CENTRAL SERICULTURAL RESEARCH & TRAINING INSTITUTE (CSRTI), MYSURU

MINUTES OF 40th RESEARCH ADVISORY COMMITTEE MEETING HELD ON 29th and 30th JULY, 2016

The 40th Research Advisory Committee meeting of CSRTI, Mysuru was held on 29th and 30th July 2016 at CSRTI, Mysuru for reviewing the progress of R&D activities of the Institute and its nested units (April, 2015 to June 2016) and to consider new project proposals for consideration. Prof. K. Narayana Gowda, Hon'ble Former Vice-Chancellor, University of Agricultural Sciences, Bengaluru chaired the meeting. The list of members and participants who attended the meeting is appended herewith in Annexure-I.

Dr. V. Sivaprasad, Director welcomed the Chairman, the members of the RAC and all the Scientists of CSRTI and its nested units for the meeting. Prof. K. Narayana Gowda, Chairman, RAC in his opening remarks expressed satisfaction over the progress made by the institute and congratulated the Director and scientists for their contribution during the reporting period. Further, he stressed on the importance of R&D on drought mitigation measures, reduction of labour and minimization of cost of production in sericulture, integrated nutrient management, critical role of farmer producers organizations (FPOs) in sericulture in the future and issues regarding the choice of mulberry cultivation in tobacco grown areas. He reiterated the decision of the previous meeting to call the RAC meeting once in six months.

ITEM NO. 1: CONFIRMATION OF THE MINUTES OF 39 th RAC MEETING ON 26th SEPTEMBER 2015

The RAC Chairman suggested to change word `mulberry' as a choice of replacement crop in tobacco growing areas instead of mulberry as replacement crop in the proceedings and the committee confirmed the minutes of the previous meeting as no comments were offered by any member.

ITEM NO. 2: REVIEW OF FOLLOW-UP ACTION TAKEN ON DECISIONS OF RAC IN 39 th MEETING

The report on the follow-up actions taken on decisions of the previous meeting was presented by Dr. M. Balavenkatasubbiah, Scientist-D, Silkworm Pathology. The committee expressed satisfaction regarding the follow up action taken on the decisions and suggestions of RAC. With regard to the projects not approved by CSB, RAC Chairman suggested to further peruse the same with further justification for consideration as lot of inputs were made by the committee in making up the research projects. Further, he has suggested that the scientist's involved in implementing externally funded projects from DBT/DST needs to be recognized in any forums by institute and CSB.

ITEM NO. 3: DIRECTOR'S REPORT

The highlights of progress achieved by the Institute and its nested units during 2015-16 were presented by Dr. V. Sivaprasad covering the aspects of Mulberry Production & Protection, Silkworm Production & Protection, Extension & Training activities. The Chairman and members appreciated the R&D achievements of CSRTI-Mysore through team efforts of Scientists and Director. The Director, welcomed and introduced the new Scientist-Bs posted to the Institute.

ITEM NO. 4: REVIEW OF CONCLUDED PROJECTS:

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

1. PIG-3502: Sustaining mulberry yields: Identification of QTLs conferring resistance to root rot disease by Linkage Disequilibrium mapping and trait introgression

The outcome of the projects was noted by the committee and advised the scientists to screen the germplasm for the other two pathogens associated with root rot in mulberry.

[Action: Dr. V. Girish Naik, Scientist -D, Molecular Biology - I]

2. PIB-3507: Development of Distinctness, Uniformity and Stability (DUS) descriptors for Mulberry (Morus spp.) and their Validation (PPV & FRA)

The outcome of the projects was noted by the committee and appreciated the team of scientists involved in developing DUS test guidelines for mulberry. The RAC advised the scientists to appraise future developments in this regard.

[Action: Dr. V. Girish Naik, Scientist -D, Molecular Biology - I]

3. AIT 3445: Development of robust bivoltine hybrids of silkworm, *Bombyx mori* L, tolerant to high temperature environment of the tropics through DNA marker assisted selection

The committee noted the outcome of the studies and the performance of the hybrids developed. The committee suggested undertaking validation of identified hybrids through OST/OFT.

[Action: Dr. S. Manthira Moorthy, Scientist -D, Silkworm Breeding Lab-I]

4. AIB3506: Studies on Thermo Tolerance, Heat Shock Protein Synthesis during Thermal Shock and Inbreeding in Silkworm, *Bombyx mori* L (DST-SERB)

The committee appreciated research the outcome and advised to utilize the information for further understanding of thermal tolerance.

[Action: Dr. S. Manthira Moorthy, Scientist -D, Silkworm Breeding Lab-I]

5. Consultancy Project (CSB/63/41—002/23/INC-Mysore/2014-15/PFAE): Validation and refinement of Serifit, an inorganic compound for effective sanitation

The committee appreciated commercialization of Seri Fit as general disinfectant and advised the scientists to popularize the product for the benefit of sericulturists.

[Action: Dr. M. Balavenkatasubbaiah, Scientist -D, Silkworm Pathology]

6. PRE 3512: Studies on pest status and eco-friendly management of thrips (*Pseudodendrothrips mori*) (Thysanoptera : Thripidae) on mulberry in Tamil Nadu and Karnataka (In collaboration with NBAII, Bengaluru).

The achievements made in the project vis-à-vis objectives were appreciated by the committee and suggested to document the source(s) of thrips in the study area and to look into the cost effectiveness of the biocontrol agents against thrips before taking up OST.

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

ITEM No. 5: NEW PROJECTS

(A) NEW RESEARCH PROJECT PROPOSALS FOR APPROVAL

1. ***Identification of indices for abiotic stress tolerance in mulberry with special reference to moisture and alkalinity stress***

The Chairman advised to interact with scientists of UAS, Bengaluru and National Institute of Abiotic Stress Management (NIASM), Baramati on soil moisture stress. The committee approved the project proposal and suggested to incorporate referee's comments and suggestions made by RAC.

[Action: Dr. T. Gayathri, Scientist - B, MBG]

2. ***Standardization and validation of LAMP (Loop mediated isothermal amplification reaction) technique for the detection of Nosema bombycis infection in silkworm***

The committee appreciated the proposal and approved the project proposal with a suggestion to develop a colour chart also for better utilization at the field level.

[Action: Dr. V. Sivaprasad, Director, CSRTI-Mysuru]

3. ***Identification of DNA markers for root knot nematode resistance in mulberry (Morus spp.)***

The committee approved the project proposal with a suggestion to include all the hotspot zones in southern states for evaluation.

[Action: Dr. GS. Arunakumar, Scientist - B, Molecular Biology - I]

4. ***Transcriptome analysis of silkworm for identification of molecular markers for improvement of silk quality***

The committee approved the project proposal.

[Action: Dr. L . Kusuma, Scientist - B, Molecular Biology - II]

5. ***Development of multi-viral disease tolerant bivoltine silkworm breeds/hybrids of Bombyx mori through marker-assisted selection***

The committee approved the project proposal and suggested to incorporate referee's comments.

[Action: Dr. L. Satish, Scientist - B, Molecular Biology - II]

6. ***Feed supplementation studies for improving young age silkworm rearing in Chawki Rearing Centres***

The committee approved the project proposal and suggested to incorporate referee's comments.

[Action: Dr. E. Bhuvaneswari, Scientist - B, Silkworm Physiology]

7. *Development of Seri-business models for enterprises in pre-cocoon sector*

The committee approved the project proposal for undertaking the study as it is very important and to come out with bankable models for various seri-entrepreneurships.

[Action: Ms. D. Joycy Rani, Scientist - B, SEEM]

TOT Projects

8. *Soil health cards*

The project proposal already approved by the CSB was presented to the committee for information. The committee suggested that the role of each major nutrient and its deficiency symptoms to be incorporated on the soil health card for the benefit of the farmers. The committee was informed that the similar information is being provided along with soil health card.

[Action: Ms. M. Sobhana, Scientist - B, Soil Sciences]

9. *Evaluation of Cauvery Gold (MV1 x S8): An improved cross breed for cocoon productivity and silk quality*.

The committee approved the ToT proposal with a suggestion to utilize the CRCs in the study area for the programme.

[Action: Mr. S.B. Kulkarni, Scientist - C, Multivoltine Breeding]

10. *Evaluation of S8 x CSR16: An improved cross breed for cocoon productivity and silk quality*

The committee approved the ToT proposals with a suggestion to utilize the CRCs in the study area for the programme.

[Action: Dr. N. Mal Reddy, Scientist - D, Bivoltine Breeding]

Research Projects Submitted to DBT for funding: The PIs of research projects presented the following project proposals submitted to DBT for funding. The committee opined that all the proposals are very much essential and needs to be taken up on priority basis.

1. *Characterization of gut microbiome in mulberry silkworm, Bombyx mori L.*

[Action: Dr. Y. Thirupataiah, Scientist - B, Silkworm Physiology]

2. *Whole Genome Sequencing of Important Mulberry Varieties of India.*

[Action: Dr. Gnanesh Nanjappa, Ramanujam Fellow-DST, Molecular Biology - I]

ITEM No. 6: REVIEW OF PROGRESS OF ONGOING PROJECTS

Director informed the committee that at present, 34 projects are being implemented and the progress of projects is as per the milestones. Among these, 14 projects are going to be concluded by 31st March 2016 and the progress made in the projects was presented and the results/observations were deliberated upon in the meeting.

AIB 3456: Development of Productive polyvoltine breeds and identification of M x B hybrids of the silkworm *Bombyx mori* L. tolerant to high temperature and BmNPV

Decision: The committee noted the progress and suggested to give more emphasis on reeling traits while testing in the field.

[Action: Dr. KB. Chandrasekahar, Sc-D, MBL]

PPF 3500: Development of Seri-Lac Culture Model for Income Augmentation (Inter institutional project with IINRG, Ranchi)

Decision: The committee noted the progress and suggested to popularize the technology in Chamarajanagar area and other semi-arid zones.

[Action: Dr. K. Srikantaswamy, Sc-D, RSRS, Ch. Nagar]

MOE 3523: Study on Drought Management practices in Mulberry Sericulture

Decision: The committee noted the progress and suggested to popularize the technologies in a focused way using digital/multi-media to sensitize through training and workshops for the DOS staff.

[Action: Dr. A. Mahima Santhi, Sc-D, SEEM]

AIB 3528: Evaluation of G11 x G19: A new bivoltine double hybrid for sub-optimal conditions

Decision: The committee appreciated the scientists for evaluating the hybrid for sub-optimal conditions and noted the performance based on the feedback from farmer's representatives and DOS.

[Action: Dr. N. Mal Reddy, Sci - D, BBL]

PRP 3530: Development of a broad spectrum formulation for effective management of mulberry root rot disease

Decision: The committee noted the progress and suggested to take up the demonstrations at all RSRS farms and CSGRC, Hosur. Further the committee advised to ascertain the residual toxicity effect on the silkworm, plant and soil before commercialization.

[Action: Dr. P.M. Pratheesh Kumar, Sc-D, Mulberry Pathology]

APR 3529: Design and development of silkworm rearing house models for hot & dry and hot & humid areas of peninsular India

Decision: The committee noted the progress and suggested to develop suitable rearing house models for hot & dry and hot & humid areas of peninsular India based on observations recorded and analysis made so far as per the objectives and milestones.

[Action: Dr. Satish Verma, Sc-E, SED]

NRDC project: Demonstration of Cocoon harvester

Decision: The committee appreciated the demonstration of cocoon harvesters to stakeholders and suggested to inform the State departments about the advantages and applicability of the same to reduce the cost of production and drudgery reduction. RAC also suggested to evaluate the machine for bivoltine seed crops with P1 farmers or at SSPC level as the cocoons have to preserved till moth emergence.

[Action: Dr. Satish Verma, Sc-E, SED]

ARE 3526: Investigation on Semio-chemicals of the silkworm uzi fly, *Exorista bombycis* [In collaboration with NBAIR, Bangaluru]

Dr. N. Bakthavatsalam, NBAIR presented the progress made and committee appreciated the progress and suggested to come out with suitable pheromone based traps for uzify management.

[Action: Dr. N. Bakthavatsalam, NBAIR; Dr. Vinod Kumar Gupta, Sc-D, PML]

PRE 3546: Identification, characterization, synthesis and field evaluation of sex pheromone of the mulberry leaf roller, *Diaphania pulverulentalis* (Lepidoptera : Pyralidae) [In collaboration with NBAIR, Bangaluru]

The committee appreciated the new initiative undertaken with NBAIR collaboration leaf roller.

[Action: Dr. N. Bakthavatsalam, NBAIR; Mr. JB. Narendra Kumar, Sc-D, PML]

Pilot study: Efficacy of anti-transpirants on moisture retention capacity and mulberry production under deficit mositure.

Decision: The committee suggested to discontinue the study as the results from the pilot study are not encouraging.

[Action: Dr. M.G. Sabitha, Sc-D, Mulberry Physiology]

TOT and Extension activities: The committee appreciated the progress of TOT and extension activities carried out by the main institute and nested units. The committee also appreciated the breed maintenance work of SSBS, Connor and P4-BSF, Hassan.

Training activities: The committee appreciated the various training programmes conducted by the main institute and RSRS units during the period.

RSRS Activities: The achievements and activities of RSRSs of Kodathi, Chamaraja Nagar, Anantapur and Salem are presented by the respective unit heads to the RAC. The presentations explained about the CPP/IVLP activities, collaborative research programmes with main institutes, programmes of continuous nature such as pest/disease surveillance etc., OST/OFTs of newly developed silkworm hybrids, various extension educational programmes. While appreciating the root trainer nursery

technology done at RSRS-Kodathi, The RAC Chairman suggested to take it up in other units after standardization and also to work out economics to encourage the entrepreneurs.
The committee appreciated the activities of RSRSs and RECs and suggested to undertake studies on regional problems and also to identify the farmer friendly cost effective technologies.

[In-charges of RSRSs of CSRTI-Mysore; SEEM; CSRTI-Mysore]

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

Ms. Joycy Rani, Scientist-B, presented the framework of Farmers Producers Organization (FPOs) being initiated by DOS-Karnataka and other related organizations including CSRTI-Mysore and other CSB institutions as per the advice of RAC Chairman, Prof. Narayana Gowda for the information of RAC and other participants of the meeting. The RAC felt that there is very much urgent need for such FPOs for sericulturists like other agri-/horticlutural crops as they are futuristic and would help farmers to cut down the costs of cocoon production and enhance productivity due to organizational structures and systems that would be developed under FPOs.

The 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. K.Y. Sivanandaiah, Farmer, Karnataka informed that Sericulturists need better control measures for uzi fly and thrips as discussed by the scientists. In order to overcome the problem of labour and water scarcity, tree mulberry plantation technology needs to be adopted by farmers.

Sri. T. Jeevanantham, Farmer, Tamil Nadu opined that sericulture farmers have the problem of root rot in their mulberry gardens and requested RSRS, Salem to take up for its control measures in affected area and also to supply new mulberry G2 variety in Tamil Nadu.

Sri. C.M. Ramesh, Silk Reeler, Tamil Nadu informed the committee about the subsidy scheme for ARMs was not released during 2014-15 by government and the committee requested DOS,T.N. to look into the policy issues.

Prof. Chinnaswamy, UAS, Bengaluru stressed on the need for collective research efforts by scientists of different disciplines like soil science and agronomy. Suitable varieties with sustainable productivity need to be developed for water logging and dry land areas.

Dr. Ananthachar suggested that multi-dimensional experts may be consulted during the formulation phase of projects. Feedback from farmers may be obtained every month on new technologies.

Dr. Vasanth Thimkapura, Special Invitee cautioned about replacing tobacco, the only cash crop under rainfed condition with mulberry. External funding agencies should be encouraged for the young scientists. Further, he also suggested applying Neem oil for mulberry pests as spray and cake for root knot problem. He was keen to know the ingredients of certain products developed and released from CSRTI-Mysuru and its nested units.

Dr. S. Shivashankar, IIHR, Bengaluru expressed his happiness about New project proposals on emerging problems by young scientists. He felt that, for the new scientists both applied and basic research should go hand in hand and thorough systematic review of research is very much essential to fill the knowledge gap and it is essential to encourage and upgrade the skills and publications of findings in standard journals.

Dr. A.N. Shylesha, NBAII, Bengaluru expressed that frequent surveys have to be undertaken to determine the pest status and to find out, if any incidence of new pest in the field. He suggested to monitor new pests by using yellow sticky traps and bio-control agents for effective control of pests. He also advised to obtain the feedback from farmers on new pests/BCAs.

Dr. H.K. Basavaraja, Retd. Scientist, Mysuru, expressed that quite a number of breeds are being tested in RSRSs with encouraging results. Suggested to plan breeds for different agroclimatic conditions and try to fix a bench mark for different hybrids.

Dr. Anil Kumar, Principal Scientist, NBSS & LUP, Hebbal, Bengaluru expressed his happiness for streamlining the issues of soil health cards to sericulture farmers on project mode and informed that NBSS & LUP have the responsibility of monitoring the soil health in the country and will help on developing region-specific recommendations based on the soil health data in mulberry.

The Chairman, RAC appreciated the team of senior scientists and young scientists under the leadership of Director for the good presentations. He also appreciated the farmer representatives and DOS representatives for their feedback which will help for future research work. He emphasized the importance of team work in collaboration with related organizations for enhancing overall performance. He also suggested for building positive liaison with Universities for better Human Resource Development. He informed the need for establishing Sericulture Producers Organizations in sericulture for the benefit of the farmers, to increase productivity, best use of common resources, minimize cost of production and to enhance profitability. He suggested involving KVKs in southern states on priority for undertaking TOT programmes as they have better reach. The Chairman, RAC also suggested to popularize tree mulberry plantations to overcome drought/moisture stress conditions particularly in low rainfall tracts. Finally he advised scientists to give attention on the suggestions of farmers, reelers and experts while formulating new research projects.

The meeting ended with vote of thanks by Dr. M. Balavenkatasubbiah, Scientist-D.

CHAIRMAN

30/8/16

Appd

30/8/16