



HANDBOOK OF ERI CULTURE



Editors

Mahesh D S

Dharmendra Kumar Jigyasu

Aftab Ahmad Shabnam



Central Muga Eri Research & Training Institute

Central Silk Board

Ministry of Textiles, Government of India

Lahdoigarh, Jorhat-785700, Assam, India



ISBN: 978-81-972337-4-6

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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
लाहदोईगढ, जोरहाट (असम) LAHDOIGARH, JORHAT-785 700, ASSAM, INDIA

2024

Handbook of Eri Culture

Publisher & Printers:

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ISBN: 978-81-972337-4-6

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Printing Co-ordination

PMCE, CMER&TI, Lahdoigarh, Jorhat

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Citation: Mahesh DS, Jigyasu DK, Shabnam A. A., (2024). In (eds.) Handbook of Eri culture. CSB-CMER&TI, pp 256. ISBN: 978-81-972337-4-6

Number of copies: 130

Handbook of Eri Culture



Shri P. Sivakumar, IFS

Member Secretary
Central Silk Board
Bengaluru



Foreword

It gives me immense pleasure to introduce this comprehensive and invaluable resource, the "Handbook of Eri Culture," brought to you by the esteemed Central Muga Eri Research and Training Institute (CSB-CMERTI), a pivotal institution under the aegis of the Central Silk Board (CSB). This handbook stands as a testament to the unwavering commitment of the institute towards the advancement and dissemination of knowledge in the field of Eri culture. Eri culture, deeply rooted in the rich tapestry of traditions and practices of Northeast India, has been a source of livelihood and cultural significance for generations. This handbook comes at a time when the world is increasingly recognizing the importance of sustainable and eco-friendly practices, making Eri culture's contributions even more pertinent. The array of topics covered in this handbook reflects the holistic approach needed to master the art and science of Eri culture.

Spanning from the intricacies of soil health and host plant diversity to the finer nuances of genetic diversity, disease management, and silk production, each chapter is a treasure trove of insights that will benefit novices and experts alike. The chapters on grainage techniques, rearing management, and pest control are particularly noteworthy, as they encapsulate the hands-on wisdom accumulated through years of dedicated research and practical experience.

Furthermore, the inclusion of chapters on hygiene measures, disinfection methods, and economics underscores the fact that successful Eri culture goes beyond just technical know-how. It underscores the importance of a holistic approach that values the health of the silkworms, the integrity of the environment, and the prosperity of the ericulturists.

I commend the scientists, researchers and experts who have painstakingly crafted each chapter, infusing them with their expertise and passion. Their contributions ensure that this handbook isn't just a compilation of information, but a living document that will inspire and guide generations of sericulturists, researchers, and enthusiasts.

As we harness the power of Eri culture to foster sustainable rural development and growth in unconventional regions of India, this handbook promises to serve as a guiding light, illuminating the way forward with invaluable knowledge. I am confident that it will be an indispensable companion for all those who seek to understand, master, and contribute to the world of Eri culture.

(P. Sivakumar)

April 09, 2024

Dr. Bidyut C. Deka
Vice Chancellor



ASSAM AGRICULTURAL UNIVERSITY
JORHAT-785013, ASSAM (INDIA)

(Recipient of Sardar Patel Outstanding Institution Award)

MESSAGE

I am happy to learn that the Central Muga Eri Research and Training Institute (CSB-CMERTI), Lahdoigarh is going to publish an important publication named 'Handbook of Eri Culture' which will remain as a comprehensive and invaluable resources for the farmers, scientists and other stakeholders of this particular field.

This handbook exemplifies the institute's steadfast dedication to advancing and disseminating knowledge in the realm of Eri culture. I am confident that it will prove an indispensable companion for all who seek to understand, master, and contribute to the dynamic realm of Eri culture.


(Bidyut C. Deka)

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Dr. Nitin Kulkarni
Director



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पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, भारत सरकार

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Message

In the heart of Northeast India, amidst its lush landscapes and rich biodiversity, lies a tradition that has seamlessly woven itself into the fabric of local culture: the cultivation of eri silk. Renowned for its unique properties and sustainable production methods, eri silk cultivation, stands as a testament to the harmonious relationship between nature and human ingenuity. It is with great pleasure that CSB-CMERTI present the "Handbook of Eri Culture," a comprehensive guide dedicated to advancing the practice of eri sericulture across India and beyond.

The "Handbook of Eri Culture" is the culmination of extensive research and collaboration among experts in the fields of eri sericulture. It reflects a deep understanding of the challenges and opportunities that lie ahead for eri sericulture. Through its pages, readers will find detailed information on host plant diversity, soil health management, and integrated nutrient management, all aimed at enhancing the yield and quality of eri silk.

Moreover, this handbook underscores the potential of eri sericulture to transform lives and landscapes. It highlights the role of technological interventions in scaling up production from a cottage industry to an industrial-scale enterprise, thereby contributing to economic development and environmental sustainability. It envisions a future where eri silk production not only thrives but also serves as a model for sustainable sericulture and ethical fashion.

To the eri farmers, extension workers, researchers, and students who have dedicated themselves to the pursuit of knowledge in sericulture, this handbook is for you. May it inspire innovation, foster collaboration, and contribute to the flourishing of eri silk production for generations to come.

Welcome to a journey of discovery, innovation, and growth. Welcome to the "Handbook of Eri Culture."

Warmest regards,


(Dr. Nitin Kulkarni)

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Dr. S. Manthira Moorthy

Director (Tech)
Central Silk Board
Bengaluru



Message

Central Muga Eri Research and Training Institute (CSB-CMERTI) a key organization under the aegis of the Central Silk Board (CSB) have prepared "Handbook of Eri Culture". This handbook is a testament to the institute's unwavering commitment to advancing and disseminating knowledge in the field of Eri culture. For many years, Eri culture has served as a vital source of livelihood and cultural significance, intricately woven into the diverse traditions and customs of Northeast India. The publication of this handbook coincides with a global shift toward recognizing the importance of environmentally conscious and sustainable practices, further highlighting Eri culture's contributions.

The handbook's extensive coverage reflects the comprehensive approach necessary to mastering the art and science of Eri culture. Each chapter is a treasure trove of information, benefiting both beginners and experts alike, with topics ranging from the nuances of genetic diversity, disease management, and silk production to the intricacies of soil health and host plant diversity. Particularly noteworthy are the chapters on chawki rearing, grainage procedures, rearing management, pest control, and post-cocoon technology, which distil practical insights gained from years of dedicated research and real-world application.

Moreover, the chapters on sanitation techniques, economics, and hygiene underscore the fact that thriving in Eri culture demands more than just technical expertise. They highlight the importance of a holistic approach that prioritizes the well-being of the silkworms, the preservation of the environment, and the prosperity of the sericulturists. I commend the scientists, researchers, and experts who have meticulously authored each chapter, infusing it with their knowledge and passion. Their contributions ensure that this handbook is more than just a collection of information; it is a living resource that will mentor and inspire future generations of enthusiasts, scholars, and sericulturists.

This handbook aims to equip both traditional and non-traditional states of India with the essential knowledge needed to foster sustainable rural development and growth through Eri culture. I am confident that it will serve as an invaluable tool for anyone seeking to learn about, appreciate, and contribute to the world of Eri culture.


(S. Manthira Moorthy)



Dr. Kartik Neog

Director

Muga Silkworm Seed Organization (MSSO)

Central Silk Board

Khanapara, Guwahati-781022, Assam



Message

Grown in the rich biodiversity and verdant landscapes of Northeast India, eri silk is a custom that has been deeply ingrained in the region's culture. Eri silk farming, also known as eri culture, is well-known for its distinctive qualities and environmentally friendly production techniques. It is a living example of the coexisting forces of nature and human inventiveness. With great pleasure, CSB-CMERTI introduce the "Handbook of Eri Culture" an extensive manual aimed at promoting eri sericulture across India and beyond.

This handbook arrives at a critical juncture as the global demand for sustainable and ethically produced silk continues to rise. It serves not only as a tribute to the enduring legacy of eri silk but also as a beacon for the future, guiding both seasoned practitioners and newcomers through the complexities of eri sericulture. From the cultivation of diverse host plants to the latest advancements in rearing technologies, this handbook encompasses a broad spectrum of knowledge, meticulously compiled to support the sustainable development of the eri silk industry.

This handbook is the culmination of extensive research and collaboration among experts in sericulture, and its milieu. It reflects a profound understanding of the challenges and opportunities that lie ahead for eri sericulture. Within its pages, readers will find detailed information on host plant diversity, soil health management, and integrated nutrient management, all aimed at enhancing the yield and quality of eri silk.

Moreover, this handbook highlights the role of technological interventions in scaling up production from a cottage industry to an industrial-scale enterprise, thereby contributing to economic development and environmental sustainability. This resource envisions a future where eri silk production not only thrives but also serves as a model for sustainable agriculture and ethical fashion. To the eri farmers, extension workers, researchers, and students dedicated to advancing the field of sericulture, this handbook is for you. May it inspire innovation, foster collaboration, and contribute to the flourishing of eri silk production for generations to come. Embark on this journey of discovery, innovation, and growth with us. Welcome to the "Handbook of Eri Culture."

Warmest regards,

(Kartik Neog)



Dr. K. M. Vijaya Kumari

Director

Central Muga Eri Research and Training Institute

Central Silk Board

Lahdoigarh, Jorhat, Assam



Message

In the heart of Northeast India, amidst its lush landscapes and rich biodiversity, lies a tradition that has woven itself into the fabric of its culture; the cultivation of eri silk. Known for its unique properties and sustainable production methods, eri silk cultivation, or eri sericulture, stands as a testament to the harmonious relationship between nature and human ingenuity. It is with great pleasure that we present the "Handbook of Eri Culture Technologies," a comprehensive guide dedicated to advancing the practice of eri sericulture across India and beyond.

This handbook emerges at a pivotal moment as the demand for sustainable and ethically produced silk continues to rise on the global stage. It serves not only as a testament to the enduring legacy of eri silk but also as a beacon for the future, guiding both seasoned practitioners and newcomers through the intricacies of eri sericulture. From the cultivation of diverse host plants to the latest advancements in rearing technologies, this handbook covers a broad spectrum of knowledge, meticulously compiled to support the sustainable development of the eri silk industry.

The "Handbook of Eri Culture Technologies" is the culmination of extensive research and collaboration among experts in the fields of sericulture, agriculture, and environmental science. It reflects a deep understanding of the challenges and opportunities that lie ahead for eri sericulture. Through its pages, readers will find detailed information on host plant diversity, soil health management, and integrated nutrient management, all aimed at enhancing the yield and quality of eri silk.

Moreover, this handbook underscores the potential of eri sericulture to transform lives and landscapes. It highlights the role of technological interventions in scaling up production from a cottage industry to an industrial-scale enterprise, thereby contributing to economic development and environmental sustainability. It is a resource that envisions a future where eri silk production not only thrives but also serves as a model for sustainable agriculture and ethical fashion. To the eri farmers, extension workers, researchers, and students who have dedicated themselves to the pursuit of knowledge in sericulture, this handbook is for you. May it inspire innovation, foster collaboration, and contribute to the flourishing of eri silk production for generations to come.

Welcome to the journey of discovery, innovation, and growth. Welcome to the "Handbook of Eri Culture Technologies."

Warmest regards,

(K. M. Vijaya Kumari)

March 06, 2024

Preface

Eri sericulture represents a distinctive aspect of agriculture in the North-eastern region of India, where agroforestry-based farming is prevalent. Ranking just after mulberry silk, Eri silk contributes significantly to India's silk production, with a total output of 7183 metric tons in the year 2023-24. Beyond its role in producing spun silk, Eri sericulture also provides nutritional benefits to farmers through the consumption of pre-pupa and pupa, which are rich in proteins and lipids. Eri spun silk is well-known for its excellent thermal properties, making it a valuable material in various textile applications.

The species *Samia ricini*, belonging to the Saturniidae family, stands out as the only fully domesticated species. In the North-eastern region, twenty-six eco-races of *Samia ricini* have been identified and characterized. These eco-races are preserved at the Central Muga Eri Research and Training Institute (CSB-CMER&TI) in Jorhat. While most eco-races produce white cocoons, the Kokrajhar, Barpeta, and Rongpipi eco-races are known for their brick-red cocoons. Based on larval colour and markings, six pure line strains have been identified: Yellow Plain (YP), Yellow Spotted (YS), Yellow Zebra (YZ), Greenish Blue Plain (GBP), Greenish Blue Spotted (GBS) and Greenish Blue Zebra (GBZ).

A notable advancement in Eri sericulture is the development of C2, a newly registered high-yielding hybrid of the Eri silkworm, achieved through the hybridization of the Genung and Borduar eco-races. These phenotypic variants serve as valuable genetic resources for research in insect genetics and breeding.

The recent advancements in technology have been instrumental in transforming ericulture from a cottage industry into a large-scale industrial endeavour. The Ministry of Textiles, Government of India, is actively supporting the development of eri clusters to elevate ericulture to industrial status. With governmental backing and the introduction of innovative technologies, eri silk production is expected to grow substantially in the coming years.

Given the potential profitability and the expansion of eri sericulture into non-traditional states, the "Handbook of Eri Culture" has been developed to offer comprehensive information on advanced technologies and best practices for scientific eri silkworm rearing. This book is the culmination of extensive research and collaboration among experts in the fields of sericulture, agriculture, and environmental science. It reflects a deep understanding of the challenges and opportunities that lie ahead for eri sericulture. Through its pages, readers will find detailed information on host plant diversity, soil health management, and integrated nutrient management, all aimed at enhancing the yield and quality of eri silk.

To the eri farmers, extension workers, researchers, and students who have dedicated themselves to the pursuit of knowledge in sericulture, this handbook is for you. May it inspire innovation, foster collaboration, and contribute to the flourishing of eri silk production for generations to come.

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Warmest regards,

Editors

Contents

Chapter No.	Title of the Chapter	Authors	Page No.
Chapter 1	Soil Health Card and Fertilizer Recommendation for Eri Silkworm Host Plants	Amit Kumar, Vinodakumar S. Naik [#] , Dharmendra Kumar Jigyasu, Aftab A. Shabnam, Prashanth A. Sangannavar, Om Prakash Patidar, K M Vijaya Kumari	1-26
Chapter 2	Eri Host Plants Diversity, Utilization, and Cultivation Practices	Aftab A. Shabnam [#] , Dharmendra K. Jigyasu, Amit Kumar, Prashanth A. Sangannavar, Om Prakash Patidar, Vinodakumar S. Naik, Dip Kumar Gogoi, K M Vijaya Kumari	27-86
Chapter 3	Eri Host Plant Diseases and Pest Control Measures	Subadas Singh [#] , K Chandrakumara, Mahesh D S, Amit Kumar and Aftab A. Shabnam	87-111
Chapter 4	Genetic Diversity and Distribution of Eri Silkworms, <i>Samia ricini</i> (Donovan)	Mahesh D S [#] , Arunkumar K P, Reeta Luikham, K M Vijaya Kumari	112-121
Chapter 5	Eri Chawki Rearing Technology	Mahesh D S [#] , Arunkumar K P, K M Vijaya Kumari	122-149
Chapter 6	Eri Silkworm Rearing Management and Practices	Mahesh D S [#] , Reeta Luikham, Arunkumar K P, K M Vijaya Kumari	150-177
Chapter 7	Grainage Techniques in Eri culture	Mahesh D S [#] , Arunkumar K P, Reeta Luikham, K M Vijaya Kumari	178-197
Chapter 8	Diseases and Pests of Eri Silkworm and Their Management Practices	Subrahmanyam G. [#] , Mahesh D S, Arunkumar K P, Subadas Singh	198-208
Chapter 9	Disinfection Methods and Hygiene Measures in Eri culture	Mahesh D S [#] , Arunkumar K P, T. James Keisa, Reeta Luikham, K M Vijaya Kumari	209-213
Chapter 10	Eri Silk Spinning Machineries and Raw Silk Production	Manjunath R N [#]	214-231
Chapter 11	Economics aspects of Eri culture	Vijay N [#]	232-249
-	Bibliography	-	250-256

[#]Corresponding Author



“In every thread of Eri silk, there lies a story of harmony - between man and nature, tradition and progress, patience and reward.”

The "Handbook of Eri Culture" honors the enduring legacy of Eri culture, which has evolved over generations. It highlights that Eri silk is not just a sericultural practice but a way of life, art, and a symbol of the connection between communities and their environment.

Eri silk production is a living heritage of India, deeply rooted in the traditions of Northeast India. It represents the intertwined relationship between cultural identity, ecological stewardship, and economic resilience.

Designed as a comprehensive guide for both beginners and experienced sericulturists, this handbook covers a broad spectrum of topics, ranging from soil health and host plant diversity to advanced genetic research techniques, disease management and silk production.

The handbook explores the synergy between traditional knowledge and modern scientific advancements. It showcases how traditional practices continue to influence and enhance contemporary sericulture, while also embracing sustainable practices for a resilient future.

Each chapter is crafted by scientists who have dedicated their careers to advancing the field of Eri culture. Their research, experimentation, and fieldwork provide a wealth of knowledge, making the handbook an indispensable guide for anyone involved in Eri silk production.

The handbook delves into the technical and cultural aspects of Eri silk production, offering insights for both seasoned practitioners and newcomers. It emphasizes the intricate relationship between soil, plants, and insects, and the importance of sustainable practices in securing the future of Eri silk.

The editors emphasize the promise of Eri culture in shaping a resilient and prosperous future for the communities involved, guided by both tradition and innovation.

Rs. 1500



Dr. K. M. Vijaya Kumari
Director

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