Minutes of the 63rd Research Council Meeting held on 12.12.2019 and 13.12.2019 at CSRTI-Mysuru

The 63rd meeting of Research Council of CSRTI-Mysuru was held on 12th & 13th December 2019 to review the new project proposals/concept notes, concluded research projects and progress of on-going project/ programmes of the Main Institute and its nested units. The list of the participants is appended at Annexure - I.

Dr. N. Balachandran, Scientist D welcomed the Director and Chairperson of RC and all other scientists to the meeting. Dr. Pankaj Tewary, Director, CSRTI-Mysuru welcomed the scientists of the Institute and nested units for the RC meeting. Director in his opening remarks informed that

- The scientists are welcome to express their valuable comments and inputs for fine tuning the new concept notes in a positive manner and not to criticise in a hurting manner.
- Concept notes already presented and turned down earlier need not be opened up again. If the proposal requires Director's intervention it may be discussed with the Director for further course of action.
- As per the CO instructions RC meeting should be conducted in every quarter.
- TOT projects and Consultancy projects will not be coded by CO hence forth as there in no research and experimentation are involved. It should be taken up as Institute programme and proper budget provisions may be made in the Action plan proposals.
- The new concept notes presented should include a detailed review of literature of studies already conducted by CSB Institutes, State Govt. Seri. Research Institutes, national and international level.
- Every Scientist should have at least one project as PI and Member Secretary, CSB Bengaluru will shortly review the Institute activities in this regard.
- Once the clearance from CO is received the new concept notes should be prepared as full projects within 10 days. The inordinate delay in submitting projects, citing workload, after approval is not accepted.
- PMCE should submit the reply to the CO queries/ reports within the specified time. Any delay due to compilation of informations should be brought to the knowledge of the Director.
- The scientists were also advised to submit the replies to the queries by PMCE immediately.
- The scientist availing leave should ensure proper back up arrangements are made. The works should not get hampered due to anyone's leave/absence.
- One review will be conducted exclusively for the RAs/SRFs/JRFs for ascertaining their involvement and contribution to the projects in which they are associated with and their contribution in the Institute works.
- The PIs/Scientists while presenting the results and findings of the project works should support their findings with proper statistical analysis.

I. CONFIRMATION OF THE MINUTES OF THE 62nd MEETING HELD ON 02.05.2019 & 03.05.2019

As no comments were received from any of the member, the minutes of the 62nd RC meeting were confirmed.

II. REVIEW OF FOLLOW UP ACTION TAKEN ON DECISIONS OF PREVIOUS MEETING

Dr. N.Balachandran, Sci-D, PMCE presented the follow up action taken on the decisions of previous meetings of RC, RAC and RCC made following observations.

Validation of Chawki feed supplement formulation in commercial chawki rearing centres of Andhra Pradesh, Karnataka and Tamil Nadu

Decision: As the CO has decided not to give project code for the TOT projects the same should be included as Institute activity with full justification along with budget and the same to be approved in the Action plan meeting.

Development of productive mulberry hybrids with functional traits associated with WUE and NUE for obtaining optimized leaf yield

Decision: As suggested by the RCS section of CO, Bengaluru Dr. Gandhi Doss to revise the concept note and submit the same immediately for final approval and further project preparation.

[Action: Dr. S. Gandhi Doss, Sci-D, MBG Section]

Review of Action Taken on the Technical Audit team Report:

Decision: As suggested by the technical Audit team all the PIs of the concluded projects are advised to submit the project document with final report.

[Action: All the concerned scientists]

Director advised to record success stories and video films on various aspects/approaches that make impact on the sericulturists and submit them to SEEM for compilation of Second book on Success stories.

[Action : All Scientists of RSRSs and RECs]

III. REVIEW OF NEW CONCEPTS/PROJECTS PROPOSED FOR CONSIDERATION

As per agenda, the review of concept notes was taken up. PIs presented the concept notes and the project wise decisions taken by the committee are as follows:

1.Evaluation of Physiology, Yield and Quality of Mulberry due to the application of Slow Release Nitrogenous Fertilizers (SRNF)

Decision: The concept note was **not approved**. As the literature survey on the earlier studies undertaken at different Institutes were not covered.

(Action: Dr. Vipin Kumar, Sci-B, Mul. Physiology)

2. Development of package of practices for tree mulberry under protective irrigation

Decision: The concept note was **approved**. The scientist was advised to include the pest and disease incidence and also intercropping in the studies.

(Action: Dr. Dhaneshwar Padhan, Sci-B, Agronomy)

3.Identification of candidate gene markers for the development of silkworm hybrids with longevity associated with stress tolerance and productive trait.

Decision: The concept note was **approved**. Pilot study may be taken up.

(Action: Dr. Ranjini M S., Sci-C, BBL)

4.Popularization of authorized G11 x G19 - A new bivoltine silkworm Double Hybrid developed through Amylase marker assisted selection among the farmers.

Decision: The concept note was **approved**. As the project was prepared as per the NSSO/field requirement.

(Action: Dr. Madhusudhan K.N., Sci-C, BBL)

5.Development of silkworm breeds/hybrids with improved silk quality through genome editing and marker assisted breeding.

Decision: The concept note was **approved**.

(Action: Dr. Kusuma L., Sci-C, BBL)

6.Targeted Baculovirus Expression System to improve silk quality and disease tolerant in silkworm *Bombyx mori*

Decision: The concept note was **approved** as the study is a novel approach

(Action: Dr. Satish L , Sci-C, BBL)

7.Modulation of heat induced antioxidant defence mechanism in response to exogenous antioxidants administration in silkworm *Bombyx mori.*

Decision: The concept note was **not approved**.

(Action: Dr. Bhuvaneswari E., Sci-C, S.W.Physiology)

8.Evaluation and Development of Eco-friendly module for the management of leaf roller in mulberry.

Decision: The concept note was **approved**. The title to be modified as "Development and Evaluation".

(Action: Dr. Mahiba Helen S., Sci-D, PML)

9.Screening of drugs to inhibit the PI3K-AKT pathway in *Bombyx mori* for controlling Nuclear polyhedrosis virus infection. (Multi institutional)

Decision: The concept note was **approved**.

(Action: Dr. Mallikarjuna G., Sci-C, S.W.Path)

10.Isolation and molecular characterization of antiviral proteins from silkworm *Bombyx mori* L against Nuclear polyhedrosis virus BmNPV.

Decision: The concept note was **not approved**.

(Action: Dr. Mallikarjuna G., Sci-C, S.W.Path)

11.Studies on the economics of cocoon production in mulberry sericulture of South India.

Decision: The concept note was **approved**.

(Action: Smt. Joycy Rani Dasari, Sci-C, SEEM)

12. Mulberry cocoon price forecasting using machine learning techniques

Decision: The concept note was **approved**. Include the statistics person from CO and CI from Dehradun for Northern Zone. Earlier references on the studies to be included.

(Action: Dr. Amit Saha, Sci-B, SEEM)

13. Development of hybrid model to forecast the raw silk production

Decision: The concept note was **approved**.

(Action: Dr. Amit Saha, Sci-B, SEEM)

14.Studies on enhancement of cocoon yield of bivoltine races by feeding of red soil planted mulberry leaves.

Decision: The concept note was **not approved**. As the concept was not elaborate enough to take up as a project.

(Action: Smt. Serani Nagendra, Sci-C, RSRS,Chamarajanagar)

15. Improvement of competitiveness of multi end reeling machines.

16.Artificial Intelligence in raw silk testing & grading

17.Air jet in silk reeling

Decision: The concept note was **approved** in collaboration with CSTRI, Bengaluru

(Action: Shri. Chandra Shekar M.N., Sci-D, Reeling)

18. Improvement of existing machines/ technologies for drudgery reduction in sericulture.

Decision: The concept note was **approved**. Prepare prototype and after thorough testing appraise the CSB with a report.

(Action: Shri. Hukkeri S.M., Sci-D, SED)

19. Development of multi-sensor system for gender identification and separation of sex in cocoons through integrated Artificial Intelligence.

Decision: The concept note was **approved** provided recent developments in this area of research is addressed.

(Action: Shri. Hukkeri S.M., Sci-D, SED)

20. Developing silkworm rearing house models suitable for all seasons.

Decision: The concept note was **withheld**. For appropriate decision from CSB.

(Action: Shri. Hukkeri S.M., Sci-D, SED)

21.Simple E^3 machines, devices & tools' agro-ergonomics for cost reduction and increase income to mulberry sericulture farmers.

Decision: The concept note was **approved**.

(Action: Dr. Rajaram S., Sci-D, REC, Samayanallur)

22.Irrigation water requirement for mulberry crop to amend prevailing recommendations [weather based (crop coefficient) approach]

Decision: The concept note was **approved** in collaboration with CSRTI, Mysuru

(Action: Dr. Rajaram S., Sci-D, REC, Samayanallur)

23.Effect of potassium mobilizing bacteria *Frateuria aurantia* on growth and development of mulberry.

Decision: The concept note was **approved**.

(Action: Dr. Dhahira Beevi N., Sci -D, RSRS, Salem)

REVIEW OF CONCLUDED PROJECTS

1. PIP 3592: Identification of indices for abiotic stress tolerance in mulberry with special reference to moisture & alkalinity stress

Decision: Dr. S. Gandhi Doss, Sci-D presented the concluding report indicating that Physio-biochemical indicators/markers were identified for moisture and alkalinity stress tolerance which could be utilized for selecting tolerant genotypes in breeding programmes. Developed crop selection indices has wide utility in quantifying the stress intensity and abiotic stress responses and it also provides information on tolerance level of the variety.

The committee suggested to come out with clear recommendations based on the analysis of the data and to submit the concluded report at the earliest.

(Action: Dr. Gayathri T, Sci -C, Mul. Physiology)

2.PRP 3591: Identification of resistance in mulberry germplasm for root knot nematode disease

Decision: Dr.Aruna Kumar G.S. presented the concluded report showing evaluation of 415 diverse mulberry germplasm against root knot nematode (RKN) which revealed that 69 were identified as resistance to RKN based on gall index in the root system. Further confirmation for 40 germplasm at three hot spot locations of Karnataka, Andhra Pradesh and Tamil Nadu and also RKN sick soil developed at CSRTI-Mysuru showed eight germplasm with high level of resistance to RKN which can be used for RKN resistance breeding programme

The committee advised the PI to submit the concluded report at the earliest and also to propose similar study for root rot problem as it is a serious problem in the field.

(Action: Dr. Arunakumar .G.S., Sci -C, Mol. Biology I)

V REVIEW OF ONGOING PROJECTS

MORICULTURE

MBG

PIC 3620: Engineering photosynthesis in Mulberry for resilience to climate change: A C_4 approach

Decision: Dr S.Gandhi Doss Sci-D presented the progress of the project and informed the project is as per the milestones, the committee noted the progress.

(Action: Dr. Tanmoy Sarkar, Sci -C, MBG)

PIB 3631: Primary yield evaluation for identification of superior mulberry hybrids with drought adaptive traits under sub-optimal irrigated condition

Decision: Dr S.Gandhi Doss Sci-D presented the progress of the project informing that mulberry plantation for optimal and sub-optimal irrigated condition were established and maintained. 11 SSR markers including QTL specific markers have been used for identification of polymorphic markers across the parental lines, 4 polymorphic SSR markers have been used for genotyping of mulberry hybrids, parental lines and check varieties. Also informed the project is as per the milestones, the committee noted the progress.

(Action: Dr. Tanmoy Sarkar, Sci -C, MBG)

PIB 3632: Evaluation of superior triploid genotypes for yield and adaptability under varied agro-climatic conditions

Decision: Dr S.Gandhi Doss Sci-D presented the progress of the project and informed that the experimental plantation established in all test locations. Data recording initiated at RSRS, Anantapur, and the project is as per the milestones the committee noted the progress.

(Action: Dr. S. Gandhi Doss, Sci -D, MBG)

PIC 01003CN (NW3b):Development of new generation transgenic mulberry for drought stress tolerance and characterization of existing transgenic mulberry for confined field trials

Decision: Dr S.Gandhi Doss Sci-D presented the progress of the project, selection and elongation of putative transformed shoots in elongation medium and confirmation of

transgenic lines expressing *SHN1* genes by sequencing using M13 primers at UAS-Bengaluru completed. He also informed the project is as per the milestones, the committee noted the progress.

(Action: Dr. Tanmoy Sarkar, Sci -C, MBG)

AICEM Phase-IV: All India Coordinated Experimental Trial in Mulberry Phase-IV

Decision: Dr S.Gandhi Doss Sci-D presented the progress of the project and informed that planting material of test mulberry genotypes have already been exchanged between the test centres of AICEM Phase-IV. Experimental plots are prepared and kept ready for plantation, which is going to be taken up during Feb. 2020. A letter of administrative approval to install drip irrigation system has been communicated to all the 7 test centres of south zone, the committee noted the progress.

(Action: Dr. S. Gandhi Doss, Sci -D, MBG)

Molecular biology –I

PIB-3633- Development of highly productive and widely adapted mulberry using exotics and wild germplasm

Decision: Dr G.S.Arunakumar Sci-C presented the progress of the project and informed that 09 different crosses using exotics, wild, indigenous and popular varieties were attempted. Seeds were recovered and stored for further evaluation. Completed sowing of F1s from four divergent crosses separately under nursery beds. The project is as per the milestones, the committee noted the progress.

(Action: Dr. Arunakumar G. S, Sci -C, Mol.Bio I)

PIC-01003CN (NW2e) - Sustaining Mulberry Yield: Identification of QTLs Conferring Resistance to Root Rot Disease by Linkage Mapping and Trait Introgression.

Decision: Dr G.S. Arunakumar Sci-C presented the progress of the project and informed that development of F_1 segregating mapping population to identify resistance QTLs and phenotyping of F_1 segregating mapping population against root rot pathogens is completed and the project is as per the milestones the committee noted the progress.

(Action: Dr. Arunakumar G. S, Sci -C, Mol.Bio. I)

PIC01003 CN (NW2a) - Validation of a high-density SNP genotyping array for QTL discovery by association mapping and bi-parental analysis in Mulberry

Decision: Dr. B.N Gnanesh Nanjappa, Ramanujan Fellow presented the progress of the project Genome size of 150 mulberry genotypes was estimated. Set of genotypes (96) panel were screened against identified SSR polymorphic markers. Observed allelic diversity for being useful in developing functional markers to assist the crop improvement.
He also expressed his concern over the delay in getting the Q PCR equipment which has hampered the progress of the works. Delay in getting approval for genotyping through outsourcing also hampering the project works. The point was noted for appraisal to CO,CSB.

(Action: Dr. B.N. Gnanesh, Ramanujan fellow, Mol.Bio. I)

PIC 01003CN (NW 2C): Identification of QTLs for yield associated traits in mulberry

Decision: Smt. Bhavya, M. R. Sci-B presented the progress of the project works. Experimental plot established with 234 mulberry genotypes, in 13 blocks, each block has 18 test and 2 check genotypes (V-1 and Kosen) with V-1 as border row and informed that the project is as per the milestones, the committee noted the progress.

(Action: Smt. Bhavya M. R., Sci-B, Mol.Bio. I)

PIC-3615- Mapping QTLs for alkalinity tolerance in Mulberry (*Morus spp.*)

Decision: Smt. Bhavya, M. R. Sci-B presented the progress of the project works as parents were identified for the development of mapping population as expected.Seeds obtained by crossing MR-2 and V1. She further informed that the project is as per the milestones, the committee noted the progress.

(Action: Smt. Bhavya M. R., Sci-B, Mol.Bio. I)

PIE – 3511: Development of Distinctiveness Uniformity and Stability Descriptors for Mulberry (*Morus* spp.) and their validation.

Decision: Smt. Bhavya, M. R. Sci-B presented the progress of the project works. Example varieties were maintained at DUS test plot. Database for the mulberry descriptors were developed to add on to INDUS. Initiated establishment of Co-nodal DUS Test Centre at CSRTI-Berhampore. Extant mulberry varieties *viz.,* V-1 and G-4 were applied for DUS testing and registration under PPV & FR Act, 2001. Director advised the PI to complete the project works as per mile stones since the project is ending by March 2020.

(Action: Smt.Bhavya M. R., Sci-B, Mol.Bio. I)

Mulberry Physiology

PIC 01003CN (NW2b) Discovery of QTL to drought adaptive traits by association mapping in mulberry.

Decision: Dr. B.N Gnanesh Nanjappa, Ramanujan Fellow presented the progress. Construction of cement structures (3nos.) with irrigation facility was completed for studying root traits as part of phenotyping. Saplings of short-listed genotypes were planted in the structures in augmented design for recording phenotypic observations for root traits, water use efficiency and other drought adaptive traits in experimental plants with uniform age/maturity under the project. The project works are as per milestones.

(Action: Dr. Gayathri T., Sci-C, Mul.Phy.)

PIC 01 003 CN (NW4a) Comparative quantitative and qualitative analysis of secondary metabolites for identification of biomarkers responsible for feed quality in mulberry

Decision: Dr.Bhuvaneswari Sci-C presented the progress of the project, informing that experimental plot got established with ten short listed genotypes as per the project proposal for the characterization of primary and secondary metabolites as well as silkworm bioassay experiments and the works are carried out as per milestones.

(Action: Dr. Gayathri T., Sci-C, Mul.Phy)

Soil science & chemistry

PIC 01003 CN (NW2d); CSB-DBT multi-component network project sub project Identification of QTLs for Nutrient Use Efficiency

(Action: Dr. V. Sobhana Sci-C, SSC)

Agronomy

PIN- 3563: Evaluation of improved mulberry genotypes for yield potential, nutrient uptake and use efficiency under varied cultivation practices

Decision: Dr.Dhaneswar Padhan Sci-B presented the progress that three crops were harvested and fourth crop is under progress. Soil samples from different treatments were collected for the season and analysis is under progress. He further informed, that the request for extension of the project period upto March 2022 from CO Bengaluru is awaited, despite submitting replies three times.

(Action: Dr. Dhaneshwar Padhan Sci-B, Agronomy)

SERICULTURE

BBL

AIB 01002 MI: Evaluation of S8 x CSR16, a new bivoltine hybrid under authorization trials among the farmers of South India.

Decision: Dr. R. Meenal Sci-D presented the progress, so far 260550 dfls of S8 x CSR16 hybrid was supplied to the farmers in the field. The results of 241050 dfls reared by 1016 farmers in South India recorded an average of 65.75 kg cocoon yield per 100 dfls. The cocoon lots were tested for silk quality and it is graded from 2A-3A. The PI of the project informed that the project works will be achieved as per milestones.

AIT 3593: Transcriptome analysis of silkworm for identification of molecular markers for improvement of silk quality

Decision: Dr. Kusuma L, Sci-C presented the progress of the project and informed that the validation of identified transcripts works is under progress and will be completed by December, 2019 as per the RAC decision of extension for three months to complete the validation works.

AIB 3596: Development of multi-viral disease tolerant (NPV, IFV and DNV1) bivoltine silkworm breeds/hybrids of *Bombyx mori* L. through marker-assisted selection.

Decision: Dr. L. Satish Sci-C presented the project works as 12 more SSR markers with anti-viral activity from literature were screened against multi-viral tolerant parents and hybrids. Of these Lipase-related gene showed amplification with locus on chromosome 3 and also isocitrate dehydrogenase as another marker and conveyed that the targets will be achieved as per milestones.

AIB 3537 Improvement of silkworm breeding in India and Bulgaria

Decision: Dr. S.Manthira Moorthy Sci-D presented the progress of the project and informed that the identified promising hybrids are being tested under OST trials at RSRSs and few selected farmers. The project works will be completed as per milestones.

ARP-3605: Validation of the DNA markers in silkworm breed developed by introgression of DNA maker associated with NPV resistance using marker assisted

selection breeding and large scale field trial of the breed (Funded by DBT)- Networking project with SBRL, Bangalore

Decision: Dr. S.Manthira Moorthy Sci-D presented the progress of the project and informed MASN lines are being maintained. Both MASN Line and CSR 4 breeds P1 dfls are supplied for hybrid production and evaluated 3000 dfls at farmers' level which recorded an average yield of 62 kgs/100 dfls. The project is progressing as per mile stones.

AIT-3628:Assessment of SNP Variation in Silkworm (*Bombyx mori* L) by Genotyping by Sequencing and genome-wide association mapping of important commercial traits". (Funded by DBT)- Networking project with RVCE, Bangalore

Decision: Dr. S.Manthira Moorthy Sci-D presented the progress of the project and informed six cycles of rearing of 100 genotypes and completed and data on five qualitative and nine quantitative traits were completed and quotations called for SNP genotyping of the breeds. Delay in getting approval for genotyping through outsourcing has hampered the progress of the project works as per mile stones.

MBL

AIB 01004 MI - Development of multivoltine breeds with improved silk quality utilizing indigenous and exotic bivoltine breeds.

Decision: Dr. K.B. Chandrashekar Sci-D presented the project works, RNA isolated from F4 generation and genetic profiling done at SBRL, Kodathi and two markers were identified for non diapause genes. The project is progressing as per mile stones

AIB 01001 MI-Evaluation of Cauvery Gold (MV1 x S8): An improved cross breed for cocoon productivity and silk quality.

Decision: Dr. K.B. Chandrashekar Sci-D presented the project works. 60950 dfls MV1 X S8 are supplied to farmers and the average yield recorded was 60.00 kgs/100 dfls. The cocoons of the MV1 X S8 hybrids are fetching Rs. 25-30 more than that of PM X CSR2 hybrid cocoons. It was suggested to take up additional seed crop rearing in NSSO P2 BSF Nagenahally to achieve the target as per milestones.

Pest Management Section

PRE 01005 CN - Demonstration and popularization of pheromone trap against silkworm uzi fly, *Exorista bombycis* (In collaboration with NBAIR, Bengaluru)

Decision: Dr. S. Mahiba Helen Sci-D informed that due to delay in finalising the MOU document and release of funds to NBAIR, Bengaluru the project duration require to be extended. The request for extension of project period along with revised schedule of activity has been sent to CO for approval. Meanwhile tenders have been placed by NBAIR for procurement of pheromone traps.

Silkworm Physiology
AIP 01006 SI : Identification of probiotic consortium to improve the productivity in mulberry silkworm, *Bombyx mori*

Decision: Dr. Y.Thirupathaiah Sci-C informed the project has been just initiated in the month of September 2019 after coding from CO, Bengaluru. Director advised to complete the work elements as per milestones.

Any other points:

- The website of CSRTI, Mysuru to include the works of nested units like RSRSs, SSBS, Coonoor and P4 BSF Hassan in brief.

  (Action: DD Computer, Heads of RSRSs, SSBS Coonoor, P4 BSF Hassan)
- Scientist D and Head of RSRS, Kodathi informed that posting of administrative staffs for RSRS and technical staffs for RECs and clusters to carry out the assigned CPP and ECP works is urgently required. Similarly Scientist D and Head of RSRS Ananthapur also requested for posting of TAs.

  (Action: DD, Establishment)
- Dr. S.Gandhi Doss Sci-D MBG section informed shortage of man power in their section as they are handling 4-5 projects and 4 acres garden maintenance. He requested for cleaning of weeds in the vacant area around MBG section using tractor mounted weeder.

  (Action: Sci-C, FMS Section)
- Hiring of the skilled and un skilled man power through authorised labour contractor for out sourcing related works.

  (Action: Sci-C, FMS Section and All divisional heads.)
- Training division to organise one refresher training course to all the scientists and staffs working in Extension units as decided in the CPP review meeting held in the August 2019.

  (Action: Sci-D and Heads of SEEM and Training Division)
- Sci-D and Head of training division has requested for posting of replacement TAs who are retiring in the months of December, 2019 and June 2020.

  (Action: DD, Establishment)

General remarks of Director:

Director appreciated that the suggestions of RC and RAC were attended by the concerned scientists pertaining to their project works and advised to the PIs to expedite the works carried out by them for completion as per milestone.

The Member Secretary, CSB, Bengaluru will be taking up a review meeting very shortly therefore all the scientists were advised to have at least one individual projects as PIs.

Further the scientists who are not having projects as PIs were advised to submit new concept notes at the earliest.

Director proudly informed that Dr. T.Mogili Sci-D (Retd.) has been conferred with Louis Pasteur award 2019 for his contributions in the field of Sericulture in the recently held ISC conference at Tsukuba, Japan and it is an honour to the Institute.

Director informed that recently "POSHAN" the multinutrient formulation for mulberry patent has been granted to in recognition of the claims made by CSRTI, Mysuru also two machineries (leaf chopping machine and cocoon harvesting machine) were licensed by NRDC for commercialisation and popularisation.

The meeting ended with vote of thanks.

Director & Chairman, Research Council

Annexure-I

List of participants attended the Research Council meeting held on 12th &13th December 2019 at CSRTI Mysore

Name & Designation	Name & Designation
Pankaj Tewary Director & Chairman, RC	
Vineet Kumar Scientist-D CSRTI, Mysore	J. B. Narendra Kumar Sci-D CSRTI, Mysore
Jalaja S Kumar Scientist-D RSRS Kodathi	N. G. Selvaraju Scientist-D CSRTI, Mysore
Anuradha H Jingade Sci-D CSRTI, Mysore	N. Balachandran Scientist-D CSRTI, Mysore
N. Dhahira Beevi Scientist-D RSRS Salem	Y. N. Sanath Kumar Sci-C CSRTI, Mysore
Mary Josepha A.V. Sci-D CSRTI, Mysore	K.N. Madhusudhan Sci -C CSRTI, Mysore
Purushotham S. Sci-D CSRTI, Mysore	Kusuma L. Scientist-B CSRTI, Mysore
Shivakumar Hukkeri Sci-D CSRTI, Mysore	Amit Saha Scientist B CSRTI, Mysore
Sobhana V. Sci-C CSRTI, Mysore	Mallikarjuna G. Sci-B CSRTI, Mysore
Joycy Rani Sci-C CSRTI, Mysore	Bhavya M. R. Scientist B CSRTI, Mysore
Serani Nagendra Sci-C RSRS, CH. Nagar	Bhuvaneshwar , E. Sci-B CSRTI, Mysore
S.Rajaram Sci - D, REC, Samayanallur	Sumathy R. I O, CSRTI, Mysore
Gandhi Doss S. Sci-D CSRTI, Mysore	Dhaneshwar Padhan Sci-B, CSRTI Mysore
Santha P. C. Scientist-D CSRTI, Mysore	G. K.Churendra CP CSRTI Mysore
V.Girish Naik Sci-D, RSRS, CH. Nagar	Pushpa H. PAS CSRTI Mysore
T.Sivasubramonian Sci-D, RSRS, CH. Nagar	Supriya M JRF CSRTI Mysore
Prateeshkumar P.M. Sci -D CSRTI, Mysore	Jagadamba M.Y. PA CSRTI Mysore
B.Vijayanaidu Sci-D RSRS Ananthapur	Abhilash H.K. JRF CSRTI Mysore
C.M.Babu Sci -D CSRTI, Mysore	Bharatesha JRF, CSRTI Mysore
Ravinda Matigatti Sci -D CSRTI, Mysore	Harshitha M.M, PA, CSRTI Mysore
H.M.Munikrishnappa AD,CSRTI, Mysore	Madhuri P. PA, CSRTI Mysore
Divya Singh Scientist B CSRTI, Mysore	Lalith Kumari PA CSRTI Mysore
M. Muthulakshmi Sci-D CSRTI, Mysore	Sowbhagya P. SRF, CSRTI Mysore
Gnanesh B. N. Ramjn. Fellow CSRTI, Mysore	Bharath Gowda JRF, CSRTI Mysore
Geetha G.S. Scientist C CSRTI, Mysore	Kruthika H.S Research Scholar, CSRTI Mysore
Ranjini M.S. Scientist-B CSRTI, Mysore	Rajini K.V. JRF, CSRTI Mysore
Thirupathaiah Y. Sci-B CSRTI, Mysore	
Satish L Scientist-B CSRTI, Mysore	
Ravindra Scientist-B CSRTI, Mysore	
Soudaminy P. V. Sci-D CSRTI Mysore	
M.N. Chandrashekar Sci - D, CSRTI Mysore	
S. Mahiba Helen Scientist-D CSRTI Mysore	
P. Sudhakar Scientist-D RSRS Ananthapur	
K Praveen Kumar Sci-D RSRS, Mulugu	,
B. Mohan Scientist-D SSBS, Coonoor	
R. Meenal Scientist-D CSRTI, Mysore	
Nishitha Naik Scientist -D, P4 BSF, Hassan	
K. B. Chandrashekar Sci-D CSRTI, Mysore	
Manthira Moorthy S Sci-D CSRTI, Mysore	
Arunakumar G. S. Sci-B CSRTI, Mysore	
Vipin Kumar Scientist B CSRTI, Mysore	