



## *From the Desk of the Director*

### **✚ Weaving Innovation, Cultivating Impact**

- Innovation Spotlight from Industry: “Almost a Continuous Running Machine” for S4A Looms

### **“IJIRA Unleashes a Wave of Firsts: Lightest Jute Yarn, Smart Machines & Bamboo Breakthroughs”**

- Smart Roll Former 2.0: Now with Sliver Length & Mobile App
- “Historic Milestones in Bamboo: IJIRA Leads India’s Sustainable Textile Revolution”
- “From Waste to Wealth - Eco friendly WPC from bamboo dust.

### **“Where Tradition Meets Transformation: IJIRA’s Game-Changing Innovations for a Greener Future”**

### **“Spinning History, Splitting Limits, Saving Soil: IJIRA at the Forefront of Fibre Innovation”**

### **IJIRA Brings Stitch Bonding to India – A First!**

*Come, explore the threads of transformation...*

-- Dr. A. K. Sharma  
Director, IJIRA

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- Partha Sanyal
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**Technology No. 1:****Innovation Spotlight from Industry: “Almost a Continuous Running Machine” for S4A Looms**

A frequent stoppages from warp and weft breakages remain a key barrier to productivity in weaving of conventional jute fabrics. The extent of these stoppages is closely linked to **yarn quality**:

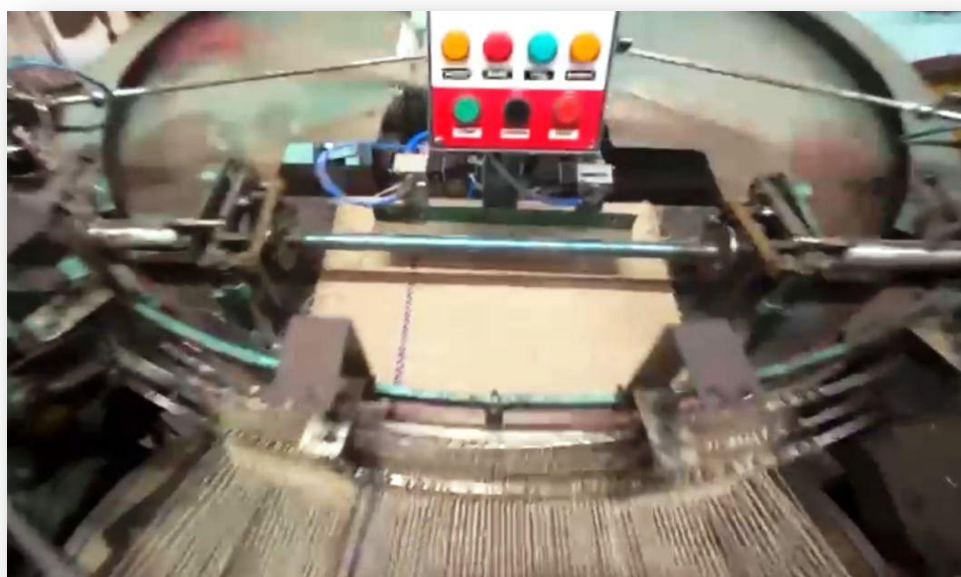
- With uniform warp and weft yarns, breakages may be limited to **5–10%**.
- If yarn quality differs, breakages can rise to **20%**, significantly affecting efficiency.

The new **almost Continuous Running Machine Technology**, claimed by **Shri Abhishek Kankaria, ED Ambica Jute Mills Ltd.**, addresses this challenge for **weft breakages**, reducing downtime to just a couple of seconds instead of long manual stoppages.

**Direct Benefits:**

- **Operator Ease:** Fewer interruptions, smoother handling, and less fatigue.
- **Higher Productivity:** Faster restart after weft break leads to more output per shift.
- **Wide Applicability:** Effective across wide range of batch quality.

While this advancement does not yet cover warp breakages, it marks an important step toward minimizing losses and boosting the global competitiveness of Indian jute mills.



## Technology No. 2:

### Historic First: IJIRA Spins the Lightest Jute Yarn Ever

IJIRA has achieved a **landmark in the history of the jute industry** by successfully spinning an ultra-light **3.3 lb/spy yarn** on an existing AD spinning frame—something never done before.

#### *Powered by Innovation*

Through its **eco-friendly mechano-enzymatic process**, IJIRA transformed raw jute into a **superior textile fibre**—finer, cleaner, and brighter—without the use of harsh chemicals.

#### *Game-Changing Outcomes*

- **Fibre fineness improved** (Tex 3.20 → 2.63) for finer yarns
- **Bulk density boosted** (0.504 → 0.665 g/cc) for smoother processing
- **Root content & defects reduced by 60%+**
- **Colour shine enhanced** (18.4% → 31.2%) for premium appeal

#### *The Breakthrough*

Spinning such a light yarn on a conventional AD spinning frame is a **milestone achievement**, opening up new opportunities for **blended textiles, premium fabrics, and export markets**.

With this, IJIRA has not just unlocked a new fibre—but a new future for the jute industry.

#### Yarn Parameters

|                             |              |              |              |              |
|-----------------------------|--------------|--------------|--------------|--------------|
| Actual yarn count           | 3.34 lb/spy  | 3.29 lb/spy  | 3.51 lb/spy  | 3.36 lb/spy  |
| MR%                         | 16           | 12           | 17           | 16           |
| Yarn count corrected at 14% | 3.28 lb/spy  | 3.34 lb/spy  | 3.42 lb/spy  | 3.30 lb/spy  |
| Wt. CV%                     | 6.05         | 3.52         | 3.74         | 5.77         |
| TPI                         | 7.58         | 7.58         | 7.58         | 7.58         |
| Avg. breaking strength      | 3.42 lb      | 3.15 lb      | 3.44 lb      | 3.28 lb      |
| Strength CV%                | 18.47        | 17.82        | 16.88        | 18.23        |
| Avg. QR                     | <b>102</b>   | <b>95</b>    | <b>98</b>    | <b>97.61</b> |
| Minimum QR                  | <b>77.84</b> | <b>59.89</b> | <b>74.07</b> | <b>71.42</b> |
| Max QR                      | <b>150</b>   | <b>137</b>   | <b>148</b>   | <b>137</b>   |

\*\* more conclusive large scale trials are being planned.



*3.3 lb/spy Jute Yarn*

### *Technology No. 3:*

## Smart Roll Former 2.0: Now with Sliver Length & Mobile App

IJIRA has successfully **upgraded its Pneumatic Control Roll Former** with cutting-edge **sliver length measurement** and **real-time data monitoring** features—marking a breakthrough in jute carding technology.

### *From Idea to Innovation:*

Inspired by mill personnel's feedback during the first live demo (25.06.2025), IJIRA's team designed, developed, and installed a precision sliver length measurement unit into the existing pneumatically controlled roll former.

### *Digital Edge:*

A dedicated mobile application now enables real-time collection, monitoring, and analysis of sliver weight, moisture regain (%) and length—bringing mill operations into the era of Industry 4.0.

### *Successful Demonstration:*

The enhanced system was showcased on 18.09.2025 at IJIRA's Pilot Plant before mill technologists, who witnessed its efficiency, reliability, and integrated functionality.

With this, IJIRA proudly announces the **successful completion of the project**, reinforcing its leadership in modernizing jute processing machinery for higher productivity and smarter quality control.



*Technology No. 4:*

## IJIRA Innovation Spotlight: Advancing Erosion Control

IJIRA's **Erosion Control Testing Facility** at its North Eastern Regional Centre (NERC) has achieved another milestone in sustainable land management.

### *From Simulation to Real-World Insights*

After initiating **shear stress simulations in July**, August marked the **successful testing of Sedimentation Retention Devices**, paving the way for advanced erosion control research.

### *Focus on Erosion Control Blankets (ECBs)*

During August–September, the facility rigorously evaluated Erosion Control Blankets—vital for reducing soil loss and trapping suspended particles in water runoff.

### *Critical Impact*

The data generated offers valuable insights into ECB efficiency, strengthening their role as a key solution in integrated erosion management for vulnerable regions.

With these advancements, IJIRA continues to lead innovation in natural-fibre-based solutions for **soil conservation, climate resilience, and sustainable infrastructure**.



### Technology No. 5:

## IJIRA Proposed Breakthrough: Hybrid Bamboo Fibre from TRL-2 to TRL-6

IJIRA is planning driving a **revolution in natural fibre innovation**, taking **Hybrid Bamboo Fibre Extraction** from early research (TRL-2) to a **near-commercial prototype (TRL-6)**—a giant leap for the technical textiles sector with support from NTTM Scheme.

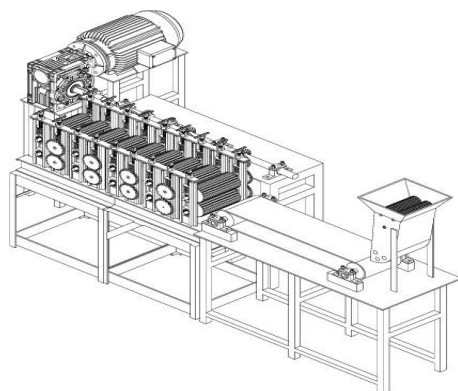
### *Key Impacts of the proposed Innovation*

- **Culm Utilization Doubled:** From 20% to 40% efficiency
- **Productivity Boost:** Strip-making output doubled
- **Cost Reduction:** Enzyme processing expenses cut by ~30%
- **Spinnable Blends:** Development of bamboo–cotton/viscose yarns with functional properties

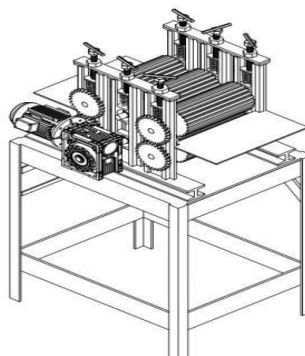
### *Strategic Progress*

At the **R&D and Innovation Committee meeting (03.09.2025)**, IJIRA showcased its indigenously developed bamboo staple fibre, tailored to Indian bamboo species. The committee was requested to sanction specialized testing equipment to accelerate scale-up.

With sanctioning of this project, IJIRA will be able to not only **unlocking bamboo's hidden potential**, but also chart a path for **sustainable technical textiles, import substitution, export acceleration and new rural livelihoods**.



*New Design of Fibrillation Machine*



*New Designed prototype of Filamentation of bamboo stripes*

### Technology No. 6:

## From Waste to Wealth: Eco-Friendly WPC with Bamboo Dust

IJIRA in collaboration with S D Polytech has pioneered **Wood Plastic Composite (WPC) panels for doors and windows** by replacing conventional **wood dust with bamboo dust**—turning waste into wealth.

- **Eco-Impact:** Conserves forests by reducing dependence on wood.
- **Sustainability:** Utilizes bamboo dust, a by-product of processing, for value creation.
- **Performance:** Durable, versatile, and ideal for door and window applications.
- **Business Potential:** Opens new markets with a green, cost-effective alternative.

This breakthrough not only curbs deforestation but also creates a **circular economy model**—where bamboo waste powers sustainable growth in the building materials sector.



### Technology No. 7:

## Cutting-Edge Innovation: Multiple Cutter Bamboo Splitting Machine

IJIRA has successfully designed and developed a **Multiple Cutter Bamboo Splitting Machine** that sets a new benchmark in bamboo processing efficiency.

### *Why It's a Game-Changer*

- Splits a full bamboo strip in **one single stroke**
- **Boosts productivity** far beyond conventional machines
- Ensures **minimal wastage** of bamboo
- Produces strips of **desired thickness** with precision cutters
- Easy, **user-friendly blade installation and sharpening**

### *The Road Ahead*

IJIRA is already working on the **next-gen version** with:

- **Full automation** for hands-free operation
- **Automatic cartridge feeding system**
- **Faster machine speed** for mass productivity
- A **simplified SOP** for easy adoption
- **Pneumatic control integration** for precision and reliability

With this innovation, IJIRA continues to drive bamboo into the future—enabling **sustainable, scalable, and high-efficiency processing solutions** for industry and rural livelihoods alike.



*Multiple Cutter Bamboo Splitting Machine*

## Technology No. 8:

### IJIRA Brings Stitch Bonding to India – A First!

IJIRA has proudly introduced **Stitch Bonding Technology to India** for the very first time through the establishment of a **Common Facility Centre**, created with partial support from **CWDB, Ministry of Textiles**.

#### Why It Matters

- Enable **eco-friendly Agromulch production** as a cost-effective substitute for plastic mulch, protecting India's agricultural soil from plastic pollution.
- Encourage **new entrepreneurs** to turn **waste wool and jute caddies into wealth**, driving rural innovation and sustainable businesses.
- Open up a new era of **green technology adoption** in agriculture and technical textiles.

With this milestone, IJIRA once again reaffirms its role as a **pioneer in sustainable solutions**, blending innovation with impact for a cleaner, greener future.



*Stitch Bonding Technology*

## Hon'ble Minister of Textiles Visits IJIRA – Showcases Path breaking Innovations

Shri Giriraj Singh, Hon'ble Minister of Textiles, Government of India, visited the Indian Jute Industries' Research Association (IJIRA) on 5th September 2025 to review the institute's pioneering work in natural fibers such as Bamboo, Ramie, Sisal, Banana, and Jute.

### *Key Highlights of the Visit*

#### ✦ **Bamboo Fiber Breakthrough**

As per the Minister's guidance, IJIRA has upgraded its patented fiber opening machine to process 1 ton/day of bamboo fiber, marking a leap in scaling bamboo-based industries.

#### ✦ **Next-Gen Bamboo Splitting Machine**

IJIRA unveiled a concept model capable of splitting a bamboo culm into strips in a single shot, replacing the three conventional machines currently used.

→ Estimated CAPEX saving: ₹2.3 crore per 1-ton bamboo cluster.

#### ✦ **Innovations for Jute Mills**

IJIRA showcased cutting-edge solutions designed to improve productivity, space utilization, power efficiency, and maintenance costs.

The Chairman, IJMA, highlighted that these will significantly boost competitiveness of the jute industry.





*Demonstration of the bamboo splitting concept model*



*Minister reviewing IJIRA's new fiber opening machine*



*Interaction with IJMA leadership and industry stakeholders*

### **Pull Quote**

***“IJIRA’s innovations in natural fibers will not only enhance industry productivity but also cut costs and accelerate India’s leadership in sustainable textiles.”***

***— Shri Giriraj Singh, Hon’ble Minister of Textiles***

### **The Bigger Picture**

IJIRA continues to emerge as the **innovation engine** for India’s natural fiber revolution, delivering technologies that are **cost-effective, sustainable, and globally competitive**.

## North East Bamboo Conclave 2025, Radisson Blue Guwahati

The Northeast Bamboo Conclave 2025 is the first-ever flagship platform dedicated to unlocking the future of India's bamboo sector in Northeast Region organised by North East Cane and Bamboo development council (NECBDC) on 18.09.2025. This auspicious event was inaugurated by Hon'ble secretary North East Council Mr S. K. Bhalla. The conclave brought together policymakers, industry leaders, investors, innovators, and entrepreneurs and R & D institution like IJIRA to chart a roadmap for investments, innovation, and collaborations that can transform the Northeast into a prominent hub for sustainable bamboo industries. Coinciding with World Bamboo Day, the event will highlight the role of bamboo in driving green growth, creating sustainable livelihoods, and strengthening India's bio-economy.

### *IJIRAs Highlights at the summit:*

- Innovation showcase: Cotton /Bamboo ,Viscose/Bamboo blended yarn, Processed bamboo fibre of different origin

### *Out Come:*

- Visitor at stall made inquiry about the blended bamboo yarn processing, production, Processing machinery. Blended fabric from bamboo, Cost etc.
- Visitors at stall made inquiry about extraction of bamboo fibre and its processing.



*Stall at IJIRA-NERC*

## SKILL INITIATIVES

### **Ongoing Skilling Programmes under NTTM**

- Skilling programmes are currently being conducted at IJIRA, Kolkata and Naffarchand Jute Mills, North 24 Parganas, under the NTTM.

## TESTING / CONSULTANCY SERVICES

### **Performance of service departments:-**

|  | <b>Physical Testing</b> | <b>Chemical Testing</b> |
|--|-------------------------|-------------------------|
| <b>Sample tested</b>   | <b>61</b>               | <b>92</b>               |
| <b>Moisture Meter calibrated</b>                                     | <b>50</b>               | <b>-</b>                |
| <b>FGJP Lot inspected &amp; tested</b>                               | <b>-</b>                | <b>08</b>               |
| <b>No. of bales of B.Twill/A.Twill bags inspected</b>                | <b>1,42,774 approx</b>  |                         |
| <b>Consultancy /Technical services to Mill(s):</b><br>- RDB Textiles | <b>01</b>               |                         |

## EVENTS

- ❖ Stitch Bonding Machine: A Global Tender on procurement of “Stitch Bonded Non-woven Line” has been floated on 20th September 2025, to strengthen and expand its research and development initiatives on natural fibres for sustainable innovations to combat plastic pollution and global warming.
- ❖ Conducted Technical feasibility study of 6” Spinning Frames at Ludlow Jute & Specialities Ltd during 11.09.25 to 18.09.25.
- ❖ Smt. Ipsita Roy attended a joint meeting held on 09.09.2025, between the European Cocoa Association (ECA), the International Cocoa Organization (ICCO), and the Indian Jute Industries’ Research Association (IJIRA) regarding the STDF-WTO project proposal on MOSH and MOAH compliance in cocoa and jute packaging.
- ❖ Smt. Soumita Choudhury & Shri Gopal Mukhopadhyay attended the meeting on “Notice to review the various proposals received for the amendment of the specification and criteria for conformity for the 580 gm - B. Twill jute bags (i.e. IS 16186-2014), Textiles - Light Weight Jute Sacking Bags for Pocking 50 kg Food grains” at JC office on dated 02.09.2025.
- ❖ Smt. Soumita Choudhury attended a meeting through VC with BIS, for extension of timeline for the R & D Project 0273 in presence of DDG , BIS.
- ❖ Smt. Soumita Choudhury paid visit to Birla Jute mill for modification of Easy Draft System.
- ❖ Smt. Soumita Choudhury attended BIS Workshop on XMLization of standards at BIS EROL , Kankurgachi.
- ❖ Directed visited CRIJAF on 5<sup>th</sup> September 2025 for planning growth of Ramie & Sisal for the Textile Sector.
- ❖ Director visited MoT on 25<sup>th</sup> September 2025 IJIRAs Royalty claim as well as for flagging key points in the co-ordination committee of TRA’s.
- ❖ Dr. Pradip Chakrabarti Participated 3rd meeting of Skill Development Committee (SDC) under National Technical Textiles Mission (NTTM), Ministry of Textiles held on Tuesday, 02nd September 2025

Innovating Natural Fibre  
  
for  
Sustainable Future

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