.

[Action: Dr. P. K. Tewary, Sc – D, Mul. Physiology Section]

6. **B -JRH (P)-019: Assessment of fertility status of mulberry growing soils in selected seri-villages of Jorhat for appropriate fertilizer management.**

Although the programme has been concluded as per the time schedule, the PI was advised to analyse the data on leaf yield improved through application of fertilizers in soil and submit report in details along with proper recommendation within 15 days.

[Action: Dr. S. N. Gagoi, Sci-D, RSRS, Jorhat]

7. **B-RNC (VP) 007: Validation trial of package of nutrient management under rainfed condition.**

The prog. was concluded as per time schedule. The concerned scientists were advised to popularize the technology at field level under the ToT prog.

[Action: Dr. G. S. Singh, Sci-D and Dr. Ch. Sudhakar Babu, Sci-D (I/C), RSRS, Ranchi]

8. **B-RNC (P)-018: Assessment of fertility status of mulberry growing soils in Seri-villages.**

Although the programme has been concluded as per the time schedule, the PI was advised to analyse the data on leaf yield improved through application of fertilizers in soil. Yield gain should be specified as quantity/ha/year along with control yield. The concerned scientists were advised to popularize the technology at field level under the ToT prog.

[Action: Dr. G. S. Singh, Sci-D and Dr. Ch. Sudhakar Babu, Sci-D (I/C), RSRS, Ranchi]

ITEM NO. 6: REVIEW OF PROGRESS OF ON-GOING PROJECTS / PROGRAMMES / PILOT STUDY

MAIN INSTITUTE

MULBERRY BREEDING & GENETICS SECTION:

Progress of 3 ongoing research projects (1) **PIB 3424**: Development of low temperature stress tolerant mulberry genotypes for sub-tropical plains, (2) **PIB 3479**: Development of high yielding mulberry varieties using physiological growth parameters as markers for selection and (3) **PIB 3481**: Evaluation of Mulberry Varieties suitable for low input soils, along with one prog. **All India Coordinated Experimental Trial on Mulberry (Phase-III)** was reviewed and found as per the milestones.

AGRONOMY SECTION:

One research project **PPA: 3499**: Evaluation of field level performance of Vishala mulberry variety in different locations under irrigated conditions in West Bengal and three prog. (1) **BPP(RP) 001**: Nitrofert Bio-fertilizer: *Azotobacter chroococcum*, mother culture maintenance and mass production of Nitrofert, (2) **BPP(RP)002**: Phosphofert bio-fertilizer: arbuscular mycorrhizal fungus (AMF), *Globus mosae* mother culture maintenance and mass production of Phosphofert and (3) **BPP(P)-023**: Optimum requirement of irrigation water and its management for sustainable leaf productivity in high yielding mulberry garden under West Bengal conditions, were reviewed and the progress was found satisfactory.

SOIL SCIENCE & CHEMISTRY SECTION:

One ongoing research project **PPS 3452**: Terrestrial carbon sequestration for sustained high productivity of quality mulberry and one prog. **BPP(P)-020**: Evaluation of soil fertility for sustained production of quality mulberry leaf in Eastern India under long-term fertilization, was reviewed and progress found as per the milestones.

MULBERRY PHYSIOLOGY SECTION:

Progress of ongoing research project **PIP-3469**: Screening of early sprouters and late senescence mulberry accessions with better leaf yield and quality under low temperature condition was found as per the milestones.

MULBERRY PATHOLOGY SECTION:

One ongoing research project **CSS-2107**: Forewarning of mulberry diseases of Eastern and North Eastern India, was reviewed and progress was satisfactory.

SILKWORM BREEDING AND GENETICS SECTION:

Four research projects (1) **AIB-3466**: Development of region specific bivoltine breeds suitable for highly fluctuating and seasonally variable climatic conditions of Eastern and North-Eastern India, (2) **AIB-3496**: Development of high temperature and high humidity tolerant bivoltine breeds of silkworm (*Bombyx mori* L.), (3) **AIB-3480**: Development of silkworm *Bombyx mori* L. breeds from a gene pool with higher genetic plasticity, (4) **AIB-3501**: Development of multivoltine breeds with high shell% AND neatness, and 1 prog. **BAI(RP)-003**: Maintenance of multivoltine and bivoltine germplasm, were reviewed and progress found as per milestones. **AIB-3491**: Post Authorization trials of silkworm hybrids in Eastern and North Eastern India, was reviewed and the PI was advised to check cocoon yield data thoroughly before presenting in any form.

[Action: A. K. Saha, Sc-D(Seri)]

BIOTECHNOLOGY SECTION:

One pilot study **BPR (PS)-003**: Identification of DNA markers associated with bacterial leaf spot resistance in mulberry (*Morus spp*), was reviewed and the progress was as per the milestones.

SILKWORM PHYSIOLOGY & REARING TECH. INNOVATION SECTION:

Progress of two projects **AIP- 3472**: Standardization and determination of temperature tolerance potentiality in different developmental stages of silkworm, *Bombyx mori* L and **APS-3497**: Studies on the environmental effect on P1 rearing, its' grainage performance followed by commercial rearing of silkworm *Bombyx mori* L. during unfavorable seasons of West Bengal (Collaboration with NSSO), was reviewed and found as per the milestones.

ENTOMOLOGY SECTION:

Progress of one programme **BPR (P)-021** "Development of weather based forecasting model for mulberry pest", was reviewed and found satisfactory.

SILKWORM PATHOLOGY SECTION:

One programme **BAR (RP)005**: Survey and surveillance of silkworm diseases in traditional sericultural districts of West Bengal and one pilot study **BAR (PS) 004**: Testing of immunogens for prevention of silkworm diseases in *B. mori*, was reviewed and progress found satisfactory.

REGIONAL SERICULTURAL RESEARCH STATIONS:

RSRS, Kalimpong:

Progress of three ongoing own programmes (1) **B-KPG (P)-015**: Improvement of rearing technology for autumn crop of Sub Himalayan region. (2) Production of SK6 x SK7 dfls and (3) Maintenance of Bivoltine Germplasm, was reviewed. In respect of **B-KPG(P)-015**, it was informed that 'shoot feeding method is practiced at farm level only'. But the package of practices is not viable because of limited crops at hills of Darjeeling and Sikkim where leaves are taken for silkworm only by plucking method. The house suggested the scientist to give the technology to the farmers who are interested to adopt the technology.

[Action: R. Bhutia, Sci-D and Sci-D (I/C), RSRS, Kalimpong]

Performance of SK6 and SK7 at farm level was lower, needs improvement through proper management and training to the technical personnel. The PI was advised to visit P3 farm of DoT(Seri) at Naxalbari and have knowledge on the rearing practices.

[Action: M. D. Maji, Sci-C & Sci-D (I/C), RSRS, Kalimpong]

With regard to 'Maintenance of BV germplasm', rearing performance of the breeds should be presented along with their passport data for comparison. The PI of the project **AIE-3454** was advised to collect the passport data of the breeds for comparison. Moreover, the concerned scientist should take serious note on silkworm rearing management and improve the yield performance.

[Action: R. Bhutia, Sci-D and Sci-D (I/C), RSRS, Kalimpong]

RSRS, Jorhat:

Progress of one collaborative project “**CSS2107**: Development of weather based forewarning system of mulberry diseases” and one prog. “**BPR (P)021**: Development of weather based forecasting models for mulberry pests” (Main Institute), one collaborative project “**AIE3454**: All India Silkworm Germplasm Evaluation Programme - Phase-II” (CSGRC, Hosur)” and one Prog. “All India Coordinated Experimental Trials for Mulberry (AICEM - III)” (CSB, Bangalore) and one own project “**MOE 3459**: Yield gap in mulberry - A study in NE region of India”, one prog. “**B-JRH(RP)009**: Survey & Surveillance of Mulberry silkworm pest & diseases in NE states” and one pilot study **B-JRH(PS)-005**: “Identification of productive Multi x Bi hybrid for plains of North-Eastern States of India through development of improved multivoltine breed(s) of silkworm, *Bombyx mori* L. utilizing local indigenous strains”, were reviewed. With regard to project “**MOE-3459**”, it was advised to present the data indicating spacing and variety, rainfed/ irrigation etc. Moreover, yield potential and actual yield to be indicated along with well defined yield gap.

[Action: M. Pamegham, Sci-C, RSRS, Jorhat]

Poor performance of silkworm breeds / hybrids of the prog. **B-JRH(PS)-005**, it was found to be the management problems. The concerned scientist was advised to analyze the reasons for the low yield and improve the performance.

[Action: T. K. Biswas, Sci-D (I/C), RSRS, Jorhat]

RSRS, Ranchi:

Progress of two collaborative projects “**CSS-2107**: Development of weather based forewarning system of mulberry diseases” and one collaborative prog. “All India Coordinated Experimental Trials for Mulberry (AICEM - III)” with other institutes and one own prog. “**BRNC(RP)-004**: Survey and surveillance of disease and pest of mulberry and silkworm (Routine prog.)” were reviewed. Regarding prog. **B RNC(RP)004**, it was suggested that combination wise disease incidence should be projected for easy comparison.

[Action: Ch. Sudhakar Babu, Sc-D, RSRS, Ranchi]

RSRS, Koraput:

Progress of two collaborative projects (1) “**CSS2107**: Development of weather based forewarning system of mulberry diseases” and (3) “**AIB3491**: Post Authorization trials of silkworm hybrids in Eastern & North-Eastern India” and one prog. “**BPR(P)021**: Development of weather based forecasting models for mulberry pests” with Main Institute, one collaborative prog. “All India Coordinated Experimental Trials for Mulberry (AICEM - III)” with other Institute and two own prog. “Survey and surveillance of disease and pest of mulberry and silkworm (Routine prog.)” and “Studies on high bush and tree type mulberry plantation under rainfed condition of Odisha” were reviewed. With regard to the programme “*Studies on high bush of Odisha*” it was suggested to explore the possibilities of inter-cropping during gestation period to add income to the farmers. It was also discussed that five technologies viz. pruning, application of biofertilizer, application of PGR, room disinfection and bed disinfection for silkworm rearing should be disseminated to the field for successful cocoon crop.

[Action: Sc-D (I/c), RSRS, Koraput, Sc-C, REC, Deogarh and DS (T), RDO, Bhubaneswar]

Comments of RAC Chairperson and Members:

Dr. H. K. Majumdar, Member RAC: While appreciating the new project proposals, Dr. H. K. Majumdar, expressed that the projects taken by the scientist have relevance to the stakeholders and the scientists have followed the suggestions/ advices of RAC in their respective project proposals. However, implementation of the recommendation should be taken care of. Scientist should emphasis to improve the silk quality up to the level of International status. The scientists should prepare the presentation slides in such a way that it becomes easy to understand and be presented within the specified time. He also suggested the scientist to visit his laboratory for conducting experiments on molecular biology.

Prof. D.K. Bhattacharya, Member RAC: Expressing thanks to the RAC Members and the scientists, he informed that the RAC meeting is very fruitful for R&D interaction at the Institute. The discussion provides a direction for future plan of action to make sericulture more profitable. He thanked Chairperson for her active involvement and appreciated her guidance to control the meeting and encouraging the scientists.

Prof. S. Maity, Member RAC: Expressing thanks to the RAC Members and all the participants, he informed that although land is limiting factor, expansion of mulberry acreage becoming difficult, hence, efforts should be made on integrated farming system viz., sericulture coupled with poultry, fishery etc. and possibilities need to be explored.

Prof. P. S. Chattopadhyay, Member RAC: Our main objective is to promote sericulture among the farmers and make sericulture as a profitable venture. New tools and machines need to be introduced so that production cost gets reduced. He also expressed that he will render support to the scientists for development of equipments / machines to reduce economic burden to the farmers.

Dr. N. Suryanarayana, Member RAC: Expressing thanks to the Director of the Institute, Dr. N. Suryanarayana, Member, RAC, appreciated the way the meeting proceeded and suggested the scientists to come forward with basic as well as applied research projects.

Shri H. P. Rai, Additional Director, DoS, Sikkim: Appreciated the interaction among the scientists taken place in the meeting and thanked all RAC members for their guidance to the farmers. He also added that under the leadership of the Director, the sericulture industry in this region will definitely cope up with the highest level of quality and productivity of silk.

Farmers Representatives from West Bengal and Manipur, Member RAC: Expressed their happiness and informed that the meeting was very fruitful for them.

Dr. A. Tikader, Scientist-D [Rep. Director (Tech) CSB], Member RAC: Expressed that the scientists should plan right from the very beginning to achieve the target for the XII five Plan period, so that fund can be properly utilized. While preparing new project proposals, more emphasis should be given on quality of the project. Duplication in objective of the project should be avoided. There should be justified number of scientists associated with any project. The scientists should co-ordinate with their respective DoS/DoT (Seri) for proper dissemination of technologies in the field.

Prof. M. Muniyamma, Chairperson RAC: Expressing thanks to all the RAC members and appreciating the efforts of the scientists during last 3 years, Prof. M. Muniyamma, Chairperson RAC informed that our primary concern is the sericulture stakeholders' interest and that need to be taken into account. Each division should have its own mandate based on which projects should be formulated considering the interest of the stakeholders. Extension and innovative programmes are essential. Similarly, R&D is very important. The scientists should have to combat with the quality of silk and reduce the cost of production and improving the productivity. There are many funding agencies and the scientists have to take advantage. Collaborations with University are also essential. She also expressed that all RSRs should come forward to formulate projects on regional problems.

Director, CSR&TI, Berhampore, Member Convenor, RAC: Dr. S. Nirmal Kumar, Director expressed his happiness stating that interaction was meaningful particularly the guiding role played by the Chairperson. He expressed thanks to chairperson for her untiring guidance to the scientists during the RAC meetings. He thanked all the RAC members for their constant inspiration to the scientists to come up with need based projects. He assured that the suggestions given by the RAC members will be duly incorporated and the milestones will be achieved. He also appreciated all the scientists for their hard works for the development of sericulture in the Eastern & North Eastern region.

The meeting ended with the vote of thanks to the chair.


Director &
Member Convenor, RAC

Approved

Sd/-

(Prof. M. Muniyamma)
Chairperson, RAC
CSR&TI, Berhampore
Date 19th March, 2014

Annexure-I

LIST OF MEMBERS, INVITEES AND SCIENTISTS ATTENDED THE 39TH MEETING OF RESEARCH ADVISORY COMMITTEE HELD ON 6TH & 7TH March, 2014 AT CSR&TI, BERHAMPORE

Sl. No.	Name	Designation
Members		
1.	Prof. M. Muniyamma. Ex-VC. Gulbarga University. Karnataka.	Chairperson
2.	Dr. H. K. Majumdar, Scientist-G, IICB, Kolkata.	Member
3.	Prof. S. Maity, Ex-Prof. BCKV, Mohanpur, West Bengal.	Member
4.	Prof. D. K. Bhattacharyya, Dept. of Zoology, University of Kalyani, Kalyani, Nadia.	Member
5.	Dr. N. Suryanarayana. Ex-Director, CSB	Member
6.	Prof. P. S. Chattopadhyay. Prof. of Agril. Engineering, BCKV, Mohanpur. West Bengal.	Member
7.	Dr. S. Nirmal Kumar. Director. CSR&TI. Berhampore	Member Convener
8.	Dr. A. Tikader, Scientist-D. (Representative, Director Tech), CSB, Bangalore	Member
9.	Dr. K. Mondal, Sci-D, ZSSO, Malda (Rep. Director, NSSO, Bangalore)	Member
10.	Shri A. N. Mandal, Rep. Director, DOT(Seri), West Bengal	Member
11.	Shri N. Vielthang, Rep. Director, DoS, Manipur	Member
12.	Shri H. P. Rai, Addl. Director, Sikkim	Member
13.	Shri Anil Kumar. Rep. Director, DoS, Jharkhand	Member
14.	Shri S.K.Sinha. Rep. Director. DoS, Bihar	Member
15.	Shri S.P.Bhowmick, Rep. Director, DoS, Tripura	Member
16.	Mrs. Mili Banerjee. Rep. Director, DoS, West Bengal	Member
17.	Shri B. K. Misra, Rep. Director, DoS, Odisha	Member
18.	Miss Ksh.Manileima Devi, Reeler representative, Manipur, Reeler's representative	Member
19.	Smt. O. Rasmani Devi, Rearer representative, Manipur, Rearer's representative	Member
20.	Shri Ranjit Mandal. Rearer representative. West Bengal	Member
Invitees		
1	Shri R. Bhattacharjee. Jt. Secretary (Tech.), RO, CSB, Kolkata	Invitee
2	Shri. S. Deori. Jt. Secy.(Tech). RD.O, CSB, Guwahati	Invitee
3	Shri R. Prasad, Asstt. Secy.(Tech), R.O., CSB, Patna, Bihar	Invitee
4	Shri G. C. Roy, Deputy Secy. (Tech), RO, CSB, Bhubaneswar	Invitee
5	Dr. Basudeb Ghosh, Sc.-D, RO, Kolkata	Invitee
6	Mrs. Mili Banerjee. Dy. Director, DoT (Seri), Murshidabad. West Bengal	Invitee
Absentee :		
1	Director. CSTRI. Bangalore	Member
2	Director. DoS, Mizoram	Member
3	Director, DoS, Arunachal Pradesh	Member
2	Md. Salauddin Momin, Reeler Representative, West Bengal	Member

Scientists/ participants attended the Meeting

Sl. No.	Name	Designation	Address
1.	Shri M. K. Majumdar	Scientist-E, R&S Division	CSR&TI, Berhampore
2.	Dr. A. K. Saha	Scientist-D, Seri. Division	CSR&TI, Berhampore
3.	Dr. M. K. Ghosh	Scientist-D, Mori. Division	CSR&TI, Berhampore
4.	Dr. S. Roy Chowdhuri	Scientist-D, PMCE Division	CSR&TI, Berhampore
5.	Smt. C. Maji	Scientist-D	RSRS, Kalimpong
6.	Shri T. K. Biswas	Scientist-D	RSRS, Jorhat
7.	Dr. Ch. Sudhakar Babu	Scientist-D	RSRS, Ranchi
8.	Shri Rushi Sahu	Scientist-C (I/C)	RSRS, Koraput
9.	Dr. S. K. Mukhopadhyay	Scientist-D, PMCE. Division	CSR&TI, Berhampore
10.	Dr. S. K. Dutta	Scientist-D, Mul.Patho.	CSR&TI, Berhampore

11.	Dr. P. K. Tewary	Scientist-D, Mul. Physiology	CSR&TI, Berhampore
12.	Dr. P. K. Ghosh	Scientist-C, MBG	CSR&TI, Berhampore
13.	Dr. G. K. Chattopadhyay	Scientist-C, SBG	CSR&TI, Berhampore
14.	Dr. M. S. Rahman	Scientist-C, Extension	CSR&TI, Berhampore
15.	Shri N. Suresh Kumar	Scientist-D, SBG	CSR&TI, Berhampore
16.	Dr. S. K. Mondal	Scientist-D, Agronomy	CSR&TI, Berhampore
17.	Dr. S. Rajaram	Scientist-D, Agronomy	CSR&TI, Berhampore
18.	Dr. S. Chanda	Scientist-D, Training	CSR&TI, Berhampore
19.	Shri N. B. Kar	Scientist-D, R&S	CSR&TI, Berhampore
20.	Dr. (Mrs) T. Datta Biswas	Scientist-D, SWP & RTI	CSR&TI, Berhampore
21.	Dr. S. Chattopadhyay	Scientist-D, Biotechnology	CSR&TI, Berhampore
22.	Dr. (Mrs.) Rita Banerjee	Scientist-D, Biotechnology	CSR&TI, Berhampore
23.	Dr. R. Kar	Scientist-D, Soil Science & Chemistry	CSR&TI, Berhampore
24.	Dr. M. V. Santhakumar	Scientist-D, Entomology	CSR&TI, Berhampore
25.	Shri. D. Das	Scientist-C, Extension	CSR&TI, Berhampore
26.	Shri Zakir Hossain	Scientist-C, Training	CSR&TI, Berhampore
27.	Shri S. Rajaram	Scientist-D, Agronomy	CSR&TI, Berhampore
28.	Dr. Jalaja S. Kumar	Scientist-D, Training	CSR&TI, Berhampore
29.	Dr. S. Chakraborty	Scientist-C, S.W. Pathology	CSR&TI, Berhampore
30.	Smt. N. Lalitha	Scientist-C, Entomology	CSR&TI, Berhampore
31.	Shri G. C. Das	Scientist-C, Extension	CSR&TI, Berhampore
32.	Shri D. Chakravarty	Scientist-C, PMCE	CSR&TI, Berhampore
33.	Dr. A. K. Verma	Scientist-C, S.W. Pathology	CSR&TI, Berhampore
34.	Dr. Monica Chaudhuri	Scientist-C, Agronomy	CSR&TI, Berhampore
35.	Shri Sunil Kr. Misro	Scientist-C	RSRS, Koraput
36.	Dr. D. P. Das Mahapatra	Scientist-C	REC, Deogarh
37.	Dr. S. N. Gogoi	Scientist-D	RSRS, Jorhat
38.	Dr. Y. Debaraj	Scientist-D	RSRS, Jorhat
39.	Dr. G. B. Singh	Scientist-D	REC, Agartala
40.	Dr. U. K. Bandyopadhyay	Scientist-D	RSRS, Kalimpong
41.	Dr. M. D. Maji	Scientist-C	RSRS, Kalimpong
42.	Mrs. R. Bhutia	Scientist-C	RSRS, Kalimpong
43.	Dr. R. L. Ram	Scientist-B	RSRS, Kalimpong
44.	Dr. S. P. Sharma.	Scientist-D	REC, Gumla
45.	Dr. Ghanshyam Singh,	Scientist-D	REC, (SU), Bhandra
46.	Shri S. T. Lepcha	Scientist-C	REC, Rangpo, Sikkim
47.	Dr. Collin Z. Renthlei	Scientist-C	REC, Shillong
48.	Dr. L. Pachuau	Scientist-B	REC, Aizawl
49.	Dr. D. Pandit	Scientist-C	REC, Maheshpur Raj
50.	Shri A. K. Dutta	Scientist-C	REC, Mothabari
51.	Dr. S. P. Chakraborty	Scientist-D	REC, Kamnagar
52.	Dr. L. Somen Singh.	Scientist-C	REC, Imphal
53.	Dr. A. H. Naqvi	Scientist-D	REC(SU), Rajmahal
54.	Dr. A. Borah	Scientist-C	REC, Dimapur