The first quarter of this year has been eventful for IJIRA as six R&D projects of IJIRA have been approved by the Project Advisory and Monitoring Committee (PAMC) and Project Approval Committee (PAC) under “Scheme for Research & Development, Transfer of Technologies and Dissemination in Jute Sector” of Ministry of Textiles (MoT), Govt. of India. This has been possible only because of active support of member jute mills of IJIRA in terms of providing 30% contribution towards the total project cost. Apart from this the National Jute Board has also approved a R&D project to IJIRA on development of sanitary napkins out of jute based pulp.

IJIRA has recently completed the study on determination of threshold dimension of B. Twill jute bags, a sponsored activity of Indian Jute Mills Association. Mill trials for techno-commercial feasibility study on Modified Rice Bran oil (MRBO) have also been conducted in Birla Jute Mills and Ganges Jute Mills.

Due to the consistent efforts of Dr. Subrata Gupta, IAS, Hon’ble Jute Commissioner and by pursuing with the states in the North East Region (NER), IJIRA as a Centre of Excellence (CoE) for promotion of jute geotextiles (JGT) in the NER, had bagged the very first project on application of JGT for strengthening of Kangla Moat bank in Imphal, Manipur in association with PWD, Manipur. Impressed with the JGT based green technology for geotechnical engineering, Hon’ble Chief Minister of Manipur has instructed the Manipur State Power Company Ltd. to use JGT for stabilization of hill slopes in their upcoming mega power plant in Thoubal, Manipur. Accordingly the DPR of the project has been modified by IJIRA incorporating JGT, which has subsequently been approved by the Chairman, State Level Coordination Committee, Manipur, recommending it for funding support from MoT.

To boost up the transfer of IJIRA developed technologies to jute industry and also to address the process, product and machine related issues, IJIRA has started IJIRA-Industry interactive meet fortnightly, as per the suggestions of Shri. D. C. Baheti, Hon’ble Chairman, IJIRA. So far five such meets have been organized by IJIRA and also efforts have been made to solve the issues through mill visits by IJIRA scientists and technologists.

I would like to thank the Editorial Board for its efforts in bringing out this edition of IJIRA Newsletter and hope that the readers will find our newsletter interesting and informative. Nevertheless I will welcome suggestions from the readers for betterment of the upcoming issues.

Dr. U.S. Sarma
Director, IJIRA
Application of JGT at Kangla Moat, Imphal, Manipur

IJIRA has conducted a series of activities for promotion of Jute Geotextiles (JGT) in Manipur. An interactive meeting was held between Shri O. Nabakishore Singh, IAS, Chief Secretary, Manipur and Dr. Subrata Gupta, IAS, Jute Commissioner on December, 2015. Dr. U.S. Sarma, Director, IJIRA, Dr. S. K. Chakrabarti, Dy. Director, IJIRA and Shri T. Basanta Singh, OIC-IJIRA, NERC had also attended the meeting. In the meeting the PWD, Govt. of Manipur requested IJIRA to use JGT for strengthening Kangla Moat banks. The Kangla Fort, located at the heart of the Imphal city and surrounded by Kangla Moats, is the most significant historical and archaeological site in Manipur.

Fig. 1: Hoarding showing IJIRA’s JGT work in Imphal

Site Inspection and DPR preparation

Site inspection was carried out by the team of Scientists and Technologists of IJIRA and after the inspection of the quality of soil and slope angle, it was decided to use two types of JGT, namely, 627 gsm treated woven JGT for strengthening the moat lining and 500 gsm open weave JGT for beau vegetation of the moat banks. Accordingly, IJIRA completed the DPR-II of the project of reconstruction of Kangla Moat banks by incorporating JGT which has been subsequently approved by the State Level Coordinating Committee (SLCC) of Manipur and Approval and Monitoring Committee (AMC) also.
Application of Jute Geotextiles

The work on application of JGT in Kangla Moat was started on 15\textsuperscript{th} February, 2015. A team of Scientists and Technologists from IJIRA was deputed at site to guide the engineers during installation process. With the cooperation from PWD, Manipur, the work of installation of 627 gsm durable JGT along with civil engineering work in 3000 sq. m stretches has been completed in one month.
Application of JGT for Hill Slope Stabilization, Thoubal, Manipur

After successful completion of JGT work at Kangla Moat, with the interest of Govt. of Manipur, IJIRA is taking up new project on application of JGT for hill slope protection in the upcoming 400 KV power substation of Manipur State Power Company Ltd. at Thoubal, 75 km from the Imphal city. The DPR has been modified by IJIRA incorporating 16000 sq. m. soil saver application. The same has also been approved by the Chairman, State Level Coordination Committee, Manipur. While the purchase procedure has been initiated, the work is planned to start at the end of April, 2016.

Soil Testing Laboratory at IJIRA

A Soil Testing Laboratory has been set up at IJIRA, Kolkata. The laboratory has been visited by Dr. Subrata Gupta, IAS, Hon’ble Jute Commissioner in February 2016. The laboratory is equipped with the following soil testing equipments -

a) Liquid Limit Device
b) Hydrometer along with its stirrer
c) Sieves with sieve shaker
d) Proctor compaction equipment
e) Modified Proctor compaction equipment
f) California Bearing Ratio (CBR) apparatus with accessories
g) Direct shear apparatus

Procurement of other identified equipments for testing of soils is in progress. Dr. G.V. Rao, Former Head, Dept. of Civil Engineering, IIT Delhi has also visited the laboratory and has given a four-day long training on soils and their properties related to geotechnical engineering.

Fig. 3: (a) Condition of site before JGT installation, (b) JGT installation work, (c) Stone pitching work, (d) completed site

Fig. 4: Visit of Hon’ble Jute Commissioner and other dignitaries at IJIRA - Soil Testing and Physical Testing Laboratory on 3rd February, 2016
From February, 2016, IJIRA has started interactive meet with individual jute mills to understand their practical problems at the mill level where IJIRA can technically contribute to solve those issues. The interactive meets have also been envisaged to continue the firm relationship between IJIRA and industry. Till date five such interactive meets have been organized by IJIRA.

1. **IJIRA – M/s Birla Jute Mills interactive meet:**

The meet was organized on 10th February, 2016 at IJIRA. A four member technical team led by Shri M. M. Swaiaka, Sr. Vice President (W), M/s Birla Jute Mills interacted with the Scientists and Technologist of IJIRA on various issues such as improvement in spreader sliver quality, automatic emulsion control in spreader, Maintenance Management Information System (MMIS), various chemical finishes on jute fabric and lubrication system of weaving department.

Accordingly IJIRA technical team paid visit to the M/s Birla Jute Mills as well as taken appropriate steps to develop/implement the systems.

2. **IJIRA – M/s Hukumchand Jute Mills interactive meet:**

The second IJIRA-Industry meet was held on 26th February, 2016 at IJIRA. A five member technical team of the mill led by Shri Bidyut Biswas, Deputy Chief Engineer interacted with the Scientists and Technologist of IJIRA. In the meet various issues of the mill such as processing of jute by eco-friendly fibre lubricant, use of chain drive & modified can tramp system in drawing frame, energy efficient sizing, moisture retention in jute process and development of digital moisture meter were discussed.

A team of IJIRA scientists and technologists made three visits subsequently and studies on few areas have been initiated.

3. **IJIRA – M/s Alliance Mills (Lessees) Ltd. interactive meet:**

IJIRA – M/s Alliance Mills (Lessees) Ltd. interactive meet was organized on 10th March, 2016 at IJIRA conference hall. This was the third IJIRA-Jute mill interactive meet. Shri A K Lohia, MD, along with Shri Rahul Sinha Roy, President, Shri Pranabesh Majhi, Process Control Manager and Shri B D Chowdhury, Maintenance Manager attended the said meet. Important issues of the mill like jute loss, online determination of sliver irregularity, optimum quality of jute yarn, MMIS, digital moisture meter, energy audit in jute mill and standard maintenance practice were discussed in the meet.

Scientists and Technologists of IJIRA paid visit to the mill subsequently and completed the baseline survey of the processes. The detailed study will be initiated shortly.
4. **IJIRA – M/s Kamarhatty Company Ltd. interactive meet:**

The meet was organized on 18\textsuperscript{th} March, 2016 at IJIRA. A four member technical team led by Shri M K Sharma, President, M/s Kamarhatty Company Ltd. has interacted with the Scientists and Technologist of IJIRA. In the interactive meeting, the mill personnel requested technical inputs from IJIRA on the following areas like improved carding, moisture retention in jute processing, improvement in winding & weaving productivity and MMIS.

A technical team of IJIRA visited the mill on 31\textsuperscript{st} March, 2016 to carry out the diagnosis study and a joint technical report has been prepared for further action.

5. **IJIRA – M/s Ludlow Jute & Specialties Ltd. interactive meet:**

IJIRA – Ludlow Jute & Specialties Ltd. interactive meet was held on 18\textsuperscript{th} March, 2016 at IJIRA conference hall. This was the fifth IJIRA-jute mill interactive meet. Shri A K Todi, MD, along with Joint President Shri Subir Mitra & other technical personnel attended the meet. The following issues such as faster retting of jute plant, root softening, brightening of jute, energy efficient sizing of jute yarn, optimum yarn quality, modern material handling system and MMIS were discussed in the meeting.

A technical team led by Dr. Md. Safikur Rahman, Dy. Director, IJIRA visited the mill and demonstrated IJIRA developed MMIS. M/s Ludlow mill has shown interest in implementing this system at the mill.
Fig. 5: IJIRA – Jute Industry Interactive Meet with (a) M/s Birla Jute Mills (b) /s Hukumchand Jute Mills (c) M/s Alliance Mills (Lessees) Ltd. (d) M/s Kamarhatty Company Ltd. (e) M/s Ludlow Jute & Specialties Ltd
A. After receiving the recommendation in 3rd meeting of Project Advisory and Monitoring Committee (PAMC), the Project Approval Committee (PAC), during its second meeting at the Ministry of Textiles, Government of India has approved another project under “Scheme for Research & Development, Transfer of Technologies and Dissemination in Jute Sector” along with previously approved seven R & D projects. The objectives of the project are briefly given below.

**Biochemical Softening of Hard Root Cuttings of Jute for Better Utilization**

- To develop an innovative biochemical softening process of hard root-cuttings of jute
- To increase the spinning potential of barky root ends of jute
- To reduce the batch cost by using softened jute fibres
- To commercialize the proposed biochemical root softening process

B. National Jute Board (NJB) has entrusted IJIRA to carry out a project on “Process Development, Automation and Pilot Scale Manufacturing of Jute Based Low Cost Sanitary Napkins”. This is to overcome the difficulties in the technology developed by IIT, Kharagpur on cotton lap/cellulose pad and to substitute the material with jute. The deliverables of the project are listed below.

- To utilize 100% jute as absorbent pulp (JAP) for manufacturing low cost sanitary napkin
- To develop low cost automation in development of napkin manufacturing process for MSME sector
- To improve the cost efficacy and design aspect of jute based sanitary napkins as per Standard
- To develop low cost jute based napkins affordable to rural women and improving awareness in rural areas/school/colleges with State and Central Govt. Agencies and NGOs/Women Self Help Groups (WSHG)
- Creation of facility for pilot scale production of JAP and sanitary napkin
- To help Women Self Help Groups (WSHG) in manufacturing of low cost jute based sanitary napkins
A. Development of Standards for use of Jute Geotextiles (JGTs) in Rural Roads
Preliminary works related to the testing of various soil properties of Black Cotton Soil from Andhra Pradesh, Red Soil from Assam, etc. and procurement of different equipments necessary for the project and fabrication of pavement model boxes are being carried out at IJIRA.

B. Jute-Thermoplastic Composites for Green Product Development
The activities as per the approved DPR have been initiated. An experimental trial for incorporation of waste jute fibre (caddies) in thermoplastic polymer has been carried out at shop floor of industrial collaborator i.e. Patton International Ltd. Moulding of composite products out of composite granules reinforced with waste jute fibre could be demonstrated successfully. Based on the pre-project activities, IJIRA has filed a joint patent (provisional) on ‘Process for manufacturing jute fibre reinforced Linear Low Density Polyethylene (LLDPE) composite product’ jointly with Patton International Ltd.

C. Design and Development of 50 kg Capacity Jute Bags considering Threshold Mechanical Properties and Physical Parameters
The studies under the project have been initiated to establish relation between yarn strength and fabric strength of B. Twill jute cloth. Sacking fabrics of various constructions have been prepared for the purpose and mechanical performance study is currently under progress.

D. Studies on Threshold Dimension of 50 kg Capacity Foodgrain Jute Bags
The studies have been carried out to determine threshold bag dimension of a 50 kg capacity standard B. Twill foodgrain jute bag (IS 16186: 2014). In the study, fourteen sets of bags, both Type A and Type B, of various dimensions from 91 cm x 55 cm to 93 cm x 56 cm have been prepared and submitted by the mill. The drop test performance of these bags have been carried out as per constant height flat drop method (IS 13035: 1991) with three types of grains; 50 kg wheat, 50 kg rice and 37 kg paddy. Considering this limited study, it has been observed that the threshold dimension of a 50 kg capacity standard foodgrain bag is 92 cm x 56 cm. Accordingly, a tolerance level of ‘– 2 cm’ in length and ‘– 1 cm’ in width when the nominal dimension of the bag is 94 cm x 57 cm has been proposed. This tolerance levels are applicable for 10% of the samples tested.

E. Techno-commercial feasibility study of Rice Bran Oil in processing of jute fibres
Techno-commercial feasibility study on modified Rice Bran Oil Technology in bulk scale as a total replacement of Jute Batching Oil (JBO) have been successfully carried out at the shop floor of M/s Birla Jute Mills and M/s The Ganges Manufacturing Co. Ltd..

F. Studies on transmigration of mineral oil hydrocarbons from jute /synthetic bags to packed food items
First lot of food grain samples (10 samples) collected from FCI Depot, Raebareli, U.P. was sent to CSIR-IITR, Lucknow for testing of transmigrated mineral oil hydrocarbons, if any, in packed food
grains from packaging material. Second lot of samples which were collected from FCI Depot, Bhubanewar also have been dispatched for testing. Test results of first lot of samples from CSIR-IITR have received.

G. Development of Jute based composite Item

IJIRA has recently designed and developed 20% jute caddies incorporated composite item (a replica of plastic water tank) which has been distributed to the member industries & visitors of IJIRA for wide publicity of Green Composite. It is envisaged that this technology / product will be ultimately used for manufacturing water tanks of 500/1000 litre capacity by the Patton Int. Ltd., Kolkata, an industrial collaborator of IJIRA.

Fig 6.: Replica of Jute-LLDPE water tank in the form of Pen Stand

Under the ongoing project on “Dyeing of silk, cotton and art silk with natural dye from plants of North Eastern Region for specialty dress materials of the region”, several textile yarns and fabrics such as jute, cotton, silk and art silk were dyed with improved fastness properties using extracted dyes from various dye-yielding resources available in NER. Trials have been carried out with Rubia cordifolia (Indian madder), Parkia speciosa (khorial), Bixa orellena (annatto seeds), Clerodendrum bracteatum (kuthap leaves), etc.

Besides the R&D activities, three workshop-cum-demonstrations have also been conducted to disseminate the knowledge acquired in the project. First workshop has been organized on 11th January, 2016 at Sualkuchi, Assam where local artisans, dyers and entrepreneurs have been present along with academician and government official. The practical demonstration has also been conducted on extraction of natural dyes from natural resources and subsequent dyeing of textile materials with extracted dyes. The second and third workshops of similar kinds have been organized in IJIRA-NERC, Guwahati and Imphal, Manipur on 12th January, 2016 and 31st January, 2016 respectively.
Under the activity of Powerloom Service Centre (PSC), IJIRA-NERC has converted a powerloom to jute weaving loom to run jute yarns of 10 lb/spy in warp and weft direction. New patterns have been prepared for a Jacquard Powerloom having 600s hooks capacity. A powerloom which was earlier used to produce cotton fabric has now been converted for preparation of jute-cotton union fabrics.

During the last three months, IJIRA-NERC has organized three seminars at Imphal on 1st February, 2016, at Guwahati on 9th March, 2016 and at Shillong on 12th March, 2016 respectively under the “Scheme and Initiative of Ministry of Textiles for the Development of Decentralized Powerloom Sector in the NER”. Dr. Rouson Ara Begum, IAS, Secretary, Sericulture & H&T, Govt. of Assam has graced the Seminar at Guwahati as Chief Guest.

One three-day Buyer-Seller Meet has also been organized by Regional Office of the Textile Commissioner, Kolkata in association with IJIRA-NERC & PSC at Guwahati, Assam. Several Entrepreneurs from all over the country have brought their products at the meet for exhibition & sales.
Integrated Scheme for Acquisition of Plant and Machinery (ISAPM)

IJIRA continues its work in ISAPM in association with National Jute Board. IJIRA carries out the Technical Appraisal for claims made by various jute mills for procuring machinery under this scheme. IJIRA along with NJB and Office of the Jute Commissioner carries out inspections of machineries already purchased under the scheme at various jute mills. The updated status of the progress of the Scheme is uploaded on IJIRA website at regular intervals.

De-novo registration of enlisted vendors of the core jute machinery under ISAPM

IJIRA has been entrusted to carry out study for the De-novo registration of enlisted vendors of the core jute machinery under Integrated Scheme for Acquisition of Plant and Machinery by the National Jute Board. Under this assignment, IJIRA has inspected a total of 33 enlisted vendors for the assessment of their present infrastructural facilities for manufacturing the claimed machineries. The final report has been submitted and accepted in the 6th Meeting of Technical Committee of ISAPM on 16th March, 2016.

Technical Lectures

IJIRA has been continuing to organise technical lectures on emerging technologies, products, processes, etc. for jute sector. From January to March 2016, eight such events were organised including technical presentations by IJIRA Scientists and Technologists as well as by invited guest lecturers. IJIRA invited guest speakers as well. Details are available on the web site of IJIRA (www.ijira.org).

NABL Accreditation of IJIRA Laboratories

IJIRA has submitted the report on the Non-conformity raised by the Lead Assessor during his pre audit on 8th December, 2015. Final audit will be conducted on 16th to 17th April, 2016.
Visit by HMoST for Inauguration of Common Facility Centre

Hon’ble Minister of State for Textiles (IC) Shri Santosh Kumar Gangwar has inaugurated three common facility centre (CFC) projects on 19th February, 2016 at Kolkata. In this occasion, Director IJIRA has presented a paper on “New Areas of Technology Development in JDP”. IJIRA also showcased various technical textiles developed by IJIRA at the Exhibition Hall.

![Images of people explaining textiles](image1.jpg)

Fig. 10: IJIRA Scientists are explaining the IJIRA developed Technical Textiles to (a) Shri Santosh Kumar Gangwar, Hon’ble Minister of State (IC), Ministry of Textiles, Govt. of India (b) Ms Rashmi Verma, Secretary, Ministry of Textiles, Govt. of India (c) Shri Sukhendu Sekhar Roy, Member of Parliament, Rajya Sabha

Republic Day Celebration

IJIRA celebrated the 67th Republic Day of India on 26th January, 2016. Shri Arvind Kumar M, ITS, Secretary, National Jute Board, has graced the occasion as Chief Guest and hoisted the National Flag followed by National Anthem. He had enticed the scientists and technologists of IJIRA to take up projects on reducing noise and dust reduction in the mills which would be beneficial to the jute industry.

![Hoisting of National Flag](image2.jpg)

Fig. 11: Hoisting of National Flag at IJIRA by Shri Arvind Kumar M, ITS, Secretary, National Jute Board
1. Dr. U. S. Sarma attended a 3rd meeting on “Empowered Committee under the Scheme for Promoting uses of Geotechnical Textiles in NER” on 5th February 2016 at Ministry of Textiles, New Delhi

2. Director, IJIRA along with Dr. S K Chakrabarti, Deputy Director, Shri Partha Sanyal and Shri Palash Paul attended a meeting on 1st Technical Committee Meeting on machinery development at Indian Jute Mills Association on 15th February 2016

3. Director, IJIRA along with Dr. S K Chakrabarti, Deputy Director, Shri Partha Sanyal and Shri Palash Paul attended a meeting on 2nd Technical Committee Meeting on machinery development at Indian Jute Mills Association on 22nd February 2016

4. Dr. U. S. Sarma, along with Dr. Md. S. Rahman, Dy. Director, Dr. S K Chakrabarti, Dy. Director and five scientists from IJIRA attended the 3rd meeting of the Project Adivisory and Monitoring Committee (PAMC) at Office of the Jute Commissioner on 23rd February, 2016

5. Director, IJIRA attended the 2nd meeting of the Project Approval Committee (PAC) at Ministry of Textiles, New Delhi on 9th March 2016

6. Shri Partha Sanyal, Scientist, IJIRA and Shri Gopal Mukhopadhyay, Technical Officer, IJIRA have attended 6th Technical Committee Meeting of ISAPM held on 16th March 2016 at National Jute Board, Kolkata

7. Director, IJIRA attended the 22nd Research Advisory Committee Meeting of ICAR, CIRCOT from 17th to 18th March 2016 at Mumbai.

8. Shri Koushik Das, Scientist attended BIS TXD-30 meeting on Geosynthetics at Bombay Textile Research Association (BTRA), Mumbai on 17th March 2016

9. Dr. U. S. Sarma attended a review meeting on on Status and Progress of Schemes for Promoting Usage of Geotechnical Textiles in NER on 22nd March 2016 at Ministry of Textiles, Government of India, New Delhi
CDr. U. S. Sarma attended Domotex Fair at Hannover, Germany along with Dr. Subrata Gupta, IAS, Jute Commissioner, Shri S. K. Gaekwad, Director, Ministry of Textiles, Shri Arvind Kumar M, Secretary and Shri. Devdoot Mukherjee, Asst. Director, National Jute Board from 16th – 22nd January 2016. The delegation led by Dr. Subrata Gupta, IAS, Jute Commissioner had also visited Karlsruher Institut für Technologie (KIT), BASF, Germany and Common Fund for Commodities, The Netherlands.

A detailed report will be placed on IJIRA web site in due course of time.

Fig. 12: Glimpses of visit by the delegation led by Dr. Subrata Gupta, IAS, Jute Commissioner

Shri R V S Mani, DS (IFW), Ministry of Textiles has visited IJIRA on 12th February 2016 finding time from his extremely busy schedule in Kolkata. He had given useful suggestions for conducting the upcoming R&D projects to be sanctioned by the Ministry of Textiles (MoT).

Fig. 13: Visit of Shri R V S Mani, DS (IFW), Ministry of Textiles, GoI to IJIRA
Important News

- 49th IJIRA’s Annual General Meeting was held on 17th December, 2015 at IJIRA.

Retirement

- Shri. P. K. Chowdhury has retired from this Association on 31st March, 2016 as Principal Technologist after rendering 37 years services to IJIRA. IJIRA Newsletter wishes him a happy future life.

Fig. 14: 49th Annual General Meeting at IJIRA

Fig. 15: Farewell of Shri P K Chowdhury, Principal Technologist, IJIRA
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JUTE IS ECO – FRIENDLY AND RENEWABLE SOURCE OF ENERGY