MINUTES OF THE 37th MEETING OF THE RESEARCH ADVISORY COMMITTEE HELD ON 28th FEBRUARY, 2014 AT CSR & TI, MYSORE

The 37th meeting of the RAC of CSRTI, Mysore was held on Friday 28th February, 2014 at CSRTI, Mysore for reviewing the progress of research, extension, training and other activities of the Institute and its nested units carried out during the period from April, 2013 to January, 2014 and to consider new project/programme proposals for implementation besides reviewing concluded projects. The meeting was chaired by Prof. K. Narayana Gowda, Hon'ble Vice-Chancellor, University of Agricultural Sciences, Bengaluru. The list of participants is appended at **Annexure-1.**

Dr. S. K. Ashwath, Scientist-D, PMCE cell welcomed the Chairman, members, invitees and the scientists of the Institute and nested units to the meeting.

Greeting all the participants on the day after Shivarathri, the Chairman in his opening remarks emphasized the problem of water shortage during the year and the need to focus our research on judicious use of water for mulberry which is the need of the hour. He cited the example of Baramathi area of Maharashtra, where rainfall was very low, but still crops were grown well due to well planned irrigation management. He opined that drip irrigation, trenching and mulching could be the key factors for effective water management in mulberry cultivation. He announced that ICAR has agreed to introduce Sericulture Education in two new colleges to be established in Assam and Kashmir. He suggested that the recommendations of two national seminars held at KSSRDI, Thalaghattapura, and UAS Chintamani can be shared with all the research institutes for planning strategic research programmes. He highlighted the need for preparation of vision document and road map for the next 20 years.

Dr. B.B. Bindroo, Director during his opening address welcomed the Chairman, members, invitees and participants and lauded the valuable guidance and timely advise offered by the Chairman, subject experts and members of the RAC which has greatly helped in fine-tuning and streamlining the research and extension activities of the Institute and its nested units.

Later on discussions on the agenda items were taken, which are as follows.

Item No. 1: Confirmation of the minutes of the 35th meeting of RAC held at CSRTI, Mysore on 25-26th February 2013.

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 36th meeting of held at CSRTI, Mysore on 19-20th July, 2013.

The report on the follow-up actions taken on the decisions of the previous meeting was presented by Dr. S. K. Ashwath, Scientist-D. The house deliberated on the

action taken report and the Chairman expressed his satisfaction and happiness over the fact that required follow up has been taken on all the decisions. .

Item No. 3: Director's report.

At the outset, Dr. B. B. Bindroo, Director informed the house that the Institute was accredited with ISO 9001-2008 certification with effect from December 2013 and he congratulated all Scientist and staff of CSR&TI, Mysore for their hard work. Later he presented the salient features of progress achieved by the Institute and its nested units during the reporting period. The presentation covered the following major aspects: (i) Mulberry Improvement, (ii) Mulberry Production, (iii) Mulberry Protection, (iv) Silkworm Improvement, (v) Silkworm Production, (vi) Silkworm Protection, (vi) Extension Activities, (vii) Sericulture Engineering and (viii) Human resource development.

The Chairman appreciated the comprehensive report presented by the Director and also congratulated the Institute for being the ISO certified organization. During the discussion, Dr. Sivaprasad, Director, SBRL pointed out that in some of the new hybrids developed, the yield is less than 70 kg/100 dfls, which is achieved in the current hybrids under CPP. The Director, clarified that the yield potential shown in the new hybrids is based on 40,000 larvae/100 dfls, while the current hybrids in CPP are supplied @60,000 eggs/100 dfls and accordingly the yield has to be converted. Dr. B.S. Angadi, Director, NSSO, Bangalore opined that besides yield, reproductive efficiency and grainage parameters are also crucial for sustaining the seed production process.

Item No. 4: Review of Concluded Projects:

1. ***DNA marker aided analysis of mulberry gene bank towards a core assembly for sustainable conservation and enhanced utilization in crop improvement- PIE 3451***

   The house noted the outcome of the project and suggested to use the core assembly of short-listed germplasm for mulberry improvement programmes.

[Action:Dr. V. Girish Naik, Sc-D, Molecular Biology Lab.I, Host plant improvement]

2. ***Studies on the factors influencing the nutrient uptake and its use efficiency in mulberry under field conditions –PIN 3442***

The house agreed on the importance of soil testing and its dissemination. Taking note on the number of farmers' covered under this programme, the Chairman suggested to utilize the data on the soil maps of southern states generated by the Soil Science Laboratory of UAS, Bangalore.

[Action:Mrs.M.G.Sabitha, Scientist-C, Mulberry Physiology, Hostplant production]

3. ***Biological control of fungal root rot disease of mulberry by endophytic bacteria Burkholderia cepacia and Bacillus subtilis strains –PRP 3462***

Prof. Nagaraj suggested that supply of bacteria to the farmer's gardens may be a problem and the native bacteria can be isolated and cultured in the field itself. Dr. Sukumar informed that the causative agent of root rot disease is different from area to area and hence, the causative agent of root rot disease in Kanakapura area has to be confirmed before testing the bacterial biological control agents. Dr. V. Sivaprasad, Director, SBRL, Bangalore also pointed out that the pathogens causing root rot disease in Andhra Pradesh are also different which needs to be tested and confirmed on the efficacy of biocontrol agents.

[Action: Dr. V. Gunasekhar, Scientist-C, Agronomy, Host plant production]

4. ***Popularization of productive bivoltine double hybrid (CSR6 x CSR26) x (CSR2 x CSR27)'Krishnaraja' with the farmers of Karnataka – MOE 3463***

The house noted the outcome which has resulted in motivating the farmers to switch over from rearing cross breeds to double hybrids.

5. ***Studies on the development of indigenous method for culturing Cordyceps and other useful species- AIB 3449***

The findings were noted by the house and suggested for commercialization of the technology. The Director informed that action has been initiated for inviting entrepreneurs through open tender.

Further, the outcome of the following Institute coded programmes concluded during the period were noted by the committee.

1. *Large scale multiplication of multivoltine and bivoltine breeds-* ***SPR 0041***
2. *Development of rearing package for the newly developed silkworm pure L –14 breed –* ***SPR 0044***
3. *Maintenance of silkworm pathogens and testing their virulence at periodical intervals-****SPT 0024***
4. *Identification of probiotic bacteria from the mulberry silkworm and study on their antibacterial activity against the bacterial pathogens of silkworm, Bombyx mori L. -* ***SPT 0045A***
5. *Detection of virus in mulberry in hot spot area of Karnataka -* ***MPT 0049****(A pilot study)*
6. *Effect of shoot harvest techniques and biomass yield of mulberry on soil organic carbon depletion in mulberry fields -* ***SEM(S) 8003***
7. *Studies on adoption of Silkworm disease control measures and its impact on cocoon production in farmers' field under Tamil Nadu conditions -* ***SEM(S) 8001****.*

8. *Studies on rhizosphere microflora of mulberry varieties as influenced by different cultivation practices under alkaline condition* - ***MPT (S) 8002***
9. *Studies on the adoption of mulberry and silkworm pest management technologies (IPM) by the sericulturists in Tamil Nadu* - ***SEM(S) 8004***
10. *A study on the adoption of recommended package of practices followed by sericulturists of different farm sizes in Tamil Nadu* - ***SEM(S) 8006***

Item No. 5: Review of progress of On-going Projects/programmes

The progress in respect of the following projects/programmes were reviewed and found to be as per the predetermined milestones and satisfactory for the reviewing period.

A. Projects:

I. Host plant improvement:

i. *Development of superior mulberry varieties suitable for moisture stress environments* - ***PIB 3268.***
ii. *Development of superior mulberry varieties by exploitation of hybrid vigour based on molecular marker diversity of parental lines* - ***PIB 3370.***
iii. *Development of disease resistant and productive mulberry genotypes with special reference to root rot and root knot diseases suitable for seri-zones of south India* - ***PIB 3457.***
iv. *Development of Distinctness, Uniformity and Stability (DUS) descriptors for Mulberry (Morus spp.) and their validation -DUS.*
v. *Sustaining mulberry yields: Identification of QTLs conferring resistance to root rot disease by Linkage Disequilibrium mapping and trait introgression" (Phase I) funded by DBT* - ***PIG 3502.***

II. Host plant protection:

i. *Development of database for mulberry diseases* - ***PRE 3486****.*

Chairman appreciated the study and expressed that it is a good documentation.

III. Silkworm improvement:

i. *Development of robust bivoltine hybrids of silkworm, Bombyx mori tolerant to high temperature environment of the tropics through DNA marker assisted selection* - ***AIT 3445****.*
ii. *Popularization of authorized silkworm hybrids among the farmers of South India* – ***AIB 3498***
iii. *Development of Productive polyvoltine breeds and identification of M X B hybrids of the silkworm, Bombyx mori tolerant to high temperature and BmNPV* - ***ABI 3456****.*

Since, the S.R.% in the selected lines is more, it may result in hibernation character. This may be taken care while selecting the lines for further continuation.

(Action: Dr. Dayananda, Scientist-C, Silkworm Breeding Lab II)

iv. *Development of productive NPV tolerant bivoltine breeds/hybrids using BmNOX marker assisted selection* - ***AIB 3476***

v. *Studies of mulberry leaf nutrition on intermediary metabolism of silkworm Bombyx mori* - ***AIP 3478***

IV. Silkworm crop protection:

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

Screen more number of anti-microsporidian drugs in initial stage and shortlist the effective ones for further work at CSRTI, Mysore and SBRL, Bangalore.

(Action Mr. A. R. Narasimha Nayaka, Scientist-C, Silkworm Crop Protection)

ii. *Habitat Studies - Impact of crop diversity on conservation and performance of natural enemies in mulberry crop system - PPE 3455*

iii. *Evaluation of available management strategies of giant African snail, Achatina fulica Bowdich in mulberry eco-system – PRE 3467.*

V. Extension:

i. *A study on adoption of pest and disease management strategies in sericulture* - ***MOE 3458***

Committee suggested not to use the term "Rate of adoption" and use only "Extent of adoption". Appreciated the work and suggested to take up this study in CPP areas also.

[Action: Dr. B. Gangadhara, Scientist-C, SEEM division]

RSRS,Chamarajanagar

i. *Development Of Seri-Lac Culture Model For Income Augmentation* - ***PPF:3500*** (Inter institutional project with IINRG, Ranchi)

B.Programmes

i. *Effect of conjunctive use of nitrification inhibitors for the efficient utilization of nitrogenous fertilizers for the sustainable mulberry production* – ***MPR 0047.***

ii. *Monitoring of soil fertility status of mulberry gardens and creation of database* - ***MPR 0005***

iii. *Long-term ecological research-Effect of mulberry cropping system on soil biology and productivity* – ***MPT 0046***

iv. *On-Farm Trial of Nemahari-A plant based formulation for management of root knot disease of mulberry* - ***SEM 0052****.*

v. *Evaluation of three-way cross hybrids for commercial exploitation* - ***SIM 0008***

vi. *Improvement of breed characteristics of L14 through multi-location breeding approach -* ***SIM 0051.***

vii. *Maintenance of breeds developed through amylase marker assisted selection, NPV tolerance and morphological mutant stocks -* ***SIM 0006***

viii. *Maintenance of bivoltine silkworm breeders stock/germplasm -* ***SIM 0016****.*

ix. *Bivoltine shuttle breeding for development of silkworms with better plasticity -* ***SIM 0017****.*

x. *Bivoltine silkworm race maintenance and multiplication –* ***SIM 0015****.*

xi. *Testing of mountages and refinement of the existing mountages for large scale rearing.*

xii. *Large scale in-house evaluation and validation of new silkworm breeds/hybrids of silkworm, Bombyx mori developed by CSRTI -* ***SPR 0019***

xiii. *Evaluation of post cocoon parameters of cocoon generated from CSRTI, Mysore -* ***SIM 0037****.*

xiv. *Identification of factors responsible for silkworm crop loss due to diseases at field level and their impact on cocoon productivity –* ***SPT 0039****.*

xv. *Maintenance of mother culture for production of recommended bio-control agents and mass release of recommended bio-control agents of sericultural pests in CSRTI campus -* ***SPT 0014.***

xvi. *Demonstrations of uzi fly management strategies in an adopted village of Srirangapatna taluk -* ***SEM 0050****.*

xvii. *Forecasting and forewarning of mulberry pest –* ***MPT 0053****.*

xviii. *Sericulture woman and Technology transfer-A group approach –* ***SEM 0042****.*

xix. *Evaluation of Elite mulberry varieties under semi- arid agro-climatic conditions -* ***MIP(A)5001*** (RSRS, Anathapur)

VI. Sericulture engineering:

The committee reviewed the progress under research and development activities, fabrication and supply of machines, patenting and commercialization, extension and training activities undertaken by the division and suggested to speed up the process of commercialization of more equipments which can generate revenue for the Institute.

[**Action: Dr. Satish Verma, Scientist-E, Seri-engineering division]**

Item No. 6. New Projects/Programmes:

Projects:

1. *Development of productive bivoltine silkworm breeds/hybrids of Bombyx mori L. tolerant to NPV.*

The project is already cleared by CO, Bangalore before sending to the referees. Dr. N. Mal Reddy presented the project along with referee's comments.

Observations/ suggestions: Suggested to take oval donor parent in the present study. The tolerant breeds evolved against NPV in the earlier projects may be included.

Decision: Approved. The project may be taken up by incorporating the above suggestions.

[**Action: Dr. N. Mal Reddy, Scientist-C, Silkworm Improvement**]

2. Breeding of Region & Season specific silkworm hybrids of B. mori for Karnataka climate.

Dr. P. Sudhakar Rao presented the project along with referees' comments.

Observations/ suggestions: The Chairman felt that Region and Season specific silkworm breeds/hybrids are the need of the hour and hence, this can be considered for approval. Members suggested to specify the donor and recipients parents in the work plan.

Decision: Approved. The project may be taken up by incorporating the above suggestions.

[**Action: Dr. P. Sudhakar Rao, Scientist-C, RSRS, Kodathi, Bangalore**]

3. *Studies on pest status & eco-friendly management of Thrips on mulberry in Tamil Nadu*.

4. *Monitoring of spread of papaya mealy bug in Tamil Nadu*.

Dr. S. Mahiba Helen presented the two projects along with the referees comments.

Observations/ suggestions: This study should also cover Karnataka state. Advised to include one co-investigator from Karnataka for conducting the study in Karnataka also.

Decision: Approved. The projects may be taken up by incorporating the above suggestions.

[**Action: Dr. S. Mahiba Helen, Scientist-B, RSRS, Salem**]

The committee noted and approved the following new Institute coded programmes already approved in the 55th RC

1. *Field trial of reeling package for L14 x CSR2 Hybrid - **SIM 0055***
2. *Development of alternate techniques in loose egg preparation for improvement of grainage operations **- SIM 0056** (Pilot study)*
3. *Validation of new recommendation of fertilizers/ manures for V1 mulberry under irrigated conditions - **MPR 0057.** (in collaboration with 3 RSRSs)*
4. *Development of double haploids through in-vitro technique for mulberry improvement (phase-II) - **MIP 0058.***

5. *Development of an user friendly technique for transplantation of mulberry saplings using auger and studies on its impact on labour economy, growth and yield parameters of the plants* ***- MPR (S) 8007****(RSRS, Salem)*
6. *Impact of plant protection strategies on mulberry ecosystem in important sericultural areas of Tamil Nadu -* ***MPT (S) 8008*** *(Pilot study – RSRS, Salem)*

Item No. 7: Progress of trials/demonstrations of technologies and feed back and Review of Extension activities of Main Institute & RSRS/REC

Main Institute and units under the control of CSR&TI, Mysore

Dr. G. S. Vindya, Scientist-D presented the progress of commercial chawki rearing, Monitoring of L14 x CSR2 crops, Extension and communication programmes, workshops, Krishimela, CPP crop performance, visitors service and also the progress of extension activities of units under the control of CSR&TI, Mysore.

The committee noted the progress which was as per the milestones and targets set.

RSRS Ananthapur:

Mr. Satyanarayana Raju, Scientist-D presented the consolidated progress report of RSRS, RECs and CPP in respect of Expansion of new mulberry varieties, Popularization of Bivoltine Hybrids, New ICB, Extension Communication pprogrammes, Cluster Promotion Programme, Training programmes of Farmers/Officials including ISDS, TUP and need based, Revenue Generation and other activities.

The house expressed its satisfaction over the achievements during the reporting period and congratulated the team.

RSRS Chamarajanagar:

Dr. B. Mallikarjuna, Scientist-D presented the progress report of RSRS, Sub-unit, Kinakahalli and CPP in respect of Expansion of new mulberry varieties, Popularization of Bivoltine Hybrids, New ICB, Extension Communication programmes, Cluster Promotion Programme, Training programmes of Farmers/Officials including ISDS, TUP and need based, Revenue Generation and other activities.

The house noted the progress and expressed its satisfaction over the achievements during the reporting period.

RSRS Kodathi

Dr. K. L. Rajanna, Scientist-D presented the progress report of RSRS, RECs and CPP in respect of Expansion of new mulberry varieties, Popularization of Bivoltine

Hybrids, New ICB, Extension Communication pprogrammes, Cluster Promotion Programme, Training programmes of Farmers/Officials including ISDS, TUP and need based, Revenue Generation and other activities.

The Committee expressed its satisfaction over the achievements during the reporting period which was as per the set targets.

RSRS Salem

Dr. Chickkanna, Scientist-D presented the progress report of RSRS, RECs and CPP in respect of Expansion of new mulberry varieties, Popularization of Bivoltine Hybrids, New ICB, Extension Communication pprogrammes, Cluster Promotion Programme, Training programmes of Farmers/Officials including ISDS, TUP and need based, Revenue Generation and other activities.

The house expressed its satisfaction over the achievements during the reporting period. As technology adoption level is very high in Tamil Nadu and the cocoon yield levels are also high (>70 kg) , the members congratulated the team effort shown in Tamil Nadu. It was also observed that the cocoon yield levels are also very high in Kerala, indicating the possibility of expansion of sericulture.

Item No. 9: Training Imparted:

Mr. Parameshwaran, Scientist-C presented the details of training programmes *viz*., ISTD, International, MDP, TOP and Need based training programmes conducted by the Institute and its nested units, target and each programme and achievements. The house deliberated on the feedback of the trainees and appreciated the progresses.

Item No. 10: Technologies under patenting and commercialization:

The house noted with satisfaction that four applications were filed for patenting and two technologies were commercialized during the reporting period.

Item No. 11: Discussion on recommendations of CSB-DOS collaborative on-farm research projects/programes (PAT, TOT *etc*.)

The house noted that the projects/ programmes are progressing as envisaged and congratulated the participating agencies.

Item No. 12: Review of recommendations of RC, EOM, RRAC & SLSCC meetings:

The house noted the suggestions / recommendations of the 55th Research Council of the Institute held on 25th November 2013; 2nd Extension Officers Meeting held on 26th November 2013; 3rd Regional Research Advisory Committee of RSRS, Salem held on 4th December 2013 and 21st Regional Research Advisory Committee of RSRS, Anantapur held on 6th July 2013; 31st and 32nd RRAC meetings of RSRS, Kodathi and Chamarajanagar held on 5th July 2013 and 3rd December 2013 respectively. Further the recommendations of SLSCC meetings of Maharashtra held on 19th November 2013

and Madhya Pradesh on 13th December 2013 were noted and expressed its appreciation for the efforts of the Committees.

Item No. 13: Subjects, if any, with the permission of the Chair:

Since no other subjects were raised for discussion the Chairman requested the members to give their concluding remarks.

Concluding remarks:

The Chairman congratulated the scientists on the progress achieved during the reporting period and requested the members to give their remarks, that might not have been expressed during the day's deliberations.

Dr. K. T. Sampath, Former Director, NIANP, Bengaluru

He appreciated the quality of research work that is being carried out at this institute and advised the scientists to have a thorough review of literature before and after formulating the project and also to update his knowledge on current status during implementation of the project through either formal or informal discussions with the experts working in the respective fields.

He opined that the Institute should have a vision document for next 20 years which is very much essential for research organizations which forms a basis for future research work. He suggested that brain-storming sessions involving all the stakeholders can be organized and based on the discussions, impact analysis, lessons learnt and SWOT analysis, the vision document can be prepared. Further, he advised that while preparing the programmes we have to keep in mind the environmental issues, extension delivery mechanisms and use of PPP models for better accountability.

Prof. Nagaraju, Former Prof. & Head, Plant Pathology, UAS, Bangalore

He appreciated the Scientists of CSRTI, Mysore for the commendable progress made during the period which was well presented. He complimented the scientists for implementing all the suggestions made by the members.

Dr. Angadi, Director, NSSO Bangalore

He suggested that breeders should also keep in mind the reproductive fitness of high yielding bivoltine hybrids developed for confirming the techno-economic feasibility at the grainages and the services of SSTL, Bangalore could be utilized if required. He felt the need for integration of TOT programmes, study of the economic feasibility of technologies using the support schemes offered during the 12th plan for increasing productivity in the field.

Dr. V. Sivaprasad, Director, SBRL, Bangalore

He suggested the need for collaborative research projects among the research Institutes of CSB, state governments and Universities in the area of mulberry research and fine-tuning of technologies.

Sri. M. A. Rahaman, Joint Director, DoS, Karnataka

He appreciated the projects formulated on region & season specific silkworm hybrids , control of mulberry pests & diseases and management of snails using Metaldehyde etc., which are very useful in the field. He felt the need to study the effect of repeated pruning on nutrient uptake from the soil, active transport systems and suggested for dissemination of single stem technology instead of short bush.

Dr. Sukumar, Scientist-D, KSSRDI, Thalaghattapura, Bangalore

He suggested that care should be taken to identify the pathogens causing mulberry diseases. For biocontrol methods, native isolates should be searched for better results as they are well adapted to that eco-system. He emphasized the importance of soil testing & fertilizer recommendation and the need for development of soil fertility maps, for which he suggested that soil analysis can be jointly done by CSRTI and KSSRDI by demarcating the regions and districts in Karnataka. Further he mentioned that there is a large yield gap between the yield potential of the high yielding mulberry varieties and the yield realized in the field. He suggested the need for conducting fertilizer trials and finalize the appropriate package before release of the variety.

In this regard, the Chairman informed that as ICAR centre at Bangalore has already developed district-wise soil fertility maps of Karnataka, we can see how this can be interfaced for mulberry instead of repeating the same.

Farmer's View:

Sri Gurumurthy Setty, Chittoor, A.P

He pointed out that V1 requires more water and water will be problem in the coming years and hence there is a need for developing mulberry varieties suitable for water stress conditions and use of drip irrigation systems. He mentioned that some farmers are not having rearing sheds/mulberry gardens and they are hiring them at high cost. Hence, more emphasis should be given on development of low cost / portable rearing sheds. He opined that liquid type of bed disinfectant could be better than the powder form. He emphasized the need of daily calendar of the practices to be followed during the course of rearing and informed that he has already prepared a daily calendar of operations which can be further refined by the Institute.

Reeler's view

Mr. Ahmed Sab, Anantapur, A. P.

He mentioned that in recent days the renditta of bivoltine cocoons increased from 5.5 to 7.5 and emphasis should be given to reduce the renditta. He suggested that silk testing facilities should be established at Hindupur.

Mr. Murgesan, RO office, Tamil Nadu

He informed that through the joint effort of CSB and DoS, Tamil Nadu achieved the cocoon yield up to 75 kg/100 dfls and also eradicated the Papaya mealy bug in Tamil Nadu.

Mr. V. Ramesh, DD (I), RO, Mumbai

He mentioned that CRCs are not adequately established in Maharashtra and requested for training of farmers on chawki rearing technology under TUP or ISDS. He also mentioned that DOS Maharashatra needs the procedure for drawing soil samples so that they can get the soils of the farmers tested at CSRTI, Mysore. In this regard, the Chairman suggested that facilities available in the State soil testing units in each district of Maharashtra can be utilized instead of sending the samples to Mysore.

Dr. B. B. Bindroo, Director, CSRTI, Mysore

The Director thanked the Chairman and all the members for tirelessly reviewing the projects of the Institute and offering valuable guidance and suggestions. He assured that the suggestions and expert views of the members will be implemented to the best of our ability in formulating future research programmes. He sought the cooperation of the State departments of sericulture, KSSRDI, APSSRDI and CSB organizations in serving the stakeholders in the best possible way.

Chairman's remarks

Prof. K. Narayana Gowda, Vice-chancellor, UAS, Bengaluru, congratulated the Director, CSR&TI, Mysore and his team of Scientists in achieving the targeted goals set during the last eight months. He complimented the experts and committee members for highlighting the relevant points and giving constructive criticisms for streamlining the research programmes. He asked the scientists to focus on many uncovered areas and the need for synergy among CSB and other state research institutions as well as universities working on sericulture for striking a balance between basic and applied research. He felt the need of intensified research on water based technologies in mulberry for cutting down the irrigation requirements. He emphasized the importance of low cost rearing houses for which bamboo based materials can be tried which are eco-friendly. He informed that Govt. of India has cleared the GM technology which may be easily adopted in non-edible crop like mulberry to address some of the unsolved problems. He opined that sericulture enterprise is most suitable for the small and marginal farmers and advised the scientists to focus on how best to maximize the profit margin and minimize the cost of production which can speed up the adoption of technologies.

The meeting ended with vote of thanks.

Sd/-
CHAIRMAN

ANNEXURE-1

List of members and invitees who attended the meeting and others who sought leave of absence during the 37th meeting of RAC of CSRTI, Mysore held on 28th February, 2014

#	**Members and invitees attended**	
1	Prof. K. Narayana Gowda, VC, UAS, GKVK, Bengaluru	Chairman
2	Dr. B. B. Bindroo, Director, CSRTI, Mysore	Member Convener
3	Prof. Nagaraju, Former Prof. & Head, Plant Pathology, UAS, Bengaluru	Member
4	Dr. K.T. Sampath, Former Director, NIANP, Bengaluru	Member
5	Dr.J. Chandrasekar Hiware, Director of Sericulture, Govt. of Maharashtra, Nagpur	Member
6	Mr.Murugashan, DD – representing the Director of Sericulture,Govt.of Tamil Nadu	Member
7	Sri. M. A. Rahaman, Joint Director, – representing the Commissioner,Govt. of Karnataka	Member
8	Dr. B. S. Angadi, Director, NSSO, CSB, Bengaluru	Member
9	Dr. P. Jayarama Raju, Scientist-C, - representing Director, CSB, Bengaluru	Member
10	Sri. Bhanuprakash Raj, Scientist-C, - representing the Director CSTRI, Bengaluru	Member
11	Dr.V.Shivaprasad, Director, SBRL, Bengaluru & CSGRC, Hosur	Member
12	Dr. J. Sukumar, DC (Mori), – representing the Director, KSSRDI, Bengaluru	Member
13	Mr. Gurumurthy Chetty, Sericulturist, Chittoor, Andhra Pradesh	Member
14	Mr. D. Ahammed Sab, Reeler, Hindupur, Andhra Pradesh	Member
15	Dr. K. L. Rajanna, Scientist-D, RSRS, Kodathi	Invitee
16	Dr. Chikkanna, Scientist-D, RSRS, Salem	Invitee
17	Mr. Ch. Sathyanarayanaraju, Scientist-D, RSRS, Anantapur	Invitee
18	Dr. B. Mallikarjuna, Scientist-C, RSRS, Chamarajanagara	Invitee
19	Mr. V.Ramesh, Deputy Director (I.), RO, CSB, Mumbai	Invitee
20	Dr. Vijaya Kumar, Asst. Secretary, RO, CSB, Mumbai	Invitee
21	Mr. H.T.Satish Kumar, Deputy Secretary (Tech.), RO, CSB, Hydarabad	Invitee
22	Mr. C.Subramanian, Asst. Secretary (Tech), RO, CSB, Channai	Invitee
	Members and invitees who sought leave of absence	
1	Dr. Rajeev Varshney, Principal Scientist & Director, Centre for Excellence in Genomics, ICRISAT, Hyderabad	Member
2	Prof. Maheshwaran, TNAU, Coimbatore	Member
3	Dr. R. R. Prasad, Prof. & Head, Centre for Equity and Social Development, NIRD, Hyderabad	Member
4	Dr. S. Vadivelu, Principal Scientist (Retd.), NBSS & LUP, Bengaluru	Member
5	Dr. R. J. Rabindra**,** Dean, College of Post Graduate Studies, CAU, Umiam, Barapani, Meghalaya	
6	Dr. P. J. Raju, Director, APSSRDI, Andhra Pradesh.	Member
7	The Commissioner of Rural Development, Govt.of Kerala, Thiruvananthapuram, Kerala	Member
8	The Commissioner of Sericulture, Govt. of Madhya Pradesh, Bhopal	Member
9	The Commissioner of Sericulture, Govt. of Andhra Pradesh, Hyderabad	Member
10	Mr. Somashekar, Sericulturist, K.R. Pete, Karnataka.	Member
11	Mr. R. Jagadeesh, Reeler, Channapattana Taluk, Karnataka	Member
12	Mr. N.R. Ramachandran, Sericulturist, Villuppuram, Tamil Nadu	Member
13	Mr. M. Ravi, Reeler, Salem, Tamil Nadu	Member

Scientists of CSRTI, Mysore and its nested units who attended the meeting

Sl. No.	Name	Designation
CSRTI, Mysore		
1.	Dr. Satish Verma	Scientist-E
2.	Dr. Vindhya, G. S	Scientist-D
3.	Dr. Kanika Trivedy	Scientist-D
4.	Dr. Naseema Begum, A.	Scientist-D
5.	Dr. Ashwath, S. K.	Scientist-D
6.	Dr. T. Thippeswamy,	Scientist-D
7.	Dr. Balavenkatasubbaiah, M.	Scientist-D
8.	Mr.V.Ganesan,	DD(Comp)
9.	Mr. Munikrishnappa, H. M.	Scientist-C
10.	Mr. Rajashekar, K.	Scientist-C
11.	Dr. Vineet Kumar	Scientist-C
12.	Ms.V.Premalatha	Scientist-C
13.	Dr. Prithvi Raje Urs, M. K.	Scientist-C
14.	Ms. Sabita, M. G.	Scientist-C
15	Dr. Girish Naik Vorkady	Scientist-C
16	Dr. Gandhi Doss, S.	Scientist-C
17	Dr. Dasappa	Scientist-C
18	Mr. Renukeswarappa, J. P.	Scientist-C
19	Dr. Gunasekhar, V.	Scientist-C
20	Dr. Sibayan Sen	Scientist-C
21	Mr. Vinod Kumar Yadav	Scientist-C
22	Dr. Nishitha Naik, V.	Scientist-C
23	Dr. Pratheesh Kumar, P. M.	Scientist-C
24	Dr. Virendrakumar	Scientist-C
25	Dr. Munirathnam Reddy, M.	Scientist-C
26	Dr. Mal Reddy, N.	Scientist-C
27	Dr. Sharmila, K. K.	Scientist-C
28	Dr. Dayananda	Scientist-C
29	Dr. Manthira moorthy, S.	Scientist-C
30	Mr. Purushotham, S.	Scientist-C
31	Dr. Somaprakash, D. S.	Scientist-C
32	Dr. Santha, P. C.	Scientist-C
33	Mr. Satish B. Kulkarni	Scientist-C
34	Dr. Vinod Kumar	Scientist-C
35	Dr. Mary Shery (Joseph), A. V.	Scientist-C
36	Mr. Narasimha Nayaka, A. R.	Scientist-C
37	Mr. Narendra Kumar, J. B.	Scientist-C
38	Mr. Nagaraja, S. B.	Scientist-C
39	Mr. Srinivasa, B. T.	Scientist-C
40	Dr. Gangadhar, B.	Scientist-C
Sl. No.	**Name**	**Designation**

41	Dr. Rajendra Singh Katiyar	Scientist-C
42	Dr. Geetha, G. S.	Scientist-C
43	Dr. Mahima Santhi, A.	Scientist-C
44	Mr. Parameshwara, C.	Scientist-C
45	Ms. Suma, A. S.	Scientist-C
46	Dr. Bhagya, R.	Scientist-C
47	Dr. Radhalakshmi, Y. C .	Scientist-C
48	Dr. Kariyappa	Scientist-C
49	Dr. Shivakumar, K. P.	Scientist-C
50	Mr. Kirsur Mukund Venkat Rao	Scientist-C
RSRS, Anantapur & nested units		
51	Dr. B.Kasi Reddy	Scientist-C
52	Dr. T. Mogili	Scientist-C
53	Dr. G. Narasimha Murthy	Scientist-C
54	Dr. M. Venkatachalapathi	Scientist-C
55	Dr.N.Balaji Chowdaty	Scientist-C
RSRS, Chamarajanagara & nested units		
56	Dr.R.Meenal	Scientist-C
57	Dr. K. C. Mahalingappa	Scientist-C
RSRS, Kodathi & nested units		
58	Mr. N. Shivashankar	Scientist-C
59	Dr. P. Sudhakara Rao	Scientist-C
60	Dr. P. Sudhakar	Scientist-C
RSRS, Salem & nested units		
61	Mr.S.Rajkumar	Scientist-C
62	Dr.J.Ravikumar	Scientist-C
63	Dr. S. Balasaraswathi	Scientist-C
64	Dr. S. Radhakrishnan	Scientist-C
65	Dr. N. Dhahira Beevi	Scientist-C
66	Dr. S. Mahiba Helen	Scientist-C
67	Dr. S. Masilamani	Scientist-C
REC, Maddur		
68	Dr. V.B.Mathur	Scientist-C
REC Sub-unit, Shimoga		
69	Dr. H. Jayaram	Scientist-C
SSBS, Coonoor		
70	Mr. R. Gururaj	Scientist-D
P4 Basic Seed Farm, Hassan		
71	Dr.G.V.Kalpana	Scientist-C
72	Dr. K. B. Chandrashekhar	Scientist-C