

IJIRA

NEWSLETTER

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From the Desk of the Director

- **Bamboo Fiber Innovation:** IJIRA's chemico-mechanical process extracts refined bamboo fiber to be used for innovative home textiles.
- **Guard Hair Utilization:** Transforming pashmina waste into extreme-cold tents, quilts and jackets, leveraging Himalayan goat guard hair's natural insulation – an innovation from waste to wealth.
- **Jute Packaging Standards:** Research introduced improved packsheets and drop-test protocols, though commercial viability challenges persist for jute ropes.
- **Roller-Drafting Efficiency:** RD frame produces 1,400 kg/day of high-strength sliver (18% CV) at 320 fpm, with commercialization finalized via NRDC.
- **Spinning Automation:** Retrofit automation for 100-spindle jute frames enhances precision, reducing manual intervention by 40% in pilot industries.
- **Oil-Free Roll Forming:** Pneumatic roll formers produce 21 kg contamination-free jute rolls, meeting new EU food-grade export standards.
- **Coastal Reclamation:** Natural fiber jumbo bags enable sustainable land recovery, offering scalable solutions for flood-prone regions.

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Editorial Board

- Dr. Pradip Chakrabarti
- Soumita Chowdhury
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*Technology No. 1:***EXTRACTION OF BAMBOO FIBERS**

IJIRA developed a process for extraction of bamboo fiber from stripes provided by NECBDC, Meghalaya through a newly designed chemico-mechanical process. The fiber so extracted was subjected to multistage refining through carding/combining to remove residual bamboo powder and short fiber. The fiber were subjected to blending with other NFs to get blended yarn and cloth for home textiles.



*Technology No. 2:***HIMALAYAN GUARD HAIR REVOLUTION: TRANSFORMING PASHMINA WASTE INTO HIGH-PERFORMANCE COLD WEATHER GEAR**

Guard hair, a coarse byproduct of pashmina wool processing (50–100 μ diameter), offers untapped potential for extreme cold-weather gear due to its durability and insulating properties. Historically used in Middle Eastern tents, this stiff outer coat of Himalayan goats can be repurposed into:

1. All-Weather Tents

- ❖ **Insulation:** Layered with pashmina undercoat remnants, it is expected to create a thermal buffer stable at -30°C. A detail testing of tent produced is being planned.

2. Reinforced Quilts

- ❖ **Durability:** Coarse fibers resist clumping, maintaining insulation over repeated compressions. The quilt produced will be sent for testing.

3. Expedition Jackets

- ❖ **Lining:** Needle-punched guard hair felt (1.5mm thickness) is expected to provide lightweight core insulation, adaptable to -50°C conditions. The jacket produced will be sent for testing.

This circular approach is expected to valorize nearly 500+ tons/year of guard hair waste, aligning with Ladakhi nomadic traditions of using goat hair for ropes and sacks, while meeting modern demands for sustainable extreme-cold gear.



*Technology No. 3:***PACKAGING PRACTICES OF JUTE PRODUCTS FOR DOMESTIC AND EXPORT TRADE (SPONSORED BY BIS)**

IJIRA has submitted its findings to BIS for making specifications of new shuttleless loom packsheet used for jute bale packaging for the first time. Earlier such specification was for only shuttle loom.

Important findings were,

- Development of new packsheet quality
- Drop test for baling hoop & PET strap from a particular height to be included in specification
- Jute rope of appropriate diameter though found suitable yet may not be commercially viable



*Technology No. 4:***ROLLER DRAFTING – RESULTS AT COMMERCIAL PRODUCTION LEVEL**

The Roller-drafting machine is in operation for serial production since last two months. 1400 kg per day of finisher drawing sliver is being regularly produce with Strength CV of 18% and improvement in mean fiber length as compare to SG Drawing frame. The RD frame is running at 320 fpm using two stage drawing system. Machine manufacturer has informed that it has received an order for one machine. Final completion report on commercialization has been submitted to NRDC.



Technology No. 5:

RETRO-FIT FOR AUTOMATION OF SD FRAME FOR JUTE SPINNING

IJIRA is in process of installing retrofit automation system for a 100 spindle slip draft jute spinning frame in one industry at its request.



Technology No. 6:

PNEUMATIC CONTROLLED ROLL FORMER AT CARDING MACHINE

Pneumatic controlled roll former at carding stage was installed in an industry and is producing 21 kg roll without having any oil-contamination. The technology is essential to comply with new European standards for export of Food Grade Jute Bags.



*Technology No. 7:***ECO-ENGINEERING COASTAL EXPANSION: SUSTAINABLE LAND RECLAMATION USING GEOTEXTILE JUMBO BAGS**

Reclaiming coastal areas through sustainable methods is increasingly vital for environmental preservation and infrastructure development. Jumbo bags, particularly eco-friendly natural fiber based, offer a promising solution.

This project merges sustainable packaging innovation with coastal engineering, offering a replicable model for regions facing rising sea levels and land scarcity

Core Objectives

- **Eco-Friendly Material Integration:** Utilize jumbo bags made from natural fibers (jute, sisal etc.) to reduce plastic waste and carbon emissions.
- **Sediment Stabilization:** Employ geotextile jumbo bags filled with locally sourced sand or sediment to create stable, erosion-resistant barriers for shoreline protection.
- **Cost and Labor Efficiency:** Streamline transportation and deployment of bulk materials compared to traditional stone/concrete methods, reducing costs by up to 40%.

Key Features of the Approach

- **Modular Design**
 - Customizable Jumbo bags (1,8 MT capacity) with reinforced lifting loops.
 - Stackable design to maximize space efficiency during transport and on-site assembly.
- **Case Study Integration**
 - 15 Jumbo bags have been sent for field trials



SKILL INITIATIVES (JANUARY – 2025)

❖ Ongoing Skilling Programme

- Programmable Logic Controller (PLC) Programmer and Troubleshooter : 13 Nos.
- Jr. Supervisor in Jute Spinning (at IJIRA Kolkata) : 18 Nos
- Jute Product Stitching Operator (at IJIRA NERC) : 16 Nos
- Jute Product Stitching Operator (at Purulia) : 42 Nos

100 candidates have enrolled for various skilling programme run by IJIRA.

13 candidates are engaged in 3 Automation factories for On Job Training (OJT).

❖ Assessment on Skilling programme held under PMKVY 4.0

- Jute Product Stitching Operator (at IJIRA NERC): 10 Nos.

Ministry of Textiles has approved two courses under NTTM focusing on geotechnical Textiles focusing on natural fibers. The courses have been vetted by stake holder committee of NCVET on 31.01.2025 and recommended for approval in 42nd NSQC meeting to be held on 18.02.2025.

TESTING / CONSULTANCY SERVICES

Performance of service departments–

	Physical Testing	Chemical Testing
Sample tested	83	95
Moisture Meter calibrated	29	-
FGJP Lot inspected & tested	-	11
Interim FGJP Audits	-	5

No. of bales of B. Twill bags inspected	1,25,730
Training & Consultancy provided to Mills	01

EVENTS

- ❖ The Director attended meeting at CRIJAF, chaired by HMoT.
- ❖ The Director attended annual day of NINFET, where HMoT was Chief Guest.
- ❖ The Director visited NECBDC for right quality of bamboo stripes to be send to IJIRA for extraction of natural fiber.
- ❖ The Director gave presentation to the Secretary, Ministry of Textiles, GoI on IJIRA activity and performance.
- ❖ IJIRA team attended stake holders meeting of NCVET for approval of NF based Geotextiles courses approved by MoT.
- ❖ Dr. Pradip Chakrabarti visited Reliance Jute Mills Int. Ltd., Bhatpara for Transfer of IJIRA's developed technology.
- ❖ Ms. Soumita Chowdhury visited EROL BIS Kolkata laboratory.
- ❖ Mr. Partha Sanyal organized awareness workshop on agro-mulch at Murshidabad in collaboration with Krishi Vigyan Kendra.
- ❖ Study report on converted SD spg. frame at Gloster Nuvo Ltd. has been submitted.
- ❖ Study report on jute grading has been submitted for BIS to take further action.
- ❖ 225th Council Meeting was held at IJIRA, Kolkata on 30th January, 2025.
- ❖ JCI placed order for 125 mini moisture meters.

The background of the entire image is a low-angle photograph of a dense bamboo forest. The bamboo stalks are tall, straight, and green, with visible nodes. They converge towards the top of the frame, creating a strong sense of verticality and depth. The lighting is soft, filtering through the canopy.

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Together
For a

**SUSTAINABLE
WORLD**
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**THINK PEOPLE
THINK COMMUNITY
THINK PLANET**