



वस्त्र मंत्रालय
MINISTRY OF
TEXTILES

CENTRAL MUGA ERI RESEARCH & TRAINING INSTITUTE
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WILD SILKS
OF INDIA
वर्चापुत्र

केरली-केमूरअवप्रस
CSB-CMER&TI

कौशिका वर्ष १९९९-२०२४
KAUSHIKA YEARS 1999-2024

25 Years of Excellence, Woven in Muga and Eri

ANNUAL REPORT

2024-25



केन्द्रीय मूगा एरी अनुसंधान एवं प्रशिक्षण संस्थान

CENTRAL MUGA ERI RESEARCH & TRAINING INSTITUTE

केन्द्रीय रेशम बोर्ड **Central Silk Board**

वस्त्र मंत्रालय, भारत सरकार **Ministry of Textiles, Government of India**
लाहदोईगढ़, जोरहाट (असम) **Lahdoigarh, Jorhat-785 700, Assam, INDIA**

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Central Muga Eri Research and Training Institute
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वस्त्र मंत्रालय, भारत सरकार Ministry of Textiles, Govt. of India
लाहदोईगढ़, जोरहाट, असम Lahdoigarh, Jorhat-785700, Assam



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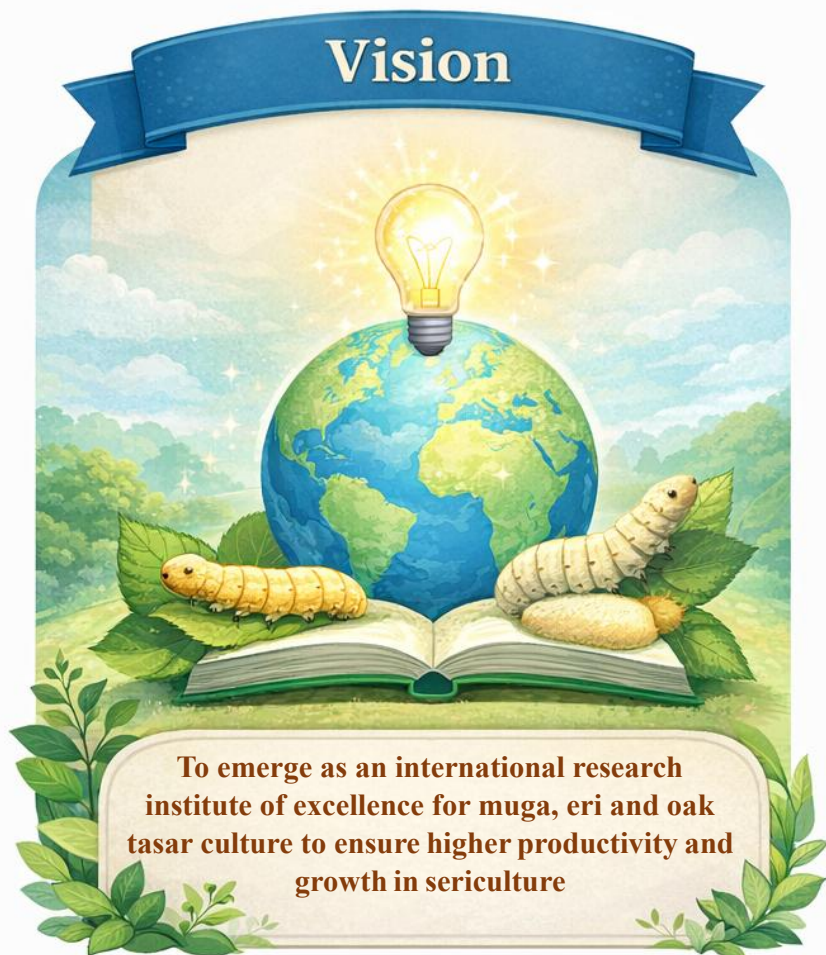
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Vision



To emerge as an international research institute of excellence for muga, eri and oak tasar culture to ensure higher productivity and growth in sericulture

Mission



To achieve excellence in application-oriented research for transforming the Muga, Eri and Oak Tasar industry from the subsistence level of production to a vibrant commercial base

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प्राक्कथन

गहन गर्व और आशावाद की भावना के साथ मैं वर्ष 2024-25 के लिए केरेबो-केंद्रीय मूगा एरी अनुसंधान एवं प्रशिक्षण संस्थान (केरेबो-केमूएअवप्रसं) का वार्षिक प्रतिवेदन प्रस्तुत कर रहा हूँ। गौरवशाली विरासत और परिवर्तनकारी भविष्य के संगम पर खड़ा यह दस्तावेज़ न केवल हमारी वैज्ञानिक उपलब्धियों को दर्शाता है, बल्कि वन्य रेशम उत्पादन बंधुत्व के प्रति हमारी अटूट प्रतिबद्धता को भी प्रतिबिंबित करता है। रेशम उत्पादन के निरंतर विकसित होते परिदृश्य में आगे बढ़ते हुए, अपने अतीत की बुद्धिमत्ता को आधुनिक विज्ञान की नवोन्मेषी सोच से जोड़ते हुए, यह वर्ष उत्कृष्टता तथा ग्रामीण और महिला सशक्तिकरण के प्रति हमारी अटूट प्रतिबद्धता का सशक्त प्रमाण है।



संस्थान के ढाई दशकों के इतिहास पर दृष्टिपात करते हुए, हम उत्तर-पूर्व भारत में वन्य रेशम उत्पादन के विकास में अपनी भूमिका पर अत्यंत गौरवान्वित हैं। यह वर्ष हमारे इतिहास में एक निर्णायक मोड़ सिद्ध हुआ है, जिसे हमने रजत जयंती समारोह के रूप में आयोजित किया और इसी दौरान गुजरात में एरी रेशम परियोजना आरम्भ की गई। ये दोनों ही उपलब्धियाँ पारंपरिक तथा नवीन क्षेत्रों में रेशम उत्पादन को आगे बढ़ाने के प्रति हमारी अटल प्रतिबद्धता को दर्शाती हैं। 24 अक्टूबर 2024 को केरेबो-केंद्रीय मूगा एरी अनुसंधान एवं प्रशिक्षण संस्थान ने अपनी 25वीं वर्षगांठ मनाई, जो अनुसंधान, नवाचार, विस्तार तथा क्षमता-विकास में हमारे नेतृत्व को उजागर करने वाला एक महत्वपूर्ण मील का पत्थर सिद्ध हुआ। इस ऐतिहासिक अवसर पर मूगा रेशम के सम्मान में डाक टिकट, संस्थान का वृत्तचित्र तथा प्रौद्योगिकियों का विमोचन किया गया। अनुसंधान एवं विकास में उत्कृष्टता की हमारी निरंतर खोज ने न केवल रेशम उत्पादन परिदृश्य को समृद्ध किया है, बल्कि अनगिनत किसानों और महिला हितधारकों को सशक्त भी बनाया है।

इस वर्ष अनेक प्रौद्योगिकियों की परिकल्पना, विकास एवं सफल परीक्षण किया गया तथा उन्हें हितधारकों तक पहुँचाया गया, जिससे क्षेत्र में उत्पादकता को बढ़ावा मिला। उत्तर-पूर्व भारत में 'एकीकृत कृषि प्रणाली पहल' के अंतर्गत मौजूदा कृषि प्रणालियों में मूगा और एरी संवर्धन के एकीकरण का सफल निदर्शन किया गया। मूगा और एरी रेशमकीट रोग निगरानी पर 42 वैज्ञानिकों एवं राज्य अधिकारियों को प्रशिक्षण प्रदान किया गया। रिपोर्टिंग हेतु गूगल शीट्स, रोग अनुवीक्षण पुस्तिका तथा पोर्टेबल माइक्रोस्कोप जैसे प्रमुख उपकरण उपयोग में लाए गए। हमने तीन नए संकर संयोजनों (C2 × BYP, BYP × TGBP, तथा GYP × TGBP) की पहचान की, जिनमें मौजूदा नस्लों की तुलना में वाणिज्यिक गुणों में 15 से 20% तक सुधार पाया गया। रोग नियंत्रण के लिए मूगा रेशमकीट में बैक्टीरियल फ्लैचेरी रोग के नियंत्रण हेतु एक नए संरूपण (फॉर्मूलेशन) का प्रमाणीकरण किया गया, जिससे कीटपालन की प्रभावी दर (ERR) में 36.7% की वृद्धि हुई। ओक तसर पर अनुसंधान में भी महत्वपूर्ण प्रगति हुई, जिसमें *A. proylei* में अंड निक्षेपण क्षमता को बढ़ाने वाले रासायनिक संकेतों की पहचान की गई। इसके अतिरिक्त, ओडिशा और आंध्र प्रदेश के शीतक अंचलों में मूगा रेशमकीट पालन के परीक्षण सफलतापूर्वक किए गए, जिनमें 85% से अधिक स्फुटन की सफलता प्राप्त हुई।

मूगा सुपर कुक संरूपण (फॉर्मूलेशन) के लिए न केवल एकस्व (पेटेंट) हेतु आवेदन किया गया, बल्कि इसे आइचेंग अनुसंधान एवं नवोन्मेष प्रा. लि. को अनुज्ञाप्ति (लाइसेंसिंग) के माध्यम से सफलतापूर्वक व्यावसायिक भी बनाया गया, जिससे उद्योग के लिए इसकी उपलब्धता सुनिश्चित हुई। प्रौद्योगिकी हस्तांतरण के क्षेत्र में हमारे प्रयासों को व्यापक सराहना मिली है। “गुजरात में एरी संवर्धन परियोजना” हमारे सफल विस्तार निदर्श (मॉडल) का एक उत्कृष्ट उदाहरण है। निदर्शन केंद्रों की स्थापना और किसानों को प्रशिक्षण देकर, प्रारंभिक कीटपालन में ही 74.23 किग्रा प्रति 100 रो.मु.बी.च. (डीएफएल्स) की प्रभावशाली औसत जीवित कोसे की उपज प्राप्त हुई। इस पहल के माध्यम से गुजरात से असम तक बाजार संपर्क स्थापित हुआ, जिसके लिए “टीम गुजरात” को केंद्रीय रेशम बोर्ड से प्रशस्ति प्रमाण-पत्र प्रदान किया गया। हमने 61 विस्तार कार्यक्रमों का आयोजन किया, जिनसे 4,292 से अधिक हितधारक लाभान्वित हुए। 229 क्षमता-विकास कार्यक्रमों के माध्यम से किसानों, छात्रों एवं राज्य पदाधिकारियों सहित 3,709 लाभार्थियों को प्रशिक्षण दिया गया।

मैं अनुसंधान सलाहकार समिति के अध्यक्ष एवं सदस्यों और केंद्रीय रेशम बोर्ड, बेंगलूरु के सक्षम प्राधिकारी को उनके अमूल्य योगदान और दृढ़ समर्थन के लिए हार्दिक आभार व्यक्त करता हूँ। विशेष रूप से, उत्तर-पूर्वी राज्यों के सभी रेशम उत्पादन विभागों तथा गुजरात, ओडिशा और आंध्र प्रदेश में हमारे नए भागीदारों के सहयोग के लिए मैं कृतज्ञता प्रकट करता हूँ। साथ ही, अनुसंधान परियोजनाओं के संचालन हेतु आवश्यक निधियां उपलब्ध कराने के लिए मैं जैव प्रौद्योगिकी विभाग और सहयोगी संस्थानों का हृदय से आभार व्यक्त करता हूँ।

अंत में, मैं केरेबो-केमूएअवप्रसं के समर्पित वैज्ञानिकों और कर्मचारियों के प्रति अपनी हार्दिक सराहना व्यक्त करता हूँ। उनके सामूहिक प्रयासों से ही हम रेशम उत्पादन अनुसंधान की सीमाओं को निरंतर आगे बढ़ा पा रहे हैं। मैं सभी हितधारकों से इस वार्षिक प्रतिवेदन का अवलोकन करने का आग्रह करता हूँ, ताकि अब तक की हमारी उपलब्धियों को पहचाना जा सके और भविष्य के विकास की संभावनाओं को रेखांकित किया जा सके।



(डॉ. कार्तिक नेउग)
निदेशक

Foreword

It is with a profound sense of pride and optimism that I present the Annual Report of the CSB-Central Muga Eri Research & Training Institute (CSB-CMER&TI) for the year 2024-25. Standing at the convergence of a glorious legacy and a transformative future, this document reflects not only our scientific milestones but also our unwavering dedication to the Vanya sericulture fraternity. As we navigate the evolving landscape of sericulture, bridging the wisdom of our past with the ingenuity of modern science, this year stands as a testament to our enduring commitment to excellence and rural and women's empowerment.



As we reflect on the Institute's two and a half decades of existence, we take immense pride in our role in the unfolding history of Vanya sericulture growth in Northeast India. This year has been a watershed moment in our history, marked by the celebration of the Silver Jubilee and the launching of the Eri silk project in Gujarat, significant breakthroughs that underscore our unwavering commitment to the advancement of sericulture both in traditional and new areas. On October 24, 2024, CSB-CMER&TI celebrated its 25th anniversary, a milestone that highlighted our leadership in research, innovation, extension and capacity-building. This historic event was commemorated with the release of a postal stamp honouring Muga silk, an Institute documentary, and technologies. Our relentless pursuit of excellence in research and development has not only enriched the sericulture landscape but has also empowered countless farmers and women's stakeholders.

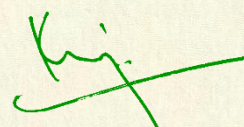
This year, numerous technologies have been conceptualised, developed, and effectively tested and are being taken to the stakeholders, driving productivity in the field. The Integrated Farming System (IFS) initiative in North-East India has successfully demonstrated the integration of muga and eri culture into existing farming systems. Training on Muga and Eri silkworm disease monitoring was conducted for 42 scientists and state officers. Key tools like Google Sheets for reporting, a disease monitoring manual, and portable microscopes were implemented. We have identified three new hybrid combinations (C2 x BYP, BYP x TGBP, and GYP x TGBP) that demonstrate a 15 to 20% improvement in commercial traits over existing breeds. To combat disease, a new formulation for controlling Bacterial Flacherie Disease in Muga Silkworm was validated, resulting in a 36.7% increase in Effective Rate of Rearing (ERR). Significant strides were made in Oak Tasar research, identifying chemical cues to enhance egg-laying in *A. proylei*. We also successfully conducted trials for Muga silkworm rearing in cooler regions of Odisha and Andhra Pradesh, achieving hatching success exceeding 85%.

The Muga super cook formulation was not only applied for a patent but was also successfully commercialized through licensing to Aicheng Research & Innovation Pvt. Ltd, ensuring its availability to the industry. Our efforts in technology transfer have not gone unnoticed. The "Eri Culture Project in Gujarat" stands as a testament to our successful extension model. By establishing demonstration centres and training farmers, we achieved

an impressive average green cocoon yield of 74.23 kg/100 DFLs in the initial rearing itself. This initiative successfully channelized market access from Gujarat to Assam, earning the "Team Gujarat" a Certificate of Appreciation from the Central Silk Board. We conducted 61 extension programmes, sensitizing over 4,292 stakeholders. Through 229 capacity-building programs, we trained 3,709 beneficiaries, including farmers, students, and state officials.

I would like to express my sincere gratitude to the Chairman and members of the Research Advisory Committee and the Competent Authority of the Central Silk Board, Bengaluru, for their invaluable input and steadfast support. I specifically acknowledge the Department of Sericulture in all North-eastern states and our new partners in Gujarat, Odisha, and Andhra Pradesh for their collaboration. I also extend my gratitude to the collaborative institutions and the Department of Biotechnology for funding research projects.

Finally, I extend my heartfelt appreciation to the dedicated scientists and staff of CSB-CMER&TI. It is through their collective effort that we continue to push the boundaries of sericulture research. I invite all stakeholders to explore this Annual Report, recognizing the strides we have made and the potential avenues for future growth.



(Dr. Kartik Neog)
Director

CSB-CMER&TI, LAHDOIGARH AT A GLANCE

Established by the Central Silk Board (CSB) under the Ministry of Textiles, Government of India, in 1999, the Central Muga Eri Research & Training Institute (CSB-CMER&TI) is the premier research and development organization addressing the specialized requirements of the vanya sericulture industry in Northeast India. Based in Lahdoigarh, Assam, the institute serves as a vital hub for advancing research in muga, eri, and oak tasar culture within a region recognized for its diverse vanya silk production. The primary mission of CSB-CMER&TI is to pioneer innovative technologies that boost the productivity of these silkworm varieties, effectively transitioning traditional sericulture into a sustainable and profitable enterprise for stakeholders.

To maintain its role at the forefront of the sector, the institute has systematically upgraded its infrastructure to support high-level research in frontier areas of sericulture specific to the North Eastern Region. The scientific faculty operates through a collaborative model to design farmer-friendly technologies, which are then rigorously evaluated and implemented in the field. These research and developmental initiatives are organized across six specialized divisions, with the Project Monitoring Cell (PMC) providing critical oversight for institutional R&D planning and progress tracking. Comprehensive administrative support is provided by ten dedicated sections, ensuring streamlined operations across areas ranging from financial management and computer services to labor management and construction.

The institute extends its scientific reach through a strategic network of regional stations and extension centers designed to bridge the gap between laboratory research and field application. This network includes two Regional Sericulture Research Stations (RSRS) located in Boko, Assam, for Muga research and Imphal, Manipur, for Oak Tasar. Further support is provided by three Research Extension Centers (RECs) in Coochbehar, Lakhimpur, and Fatehpur, which focus on identifying and disseminating region-specific technologies for muga and eri silkworms. Additionally, the Field Laboratory at T. Khullen operates under RSRS Imphal to facilitate the direct transfer of Oak Tasar technologies to beneficiaries, underscoring the institute's commitment to the sustainable development of vanya sericulture.

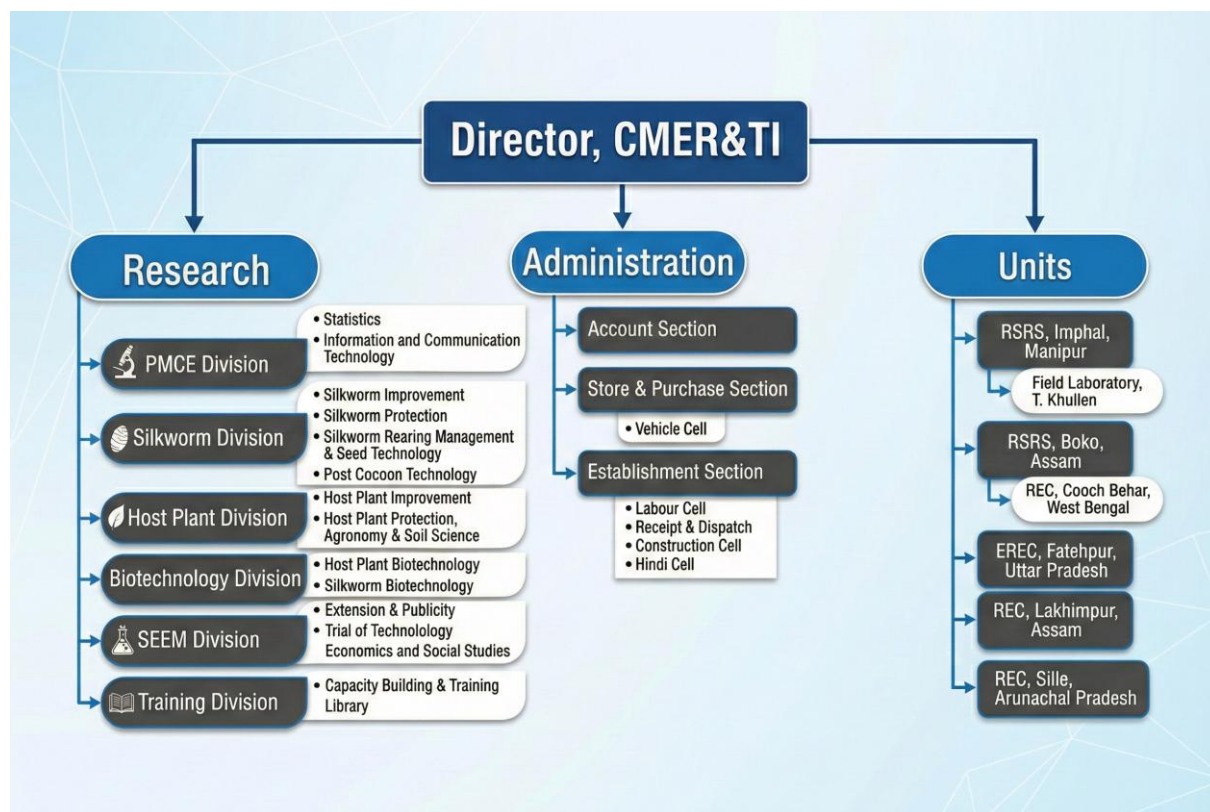
MANDATE OF THE INSTITUTE

- To act as an apex research institute for providing research and developmental support for muga, eri and oak tasar sericulture.
- To conduct basic, strategic and applied research to increase the production and productivity of silkworms and their host plants.
- Improvement of food plants and silkworm eco-races and hybrids.
- To conduct socio-economic research for assessing the sustainability of newly developed technologies.
- To percolate the research findings to the end users through extension and training mechanisms.

HUMAN RESOURCES (as of 31.03.2025)

SL. No.	Staff	Main institute	RSRS (Boko+Imphal)	RECs
1	Scientists			
	Scientist-D	2	1+2	1
	Scientist-C	3	0+0	0
	Scientist-B	6	0+0	1
	Sub-Total	11	1+2 = 3	2
2	STA/ SFA/FA	12	3+10	9
3	Administrative staff			
	AD (A&A) + AD (Com) + AD (OL)	1+1+1	0+0	0
	Supdt + Asst. Supt + JE	2+4+1	0+0	0
	UDC/LDC	02	1+0	0
	Stenographer	00	0+0	0
	Asst. Technician	01	0+1	2
	Hindi translator	00	0+0	0
	Driver	01	0+0	0
	MTS	04	1+3	3
	Sub-Total	30	5+14 = 19	14
	G. Total	41	6+16 = 22	16



ORGANIZATIONAL SETUP**EXTENSION NETWORK**

वैज्ञानिक अमला Scientific Personnel

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Sh. Subedar Pertin

Senior Technical Assistant
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 Arunachal Pradesh

DELEGATED AND NON-DELEGATED UNITS OF CSB-CMER&TI

Delegated Units

Central Muga Eri Research & Training Institute, Lahdoigarh, Assam (Main Institute)

Non-Delegated Units

Regional Sericulture Research Station, Boko, Kamrup, Assam (from Sept., 2021)

Regional Sericulture Research Station, Imphal, Manipur (from Sept., 2021)

Research Extension Centre, Coochbehar, West Bengal

Research Extension Centre, Lakhimpur, Assam

Research Extension Centre, Fatehpur, Uttar Pradesh

Research Extension Centre, Sille, Arunachal Pradesh



अनुसंधान सलाहकार समिति RESEARCH ADVISORY COMMITTEE

अध्यक्ष Chairman

Dr. Bidyut Chandan Deka

Vice Chancellor, Assam Agriculture University, Jorhat

Email: vc@aaau.ac.in , bidyutdeka@yahoo.com

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The Director Directorate of Handloom and Sericulture Department of Industries, Govt. of Bihar 2 nd Floor, Udyog Vibhag, Vikas Bhawan	Member Convener Director, CMER&TI, Lahdoigarh, Jorhat - 785700, Assam



केरेबो-केमूएअवप्रसं (CSB-CMER&TI) की अनुसंधान एवं विकास (R&D) तथा अन्य उपलब्धियों की प्रमुख झलकियाँ (अप्रैल 2024 – मार्च 2025)

1. गुजरात में एरी संवर्धन परियोजना का सफल कार्यान्वयन: गुजरात के चार जिलों (बनासकांठा, महेसाणा, पाटन एवं साबरकांठा) में एक सीआरसी (CRC) तथा चार उत्तरावस्था निदर्शन कीटपालन केंद्रों (DRCs) सहित कुल पाँच एरी कीटपालन निदर्शन केंद्र स्थापित किए गए। केरेबो-केमूएअवप्रसं की मानक एरी प्रौद्योगिकियों का उपयोग करते हुए 1000 रो.मु.बी.च. (डीएफएल्स) के डिंभक-अंतरण (ब्रशिंग) के माध्यम से किसानों को व्यावहारिक प्रशिक्षण दिया गया, जिसमें 100 चयनित एवं 100 से अधिक इच्छुक किसान शामिल थे। इस परियोजना के अंतर्गत प्रारंभिक पालन में ही औसतन 74.23 किग्रा प्रति 100 रो.मु.बी.च. (डीएफएल्स) जीवित कोसे की उपज प्राप्त हुई। परियोजना ने गुजरात से असम एवं अन्य क्षेत्रों तक कोसे के विपणन को सफलतापूर्वक जोड़ा, जिससे किसानों को बेहतर बाजार पहुँच सुनिश्चित हुई। साथ ही, उत्तरावस्था कीटपालन प्लेटफॉर्म को परिष्कृत किया गया, कीटपालन गृह क्षेत्र एवं कीटपालन संस्तर अंतरालन की आवश्यकताओं का मानकीकरण किया गया तथा प्लास्टिक चंद्रिका के माध्यम से क्षमता आरोपण तकनीकों की शुरुआत की गई, जिससे एरी रेशमकीट पालन की सतत एवं प्रभावी प्रक्रियाओं को बढ़ावा मिला।

2. मूगा सुपर कुक संरूपण (फॉर्मूलेशन): मूगा सुपर कुक संरूपण को केरेबो की आईपी (IP) व बीपी (BP) सेल के माध्यम से एकस्व (पेटेंट) के लिए आवेदित किया गया और इसके निर्माण व आपूर्ति हेतु अनुज्ञाप्ति (लाइसेंस) प्रदान करके इसे आइचेंग अनुसंधान एवं नवोन्मेष प्रा. लि., शिवसागर के माध्यम से व्यावसायीकृत किया गया।

3. उत्तर-पूर्व भारत में एकीकृत कृषि प्रणाली (IFS) पहल: मौजूदा कृषि प्रणालियों में मूगा एवं एरी संवर्धन के एकीकरण का सफल निदर्शन किया गया। सात किसानों के खेतों को अपनाकर तथा संस्थान में एक IFS निदर्श (मॉडल) स्थापित कर, एरी रेशमकीट के दो उत्पादक फसल चक्र सफलतापूर्वक संचालित किए गए। कृ.वि.के. (KVK), जोरहाट के सहयोग से किसानों को वैज्ञानिक प्रशिक्षण एवं आवश्यक इनपुट प्रदान किए गए। उपज एवं आय सृजन से संबंधित व्यवस्थित आँकड़े यह दर्शाते हैं कि ये निदर्श (मॉडल) विविधीकृत एवं सतत कृषि पद्धतियों के माध्यम से किसानों की आजीविका सुदृढ़ करने की क्षमता रखते हैं।

4. मूगा रेशमकीट में बैक्टीरियल फ्लेचरी रोग नियंत्रण: मूगा रेशमकीट में बैक्टीरियल फ्लेचरी रोग को नियंत्रित करने हेतु तैयार किए गए संरूपण (फॉर्मूलेशन) का सत्यापन किया गया। इस कीटाणुनाशक संरूपण के प्रयोग से रेशमकीट पालन के परिणामों में उल्लेखनीय सुधार देखा गया। कीटपालन की प्रभावी दर (ERR) में 36.7% की वृद्धि हुई (31.65% से बढ़कर 43.27% तक), तथा प्रति रो.मु.बी.च. (DFL) कोसे की उपज में 22.18% की बढ़ोतरी दर्ज की गई (34.16 से बढ़कर 41.73 कोकून)। ये परिणाम रेशमकीट पालन के नतीजों को बेहतर बनाने में इस संरूपण की प्रभावशीलता को स्पष्ट रूप से दर्शाते हैं।

5. रोग अनुवीक्षण प्रशिक्षण: मूगा एवं एरी रेशमकीट रोग अनुवीक्षण पर 42 वैज्ञानिकों एवं राज्य अधिकारियों को प्रशिक्षण प्रदान किया गया। रिपोर्टिंग हेतु गूगल शीट्स, रोग अनुवीक्षण पुस्तिका तथा पोर्टेबल सूक्ष्मदर्शी (माइक्रोस्कोप) जैसे प्रमुख उपकरण भी उपयोग में लाए गए।

6. रोग निगरानी समूह: अठारह अनुवीक्षण समूह असम, नागालैंड एवं मेघालय में नियमित निरीक्षणों के माध्यम से मूगा एवं एरी रेशमकीट रोग निगरानी का कार्य जारी रखे हुए हैं। रिपोर्टिंग के लिए गूगल शीट्स, रोग अनुवीक्षण पुस्तिका एवं पोर्टेबल सूक्ष्मदर्शी (माइक्रोस्कोप) जैसे उपकरण प्रभावी अनुवीक्षण एवं समय पर हस्तक्षेप में सहायक सिद्ध हो रहे हैं। साथ ही, विभिन्न समूहों (क्लस्टर्स), मूल बीज फार्मों (बेसिक सीड फार्मों) एवं अन्य स्थानों में रेशमकीट रोग आपतनों के अनुवीक्षण हेतु ऐप-आधारित प्रणाली पर भी कार्य प्रगति पर है।

7. मौसमी प्रवृत्तियाँ: मौसमी प्रवृत्तियों की पहचान की गई, जिसमें पेब्रिन एवं फ्लेचरी प्रमुख रोग पाए गए।



8. एरी रेशमकीट संकर संयोजन: एरी रेशमकीट के तीन संकर संयोजनों—C2 × BYP, BYP × TGBP तथा GYP × TGBP की पहचान कर बड़े पैमाने पर परीक्षणों हेतु अनुशंसा की गई। इन संकरों में अनुशंसित वाणिज्यिक नस्ल C2 एवं बोर्डुआर इकोरेस (Borduar ecorace) की तुलना में वाणिज्यिक विशेषकों में 15–20% तक सुधार पाया गया।

9. ओक तसर रेशम प्रजातियाँ: ओक तसर रेशम की तीन शलभ प्रजातियाँ—*A. proylei*, *A. frithi* एवं *A. roylei*—एकत्र कर उनका आकारिकी (मॉर्फोलॉजिकल) लक्षणन किया गया, जिसमें कोसे एवं तंतु (फिलामेंट) विशेषकों में उल्लेखनीय विविधता पाई गई। सत्रह रसायनों का मूल्यांकन किया गया, जिनमें से चार *A. proylei* में अंडे देने (निक्षेपण) की क्षमता बढ़ाने में प्रभावी पाए गए। इन्हें आगामी बीजागार कार्यों में समिश्रण (ब्लेंड) परीक्षण हेतु उपयोग किया जाएगा।

10. शीतक अंचलों में ग्रीष्मकालीन प्रबंधन: गर्मी के दौरान शीतक अंचलों में मूगा रेशमकीट पालन प्रबंधन हेतु ओडिशा के कोरापुट में दो कीटपालन एवं बीजागार सहित चार स्थानों पर सफल परीक्षण किए गए। बीज कोसे केरेबो-केमूएअवप्रसं एवं निदेशक, रेशम उत्पादन, आंध्र प्रदेश को व्यावसायिक मौसम कीटपालन हेतु उपलब्ध कराए गए। शीतक अंचलों में अंड स्फुटन (हैचिंग) सफलता 85% से अधिक रही, जबकि नियंत्रण क्षेत्रों में लगभग 1% पाई गई। इसके अतिरिक्त, कोरापुट में 5,100 सोम नवोद्भिद (पौधे) लगाए गए तथा अगले वर्ष के लिए निदेशक, रेशम उत्पादन, आंध्र प्रदेश से 7,000 नवोद्भिदों की मांग की गई।

11. प्रशस्ति एवं सम्मान: डॉ. कार्तिक नेउग, निदेशक, केरेबो-केमूएअवप्रसं; डॉ. महेश डी. एस., वैज्ञानिक-सी, केरेबो-केमूएअवप्रसं; तथा गुजरात टीम, जिसमें श्री सतीश सिंह (कल्याण फाउंडेशन) और डॉ. एल.डी. परमार (एसडीएयू) शामिल हैं, को गुजरात में एरी संवर्धन (एरी कल्चर) में उनके महत्वपूर्ण योगदान के लिए केंद्रीय रेशम बोर्ड द्वारा प्रशस्ति प्रमाण-पत्र प्रदान किया गया। यह सम्मान एरी संवर्धन को बढ़ावा देने, किसानों की आजीविका में सुधार करने तथा सतत रेशम कृषि पद्धतियों को आगे बढ़ाने के उनके प्रयासों की सराहना करता है।

12. अबद्ध अंड उत्पादन तकनीक (Loose Egg Technology): रजत जयंती समारोह के दौरान, केरेबो-केमूएअवप्रसं ने पारंपरिक खरीका विधि के स्थान पर व्यावसायिक स्तर पर शीट-आधारित अबद्ध (Loose) अंड उत्पादन तकनीक का अनावरण किया (केमूएअवप्रसं एवं EBSF, टोपाटोली में व्यावसायिक स्तर पर परीक्षण)। यह तकनीक सरल, किफायती एवं श्रम-संचायक है। इससे अण्डनिक्षेपण स्थान की आवश्यकता पाँच गुना कम हुई तथा शलभ रखने का समय एक-तिहाई रह गया। अंडा प्राप्ति, धुलाई एवं कीटाणुशोधन भी अधिक तेज और सरल हो गए। अंडा ऊष्मायन एवं समकालिक प्रस्फुटन प्रक्रम (ब्लैक बॉक्सिंग) विधियों में सुधार से अंडजोत्पत्ति (हैचिंग) दर बेहतर हुई और अंडा गुणवत्ता बनी रही। लाभ-लागत अनुपात पारंपरिक विधि के 1.16 की तुलना में 1.44 पाया गया। प्रति 25 लाख डीएफएल्स वार्षिक क्षमता वाले व्यावसायिक अबद्ध अंड उत्पादन केंद्र हेतु आवश्यक उपकरणों सहित एक निदर्श (मॉडल) रूपरेखा (ब्लूप्रिंट) भी तैयार की गई, जिससे बड़े पैमाने पर एरी अंड उत्पादन, नए सेरी-उद्यमियों को प्रोत्साहन तथा ग्रामीण आय में वृद्धि का मार्ग प्रशस्त हुआ।

13. एआई (AI) आधारित मोबाइल एप्लिकेशन: कृत्रिम बुद्धिमत्ता एवं मशीन लर्निंग पर आधारित मोबाइल एप्लिकेशन विकसित कर जारी किया गया, जो पेब्रिन (*Nosema sp. Aal*) की वास्तविक समय में पहचान एवं मात्रात्मक विश्लेषण करता है। इसे 24 अक्टूबर 2024 को रजत जयंती समारोह के दौरान प्रमोचित किया गया।

14. अरंडी (Castor) जीन पूल संवर्धन: केरेबो-केमूएअवप्रसं ने ICAR-भारतीय तिलहन अनुसंधान संस्थान, हैदराबाद के साथ अरंडी (कास्टर) जीन पूल के संवर्धन हेतु सामग्री हस्तांतरण समझौता (MTA) किया। प्राथमिक उपज परीक्षण में अभिगम-22 (Accession-22) की श्रेष्ठता प्रमाणित हुई, जिसमें पत्ती उपज में 20% वृद्धि एवं उपज-निर्धारक विशेषकों में उल्लेखनीय सुधार पाया गया। आगामी रोपण मौसम में बहु-स्थानिक परीक्षण (MLT) के अंतर्गत इन अभिगमों का परीक्षण किया जाएगा।



15. खाद्य पौधों का वितरण: केरेबो-केमूएअवप्रसं ने 165 लाभार्थियों को मूगा एवं एरी खाद्य पौधों के 28,055 नवोद्भिद (पौधे) उपलब्ध कराए, जिससे लगभग 63 एकड़ क्षेत्र में श्रेष्ठ खाद्य पौधों का रोपण संभव हुआ। इसके अतिरिक्त, एरी संवर्धन के समर्थन हेतु 17 किसानों को 20 किलोग्राम अरंडी (NBR) बीज 10 एकड़ क्षेत्र में बुवाई के लिए प्रदान किए गए।

16. विकसित भारत पहल: विकसित भारत पहल के 100 दिवसीय कार्यक्रम के अंतर्गत केरेबो-केमूएअवप्रसं ने गुजरात में एरी रेशम उत्पादन प्रचार परियोजना को उजागर करते हुए वीडियो वृत्तचित्र की एक श्रृंखला जारी की। इनमें एक हिंदी वृत्तचित्र, अंग्रेजी और गुजराती भाषा में जागरूकता अभियान वीडियो, तथा परियोजना के निदर्शन और कार्यान्वयन की प्रगति को दर्शाने वाला एक विशेष वृत्तचित्र शामिल था, जिसमें किसानों के अनुभवों और क्षेत्रीय स्तर पर पड़े प्रभाव को प्रस्तुत किया गया।

17. रजत जयंती समारोह: केरेबो-केमूएअवप्रसं ने 24 अक्टूबर 2024 को अपनी 25वीं वर्षगांठ मनाई, जिसमें मूगा, एरी एवं ओक तसर रेशम उद्योगों में संस्थान के महत्वपूर्ण योगदान को रेखांकित किया गया। इस अवसर पर एक वृत्तचित्र, स्मारक पुस्तक, मूगा रेशम के सम्मान में डाक टिकट तथा एरी संवर्धन पर “गोल्डन थ्रेड्स” पुस्तक का विमोचन किया गया। प्रौद्योगिकी लाइसेंस (अनुज्ञाप्ति) प्रदान किए गए और प्रशस्ति प्रमाण-पत्र वितरित किए गए। यह समारोह अनुसंधान, नवाचार एवं क्षमता-विकास में केरेबो-केमूएअवप्रसं के नेतृत्व तथा ग्रामीण समुदायों के सशक्तिकरण एवं सतत रेशम उत्पादन प्रक्रियाओं के प्रचार की प्रतिबद्धता को दर्शाता है।

18. विस्तार कार्यक्रम: कुल 61 विस्तार कार्यक्रम (लक्ष्य 56 से अधिक) आयोजित किए गए, जिनसे 4,292 से अधिक हितधारकों को जागरूक किया गया।

19. क्षमता-विकास एवं प्रशिक्षण: 229 क्षमता-विकास एवं प्रशिक्षण कार्यक्रमों के माध्यम से रेशम उत्पादन विभाग (निदेशालय) के कर्मचारी, विद्यार्थियों एवं अन्य हितधारकों सहित 3,709 से अधिक लाभार्थियों को प्रशिक्षित किया गया। इन कार्यक्रमों में मूगा एवं एरी क्षेत्रों से संबंधित किसान कौशल प्रशिक्षण, प्रौद्योगिकी उन्मुखीकरण, रेशम उत्पादन संसाधन केंद्र सत्र, कोसोत्तर प्रशिक्षण, चॉकी कीटपालन प्रशिक्षण, समर्थ आदि शामिल हैं।

20. मणिपुर में मूगा संवर्धन: मणिपुर में मूगा संवर्धन को सुदृढ़ करने की दिशा में महत्वपूर्ण प्रगति की गई, जिसके अंतर्गत अग्रणी किसानों का चयन, बेंचमार्क सर्वेक्षण, जागरूकता कार्यक्रम तथा प्रौद्योगिकी निदर्शन आयोजित किए गए। किसानों को आवश्यक इनपुट उपलब्ध कराए गए और सितंबर 2024 में मूगा रेशमकीट का सफल कीटपालन किया गया, जिससे क्षेत्र में मूगा संवर्धन पद्धतियों को मजबूती मिली।



HIGHLIGHTS OF R&D AND OTHER ACHIEVEMENTS OF CSB-CMER&TI (April 2024-March 2025)

1. Successful Implementation of Eri Culture Project in Gujarat: Five Eri rearing demonstration centers were established, including one CRC and 4 late age demo rearing centres (DRCs) across 4 districts (Banaskantha, Mehsana, Patan and Sabarkantha) with hands-on training provided to the farmers by brushing 1000 DFLs (covering 100 selected and 100+ interested farmers) using CSB-CMER&TI's standard eri technologies. The project led to an improved average green cocoon yield of 74.23 kg/100 DFLs in the initial rearing itself. The project successfully channelized cocoon marketing from Gujarat to Assam and other regions, ensuring better market access for the farmers. The project refined late-age rearing platforms, standardized rearing house area, rearing bed space requirements and introduced efficient mounting techniques using plastic mountages, contributing to sustainable and effective Eri silkworm rearing practices.
2. The Muga super cook formulation was applied for patent through the IP&BP Cell of CSB and was commercialised through licensing for manufacture and supply to Aicheng Research & Innovation Pvt. Ltd, Sivasagar.
3. The Integrated Farming System (IFS) initiative in North-East India has successfully demonstrated the integration of muga and eri culture into existing farming systems. With the adoption of seven farmers' fields and the establishment of an IFS model at the institute, two productive eri silkworm crop cycles have been conducted. Farmers have received scientific training and essential inputs in collaboration with KVK, Jorhat. Systematic data collection on yield and income generation reflects the potential of these models for enhancing farmer livelihoods through diversified and sustainable agricultural practices.
4. Formulation for Controlling Bacterial Flacherie Disease in Muga Silkworm was validated. Application of this disinfection formulation significantly improved silkworm performance. ERR% increased by 36.7% (from 31.65% to 43.27%), and cocoon yield per DFL improved by 22.18% (from 34.16 to 41.73 cocoons). These results highlight the formulation's effectiveness in enhancing rearing outcomes.
5. Training on Muga and Eri silkworm disease monitoring was conducted for 42 scientists and state officers. Key tools like Google Sheets for reporting, a disease monitoring manual, and portable microscopes were implemented.
6. Eighteen monitoring groups continue to oversee Muga and Eri silkworm disease surveillance through regular inspections across Assam, Nagaland, and Meghalaya. Key tools such as Google Sheets for reporting, a disease monitoring manual, and portable microscopes aid in efficient monitoring and timely interventions. Additionally, an app-based monitoring plan is underway to monitor silkworm disease incidents in different Clusters, basic seed farms and other places.
7. Identified seasonal trends where Pebrine and Flacherie were the dominant diseases.



8. Three hybrid combinations of Eri silkworm—C2 x BYP, BYP x TGBP and GYP x TGBP—have been identified and recommended for large-scale trials. These hybrids show 15 to 20% improvement in commercial traits compared to the recommended commercial breed C2 and the Borduar ecorace.
9. Three oak tasar silk moth species—*A. proylei*, *A. frithi*, and *A. roylei*—were collected and morphologically characterized, revealing significant variations in cocoon and filament traits. Seventeen chemicals were evaluated, identifying four that effectively enhance egg laying in *A. proylei*, which will be used for blend testing in upcoming grainage operations.
10. For rearing management of muga silkworm in cooler regions during summer, the trials were successfully conducted at four locations, including two rearings and grainage in Koraput, Odisha. Seed cocoons were supplied to CSB-CMERTI and DoS Andhra Pradesh for commercial season rearing. Hatching success exceeded 85% in cooler regions, while control regions showed a hatching rate of approximately 1%. Also, 5,100 som seedlings were planted in Koraput, with a request for 7,000 seedlings for next year from DoS Andhra.
11. Dr. Kartik Neog, Director, CSB-CMERTI; Dr. Mahesh D S, Scientist-C, CSB-CMERTI; and Team Gujarat, including Shri. Satish Singh (Kalyan Foundation) and Dr. L. D. Parmar (SDAU) were awarded the Certificate of Appreciation by the Central Silk Board for their significant contributions to sericulture in Gujarat. This recognition acknowledges their efforts in promoting Eri culture, enhancing farmer livelihoods and advancing sustainable silk farming practices.
12. During the Silver Jubilee celebration, CSB-CMER&TI unveiled a newly developed sheet-based commercial loose egg production technology for replacing the traditional kharika method at the commercial level (tested at both CMER&TI and EBSF, Topatoli at the commercial level). This innovation is simple to use, cost-effective and labor-saving. It reduces oviposition space requirements five times and cuts moth placement time to one-third. Egg harvesting, washing and disinfection have also become faster and simpler. Improvements in egg incubation and black boxing methods have led to better hatching rates and maintained egg quality. With a higher Benefit-Cost ratio of 1.44 compared to 1.16 in the traditional method. A model blueprint with appliances required for a commercial loose egg production centre (25 lakh DFLs/year) was also designed, paving the way for large-scale eri egg production, encouraging new seri-entrepreneurs and boosting rural incomes.
13. Mobile based application for real-time identification and quantification of pebrine (*Nosema sp. Aa1*) detection using Artificial Intelligence and Machine learning models was developed and released during the Silver Jubilee Celebration Event on 24th Oct. 2024.
14. CSB-CMER&TI has entered into a Material Transfer Agreement with ICAR- Indian Institute of Oilseeds Research, Hyderabad, for enrichment of the Castor gene pool. Superiority of *Accession-22* was validated under Primary Yield Trial with 20% enhancement in leaf yield and significant improvement in yield attributing traits. The accessions will be test-verified under Multi-locational trials (MLT) in the forthcoming plantation season.



15. CSB-CMER&TI supplied 28055 seedlings of Muga and Eri host plants to 165 beneficiaries. This has supported the augmentation of the plantation of superior host plant accessions at farmers' fields of about 63 acres. 20 kgs of castor (NBR) seeds were also supplied to 17 farmers for sowing in a 10-acre area for the support of eri culture.

16. CSB-CMER&TI released a series of video documentaries under the 100 Days Programme of the Viksit Bharat initiative, highlighting the Eri Sericulture Promotional Project in Gujarat. These included a Hindi documentary, English and Gujarati awareness campaign videos and a special documentary showcasing the progress of project demonstrations and implementation, featuring farmers' experiences and field-level impact.

17. CSB-CMER&TI celebrated its 25th anniversary on October 24, 2024, highlighting its significant contributions to the Muga, Eri, and Oak Tasar silk industries. The event featured the release of a documentary, commemorative book, postal stamp honoring Muga silk, and the launch of the "Golden Threads" book on Eri-culture. Technology licenses were awarded, and certificates of appreciation were presented. The celebration underscored CSB-CMER&TI's leadership in research, innovation, and capacity-building, with a focus on empowering rural communities and promoting sustainable sericulture practices.

18. Conducted a total of 61 extension programmes (surpassing the target of 56), sensitizing over 4,292 stakeholders.

19. Over 3709 beneficiaries, including DoS staff, students, and stakeholders, have been trained through 229 programs under the institute's capacity-building and training initiatives. These programs, covering both Muga and Eri sectors, include farmer skill training, technology orientation programs, sericulture resource center sessions, post-cocoon training, chawki rearing training, and Samarth, among others.

20. Significant progress was made in enhancing muga culture in Manipur through the selection of lead farmers, benchmark survey, awareness programs, and technology demonstrations. Farmers were equipped with essential inputs, and successful muga silkworm rearing was conducted in September 2024, strengthening Muga culture practices in the region.



परियोजनाओं की सूची List of R&D Projects

सम्पन्न परियोजनाएं Projects concluded in 2024-25

Sl.	Code	Title	Duration	Principal Investigator	Co-Investigator
1	AIP-05013-SI	Impact of elevated CO ₂ and temperature on muga silkworm and its primary host plant (CSB-funded project)	Mar., 2020 to Feb., 2023 (Extended up to Feb. 2025)	Sinto Antoo (from 14.09.2024) D.K. Jigyasu (01.07.2022 to 13.09.2024) Amit Kumar (up to 30.06.2022)	Aftab A. Shabnam

नैरंतरिक परियोजनाएं ON GOING RESEARCH PROJECTS

Sl.	Code	Title	Duration	Principal Investigator	Co-Investigator
1	APS0502 1EF (DBT funded)	Studies on population diversity and the role of host plant volatile cues for enhancing egg laying in temperate tasar silk moth (<i>Antheraea proylei</i>)	Jan. 2022 to Dec. 2024 (Extended up to Sept. 2025)	Sinam Subharani Devi (PI) Kaiho Kaisa (Co-PI) K. M. Vijayakumari (Co-PI) up to 30.04.2025	-
2	ARP0502 3CN	Muga and Eri silkworm disease monitoring in north eastern states of India.	Mar. 2023 to Feb. 2028	Brunda B N (PI) Arun Kumar K P (From 01.10.2024 to 20.02.2025) Bitupon Das (upto 30.09.2024) Lopamudra Guha (Co-PI)	All Scientists of CSB-CMER&TI & MESSO units
3	AIT05024 EF (DBT funded)	Advanced-level Institutional Biotech Hubs at Central Muga Eri Research and Training Institute, Jorhat, Assam (Phase-II)	Mar. 2023 to Feb. 2026	Arun Kumar KP	Mahesh D S
4	PIB5025S IC	Characterization and evaluation of Soalu (<i>Litsea monopetala</i>) accessions for muga silkworm (<i>Antheraea assamensis</i>) rearing	Feb. 2024 to Jan. 2027	Om Prakash Patidar	Aftab A. Shabnam, DK Jigyasu (up to Aug. 2024)
5	SPR5026 SIC	Development of suitable Muga and Eri-based Integrated Farming System (IFS) for North East India	Feb. 2024 to July 2026	Diganta Mech	Vijay N



Sl.	Code	Title	Duration	Principal Investigator	Co-Investigator
6	MOE5027 SIC	Economic analysis of Tapioca-based Eri-culture in Assam & Nagaland	Feb. 2024 to July 2025	Vijay N	Diganta Mech
7	SPR5028 SIC	Popularization of Improved Technologies of Muga Culture for Enhancing Cocoon Production in Manipur	Feb. 2024 to Jan. 2027	Kh. Subadas Singh	L Somen Singh Vijay N
8	PIT5029S IC	Development of clonal propagation methods in Borpat (<i>Ailanthus grandis</i> L.) for its mass multiplication	Mar. 2024 to Feb. 2027	Om Prakash Patidar	D.K. Jigyasu
9	MOE5030 SNC	Evaluation, optimization & Popularization of Eri-culture Practices in Castor Growing Areas of Gujarat	Mar. 2024 to Feb. 2026	Mahesh D S	Vijay N Suraj Pal
10	SRE05031 SNC	Infochemicals mediated Multifarious behavioural tactics for Uzi fly management in Muga culture	Mar. 2025 to Feb. 2028	Kaiho Kaisa (PI) Mukesh K Dhillon (Co-PI)	Dr. Suresh Nebapure (CI)
11	SPR05032 SIC	Development of rearing technology in Early Spring and Late Autumn crop	Mar. 2025 to Feb. 2028	Reeta Luikham	Sinam Subharani Devi, Sinto Antoo
12	SIB05033 SIC	Isolation of shorter larval duration line of Oak Tasar silkworm <i>A. proylei</i> through selection from the mass population	Mar. 2025 to Feb. 2029	Laishram Somen Singh	Khwairakpam Subadas Singh
Collaborative projects as Co-PI/CI with other institutes					
01	AIB08008 MI	Development and evaluation of Eri silkworm (<i>Samia ricini</i> Donovan) breeds/ hybrids with improved productivity	Mar. 2022 to Feb. 2025	Reeta Luikham	Aftab A. Shabnam
02	SRP08012 MNC	Development of a Rapid Antigen Test Kit for Diagnosis of Cytoplasmic Polyhedrosis in Vanya Silkworm (<i>Antheraea assamensis</i> , <i>A. mylitta</i> and <i>A. proylei</i>)	Feb. 2024 to Jan. 2026	Dr. G. Subrahmanyam (ISBR)	Bruda B N



अनुसंधान एवं विकास परियोजनाओं की उपलब्धियाँ
रेशमकीट प्रभाग

ACHIEVEMENTS IN R&D PROJECTS
SILKWORM DIVISION



ONGOING PROJECTS**1. ARP05023CN: Muga and Eri Silkworm Disease Monitoring and Management in North East States****Project Period:** Mar. 2023 to Feb. 2028**Funding Agency:** Central Silk Board, Bengaluru**Total Budget allocation:** 41.00 Lakhs**Total Expenditure (during the year):** 05.30 Lakhs**Scientists involved:** Ms. Brunda B N (PI), CSB-CMERTI, Lahdoigarh

Dr. Lopamudra Guha (Co-PI), CSB-MESSO, Guwahati

All CSB-CMER&TI and CSB-MESSO nested units and DoS in the North East (CI)

Objectives

1. To estimate the disease prevalence in Vanya silkworms (Muga and Eri) at seed farms, ASR's Level and grainages in North-eastern India.
2. To suggest timely remedial measures to ASRs, farmers and DoS personnel to manage the Vanya silkworm diseases and to prevent disease outbreak.

Summary of the findings/achievements :

1. Training programs were successfully conducted for 42 Scientists/OICs/Technical personnel from CSB-MESSO, CSB-CMER&TI, and its nested units.
2. Separate training was organized for 25 nominated State Sericulture Officers to strengthen disease monitoring and management capacities.
3. Google Sheets were developed and implemented for efficient and uniform submission of monitoring reports.
4. A comprehensive Manual on Disease Monitoring was prepared and distributed to all Coordinating Institutes.
5. A dedicated WhatsApp group was created to ensure effective communication and real-time coordination with Department of Sericulture (DoS) officers involved in the project.
6. Six portable microscopes were procured to facilitate field-level disease diagnosis and monitoring.
7. Eleven Zone-wise Monitoring Groups were constituted, comprising DoS officers, scientists, and project coordinators, to strengthen disease surveillance and reporting mechanisms.
8. Disease samples collected from Central and State Sericulture farms as well as farmers' fields across the Northeastern states were analyzed, and reports with remedial measures were furnished to the concerned agencies.
9. Crop inspection and monitoring activities were carried out across multiple locations, including Nagaland, Meghalaya, and Assam, covering both DoS and farmers' (ASR) fields.
10. During the year 2024–25, disease monitoring and surveillance were conducted across more than 60 locations in Meghalaya, Nagaland, Manipur, Arunachal Pradesh, and Assam.



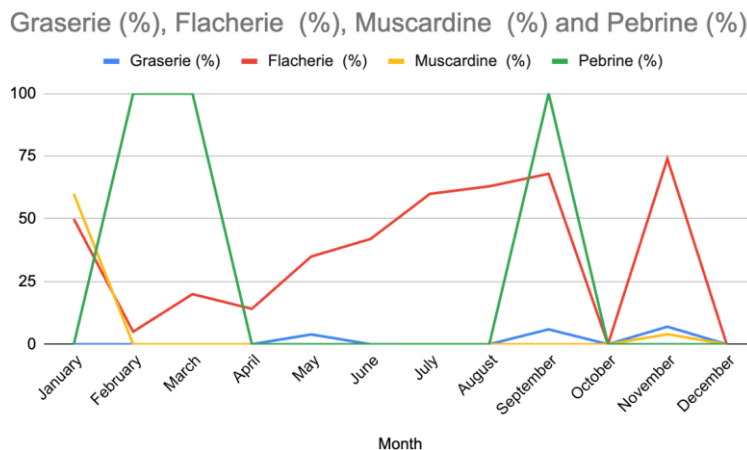


Figure 1: A graphical representation of the occurrence and seasonal trend of major silkworm diseases across the Northeastern region during 2024–25 was prepared to aid in data interpretation and decision-making.

As depicted in the graph, the incidence of Graserie was observed during April to June and again from August to December, although its intensity remained relatively low throughout the year. Similarly, Muscardine occurrence was slightly higher in January, followed by minor incidences between October and December, with a small rise noted during November. In contrast, Pebrine showed high incidence levels from January to April, and again during the mid-August to October period. Flacherie exhibited a gradual increase in incidence from January to December, peaking between August and September, followed by another noticeable rise around mid-November. Overall, the graph indicates that while Graserie and Muscardine appeared sporadically and with low severity, Pebrine and Flacherie were the more dominant diseases, with distinct seasonal peaks corresponding to environmental or rearing conditions.

MOE5030SNC: Evaluation, optimization & Popularization of Eri-culture Practices in Castor Growing Areas of Gujarat

Project Period: Mar. 2024 to Feb. 2026

Funding Agency: Central Silk Board, Bengaluru

Total Budget allocation: 45.90 Lakhs

Total Expenditure (during the year): 33.94 Lakhs

Scientists Involved:

CSB-CMER&TI:

Dr. Mahesh D S, Scientist-C, PI

Dr. K Chandrakumara, Scientist-B, CI (Upto Mar. 2025)

Dr. Vijay N, Scientist-C, CI

Dr. D K Jigyasu, Scientist-D, CI

Kalyan Foundation, Palanpur, Gujarat:

Mr. Satish Singh, Co-PI

Mr. Nitin Jaimini, CI



Objectives:

1. To evaluate and optimize the Ericulture practices in castor-growing regions of Gujarat state through the available technologies and practices.
2. To propagate and promote Ericulture in castor-growing areas of Gujarat state to augment farmers' income by raising awareness and encouraging adoption of efficient and sustainable practices.

Summary of the findings/achievements:

- Five demo-Eri rearing houses are established, including one Eri Chawki Rearing Centre (CRC) at Jagana (Palanpur) and four late-age rearing centers in Haripura (Sabarkantha), Malekpur (Mehsana), Kakoshi (Patan) and Kidotar (Banaskantha).
- These centres are fully equipped with essential rearing equipment (distributed to the farmers). Additionally, rearing appliances have been provided to five more farmers who have adequate space for late-age rearing.
- Conducted a demonstration-cum-hands-on training on Eri rearing including the Eri chawki rearing center at Jagana (Palanpur) and late-age rearing at four late-age demonstration rearing centers (DRCs) located at Malekpur (Mehsana), Kakoshi (Patan), Kidotar (Banaskantha) and in Haripura (Sabarkantha), as well as at nearby selected farmers' fields.
- A total of 1,000 DFLs were brushed at the Eri chawki rearing center in Jagana (Palanpur), following the standard package of Eri chawki rearing technology developed by CSB-CMER&TI, from egg incubation to the transportation of chawki worms.
- The chawki batch was distributed to 17 farmers across four districts, including the four late-age demonstration rearing houses and nearby selected farmers. The complete late-age rearing demonstration followed the improved late-age rearing practices developed by CSB-CMER&TI, engaging 100 selected farmers and over 100 interested farmers.
- Out of 1,000 DFLs, around 742.89 kg of green cocoons were obtained (74.23 kg/100 DFLs) in the initial rearing itself, with an average ERR (%) of 83.22 ± 3.37 . Additionally, the following averages were recorded: cocoon weight – 3.00 ± 0.19 g, pupal weight – 2.53 ± 0.17 g, shell weight – 0.48 ± 0.05 g and cocoon shell percentage – 15.8 ± 0.54 .
- Refined the existing platform rearing technology and mounting system using improved techniques.
- As Gujarat currently lacks regulated markets for Eri cocoons, the green cocoons were transported to the Northeast. Farmers received Rs. 250 per kg of green cocoons, excluding costs for transportation, packaging and chawki cost.
- Studies on a dense plantation system (75×60 cm) compared to the current system (150×120 cm) are ongoing to increase the number of Eri DFLs brushed per unit area.

Specific outcome

- Developed improved platforms for late-age rearing along with improved rearing practices and mounting techniques by using plastic mountages.
- Standardized the rearing house area required for eri rearing.
- Evaluated and optimized the different eri technologies developed by CSB-CMER&TI.

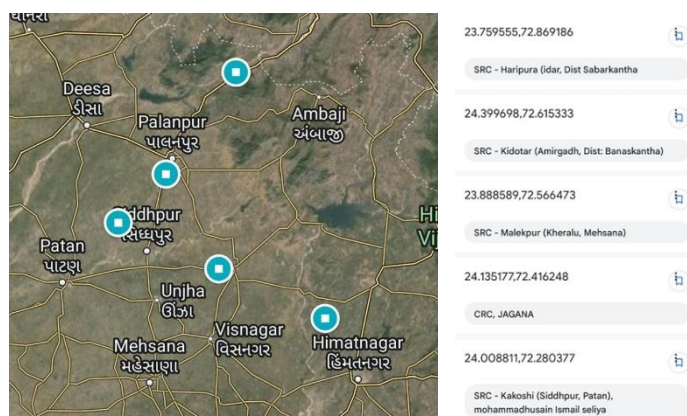


Figure 2: Locations of demo CRC and late-age rearing houses



Figure 3: Establishment of Demo-rearing centres (DRC) at different locations in Gujarat



Figure 4: Castor plantations (GCH-8)



Figure 5: Fully furnished Eri Chawki Rearing Centre (CRC), Jagana Village, Palanpur



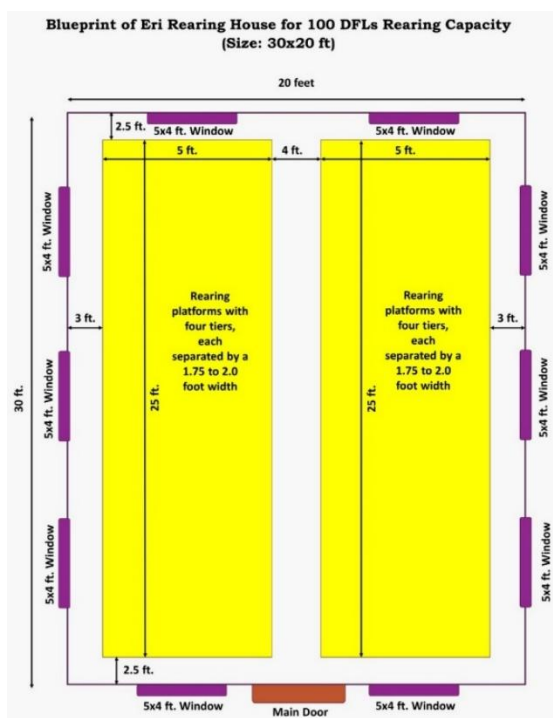


Figure 6: Standardized the rearing house area required for eri rearing

Table 1: Crop performance of eri silkworm rearing at different farmers

Farmers	Number of DFLs received for demo rearing	Cocoon yield (Kg)	Number of larvae supplied	Number of cocoons harvested	Effective rate of rearing (%)	Average 100 cocoon weight (g)	Average 100 Pupal weight (g)	Average 100 shell weight (g)	Cocoon Shell (%)
1	100	76.97	31850	28381	89.14	3.08	2.61	0.47	15.9
2	50	40.12	15925	13925	87.44	3.31	2.76	0.55	16.61
3	50	39.15	15925	13640	85.65	3.21	2.7	0.51	15.88
4	25	18.08	7962	6292	79.02	2.86	2.41	0.45	15.73
5	25	19.5	7962	6711	84.28	3.08	2.59	0.49	15.9
6	125	88.52	39812	31513	79.22	2.79	2.37	0.42	15.05
7	50	35.6	15925	12624	79.27	2.82	2.38	0.44	15.6
8	50	39.64	15925	13382	84.03	2.92	2.45	0.47	16.09
9	50	41.3	15925	14011	87.98	3.22	2.92	0.53	16.46
10	25	20.17	7962	6808	85.51	3.26	2.73	0.53	16.25
11	25	18.25	7962	6390	80.26	2.96	2.48	0.48	16.22
12	25	17.6	7962	6518	81.87	2.72	2.3	0.42	15.44
13	25	19.64	7962	6792	85.31	3.01	2.51	0.5	16.61
14	150	108.13	47745	38617	80.88	2.8	2.37	0.43	15.35
15	75	54.32	23887	18731	78.41	2.91	2.48	0.43	14.78
16	100	70.85	31850	26591	83.49	2.86	2.42	0.44	15.38
17	50	35.05	15925	13205	82.91	2.94	2.49	0.45	15.31
	1000	742.89	318466	264131	83.22	2.99	2.53	0.47	15.79
				SD	±3.36	±0.18	±0.16	±0.041	±0.54





Egg incubation (1000 DFLs)



Black boxing of incubated eggs



Black-box opening



Demonstration of Eri chawki brushing



Castor leaf chopping



Chopped leaf feeding on hatched worms



Bed spacing



Providing bed cleaning net and feeding



Chawki-uniformly settled for 1st moult



Dusting of lime during moult



Chawki - uniformly settled for 2nd moult



Eri chawki distribution



Promotion of platform rearing at all the DRCs



Transportation and distribution of chawki

Figure 6: On-site training and demonstration of Eri culture technologies and their evaluation in Gujarat



Figure 7: Demo trainings have been initiated at each Demo Rearing Centre for the selected farmers



Figure 8: Crop harvest and transportation of cocoons



Figure 9: Studies on a dense plantation system (75x60 cm) compared to the current system (150x120 cm) to increase the number of Eri DFLs brushed per unit area (at SDAU) and discussion with the concerned staff with Director, CSB-CMER&TI and Team



SRE05031SNC: Infochemicals mediated Multifarious behavioural tactics for Uzi fly management in Muga culture**Project Period:** March 2025 to February 2028**Funding Agency:** Central Silk Board, Bengaluru**Total Budget Allocation:** 69.09 Lakhs**Total Expenditure (during the year):** 00.00 Lakh**Scientists Involved:****CSB-CMER&TI, Lahdoigarh**

Dr. Kaiho Kaisa (PI)

Dr. Ramesha A (CI)

ICAR-IARI, New Delhi

Dr. Dr. Mukesh K Dhillon (Co-PI)

Dr. Suresh Nebapure (CI)

The project addresses one of the most persistent challenges in Muga sericulture, the Uzi fly infestation, which causes heavy crop losses and threatens seed crop sustainability. The study aims to develop eco-friendly, behaviour-based management strategies by identifying and utilizing infochemicals that influence Uzi fly behavior.

This innovative approach will pave the way for species-specific, non-toxic interventions, reducing dependence on chemical pesticides and promoting sustainable Muga culture. Once established, the outcomes will contribute significantly to enhancing cocoon yield, protecting rural livelihoods, and strengthening the resilience of Assam's unique Muga silk ecosystem.

Although the project formally commenced in March and experimental work has not yet begun, preparatory activities such as equipment procurement planning and coordination between collaborating institutes have been initiated to ensure smooth execution in the upcoming quarters.

Objectives:

1. To evaluate the efficacy of insect origin infochemicals against the Uzi fly
2. To evaluate the efficacy of Muga host plants volatiles and synthetic chemicals
3. Bio-prospecting for the effective infochemicals from various flowering plants
4. To assess the effectiveness of infochemicals against Uzi fly



अनुसंधान एवं विकास परियोजनाओं की उपलब्धियाँ

खाद्य पौधा प्रभाग

ACHIEVEMENTS IN R&D PROJECTS
HOST PLANT DIVISION



CONCLUDED PROJECT

Project Code & Title : AIP-05013-SI Impact of Elevated CO₂ and Temperature on Muga Silkworm and Its Primary Host Plant

Project Period : March 2020 – February 2025

Funding Agency : Central Silk Board, Bengaluru

Total Budget allocation : ₹44.72 lakhs

Total expenditure : ₹43.12 lakh

Scientists involved: Sinto Antoo (PI from 13.09.2024)

Dharmendra K. Jigyasu (PI up to 12.09.2024)

Amit Kumar (PI up to 31.07.2022)

Aftab Ahmad Shabnam (CI)

G. Subramanyam (CI up to 26.07.2021)

Objectives:

- To assess the influence of elevated CO₂ and temperature on growth and yield attributes of primary host plant.
- To assess the impact of elevated CO₂ and temperature on muga seed crop production, cocoon characteristics and fecundity.
- To design strategies for adoption in muga silk worm rearing under the changing environmental scenario in Assam.

SUMMARY OF THE FINDINGS/ACHIEVEMENTS:

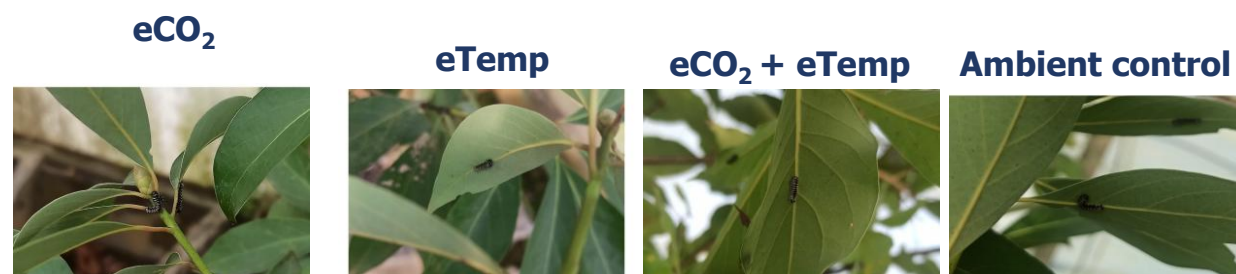
- Under elevated CO₂ (eCO₂: 550 ppm) and temperature conditions (1.5°C over prevailing ambient temperatures of 20.85 °C to 25.62 °C during the rearing season), the host plant showed significant physiological and biochemical changes.
- Leaf moisture content reduced by 9%, and leaf damage increased by 63.2%. Carbohydrates increased by 45.3–54.8% due to the CO₂ fertilization effect, while protein content decreased by 14.6–22.1% owing to dilution effects under eCO₂.
- Amino acid content decreased by 23.6%, and total sugars increased by 25.9–69.8%, possibly due to enhanced starch accumulation. However, reducing sugars decreased by 15.7%, indicating a shift in energy and osmotic balance.
- Additionally, ascorbate content was reduced by 25.1%, suggesting increased oxidative stress and altered photosynthetic efficiency. A decrease in chlorophyll b by 10.2–37.7% was observed, reflecting impaired nitrogen metabolism, while carotenoid content increased by 11.3–26%, indicating a potential role in preventing oxidative damage.
- In the muga silkworm, carbohydrates in haemolymph increased by 21.1%, possibly due to enhanced glucose mobilization or increased trehalose content, while protein and lipid contents in haemolymph decreased by 33.5% and 38.7%, respectively.
- The reduction may be attributed to accelerated proteolysis and a metabolic shift towards carbohydrates.
- Significant biological impacts were also recorded: a reduction in larval duration by 6 to 11 days, and a reduction in cocoon weight, pupal weight, and shell weight by 45%, 45%, and 38%, respectively, under high temperature.
- Additionally, the effective rate of rearing (ERR%) dropped to 2%, and fecundity was reduced by 14.2%, indicating developmental and reproductive trade-offs.



- To mitigate the adverse effects, the project identified several short-term and long-term strategies. Short-term strategies include irrigation and mist spray on high-temperature days, corrections in fertilizer application to improve plant nitrogen status, shifting the seed crop schedule, and rearing seed crops in cooler regions.
- Long-term strategies focus on breeding and development of climate-resilient Som varieties and thermo-tolerant muga breeds for climate-smart muga culture.
- As per the 45th RAC recommendations, a test verification of the developed short-term mitigation strategies is scheduled in the upcoming seed crop using the OTC facilities already established at the institute.

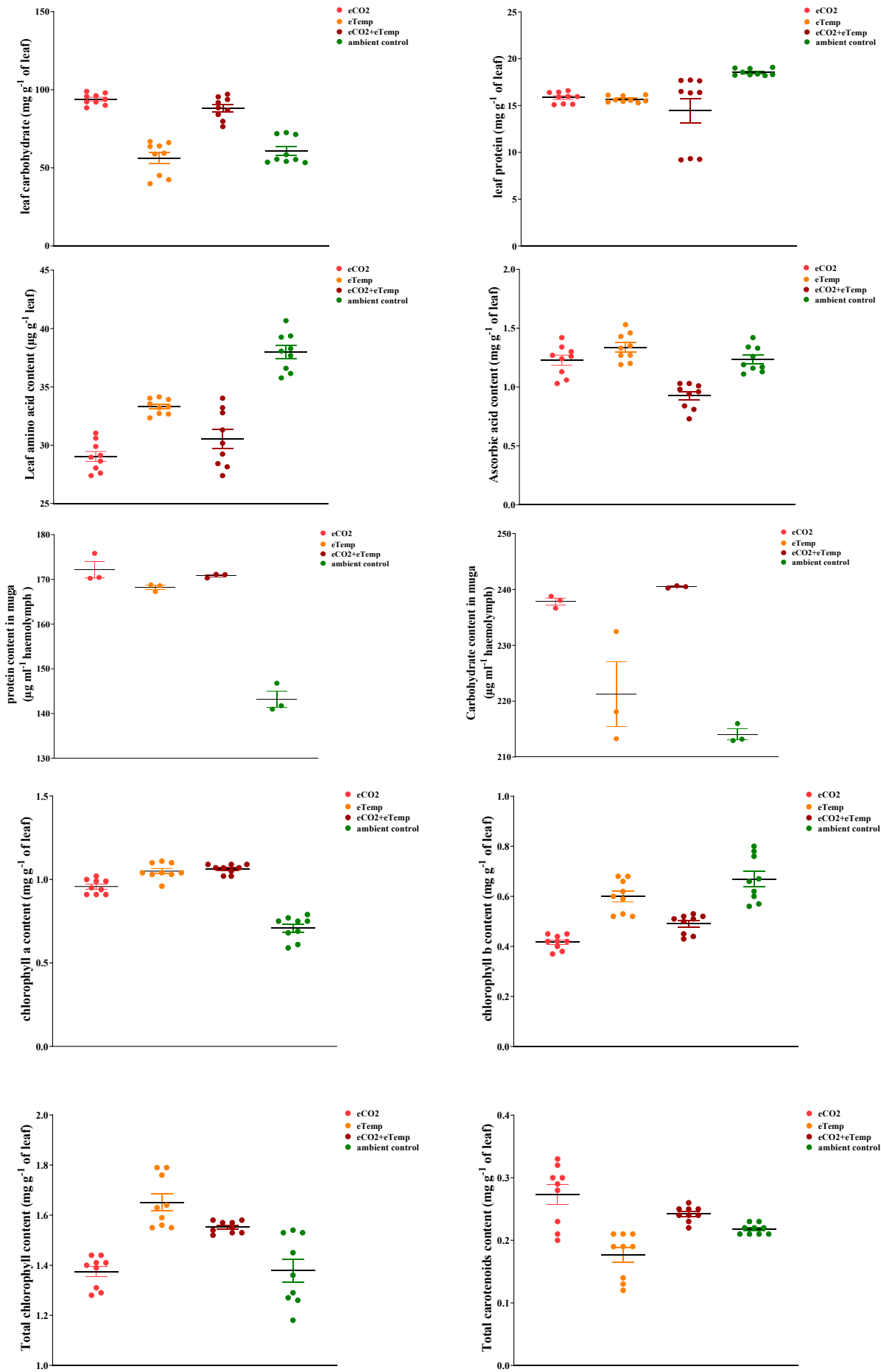
Jan 2025	Temp (°C)
Minimum Temp.	12.326
Maximum Temp.	28.929
Average Temp.	18.732
Feb 2025	Temp (°C)
Minimum Temp.	12.066
Maximum Temp.	27.962
Average Temp.	18.843

1st Instar



5th Instar





ONGOING PROJECTS

PIB-05025-SIC: Characterization and evaluation of Soalu (*Litsea monopetala*) accessions for muga silkworm (*Antheraea assamensis*) rearing

Project Period: February 2024-January 2027

Funding Agency: Central Silk Board, Bengaluru

Total Budget Allocation: 23.15 Lakhs

Total Expenditure (during the year): 13.45 Lakh

Scientists Involved: Dr. Om Prakash Patidar (PI)

Dr. Aftab A. Shabnam (CI)

Dr. DK Jigyasu (CI) (up to Aug 2024)

Objectives:

1. To evaluate and characterize the Soalu accessions towards varietal development.

Summary of the findings/achievements:

- Morphological traits were recorded for several characters, including: branching nature, young and mature shoot colour, bud shape and attachment, leaf lobe shape, leaf type, margin, apex, base, surface, texture, colour, glossiness, shape, dry bark colour, leaf wrinkleness, mature stem colour, pigmentation of primary veins, phyllotaxy, shape of leaf scar, and growth nature, among others.
- Maximum morphological variation was observed in leaf base shape, leaf apex, and leaf shape.
- Leaf apex variations included: *obtuse*, *retuse*, *mucronate*, *emarginate*, *rounded*, and *acute* forms.
- Leaf base variations included: *obtuse*, *oblique*, *cordate*, *acute*, and *rounded* types.
- Leaf shape variations were observed as: *elliptic*, *obovate*, *ovate*, and *oblong*.
- Among the metric traits, the highest coefficient of variation (CV%) was recorded in total shoot length (29%), followed by 100-leaf weight (23%), number of shoots (16%), and stem diameter (16%).
- In terms of physiological traits, total chlorophyll, chlorophyll b, and carotenoid content showed significant variation among the 22 accessions studied.



Elliptic



Obovate



Ovate





Obtuse



Oblique



Rounded



Cordate



Acute



Oblong



Obtuse



Retuse



Mucronate



Emarginate



Rounded



Acute

PIT-05029-SNC: Development of clonal propagation methods in Borpat (*Ailanthus grandis* L.) for its mass multiplication

Project Period: March 2024-February 2027

Funding Agency: Central Silk Board, Bengaluru

Total Budget allocation: CSB-CMERTI: 10.00 Lakhs; ICFRE-RFRI: 22.04L

Total expenditure (during that year): CSB-CMERTI: 04.20 Lakhs; ICFRE-RFRI: 06.80 Lakhs

Scientists Involved: Dr. OP Patidar (PI)

Dr. DK Jigyasu (CI) (up to July 2024)

Dr. Satyam Bordoloi, Co-PI, RFRI, Jorhat

Objectives:

1. To evolve simple, rapid and inexpensive clonal propagation techniques for mass multiplication of Borpat.
2. Optimization of most suitable technique for mass multiplication of Borpat.

Summary of the findings/achievements:

- Existing Borpat plantations are being maintained following the recommended package of practices.
- A stem cutting trial using various concentrations of plant growth regulators (PGRs) was conducted at CMERTI during the rainy season.
- A surface sterilization protocol has been standardized for leaf explants, from which callus formation has been successfully achieved.
- Embryonic callus formation was predominantly observed at the leaf tips, with no response noted in other regions of the leaf.

Trials conducted using half-strength MS medium and Woody Plant Medium (WPM) did not yield satisfactory results.

- Currently, the experiment is ongoing using Modified Woody Plant Medium, which is being evaluated for improved response.
- Petioles, both with and without leaves, did not exhibit new shoot growth, likely due to the absence of axillary buds.
- New shoot emergence was observed from stem cuttings; however, root formation was not achieved in these explants.



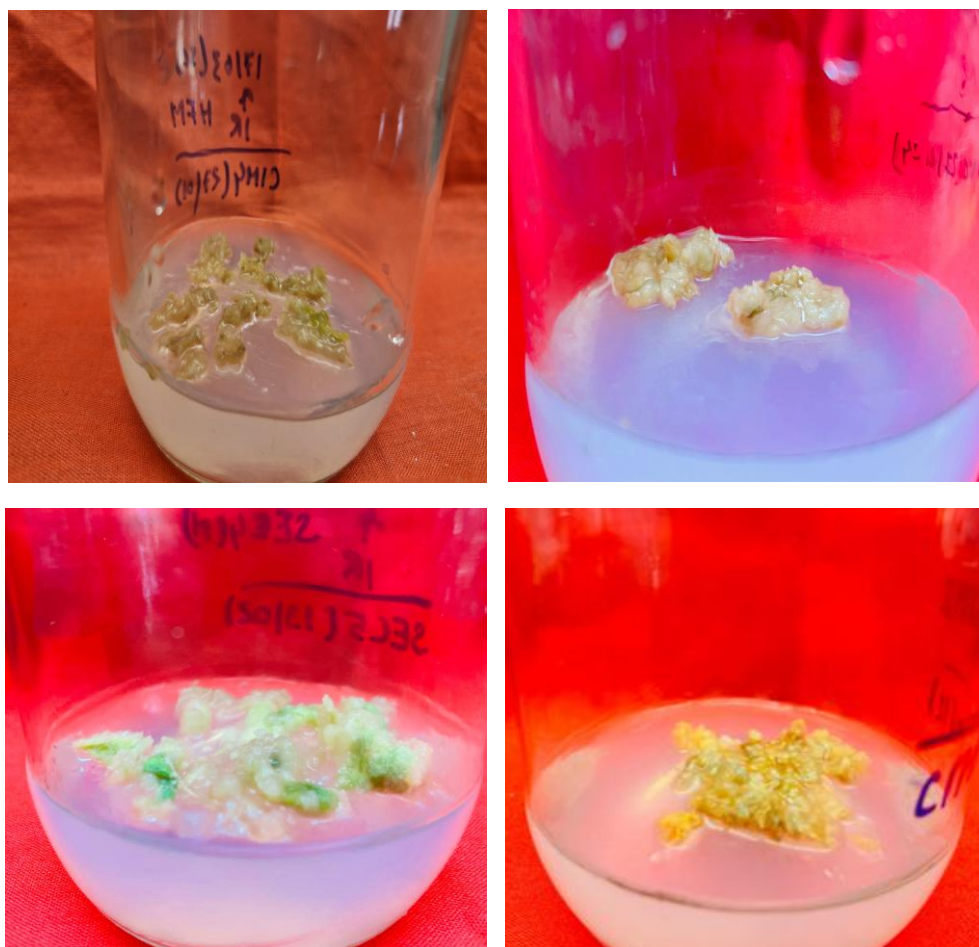
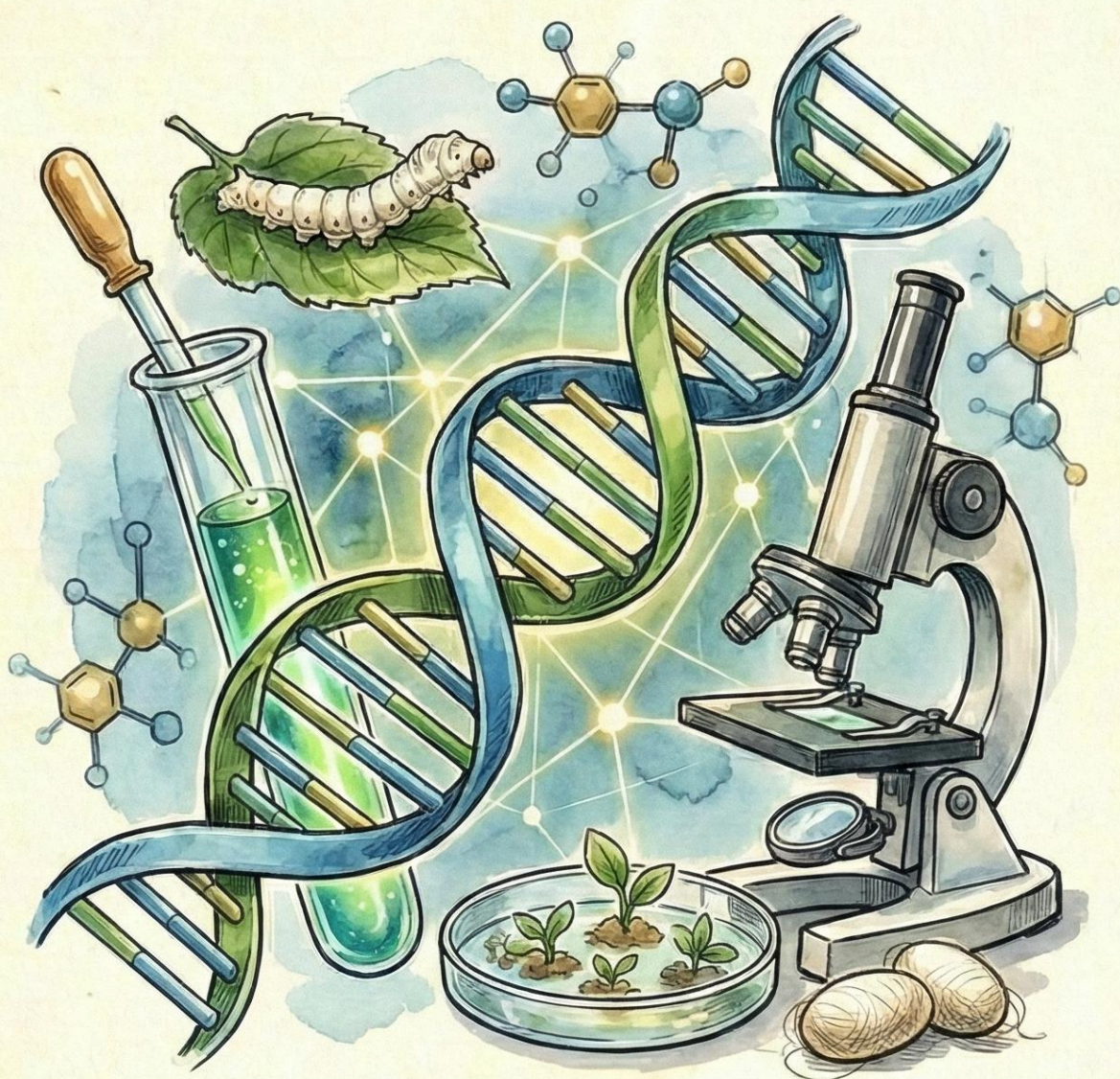


Figure 10: Multiplication of embryonic callus in Borpat

अनुसंधान एवं विकास परियोजनाओं की उपलब्धियाँ
जैव-प्रौद्योगिकी प्रभाग

ACHIEVEMENTS IN R&D PROJECTS BIOTECHNOLOGY DIVISION



AIT05024EF: Advanced level Institutional Biotech Hub at CMERTI, Jorhat (Phase II)**Project Period:** February 2023 – February 2026**Funding Agency:** Dept. of Biotechnology, Govt. of India**Total Budget allocation:** 57.82 Lakhs**Total expenditure** (during that year): 3.24 Lakhs**Scientists Involved:** Dr. Arun Kumar KP (PI)

Dr. Bitupan Das (CI)

Dr. Mahesh DS (CI)

Dr. Kaiho Kaisa (CI)

Objectives:

1. Collection and maintenance of different ecoraces and strains of Eri silkworms.
2. Genotyping by Sequencing of selected ecoraces and strains of eri silkworms.
3. Analysis of SNP data for use in different downstream applications for the improvement of Eri silkworm.

Summary of the findings/achievements:***Collection and maintenance of different ecoraces and strains of Eri silkworms***

Total 9 ecoraces, Lakhimpur (SR012), Kokrajhar (SR014), Borduar (SR001), Dhansiripar (SR020), Diphu (SR010), Mendipathar (SR005), Titabar (SR002), Lahing (SR008) and Namti having different strains of the eri silkworm were collected in the first year of the project. But due to pebrine disease outbreak in the Institute the ecoraces were discarded. Five ecoraces of Eri silkworm Borduar, Udalguri, Nongpoh, Dimapur and Jonai with morphological larval characters and cocoon characters have been recollected and are maintained at the Institute.

Purification of strains from the collected ecoraces

Each of the strains from the collected ecoraces was purified using the cellular rearing method and is maintained separately at the Institute.

Collection of wild eri (*Samia canningi*) cocoons.

During the field surveys, wild eri (*Samia canningi*) silkworms were collected and reared at the institute. Grainage was conducted from the collected cocoons after rearing. The silkworms are currently being maintained at the institute.

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Figure 11: (A) Wild cocoon, (B) Cocoon from cross between wild and cultivated and (C) Cultivated cocoons.

Identification of default larval phenotype

From the experiments conducted during rearing, it was found that the default larval colour of the eri silkworm is Yellow and the gene responsible for it is recessive. In case of larval markings, the plain phenotype is the default and recessive. The larval phenotype Yellow Plain gets expressed only when no gene for Greenish Blue colour and Spotted / Zebra larval marking is present.

A procedure for mass rearing of purified morphotypes in silkworms to maintain the population has been developed.

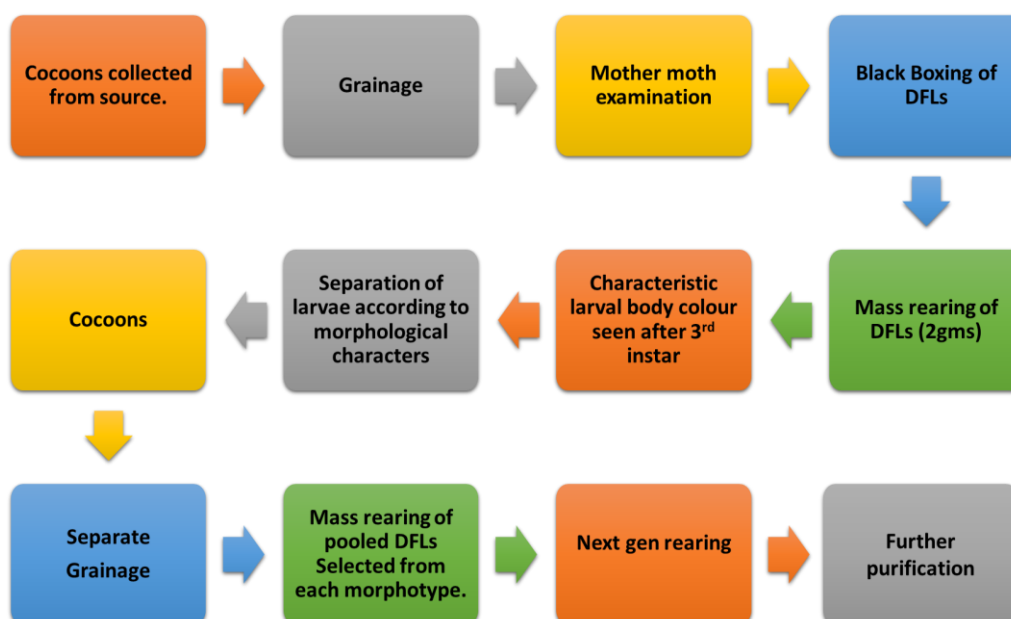


Figure 12: Mass rearing procedure for purified strains from each ecorace

To address the issue of bottleneck effect due to continuous cellular rearing of purified silkworms, which led to inbreeding depression, a significant loss of genetic variation, and a subsequent decline in the overall vigor of the silkworms, a mass rearing procedure was developed for the purification of different strains from each ecorace. This new procedure includes modifications to the original cellular rearing technique and incorporates additional steps to ensure the health and genetic diversity of the silkworm population.



DNA isolation and GBS of initially selected ecoraces/strains.

A protocol for extracting DNA from silkworm pupae was standardized. This protocol was also found to be effective for extracting DNA from the silk glands of larvae. DNA was extracted from the silk glands of male and female larvae at the 5th instar larval stage. Five samples were collected from each gender, resulting in a total of ten samples for each strain. A total of 100 DNA samples have been extracted and sent for sequencing.

Discovery of a Novel Silkworm Phenotype

During the field visit, it was observed that different types of larval marking on silkworms with characteristic small dots on the body and small dots on legs were found in Diphu, Assam and Namti, Assam, which have not been reported earlier.

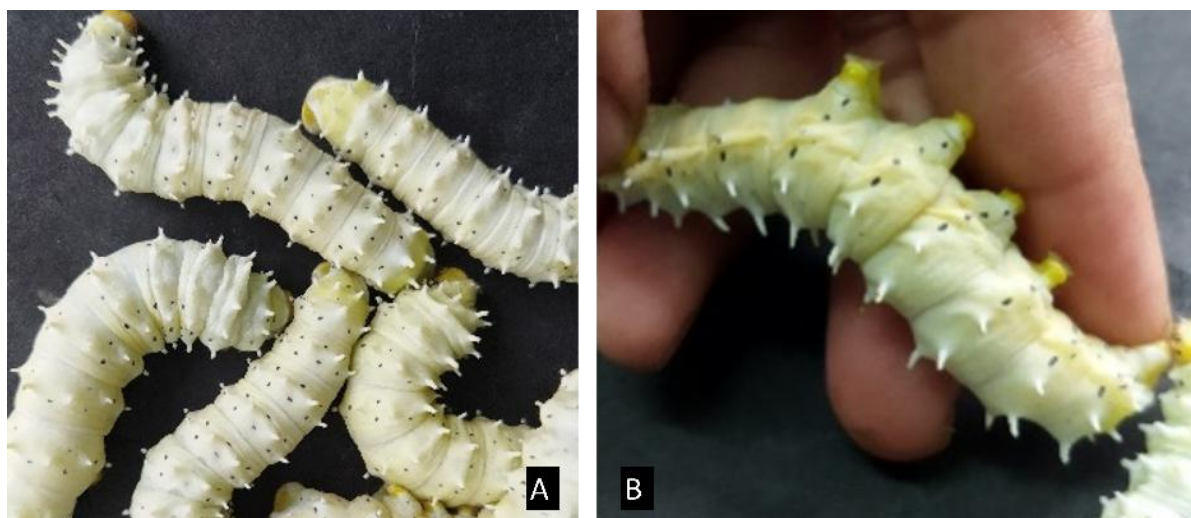
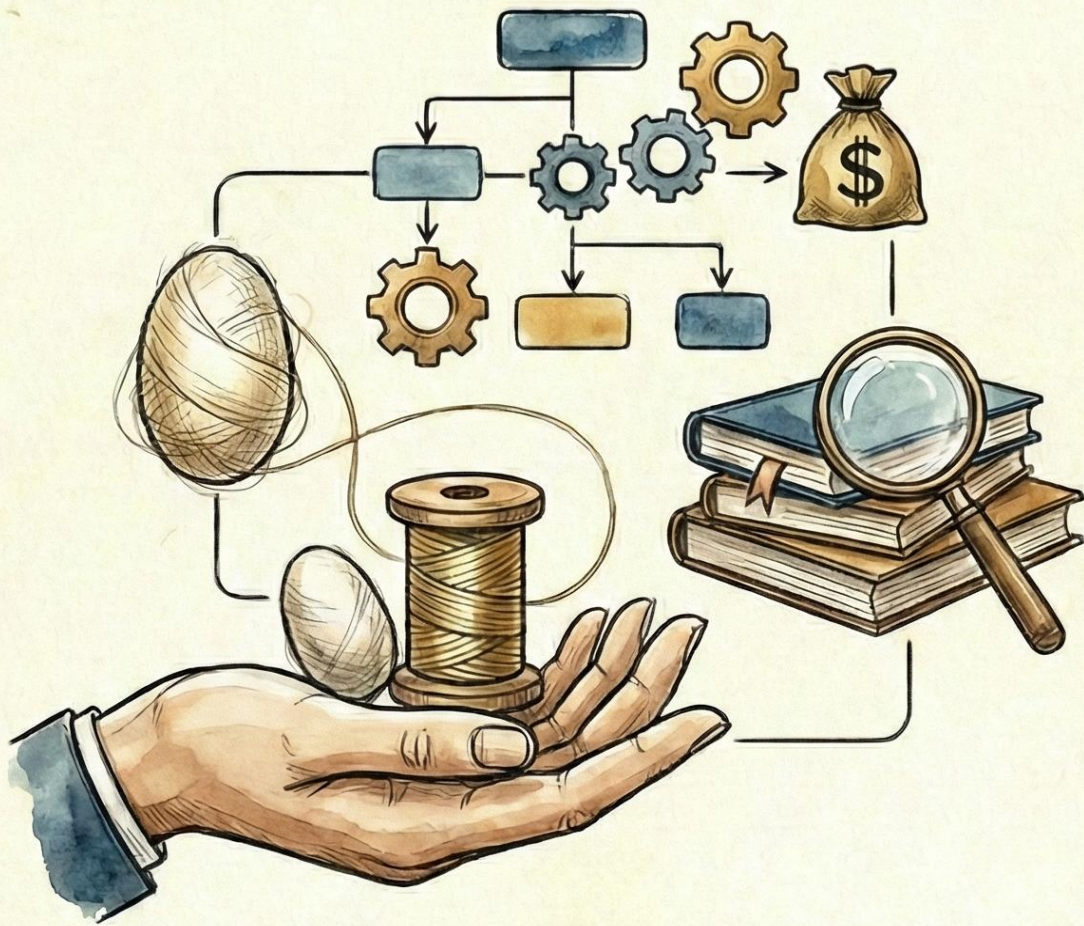


Figure 13: Images showing silkworms collected from Diphu and Namti which shows (A) Small dots on larval body and (B) Small dots on legs.

अनुसंधान एवं विकास परियोजनाओं की उपलब्धियाँ
रेशम उत्पादन विस्तार, आर्थिक और प्रबंधन प्रभाग
**ACHIEVEMENTS IN R&D PROJECTS
SERICULTURE EXTENSION,
ECONOMICS & MANAGEMENT
DIVISION**



SPR5026SIC: Development of suitable Muga and Eri based Integrated Farming System (IFS) for North East India

Project Period: February 2024 to July 2026

Funding Agency: Central Silk Board, Bengaluru

Total Budget Allocation: 35.85 Lakhs

Total Expenditure (during that year): 16.06 Lakhs

Scientists Involved: Dr. Diganta Mech (PI)

Dr. Vijay. N (CI)

Dr. Vikram Kumar (CI)

Dr. Kaiho Kaisa (CI)

Objectives:

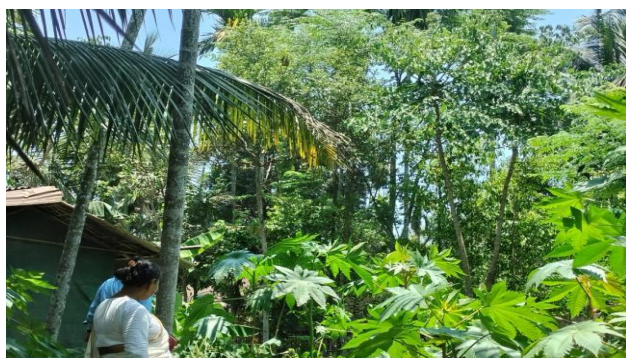
1. To identify muga and eri based IFS at farmers level in different locations of North East India.
2. To develop suitable muga and eri based IFS model through assessment of yield and economics per unit area.

Summary of the findings/achievements:

- A total of 197 farmers' fields were surveyed across various regions of North-East as part of the scheduled activity to identify the existing Integrated Farming Systems (IFS).
- According to the survey and feasibility assessments, seven Integrated Farming System (IFS) models i.e., Muga + Poultry + Goat + Piggery + Paddy+ Horticulture, Muga + Eri + Fish + Poultry + Tea, Eri + Fish + Poultry + Horticulture, Muga + Fish + Poultry + Piggery, Muga + Eri + Poultry + Fish + Horticulture, Eri + Tea + Horticulture and Muga + Fish + Poultry + Piggery + Horticulture were identified for study at farmers' fields. In addition to that, three additional models of IFS i.e, Muga + Eri+ Piggery, Muga+ Eri+ Horticulture and Eri + Fish+ Poultry, were introduced based on the suggestion of 44th RAC of the institute
- To ensure effective integration and interlinkage among the various components of the Integrated Farming System (IFS), an additional component i.e., compost pit, was introduced in each IFS model. This aims to promote organic recycling and sustainable nutrient management within the system.
- A training programme was organized in collaboration with Krishi Vigyan Kendra (KVK), Jorhat, to enhance the scientific knowledge and management skills of the adopted farmers in handling the diverse components of the IFS.
- As part of the support package, the adopted farmers were provided with essential inputs, including ducklings, piglets, fish fingerlings and animal & fish feed, assistance for setting up compost pits, Eri and Muga disease-free layings (dfls), along with rearing nets, disinfectants and other critical materials required for silkworm rearing.
- In alignment with the scheduled activities, a model IFS unit has also been established at the institute premises, comprising the components of Muga silkworm rearing and grainage, Fishery and Poultry. This institutional model serves as a demonstration-cum-research platform to monitor and evaluate the performance and integration efficiency of different IFS components under controlled conditions.



➤ Interim data pertaining to the yield and income of different IFS components at the farmers' field, as well as the institute model of IFS has been recorded. The analysis of interim data reveals that among the different IFS components, the highest net income was observed in eri (31.8%), followed by muga (27.5%), poultry (18.5%), fishery (8.3%), horticulture (8.6%) and tea (5.3%). Furthermore, the average net income under IFS increased by 29% compared to the unintegrated cropping system in one acre of land



Existing IFS practices with muga and Eri at the farmer's field



Training on IFS management for the adopted farmers



Inputs and assistance provided to the adopted farmer



IFS activities at the adopted farmers' field



IFS activities at the institute

MOE5027SIC: Economic analysis of Tapioca based Eri-culture in Assam & Nagaland

Project Period: March 2024 to July 2025 (Extended up to Feb., 2026)

Funding Agency: Central Silk Board, Bengaluru

Total Budget Allocation: 12.10 Lakhs

Total Expenditure (during that year): 07.97 Lakhs

Scientists Involved: Dr. Vijay N, (PI)

Dr. Diganta Mech (CI)

Dr. Harisha R (CI)

Objectives:

1. To assess the impact of different percentage of leaf utilization on tuber production and eri rearing performance in Assam & Nagaland.
2. Economic analysis of tapioca cultivation with respect to eri culture.

Summary of the findings/achievements:

1. Soil Analysis and Land Preparation

- Baseline and follow-up soil analyses were performed to optimize soil fertility for tapioca cultivation.
- Farm No. 02 was systematically prepared and ploughed to support two consecutive tapioca planting cycles.

2. Tapioca Cultivation and Management

- A total of 2,228 tapioca cuttings were sourced from Nagaland, Kokrajhar, Udalguri, and Boko, and successfully established in Farm No. 02.
- Standard agronomic practices, including gap filling, weeding, application of FYM and fertilizers, and pruning, were regularly implemented.



- Field experiments utilizing a randomized complete block design (RCBD) were conducted, testing various leaf harvesting intervals (7 and 14 days) and percentages (20%, 30%, 40%) to study their influence on both tuber and silkworm productivity.
- **Tuber Harvesting:**
 - The overall tuber yield was 989.799 kg, with 321.153 kg harvested from the 7-day interval treatments and 668.646 kg from the 14-day interval treatments.
 - Results indicated that harvesting 20% of leaves at a 14-day interval optimizes tuber health and yield.
- The second season of the tapioca plantation was initiated at the institute farm.

3. Eri Silkworm Rearing

- Eri silkworms were reared on multiple host plants, including Castor, Kesseru, Tapioca, and Borpat at the institute farm.
 - Average larval weights were recorded as follows: Castor (5.3g), Kesseru (4.34g), Tapioca (4.25g), and Borpat (4.13g).
- Eri silkworm rearing trials under tapioca were also conducted at selected farmers' fields.
- Grainage operations were carried out to produce disease-free layings (DFLs) for continuous rearing cycles.
- **Key rearing trial:**
 - Fifty DFLs were reared using different leaf harvest treatments (7-day and 14-day intervals at 20%, 30%, and 40% leaf harvest).
 - This experiment resulted in the production of 8,761 cocoons (8,586 formed), with an average larval weight of 6.005g.

Average Performance (Second Crop)

Parameter	Value
5 th instar larval wt.	6.005g
Cocoon wt. (Male)	1.873g
Cocoon wt. (Female)	2.099g
Shell wt. (Male)	0.219g
Shell wt. (Female)	0.256g
Shell ratio (Male)	11.77%
Shell ratio (Female)	12.29%

Leaf Harvest and Tuber Yield (Summary)

- ❖ **7-day interval (Total 321.153 kg)**
 - 20%: 1.687 kg/plant (118.156 kg total)
 - 30%: 1.453 kg/plant (101.711 kg total)
 - 40%: 1.446 kg/plant (101.286 kg total)
- ❖ **14-day interval (Total 668.646 kg):**
 - 20%: 1.795 kg/plant (251.389 kg total)
 - 30%: 1.485 kg/plant (207.975 kg total)
 - 40%: 1.494 kg/plant (209.282 kg total)

4. Farmer Engagement and Capacity Building

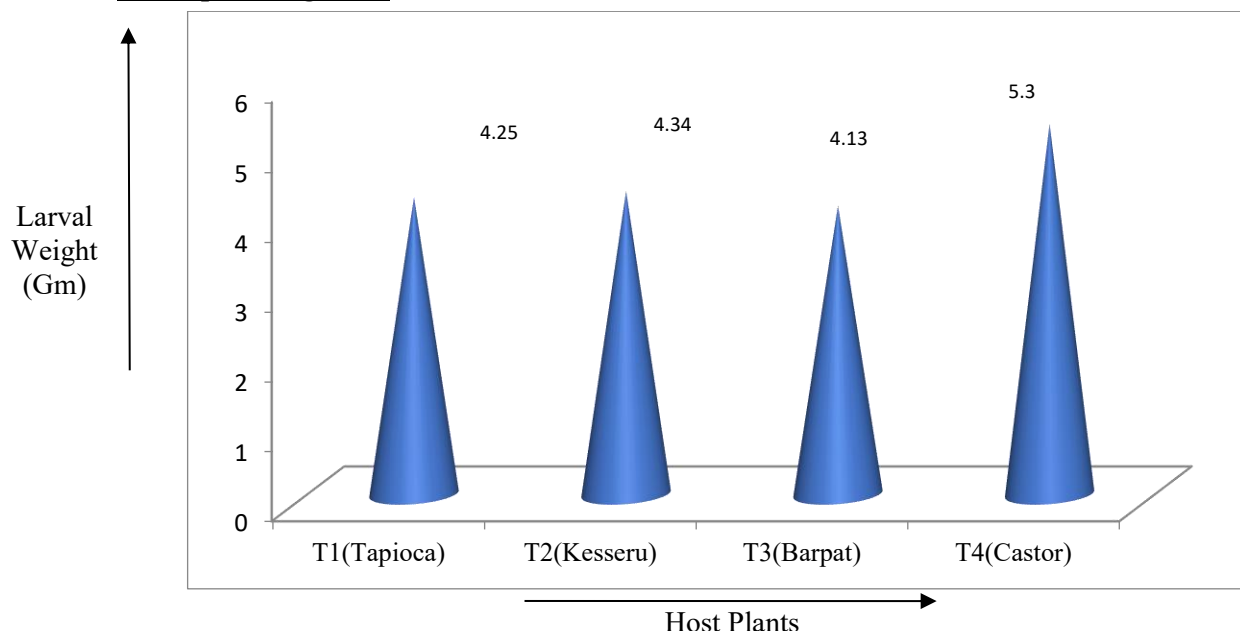


- Detailed surveys led to the selection of 24 tapioca-based eri farmers, primarily from Mokokchung (Nagaland) and BTC (Assam).
- Several training programmes were organized to educate farmers on best practices in tapioca-based eri rearing and host plant management.
- Bamboo rearing stands and plastic trays were distributed to selected farmers, resulting in improved silkworm management in their fields.

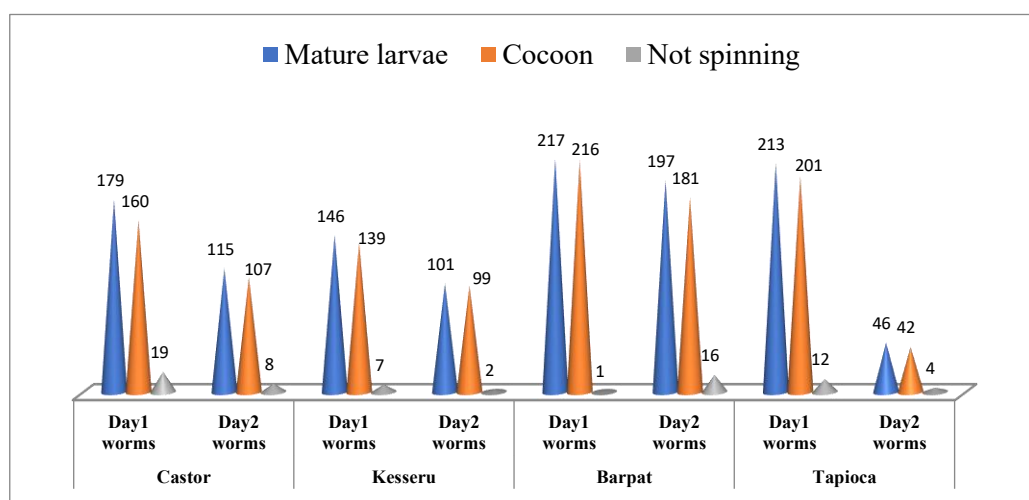
Conclusion

The project has demonstrated that tapioca-based Ericulture is both technically viable and economically beneficial for Assam and Nagaland. The model promotes efficient resource utilization, delivers dual outputs (leaves for silkworms, tubers for food or sale), and is well-suited to smallholder farming systems. Ongoing efforts in data analysis and farmer engagement will further validate and promote this sustainable approach.

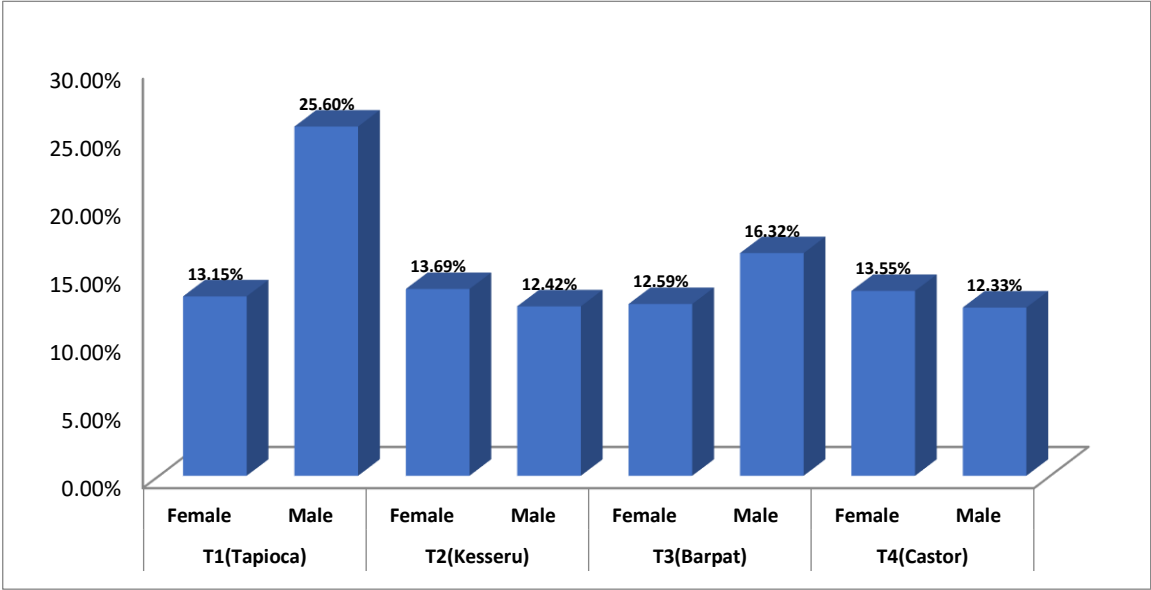
1st Crop rearing data:



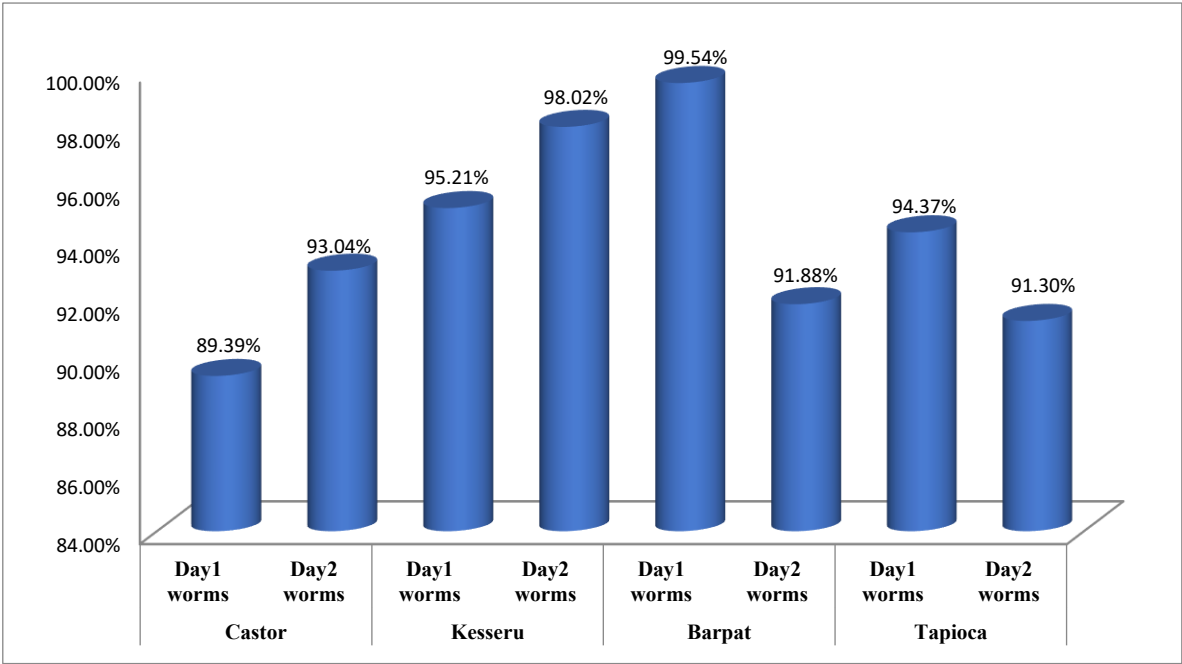
Larval weight differences of different Food Plants



Graphical representation of Larval maturity & cocoon formation



Shell ratio comparison



Effective rate of rearing



Tapioca plantation



Pruning of Tapioca plantation

Tuber harvesting of Tapioca plants



2nd crop rearing under Castor, Kessuru, Tapioca & Borpat host plant



Cocoon harvesting & Grainage at Institute



Survey and farmers selection at Mokokchung, Nagaland



Survey and farmers selection at Kokrajhar, BTC



Training & Input supply to the selected farmers



EXTENSION COMMUNICATION PROGRAMMES OF CMERTI LAHDOIGARH AND ITS NESTED UNITS FOR 2024-25

Target & Achievements of Extension communication programs of CSB-CMER&TI & Nested units for the year 2024-25

#	Programme	Target			Achievement		
		No of Program	No of Stakeholders	Budget Allocation (Rs. in Lakhs)	No of Program	No of Stakeholders	Budget Utilized (Rs. in Lakhs)
A	CSB-CMER&TI, Lahdoigarh						
1	Workshop / Seminar	1	100	2	1	99	2
2	Krishimela	1	400	3	1	520	3
3	Tech. Awareness Program	5	250	0.5	8	512	1.1
4	Field Day	6	300	0.9	8	619	1.2
5	Total	13	1050	6.4	18	1750	7.3
B	CSB-RSRS, Boko						
1	Krishimela	1	200	1.5	1	250	1.5
2	Tech. Awareness Program	3	150	0.3	4	295	0.55
3	Field Day	3	150	0.45	3	225	0.45
4	Tech. Demonstration	4	100	0.04	4	165	0.04
5	Total	11	600	2.29	12	935	2.54
C	CSB-RSRS, Imphal						
1	Krishimela	1	200	1.5	1	310	1.5
2	Tech. Awareness Program	3	150	0.3	3	150	0.3
3	Field Day	3	150	0.45	1	74	0.15
4	Tech. Demonstration	4	100	0.04	4	115	0.04
5	Total	11	600	2.29	9	649	1.99
D	CSB-REC, Lakhimpur						
1	Tech. Awareness Program	3	150	0.3	3	162	0.3
2	Tech. Demonstration	4	100	0.04	4	103	0.04
3	Total	7	250	0.34	7	265	0.34
E	CSB-EREC, Fatehpur						
1	Tech. Awareness Program	2	100	0.2	2	141	0.2
2	Tech. Demonstration	4	100	0.04	5	153	0.05
3	Total	6	200	0.24	7	294	0.25
F	CSB-REC, Sille						
1	Tech. Awareness Program	2	100	0.2	2	134	0.2
2	Tech. Demonstration	2	50	0.02	2	45	0.02
3	Total	4	150	0.22	4	179	0.22
G	CSB-REC, Coochbehar						
1	Tech. Awareness Program	2	100	0.2	2	172	0.2
2	Tech. Demonstration	2	50	0.02	2	48	0.02
3	Total	4	150	0.22	4	220	0.22
	Grand Total	56	3000	12.00	61	4292	12.86



Extension Communication Programmes and Technology Dissemination on Muga, Eri, and Oak Tasar Sericulture

As part of the Extension Communication Programme under the Annual Action Plan 2024–25, CSB-CMER&TI, Lahdoigarh and its nested units actively conducted a wide range of outreach activities focused on Muga, Eri, and Oak Tasar culture across the north-eastern region. The aim was to promote sustainable sericulture practices, disseminate improved technologies and strengthen farmer capacity through practical demonstrations and stakeholder interactions.

Programme Reach and Outcome

- ❖ A total of 61 programmes were conducted, surpassing targets set in the Annual Action Plan. These included:
 - Workshops/Seminars – 1
 - Krishimelas – 3
 - Technical Awareness Programmes – 24
 - Field Days – 12
 - Technology Demonstrations – 21
- ❖ Over 4292 stakeholders were sensitized on various aspects of host plant management, silkworm rearing, disease management, and value addition.
- ❖ Total expenditure was Rs. 12.86 lakh, efficiently utilized across units.
- ❖ Participation in 16 exhibitions and 2 field visits further enriched knowledge dissemination, benefiting an additional 40 progressive farmers.

Unit-Wise extension activities carried out in the Field

CSB-CMER&TI, Lahdoigarh (Main Institute)

CSB-CMER&TI, Lahdoigarh, exceeded its planned targets by organizing 18 programmes against a target of 13. These included workshops, Krishimelas, technical awareness programmes, and field days. A total of 1750 stakeholders were sensitized, well above the planned outreach of 1050, with an effective utilization of Rs. 7.30 lakh.

- ⇒ A Workshop-cum-Seminar focused on improved oak Tasar seed production and expansion in the Dima Hasao, Assam and disease management strategies.
- ⇒ The Krishimela showcased the latest technologies in Eri rearing and post-cocoon processing, drawing over 520 participants.
- ⇒ Technical Awareness Programmes (8 events) focused on host plant management, pest control, and silkworm rearing schedules for Muga and Eri culture.
- ⇒ Field Days (8 events) allowed farmers to observe best practices on-site, particularly in Oak Tasar silkworm rearing in marginal hill areas.

RSRS, Boko

RSRS, Boko conducted 12 programmes, reaching 935 stakeholders, surpassing the target of 600. The improved technologies of the muga and eri culture were transferred to the farmers.

Stress has been given to the seed production of muga in the lower Assam. Budget utilization stood at Rs. 2.54 lakh.

- Technical demonstrations on the use of disinfectants in muga and eri culture, seed grainage activities, egg wash and disinfection of muga were taught to the farmers.
- These technologies were highly appreciated by muga seed farmers and women SHGs.

CSB-RSRS, Imphal

RSRS, Imphal completed 9 programmes, reaching 649 stakeholders. Although slightly short of its target in the number of events, it met and exceeded its outreach goals. The emphasis was on promoting Oak Tasar sericulture in Manipur's hill areas and demonstrating disease control protocols. Budget used was Rs. 1.99 lakh.

- The unit conducted Krishimelas and awareness programmes in remote areas, demonstrating techniques on pruning and disinfection of rearing and grainage activities to the farmers.

CSB-REC, Lakhimpur

This unit achieved all 7 planned programmes, reaching 265 stakeholders. Programmes were tailored for tribal beneficiaries practicing Muga culture under natural conditions. The focus was on quality DFL handling and weather-resilient practices.

CSB-EREC, Fatehpur

EREC, Fatehpur went beyond its targets by organizing 7 programmes against a target of 6. A total of 294 stakeholders participated. Popularization of Ericulture in Uttar Pradesh for doubling Farmers' income was done at the farmers' field. Special sessions were held on backyard castor cultivation and Eri rearing.

CSB-REC, Sille

REC, Sille successfully implemented 4 programmes reaching 179 stakeholders. The unit focused on Muga & Eri rearing in Arunachal Pradesh and promoted the use of improved rearing technologies, host plant management and disease and pest management.

CSB-REC, Coochbehar

REC, Coochbehar achieved the full target, conducting 4 programmes with a total outreach of 220 stakeholders. Emphasis was laid on Muga & Eri integration into homestead farming systems.

Other Outreach Activities

- Participation in 16 exhibitions across Assam, Arunachal Pradesh, and Nagaland enabled technology dissemination to a wider audience, including urban entrepreneurs and policymakers.

- 2 field visits were conducted, benefiting 40 selected progressive farmers, where direct interaction with scientists helped in troubleshooting field-level issues and encouraged peer learning.

These efforts collectively reflect the strong commitment of CSB-CMER&TI and its units to promote sericulture-based livelihoods through targeted extension, technology transfer, and stakeholder engagement. The visual documentation of each programme—including photographs, feedback forms, and video clips—has been compiled and archived for reporting and impact assessment purposes.

Krishi mela & Silver Jubilee celebrations at CSB-CMER&TI, Lahdoigarh on 24.10.2024



Photographs of the Inauguration of Exhibition stall, release of the Mobile app Pebdetect and books during Krishimela & Silver Jubilee Celebration at CSB-CMER&TI, Lahdoigarh, Jorhat by Shri Pabitra Magharita, Hon'ble Minister of State for External Affairs & Ministry of Textiles; Shri Urkhao Gwra Brahma, Minister for Handloom, Textile & Sericulture, Government of Assam; Shri Kamakhya Prasad Tasa, Hon'ble Member of Parliament; Shri P. Sivakumar, Member Secretary & CEO, CSB; Dr. Kartik Neog, Director, CSB-CMER&TI, Lahdoigarh.



Photographic Highlights from Vanya Krishimela at Urimaghat on 11.02.2025

Vanya Krishimela was organized at Urimaghat on 11th February 2025. The photographs capture key moments from the event, including exhibition stalls, farmer-scientist interactions, live demonstrations, and enthusiastic participation by local stakeholders. The event served as a vibrant platform for promoting Vanya silk and sustainable sericulture practices among the rural community. This event was graced by a special guest, Shri Pradip Swagiary, Boro Kachari Welfare Autonomous Council, Uriamghat; and Dr. Kartik Neog, Director, CSB-CMER&TI; Dr. Diganta Mech, Scientist-D; Scientists & technical staff of CSB-CMER&TI, Lahdoigarh, Jorhat, including progressive local farmers of Borpathar, Sarupather & Uriamghat.



Photographic Highlights from Technology Awareness Programmes

CSB-CMER&TI conducted various Technology Awareness Programmes across different locations during the financial year 2024–25. These images reflect the institute's outreach efforts in disseminating improved technologies on Muga and Eri, culture. The programmes focused on sensitizing farmers, women entrepreneurs, and local stakeholders on scientific practices in host plant cultivation, silkworm rearing, grainage operations, and post-cocoon management for sustainable sericulture development.



Photographic Glimpses of Field Day Programmes

CSB-CMER&TI, conducted Field Day Programmes at various locations during the financial year 2024–25. These events served as practical platforms for technology transfer and hands-on demonstrations in Muga, Eri, and Oak Tasar sericulture. The images showcase active participation of farmers, live demonstrations on host plant and silkworm management, expert interactions, and collective discussions that aimed to strengthen field-level adoption of recommended technologies.

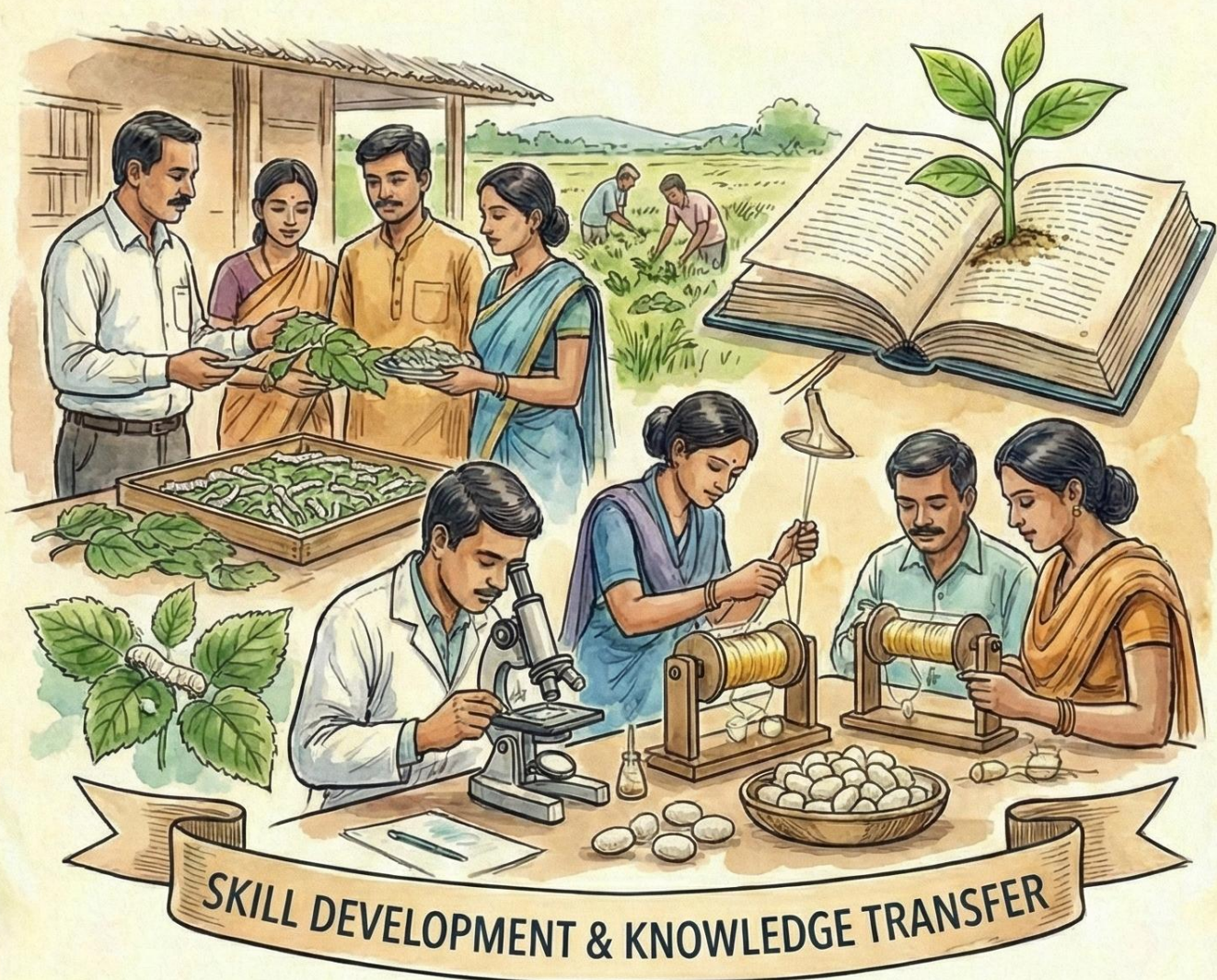


Photographic Glimpses of Workshop

CSB-CMER&TI, Lahdoigarh, at Dima Hasao, Assam during the financial year 2024–25. This workshop was aimed at capacity building and knowledge dissemination among sericulture stakeholders, with a focus on improved practices in Oak Tasar culture. The programme included expert lectures, technical sessions, interactive discussions, and demonstrations on host plant management, silkworm rearing techniques, and post-cocoon technologies. The photographs reflect the active participation of farmers, SHGs, FPOs, and officials, highlighting the institute's commitment to strengthening field-level adoption of scientific sericulture practices.



अनुसंधान एवं विकास परियोजनाओं की उपलब्धियाँ
क्षमता विकास एवं प्रशिक्षण प्रभाग
**CAPACITY BUILDING
& TRAINING**



CAPACITY BUILDING & TRAINING (CBT) PROGRAMMES CONDUCTED BY CSB-CMER&TI, LAHDOIGARH DURING THE YEAR 2024-25

#	Particulars	Target			Achievement		
		Physical (Nos.)	Beneficiaries (No.)	Financial (Rs.)	Physical (Nos.)	Beneficiaries (No.)	Financial (Rs.)
1	Farmers skill training	16	400	15.00	14	427	14.499
2	Farmers skill training for Bihar	10	300	9.0	8	250	7.483
3	Technology Orientation Programme	10	250	9.50	9	263	8.92
4	Training under Post Cocoon Sector	5	150	4.50	5	150	4.207
5	Sericulture Resource Centres (SRCs)	90	900	6.75	106	1217	5.575
6	Establishment of new SRCs	6	-	24	60	800	24.327
7	Establishment of 5 additional SRC	0	0	0.0	5	-	10
8	Management Development Programme under STEP	0	0	0.0	-	-	-
9	Intensive Training (Eri chawki rearing)	1	20	2.20	1	20	2.254
10	Other Need Based Training Programmes	0	0	0.0	4	110	8.586
11	PGDS	0	0	0.0	-	-	-
12	Non-CBT: Training programme funded by agencies other than CSB*	0	0	0.0	0	0	0
13	Training under SAMARTH	23	700	0.0	16	422	18.18
14	Exposure Visit	0	0	0.0	1	50	-
	Total	123	2720	70.95	229	3709	104.031



Few glimpses of capacity building and training programmes conducted by the institute





अधीनस्थ इकाइयाँ की गतिविधियाँ

ACTIVITIES OF NESTED UNITS



REGIONAL SERICULTURAL RESEARCH STATION IMPHAL, MANIPUR

ONGOING PROJECTS

APS-05021-EF: Studies on population diversity and the role of host plant volatile cues for enhancing egg laying in temperate tasar silk moth (*Antheraea proylei*)

Project Period: Oct., 2021 to Dec., 2024 (Extended up to Sept. 2025)

Funding Agency: Department of Biotechnology (DBT), New Delhi

Total Budget Allocation: 122.48 lakhs (Total Released: Rs. 54.31 lakhs)

Total Expenditure (during the year): RSRS, Imphal: Nil;

CMER&TI: Rs. 3,71,981; Manipur University: Nil; IIHR: Nil

Scientists Involved:

Dr. Sinam Subharani Devi, Project Coordinator and PI, RSRS, Imphal

Dr. Kaisa Kaiho, PI, CMER&TI, Lahdoigarh

Dr. Lisam Shanjukumar, PI, Manipur University

Dr. P.D. Kamala Jayanthi, PI, IIHR, Bangalore.

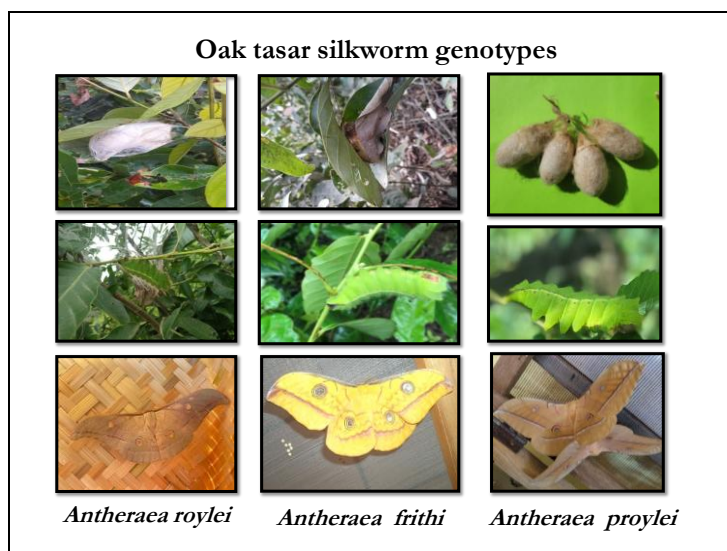
Objectives:

1. To survey and establish population diversity of oak tasar silk moths across NER.
2. To establish potent food plants (Host) for oak tasar silk moths, *A. proylei* for egg production.
3. To isolate and evaluate highly suitable host plant volatiles to activate/increase egg laying in oak tasar silk moth.
4. To standardize the synthetic oviposition stimulant blends to enhance egg production in oak tasar silk moths and establishing the efficacy of developed technology.
5. To evaluate the synthetic volatile blend in large scale at oak tasar seed production centres

Summary of the findings/achievements:

Survey and collection of oak tasar silk moths along with their associated food plants were carried out in the hill districts (Senapati and Kangpokpi), as well as in the valley districts (Bishnupur, Imphal East, Imphal West, and Thoubal) in Manipur. Extensive surveys were conducted in natural habitats and undistributed forests areas to document the presence of wild oak silk moths, larvae, cocoons, and their host plants. Efforts were made to rear the collected wild silk moths to maintain the genetic stock. The occurrences of wild silk moth species were systematically counted and recorded. Data were recorded on key parameters including cocoon shape, cocoon weight, shell weight, shell ratio, length, breadth, peduncle length, filament length, wingspan, etc.



**Table 1. Morphological characteristics of different oak tasar silkworm genotypes**

Characters	<i>A. proylei</i>	<i>A. frithi</i>	<i>A. roylei</i>
Cocoons shape	Oval	Oval	Oval
Cocoon weight (g)	6.63±1.00	4.48 ± 1.17	7.92±1.30
Shell weight (g)	0.77±0.10	0.43 ±0.09	0.86±0.11
Shell ratio (%)	11.79±1.80	10.05 ± 2.24	10.52±0.34
Length (cm)	4.24±0.33	3.70±3.28	4.90±0.08
Breadth (cm)	2.21±0.14	1.90 ±1.98	4.24±0.52
Peduncle length (cm)	6.67±1.56	3.55±4.30	4.30±0.87
Filament length (m)	628.5±23.8	584.66±14.93	195.2±8.99
Wingspan (mm)	142.8±11.73	129.8±11.56	138.2±10.00

A total of 3 (three) oak tasar silkworm species were collected from different locations of Manipur. Among the collected silkworms, *Antheraea proylei* is the only commercially exploited oak tasar silkworm species in India while the other two species *A. roylei* and *A. frithi* are found in the wild. Characterization of these species was conducted based on the various morphological traits and important economic parameters. All the three species are polyphagous feeding on multiple host plants. The cocoons produced are single layered, except for *Antheraea roylei*, which produced double layered cocoons. The volutinism of the silk moths are varied. *Antheraea proylei* is weak bivoltine whereas *A. roylei* and *A. frithi* are bivoltine.

Spring and autumn crop rearing conducted for maintain cocoon stock in the grainage for evaluating the blends. The highest ERR was recorded in *Q. serrata* in both the seasons and least in *L. dealbata*.

Table 2. *Antheraea frithi* population, their place of collection and the no. of individuals collected

Sl. No	Place of collection	No. of cocoons	No. of larvae	No. of moths
1	Chandel	0	0	0
2	Bishnupur	17	8	2
3	Churachandpur	15	0	0
4	Ukhrul	0	0	0
5	Thoubal	48	11	0
6	Senapati	22	15	11



7	Kangpokpi	14	0	8
8	Arunachal Pradesh	11	9	0
9	Assam	0	0	0
10	Nagaland	0	0	0
Shannon Diversity (H)		1.79	1.37	0.93

Antheraea frithi was recorded maximum from Senapati district of Manipur during the survey. *Antheraea proylei* being a synthesized hybrid was not recorded from wild during the survey. *Antheraea roylei* was recorded only from Senapati district of Manipur.

Table 3. Rearing performance of *A. proylei* during spring and autumn crop during 2024-25

Sl. No	Food Plant	Season					
		Spring			Autumn		
		Larval weight (g)	Total larval Duration (days)	ERR (%)	Larval weight (g)	Total Larval Duration (days)	ERR (%)
1	<i>Q. serrata</i>	21.32±0.47	34.33±0.07	40.64±0.56	22.11±0.43	38.00±1.15	22.77±0.88
2	<i>Q. griffithii</i>	19.89±1.03	35.68±1.12	38.75±0.03	19.00±0.51	40.33±0.81	21.26±0.57
3	<i>L. dealbata</i>	13.39±1.73	40.45±0.34	32.90±0.01	14.90±0.32	43.00±0.54	16.70±0.75
	CD (p=0.05)	2.63	3.50	1.34	1.34	3.51	2.53

The seed cocoons of *A. proylei* are maintained in the grainage for further testing of the blends. The seed cocoons were also supplied to other collaborating Institutes for initial standardization of the blends.

Totally 58 responsible chemicals were identified. Out of which 17 chemical were commercially available and all individual chemicals of 100 ppm concentration were tested to know egg laying capacity tasar silk moth. Further blends on natural GC-MS Concentration will be tested to know egg laying capacity tasar silk moth.

Screening of synthetic chemicals during spring crop grainage: IIHR, Bangalore has supplied screened 17 numbers of chemicals responsible for stimulating *A. proylei* moth egg laying were identified and confirmed through gas chromatography- electroantennographic detection (GC-EAD) and Gas chromatography – mass spectroscopy (GC-MS) from *Q. serrata*, *Q. dealbata*, *Q. incana*, *Q. griffithii* and *Q. semicarpifolia* leaves and stem volatiles and these chemicals are test-verified during spring crop grainage Oak tasar and data generated from the grainage is mentioned below:

Chemical Groups	Realized	Retained
Chemical 1	130 ± 21.99	10 ± 7.63
Chemical 2	117 ± 16.844	28 ± 6.56
Chemical 3	110 ± 36.72	13 ± 16.02
Chemical 4	122 ± 43.19	15 ± 8.52



Chemical 5	126 ± 33.24	8 ± 19.34
Chemical 6	103 ± 38.81	22 ± 18.25
Chemical 7	124 ± 38.98	12 ± 15.8
Chemical 8	120 ± 39.80	16 ± 24.6
Chemical 9	137 ± 36.59	11 ± 21.09
Chemical 10	118 ± 46.35	23 ± 30.21
Chemical 11	131 ± 39.79	10 ± 22.09
Chemical 12	122 ± 37.06	18 ± 17.03
Chemical 13	121 ± 40.01	18 ± 22.98
Chemical 14	121 ± 39.47	22 ± 15.65
Chemical 15	118 ± 47.23	15 ± 22.11
Chemical 16	110 ± 42.48	13 ± 15.09
Chemical 17	106 ± 34.31	19 ± 25.91
Control	105 ± 36.73	22 ± 23.

Twelve specimens of oak Tasar silk moths collected. Following the isolation of genomic DNA from these samples, whole genome sequencing (WGS) and 16S microbiome profiling are presently underway. These studies will shed light on the microbial makeup and genetic diversity of the samples that were gathered. Phylogenetic analysis will be the next step after sequencing is finished in order to determine evolutionary links and find potential genetic markers related to silk quality and adaption. In order to reach significant findings, the next stage will entail data interpretation and analysis. Due to lack of funds, we have paused our downstream process of Bioinformatics analysis.

Project Code: SPR-05028-SIC

Project Title: Popularization of improved technologies of Muga Culture for enhancing cocoon production in Manipur

Project Period: February 2024 to January 2026

Funding Agency: Central Silk Board, Bengaluru

Budget Allocation: Rs. 13.20 lakhs

Total expenditure (during the year): Rs. 6.31 Lakhs

Scientists Involved: Dr. Kh, Subadas Singh (PI)

Dr. L. Somen Singh, (CI)

Dr. Vijay N, (CI)

Objectives:

1. To enhance cocoon production through adoption of improved technologies of mugaculture.
2. To improve socio-economic status of muga farmers of Imphal East district, Manipur.



Summary of the findings/achievements:

Selection process of muga farmers was conducted in Imphal East Manipur in coordination with DoS Manipur. Processed to purchase equipments from GeM, muga DFLs and other consumables for the project work. Benchmark survey of muga farmers was successfully completed in Imphal East district of Manipur. Several technology sensitization and popularization programmes of selected technologies of mugaculture was conducted for farmers. Demonstrated disinfection techniques of Muga farms to the farmers using lime, bleaching powder and sodium hypochlorite at field level. Organized training programmes of farmers in coordination with District Sericulture Officer on different selected mugaculture technologies. Training and awareness programmes were conducted for selected muga farmers at Sinam Kom, Imphal East district of Manipur for sharing technology awareness of Mugaculture.



Fig. 1: Benchmark survey, technology demonstration and group discussion programmes

Muga cocoon production data before technology intervention:

Avg. Rearing capacity per crop	Avg. Insect pest occurrence	Avg. Disease Occurrence	Avg. Cocoon Production	Avg. Income generation per year
100-200	20-30%	30-40% or more	25-30 per dfl	15000-30000

Table 1: Benchmark survey data of farmers on muga silkworm rearing



Fig. 2: Distribution of disinfectants and muga DFLs to the farmers

Muga DFLs was procured from MESSO Pailapool and supplied to the selected farmers for rearing. Brushing of muga silkworm was performed at farmers fields for the Kotia crop (Oct-Nov., 2024). Before brushing, rearing farms were properly disinfected using slaked lime, bleaching powder, sodium hypochlorite etc. Equipments/items such as nylon nets, secateur, dao, gumboots were supplied to the farmers. Regular field visit was conducted to monitor the rearing practice of muga silkworm at farmers level. Demonstrated new mountage technology to the farmers to replace use of jali (dried leaves). Average cocoon production per DFL was obtained 35/DFL against the benchmark survey data 25/DFLs.



Fig. 3: Muga silkworm rearing at farmer's field in Manipur



Muga cocoon production data after technology intervention:

#	Name of Farmer	DFLs	Avg. Hatching %	ERR %	Cocoon/DFL	Actual cocoon yield	Cocoon yield/ 100 DFL
1	Y. Iboyaima	50	70	37.75	37	1850	3700
2	K. Ibo Singh	50	70	35.70	35	1750	3500
3	S. Haolal	50	70	40.81	40	2000	4000
4	Oinam Yaima	50	70	33.67	33	1650	3300
5	A. Joy Singh	50	70	39.79	39	1950	3900
6	N. Thoiba Singh	50	70	40.81	40	2000	4000
7	M. Apabi Singh	50	70	35.70	35	1750	3500
8	K. Nimai Singh	50	70	36.73	36	1800	3600
9	M. Leibaklei Devi	50	70	34.69	34	1700	3400
10	N. Dhana Singh	50	70	32.73	32	1800	3600
Avg.		50	70	36.83	36.1	1825	3650

Table 2: Cocoon yield per DFL ranges 32-40 as compared to baseline data 25-30

Conducted farm survey to monitor stem borer infestation in the muga food plant, *Persea bombycina*. Intercropping programme in the farmers's field was introduced. Applied 2% neem extract with cotton swab at the infestation part of the host plants. Agronomical practices and farm cleaning has been conducted. Demonstrated pruning programme of Muga host plants at the farmers' field.

Distributed Lahdoi, antifungal disinfectant to the farmers. Demonstarted ring method application of FYM to the muga food plants at farmer's fields.

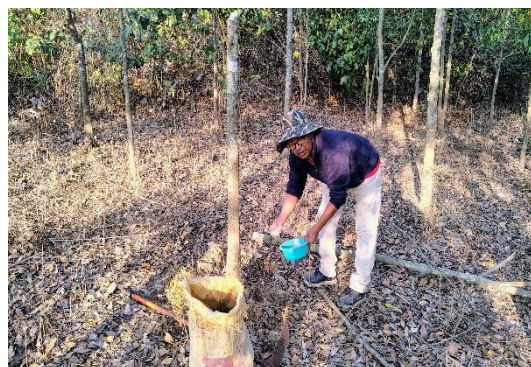




Fig. 4: Pruning technique of muga food plants, application of FYM, intercropping concept and stem borer control techniques at farmer's field.

Newly Sanctioned projects

Project Code: SPR-05032-SIC

Project Title: Development of rearing technology in Early Spring and Late Autumn crop

Project Period: March 2025 to Feb 2028

Funding Agency: Central Silk Board, Bangaluru

Budget Allocation: Rs. 15.85 lakhs.

Total expenditure (during the year): 00.00

Scientists Involved: Dr. Sinam Subharani Devi, (PI)

Dr. Kh. Subadas Singh, (CI)

Dr. Sinto Antoo, (CI)

Objectives:

1. To develop a suitable rearing technology for early spring crop to avoid dfls wastage and establish a seed linkage with North West India.
2. To develop a suitable rearing technology for autumn crop to compensate the loss of seed cocoons due to erratic emergence and pupal mortality during prolonged preservation.

Summary of the findings/achievements: The project was coded on 11th March 2025.

Project Code: SIB-05033-SIC

Project Title: Isolation of shorter larval duration line of Oak Tasar silkworm - *A. proylei* through selection from the mass population.

Project Period: March 2025 to Feb 2029

Funding Agency: Central Silk Board, Bangaluru

Budget Allocation: Rs. 17.40 Lakhs

Total expenditure (during the year): 00.00

Scientists Involved: Dr. Kh. Subadas Singh (PI),

Dr. Sinam Subharani Devi (CI)

Objectives:

1. Selection of inbreed line with shorter larval duration from the mass population of *A. proylei*.

Summary of the findings/achievements: The project was coded on 11th March 2025.



Photographic Glimpses of Extension Communication Programmes Organized by RSRS, Imphal, Manipur

Displayed below are selected photographs from the Extension Communication Programmes organized by the Regional Sericultural Research Station (RSRS), Imphal, Manipur at various locations during the financial year 2024–25. These programmes were aimed at promoting awareness and field-level adoption of improved technologies in Oak Tasar, Muga and Eri sericulture. Through demonstrations, farmer–scientist interactions, and distribution of IEC materials, the events facilitated knowledge sharing on scientific rearing practices, host plant cultivation, and disease prevention. The photographs reflect active farmer participation and highlight RSRS Imphal's efforts in strengthening grassroots sericulture extension in the region.



REGIONAL SERICULTURE RESEARCH STATION (CSB-RSRS), BOKO, ASSAM

- Under extension and Communication Programme 1135 farmers were covered through Krishimela, Awareness Programmes, Field Days, and Technology Demonstration Programme.
- Under Human Resource Development, 2 batches of farmer's skill Training, 3 batches of Technology Orientation Programme and 1 batch of Post Cocoon Training Programme were conducted and 155 framers/students were trained.
- Under Farmer's Skill Training Programme, 5 batches of farmers from Bihar, one batch from UP and one batch from Odisha were trained and 213 farmers were trained.
- Under commercial Muga crop rearing 750 g DFLs were reared produced 42,133 Nos. of commercial cocoons.
- The centre generated a total revenue of Rs.167026.00

Capacity Building and Training Institute-wise for financial year of 2024-2025						
#	Name of the Trng. Programme	Target for the Year		Progress till end of the year		
		Physical	Financial	Physical	Financial	No of farmers/ Students trained
1	Exposure visits for Technology Awareness	-	-	-	-	
2	Farmers' Skill Training	2	2.25	2	2.25	55
	Farmers' Skill Training (Bihar)	5	4.93	5	4.93	153
	Farmers' Skill Training (UP)	1		1		22
	Farmers' Skill Training (Odisha)	1		1		38
3	Technology Orientation Programme (Officials from DoS& CSB)	3	2.85	3	2.85	75
4	Training under Post cocoon sector	1	0.75	1	0.75	25
5	Training under Sericulture Resource Centre	10	0.75	10	0.75	100
6	Training under STEP by Institute	-	-	-	-	
	Sub Total	23	11.53	23	11.53	468
7	Training funded under - NON CBT	-	-	-	-	
8	Training funded under - NON CSB	-	-	-	-	
	Sub Total	0	0	0	0	
	Grand Total	23	11.53	23	11.53	468

Meteorological Data (Unit wise) - may be presented in brief

Year		Temperature (°C)		Rel. Humidity %		Nos. of rainy Days	Rain fall (mm)
2024	Month	Max.	Min.	Max.	Min.		
	April	37	30	98	50.7	10	181
	May	39	20	99	59.5	13	226
	June	36	23	99	56.5	23	309
	July	38	26	64	98.5	18	370
	August	37	24	98.5	60.2	16	225
	September	39	25	98.5	62.5	13	199
	October	34	21	98	58	11	17092
	November	32	14	98	55	5	45
	December	28	11	97	45.5	1	8
2025	January	29	11	97	55	1	21
	February	31	1	96	43.7	0	0.00
	March	35	13	97	47	5	70

For Extension activities

Particulars	Target	Achievement
Raising of quality Som/Soalu planting material (Nos.)	Nil	Nil
Supply of Som/Soalu planting materials (Nos.)	Nil	Nil
Supply of Kesseru Seeds	Nil	Nil
Muga Dfls rearing (Nos.)		
Commercial	2500	500
Seed	700	0
Muga Cocoons production Nos.		
Commercial	1500000	7,583
Seed	28000	0
Muga Dfls production (Nos.) Rs. 8.00/- Per g	7000	0
Muga Dfls supply (g.)	7000	-
Vermicompost Production (kg)	20000	-

Extension Communication Programme:

Particulars	Target	Achievement
Krishi Mela	1	1 (450)
Field Day	3	3 (225)
Technology Awareness programme	3	3(195)
Technology Awareness programme (Special to commemorate Platinum Jubilee)	1	1(100)
Technology Demonstration	4	5 (165)
Group Discussion	-	-
Workshop	-	-

Total acre of plantation: 24.5 acres plantation of Som and Soalu

Available host plant: 10044 plants

Land area under plantation, Area of building and roads, vacant and unutilized land area

Nursery	Plant ation area	National Bamboo Mission	Low land	Roads	Office Building and Laboratory	Staff Quarters	Total	Vacant	Status of land
2.50	24.5 0	2.00	1.50	6.50	7.00	6.00	50	Nil	Own land

Hindi section/activities (Hindi section): 4 quarterly Hindi Meeting and along with 4 Hindi Workshop were organized. A total of 80 Officers/Officials took part in the above programme. Hindi Diwas on 14.09.25 and Hindi week w.e.f 08.09.2025 to 14.09.2025 were also organized.

Staff details, transfer, newly joined, retired officials etc. (Establishment Section):

Sl No	Designation	No.
1	Scientist-D	1
2	Scientist-C	Nil
3	STA	Nil
4	Sr.FA	2
5	UDC	1
4	AT	Nil
5	MTS	Nil
6	Driver (Contractual)	1

Photographic Glimpses of Extension Communication Programmes Organized by CSB-RSRS, Boko

Regional Sericultural Research Station (RSRS), Boko organized various Extension Communication Programmes at different locations during the financial year 2024–25. These programmes aimed to raise awareness and promote the adoption of scientific practices in Muga and Eri sericulture among rural and tribal communities. Through focused interactions, demonstrations, and distribution of IEC materials, the programmes facilitated knowledge sharing on host plant cultivation, silkworm rearing, disease prevention, and post-cocoon processing. The images reflect the active involvement of farmers, SHGs, and local stakeholders, highlighting RSRS Boko's efforts to strengthen grassroots-level sericulture extension.





ERI RESEARCH EXTENTION CENTRE (CSB-EREC), FATEHPUR, UTTAR PRADESH

The Eri Research Extension Centre, established in May 2006 under CSB-CMER&TI, Lahdoigarh (Assam), initially began its operations in a rented building at Auraiya, Uttar Pradesh. The Centre was set up with the primary objective of extending technical support to the Department of Sericulture, Government of Uttar Pradesh, and the NGO Shramik Bharti, Kanpur, for promoting Ericulture in this non-traditional region.

The Centre functioned in Auraiya district, U.P. until December 2009, and subsequently relocated to Fatehpur, Uttar Pradesh, in December 2010. It continues to operate from a rented building in Fatehpur, with a renewed focus on providing technological support and monitoring to castor growers and eri rearers, in collaboration with DoS, Fatehpur, U.P.

In alignment with the mandate and annual targets set by CSB-CMER&TI, Lahdoigarh, the Centre has undertaken several technical initiatives during the reporting year 2024–25. Ericulture is being promoted and expanded in Uttar Pradesh's non-traditional areas, specifically in the districts of Fatehpur, Kanpur Nagar, Kanpur Dehat, Unnao, Hamirpur, Chitrakoot, Jalaun, and Banda. These initiatives are being carried out in collaboration with the Department of Sericulture, U.P.

The Centre's activities include extension programs, technology awareness meetings, field days, group discussions, training programs, demonstrations, and supervision and monitoring of rearing and grainage of ericulture. These initiatives fall under the broader framework of technology transfer and capacity-building to support sustainable Ericulture development in the region.

(1) Technologies Transferred during the Year:

(A) Technology Awareness Programme on Eri Culture: 02 (100% achievement)

1st Technology Awareness Programme on Eri Culture

Programme was held on 18th September 2024 at Village Dhana, Block Amauli, District Fatehpur (U.P.)

Event Chairperson: Dr. D.K. Jigyasu, Scientist-D, EREC, Fatehpur

Special Guest: Shri Manphool Nishad, Village Sarpanch

Participants: 71 castor-growing farmers

Key Highlights:

Welcome Address: Shri Deen Mohammad (Senior Technical Assistant) briefed the participants on the objectives of the programme and highlighted the benefits and best practices of eri culture.

Technical Session: Shri Ram Jiwan (Field Assistant) delivered a detailed talk on:

- Dual-purpose utility of the castor crop
- Chowki (early-stage) and late-age silkworm rearing techniques

Interactive Session: Dr. D.K. Jigyasu, Scientist-D/In-charge have discussed:

- Practical demonstrations for hands-on learning
- Ongoing initiatives by EREC and Central Silk Board to promote eri culture in non-traditional areas
- Role of improved practices in boosting productivity and farmer income

Conclusion:

Shri Raj Narayan (Field Assistant) delivered the vote of thanks. The programme ended with the distribution of tea and snacks to all participants.

2nd Technology Awareness Programme on Eri Culture

Programme was held on 18th September 2024 at Village Dhana, District Fatehpur (U.P.) **Event**

Chairperson: Shri Deen Mohammad, Senior Technical Assistant, EREC, Fatehpur.

Special Guest: Shri Ramrati, Former Village Sarpanch

Participants: 72 castor-growing farmers (Table No. 01)

Key Highlights:

Welcome and Opening Remarks:

Delivered by Shri Deen Mohammad, STA, who introduced the objectives of the programme and highlighted the benefits, potential, and best practices of eri culture.

Technical Session:

Speaker: Shri Ram Jiwan, Field Assistant

Topics Covered: Dual-purpose utilization of castor crop

Chowki (early-stage) and late-age silkworm rearing practices

Interactive Session:

Speaker: Shri Raj Narayan, Field Assistant

Discussions Included: Demonstrations for hands-on learning, Activities undertaken to promote eri culture in non-traditional states, Roles and responsibilities of EREC, Fatehpur, and Central Silk Board and adoption of improved eri culture practices for enhanced productivity.

Conclusion:

Shri Suresh, Assistant Technician, concluded the event with a vote of thanks. Tea and snacks were distributed to all participants.

The programme reflected the ongoing efforts and commitment of the Central Silk Board and EREC, Fatehpur, towards strengthening farmer capacities and fostering rural development through eri culture.

(B) Technology Demonstration Programme: 05 (100% achievement)

Different Technology demonstration programmes have been organised in different places focusing on key aspects of Eri culture, including Chawki Rearing, Late Age Rearing, disinfection and cleaning and effective ways to harvest and process cocoon. Additionally, Scientists and Technical Staff also visited farmers' fields to observe castor plantation growth and provide guidance on insect pest management. The following technology demonstration programmes are:

1st Technology Demonstration Programme was organized at Village- Dhana, Fatehpur (UP) on 19.09.2024 and total no. of 29 Eri farmers covered (Details are in Table No. 01).

2nd Technology Demonstration Programme was organized at Village- Kripalpur Binda, Fatehpur (U.P.) on 30.09.2024 and total no's of 28 Eri farmers covered (Details are in Table No. 01) and to commemorate the 75th anniversary of the Central Silk Board.

3rd Technology Demonstration Programme was organized by the Centre at Village- Khaptiha Khurd, Banda (U.P.) on 13.11.2024 and total no's of 32 Eri farmers covered (Details are in Table No. 01).

4th Technology Demonstration Programme was organized at Village Ajaipur Kudaila, Fatehpur (U.P.) on 26.11.2024 and total no's of 28 Eri farmers covered (Details are in Table No. 01).



5th Technology Demonstration Programme was organized by this centre at Village- Chakiva, Fatehpur (U.P.) on 27.11.2024 and total no's of 26 Eri farmers covered (Details are in Table No. 01)

These demonstration programmes showcased the commitment of the Central Silk Board and EREC, Fatehpur, towards knowledge dissemination, practical skill development, and the sustainable promotion of eri culture in non-traditional areas.

(2) Capacity Building and Training (CBT) Programme:

(A) Farmers Skill Training Programme: 01 (100% achievement)

The Eri Research Extension Centre (EREC), Fatehpur, successfully organized a five-day Farmers Skill Training (FST) programme from 24th to 28th September 2024, targeting the empowerment of rural women through skill development in eri culture. A total of 28 female farmers from nearby villages in Fatehpur district participated enthusiastically in the training (Details in Table No. 02). These women trainees from the nearby village of Fatehpur district enthusiastically participated in the program, demonstrating their eagerness to learn and adopt improved sericulture techniques. The primary objectives of the training program are: To create awareness about Eri culture and its benefits. To impart knowledge on host plant establishment, rearing management and disinfection practices. To emphasize the importance of hygiene maintenance and disease management and pest control strategies in Eri cultivation. Expert resource persons from Eri REC Fatehpur and state sericulture department have conducted interactive sessions, by theory classes on projector and practical demonstrations, hands-on training followed by group discussions and question and answer sessions. The trainees were evaluated both before and after the training. On the final day, an assessment was conducted to gather feedback from the participants, and the program concluded with the distribution of prizes and certificates.

(B) Technology Orientation Programme: 01 (100% achievement)

A Technology Orientation Programme was successfully conducted at the Department of Zoology, Babasaheb Bhimrao Ambedkar (Central) University), Lucknow, from 24th to 28th February 2025. The programme targeted 26 beneficiaries, including Eri silk demonstrators and Anudeshaks from the State Sericulture Department, Uttar Pradesh, as well as postgraduate students and research scholars from the university (Table No. 02). The primary goal was to enhance the technical knowledge and skills of participants by introducing them to recent advancements in Ericulture, thereby strengthening their capabilities for practical implementation and dissemination. The participants exhibited keen interest and enthusiasm in learning and adopting improved Eri silk production techniques. Experts from Eri REC Fatehpur, State Sericulture Department and BBAU Lucknow conducted theoretical classes, practical demonstrations, interactive discussions, and Q&A sessions during the program. The trainees were provided hands-on experience in host plant cultivation, silkworm rearing management, disinfection techniques, and advanced silk production practices.

(3) Non-CBT Programme:

(A) FST by DoS Uttar Pradesh and Bihar: (Uttar Pradesh-454, Bihar-228 and Gujarat 25)

- i. A series of Farmers Skill Training (FST) programmes were successfully conducted at the Lauhpurush Sardar Vallabhbhai Patel Rajkiya Resham Prashikshan Sanstha, Mirzapur, Uttar

Pradesh, under the aegis of the State Sericulture Department, Uttar Pradesh, in coordination with the Eri Research Extension Centre (EREC), Fatehpur. These programmes were specially designed to empower eri farmers across various districts of Uttar Pradesh by providing them with comprehensive training on eri sericulture, covering the complete "Soil to Silk" process. From September 2024 to March 2025, a total of 454 eri farmers participated in the training sessions. The participants represented multiple non-traditional eri farming districts of Uttar Pradesh, thereby ensuring widespread dissemination of knowledge and practices related to eri culture.

- ii. The Department of Sericulture, Bihar (U.P.), conducted a series of eri culture training programmes from October 2024 to March 2025, targeting eri farmers across various regions. These programmes were organized in multiple batches and successfully trained a total of 228 eri farmers, equipping them with essential knowledge and practical skills to adopt and improve eri silk farming practices.
- iii. In July 2024, a village-level campaign was conducted across 4 districts in Gujarat, covering 112 villages. This initiative resulted in the registration of 2136 castor growers and provided village-level training programs to 817 farmers. As part of the 100 Days Vikashit Bharat Programme, Hon'ble Minister of Textiles, Shri Giriraj Singh, launched an Eri sericulture promotional project on 10th August 2024 at SDAU campus, Palanpur, Gujarat. Following this, Chawki rearing of 1000 dfles was conducted, followed by late-stage rearing at Demo-Rearing Centres and farmer levels, achieving a significant milestone with a production of 80 kg of raw Eri silk.

4. Other Activities:

- a) Survey and surveillance of disease/pest occurrence in castor plantation and Eri Silkworm.
- b) Monitoring of eri silkworm rearing at farmers level in different villages.
- c) Honoured to welcome Dr. Kartik Neog, Director, CMER&TI and Dr. Aftab A. Shabnam to Eri REC Fatehpur and farmer field. The visit show casing the input and technologies intervention in ericulture by Eri REC.
- d) Dr. Dhamendra Kumar Jigyasu, Scientist-D & Shri Ram Jiwan, Field Assistant, Eri REC, Fatehpur imparting training and rearing of eri silkworm under the on-going project in Gujarat during November to December, 2024.
- e) **Vigilance Awareness Week: (16.08.2024 to 15.11.2024):**

Vigilance Awareness Week was observed from 16th August to 15th November 2024 by the Eri REC, Fatehpur. As part of the observance, the Centre organized two programmes on 13th and 25th September 2024 at the office campus. A total of 43 participants, including CSB officers/officials, Department of Sericulture (DoS) officials, and Eri farmers, actively took part in these events.

f) Swachchhta Hi Seva: (17.09.2024 to 02.10.2024):

The centre has been organized Swachchhta Hi Seva programme from 17.09.2024 to 02.10.2024. Under this, 11 programmes have been organised in office premises on 17.09.24, 18.09.24, 19.09.24, 20.09.24, 21.09.24, 23.09.24, 25.09.24, 26.09.2024, 27.09.24, 28.09.24, 29.09.24, 30.09.24 and 02.10.2024. A total No. of 154 CSB Officer and Official, DoS Official and Eri farmers, and local citizens involved in this programme.

g) Swachchhta Pakhwada: (01.03.2025 to 15.03.2025):

Swachchhta Pakhwada was observed from 1st to 15th March 2025, during which 10 programmes were conducted by EREC, Fatehpur. Activities were carried out at the office campus and the local railway station, including campus cleaning, organizing and maintaining old files, registers, official documents and pamphlets promoting cleanliness. A total of 56 participants, comprising CSB officers/officials and local citizens, actively took part in the initiative.

5. Details of Meteorological Data (01.4.2024 to 31.3.2025)

Details are in Table No. 03

6. Implementation of Official Language (Rajbhasa Hindi):

- Eri REC, Fatehpur (U.P.) received the **Consolation Prize** from TOLIC, Fatehpur, U.P., for its outstanding performance in the implementation of the Official Language during the year 2024–25.
- A popular article titled "Promotion of Official Language Hindi by Eri Research Extension Centre, Fatehpur, Uttar Pradesh" by Shri Suraj Pal, Scientist-D, was submitted for publication in *Indian Silk*.
- The TOLIC, Fatehpur, Uttar Pradesh, has been organized an online Rajbhasa Seminar and Hindi Quiz Competition on 29th May 2024. Shri Raj Narayan, Field Assistant, and Shri Suresh, Assistant Technician have been participated in the programme. Shri Raj Narayan was also felicitated for his excellent performance in the Rajbhasa Hindi Quiz Competition.
- An article titled "Expanding Horizons of Eri Silk Development through Castor Cultivation in Non-Traditional States – Celebrating 75 Glorious Years of the Central Silk Board" by Dr. Dharmendra Kumar Jigyasu, Scientist-D, was published in "Resham Mitra 2024", a magazine issued by the State Sericulture Development Department, Uttar Pradesh.
- Shri Raj Narayan, Field Assistant, submitted three articles for publication in the Hindi Newsletter 2025, scheduled to be published in February 2025 by the Central Muga Eri Research & Training Institute, Lahdoigarh (Assam).
- Quarterly Hindi meetings for the implementation and promotion of official language have been conducted on 19.06.2024, 23.09.2024, 30.12.2024 and 20.03.2025.

7. Details of Human Resource:

Sl.	Name	Designation	Status
1	Sri. Suraj Pal	Scientist-D	Superannuation on 31.08.2024
2	Dr. Dhamendra Kumar Jigyasu	Scientist-D	12.07.2024
3	Shri Deen Mohammad	Senior Technical Assistant	09.07.2021
4	Shri Raj Narayan	Field Assistant	13.07.2021
5	Sri. Ram Jiwan	Field Assistant	13.08.2018
6	Sri. Suresh	Assistant Technician	01.04.2017
7	Sri Jokhu Ram	MTS	Superannuation on 31.12.2024

8. Administration during the year 2024-25:

During the reporting period, Shri Suraj Pal, Scientist-D and In-Charge of Eri REC, retired upon superannuation on 31.08.2024. Following his retirement, Dr. Dharmendra Kumar Jigyasu, Scientist-D, assumed charge of Eri REC, Fatehpur.



Photographic Glimpses of Extension Communication Programmes Organized by CSB-EREC, Fatehpur | Financial Year: 2024-25

Shown below are selected photographs from the Extension Communication Programmes conducted by the Eastern Regional Extension Centre (EREC), Fatehpur at various locations during the financial year 2024-25. These programmes focused on creating awareness and enhancing field-level adoption of scientific practices in Eri and Muga sericulture. The activities included practical demonstrations, expert interactions, and distribution of educational materials, aiming to empower local farmers and SHGs with updated sericulture technologies. The images capture the enthusiastic participation of stakeholders and EREC Fatehpur's commitment to strengthening sericulture outreach in the region.







Technology Awareness Programme





Technology Demonstration Programme



Farmer Skill Training Programme





Technology Orientation Programme



ANNUAL TARGET AND ACHIEVEMENT OF CSB-EREC (2024-25)**Table No. 01:** ECP target and achievement of Eri REC, Fatehpur

SL. NO.	ACTIVITIES	Unit Cost Lakh (Rs.)	Target		Achievement		No. of stakeholders		Achievement (%)
			Physical (No.)	Fin. (Rs. In lakh)	Physical	Financial	Target	Achievement	
1.	Technology Awareness	0.10	02	0.20	02	0.20	100	143	143%
2.	Technology Demonstration	0.01	05	0.05	05	0.05	100	153	153%
	TOTAL	-	07	0.25	07	0.25	200	296	100%

Table No. 02: Training program target and achievement of Eri REC, Fatehpur

Sl. No.	Type of Training	Batch No.	Period of Training	No. of Farmers Trained	Sanctioned Amount (Rs. in lakhs)	Expenditure Amount (Rs. in lakhs)
1.	Farmer Skill Training (FST)	01	24.09.2024 to 28.09.2024	28	1.125	1.125
2.	Technology Orientation Programme (TOP)	01	24.02.2025 to 28.02.2025	26	0.95	0.95
	TOTAL			54	2.075	2.075

Table No. 03: Meteorological Data of Fatehpur (U.P.)

Year	Month	Temperature °C		Relative Humidity (%)		Avg. Rainfall (mm)	Nos. of Rainy Days
		Max.	Min.	Max.	Min.		
2024	April	43	18	35	06	1.18	5
	May	46	20	46	03	0.63	7
	June	47	22	73	08	51.41	18
	July	40	20	80	33	165.32	28
	August	36	23	92	41	249.52	31
	September	39	23	98	44	145.6	25
	October	36	20	91	20	3.91	5
	November	36	11	60	16	0	0
	December	29	06	66	15	7.97	4
2025	January	26	09	80	28	4.86	7
	February	29	10	68	17	24.07	11
	March	39	11	50	08	20.16	6



CSB-REC, SILLE, ARUNACHAL PRADESH

Highlights of activities/achievements for each unit should be given separately.

- i. 4 Awareness programme conducted with 242 stakeholders.
- ii. 4 Technology demonstration with 86 stake holders.
- iii. Supplied 10, 200 Nos. of kesseru saplings and 750 Nos. of Som sapling.
- iv. Farm maintenance

Meteorological Data (Unit wise) - may be presented in brief

Sl. No.	Month	Year	Temperature		Relative Humidity		No. of Rainy Days
			Max.	Min.	Max.	Min.	
1	April	2024	24°C	22°C	77%	76%	10
2	May	2024	28°C	24°C	84%	74%	9
3	June	2024	29°C	27°C	90%	83%	20
4	July	2024	30°C	27°C	91%	83%	15
5	August	2024	30°C	26°C	89%	82%	16
6	September	2024	30°C	26°C	87%	78%	11
7	October	2024	24°C	22°C	89%	84%	15
8	November	2024	24°C	20°C	87%	79%	3
9	December	2024	19°C	13°C	80%	65%	-
10	January	2025	20°C	12°C	82%	70%	4
11	February	2025	19°C	13°C	85%	74%	10
12	March	2025	21°C	17°C	87%	76%	8

Extension activities

On-farm trials: One OFT was conducted at Doji Village, West Siang Aalo during the year 2024.

Technology Demonstration: 2 Nos. of Technology Demonstrations on Muga/Eri & 2 Nos. of Tech. Demo. Was conducted on Mulberry.

For Farm activities

Total Plantation area: 2248.18 sq mtrs. of land are covered with mulberry, eri and som plantations

Available Host Plants: 1700 nos. of Mulberry plants, raised 300 Nos. of kesseru saplings in between Mulberry plot and 35 nos. of som plantations.

Building etc.

State Sericulture department of Arunachal Pradesh provided 2 rooms.



Photographic Glimpses of Extension Communication Programmes Organized by CSB-REC, Sille, Arunachal Pradesh | Financial Year: 2024–25

Below are selected photographs from the Extension Communication Programmes organized by the Regional Extension Centre (REC), Sille, Arunachal Pradesh at various locations during the financial year 2024–25. These programmes aimed to promote awareness and field-level adoption of improved sericulture practices, particularly in Muga and Eri culture. Through hands-on demonstrations, farmer–scientist interactions, and dissemination of IEC materials, the events helped strengthen scientific knowledge among local farmers and SHGs. The photographs showcase active participation from stakeholders and highlight REC Sille's dedicated outreach efforts in the tribal and rural belts of Arunachal Pradesh.

Some view photograph of Extension communication programme organized by REC, Sille, Arunachal Pradesh in different places for the financial year 2024-25



CSB-REC, Lakhimpur

1. Highlights of activities/achievements for each unit should be given separately.
- Under extension and Communication Programme 265 nos. of farmers were covered through Awareness Programmes and Technology Demonstration Programme.
- Under Human Resource Development, 2 batches of farmer's skill Training, 2 batches of Technology Orientation Programme and 1 batch of Post Cocoon Training Programme were conducted and 163 farmers/students were trained.
- Under Sericulture resource centre 100 nos. of farmers were trained
- Under commercial Muga crop rearing 650g DFLs were reared produced 33400 Nos. of commercial cocoons.
- The centre generated a total revenue of Rs. 20400.00

Capacity Building conducted at REC Lakhimpur during 2024-25						
#	Name of the Training Programme	Target for the year		Progress till end of the year		
		Phy	Fin (Rs in lakh)	Phy	Fin	Nos. of farmers/students/NGO member trained
1	Exposure visit for Technology Awareness	-	-	-	-	-
2	Farmers Skill Training	2	2.34	2	2.34	61
3	Technology Orientation Programme	2	1.90	2	1.90	67
4	Training under Post cocoon sector	1	0.75	1	0.75	40
5	Training under Sericulture Resource Centre	20	1.50	20	1.50	200
6	Training under STEP by Institute	-	-	-	-	-
Sub Total		25	6.49	25	6.49	368
7	Training funded under – NON CBT	-	-	-	-	-
8	Training funded under – NON CSB	-	-	-	-	-
Sub Total		-	-	-	-	-
Grand Total		25	6.49	25	6.49	368

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Research Papers

1. Brahma L.R, Saikia D, Saikia M, **Rabha P** and Dutta L.C (2024). Interchange effect of food plants on yield and qualitative characters of Eri (*Samia ricini* Donovan) Cocoon. *Plant Archives.*, 24: 224-228. (NASS Rating: 5.59)
2. Narzary P.R, Das A, Saikia M, Verma R, Kaman P.K and **Rabha P** (2024). Impact of Treated Castor Leaves on Growth and Productivity of Eri Silkworms: A Bioassay Study. *Journal of Advances in Biology & Biotechnology.*, 27(6): 452-462.(NASS Rating: 5.30)
3. Saikia D, Saikia D, **Rabha P**, Sakia M and Borah D (2024). Challenges confronted by the Muga (*Antheraea assamensis* Helfer) farmers in adoption of the scientific practices in Sonitpur district of Assam, India. *Journal of Advances in Biology & Biotechnology.*, 27(7): 363-271. (NASS Rating: 5.30)



Popular articles

1. K.M Arun, Rabha P, V.S Ramya and Jayashree (2025). Transforming Waste to Wonder: Waste Cocoon's Artistic Metamorphosis. *An Agriculture Newsletter*.
2. Saikia D, Rabha P and Dutta P (2025). Use of ITK (Indigenous Technology Knowledge) in Muga Culture at Lakhimpur District of Assam. *The Agriculture Magazine*.
3. Rabha P, Brahma D, Saikia D and Sarma J (2025). Potentiality of Eri culture in the Char-Chapori areas of Assam. *Indian Farmer*.

Conference abstracts

1. K.P Arun Kumar, Rabha P, Kumar V and Chandrakumara K, D.S Mahesh and Neog K (2025). Muga silkworm rearing in cooler areas during Summer: managing effects of climate change on Muga. National Conference AGMET-2025. Assam Agricultural University, Jorhat.
2. पुलक राभा, विजय एन और कार्तिक निओग(2025). असम के लखीमपुर जिले में एरी रेशम के उत्पादन में महिलाओं की भागीदारी. रेशम उत्पादन (शहतूती एवं गैर-शहतूती) पर राष्ट्रीय राजभाषा रेशम तकनीकी सेमिनार. केंद्रीय तसर अनुसंधान एवं प्रशिक्षण संस्थान, रांची, झारखंड, २,०२५.

Papers presented in Conferences/Meetings/ Seminars/ Symposia, etc. (with details): 1

1. K.P Arun Kumar, Rabha P, Kumar V and Chandrakumara K, D.S Mahesh, Chandrakumara K, D. S. Mahesh and Neog K (2025). Muga silkworm rearing in cooler areas during Summer: managing effects of climate change on Muga. National Conference AGMET-2025. Assam Agricultural University, Jorhat.

Workshops, Seminars, Farmers' Day, etc., Organized by the Institutes and its nested units - with a brief report of each event and photographs (Extension Section/Units): Given below

All Nodal Officers of Sericulture Resource Centres (SRCs) should submit their activities in brief.

S N	Topic	Nos. of farmers
1	Silkworm disease and pest management	10
2	-do-	10
3	Technology of muga culture	10
4	Technology of eri culture	10
5	Silkworm rearing technique	10
6	-do-	10
7	Silkworm disease and pest management	10
8	Eri Chwaki rearing	10
9	-do-	10
10	Technology of muga culture	10
Total		100



All other events organized / observed by the institute in the year (the coordinator/section/organizers should submit the report)

Meteorological Data (Unit wise) - may be presented in brief

Year		Temperature (°C)	Rel. Humidity %			Nos. of rainy Days	Rain fall (mm)
2024	Month	Max.	Min.	Max.	Min.		
	April	39	31	94	53.7	07	188
	May	38	23	94	58.2	10	195
	June	36	25	94	57.3	19	286
	July	39	30	88	58.4	16	301
	August	38	28	95.4	62.1	15	212
	September	32	27	93	59.2	13	199
	October	32	25	94	58	12	170
	November	31	19	90	58.5	3	34
	December	30	14	84	59	2	6
2025	January	28	12	81	57	1	21
	February	30	14	85	61	0	0.00
	March	33	17	91	59	4	51

For Extension activities

Plan for land use and Resource Conservation :

Publicity :

Particulars	Target	Achievement
Raising of quality Som/Soalu planting material (Nos.)	Nil	2300
Supply of Som/Soalu planting materials (Nos.)	Nil	1200
Supply of Kesseru Seeds	Nil	3500
Muga Dfls rearing (Nos.)		
Commercial	650 dfl	650 dfl
Seed	-	0
Muga Cocoons production Nos.		
Commercial	-	33400
Seed	-	-
Muga Dfls production (Nos.) Rs. 8.00/- Per g	-	-
Muga Dfls supply (g.)	-	-
Vermicompost Production (kg)	-	-

Extension Communication Programme:

Particulars	Target	Achievement
Technology Awareness programme	3	3 (162)
Technology Demonstration	4	4 (103)

Total acre of plantation: 3 acre plantation of Som (taken in lease from DOS, Assam)

Available host plant: 700 plants

Land area under plantation, Area of building and roads, vacant and unutilized land area

Nursery	Plantation area	National Bamboo Mission	Low land	Roads	Office Building and Laboratory	Staff Quarters	Total	Vacant	Status of land
0.2 acre	2	-	-	-	0.8	-	3 acre	Nil	Lease



Hindi section/activities (Hindi section): 4 quarterly Hindi Meeting were organized. A total of 15 officers/Officials/participants took part in the above programme. Hindi Diwas on 14.09.25 was celebrated at the unit.

Staff details, transfer, newly joined, retired officials etc. (Establishment Section):

Sl No	Designation	No	
1	Scientist-B	1	
2	STA	2	
3	MTS	2	

**Photographic Glimpses of Extension Communication Programmes
Organized by CSB-REC, Lakhimpur | Financial Year: 2024-25**

Below are selected photographs from the Extension Communication Programmes organized by the Regional Extension Centre (REC), Lakhimpur at various locations during the financial year 2024-25. These programmes aimed to disseminate improved practices in Muga and Eri sericulture through farmer-scientist interactions, field demonstrations, and the distribution of IEC materials. The events facilitated awareness on scientific host plant management, silkworm rearing techniques, and disease prevention methods. The photographs reflect active engagement from farmers and local stakeholders, showcasing REC Lakhimpur's efforts toward strengthening sericulture extension in the region.

Photographs of Extension communication programme organized by CSB-REC, Lakhimpur in different places for the financial year 2024-25



Photographic Glimpses of Extension Communication Programmes Organized by REC, Coochbehar | Financial Year: 2024–25

Presented below are selected photographs from the Extension Communication Programmes organized by the Regional Extension Centre (REC), Coochbehar at various locations during the financial year 2024–25. These programmes focused on promoting scientific practices in Eri and Muga sericulture through live demonstrations, expert interactions, and the distribution of awareness materials. The initiatives aimed to empower farmers, SHGs, and local stakeholders with updated knowledge on host plant cultivation, silkworm rearing, and disease management. The images reflect the enthusiastic participation and field-level impact achieved through REC Coochbehar's extension efforts.

Photographs of Extension communication programme organized by REC, Coochbehar in different places for the financial year 2024-25



Impact Highlights

- The integration of **technology demonstrations with hands-on training** significantly enhanced adoption rates.
- The focus on **women's involvement**, especially in Eri culture, encouraged household-level income generation.
- Farmers expressed high satisfaction, particularly with **low-cost rearing innovations**, disease control measures, and improved leaf yield through scientific host plant management.



संस्थान की महत्वपूर्ण घटनाएँ और समग्र गतिविधियाँ
IMPORTANT EVENTS AND OVERALL ACTIVITIES OF THE INSTITUTE

Farewell to Director Dr. (Mrs) K.M.Vijaya Kumari



Valedictory and Certificate Distribution Ceremony of Foundation Training Programme for the Foundation Training Programme for Newly Inducted Post-Cocoon Scientists, graced by Sh. Gulab Chand Kataria, Honorable Governor of Assam





As part of efforts to expand sericulture in Gujarat, the Member Secretary of CSB, accompanied by a team, visited the Kalyan Foundation, Palanpur





Guest lecture featuring Nimisha Baruah Ebbers, an Independent Researcher and Emerging Practitioner from Leuphana University, Lüneburg, Germany.



International Yoga Day Celebration at CSB-CMER&TI



World Blood Donor Day Camp at CSB-CMER&TI



World Environment Day 2024 Celebrations: Eri and Muga Host Plantation Drive



Visit of the Silk Policy - 2047 delegation to discuss the formulation of the CSB Silk Policy



National Sports Day Celebrations Conclude with Prize Distribution and Valedictory Program at CSB-CMER&TI



Meaningful plantation drive alongside of Har Ghar Tiranga campaign



CSB-CMER&TI Celebrating 78th Independence Day



The launch of the Eri Sericulture Promotional Project at SD Agricultural University, Palanpur, Banaskantha, Gujarat



The launch of educational booklets at the Eri Sericulture Promotional Project at Gujarat



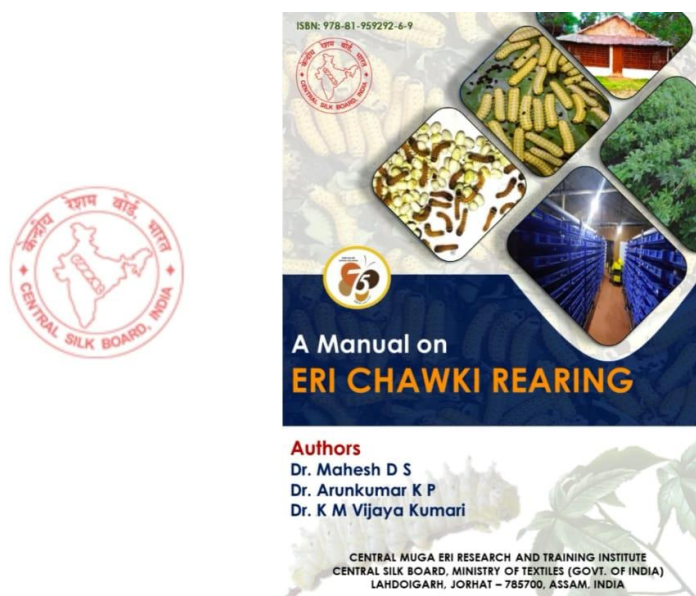
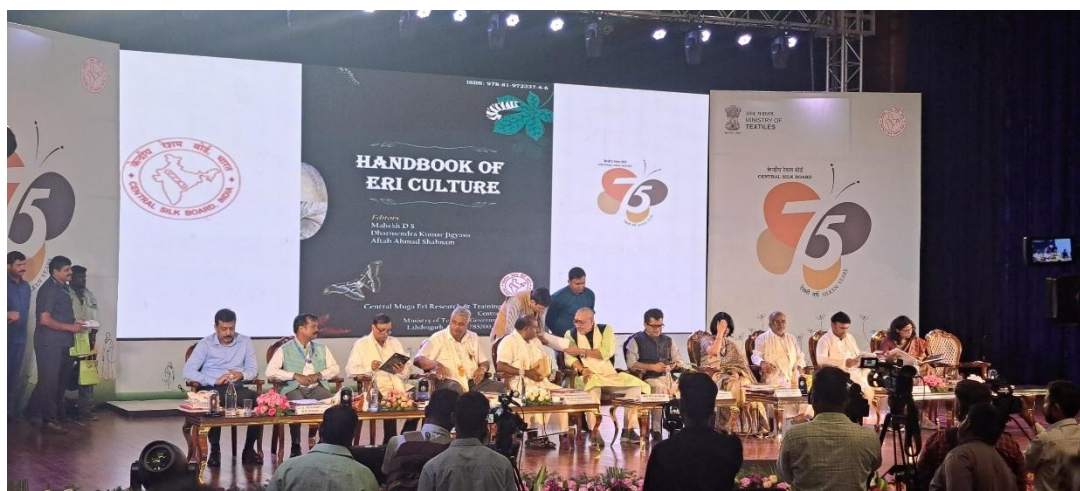
Dr. Aftab Ahmad Shabnam and Dr. Diganta Mech from CSB-CMER&TI for receiving the prestigious Best Scientist Award by Central Silk Board



CSB-CMER&TI, Lahdoigarh, along with RSRS Imphal, proudly showcased a variety of Vanya sericulture products



During the grand Platinum Jubilee celebration of the Central Silk Board, Hon'ble Union Minister of Textiles, Sh. Giriraj Singh Ji, along with esteemed guests Sh. H.D. Kumaraswamy Ji and Sh. Pabitra Margherita Ji, released three key publications: Handbook on Muga Culture, Handbook on Eri Culture, and the Manual on Eri Chawki Rearing



Signing of an MoU between CSB-CMER&TI, Lahdoigarh, and Assam Agricultural University, Jorhat



One-Day Brainstorming Workshop on “Oak Tasar Silk Production: From Forest to Fabric”



Dr. Mahesh D S, Scientist-C awarded with the prestigious Presentation Award for Young Scientists (PAYS) at the 27th International Congress of Entomology (ICE-2024) in Kyoto, Japan



Bidding farewell to Sh. Bitupan Das, Scientist D, and Sh. Suren Sensowa, SFW



Plantation drive as a part of the [#SwachhtaHiSeva2024Seva](#) campaign



Silver Jubilee Celebrations Moments



Felicitations and Awards



Scientific discussion with participation from renowned experts such as Dr. N.K. Krishna Kumar, Dr. Subhash Chander, Prof. Ravinder S. Chandel, Prof. Chinna Made Gowda, Dr. N. Srinivasa, Dr. K. Ramaraju, Dr. Arjun Singh Baloda, and Dr. J.P. Sampath Kumar



44th Research Advisory Committee (RAC) Meeting



Dr. Vijay has been awarded second place in recognition of Best Oral Presentation



76th Republic Day Celebrations



Dr Kartik Neog, Director and Dr Mahesh D S, Scientist, CSB-CMER&TI honored with a prestigious Certificate of Appreciation



73rd Research Council Meeting of CSB-CMER&TI, Lahdoigarh and a special felicitation ceremony was held to honor Dr. Reeta Luikham, Scientist-D



CSB-CMERTI bid farewell to Dr. Arunkumar K P as he embarks on a new journey at CSB-SBRL, Bengaluru



Vanya Reshom Krishi Mela on 11th February 2025 at the Community Hall, Uriamghat, Golaghat



CSB-CMERTI, Lahdoigarh bids a fond farewell to Dr. Manjunath R. N., Scientist, upon his transfer



Sh. Sinto Antoo, Scientist-B awarded with the Best Oral Award at the AGMET-2025



45th Research Advisory Committee (RAC) Meeting of CSB-CMERTI, Lahdoigarh**Brainstorming Workshop for the Development of the Silk Industry Beyond Silk Samagra 02 (South Zone) at La Marvella Hotel, Bengaluru**

केरेबो-केंद्रीय मूगा एरी अनुसंधान व प्रशिक्षण संस्थान, लाहदोईगढ़ एवं इसके अधीनस्थ केन्द्रों द्वारा वर्ष 2024-25 के दौरान राजभाषा कार्यान्वयन के संबंध में किए गए कार्यों व उपलब्धियाँ

केन्द्रीय रेशम बोर्ड में राजभाषा नीति के कार्यान्वयन हेतु वर्ष 2024-25 की वार्षिक कार्य योजना व जाँच बिंदुओं को प्रभावी ढंग से लागू करने का दिनांक 7.05.2024 की पत्र संख्या: केरेबो-3(1)/2014-15/हिन्दी तथा राजभाषा विभाग, गृह मंत्रालय, भारत सरकार द्वारा जारी वर्ष 2024-25 के वार्षिक कार्यक्रम के तहत इस संस्थान और इसके अधीनस्थ केन्द्रों में राजभाषा के कार्यान्वयन के क्षेत्र में तीव्रता से अनुपालन किया जा रहा है।

1. **राजभाषा अधिनियम, 1963 की धारा 3 (3) के अंतर्गत आने वाले कागजातों को अनिवार्य रूप से द्विभाषी में जारी करना:** इस अधिनियम के अंतर्गत आनेवाले सभी कागजातों को द्विभाषी रूप में जारी किया जाता है। इसकी रिपोर्ट प्रत्येक तिमाही में सचिवालय, बंगलूरु और अन्य संबंधित कार्यालयों को प्रेषित की जाती है।

2. **राजभाषा नियम (5) का अनुपालन- हिंदी में प्राप्त पत्रों के उत्तर हिंदी में देना:** इस संस्थान में इसे शत प्रतिशत अनुपालन किया जाता है।

3. **फाइलों/आवतियों/ई ऑफिस पर हिंदी टिप्पण लेखन:** फाइलों पर हिंदी में लिखी गई टिप्पणियों का प्रतिशत लक्ष्य से ज्यादा पाया।

4. **यांत्रिक सुविधाएं:** संस्थान के प्रभागों और अनुभागों में भी द्विभाषी सुविधा से युक्त कम्प्यूटर और लैपटॉप उपलब्ध है।

5. **तिमाही बैठक/एक दिवसीय हिंदी कार्यशाला का आयोजन:** इस संस्थान में नियमित रूप से रा.भा. का. समिति की 04 तिमाही बैठकों और कार्यशालाओं का समापन किया गया। उन कार्यशालाओं में संस्थान के अधिकांश वैज्ञानिकों, अधिकारियों और कर्मचारियों ने सक्रिय से भाग लिया और उन्हें राजभाषा हिंदी के प्रयोग संबंधी अधिनियमों, जानकारीयों एवं हिंदी भाषा की शुद्धता पर प्रायोगिक ज्ञान भी प्राप्त कराया गया। संस्थान के अधीनस्थ कार्यालयों में भी कार्यशालाएँ आयोजित की गईं। दिनांक: 24.02.2025 को अधीनस्थ केंद्र- केरेबो-क्षेत्रीय रेशम उत्पादन अनुसंधान केंद्र, इम्फाल में एक दिवसीय हिंदी कार्यशाला संपन्न हुई। इस कार्यक्रम में संयुक्त निदेशक/वैज्ञानिकगण सेवानिवृत्त, वैज्ञानिकों और कर्मचारियों ने बड़ी इच्छुकता के साथ भाग लिया। इसकी स्मरणीय झलक:



6. **हिंदी प्रबोध/प्रवीण/प्राज्ञ पाठ्यक्रम का प्रशिक्षण:** इस संस्थान के 05 (पाँच) वैज्ञानिक-बी को प्राज्ञ पाठ्यक्रम में सत्र जनवरी - मई वर्ष 2024 के लिए प्रशिक्षण प्राप्त करने के संबंध में नामित किया गया। उन्होंने प्राज्ञ परीक्षा भी उत्तीर्ण कर ली है। फलतः उन्हें प्रोत्साहन पुरस्कार सहित 12 महीने की अवधि के लिए एक महीने की अवधि के लिए एक वेतन वृद्धि के बराबर का वार्षिक वेतन की संस्वीकृति प्रदान की गई।

7. **सरकारी कामकाज मूल रूप से हिंदी में करने के लिए प्रोत्साहन योजना:** इसके अंतर्गत अधीनस्थ इकाई- केरेबो-एरी अनुसंधान प्रसार केंद्र, फतेहपुर (उ.प्र) के सेवानिवृत्त वैज्ञानिक डी एवं प्रभारी डॉ. सूरज पाल को हिंदी में अधिक से अधिक कार्य करने के लिए प्रथम नकद पुरस्कार की रकम एवं प्रशस्ति-पत्र प्रदान किया गया और



संस्थान में कार्यरत 03 पदाधारियों को भी क्रमशः (II) पथम, द्वितीय और तृतीय नकद पुरस्कार और प्रशस्ति-पत्र प्रदान किए गए।

8. **राजभाषा चलशील्ड योजनाएँ स्थापित करना:** राजभाषा हिंदी के प्रोत्साहन के लिए संस्थान के प्रभागों और अनुभागों के बीच उत्कृष्ट कार्य करने के लिए “चल शील्ड” से सम्मानित किया जाना आरम्भ किया गया। वर्ष 2024 के लिए सांख्यिकी विस्तार व आर्थिक प्रबंधन प्रभाग, केरेबो-केमूएअवप्रसं को उक्त चल शील्ड से सम्मानित किया गया।

9. **अधीनस्थ केंद्रों की राजभाषा की समीक्षा :** अधीनस्थ केंद्रों/इकाईयों से प्राप्त राजभाषा हिंदी के कार्यान्वयन संबंधी रिपोर्ट को समय-समय पर समीक्षा की गई।

10. **हिंदी दिवस व राजभाषा हीरक जयंती समारोह में भाग लेना / हिंदी दिवस/पखवाड़ा समारोह वर्ष 2024 का आयोजन:** इस समारोह के अंतर्गत, इस संस्थान की श्रीमती वाहेबम मंलेम देवी, सहा.निदेशक (रा.भा.) और श्रीमती स्मृता दत्त, प्रवर श्रृणी लिपिक द्वारा भारत मंडपम, प्रगति मैदान, नई दिल्ली में दिनांक 14 और 15.09.2024 को आयोजित हिंदी दिवस व राजभाषा हीरक जयंती समारोह और चतुर्थ अखिल भारतीय राजभाषा सम्मेलन में भाग लिया गया। उस वर्ष हिंदी दिवस के दिन राजभाषा हीरक जयंती समारोह भी मनाया गया। के.रे.बो, हिंदी अनुभाग, बेंगलूरु से प्राप्त परिपत्र के अनुपालन में दिनांक 17.09.2024 से 30.09.2024 तक संस्थान में हिंदी पखवाड़ा-2024 पूर्ण उत्साह के साथ मनाया गया जिसमें 04 प्रतियोगिताएं आयोजित की गईं। कार्यक्रम में वैज्ञानिकों, अधिकारियों और कर्मचारियों ने हिंदी के प्रति बहुत ही उत्साहपूर्क सहभागिता की और हिंदी भाषा के प्रति अपनी प्रतिबद्धता को और प्रगाढ़ बनाने का संकल्प लिया। विजेताओं को नकद पुरस्कार और प्रशस्ति-पत्र प्रदान किए गए। अधीनस्थ केंद्रों में भी हिंदी दिवस/पखवाड़ा समारोह वर्ष-2024 मनाया गया जिन में केंद्रों के सभी अधिकारियों और कर्मचारियों ने सक्रिय भागीदारी दिखाई।

11. **विश्व हिंदी दिवस वर्ष 2025:** दिनांक 10 जनवरी, 2025 को 3.00 बजे से 5.00 बजे तक केंद्रीय रेशम बोर्ड, बेंगलूरु द्वारा आयोजित विश्व हिंदी दिवस के अवसर पर संस्थान और अधीनस्थ केंद्रों/इकाईयों के अधिकांश अधिकारियों, सहा.निदेशक (रा.भा) और कर्मचारियों ने विडियो कॉन्फ्रेंस के जरिए भाग लिया।

12. **नगर राजभाषा कार्यान्वयन समिति, जोरहाट की बैठक :** नगर राजभाषा कार्यान्वयन समिति, जोरहाट द्वारा आयोजित अर्ध वार्षिक बैठकों और गतिविधियों में इस संस्थान ने नियमित रूप से सभागिता निभाई।

13. **हिंदी में प्रकाशन :** संस्थान द्वारा हिंदी में कई प्रकाशन किए गए हैं। इन में से 03 पत्रकें (लीफ लेटस) निम्न प्रकार हैं :

1. खाद्य पौधों पर आधारित वाष्पशील (सिंथेटिक) मिश्रण
2. एरी रेशमकीट पालन में स्वच्छता और संक्रमण रोकथाम
3. मूंगा सुपर कूक (क्षेत्रीय भाषा में भी प्रकाशित)

14. **हिंदी समाचार-पत्र की खरीद जारी है।**

15. **उत्कृष्ट कार्य करने पर पुरस्कार प्राप्त संबंधी:**

- I. दिनांक 24.8.2024 को केरेबो-केतअवप्रसं, नगड़ी, राँची द्वारा आयोजित राष्ट्रीय राजभाषा रेशम तकनीकी सम्मेलन में संस्थान के डॉ. मंजुनाथ, वैज्ञानिक सी (स्थानांतरित) ने कोसोत्तर प्रौद्योगिकी सत्र में प्रथम पुरस्कार प्राप्त किया।
- II. दिनांक 06.02.2025 को नगर राजभाषा कार्यान्वयन समिति, जोरहाट द्वारा केरेबो-के.मू.ए.अ.व प्र.सं., लाहदोईगढ़ को वर्ष 2023-2024 के लिए राजभाषा कार्यान्वयन के क्षेत्र में सर्वोत्तम कार्य निष्पादन के लिए द्वितीय पुरस्कार के रूप में शील्ड व प्रशस्ति-पत्र से अलंकृत किया गया। प्राप्त किए गए शील्ड व प्रशस्ति-पत्र के फोटोग्राफ निम्नवत संलग्न हैं:





III: दिनांक 04.09.2024 को केरेबो-क्षेत्रीय रेशम उत्पादन अनुसंधान केंद्र, मंत्रीपुख्रि, इंफाल पूर्व, मणिपुर को वर्ष 2023 के दौरान राजभाषा कार्यान्वयन के क्षेत्र में उत्कृष्ट कार्य निष्पादन हेतु नगर राजभाषा कार्यान्वयन समिति (नराकास), इंफाल द्वारा द्वितीय पुरस्कार के रूप में शील्ड व प्रशस्ति-पत्र से सम्मानित किया गया।

इस उपलब्धि ने केरेबो-क्षेत्रीय रेशम उत्पादन अनुसंधान केंद्र, इंफाल को राजभाषा कार्यान्वयन के क्षेत्र में अग्रणी कार्यालयों में स्थापित किया है। यह सम्मान केंद्र के कर्मचारियों के सतत प्रयासों और हिन्दी के प्रति समर्पण का परिणाम है। प्राप्त किए गए शील्ड व प्रशस्ति-पत्र के फोटोग्राफ निम्नवत संलग्न है:



IV. संस्थान के अधीनस्थ केंद्र केरेबो-एरी अनुसंधान प्रसार केंद्र, फतेहपुर (उत्तर प्रदेश) को वर्ष 2024-25 के दौरान उत्कृष्ट राजभाषा कार्यान्वयन हेतु नराकास फतेहपुर द्वारा प्रोत्साहन पुरस्कार के स्वरूप में शील्ड प्रदान किया गया।

यह सम्मान कार्यालय श्रेणी में केंद्र द्वारा राजभाषा हिन्दी के प्रचार-प्रसार, सरकारी पत्राचार एवं दैनिक कार्यों में हिन्दी के प्रभावी उपयोग के लिए दिया गया।

इसके अतिरिक्त, केंद्र के कर्मचारी श्री राज नारायण को वर्ष 2024 में आयोजित विभिन्न राजभाषा प्रतियोगिताओं में उल्लेखनीय प्रस्तुति निष्पादन करने के लिए भी सम्मानित किया गया। उन्होंने पंजाब एंड सिंध बैंक द्वारा आयोजित हिन्दी क्विज प्रतियोगिता में द्वितीय पुरस्कार, बैंक ऑफ बड़ौदा द्वारा आयोजित प्रतियोगिता में प्रोत्साहन पुरस्कार, तथा यूनियन बैंक ऑफ इंडिया द्वारा आयोजित राजभाषा ज्ञान प्रतियोगिता में भी प्रोत्साहन पुरस्कार प्राप्त किया। प्राप्त किए गए शील्ड व प्रशस्ति-पत्र के फोटोग्राफ निम्नवत संलग्न है :



16. संस्थान की वेबसाइट को द्विभाषी में उपलब्ध है।

17. वितरण : समय समय पर केंद्रीय कार्यालय, बेंगलूरु और संबंधित कार्यालयों से राजभाषा नीति के कार्यान्वयन के संबंध में प्राप्त परिपत्र/दस्तावेजों एवं कार्य-योजना/वार्षिक कार्यक्रम का वितरण कर दिया गया।

अन्य उपलब्धि:

दिनांक 5 मार्च, 2025 को मेफेयर स्प्रिंग वेली रिजॉर्ट, गुवाहाटी में राजभाषा विभाग द्वारा पूर्व एवं पूर्वोत्तर क्षेत्र के लिए संयुक्त क्षेत्रीय राजभाषा सम्मेलन एवं पुरस्कार वितरण समारोह आयोजित किया गया है। इस सुअवसर पर केरेबो-केंद्रीय मूगा एरी अनुसंधान एवं प्रशिक्षण संस्थान के दो वैज्ञानिकगण, नॉडेल अधिकारी के रूप में श्रीमती वाहेंबम मंलेम देवी, सहा.निदेशक (रा.भा), एक कर्मचारी और अधीनस्थ केंद्रों के तीन कर्मचारी तथा केरेबो-भारतीय रेशम मार्क संगठन, गुवाहाटी के कर्मचारियों द्वारा एक विशेष प्रदर्शनी स्टल लगाया गया। उद्यमी ने विक्रय हेतु कुछ रेशमी परिधान का प्रदर्शन भी किया।

माननीय मुख्य मंत्री डॉ.हिमंत विश्व शर्मा जी राज्य सरकार असम, माननीय केंद्रीय गृह राज्य मंत्री श्री नित्यानंद राय जी और अन्य अतिथियों ने केंद्रीय रेशम बोर्ड के प्रदर्शनी स्टल का वीक्षण किया; माननीय मुख्य मंत्री और माननीय केंद्रीय गृह राज्य मंत्री को असम राज्य की पारंपरिक पहचान फूलम गामोछे से संस्थान के डॉ. ओम प्रकाश पाटीदार, वैज्ञानिक-सी और श्री रोशन लाल मीणा, वैज्ञानिक-बी द्वारा सम्मानित किया गया जहाँ हमारी टीम ने मूगा एवं एरी रेशम की विशिष्टता और इसके उत्पादन से जुड़ी वैज्ञानिक एवं नई तकनीकी प्रक्रियाओं की जानकारी साझा की। इस आयोजन का मुख्य उद्देश्य हिंदी भाषा को बढ़ावा देना तथा सरकारी कार्यों में इसकी प्रभावशीलता को सुदृढ़ करना था। साथ ही, यह असम के समृद्ध मूगा एवं एरी रेशम उद्योग की अनूठी विरासत को राष्ट्रीय स्तर के समारोह के मंच पर प्रदर्शित करने का एक महत्वपूर्ण अवसर भी बना।

इसकी झलक :



संस्थान में आयोजित विभिन्न कार्यक्रमों जैसे राष्ट्रीय मतदाता दिवस का शपथ ग्रहण करना, गणतंत्र दिवस पालन करना, अंतर राष्ट्रीय महिला दिवस, समय-समय की स्वच्छता/सर्तकता जागरूकता, योग दिवस, अंगदान दिवस और अन्य संबंधित गतिविधियों का राजभाषा अनुभाग द्वारा सफलतापूर्वक संपन्न किया गया। संस्थान की क्रियाकलापों के प्रचार-प्रसार हेतु प्रेस एवं मीडिया के साथ समय-समय पर समन्वय किया जा रहा है।



Publications of CSB-CMER&TI from 2024-2025

Research papers / Full length papers / Lead papers

1. Patidar O.P., Jigyasu DK Shabnam, A. A., Harisha R, Sinto A and Neog K. (2024). Optimizing nursery-raising techniques for borpat (*Ailanthus grandis* Prain) to enhance eri silk production in northeast India. *Plant Archives* vol 24, Special Issue (VS), 2024: 229-237.
2. Harisha, R., Ahlawat, A.K., Balakrishna, A.P., Bhavya, B., Singh, S.K., Singhal, S., Narwal, S., Jaiswal, J.P., Singh, J.B., Kumar, R.R. and Singh, S.K., 2024. Unraveling the effects of genotype, environment and their interaction on quality attributes of diverse wheat (*Triticum aestivum* L.) genotypes. *Indian Journal of Genetics And Plant Breeding*, 84(02), pp.156-167. <https://doi.org/10.31742/ISGPB.84.2.2> (IF: 0.4; NAAS: 6.4)
3. Harisha, R., Balakrishnan, A.P., Manjunath, K. K., Bhavya, B., Singhal, Shivakumar H. B., Ahlawat, A.K., Singh, S.K., and Singh A. M. 2024. Polyphenol oxidase (PPO) in wheat (*Triticum aestivum*): a systematic review on bioactivity, inheritance, functionality and their effects on end products. *Cereal Research Communications*. <https://doi.org/10.1007/s42976-024-00576-6> . (IF: 0.85; NAAS: 6.85)
4. Kartik Neog, Aftab A. Shabnam, K.Chandrakumara, Mahesh D. S, K. P. Arunkumar, D. K. Jigyasu and Amit Kumar. 2025, Technological Innovations for Sustainable Muga and Ericulture in India, International Conference on Emerging Technologies in Silk Sector - SILKTECH 2025 Souvenir, pp. 24-31.
5. आफताब ए. शबनम, केपी अरुणकुमार, डी एस महेश, सुबदास सिंह, अमित कुमार, रीता लुइखम, डीके जि ज्ञासु, आर.एन. मंजूनाथ और कार्तिक नियोग, 2024, मूगा और एरी रेशम उत्पादन में प्रगति एवं भविष्य की संभावनाएँ : एक व्यापक विश्लेषण, राष्ट्रीय राजभाषा रेशम तकनीक सेमिनार 2024 - रेशम उद्योग की उन्नति में अनुसंधान, प्रशिक्षण एवं प्रसार का योगदान. Pp.19-24.
6. Subharani, S., Luikham, R and Neog, K. (2025) Management of semilooper (*Hyblaea puera* Cramer) infesting *Quercus serrata* Thunb. in Manipur *Indian Journal of Sericulture* 2025_IJS_006 (Accepted).
7. Wahengbam Sapana, Subadas Singh, Y Surjalata, Anowar Hossain, Debaraj Yumnam, Somdip Majumdar and Somorjit Singh (2024). Impact of Seasonal Variations on Cocoon Yield and its Attributed Traits of Eri Silkworm (*Samia ricini*, Donovan). *Biological Forum – An International Journal*, Vol. 16 (7), 2024 pp.336-340.
8. Subadas Singh, Dinata Roy, Mahananda Chutia, Reeta Luikham and Kartik Neog (2024). Cross transmission of pebrine spores from wild lepidopteran caterpillar, *Criculatrifenestrata* Helfer to Muga silkworm, *Antheraea assamensis* Helfer. In *Plant Archives*, Vol. 24, 2024 pp.28-33.
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2. Aftab A Shabnam, Arun Kumar KP, Amit Kumar and DK Jigyasu (Eds), Handbook of Muga Culture. (1st Ed., pp 70-87). CSB-CMER&TI Jorhat. ISBN 978-81-959292-8-3
3. Manjunath R N, Roshan Lal Meena. Golden Thread: A Guide to Muga Silk Post cocoon technology. ISBN 978-81-972337-3-9

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1. Naik VS, Kumar A, Jigyasu DK, Shabnam A Aftab, Patidar OP, Vijayakumari KM (2024). Soils of muga sericulture. In: Aftab A Shabnam, Arun Kumar Kp, Amit Kumar and DK Jigyasu (Eds), Handbook of Muga Culture. (1st Ed., pp 1-19). CSB-CMER&TI, Jorhat. ISBN 978-81-959292-8-3
2. Sangannavar PA, Shabnam AA, Kumar A Jigyasu DK, Vinod Kumar, Debnath R, Patidar OP, Vijayakumari KM (2024). Muga Host Plants diversity and utilisation. In: Aftab A Shabnam, Arun Kumar KP, Amit Kumar and DK Jigyasu (Eds), Handbook of Muga Culture. (1st Ed., pp 20-69). CSB-CMER&TI, Jorhat. ISBN 978-81-959292-8-3
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2. Harisha R, Patidar OP, Sinto A., Shabnam AA, Choudhary A, and Hussain SA. (2024). A soil sampling guide for effective muga and eri host plant management. Technical Bulletin 02/2024. ISBN: 978-81-972337-6-0. CSB-CMERTI
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2. Hussain, A. Md., Rasid, S.S., Sut, R., Kaisa, K., Hussain, S.A. (2024). Pebrine- A silent threat to Indian Sericulture. 45(18); pp204-214; UPJOZ.4035. ISSN:0256-971X(P).

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2. Mahesh DS, DK Jigyasu, Satish Singh, Nitin Jaimini, K Chandrakumara, Arunkumar KP, Vijay N, MK Chandaragi, LD Parmar, Naresh Babu N, Kartik Neog, S M Mantira Moorthy and P Sivakumar, Eri-Fusion Approach: A Visionary Model and Sustainable Road Map for

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1. Eri Sericulture Promotional Project in Gujarat (Hindi Documentary) released on 10th August, 2024 in 100 days programme of Viksit Bharat by Honble. Minister of Textiles.
2. Gujarat Eri Project Progress Documentary (English).
3. Gujarat Eri promotional project awareness campaign Video (English).
4. Gujarat Eri promotional project awareness campaign Video (Gujarati).
5. Celebrating 25 Years of Excellence: CSB-CMER&TI, Lahdoigarh; A documentary prepared by Dr. Arun Kumar KP, Sc-D; Sh. Sinto Antoo, Sc-B; Dr. K. Chandrakumara, Sc-B; Dr. Mahesh D S, Sc-C & Dr. Om Prakash Patidar, Sc-C (Assamese version)
6. Celebrating 25 Years of Excellence: CSB-CMER&TI, Lahdoigarh; A documentary prepared by Dr. Arun Kumar KP, Sc-D; Sh. Sinto Antoo, Sc-B; Dr. K. Chandrakumara, Sc-B; Dr. Mahesh D S, Sc-C & Dr. Om Prakash Patidar, Sc-C (Hindi version)
7. Celebrating 25 Years of Excellence: CSB-CMER&TI, Lahdoigarh; A documentary prepared by Dr. Arun Kumar KP, Sc-D; Sh. Sinto Antoo, Sc-B; Dr. K. Chandrakumara, Sc-B; Dr. Mahesh D S, Sc-C & Dr. Om Prakash Patidar, Sc-C (English version)



GRANTS –IN-AID FOR THE YEAR 2024-25

Head	GIA RECEIVED	EXPENDITURE INCURRED	SURRENDERED
Plan (NE General)	6,45,52,621.00	6,45,52,621.00	-
Plan General	58,57,379.00	58,57,379.00	-
Plan (NE Capital)	1,84,06,000.00	1,84,06,000.00	-
Plan Capital	1,04,20,000.00	1,04,20,000.00	-
Total	9,92,36,000.00	9,92,36,000.00	-

EXTERNAL FUND BALANCES FOR THE YEAR 2024-25

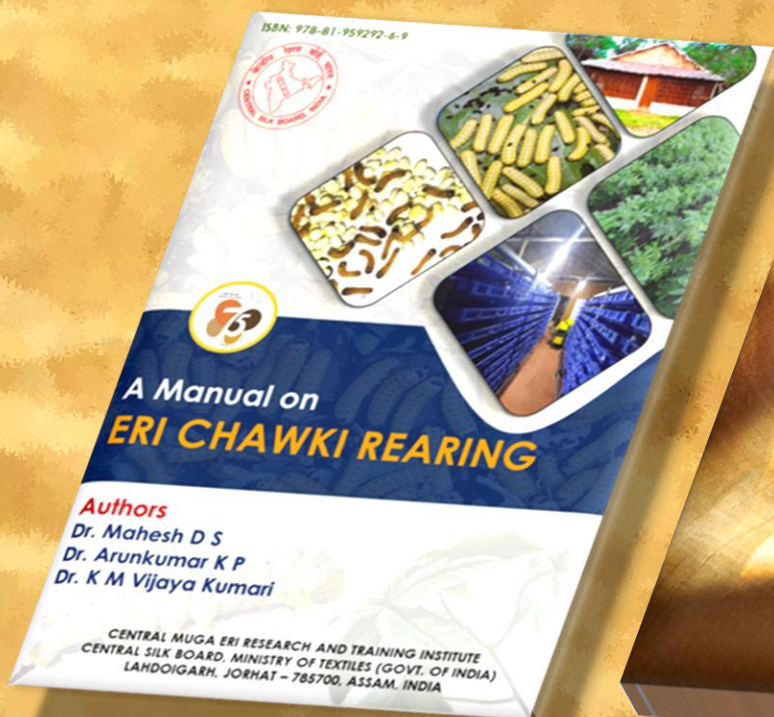
Head	DBT Fund	DST FUND
Opening Balance as on 01.04.2024	4,37,184.00	2,88,943.00
Amount Received during the year (including interest)	20,23,765.00	-
Expenditure during the year	5,15,508.00	-
Surrendered during the year	15,08,257.00	-
Closing Balance	4,37,184.00	2,88,943.00



Progress at a glance for the year 2024-2025

Name of the Institute	Research Projects as PI			Research Projects as CI			Capacity Building & Training		Extension Communication programmes (ECPs)		Soil Analysis services provided	Information, Education and Communication during 2024-2025	No. of patents filed/granted and technologies commercialised	Procurement of equipment's (Amount spent - Rs in lakhs)	Other activities	Revenue generated (Rs. in Lakhs)
	Ongoing projects during the year	Concluded Projects during the year	Newly initiated Projects	Ongoing projects during the year	Concluded Projects during the year	Newly initiated Projects	No. of Programs Conducted	No. of stakeholders trained	No. of Programs Conducted	No. of stakeholders trained						
CSB-CMER&TI, Lahdoigarh	09	01	03	02	01	00	229	3709	61	4292	38	262	03	273.47	52.88	11.23

Further Reading: Key Scholarly Contributions of CSB-CMERTI



केरेवो-केनूएअवप्रस

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