

CENTRAL TASAR RESEARCH AND TRAINING INSTITUTE
RANCHI - 835 303, JHARKHAND

**MINUTES OF THE 51ST MEETING OF RESEARCH ADVISORY
COMMITTEE (RAC) OF CTR&TI HELD ON 25TH- 26TH NOVEMBER, 2022
AT CTR&TI, RANCHI**

The 51st meeting of Research Advisory Committee (RAC) of CTR&TI, Ranchi was convened on 25th-26th November, 2022. Dr. K. Sathyanarayana, Director & Member Convener of RAC extended a warm welcome to the RAC Chairman, Dr. Onkar Nath Singh, Hon'ble Vice Chancellor, BAU, Ranchi, Dr. Sunil Chandra Dubey, ADG, ICAR, New Delhi, Dr. Nitin Kulkarni, Director, IFP, Lalgunwa, Ranchi, Dr. A. Venugopal, Director, BTSSO, Bilaspur, Dr. P.K. Mishra, Retd. Director (Tech), Central Silk Board, Bengaluru and other RAC members, representatives from DOSs, Producer Institutions/ NGOs and Scientists of the Institute. The list of participants is appended as **Annexure-1**.

Director, CTR&TI, Ranchi presented the scientific strength vis-à-vis projects handled, Research Highlights along with the activities & achievements of the institute since the last RAC. Director informed the Committee that the Fish feed 'RESHMEEN' developed from spent Tasar pupae was released on 28.10.2022 after large scale trials at West Bengal, Chhattisgarh and Jharkhand in association with ICAR- CIFRI (W.B) and CTRTI, Ranchi. During the period, 7 project proposals have been submitted to Central Office for approval & allotment of code no. and 4 Pilot projects were initiated by CTRTI. The Committee expressed its concern on many of the scientific posts being vacant at institute and at majority of nested units and called for filling up the same to meet the set objectives.

The Chairman RAC congratulated CTR&TI, Ranchi on the occasion of conducting 51st meeting of RAC and observed that research in tasar sector is moving in a progressive direction. After this, the Chairperson sought the opening remarks of the Committee members/ experts.

Dr. S.C. Dubey congratulated the Director, CTR&TI for tremendous improvement in research progress. He opined that the explanatory notes of the meeting are very informative, which would help members to contribute with focussed inputs.

Dr. P.K. Mishra observed that all the suggestions and discussions of the previous RAC meeting with respect to multi-location trials and by-product utilization have been addressed and pace of the current research would help to boost the tasar silk production.

Dr. A. Venugopal, Director, BTSSO mentioned that it was his first visit to CTR&TI, Ranchi. He appreciated the CTR&TI team for the quality of research projects, progress and the outcome of the research taken up. He also assured continued support from BTSSO by continuing the involvement of BSMTC scientists in various research and technology development/ dissemination.

Dr. K. Jagannathan, Scientist-D, CSTRI, Bengaluru remarked that CSTRI is associated with CTRTI through couple of collaborative research projects. He suggested that the follow up action of previous RAC meeting needs to be discussed in detail.

Mr. Shamshad Alam, TDF expressed his appreciation about the progress of the institute. He added that new projects are being formulated with focus on field related problems. All the aspects like host plant, silkworm, PCT and waste utilization are being covered and a lot of improvement / development is visible at the field level.

Dr. Prashanth Sangannavar, Scientist-C and representative, RCS, Bengaluru appreciated CTR&TI for the quantum and quality of work even with limited number of scientists. He added that CTRTI with minimum manpower, organized the Vanya Symposium successfully and patenting of 3 technologies is expected to be patented and popularized during the year.

Dr. Onkar Nath Singh, Chairman, RAC congratulated and appreciated CTRTI team on the tremendous and evident improvements that took place during last one year not only in research, technology dissemination, extension & training but also in infrastructure creation. He remarked that the Vanya Symposium would remain as witness to the leadership and team work where scientists working in Vanya sericulture got an opportunity to showcase and present their work. He suggested that this meeting should discuss the ways and means to bring the recommendation of the symposium to the field level.

Dr. N. Kulkarni, Director, IFP said that it's a privilege for being a member of RAC of CTR&TI, Ranchi where lot of focused research work is being done to help the society, particularly the communities associated with forest areas.

Later, Dr. Jitendra Singh, Scientist-C, PMCE Division initiated the proceedings as per the agenda.

Agenda No. 1: Confirmation of minutes of 50th meeting of RAC held 16th -17th June 2022.

As no comments were received from any of the members, minutes of 50th meeting of RAC held on 16-17th June 2022 at CTR&TI, Ranchi, were confirmed.

Agenda No.2: Follow up Action on the General Recommendation/ Decisions of the last RAC Meeting.

The follow-up actions on the general recommendation/ decisions of last RAC meeting were discussed. The Committee reviewed the action taken on the decisions made during the last RAC and expressed their satisfaction on the follow-up.

Agenda No.3: Follow up Action Taken on the Project Specific Recommendation/Decisions of the Last RAC Meeting

The follow-up actions on the recommendation/decisions of last RAC with respect to projects were discussed along with the progress and findings of the projects.

Agenda No.4: Review on Concluded projects

1. [AIB-4717] Improvement of tropical tasar silkworm *Antheraea mylitta* D for high silk yield through recurrent Selection (Sep 2020 - Aug 2022) [PI: Dr. I. G. Prabhu, Scientist- C, CTR&TI, Ranchi]

The committee suggested that although the improvements in the desired characters are not significant, the data should be studied to identify the trends and PI should check if any useful information can be obtained.

[Action: Dr. I. G. Prabhu, Scientist- C & PI]

Agenda No.5: Concept Notes of New Research Projects for approval

(i) Project proposals based on RAC recommendation/AAP meetings:

1. Stabilization and Multiplication of Thermo-Tolerant Line(s) of Tropical Tasar Silkworm *Antheraea mylitta* [Continuation Phase III] (Dec., 2022- Nov, 2025) [PI: Dr. I.G. Prabhu, Scientist-C]

Committee suggested that studies pertaining to deciphering of molecular mechanism behind thermo-tolerant have to be included as the information is required for subsequent studies. Temperature-Humidity index shall also be determined and validated properly with variable population.

As the concept was already recommended by RAC in its 49th and 50th RAC, the Committee suggested for its immediate submission to CO, CSB in RMIS-02 for coding and approval.

[Action: Dr. I.G. Prabhu, Scientist-C & PI]

2. Tasar silkworm disease monitoring and management (Dec., 2022- Nov., 2027) [PI: Dr. J.P. Pandey, Scientist D]

Committee taking into cognizance its recommendation of the project in its last meeting suggested to include the following with respect to developing disease forewarning models:

- i. To refer standard procedures of survey and surveillance.
- ii. To include GPS based monitoring and record the entire process including sampling spots & other variables.
- iii. To record initial health condition of the worms / pupae and included as a factor.
- iv. To consider the preceding year's data on weather conditions, environmental factors and disease incidence data.

[Action: Dr. J.P. Pandey, Scientist-D & PI]

3. In-situ Conservation of Modal Eco-race of Tasar Silkworm in Odisha (Dec., 2022- Nov., 2025) [PI: Dr. I.G. Prabhu, Scientist-C]

4. In-situ Conservation of Raily Eco-race of Tasar Silkworm in Chhattisgarh (Dec., 2022- Nov., 2025) [PI: Dr. I.G. Prabhu, Scientist-C]

Committee sought reasons for not submitting the above project proposals for coding and approval of CO in spite of its recommendation by RAC in its 49th meeting. However, it was suggested to i) cover larger area for observation and release of insect population besides demarcating it, ii) integrating and coordinating with the different agencies viz., DOS, CSB, Forest Deptt., NGOs, Community etc., with role alienation.

[Action: Dr. I.G. Prabhu, Scientist-C & PI]

5. In-situ Conservation of Sarihan Eco-race of Tasar Silkworm in Chhattisgarh (Dec., 2022- Nov., 2025) [PI: Dr. I.G. Prabhu, Scientist-C]

Committee while recommending the project proposal which would help in increase of tasar silk production in Jharkhand which drastically came down during the year 2021-22, suggested to i) include traditional rearing practices and to try its rearing in Dhanbad area also and ii) use drones for assessing the no. of cocoons in a particular area.

[Action: Dr. I.G. Prabhu, Scientist-C& PI]

6. Medicinal Mushrooms Production on Vanya tree waste for Tribal Empowerment (Dec, 2022- Nov, 2025) [PI: Dr. Aparna K, Scientist C]

In view of recommendation of RAC in its 49th meeting, Committee once again recommended the proposal with a suggestion to take standard procedures recommended by ICAR-IIHR or ICAR-DMR as a reference while standardizing the protocols for tasar host tree waste. Committee recommended for one JRF and one PA against proposed 2 JRFs.

[Action: Dr. Aparna K, Scientist C & PI]

7. Documentation and Validation of Indigenous Technical Knowledge (ITKs) in Tropical tasar Zone (Dec., 2022 – Nov., 2025) [PI: Dr. Jagadajyoti Binkadakatti, Scientist-C]

The Committee recommended the proposal with a suggestion to i) use “documentation” in place of “scientific documentation” since use of the word “scientific documentation” will be quite vast as it includes validation also, ii) to add one more scientist after one year depending on requirement and iii) to identify/ validate ITK and decide sufficient sample size.

[Action: Dr. Jagadajyoti Binkadakatti, Scientist-C& PI]

8. Effect of different spacing on chawki leaf productivity of tasar host plats (*Terminalia arjuna*, *T. tomentosa* and *Lagerstroemia speciosa*) and its influence on chawki silkworm rearing (Dec., 2022 – Nov., 2025) [PI: Dr. Harendra Yadav, Scientist-C]

Committee recommended the proposal which shall improve the ERR and overall productivity/ quality of cocoons and suggested to include age of plants or year of plantation in the proposal.

[Action: Dr. Harendra Yadav, Scientist-C& PI]

9. Isolation and characterization of fibroin from tasar silk fiber waste: its application in wound healing (Dec., 2022 – Nov., 2025) [PI: Dr. Karmabeer Jena, Scientist-D]

Committee while recommending the proposal which was earlier placed to the Working Group on seri byproduct utilization and suggested to propose the project for 3 years as two years duration may not be sufficient. It was suggested to consider the processes followed in mulberry sector by CSTRI, Bengaluru.

[Action: Dr. Karmabeer Jena, Scientist-D& PI]

12. Impact of climate change on tasar food plants and silkworm (Dec., 2022 – Nov., 2025) [PI: Dr. Jitendra Singh, Scientist-C]

Committee observed that instead of climate change, weather change shall be mentioned besides considering the online data.

House suggested to mention plants to be taken under each observatory and to specify area and locations where the observation is to be taken. It was also suggested to follow the standard methodology and to consider

only 4 parameters, i.e., host plant pest & diseases and silkworm pest and diseases.

[Action: Dr. Jitendra Singh, Scientist-C & PI]

Agenda No.6: Review of the progress of ongoing research projects

Total 15 research projects (including 3 collaborative) were discussed and RAC recommended/suggested as mentioned below:

A. Main Institute:

1. [PIB04009SI] Evaluation of identified hybrids of *Terminalia arjuna* × *T. tomentosa* and drought tolerant accessions of *T. arjuna* for their suitability in different tropical tasar silkworm rearing regions (Oct. 2021 – Sept. 2027) [PI: Dr. S. Gandhi Doss, Scientist-D, CTR&TI, Ranchi]

The committee expressed concern over the low pace of the project. The PI was suggested to complete the transplantation to the field by the upcoming planting season. Drought resistant accessions may be maintained at drought conditions to retain characters. The age gap among the saplings may be reduced by using larger nursery bags for maintaining the saplings.

[Action: Dr. S. Gandhi Doss, Scientist-D& PI]

2. [PPA04010CN] Region and season specific selection of pruning and brushing schedule for tasar food plants and silkworm protection (Feb 2022 – January 2025) [PI: Dr. Jitendra Singh, Scientist- C, CTR&TI, Ranchi]

Committee suggested that objectives should be different from the title and should be modified. Data should be statistically analysed, standard deviation and CD or co-efficient of variation (CV) should be presented. A table depicting the study locations and different variables shall be presented for better comprehension. Factorial RBD model of experiments shall be followed.

[Action: Dr. Jitendra Singh, Scientist- C& PI]

3. [ARP04012SI] Developing ectomycorrhizal bio-inoculants for improving survival and leaf yield of *Terminalia arjuna* and *Terminalia tomentosa* (Feb 2022 – January 2025) [PI: Dr. Aparna Kopparapu, Scientist-C, CTR&TI, Ranchi]

The samples should be narrowed down based on morphological identification and based on pathogenic/non- pathogenic characteristics. The screened isolated may then be identified through molecular methods.

Literature may be referred for most commonly associated ECM fungi in the regions under study.

[Action: Dr. Aparna Kopparapu, Scientist-C& PI]

4. [APS04003SI] Studies on the Reproductive Potential of Tasar Silkworm, *Antheraea mylitta* D with Special Reference to Nutritional and Mechanical Indices (March 2020-February 2023 Extended upto August 2022) [PI: Dr. K. Jena, Scientist- D, CTR&TI, Ranchi]

Committee suggested to use square plastic oviposition boxes being used in BPSUs in forthcoming grainages to know the efficiency of different oviposition devices.

[Action: Dr. K. Jena, Scientist- D& PI]

5. [AIE04004CN] Study on existence of tropical tasar silkworm ecoraces and their subsist places with the help of geospatial technology (March 2020-February 2023 Extended upto February 2025) [PI: Dr. I. G. Prabhu, Scientist- C, CTR&TI, Ranchi]

The committee suggested the following with respect to the project:

- i. The ecoraces of the insects collected and reared should be confirmed with those reported earlier both phenotypically and on molecular basis.
- ii. The composition of forest flora is changing and there may be a shift in habitat of ecoraces. The extent of migration should be taken into consideration during studies.
- iii. Installation of 5 light curtains in 5 sq. km grid as followed in the project is sufficient. Instead of blue light 40 Watt LED light bulb may be tried. Different colour bulbs may also be tried to find out the most suitable colour of light for light curtains.
- iv. Services of local community people should be utilized for carrying out the work since they have more information and acquaintance with the area. This also will help to cover larger area and also historical data may also be obtained. The required remuneration may be met from manpower Head or from contingency besides considering re-appropriation, if required.
- v. The PI's request for recruiting 02 interns at BIT, Mesra, under Prof. Jagannathan, Dean, Remote Sensing, BIT, Mesra, in place of one PA to be recruited within the available budget in Manpower / non-recurring Head was recommended by the Committee.
- vi. The PI was suggested to revise and update the project document with above suggestions and submit the same to CO.

[Action: Dr. I.G. Prabhu, Scientist- C & PI]

6. [BPC04005SI] Tasar Waste to wealth by Cordyceps (March 2020-February 2023) [PI: Dr. K. Jena, Scientist- D, CTR&TI, Ranchi]

The Committee suggested the PI to submit project completion report as per approved time and unutilized amount may be used for taking up the proposed OST for conducting experiments on value addition in commercialization of products.

[Action: Dr. K. Jena, Scientist- D &PI]

7. [ARE04006CN] Management of Important Pests of Tasar Silkworm *Antheraea mylitta* (D) Through Botanical Repellents (April 2021- March 2024 Extended up to September, 2024) [PI: Dr. H.S. Gadad, Scientist- C, CTR&TI, Ranchi]

Committee suggested to characterize the effective botanical extracts to find out the secondary metabolites like repellent chemical compounds present in it. The committee also suggested to use the available synthetic compounds as some other compounds may also be present in crude extract besides the influence of pH of hexane.

Efforts should be made to collaborate with NBAIR, Bangalore as it is a premier institute working on various predators and parasitoids in order to manage the pests of tasar silkworm

[Action: Dr. H.S. Gadad, Scientist- C& PI]

8. [BPC04008EF] Mass level extraction of sericin from tasar cocoon cooking waste water for its prospective utilization (March 2021-Feb 2024) [PI: Dr. K. Jena, Scientist- D, CTR&TI, Ranchi]

The house suggested him to use yarn degumming water also to avoid contamination in sericin based on its practicability, which will be more suitable for bio-medical and nutraceutical products.

[Action: Dr. K. Jena, Scientist- D & PI]

9. [ARE04011MI] Species diversity, assessment of potential loss and management of predatory wasps in tasar ecosystem (February 2022- January 2025) [PI: Dr. Hanamant Gadad, Scientist-C& PI]

- Committee suggested to consult scientists from NBAIR and ZSI for species identification of wasps and observed that the surveys shall be GPS based systematic survey. Uniform methodology shall be followed for all the surveys.

- It has been suggested to list out the predatory wasps after species identification based on the literatures and out of them how many species are known to predate on tasar silkworm may be observed.
- It is requested to include In-charge of BSMTC, Patelnagar as a Co-PI in place of In-charge of BSMTC, Pali along with the sanctioned budget, as the target pest incidence is more in Patelnagar and it will be useful for better implementation of the project. The Committee considered the request.

[Action: Dr. Hanamant Gadad, Scientist-C & PI]

11. [CYR04013MI] Studies on storage practices of tropical tasar cocoons for better cooking efficiency, reeling parameters and yarn quality (February 2022- January 2024) [PI: Mr. Debasis Chattopadhyay, Scientist -D]

The committee suggested for larger sample size i.e. 50 to 100 cocoons per replication, and a factorial CRD analysis - 3 level factorial experiment shall be conducted. The stifling and storage process being used in industry may be included as one of the treatments.

[Action: Mr. Debasis Chattopadhyay, Scientist –D & PI]

12. [MOE0414MI] Evaluation and popularization of improved technologies developed in the field of tasar sector for central and north India (On Station/Farm Trials of CTRTI) (February 2022- January 2024)[PI: Dr. Jagadajyoti Binkadakatti, Scientist-C]

Regarding the technologies under validation, the committee suggested the following:

(i) Validation of chemical trap for Ichneumon wasp:

One or two BSM&TCs may also be included on the basis of occurrence observed during this year.

The quantity and concentration of the identified compounds shall be standardized.

(ii) Evaluation of IPM for control of Stem borer in tasar food plants:

In IPM, 2-3 effective techniques based on affordability, availability, efficacy shall be included. Refinement of the technology is required.

(iii) Management of abiotic factors using light reflector paints to reduce erratic and delayed emergence:

The Committee suggested to take feedback from the trial locations. The technology may be validated under OFT by TDF.

(iv) Validation and popularization of cooking package developed for three eco-races:

In OFT, sample size shall be as per the industry's requirement / practice and so sample size shall be larger. As the process is going to be patented / commercialized, the data will be needed. A table having comparative data shall be presented with results at laboratory, OST & OFT. Next trial shall be taken up at TDF centres.

It was suggested that a test report regarding quality of the yarn got from the above cooking process may be obtained.

[Action: Dr. Jagadajyoti Binkadakatti, Scientist-C& PI]

B. Collaborative projects:

13. [BPS01013CN] Utilization and diversification of silkworm pupae products for human & animal consumption and composting (Collaborative project of CSRTI, Mysore) (October 2020-September 2022 Extended upto March, 2023) [Co-PI: Dr. K. Jena, Scientist- D, CTR&TI, Ranchi]

Project progress was satisfactory and the house suggested to submit the request for re-appropriation of budget for six months extension.

[Action: Dr. K. Jena, Scientist- D &PI]

14. [MOE04007EF] Establishment of Biotech-KISAN Hub at Professional Assistance for Development Action (PRADAN), Deoghar, Jharkhand for three Aspirational Districts of Jharkhand (Godda, Dumka and Pakur) (September 2020 – August 2022) [PI: Dr. J.P. Pandey, Scientist- D, CTR&TI, Ranchi]

The committee suggested that the intercropping practices may be optimized based on soil health condition in order to increase the yield of intercrops.

4-5 farmers outside Biotech Kisan Hub may be taken as control to show the impact of this project.

The P.I. requested for six months extension of the project due to delay in starting of the project, administrative reasons like shifting of accounts etc. House recommended to seek extension from the DBT.

[Action: Dr. J. P. Pandey, Scientist- D &PI]

15. [AIT08006EF] Development of lateral flow assay (LFA) kit for diagnosis of pebrine disease in silkworms (DBT funded project of SBRL) in Collaboration with Bhat Biotech Pvt Ltd, Bangalore B Project period: A) [Co-PI: Dr. Hanumant Gadad, Scientist-C CTR&TI, Ranchi]

Committee expressed that more coordination and linkage is required between the collaborative institutes in order to take the outcome of the project to end users.

There shall be some budget provision in order to take extensive field validation of LFA kit

Committee also advised that investigators should mutually visit the collaborative institutes to understand the technology and field requirements in better manner.

[Action: Dr. H. S. Gadad, Scientist- C& PI,]

16. [MOE9001MI: Test verification of seed preservation technology developed for Tasar silkworm (*Antheraea mylitta*, D) [PI: Dr. J. P. Pandey, Scientist- D, CTR&TI, Ranchi]

The committee asked BTSSO to vouch for the cocoon preservation technique so as to integrate the cocoon preservation and egg preservation technology to check their efficacy.

As it is a kind of TOT programme, PRADAN or TDF can be involved for its trial in their grainage. Also, the said technology would be most required in first grainage to address synchronisation issues.

[Action: Dr. J. P. Pandey, Scientist- D &PI]

Agenda No.7: R&D Highlights of the Institute from last RAC to till date

R&D Highlights of the Institute from last RAC to till date was presented by Dr. K. Sathyanarayana, Director, CTR&TI, Ranchi before the RAC. The salient points of the research highlights of the Institute are as below:

- i) During the period, 7 Research proposals were submitted in RMIS-02 for administrative approval and coding.
- ii) Development of fish feed 'RESHMEEN' from tasar spent pupae.
- iii) Patenting and commercialization of RESHMEEN initiated after large scale trial in W.B, CG & JH.
- iv) Coordinated with CFTRI, Mysuru on use of Tasar pupae as poultry feed.
- v) Isolation and characterization of chitin and chitosan from tasar spent pupae besides utility of chitosan in enhancement of shelf life of fruits (Banana)
- vi) Signing of MoU with Birsa Agricultural University, Kanke, Ranchi and MoA with Tasar Development Foundation & HINDALCO India Ltd.
- vii) Accreditation of around 500 Community Resource Persons (CRPs)

done in collaboration with BAU Ranchi, KVK/TDF.

- viii) Convergence with KVKs for Technology Demonstration for training and extension.
- ix) Joint surveys conducted to assess the present status of different tasar eco-races for developing / updating operational/ functional conservation models.
- x) Refining of technology process documents of nine effective technologies considering field feedback.
- xi) Patent application submitted to C.O. for approval -
 - Process to mass produce *Cordyceps militaris* on Vanya silkworm refuses.
 - Cocoonase enzyme variant based cocoon processing to get value added tasar silk.
- xii) Commercialization of Pebrine visualization Solution (PVS) with M/s. Biosafe Hygiene on 19.05.2022 through NRDC, New Delhi.
- xiii) Products developed by CTRTI viz., “Jeevan Sudha” to control virosis and “Depuratex” for egg washing and disinfection are listed by the authorized vendor in the GeM portal.
- xiv) Proposal submitted for commercialization of patented product LSM.
- xv) Organized National Symposium on “Vanya Sericulture: Opportunities Galore” held on 28-29 October 2022 at Hotel AVN Grand, Ranchi.
 - Total 137 abstracts has been published in National Symposium Vanya Sericulture under different sessions viz., Recent advances in improvement and management of host plants of Vanya silkworms (35), Conservation, improvement and rearing management in Vanya silkworms (36), Vanya Silkworm Seed Augmentation- Recent trends and role of private sector (20), Recent advances in Post Cocoon Technology, Seri Byproduct utilization and Marketing in Vanya sector (26) and Role of Capacity Building, Extension and Services in Vanya sector (20) respectively.
 - Total 48 research papers were published in Special Issue of Plant Archives: An international Journal, whereas more than 20 research articles has been communicated for Special Issue of Journal of Environmental Biology.
- xvi) Around 500 Community Resource Persons (CRPs) accreditation has been conducted in collaboration with BAU Ranchi, KVK/TDF/CTR&TI Ranchi.
- xvii) Technology Orientation Training programme from 26.07.2022 to

30.07.2022 for 25 Officers/Officials of Department of Horticulture, Gov of Punjab for the introduction of Tasar Culture in Punjab State.

- xxviii) "Trainers' Training Programme for KVK Scientists" from 11.10.2022 to 15.10.2022. Twenty three Scientists / SMS from eight states viz., Jharkhand, Odisha, Chhattisgarh, Andhra Pradesh, Maharashtra, Uttar Pradesh, Madhya Pradesh and West Bengal attended the training programme
- xix) Refresher Training on "Recent technological advancement in tasar culture and extension approaches under Competency Enhancement Programme from 2nd-04th November, 2022. Twenty five Technical Assistants and Field Assistants of CTR&TI and BTSSO attended the training programme.
- xx) Technology Orientation Training programme from 15.11.2022 to 19.11.2022 for 25 Officers/Officials of different DOSs of 07 states viz. West Bengal, Madhya Pradesh, Maharashtra, Uttar Pradesh, Jharkhand, Chhattisgarh and Odisha was organized.
- xxi) A state Level Workshop on Tasar Technology Dissemination and Experience Sharing in Chhattisgarh was organized by CTRTI Ranchi in co-ordination with the Department of Sericulture, Govt. of Chhattisgarh at Raipur on 22.09.2022 covering about 90 participants from DOS, Chhattisgarh, KVK scientists, forest department officials, NGO, progressive farmers etc.
- xxii) A state Level Workshop on Tasar Technology Dissemination and Experience Sharing in Jharkhand was organized by CTRTI Ranchi in co-ordination with the Department of Sericulture, Govt. of Jharkhand at CTRTI, Ranchi on 21.07.2022 covering about 55 participants from DOS, Chhattisgarh, KVK scientists, forest department officials, NGO, JSLPS, Hindalco etc.
- xxiii) A State level Workshop on "Technology Dissemination and Experience Sharing in Uttar Pradesh" was organized on 22.08.2022 at Banwasi Seva Ashram, Govindpur, Sonbhadra (U.P) covering about 103 participants viz. Scientists/Staff from CTRTI, Ranchi, Scientist from BHU & KVK, farmers and all other stakeholders.
- xxiv) On 15.09.2022, a Team of over 15 IFS officers visited CTR&TI Ranchi as part of Refresher Training Programme of In-service Officers with focus on "Strategies for livelihood enhancement in forest fringe villages", coordinated by the Institute of Forest Productivity, Ranchi. During the visit, various R&D activities of Institute and possible convergence options were explained. The team also visited research laboratories of Institute and interacted with the CTRTI scientists.

Agenda No.8: Trial of Technologies (OSTs/OFTs)

Total 9 technologies (7 OSTs and 2 OFTs) were discussed during the RAC meeting. The committee took note of the progress. The list of OSTs and OFTs are given below.

On Station Trials

- i) Evaluation of cocoonase variant for cocoon softening/ degumming and silk surface modification.
- ii) Evaluation of PSB for qualitative and quantitative improvement t in tasar food plant leaf.
- iii) Validation of chemical trap for Ichneumon wasp.
- iv) Evaluation of IPM for control of gall fly.
- v) Evaluation of IPM for control of Stem borer in tasar food plants.
- vi) Establishment and popularization of New Improved accession nos. 102 and 123 of *Terminalia arjuna* and *Lagerstroemia speciosa*.
- vii) Evaluation of egg washing cum disinfection machine to produce quality tasar silkworm dfl's.

On Farm Trials

- i) Validation and popularization of cooking package developed for three eco- races.
- ii) Management of abiotic factors using light reflector paints to reduce erratic and delayed emergence.

Agenda No. 9: Extension Communication Programmes (ECP) and other programmes

Progress of the Extension Communication Programmes (ECP) conducted by the nested units was presented to the Committee. The committee took note of the progress.

Agenda No. 10: Training Capacity Building (CBT) and other programmes

Progress of the Capacity Building Training conducted at the Institute and nested units was presented to the committee. The committee took note of the progress.

Agenda No.11: Any other points for discussion

1. BRIEF DETAILS OF NATIONAL SYMPOSIUM ON “VANYA SERICULTURE: OPPORTUNITIES GALORE ”

28th& 29th October 2022 at AVN Grand Hotel, Ranchi

No. of participants: Over 200

Officers/representatives:

DOS, Dept. of Forest, NABARD, Hindalco, JSLPS, Eco-tasar, TDF, representatives of Industry, authorized manufacturers of inputs/ Vanya silk products etc.

Exhibition Stalls: 13 stalls with Vanya Silk products and business opportunities

Sessions/ Abstracts: 5 -137 abstracts (61 oral and 76 posters)

SESSION WISE ABSTRACTS

Sl. No.	Name of the Sessions	No. of Abstracts
1.	Recent advances in improvement and management of host plants of Vanya silkworms	35
2.	Conservation, improvement and rearing management in Vanya silkworms	36
3.	Vanya Silkworm Seed Augmentation- Recent trends and role of private sector	20
4.	Recent advances in Post Cocoon Technology, Seri Byproduct utilization and Marketing in Vanya sector	26
5.	Role of Capacity Building, Extension and Services in Vanya sector	20
	Total	137

INSTITUTE WISE ABSTRACTS

Name of the Institute	No. of Abstracts
Central Tasar Research and Training Institute, Ranchi	44
Central Muga Eri Research and Training Institute, Lahdoigarh	23
Basic Tasar Silkworm Seed Organization, Bilaspur	15
Central Sericultural Research and Training Institute, Mysuru	4
Central Sericultural Research and Training Institute, Berhampore	4
Central Silk Technological Research Institute, Bangalore	8
Seri-Bio-Tech Research Laboratory, Bengaluru	3
Muga Eri Silkworm Seed Organisation, Guwahati	4
C.O, Bengaluru	6
SSTL, Bengaluru	1
Others	25
Total	137

MAJOR POINTS OF DISCUSSION

- Faster propagation & effective utilization of host plants, Measures for climate mitigation, Promotions of BSPU model in seed production,
- Advance planning of rearing/ seed production activities,
- Seed zone concept,
- Effective disease monitoring schedules,
- Utilization of seed production capacities, trained manpower (CRPs), involving professional CBOs/ NGOs
- Mechanization,
- Up scaling and augmentation of host plantation
- Utilization of Seri-resources,
- Effective implementation of the Central Seed Act and Utilisation of Vanya seri by-products etc.

The recommendations of National Symposium on “Vanya Sericulre: Opportunities Galore” will be published as separate document with ISBN number.

2. TOP 10 CHALLENGES & OPPORTUNITIES IN TASAR SECTOR

A. Challenges:

1. Issues related to early and efficient propagation techniques of host plants in general and Asan in particular
2. Periodical application of inputs in the fringe forest areas and spray of disease or pest control compounds on the grown-up flora.
3. Lack of focussed breeding approach and absence of buffer genetic stock in isolated patches leading to inbreeding depression.
4. Tasar silkworm rearing being outdoor activity, climate change related issues in the recent years are severely affecting seed production/ seed cocoon generation, leading to new and emerging pests of host plants & silkworms, incidence of diseases etc.
5. Lack of focus on eco-race conservation by the States, genetic mix and change in behavioural pattern of wild eco-races due to climate change.
6. Non-adoption of available technologies including ICT, replicable models & best practices developed under special projects, discouraged private participation and lack of coordination with other development partners by the States.
7. Lack of large-scale collection, marketing, stifling and conversion of cocoons besides processing affecting the export potential.
8. Lack of proper utilization of by-products
9. Lack of entrepreneurial promotion in input/ machine manufacturing, marketing etc.
10. Lack of uniformity in price fixation and subsidy pattern for cocoons, seed and silk coming in the way developing entrepreneurship.

B. Opportunities:

1. Wide production base across the Tasar silk value chain which can be developed into rural micro-entrepreneurial models
2. Potential for remunerative rural/ Tribal employment during lean period for agriculture
3. Huge potential for accrual of social benefit due to tribal and women employment/ empowerment
4. Scope to explore environmental benefits through carbon sequestration initiatives coupled with creation of sustainable livelihood and utilization of waste lands to increase green cover.
5. Eco Friendly nature of production processes leading to increasing investments
6. High Market demand (domestic and international) for tasar fabrics with increasing export potential
7. Traditional handloom designs and tribal motifs which may earn GI tag to add value & create special market niche for vanya silks
8. Scope to nurture start-ups in utilization of various tasar by-products.
9. Emerging interests in research collaboration and convergence in developmental activities increasing multi-stakeholder base as well as investments.
10. Scope for integrated farming practices with improved agriculture, vegetable cultivation and NTFPs.

Agenda No.12: Concluding remarks from RAC members

Dr. N. Kulkarni expressed that the scientists are putting good efforts and complemented that the methodologies are planned meticulously and projects are being carried out in a systematic manner. He congratulated the Director and scientists of CTRTI, Ranchi for their achievements since last meeting. He opined that the Institute is working on forest trees, which is more challenging for propagation, multiplication & plantation of food plants in the changing climate. Institute of Forest Productivity (IFP) is volunteered to extend possible support for the collaborative research by entering MOU with CTRTI, Ranchi.

Dr. Sunil Dubey congratulated the Director and the entire team for the progress and good presentation. He suggested to present statistically analysed data with suitable statistical design. In collaborative projects, periodical review meeting on 3 or 6 months shall be done. Mycorrhiza has great potential shall be developed and commercialized. Technical validation shall be taken very seriously good package of practice with suitable recommendation shall be shall be developed for post cocoon technologies.

Dr. A. Venugopal, Director, BTSSO observed that with less no. of scientists taking up more no. of projects is appreciable. Presentations are good and the discussion and suggestions were quite fruitful. Presentation shall be with statistical analysis.

Dr. P.K. Mishra congratulated the Director for covering all the aspects in research projects with limited no. of scientists. He suggested that during cocoon storage, low temperature should be maintained at least in trial / project areas to ensure appropriate tasar seed production. For cocoonase, qualitative and quantitative analysis of complete data is required and for ecorace conservation, local people shall be involved.

Dr. N.B. Chowdhury brought to the Committee's attention that single day hatched eggs should be taken for the cocoon production in order to control pebrine.

Dr. K. Jaganathan expressed that the presentations show that what kind of hard work scientists are doing congratulated the Director that with a lean team of scientists, the kind of work being undertaken. Projects of field relevance and covering so many aspects were discussed. He suggested that more entrepreneurship-oriented programme shall be taken under CBT.

Mr. Shamsad Alam expressed his satisfaction that many field issues which were pending for long have been taken up by the CTRTI. Presentations were excellent and some statistical analysis is needed. The project PIB04009SI is very important for the sector and need of the industry. PVS has been found very helpful in enhancing the speed and efficiency of microscopic examination. He informed that from next year, propagation of Jarul from seed will be taken up at their level. He observed that a package of practice shall be developed for propagation of Jarul. PSB is promising technology and shall be tried very meticulously. He requested that Jeevan Sudha formulation shall be shared with TDF for its mass utilisation in the field.

Dr. Prasanth Sangannavar observed that CTRTI is working very well as compared to other institutes and with only 12 scientists, 15 projects are running. He suggested for more focussed research and no. of publications. He sought for more co-ordination in collaborative projects. To bridge the gap between scientists and the no. of projects, required no. of Project Assistants and JRFs shall be proposed. Some advance training shall also be attended by the scientists for knowledge up-gradation.


Dr. K. Jena, Scientist-D, CTRTI opined the problems with the lesser no. of publication is also due to the high publication charges. He suggested that contingency fund for publication shall be considered in project budget.

Dr. K. Sathyanarayana, Director, CTRTI extended thanks to chairman and members for the fruitful suggestions and observed that since no exclusive right regarding Jeevan Sudha has been given to the commercializing partner it can be shared with more partners. He promised the members to address the gaps discussed by the Committee.

Dr. Onkar Nath Singh, Chairman RAC appreciated the Director for providing a congenial environment to the scientists and doing a lot of good work with only few scientists. He suggested that there shall be a provision for funding for publication with certain NAAS rating. He reiterated that working in a congenial and positive environment yield more fruitful work/output.

Dr. K. Sathyanarayana thanked the Chairman, all the Members, Invitees, Scientists from RCS and his team of scientists from CTR&TI, Ranchi and BTSSO, Bilaspur for a thorough and meaningful discussion.

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


(Dr. Onkar Nath Singh) 17/12/2022
Chairman, RAC

LIST OF PARTICIPANTS IN THE 51ST MEETING OF RAC OF CTR&TI RANCHI HELD ON 25th- 26th NOVEMBER, 2022

CHAIRMAN:

1. Dr. Onkar Nath Singh, Vice Chancellor, Birsa Agricultural University, Ranchi.

MEMBERS

2. Dr. Nitin Kulkarni, Director, IFP, Lal Gutwa, Ranchi.
3. Dr. Sunil Chandra Dubey, ADG, ICAR, New Delhi
4. Dr. A. Venugopal, Director, BTSSO, Bilaspur
5. Dr. P. K. Mishra, member & Director (Rtd.), CSB.
6. Mr. Shamshad Alam, Integrator-PRADAN, Ranchi
7. K. Jaganathan, Scientist - D(Representative), Director, CSTRI, Bengaluru.
8. Dr. Prashanth Sangannavar, Scientist-C, RCS, CSB Bengaluru
9. Mr. Summar Bahdur Shekhar, Assistant Director Industry (Representative), DoS, Jharkhand.
10. Dr. K. Sathyanarayana, Director, CTRT&TI, Ranchi- Member Convener

Scientists from BTSSO, Bilaspur

11. Dr. B.N. Chaudhary, Scientist - D

SCIENTISTS – CTR&TI, Ranchi

12. Dr. S. Gandhi Doss, Scientist-D
13. Ms. Susmita Das, Scientist-D
14. Dr. J.P. Pandey, Scientist-D
15. Dr. K. Jena, Scientist-D
16. Dr. Vishal Mittal, Scientist-D
17. Mr. Debasish Chattopadhyay, Scientist-D
18. Dr. Harendra Yadav, Scientist-C
19. Dr. Jitendra Singh, Scientist-C
20. Dr. D.I.G. Prabhu, Scientist-C
21. Dr. J. Binkadakatti, Scientist-C
22. Dr. Hanmant Gadad, Scientist-C
23. Dr. Aparna, K, Scientist-C