From the Desk of the Director

I shall begin by conveying my heartiest greetings for the New Year 2017 by wishing our readers all the happiness and prosperity in the coming time.

The last trimester has been very eventful for IJIRA as numbers of R&D projects have been approved by the Ministry of Textiles, Govt. of India and the institute has promptly initiated the R&D works. On the other hand activities on eight ongoing projects are going on in full swing.

Under the activity of CoE for Jute Geotextiles, IJIRA has formulated 117 projects among which 11 got approval of the Ministry of Textiles for four roads of approximately 22.6 km stretch in Manipur and seven hill slope stabilization projects for around 1.54 lakh sq. m. in Meghalaya. The State Level Coordination Committee (SLCC) of Manipur has also approved seven roads (23.42 km) and seven slopes (4.78 lakh sq. m.) for use of jute geotextiles. The same will be placed to the Ministry of Textiles for their approval. Moreover, two roads in Assam (25 km), thirty one roads in Manipur (228.7 km), nine slopes in Assam (0.36 lakh sq. m), two slopes in Mizoram (0.13 lakh sq. m) and nineteen slopes in Manipur (1.5 lakh sq. m.) have been approved by the respective state SLCCs.

A book titled “Handy Book on Jute Geotextiles for Strengthening of Road Pavement and Hill Slope Stabilization”, has been released by Hon’ble Union Minister of Textiles Smti Smriti Zubin Irani on 27th November 2016 at Imphal in the august presence of Shri Govindas Konthoujam, Hon’ble Minister (Com and Ind.), Govt. of Manipur, Dr. Thokchom Meinya, MP, Lok Sabha, Shri O. Nabakishore Singh, Chief Secretary, Govt. of Manipur.

IJIRA has been nominated as an approved Inspection Agency by the Office of the Jute Commissioner. Accordingly, in parallel to regular R&D activities, IJIRA has also started inspection of B. Twill jute bags for Govt. supply from 14th December, 2016. Moreover, IJIRA is also involved in mill level group studies to identify reason for low productivity and providing solutions thereof.

Lastly I thank the Editorial Board for its effort to bring out this edition of IJIRA Newsletter in time. I hope that the readers will find this Newsletter interesting and informative. Nonetheless I will welcome any positive suggestions/comments and constructive criticism too which will help us to do better.

Dr. U.S. Sarma
Director, IJIRA
A. PROMOTIONAL ACTIVITIES OF JUTE GEOTEXTILES

a) Exhibition cum Awareness on ‘Jute Geotextiles Application’ in Sangai Festival, 2016 at Imphal, Manipur held from 21st to 30th November as a promotional activity under “ Scheme for promoting usage of Geotechnical Textiles in NER”

IJIRA had put-up an Exhibition Stall in the Manipur Sangai Festival 2016 at Hapta Kangjeibung, Palace Compound which was inaugurated by Dr Najma Heptulla, Governor, Govt. of Manipur; Shri Okram Ibobi, Chief Minister, Govt. of Manipur, Japanese Ambassador to India Shri Kenji Hiramatsu and Chief Minister of Myanmar’s Chin State Shri U Salai Luai on 21st Nov. 2016. The exhibition was continued from 21st Nov. to 30th Nov. 2016.

b) Release of Handy Book on Jute Geotextiles for Strengthening of Road Pavement and Hill Slope Stabilization by Smti Smriti Zubin Irani, Hon'ble Minister of Textiles, Govt. of India

A Book titled “HANDY BOOK ON JUTE GEOTEXTILES FOR STRENGTHENING OF ROAD PAVEMENT AND HILL SLOPE STABILIZATION” was released by Hon'ble Minister of
Textiles. Smti Smriti Zubin Irani on 27th November 2016 at Imphal in the august presence of Shri Govindas Konthoujam, Hon'ble Minister(Com and Ind.), Govt. of Manipur, Dr.Thokchom Meinya, MP, Lok Sabha, Shri O. Nabakishore Singh, Chief Secretary, Govt. of Manipur amongst other under Soft Intervention Component (CoE) CoE Activities on Jute Geotextiles taken up by IJIRA (CoE) under “Scheme for Promoting Usage of Geotechnical Textiles in North East Region”.

B. Visit of a team of Scientists and Technologists led by Dr. U.S Sarma, Director IJIRA and Dr. G.V. Rao to Manipur for Promotional activities of Jute Geotextiles and Onsite Testing at approved road projects.

A team comprising of Engineers and Technologists led by Dr. U.S Sarma, Director IJIRA and Dr. G.V. Rao visited Imphal for various activities regarding Promotional activities of Jute Geotextiles and On site Testing at approved road projects.

a) The team had a meeting with the Engineers and senior officials of the Rural Engineering Department (MSRRDA) and detail discussion were done on the importance of using Jute Geotextiles especially in PMGSY road.

b) Visited Central Laboratory for Soil Testing under Rural Engineering Department for exploring the use of the laboratory for the Onsite testing work for Jute Geotextiles projects.

c) Had carried out field testing to determine various engineering properties of subsoil on the approved road projects of Ministry of Textiles under “Scheme for Promoting Usage of Geotechnical Textiles in North Eastern Region”.

d) The team also had a meeting with Shri O. Nabakishore Singh, IAS, Chief Secretary of Manipur and highlighted on the activities being carried out by IJIRA as Centre of Excellence on Jute Geotextiles under “Scheme for Promoting Usage of Geotechnical Textiles in North East Region”. Further the team also requested Chief Secretary for convening of SLCC for the projects where IJIRA had already carried out TEV studies and necessary DPR II preparation. Chief Secretary, Govt. of Manipur also highlighted on the necessity to explore the feasibility of producing Jute Diversified Products in Manipur and requested Director, IJIRA to take initiatives. Dr. U.S Sarma, Director IJIRA had explained that there is unlimited scope of jute diversification ranging from making of ordinary shopping/fancy bags, handloom products, floor coverings, home textiles, Jute Handicraft etc. Different samples including Star table Jute Mat, Wall Hanging, Big Shopper, Fancy Bag, Jute fabric, Ju-co cloth, Jute laminated fabric, Jute yarn, Jute fibre, Jute rope etc were being shown where Self Help Groups (WSHGs), artisans and entrepreneurs of the State can take a reference in making different Jute products.
C. COE ACTIVITIES OF IJIRA ON JUTE GEOTEXTILES AS ON 31ST DECEMBER 2016

<table>
<thead>
<tr>
<th></th>
<th>Approved Project by Ministry of Textiles, Govt. of India till date</th>
<th>Recently Recommended Projects (TEV &amp; DPR II) by SLCC for approval by MoT</th>
<th>TEV studies completed for putting up to SLCC</th>
<th>TEV studies yet to be carried out for projects cleared by SLCC</th>
<th>Projects which are found to be not viable as per TEV</th>
<th>Number of Projects awaiting SLCC clearance for TEV Study</th>
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<tbody>
<tr>
<td><strong>Road Projects</strong></td>
<td>04 Nos. (Appx. Length = 22.6Km) in Manipur state</td>
<td>07 Nos. (Appx. Length = 23.42Km) in Manipur state</td>
<td>01 Nos. Assam</td>
<td>17 Nos. Manipur</td>
<td>02 Nos.</td>
<td>22 Nos. (10 in Mizoram, 9 in AP and 03 in Assam)</td>
</tr>
<tr>
<td><strong>Slope Stabilization projects</strong></td>
<td>07 Nos. (Appx. Area =1, 53, 850.00 sq. m ) Six slope projects in Meghalaya and One project in Manipur</td>
<td>07 Nos. (Appx. Area =4, 77, 800.00 sq. m) in Manipur state</td>
<td>10 Nos. (09 in Assam and 01 in Mizoram)</td>
<td>22 Nos. Manipur</td>
<td>07 Nos.</td>
<td>11 Nos. Arunachal Pradesh</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>11</td>
<td>14</td>
<td>11</td>
<td>39</td>
<td>09</td>
<td>33</td>
</tr>
</tbody>
</table>

Total: 117 Projects

Ongoing R&D Activities of IJIRA

Presently IJIRA is carrying out eight R&D projects; seven sponsored by the Ministry of Textiles, Govt. of India and one sponsored by the National Jute Board. Besides these five new R&D projects have been approved and two new R & D projects approved in principle by Ministry of Textiles. Followings are the project-wise activities being carried out so far –

A. Design and Development of 50 kg Capacity Jute Bags considering Threshold Mechanical Properties and Physical Parameters

- Relationship between fabric strength and yarn strength has been established
- Economic dimension of jute bag has been worked out
- Optimum porosity (cover factor) of cloth has been determined
- Six types of bags (Type A) have been prepared considering the above findings
- Laboratory evaluation of these bags have been completed at IJIRA laboratory
• Three more types of Type A bag and three types of Type B bags are being prepared in a member mill

B. Utilization of Jute Sticks & Jute Waste for Extraction of Value added Chemicals for Industrial uses

Jute waste and jute sticks are being explored in this project to produce bio-ethanol, lignosulphonate and bio-oil. Details of work carried out so far as follows:
• 20 L capacity biofermentor has been installed for bulk production of ethanol.
• Approx 3 litre of 95% Ethanol has already been obtained from jute stick in laboratory scale.
• High temp-high pressure autoclave for lignosulphonate extraction from jute stick is successfully installed and high quality lignosulphonate has been obtained.

![Fig.: High Pressure Autoclave for extraction of lignosulphonate](image1)
![Fig.: Bio-fermenter for production of bio-ethanol from jute](image2)

C. Faster Retting of jute plant through Bio-Chemical intervention

• Farmers’ Awareness Programmes on the faster retting of jute plants using biochemical formulation (IJIRA-SUBHRA) have been organized at fourteen different jute growing places in association with Jute Corporation of India
• Farmers’ registration has been done to carry out jute plant retting in the major jute growing districts like Hooghly, Nadia, Murshidabad and North 24-Parganas registering 179 jute farmers
• 125 demonstration/field trials on faster retting of jute using IJIRA microbial consortium have been carried out in 18 blocks of 4 jute growing districts
• It has been observed that jute fibres retted with IJIRA-SUBHRA are 1.0-1.5 grades higher than the conventionally retted jute fibres.

D. Biochemical Softening of Hard Root Cuttings of Jute for Better Utilization

• Biochemical formulation has been optimized for softening of hard root cuttings of jute
• Shop floor trials on ‘Biochemical softening of hard root cuttings of jute’ in 4 jute mills have been successfully completed on sacking warp quality (10.00 lb/spy) incorporating 10-15% biochemically softened root cuttings with substantial reduction in batch cost.
• Commercialization of the process has been initiated at Ludlow Jute & Specialities Limited.

E. Jute-Thermoplastic Composites for Green Product Development

• Loom Caddies: Four prospective jute mills have been identified for supplying of segregated loom caddies.
• Capex: Both laboratory scale (7 Kg batch) and pilot scale (50 Kg batch) Kneader - Extruder Systems are being fabricated.
• Trials for Composite Granules: Five consecutive trials of making granules in a kneader-extruder system have been conducted under Industrial set up to study the long term workability of the process.
• Trials for Injection Moulding: Trials using Jute-LLDPE & Jute-HDPE Granules in Injection Moulding machine have been conducted in different plastic processing industries in order to assess the mould ability of Jute-plastic composites. Ten different products have been made.
• Characterization: Characterization of composites is continued and positive results have been obtained for Jute incorporated composite products in terms of strength.

Fig.: Injection moulded Jute (20%) – TP item
F. Development of Standards for use of Jute Geotextiles (JGTs) in Rural Roads

- Fabric engineering of JGTs for different applications in rural road
  - ✓ One prototype of synthetic blended JGTs has been developed at mill level.
  - ✓ Treatment of treated JGT is under progress at mill level.
  - ✓ Development of JGT for reinforcement is under progress at mill level.

- Four different types of soil from different parts of India, e.g., Black Cotton Soil from Andhra Pradesh, Red Lateritic Soil from Guwahati, Locally available Alluvium Soil (nearby Kolkata) and Silty Soil from Manipur have been collected to be used as subgrade soil for Laboratory pavement model performance test. Determination of various properties of these soils pertaining to road construction and associated research, e.g., Atterberg limits, Compaction test, California Bearing Ratio (CBR), etc is under progress.

- In-isolation testing of different properties of a selected commercial JGT (grey 724g/m2) is completed.

- Laboratory pavement performance simulation study with JGT, synthetic geotextile and control pavement
  - ✓ Fabrication of metallic pavement model tanks is under progress.
  - ✓ Preparation of pavement models is under progress.
  - ✓ Degradation tests for JGTs in different types of fully saturated soils for different durations under progress. Residual strength testing of exhumed JGTs has been already carried out up to 3 month duration.

- Degradation tests of grey JGT in open environment (air) and under water are also under progress.

- Actual field study has been started. Project team visited the actual road site in Thoubal District of Manipur State. Following activities have been carried out
  - ✓ Dynamic Cone Penetrometer tests on road subgrade and collected soil samples for determination of Field Dry Density, Moisture Content by Core Cutter and Sand Replacement method.
  - ✓ Soil samples collected for laboratory tests also.
G. Development of High Speed Roller Drafting System for Improvement in Jute Drawing Frame Productivity

- The fabrication part for the table top model of 4 over 4 Roller Drafting system has been done
- The trial run with the table top model for standardisation of machine parameters is in progress
- Comparison of yarn parameters from roller drafted sliver vis-a-vis Screw Gill drawn sliver will be carried out next

H. Process Development, Automation and Pilot Scale Manufacturing of Jute Based Low Cost Sanitary Napkins

- An awareness programme and promotional activity of jute based low cost sanitary napkins developed by IJIRA has been carried out at Hukumchand Jute Mills among 52 female participants.
The programme has been covered by Kolkata TV and published in the daily Bengali newspaper, “Anandabazar Patrika”.

**Fig: Promotion of IJIRA developed jute based sanitary napkins among women workers of HCJM, Naihati**

- Jute based pulp has been supplied to ‘Balia Gram Unnayan Samity’, Hooghly, a self-help group for the manufacturing of IJIRA developed jute based sanitary napkins for distribution to village women and their feedback.

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**A. Jute based Air Filter media having Anti-Microbial & Odour Absorbing Properties**

**Project Objectives:**

- To develop bio-compostable anti-microbial and odour absorbing Air Filter for Air Handling Units (AHU) based on Jute textiles.
- Standardization of treatment process of Jute textiles and trial for production in a commercial set-up.
- Use of Jute textiles in high-performance application and their evaluation in comparison with existing products.

**Budget: 72.80 Lakh**
B. Development of PLA Laminated Jute as Bio-Compostable Packaging Material

Project Objectives:

- To develop completely bio-compostable Jute based packaging material using PLA and similar other bio products.
- Standardization of the production process.
- Commercial scale production study.

Budget: 96.00 Lakh

C. Development of Jute based Textile Preforms and Pultruded Composite Products

- To develop and apply coating–cum-compatibilizing polymer for jute sliver / yarn
- To develop Jute-based flat tape type textile preforms by coating with polymer
- Production & performance evaluation of Jute based pultruded profiles
- Promotion of Jute Pultruded profiles as wood substitute with improved performance

Budget: 103.40 Lakh

D. Feasibility Study of Oil-free Processing of Jute Fibres

1. Objective of the Project (Part-I)
   - To develop a new oil-free lubricant formulation (JBO and RBO–free) for jute fibre processing
   - Spinning of quality jute yarn of (8-10 lb/spy) at IJIRA

Budget: 38.70 Lakh

2. Objective of the Project (Part-II)
   - To study of rheological and toxicological behaviour of oil-free lubricant formulation
   - To observe spinning performance of jute spinning using oil-free lubricant formulation at mill shop-floor

Budget: 33.50 Lakh
E. Design and Development of Continuous Damping, Calendaring and Cutting Machine for Jute Fabric

Project Objectives

- Design and development of continuous damping, calendering and cutting/folding machine for jute fabric
- Standardization of the process parameters

Budget: 145.20 Lakh

F. Development of New Generation Carding and Drawing Machines for improved Jute Yarn Quality

- To adopt new generation spinning technology for manufacturing jute yarns with improved yarn quality and productivity through proper technological intervention
- Development of suitable machinery in collaboration with machinery manufacturer of international repute considering machine performance, productivity, operational suitability and machine lay-out for allied fibres
- Determination of process parameters for each and individual machinery developed through extensive trials
- Transfer of technology to the Indian Jute Sector for its overall benefit

G. Development of Rotary Card for Jute Processing

- Development of Rotary card for processing of jute fibre through proper technological intervention jointly by the R&D institute, jute industry and machinery manufacturer for better machine performance, productivity, operational suitability and machine lay-out.
- Development of industrial scale Rotary card for jute to impart gentle treatment of jute fibre for minimising short fibre generation as well as better utilisation of jute fibre
- Transfer of technology to the Indian jute sector for its overall benefit
Jute Raw Material Bank (JRMB)

IJIRA and National Jute Board had executed Memorandum of Understanding (MoU) for operating of Jute Raw Material Bank Scheme (JRMB) at North East Regional Centre of Indian Jute Industries Research Association, EPIP Campus, Amingaon, Assam.

PSC-Activities

- **Power-loom Weaving Training**: 10 persons had been trained in one batch in the area of pre-weaving, weaving technology in Aizawl, Mizoram.

- **Testing and Technical Consultancy**
  - **Sample Testing**: 25 yarn and fabric samples had been tested during this period and the revenue earned from the testing is Rs. 24843.00

- **Technical Consultancy**: IJIRA-NERC & PSC had carried out technical consultancy as well as AMC works at Indian Institute of Handloom Technology, Guwahati and training on powerloom technology had been given to the final year student of the said Institute during this period.

- **Group Insurance Scheme (GIS)**
  Group Insurance had been registered to the 22 powerloom weavers / workers in the decentralized powerloom Industry in NER.

- **Seminar/workshop & Buyer-Seller Meet**:
  IJIRA-NERC&PSC in association with Regional office of the Textile Commissioner, Kolkata had conducted two seminar programs at Imphal, Manipur on 27th October 2016 & Passighat, Arunachal Pradesh on 30th November 2016 on “Schemes / Initiatives of Ministry of Textiles, Govt. of India for the development of decentralised Powerloom Sector in the North East Region”

  One Buyer-Seller Meet had been conducted successfully during the Sanghai Festival at Manipur wef.21st November to 30th November 2016.

Integrated Scheme for Acquisition of Plant and Machinery (ISAPM)

IJIRA continues its work in ISAPM in association with National Jute Board. IJIRA is recently working for the De-Novo registration of foreign Vendors under ISAPM.
Technical Lectures

IJIRA has been continuing to organise technical lectures on emerging technologies, products, processes, etc. for jute sector. From October 2016 to December 2016, eight such events were organised including by IJIRA Scientists and Technologists. Details are available on the web site of IJIRA (www.ijira.org).

Meetings & Summits

1. Dr. U. S. Sarma, Director, IJIRA along with Shri Th. Basanta Singh, Officer in Charge, IJIRA- NERC, Guwahati and Shri Rafi Ahmed of IJIRA – NERC attended the 6th SLCC Meeting, Manipur held on 26th December 2016 in the Office of the Chief Secretary, Govt. of Manipur.

2. Dr. U. S. Sarma, Director, IJIRA attended a PAC meeting and presented 9 projects of IJIRA on 20th December 2016 at Ministry of Textiles, New Delhi

3. Dr. U. S. Sarma, Director, IJIRA attended a 5th meeting on “Empowered Committee under the Scheme for Promoting uses of Geotechnical Textiles in NER” on 19th December 2016 at Ministry of Textiles, New Delhi

4. Dr. U. S. Sarma, Director, IJIRA attended a 6th meeting of the Apex Monitoring Committee on 6th November 2016 at Ministry of Textiles, New Delhi

5. Shri A.K. Haloi of NERC- IJIRA, Guwahati attended and gave a presentation on the salient features of the Ministry of Textiles Scheme for promoting usage of geo-textiles in North Eastern and the Feasibility of Jute Geotextiles applications in North Eastern Terrain in the meeting of Engineers of Assam PWD, consultants held on 19th November 2016 at Conference Hall of PWD, Assam.

6. Dr. U. S. Sarma, Director, IJIRA attended a meeting taken by Hon’ble Minister of textiles with stakeholders in Udyog Bhavan, New Delhi on 20th October 2016

7. Shri Th. Basanta Singh, Officer in Charge, NERC- IJIRA, Guwahati attended and gave a presentation on the salient features of the Ministry of Textiles Scheme for promoting usage of geo-textiles in North Eastern in the one day seminar cum workshop for disseminating awareness of use of Jute Geotextiles in road construction, hill slope protection, river bank protection and embankment stabilization at IJIRA H.O. on 25th October 2016 which was organized by Indian Jute Mills Association (IJMA) in association with the National Jute Board and IJIRA.

8. Shri Th. Basanta Singh and Shri A.K. Haloi of NERC- IJIRA, Guwahati attended and gave a presentation on the salient features of the Ministry of Textiles Scheme for promoting usage of geo-textiles in North Eastern and the Feasibility of Jute Geotextiles Applications in North Eastern Terrain in the meeting of Concerned Divisional District Engineers of Assam PWD, consultants held on 6th October 2016 at Conference Hall of PWD, Assam.

9. Shri Th. Basanta Singh, Officer in Charge, NERC- IJIRA, Guwahati attended meeting at the Office of the Textile Commissioner, Mumbai on 03rd Oct. 2016 and 08th December 2016 regarding Committee for empanelment of manufacturers/suppliers for supply of various Geotechnical Textiles and Committee to calculate the incremental cost for slope stabilization Projects due to use of Geotechnical Textiles.
• 197th IJIRA’s Council Meeting was held on 25th November, 2016 at IJIRA.