

IJIRA

NEWSLETTER

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- Soumita Chowdhury
- Partha Sanyal
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From the Desk of the Director

- ❖ **Scaling Innovation: Hybrid Bamboo Fibre Extraction Moves from TRL 2 to TRL 6 for Technical Textiles**
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- ❖ **Waste to Wealth in the Himalayas: IJIRA Showcases Guard Hair-Based Cold Climate Gear at Leh**

Stay tuned as we pave the way for a new era in natural fiber innovation!

Dive in now!

Dr. A. K. Sharma
Director, IJIRA

Technology No. 1:**Hybrid Bamboo Fibre Extraction from TRL 2 to TRL 6 for Technical Textiles**

IJIRA's breakthrough initiative is pushing the boundaries of natural fiber processing—advancing hybrid bamboo fibre technology from early-stage research (TRL 2) to a near-commercial prototype level (TRL 6). This marks a significant step toward sustainable, high-performance solutions for the technical textiles sector.

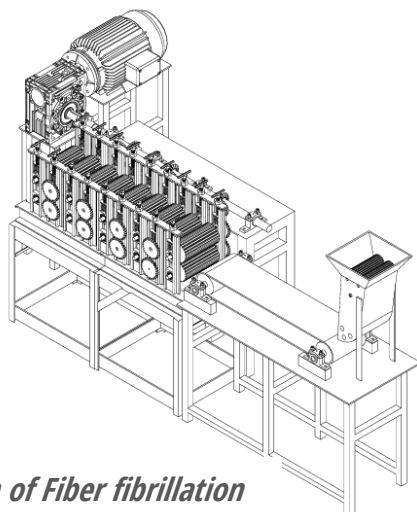
Highlights of proposed plan of work:

- Upscaling bamboo fibre extraction technology from TRL 2 to TRL 6
- Improve bamboo culm utilization from 20% to 40%,
- Double strip-making productivity,
- Reduce enzyme processing costs by ~30%, and
- Develop spinnable, functional bamboo-cotton/viscose blended yarns

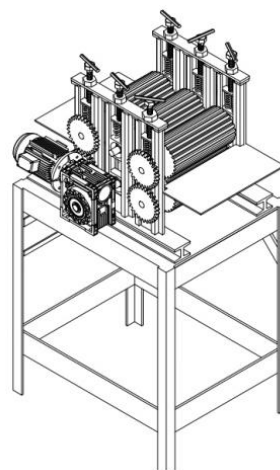


The 54th Sub Committee has recommended the project to the R&D Committee after addressing the conditions of industry contributors.

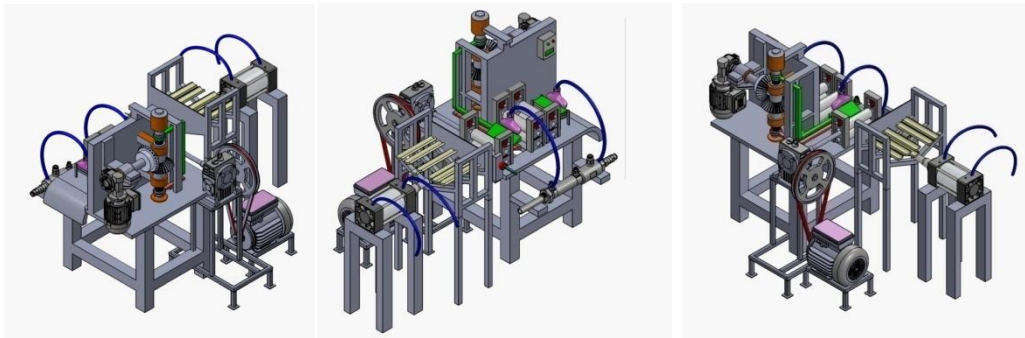
IJIRA has already assured two industry partners contributing nearly Rs. 90 lakhs for experiments of converting fiber into yarns by the PI.



***New Design of Fiber fibrillation
machine***



***New Designed prototype of
filamentation of bamboo stripes***



New Design of Bamboo Splicing machine

Technology No. 2:

Auto Form-X: Smart Pneumatic Carding Roller with Weight & Moisture Control

IJIRA Unveils Smart Pneumatic Roll-Former for Cleaner, Greener Jute Processing.

A major leap in jute processing innovation! IJIRA has successfully installed its newly developed Pneumatic-Controlled Roll-Former at its pilot plant in Kolkata. Live demonstration of pneumatic controlled card roll-former was organized in IJIRA pilot plant, Kolkata on 25.06.2025 wherein roll weight, MR% and converted roll weight is deployed in a HMI fixed with a control panel.

Key Technical Highlights:

☒ Contamination-Free Processing

No use of mineral oils – ensuring full compliance with MOSH/MOAH safety norms, making it ideal for food-grade jute packaging.

☒ Enhanced Operational Reliability

Replaces conventional mechanical oil regulators with a robust pneumatic control system, reducing downtime and maintenance needs.

☒ Energy-Efficient by Design

Engineered for lower power consumption (1.5-2 units/hr.) than traditional roll-formers – a step toward sustainable manufacturing.



Online roll weight and moisture detection

Smart Quality Monitoring

Equipped with real-time sensors to detect roll weight and moisture at the carding stage – enabling process traceability, better quality control, and predictive maintenance.

COMPARATIVE PERFORMANCE:

Parameter	Conventional System	New Pneumatic Retrofit
Required pressure to form a roll (kg/cm ²)	15 - 42	7 - 12
Average Energy Consumption per Roll Formed (kwh/hr)	8.98	6.95*
MOSH/MOAH contamination risk	High	Nil
Maintenance Frequency	Frequent	Minimal

* Excluding energy consumption in Air Compressor

Technology No. 3:

North East Gets India's First ECB Performance Testing Lab at IJIRA

IJIRA-NERC Unveils Fully Equipped Soil Erosion Control Testing Facilities in Guwahati centre

We're excited to share the latest milestone from IJIRA's North Eastern Regional Centre (NERC)—the launch of a dedicated Soil Erosion Control Testing Facilities, now fully staffed and operational!

Team in Place: Fully Staffed & Ready to Innovate

Our recruitment is now completed. A dynamic team of technical experts and support staff has joined us, ready to drive research, testing, and outreach for sustainable erosion control solutions across the region.

Laboratory Commissioned: Precision Equipment Installed

The newly set-up laboratory is now fully functional with industry-standard equipment, including:

- Shear Stress Test Apparatus
- Rain Splash Simulation Apparatus
- Sediment Retention Measurement Apparatus

All systems are powered by PLC/HMI-based control panels with high-resolution sediment quantification, enabling to simulate real-time conditions—from intense rainfall to hydraulic shear stress—for both vegetated and un-vegetated geotextiles.

🏗️ On-Ground Action: Field Surveys Completed

Our team has completed comprehensive site assessments across selected project zones. These surveys lay the groundwork for field trials and performance validation of natural fiber-based erosion control products.

🏗️ Why This Matters

This facilities mark a significant step forward in developing eco-friendly, performance-tested geotextiles—supporting Green India Mission, rural livelihood generation, and sustainable land management in the Northeast and beyond.



Shear Stress Test Apparatus



Sedimentation Retention System



Rain Splash Simulation Setup

*Technology No. 4:***Development of Jute-Sisal blended fabric for home textiles****IJIRA Innovates: Treated Sisal for Finer Home Textile Yarns**

Building on its earlier success with jute-sisal blended yarns (80:20, 10–16 lb/spy), IJIRA has now successfully modified sisal fibers through a specialized treatment process—enabling a higher blend ratio and finer yarn production.

The result? A 6.5 lb/spy Jute:Sisal (70:30) yarn, the yarn has been used to produce union fabric suitable for home textile applications—a first-of-its-kind breakthrough in natural fiber innovation!



*Cotton: Jute: Sisal
Greige Fabric*



*Cotton: Jute: Sisal
Bleached Fabric*

*Technology No. 5:***Advancing Flax–Ramie Innovation: IJIRA–CRIJAF Collaboration in Action**

As announced in last month's newsletter, IJIRA and CRIJAF have joined hands to explore new frontiers in Flax–Ramie blended textiles.

- ✚ This month, IJIRA initiated trials using 50:50 Flax:Ramie blends, incorporating ramie fibers treated through a modified degumming process to assess improvements in yarn fineness and fabric quality.
- ✚ The blend has successfully progressed up to the drawing stage, with spinning trials currently underway—paving the way for sustainable, high-performance natural yarns.



Processing of Ramie Flax blend

SKILL INITIATIVES

❏ IJIRA Hosts B.Tech Interns under GIST 2.0 of NTTM

Under the GIST 2.0 Scheme of the National Technical Textiles Mission (NTTM), Ministry of Textiles, IJIRA has been empanelled as a host institute for paid internships in technical textiles.

As part of this initiative, four 7th-semester B.Tech students from NIT Jalandhar have joined IJIRA for their Summer Internship (June 2025):

- IJIRA Kolkata: 2 students working on “Characterization of Bamboo Fibres” for technical textile applications.
- IJIRA-NERC Guwahati: 2 students engaged in “Soil Erosion Studies on Hill Slopes” to design natural geotextiles.

This hands-on exposure aims to build future-ready talent in sustainable and functional textiles.



Key note address by Shri Ashok Malhotra, Mission Director, NTTM, on Inauguration of Skill programme for Target Group (TG 2) under NTTM (Skilling)

IJIRA Showcases “Waste to Wealth” Innovation at Leh

Central Wool Development Board, Ministry of Textiles, Government of India, organized a five-day event from 30th June to 4th July 2025 at Eco-Park, Leh.

- ❑ At the event, IJIRA showcased its breakthrough in converting Pashmina guard hair—previously considered waste—into high-performance, lightweight products tailored for extreme cold climates.
- ❑ Innovative items like insulated jackets, quilts, and tents were displayed, attracting keen interest and admiration from local communities, officials, and decision-makers alike.
- ❑ The initiative reflects IJIRA's commitment to sustainable innovation, rural value creation, and circular economy in the Himalayan region.



TESTING / CONSULTANCY SERVICES

Performance of service departments–

	Physical Testing	Chemical Testing
Sample tested	32	82 (Non-FGJP)
Moisture Meter calibrated	21	-
FGJP Lot inspected & tested	-	01
Process Audit for MOSH-MOAH compliance	-	01
No. of bales of B.Twill/A.Twill bags inspected	1,42,331 approx	
Consultancy /Technical services to Mill(s):	04	
<ul style="list-style-type: none"> - Ludlow Jute & Specialities Ltd - Bowreah Jute Mill - West Bengal Agro Jute Mill - RDB Textiles 		

EVENTS

- ❖ Director, IJIRA presented the bamboo project closer report in the 54th Sub Committee held on 11.06.2025.
- ❖ Director, IJIRA Visited Indira Gandhi Agricultural University, Raipur for trials of IJIRA developed agromulch to get comparative scientific data in comparison to plastic mulch during 27th-30th June.
- ❖ Smt. Soumita Chowdhury, Scientist, IJIRA visited “Bombay Textile Research Association (BTRA)” under BIS project 0273 on 03.06.2025.
- ❖ Smt. Soumita Chowdhury, Scientist, IJIRA presented topic “Ending Plastic Pollution Globally” at BIS Eastern region laboratory on Environment Day (i.e. 05.06.2025).
- ❖ Shri Monimoy Das, Tech. Officer, IJIRA visited Baleshwar, Odisha to collect technical data, field evidence, and user feedback for revising the existing BIS Standard IS 14986:2001 under BIS-sponsored project on 06.06.2025.
- ❖ Shri Gopal Mukhopadhyay, Tech. Officer, IJIRA carried out an experimental trial on stitching in PP Laminated Sugar Bag, Type E at Averill Infrastructure Pvt. Ltd. on 11.06.2025.
- ❖ Physical inspection was carried out by Shri Bikram Das, NSDC, Eastern Region on 19.06.2025 at Ananda Nagar Center, Purulia.
- ❖ Shri Gopal Mukhopadhyay, Tech. Officer, IJIRA conducted a techno-commercial feasibility study of Newly Proposed sampling plan for B.Twill Jute bag Inspection at three jute mills.
- ❖ Shri Anil Singh, Technical Director, Empire Jute Mill paid visit on 27.06.2025 to enlighten about pneumatic controlled Roll Former which saves energy (1.5unit/hr) at carding stage.
- ❖ A 70-day skilling course for Junior Technician (Natural Fibre–Geotextile) under NTTM was inaugurated on 18th June 2025 by Shri Ashok Malhotra, Mission Director, NTTM, Ministry of Textiles, GOI.
- ❖ Shri Partha Sanyal, Scientist, IJIRA presented agrotextile development in 19th EMC Meeting chaired by Jute Commissioner on 20.06.2025 through VC.
- ❖ Smt. Soumita Chowdhury, Scientist paid visit to Birla Jute Mill For development of two new qualities of Open Weave JGT under BIS 0273 Project.
- ❖ 9 Industry Representatives in the rank of GM/Chief Engineer have experienced live demonstration of Pneumatic Controlled Roll Former and suggested to commercialize in the modular form for Mills on 25.06.2025.

Innovating Natural Fibre

for
Sustainable Future

INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

17, Taratala Road, Kolkata – 700 088

Telephone: (033) 6626 9200 * Fax: (033) 6626 9204 * E-mail: ijiraweb@ijira.org.in *

Website: www.ijira.org.in