

CENTRAL SERICULTURAL RESEARCH & TRAINING INSTITUTE (CSRTI), MYSORE

**MINUTES OF THE 39th RESEARCH ADVISORY COMMITTEE MEETING
(21st SEPTEMBER, 2015)**

The 39th meeting of RAC of CSRTI, Mysore was held on Friday 21st September 2015 at CSRTI, Mysore for reviewing the progress of R & D activities of the Institute and its nested units during the period from September 2014 to August 2015 and to consider new project proposals, concept notes for implementation. The meeting was chaired by Prof. K. Narayana Gowda, Hon'ble Former Vice-Chancellor, University of Agricultural Sciences, Bengaluru. The list of participants is appended.

Dr. V. Sivaprasad, Director welcomed the Chairman, the members of the committee and all the scientists of CSR&TI and its units for the meeting. Chairman in his opening remarks expressed his satisfaction over the progress of research projects and the outcome of previous RAC meeting deliberations in terms of new projects initiated and technologies developed. He congratulated the Director and the scientists including the retired personnel for their contribution during the period as well. He also expressed his happiness regarding the recruitment drive of 65 new scientists by CSB, which would fill the gap of retiring scientists. Further, he stressed on the importance of R&D on drought mitigation measures, reduction of labour and minimization cost of production in sericulture, integrated nutrient management and eco-friendly issues. He also expressed his concern over the replacing of tobacco cultivation and mulberry as replacement crop in the tobacco growing areas. Director may convene a special meeting involving all the stake holders. He advised to conduct the RAC meeting timely once in six months.

ITEM NO. 1: CONFIRMATION OF THE MINUTES OF THE 38TH MEETING OF RAC HELD AT CSR&TI, MYSORE ON 26th SEPTEMBER 2014

The committee confirmed the minutes of the previous meeting, since there were no comments from any of its members.

ITEM NO. 2: REVIEW OF FOLLOW-UP ACTION TAKEN ON THE DECISIONS OF THE RAC IN ITS 38TH MEETING OF HELD AT CSR&TI, MYSORE ON 26th SEPTEMBER 2014.

The report on the follow-up actions taken on decisions of the previous meeting was presented by Dr. T. Thippeswamy, Scientist-D, & DC (Host plant /SEEM division). The Chairman expressed his satisfaction regarding the follow up action taken on the decisions and suggestions of the 38th RAC meeting.

ITEM NO. 3: DIRECTOR'S REPORT

Dr. V. Sivaprasad, Director presented the highlights of progress achieved by the Institute and its nested units during the reporting period. The presentation covered the aspects of (i) Mulberry Improvement, Production & Protection, (ii) Silkworm Improvement, Production & Protection, (iii) Extension & Training activities. The Chairman and members appreciated the brief report presented by Director and congratulated the Director and his team for the progress.

ITEM NO. 4: REVIEW OF CONCLUDED PROJECTS:

The following projects concluded during the reporting period were reviewed by the committee.

1. **PIB-3370:** Development of superior mulberry varieties by exploitation of hybrid vigour based on molecular marker diversity of promising parental lines.

The outcome of the project was noted by the committee and suggested to take up further evaluation of the identified varieties.

[Action: Scientist -D, Mulberry Breeding & Genetics]

2. **AIB-3498**: Popularization of authorized silkworm hybrids among the farmers of South India.
3. **SIM:0008** - Evaluation of three way cross hybrids for commercial exploitation.

The committee noted the performance of the hybrids tested under the projects and the popularization of better performing hybrids in the field.

[Action: Scientist -D, Silkworm Breeding Lab-I]

4. **AIB-3488**: Pre-authorization field trials of L14 x CSR2: A new polyvoltine x bivoltine hybrid of the silkworm, *Bombyx mori* with superior fibre qualities.

The committee suggested to select contrasting parents and emphasized the lower traits in multivoltine component for obtaining better hybrid vigour.

[Action: Scientist -D, Silkworm Breeding Lab -II]

5. **ARP 3477**: Therapeutic control of Microsporidiosis in the silkworm through characterization of Methionine Amino Peptidase enzyme genes (MetAP2) in *Nosema bombycis*.

The committee noted the outcome and felt that the study would have included latest anti-protozoan molecules against *N. bombycis*

[Action: Scientist -D, S.W.Pathology]

6. **AIB 3476**: Development of Productive NPV tolerant BV Breeds / hybrids carrying BmNOX marker assisted selection.

The outcome of the project was noted by the committee and suggested to take up OST of identified breeds.

[Action: Scientist -D, Molecular Biology II]

ITEM No. 5: NEW PROJECTS

(A) NEW PROJECTS FOR APPROVAL

1. Development of Technology for Production of Organic Silk

The committee approved the project proposal and suggested to incorporate referee's comments. The committee also advised to collect information from the existing organic farming adopted by mulberry farmers and standardize the procedures for silkworm rearing and reeling.

2. Evaluation of modified spacing with special reference to planting geometry for sustainable mulberry leaf production

The committee approved the project proposal and suggested to incorporate the referee comments and also to modify the objectives by replacing the word 'better yield' with economic yield.

3. Identification, characterization, synthesis and field evaluation of sex pheromone of the mulberry leaf roller *Diaphania pulverulentalis* (Lepidoptera: Pyralidae) {in collaboration with NBAIR, Bangalore}

The committee approved the proposal for undertaking the study.

4. Host pathogen interaction of microsporidian using 3D tissue engineered microvillous system on silk scaffolds (in Collaboration with IIT, Kharagpur)

The committee approved the proposal to facilitate the initiation of silk biomaterials research in the institute.

5. Evaluation of improved mulberry genotypes for yield potential, nutrient uptake and use efficiency under varied cultivation practices

The committee felt that the project is most appropriate and approved the project proposal.

6. Development of value added products from spent pupae of mulberry silkworm, *Bombyx mori* L. (in collaboration with NIANP, Bangalore)

The committee approved the project proposal and the roles of collaborating partners should be spelt out in the project write-up.

7. Assessing the efficacy of recommended chemicals in insect/ disease / weed management and their impact on soil biota of mulberry ecosystem in South India

The committee approved the project proposal for undertaking the study as it is very important to study the residual effects of chemicals used in sericulture on soil microbiota and suggested to track the active ingredients of commercial pesticides/insecticides.

Research Projects Submitted to DBT for funding: The PIs of research projects presented the following project proposals to RAC. The committee examined the proposals and appreciated the initiatives taken by the institute as a follow up of DBT Brainstorming session on Mulberry and Silkworm biotechnology at the institute (November 2014) and Network developments. The committee opined that all the proposals are very much essential and studies need to be taken on priority basis.

- 1.Genetic analysis of mulberry growth vigour and development of variety responsive to repeated shoot harvest.
- 2.Multi-trait association in mulberry by RAD sequencing and development of climate resilient varieties.
- 3.Assessment of SNP Variation in Silkworm (*Bombyx mori* L) by RAD Sequencing and genome-wide association mapping of important commercial traits.
- 4.Development of productive soil moisture stress tolerant transgenic mulberry genotypes through hybridization and marker assisted selection.

(B) CONCEPTS FOR NEW PROJECTS: The following project concepts were presented to the RAC for approval and formulation of new projects. These projects were already submitted to CSB for approval and referee's comments.

1. Carbon sequestration in mulberry cultivation and strategies to enhance carbon sequestration

The committee appreciated the efforts and approved the proposal with a suggestion to refer the work done at other CSB institutes and also to use the facilities available with other institutions by establishing functional linkages.

- 2.Efficacy of anti-transpirants on moisture retention capacity and mulberry production under deficit irrigation

The committee suggested to take up pilot study and generate data on its effect on mulberry and silkworm and advised to study the cost effectiveness of anti-transpirants. RAC also suggested resubmitting the proposal for consideration in the next meeting.

3. Identification of robust bivoltine silkworm hybrids suitable for high temperature and high humidity conditions

The committee approved the project proposal with a suggestion to include the breeds already identified for high temperature and low humidity conditions and to give more emphasis on development of rearing technology to manipulate temperature and humidity in the rearing houses of coastal regions.

4. Validation trials of automated disinfection of silkworm rearing house

Committee appreciated the efforts of the institute to promote farmer's innovation and approved to take up the study for validation of automated disinfection method along with scientific rationale.

5. Determination of yield potential of newly developed bivoltine hybrids under tree type mulberry plantation with protective Irrigation

The committee appreciated the project proposal and approved the proposal for implementation as the project would lead to the climate resilient technology particularly for water stress and low rain fall tracts.

6. Impact of CPP on sericulture development in North Karnataka Clusters

7. Socio-economic impact of CPP on bivoltine seri-farmers in Tamil Nadu

8. Studies on yield gap in mulberry cocoon production in the states of Andhra Pradesh and Telangana

The committee appreciated all the project proposals on impact analysis of CPP with a suggestion to the limit the study for objectives of impact of CPP on productivity and socio-economic empowerment of farmers in the respective regions and suggested to specify the dimensions of socio-economic indicators as indicated in the CPP original report. The committee also suggested discussing the project proposal with extension and economic experts of UAS, Bangalore.

9. Phytoremediation of heavy metal contaminated soils with mulberry tree plantation

The committee approved the proposal with a suggestion to refer the studies conducted by UAS, Bangalore for other crops.

10. Application of oviposition stimulants for enhancing egg laying capacity in the silk moth, *Bombyx mori L*

The committee approved the proposal for a period of 18 months as a collaborative study with NSSO and SSTL and opined that it is industry oriented and could improve seed production.

Chairman and members expressed that such proposals should pass through RAC as a special case these projects are approved by 39th RAC.

ITEM No. 6: REVIEW OF PROGRESS OF ONGOING PROJECTS

Director informed the committee that 12 new projects have been initiated during the period under report and all the ongoing projects progress is as per the milestones.

TOT and Extension activities: The committee reviewed the progress of TOT and extension activities carried out by the main institute; RSRSs (Kodathi, Charamarajanagar, Salem and Ananthapur) and their nested units and appreciated the progress achieved.

With regard to formation of farmers groups in CPP area, the committee appreciated the efforts of RSRS, Salem & DOS, Tamil Nadu and suggested RSRS, Kodathi and Ananthapur for formation of Farmers groups in the CPP areas of Karnataka and AP. The Director was requested to arrange for visit to KVK, Banaglore North (National award winner) to familiarize on the formation of sericulture farmers association. The chairman suggested arranging for the marketing of lac produced by the farmers in Seri-lac project and to further popularize the seri-lac cultivation in similar agroclimatic conditions.

Training activities : The committee appreciated the various training programmes conducted by the main institute and RSRS units during the period and suggested to take up training of CPP farmers

ITEM NO. 7: SUBJECTS, IF ANY, WITH THE PERMISSION OF THE CHAIR:

Since no specific subjects were raised for further discussion, Chairman, RAC while thanking the experts for their interventions during the meeting, requested the expert members to express specific and general remarks on deliberations. He also requested the farmer and reeler members to give their remarks and feedback.

Sri. C.M. Ramesh, Silk Reeler, Tamil Nadu informed that reelers are facing the problem of non-availability of uniform cocoons, high cost of production even though the price of silk remained same over the number of years. In this regard, he requested for development of improved breeds for production of quality silk and also suggested that the government can impose additional import duty for the imported silk to protect domestic silk production.

Sri. T. Jeevanantham, Farmer, Tamil Nadu informed that sericulture farmers groups are formed in Tamil Nadu. Those groups can be trained to solve the problem of root rot in their mulberry gardens and to avoid uprooting of mulberry. He also requested DOS, TN to extend training on chawki rearing to the farmers group.

Sri. Kirubakaran, RO, Chennai requested for providing mulberry varieties suitable for coastal areas and the automatic disinfection system that is being validated should be cost effective.

Dr. Vasanth Thimkapura, Special Invitee expressed thanks for inviting to the august body meeting and shared his experience in agronomy and horticulture crops and informed that he is new to mulberry cultivation and yet can contribute regarding root diseases of mulberry. Further, he expressed that separate interaction with concerned scientists will help in understanding the root diseases of mulberry and to have a collaborative work. He stressed the importance of proper diagnosis of the disease, estimation of severity and identification of causal agent. Suitable treatment with chemical as well as bio-consortium could address the root rot in mulberry. He also invited the scientists of institute for visiting his lab and offered to share his expertise.

Dr. Kantipudi Nirmal Babu, AICRPS, IISR, Kozikode, Kerala, appreciated the deliberations of the meeting and suggested to explore the possibility of root diseases management through VAM and PCBR application.

Dr. Kanika Trivedi, Director, SBRL & CSGRC opined that automatic disinfection unit should ensure clearance of blockage in the nozzles. She had also felt that CSB approve the positions of JRF/SRFs proposed in the new projects as the scientific man power is becoming scarce.

Shri. Prince Mohan, DOS, Tamil Nadu informed that Coastal areas of Tamil Nadu have great potential for sericulture development and with regards to organic farming, felt that cost of economics needs to be worked out.

Smt. Arunka kumari, Joint Director, DOS-Andhra Pradesh expressed that identification of suitable hybrids for coastal regions is long pending demand and present project proposal is a welcome step and should be undertaken on priority for improvement of sericulture in water-rich areas of AP.

Dr. A.N. Shylesha, NBAII, Bengaluru expressed that pheromone trap developed for *Diphania indica* by private company should be tested for *D. pulverulentalis*.

Dr. S. Shivashankar, IIHR, Bengaluru suggested to test the consortium of plant growth substance developed by IIHR in mulberry and also that oviposition stimulants should be validated in commercial seed production centres.

Dr. H.K. Basavaraja, Retd. Scientist, Mysore, suggested focusing more on improvement of quality of silk in the silkworm breeding programmes.

Dr. Anil Kumar, Principal Scientist, NBSS & LUP, Hebba, Bengaluru, Agri Farm, Bengaluru informed that NBSS & LUP have the responsibility of monitoring the soil health in the country and also suggested for collaborative efforts between CSRTI and NBSS on developing region-specific recommendations and soil-health monitoring systems in mulberry.

Dr. Jayaprakash, Director, NSSO, Bangalore appreciated the efforts of the Director in proposing twenty new projects in a short period and the out come of the projects will help the Indian silk Industry. Further he informed to the house that NSSO has preserved the dfls of different breeds for specific region and season.

The Chairman, RAC congratulated the Director and his team of Scientists in achieving the targeted goals set for the reporting period. He complimented the experts and members of the RAC for highlighting the relevant points and offering constructive suggestions and advice for streamlining the research projects. He informed that during the recent RCC meeting, some core areas of research has been suggested for taking up research work by different institutes of CSB. In view of shortage of scientific manpower, he suggested to take the advantage of collaboration with related institutions for development of cost effective and sustainable technologies. Further, he stated that there is a need to look into the aspects of judicious use of water and energy, which are fast becoming scarce resources in future.

He also felt that participation of newly formed state, Talangana DOS representation in the RAC meeting for development of Sericulture in the non-traditional areas. He appreciated the feedback of the reelers and farmer members view representing large number of farmers and reelers. He informed that participation of other farmer and reeler members for the next meeting to be ensured by the concerned state RSRs heads. He also suggested to make constant efforts to utilize the outcome of concluded projects to end users through concerned DOSs and to minimize the cost and maximize the benefit, so that profit margin from sericulture sector could be improved.

He said that some of the farmers are doing innovative work; such innovative work needs to be identified, standardized and validated. The innovators should be recognized by way of felicitation in Krishimela and farmers workshops. He also appreciated the work carried out by Training and Extension divisions and suggested to organize training programmes for DOS and other concerned officials on formation of groups in CPP area, which could take care of sustenance of bivoltine technologies in the field even after withdrawal of CPP and cost effective measures.

The meeting ended with vote of thanks.

Sd/-
CHAIRMAN

LIST OF MEMBERS AND INVITEES WHO ATTENDED 39TH RAC MEETING HELD ON
21.9.2015

Sl. no.	Name of Members and Invitees		
1	Prof. K. Narayana Gowda, VC, UAS, GKVK, Bengaluru	Chairman	
2	Dr. V. Sivaprasad, CSRTI, Mysore	Member Convener	
3	Dr. Anil Kumar, Principal Scientist, NBSS & LUP, Hebbal Agri Farm, Bengaluru.	Members	
4	Dr. Kantipudi Nirmal Babu, AICRPS, IISR, Kozikode, Kerala.		
5	Dr. S. Shivashankar, IIHR, Bengaluru		
6	Dr. H.K. Basavaraja, Retd. Scientist, Mysore		
7	Dr. A.N. Shylesha, NBAIL, Bengaluru		
8	Dr. V.G. Hathyal, Scientist-F (Rep Director, KSSRDI)		
9	Sri. H.A. Dinesh, DD, DOS, Mysore (Rep Commissioner DOS, Karnataka)		
10	Sri. Mohan, DD, Principal TNSTI, Hosur, (Rep Commissioner DOS, Tamilnadu)		
11	Smt. C. Arun Kumari, JDS, (Rep Commissioner DOS, Andhrapradesh)		
12	Dr. P. Jayarama Raju, Scientist-D, - (Rep Director(Tech), CSB, Bengaluru)		
13	Dr. G. Hariraj, Sci-D, (Rep Director, CSTRI, Bengaluru)		
14	Dr. P. Jayaprakash, Director, NSSO, CSB, Bengaluru.		
15	Dr. Kanika Trivedy, Director SBRL, Bengaluru & CSGRC, Hosure		
16	Sri. T. Jeevanatham, Farmer, Tamil Nadu		
17	Sri. C.M. Ramesh, Silk Reeler, Tamil Nadu		
18	Mr. Ch. Sathyanarayanaraju, Scientist-D, RSRS, Anantapur		
19	Dr. Himanthraj, Sc-D, RSRS, Kodathi, Bengaluru		
20	Dr. K. Srikantaswamy, Scientist-D, RSRS. Chamarjanagr		
21	Dr. Chikkanna, Scientist-D, RSRS, Salem		
22	Vijayakumar, Deputy Secretary, Regional office, Mumbai, Maharashtra.		
23	Mr. David Raja, Deputy Secretary (Tech) Regional Office, Hyderabad		
24	Sri Kirubakaran, Deputy Secretary(Tech), RO, CSB, Chennai, Tamil Nadu		
25	Dr. Vasanth Thimkapura, Agricultural Scientist, Mysore - Special Invitee		
	Members and invitees who sought leave of absence		
1	Dr. K. Siddeswaran, TNAU, Tamil Nadu		
2	Prof. K.P. Chinnaswamy, GKVK, Bengaluru		
3	Prof. Anantachar, Raichur		
4	Director, APSSRDI, Andhra Pradesh.		
5	The Commissioner of Rural Development, Govt. of Kerala		
6	Director of Sericulture, Maharashtra		
7	The Commissioner of Sericulture, Govt. of Madhya Pradesh, Bhopal		
8	Sri. Peddi Ravindar, silk Reeler, Andhra Pradesh		
9	Sri. Satyanarayana Reddy, Bivoltine farmer, Andhra Pradesh		
10	Sri. Syed Ziyulla, Silk Reeler		
11	Sri. K.Y. Shivanandaiah, Farmer, Tumkur		
12	Dr. K.C. Narayanaswamy, UAS, G.K.V.K, Banaglore- Special Invitee		

List of Participant Scientists from CSRTI, Mysore and its nested units from 39th RAC

1	Dr. T. Thippeswamy, Sci-D,CSRTI, Mysuru.	34	Dr.Noble Morison Sci-D, REC, Madival
2	Dr. Dasappa, Sci-D,CSRTI, Mysuru.	35	Dr. Satshverma,Eci-E, CSRTI, Mysuru
3	Mr.R.K.Khare, Sci-D, REC, Hosangabad	36	Dr.R.S.Katiyar, Sci-D, Trg.Division,CSRTI, Mysuru.
4	Mr.Ramapraksh, Sci-D, REC,Baramati	37	Dr.M.Maheswari, Sci-D,RSRS,Kodathi, Bengaluru
5	Dr.S.R.Katti, Divisional Chief, KSSRDI,	38	Dr. Vinod Kumar, Sci-D,PML ,CSRTI, Mysuru
6	Dr.B.T.Srinivasa, Sci-D,CSRTI, Mysuru.	39	Mr. Narendra Kumar, J. B. Sci-D,PML, CSRTI, Mysuru
7	Mr.S.Rajakumar, Sci-d,RSRS, Salem	40	Dr.S.Masilamani, Sci-D, REC, Krishnagiri.
8	Dr.J.Ravikumar Sci-D, RSRS, Salem.	41	Dr. G.V. Kalpana,Sci-D,P4 BSF,Hassan
9	Dr. Mahima Santhi, A.	42	Dr. Nishitha Naik. V,mul.Path, CSRTI, Mysuru
10	Dr. Sharmila, K. K.	43	Dr. Geetha, G. S. Sci-C , SEEM, CSRTI, Mysuru
11	Ms.Soundamany, P.V.Sci-C,BBL, CSRTI, Mysuru	44	Ms.Suma, A.S. Scientist-D,Trg.Divison
12	Dr.P.S.Ambika, Sci-D,RSRS, Kodathi.	45	Dr.Y.C.Radhalakshmi, Sci-D,Reeling CSRTI, Mysuru
13	Dr. Santha, P.C.Sci-D,TVDC, SCRTI, Mysuru	46	Dr.Mahiba Helen Sci-C, RSRS,Salem
14	Mr.Mukund V Kirsur Sci-D, CSRTI, Mysuru	47	Dr.Kariyappa, Sci-D,Reeling CSRTI, Mysuru
15	Dr.Vinodkumar Sci-D PMCE, CSRTI, Mysuru.	48	Dr.Pratheeshkumar Sci-D CSRTI, Mysuru
16	Dr.Raveendra matigatti Sci-D, REC,SU,Kudlagi	49	Dr.Balavenkatasubbiah,Sci-D,SWPatho, Mysuru
16	Dr.H.Jayaram, Sci-D,REC.SU,Kanakapura	50	Dr.S.M.Murthy,Sci-D,CSRTI, Mysuru
18	Dr.A.R.N.Nayaka Sci-D,SW patho Mysuru	51	Dr.C.M.Kishore Kumar, Sci-D,CSRTI, Mysuru
19	Dr.D.Raghavendra Rao,Sci-D,CSRTI, Mysuru	52	Dr.Sibyan Sen Sci-C CSRTI, Mysuru
20	Dr. Somaprakash, D. S.	53	Dr. Gangadhar, B. CSRTI, Mysuru
21	Mr. R. Gururaj, Sci-D RSRS,Coonor	54	Dr.T.V.S.Srinivasa Rao,Sci-D,REC,SU,
22	Dr.B.Srinath Sci-D,RSRS,Ananthapur	55	Dr.B.Kashi Reddy, Sci-D,RSRS,Ananthapur
23	Vinodkumar Yadav, Sci-B, CSRTI, Mysuru	56	Dr.S.Gandhi Dass, Sci-D, MBG, CSRTI, Mysuru.
24	Dr.V.Gunashekar, Sci-C,CSRTI, Mysuru.	57	Mr.S.B.,Kulkarni, Sci-D, REC, V.Kota
25	Dr.G.V.Prasad Sci-D, REC,SU, Palamner	58	Mr.N.Balachandran Sci-D, CSGRC Hosur
26	Dr.Munirathnam Reddy Sci-D, CSRTI, Mysuru	59	Dr.K.M.Ponnuvel, Sci-D SBRL, Bengaluru
27	Mr.Rajashekara,K. Sci-D,CSRTI, Mysuru	60	Dr.A.K.Awasthi Sci-D, SBRL, Bengaluru
28	Mr.K.Velayudan, Sci-D REC,SU, Tumkur	61	Dr.Dayanda Sci-D, CSRTI, Mysuru
29	Dr.Vineethkumar Sci-D,CSRTI, Mysuru	62	Dr. Bhagya, R. Sci-D, CSRTI, Mysuru
30	Ms.Rekha, A.D. CSRTI, Mysuru	63	Mr.C.Parameswara Sci-C. Trg, CSRTI, Mysuru
31	Mr.N.Chandrakanth, JRF,BBL,CSRTI, Mysuru	64	Mr.H.M.Munikrishnappa, Sc-C, CSRTI, Mysuru
32	Dr.S.N.Pallavi, Sci-D RSRS,Chamarajanagar	65	Mr.S.B.Nagaraja, Sci-D,CSRTI, Mysuru
33	Mr.KC.Mahalingappa, Sc-C,REC,SU,Kinakahalli		