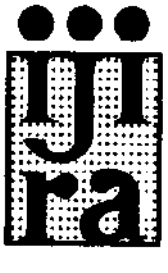
Since 1937

Annual Report
2016-17

INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

ANNUAL REPORT
2016-2017



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SECTION I

Areas of Work
&
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(2016-17)

❒ Brief Introduction on IJIRA

Indian Jute Industries' Research Association (IJIRA), registered under West Bengal Societies Registration Act, 1961, is an autonomous Co-operative Research Organization, located in Kolkata. It has started its journey since 1937. It is the first cooperative R&D institute, established by Jute Industry in India.

IJIRA is governed by a Council comprising of 24 members headed by the Chairman. The members, represent the jute industry, government officials, eminent professionals and directors of renowned institutions. The Director of the Institute is appointed by the Council and is the Principal Executive Officer of the Association exercising general power of supervision and coordinating overall activities of the association. The Director, IJIRA is essentially the Director-Secretary of the Association.

IJIRA has a North Eastern Regional Centre (NERC) at Guwahati, Assam to promote Jute based industry and diversified Jute Products more effectively in that region. It has also a Power-Loom Service Centre (PSC) at Guwahati set up with the funding support of Office of the Textile Commissioner, Ministry of Textiles, Govt. of India. It has a full-fledged Garment Manufacturing Training Centre (GMTC) too, at PSC, Guwahati.

With funding assistance of Government of India, IJIRA has been focussing on a new range of activities in the areas of:

- Bridging gaps between R&D and the industrial requirements
- Catering to changing needs of industry and market
- Commercialization of proven technologies
- Improving income by rendering more technical services to industries
- Increasing testing and certification activity to improve revenue earning

❒ Membership

At present IJIRA has got jute mills membership as 72 Primary Members and 5 Associate Members.

❒ Activities of IJIRA during 2016-2017

1. Research and Development on
    - Improved and accelerated retting technology for jute plant
    - Quality up-gradation of jute fibres

- Mechanical processing of fibres into yarns and fabrics
- Bio-chemical processing of fibres and fabrics
- Design and development of diversified jute products
- Development of Jute Geotextiles and its promotion
- Development of Jute reinforced composite products and their commercialization
- Development of instruments for quality control

2. Productivity improvement in Jute Sector

3. Centre of Excellence for promotion of jute geotextiles in the NER
   - To carry out TEV studies of state sponsored projects
   - To prepare DPR2
   - To get approval from SLCC
   - To implement projects in the NER states in range soft and hard interventions

4. Consultancy for
   - Mechanical processing of natural fibre based textiles
   - Chemical / Bio-chemical processing / Environmental aspects
   - Technical textiles (Jute Geotextile, Jute Agrotextile, Packtech, etc.) and their promotion and commercialization

5. Compliance of eco-standards and environmental aspects

6. Technology transfer to jute mills

7. Quality assurance of Food Grade Jute Products (FGJP) and other value added jute items

8. Assistance to National Jute Board (NJB) and Office of the Jute Commissioner for assessment of Jute Mills' Modernization Programme

9. Implementation of IJIRA-NERC Project:
   - Field level demonstration of technologies (in NE states of India)
   - Cluster based technology development for decentralized sector
   - Technical services through physical, chemical and eco-laboratory

10. Entrepreneurship development programme in :
    - Power-loom sector of Assam
    - Small-scale sector for Jute Diversified Products
11. Quality assurance for relief materials procured by Disaster Management Department, Govt. of West Bengal
12. Testing and certification services
13. Standardization of Jute Products with BIS
14. IT applications and Management Information System
15. IPR on newly developed technologies
16. Dissemination of information of new R&D activities, events through publication of research papers, patents, newsletter and technical notes and participation in exhibitions and seminars
17. Productivity norms formulation for various jute products.
18. To set up focussed incubation centre on plug and play basis.

❒ Ongoing R&D activities by IJIRA

R&D Projects

Presently IJIRA is carrying out thirteen R&D projects; twelve sponsored by the Ministry of Textiles, Govt. of India and one sponsored by the National Jute Board. The project-wise activities are detailed below: –

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

Under this project relation between yarn strength and fabric strength, actual cover factor and theoretical cover factor and economic bag dimension have been established through laboratory studies. Considering the outcome of the studies, Type A and Type B bags of 545 g/bag have been developed. As per the recommendation of the Project Monitoring Committee, efforts are now being made for development of plain woven sacking bags. Re-examination of threshold breaking strengths is also undergoing currently.

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

Jute stick is the woody portion of jute plant. Jute stick contains considerable amount of cellulose with lignin and hemicelluloses. Therefore, it is a potential raw material for biomass-based ethanol production. Bioethanol can be used as fuel with significant characteristics like high octane number, low cetane number and high heat of vaporization

Fermentation of sugars from lignocelluloses has been proposed as a viable pathway for the production of renewable biofuels to supplement petro-fuels for sustainable economic development. Jute sticks have been subjected to dilute acid hydrolysis followed by fermentation of the liberated sugars to produce ethanol.

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

To address the negative attributes of conventional retting process of jute plant [such as time consuming (18-21 days), labour and water intensive, generates average to poor quality of fibre, and ecologically hazardous]. In order to obtain better quality of jute fibres for value added diversified applications, improved retting methodology along with modern community retting facilities has been envisaged at the jute growing village level to ensure better quality jute fibres preferably by 'Public Private Partnership' mode through appropriate agency. The institute has been working for last couple of years to develop a farmer's friendly innovative and accelerated jute retting process and has developed a "Biochemical formulation" (SUBHRA) which is basically a combination of identified jute retting microbes (having pectinolytic, hemicellulolytic and lignolytic activities) along with a growth promoter and a retting accelerator. Application of IJIRA developed 'SUBHRA 'has shown encouraging results at the laboratory and pilot scale field trials which includes

i) reduction in jute retting period by about 50%
ii) improvement in fibre quality by 1.5-2.0 grades.

More than hundred field demonstration trials using IJIRA-SUBHRA on faster retting of jute plants have been carried out in four jute growing districts of West Bengal. IJIRA –SUBHRA retted jute fibres appear to be remunerative to the farmers.

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

A biochemical formulation for softening of hard root cuttings of jute has been developed by IJIRA for their gainful utilization in sacking warp batch. The formulation consists of one identified jute root softening bacteria, Pseudomonous sp. and two low cost nitrogen and carbon rich growth promoters (nitrogen and carbon containing). The formulation has been optimized through laboratory and IJIRA Pilot plant experiments incorporating different percentage of softened root cuttings in the fibre batch of sacking warp quality (10-13 lb/spy).

Successful shop floor trials have been carried out in five Jute mills. 15% softened root cutting of jute has been incorporated in sacking warp (10-13 lbs/spy) with substantial reduction in batch cost. Efficacy of such root softening formulation on uncut jute fibre is under investigation. Commercialization of the biochemical root softening process has been successfully completed at Caledonian Jute & Industries Ltd. Further commercialization of this process technology is in progress.

5. Jute-Thermoplastic Composites for Green Product Development

The technology for incorporation of Jute fibre into thermoplastic composite has been developed utilizing shear mixing mechanism at Kneader Extruder system. It has been possible to incorporate upto 20% Jute caddies mainly loom caddies into the thermoplastic composites and moulding products out of them. In association with technology partner M/s Patton International Ltd. the process of 20% Jute incorporated LLDPE composite tank manufacturing process has been established on industrial scale. The required facility for Jute incorporated thermoplastic composite processing has been created at IJIRA by installation of Kneader Extruder machines.

6. Development of Standards for use of Jute Geotextiles (JGTs) in Rural Roads

A significant Indian geographical area is covered by clayey soils which add to our agricultural prosperity. However, constructing civil engineering structures such as roads and canals through clayey deposits pose abundant geotechnical problems; the solutions of which always adds to the cost component of projects. Though geosynthetics were considered to offer solutions to various problems posed by clays, those demand for considerable cost investment. Moreover, the cost component is sensible when we deal with low volume roads like rural roads. In this context, the use of natural geotextiles made of jute or their combination could be an alternative cost effective approach.

Although considerable numbers of field studies have been carried out applying Jute geotextiles in road construction, a comprehensive comparative study encompassing use of jute geotextiles and synthetic geotextiles for similar kind of roads and control road stretches is yet to be carried out. Hence, performance of different jute geotextiles in different soils (to understand the geotechnical mechanism and the cost savings) will be evaluated in this project. The project would also come out with proper technical/ scientific justification to establish the claims of durability, strength and other parameters of JGT to address the concerns of the civil engineers for its applications.

7. Development of High Speed Roller Drafting System for Improvement in Jute Drawing Frame Productivity

The presently used conventional Jute Finisher Drawing frames (both Screw Gill and Rotary Gill) have their limitations in terms of productivity and maintenance due to its inherent complex machine design. To address this issue, a simple Roller Drafting finisher Draw frame will be developed with an aim to achieve substantial improvement in productivity with acceptable sliver quality and minimum maintenance. A table top model has been already developed and undergoing intensive trials.

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

Experimental work on formulation development and design of Bio-compostable Air filtration media based on Jute textiles having functional properties has been initiated. Few initial samples developed at the laboratory have been characterized to test the filtration efficiency.

9. Development of PLA Laminated Jute as Bio-Compostable Packaging Material

PP or HDPE/LDPE laminated jute fabric is being produced at commercial scale. Since hydrocarbon based products are used, such jute laminated products are not completely bio-compostable. The objective of the project is to replace the hydrocarbon based film former by a bio-compostable polymeric material.

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

Pultrusion is one of the cost effective mass production technologies for composite profile production. Jute in place of the glass or other reinforcement will reduce the cost.

Jute thermoset composite profile using pultrusion technology with fibres oriented in axial direction is proposed to produce for maximum realization of properties. Initial activities for jute tape based pultruded composite development has been initiated.

For improvement of compatibility of reinforcement and resin the special treatment on the fibre is being tried of.

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

The project has started in January, 2017 to assess the feasibility of an alternate processing technology of jute without using oils. Review of literature is being carried out and few formulations have been identified for application and procurement of CAPEX items has been also initiated.

12. Design and Development of Continuous Damping, Calendaring and Cutting Machine for Jute Fabric

Various sequences of operation for the continuous line have been conceptualized in consultation with the collaborating machinery manufacturer. The engineering design of the continuous line is under progress. The prototype development will be commenced shortly.

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

Production of jute based core material for making Sanitary Napkin has been continuing at IJIRA Chemical processing pilot plant (8.0 kg/day). Jute based pulp for Sanitary Napkins are being dispatched to various Women Self Help Groups (WSHG).

❒ NABL Accreditation

NABL Accreditation (ISO 17025:2005) of IJIRA Laboratories

IJIRA Physical and Chemical Testing Laboratories have been accredited by the NABL with effect from 16.06.2016 which is valid up to 15.06.2018. 17 parameters in Mechanical Testing and 6 parameters in chemical testing areas have been accredited by the NABL.

a) Accreditation Certificate No. for IJIRA Chemical Testing Laboratory: T - 3992
b) Accreditation Certificate No. for IJIRA Physical Testing Laboratory: T - 3993.

❒ Machine Development

Digital moisture meter for jute

IJIRA has conceptualized and got fabricated digital moisture meter for jute & jute products in collaboration with an entrepreneur, M/s. India Electronics Inc. in order to substitute the currently used analogue type IJIRA moisture meter.

❒ Technology Transfer

Techno-Commercial feasibility Study of RISELLA-X a New Jute Fibre lubricant

Memorandum of Understanding has been signed between IJIRA and Shell International Petroleum Company Limited with the objective to study the efficacy of Shell developed new jute fibre lubricant (Risella X)in jute fibre processing and it's techno commercial feasibility. The study has been started in IJIRA Pilot Plant (Phase -I).

❒ Technical Services

1. Consultancy services on jute geotextiles (JGT) under Centre of Excelence (CoE)

As CoE in JGT under the scheme of "Promoting usage of Geotechnical textiles in the NER", IJIRA is carrying out Techno Economical viability (TEV) study for various rural roads, hill slopes and canal bank projects. IJIRA is also assisting various state govt. agencies of the NER for the application of JGT.

2. Incentive Scheme for Acquisition of Plant and Machinery (ISAPM)

Under this scheme, National Jute Board (NJB) and the Technical Committee of ISAPM entrusted IJIRA as technical institution to be used for different purposes of this scheme amended from time to time. Main responsibility of IJIRA is to technically appraise the scheme and will inform the jute mills / JDP units about their eligibility to receive subsidy under this scheme. As one of the members of ISAPM, IJIRA also inspects such acquisition and installation of machinery.

3. Testing services to industry

- Services on quality assurance of Food Grade Jute Products (FGJP) have been provided to sixteen Jute Mills who has renewed their Process Capability license from IJIRA to manufacture FGJP for the year 2016-17.
- In the same year, total 85 lots (No. of FGJP samples 171) have been inspected, tested as per IJO 98/01 and certified by IJIRA for export.
  In addition, interim process audit of the manufacturing process of FGJP at the licensed mills has also been carried out by IJIRA.
- Transfer of Rice Bran Oil (RBO) technology for the manufacturing of FGJP has been carried out in East India commercial Co. (Unit : Krishna Hessian, Eluru, Andhra Pradesh).
- No. of chemical tests carried out = 170

Physical testing division is providing testing services to the Jute industry as well as other government and non-government organizations. Fibre, yarn and fabrics (including Geotextiles) are tested at the laboratory regularly. This division has served 12 Jute Mills, IJMA, 13 Govt. organizations and 25 non-jute organizations.

4. Quality assurance for relief materials of Disaster Management Department of Govt. of West Bengal

Quality checking of clothing and garments for relief materials from Directorate of Disaster Management, Govt. of West Bengal have been conducted for testing

their quality related characteristics including blend composition and wash-fastness properties. Total no. of tests performed are 663.

❒ Business Effort

The prime focus of research & development of IJIRA has always been industry driven R&D projects. Apart from R&D, IJIRA is also striving for market development of various jute and jute diversified products. Few details are given below

1. The Food Corporation of India and other State Procurement Agencies purchase large quantity of jute bags (580 g) every year. The presently used jute bag by these agencies is developed by IJIRA which is considered to be around 10% cheaper than earlier version of jute bags. Hence, the Govt. of India and other State Agencies are getting substantial cost benefit. Presently IJIRA is doing R&D on further modification of jute bags to make the bags more cost effective.
2. Jute geotextile is considered to be an emerging area for the jute sector, and IJIRA, as Centre of Excellence for jute geotextiles, is now working for promotion of this product and expansion of the market size of jute diversified products market size in various states including NER. So far IJIRA has been able to identify places for application of around 2.6 lakh square metre for application of various types of jute geotextiles. The approximate cost of the said materials is around Rs. 2.4 crore.
3. Presently IJIRA, as an enlisted Inspection Agency by the Office of the Jute Commissioner, is carrying out B. Twill jute bag inspection for MARKFED-Chhattishgarh, Haryana Agro Industries Corp., Haryana State Warehousing Corporation, and the Food Corporation of India.

❒ Funding

IJIRA has received Rs.350 lakh as grant-in-aid from Ministry of Textiles, Government of India during the FY 2016-2017.

SECTION II

Activities in North - East Region (2016-17)

❒ Activities of IJIRA-North Eastern Regional Centre and Powerloom Service Centre, Guwahati

The North Eastern Regional Centre of IJIRA at Guwahati has been set up for promotion of natural fibers based industries in North Eastern Region. It has also a Powerloom Service Centre (PSC) with the funding assistance of the Office of the Textile Commissioner, Ministry of Textiles, Govt. of India. It has a full-fledged garment manufacturing and wet processing training centre. The Centre at Guwahati provides technical support and guidance to textile and clothing sector. The Centre provides training, testing, design and development, technical consultancy and dissemination of information on schemes/ initiatives of Ministry of Textiles, Govt. of India for development of textile and clothing sector in NE Region.

Premises Location of IJIRA-NERC & PSC, Guwahati

NERC & PSC is well equipped with

- Pre Weaving and Powerloom Machinery
- Readymade Garment Machinery
- Wet Processing Machinery
- Laboratory testing equipments
- Machinery, accessories, allied equipments and teaching aids suited for present need.
- Qualified technical personnel along with necessary supporting staffs and Resource Persons.
- Soil Testing Laboratory

Infrastructure of IJIRA – NERC & PSC

Functions of IJIRA-NERC & PSC

- Productivity improvement by providing training to weavers, jobbers, fitters, entrepreneurs, local unemployed youth, unskilled operators in various textile processing
- Quality testing of textiles
- Technical consultancy
- Research & Development
- Facilitate need based all legitimate support to textile & clothing industry in the NER
- Organization of awareness/workshop/seminar programme for dissemination of the Schemes of the Office of the Textile Commissioner, Ministry of Textiles, Govt. of India.
- Survey to collect and assess statistical information
- Coordinate Power loom development activities
- Facilitation programs for cluster development

IJIRA-Powerloom Service Centre Activities

A. Power-loom Weaving Training and servicing.

i. Servicing of Powerloom machines installed at Indian Institute of Handloom Technology, Guwahati as per Annual Maintenance Contracts (AMC).

ii. Trial production on Jacquard Weaving loom and Jute weaving loom had been done at Weaving shed.

iii. Two months Powerloom Weaving training program started at Weaving workshop in NERC Office. Training has been given to operate the Powerloom Weaving machine and to impart the requisite skill as required to be a good technician.

iv. 04 persons had been trained in one batch in the area of pre-weaving, weaving technology and post weaving section at NERC Office and 10 persons had been trained in one batch in the area of pre-weaving, Weaving technology in Aizawl, Mizoram.

B. Testing and Technical Consultancy

i. One Technical Consultancy works on Powerloom machinery had been conducted at Aizawl, Mizoram.

ii. 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 students of the said Institute during this period.

iii. IJIRA-NERC & PSC had also done technical consultancy as well as AMC at IIHT, Guwahati and Powerloom unit at Aizawl, Mizoram.

iv. 06 nos. of Fabric samples provided by Assam Agriculture University, Jorhat had been tested.

v. 28 nos. of Yarn samples provided by Assam Agriculture University, Jorhat had been tested.

vi. 04 nos. of Eri Silk Yarn samples had been tested in physical laboratary. Samples were received from M/s. Fabric Plus (p) Ltd. , Kamrup, Guwahati.

vii. 47 yarn and fabric samples had been tested during this period and the revenue earned from the testing is Rs. 8653.00.

viii. 25 yarn and fabric samples had been tested during this period and the revenue earned from the testing is Rs. 24843.00.

C. Group Insurance Scheme (GIS)

i. Registration of Group Insurance Scheme (GIS) for 15 nos. of powerloom weavers have been done from decentralized Powerloom weaving sector.

ii. Group Insurance had been registered to the 32 powerloom weavers/ workers in the decentralized powerloom Industry in NER.

iii. 134 powerloom weavers / workers had been enrolled under Group Insurance Scheme in the decentralized powerloom Industry in NER.

SECTION III

Details of R&D Activities (2016-17)

Project Serial No. 1.

Project Title : Design and Development of 50 kg Capacity Cost Effective Jute Bags Considering Threshold Physical Parameters and Mechanical Properties

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Project Group : Mr. Palash Paul (PI), Mr. Partha Sanyal, Mr. Koushik Das, Mr. Debi Prasad Gon, Mr. Gopal Mukhopadhyay, Mr. Kaustav Roy

Objective:

i) Design and development of 50 kg capacity jute bags, both in shuttle as well as in shuttle-less looms, considering threshold physical parameters and mechanical properties

ii) Standardization of bag specifications for acceptance by the buyers

Work done

This R&D project has been undertaken to scientifically develop jute bags considering boundary limits of each parameters. Under a R&D project, IJIRA has established breaking strength requirement in jute bags which has been finally adopted by the Bureau of Indian Standards and amended the breaking strength requirements. Considering those values of breaking strength, there is an opportunity to develop bags of different construction and weight.

With a view on the above, under this project, efforts have been made to carry out relationship between important parameters for reverse engineering bag construction. These are discussed below –

- ***Relation between yarn strength and fabric strength***

  Since breaking strength requirement in various directions of a jute bag is known, hence efforts have been made to establish relationship between fabric strength and constituent yarn strength, so that using that relationship various yarn count and thread density matrix may be prepared for engineering the bag. Accordingly an empirical relationship has been established among strip strength, longitudinal yarn strength (QR), longitudinal thread density and cross thread density. The relationship has also been validated using field level data.

- ***Optimum porosity of jute bag***

  The seepage of grains form any sack is always a matter of serious concern as it leads to wastage of valuable food grains. From the studies it has been observed that if the actual cover factor of the sack is 75 (as per jute system) or more, then the seepage from sack is

negligible. However, while measuring the theoretical cover factor, it is considered that yarns are having circular cross section, although practically yarns become oval in cross section after passing through the calender. Therefore, to determine the actual cover factor of sacking fabrics, a relation has been established between theoretical and actual cover factor.

- ***Determined economical bag dimension -***

  The prescribed standard bag dimension as per IS 16186: 2014 is 94 cm x 57cm, for bag length & bag width respectively. The dimension of jute bag is important mainly for two aspects; accommodation of desired amount of grain with prescribed open space to allow grain mobility and another is stack stability. Through laboratory studies carried out at IJIRA laboratory, it has been found that a bag dimension of 91 cm x 59 cm gives desired filled bag length:width equals to 1.5. Moreover, manufacturing cloth of 59 cm will enable the millers to improve productivity. On the other hand a particular length of cloth will produce more numbers of bags.

Engineering of Jute Bags

Considering the above three basic parameters of jute bags; 91 cm x 59 cm dimension, 75 cover factor and BIS stipulated strength, various Type A and Type B jute bags have been developed and tested at IJIRA laboratories. While designing the bags, the economical aspects have also been considered. Various types of bags and their constructional parameters are given in Table – 1.

Table 1: Experimental 500 g and 525 g Jute Bags

Sl No	Bag Dimension (cm x cm)	Bag Type	Bag Weight (g)	Ends/dm	Picks/dm
1	91 x 59	Type A	525	40	42
2				40	38
3				36	42
4		Type A	500	40	42
5				40	38
6				36	42
7		Type A	525	34	42
8				34	38
9				38	42
10				38	38
11		Type B	525	58	23
12				58	25
13				52	28
14				52	25

From the set parameters and reverse engineering, it has been observed that bag weight of 500 g and with a warp and weft share of 50:50 can be theoretically developed using existing raw jute batch and yarn count of sacking warp and weft. However, negative tolerance in bag weight, as allowed in the existing BIS standard, will have detrimental effect in its performance. Despite of the apprehension, Type A 500 g/bag has been prepared with three different constructions. The test results show that there is seepage of grain during drop test.

More numbers of experimentation have been carried out with bags of 525 g weight. So far, seven different varieties of Type A bag and four varieties of Type B bag have been prepared from two different jute mills. Initial test results are showing within acceptable limits. Drop test of these bags will be carried out shortly.

Project Serial No. 2.

Project Title : Utilization of Jute Sticks & Jute Waste for Extraction of Value added Chemicals for Industrial uses

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Project Group : Dr. Sandip Bose, Mr. Amal Chandra Deka, Mr. Atiar Rehman Dewan, Dr. Syamal Kanti Chakrabarti, Ms. Tanusree Mookherjee

Objectives :

1. Separation from Jute sticks and Jute waste, constituents like lignin, hemicllulose and cellulose
2. Extraction of lignin and preparation of Lignosulphonate from Jute sticks and Jute waste for application in oil drilling, battery and dyestuff extraction
3. Extraction of hemicellulose and cellulose from Jute sticks and Jute waste and preparation of ethanol by chemical and biochemical reactions
4. Preparation of nanocellulose from cellulose of Jute sticks and Jute waste
5. Preparation of bio-fuel from Jute sticks and Jute waste

Work done

Activity 1 : Procurements of instruments and set-up :

1. High temperature high pressure autoclave :

Status : Instrument purchased, installed and utilized for regular project activity.

Specification : Capacity 125 litres, Maximum Temperature 200 °C and Maximum Pressure 200 psi.

Utility : Used for extraction of Lignosulphonate under high temperature high pressure condition, Hydrolysis and extraction of cellulose hydrolyzate for bio -fermen tation is also carried out in this specialized autoclave.

2. Bio fermenter :

Status : Instrument purchased, installed and utilized for bio-ethanol production from jute stick.

Specification : 20 litre capacity, able to maintain temperature at ±1 °C, Sterilization temperature 121 °C with stirring facility.

Utility : Used for producing ethanol from jute stick hydrolyzate. More than 5 pilot batches of bio-ethanol has been produced successfully from jute stick hydro zylate of batch size 10 litres each.

3. Pulverizer :

Status : Instrument purchased, installed and utilized for project

Specification : Capacity 6 kg/hour with a 60 mesh product, higher production with coarser mesh size.

Utility : Used for producing jute dust from jute stick. The jute dust is utilized for pro duction of hydrolyzate (for alcohol production) and bio-oil production.

High temperature high pressure autoclave

Biofermenter

4. Centrifuge :

Status : Instrument purchased, installed and utilized for project

Specification : Capacity 2 x 250 ml, RCF: 7560, Max Speed: 7000 rpm

Utility : Used for separation of microorganisms for ethanol production, calcium Lignosulphonate and calcium carbonate separation.

Pulverizer

Centrifuge

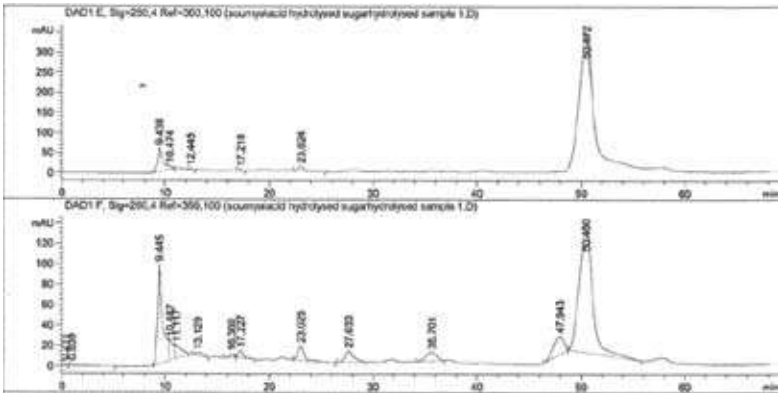
Activity 2 : Preparation of Lignosulphonate from jute sticks

The process of extraction of sodium lignosulphonate and calcium Lignosulphonate from jute fibres and jute stick has been conceived, executed and standardized. The different routes for lignosulphonate extraction have been explored and the most efficient process has been identified for lignosulphonate extraction. The process involves treatment of biomass with sodium bisulphite to 16 wt% and 0.6% sulphuric acid (for maintaining the pH) at a temperature of 160 °C for 15 minutes at 90 psi. The filtrate was further treated to obtain Sodium and Calcium lignosulphonate from the reaction mixture.

Periwal Enterprises, an importer and reseller of sodium lignosulphonate, has agreed to test market the lignosulphonate, produced under this project, for field evaluation and explore commercial prospects within the scope of this project.

Activity 3 : Preparation of ethanol from holocellulose

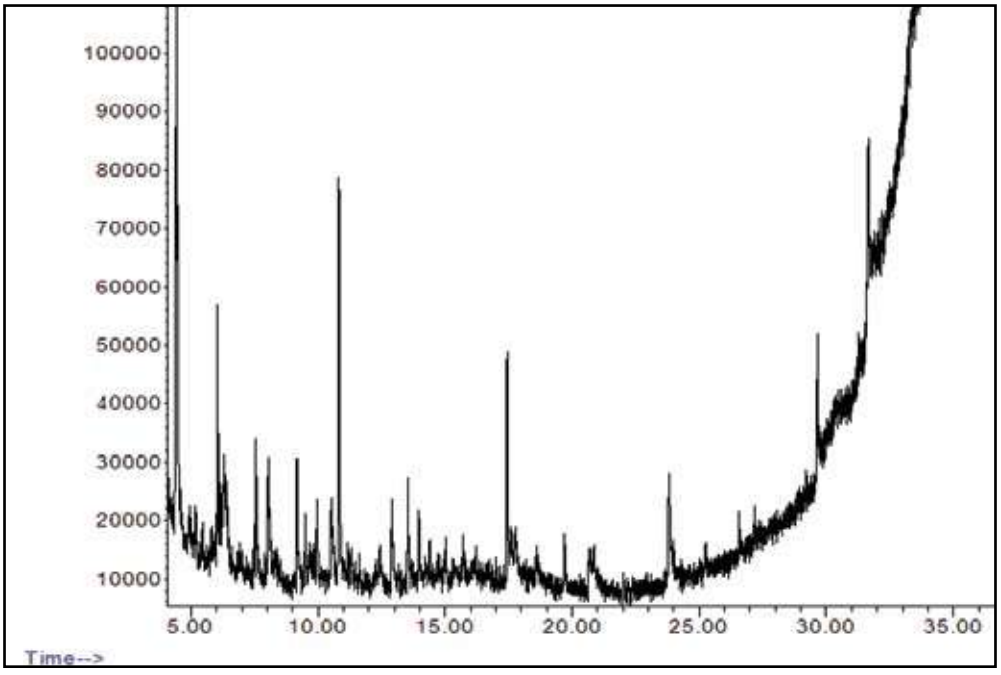
The process of extraction of holocellulose has been investigated by the action of enzymes and chemicals. The chemical hydrolysis yields certain chemicals which are harmful for consequent fermentation process. However, the cost of enzymatic hydrolysis being prohibitively high, the hydrolysis with enzymes was not elaborately tested in this project. Two recombinant strain of yeast were used on the hydrolyzate product of jute stick, to develop the process of ethanol preparation. The ethanol produced could be distilled out to 95% concentration.



HPLC Analysis of Acid Hydrolysis Product

Activity 4: Preparation of bio-fuel from jute stick

The jute stick after pulverisation was isolated for bio-oil extraction. Initial experiments conducted in collaboration with Central Institute of Agricultural Engineering, Bhopal. Based on the results of the experiments pyrolysis reactors would be conceived designed and fabricated for concluding the work. The bio-oil obtained from the flash pyrolysis were characterised for presence of various groups and FTIR, GCMS and iodine number estimation were carried out.



GC- MS analysis

GC-MS detected more than 90 compounds

The major identified compounds are

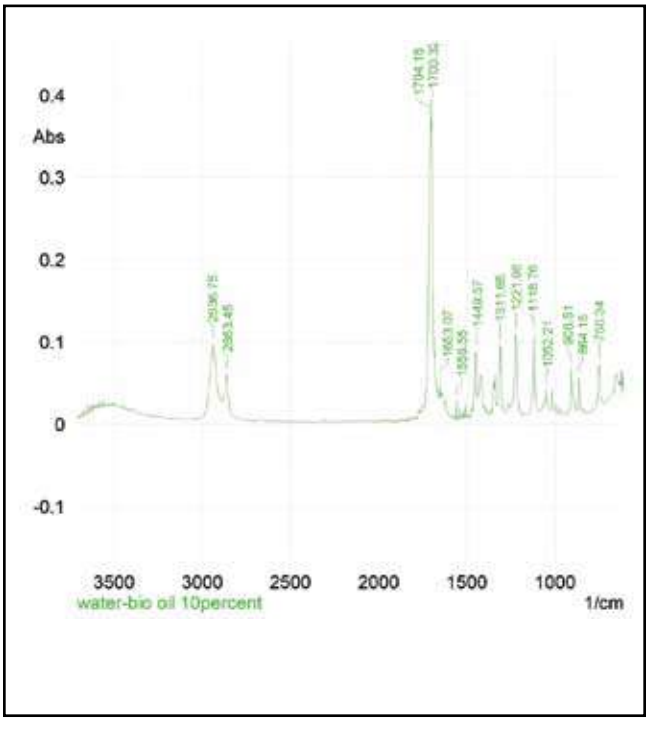
- 2-Cyclopenten-1-one, 2-methyl-2-Cyclopenten-1-one
- Mequinol
- Furfural
- Phenol, ethyl phenol, methyl phenol
- 2-methyl-Cyclohexanone, oxime
- 2,6-bis(1,1-dimethylethyl)-1,4-Benzenediol
- 3,5-dimethoxy-Cyclohexanol
- 2,6-dimethoxy-Phenol
- Diethyl Phthalate
- Levoglucosan
- 3,4-dihydro-2H-Pyran

Activity 5 : Preparation of nanocellulose from α- cellulose

The isolation of pure α-cellulose from jute stick and jute fibre pulp has been executed. Jute pulp was de-oiled and deligninfication process was done using 0.7% Sodium chlorite-Sodium acetate buffer and again was treated with sodium meta-bisulphite (5% w/v) at 60°C for 1 hour. Acid hydrolysis using 55% sulphuric acid for 2 hours at 45°C was done twice and was quenched by adding ice water. Excess sulphuric acid was removed by centrifugation at 10,000rpm for 10 minutes thrice. The supernatant was collected and it was sonicated at 60°C for 45 minutes. No such colloidal structure was obtained.

As a standard process 100% pure cotton was taken to prepare Nanocellulose was using the same procedure and colloidal suspension was obtained at the end.

ATR FTIR of Bio-oil aqueous extract



Peak	Significance
2936	Alkyl C-H stretching
2863	
1704	-C=O Ketone, aldehyde
1700	
1653	C = C stretching
1558	Aromatic C=C bending
1449	Methyl group
1311	Aromatic C=O
1221	Vinyl ether
1118	ether
1052	alcohol

Activity 6 : Characterization of Bio-char obtained from Jute stick pyrolysis as a by-product :

Bio-char also known as Bio-charcoal was physically and chemically characterized to check the absorption of Iodine i.e. the Iodine number estimation test. Two readings were obtained – 170.00mg/gm and 125.475mg/gm (Normal range for activated charcoal marketed by MERCK 600-1450mg/gm). Another method Methylene blue adsorption test of Bio-char is under study.

Project Serial No. 3.

Project Title : Faster Retting of jute plant through Bio-Chemical intervention

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Duration : 24 months

Project Group : Dr.S.K.Chakrabarti (PI), Mr.S.G.Saha, Dr. Sandip Basu, Mr. Ritwik Chakrabarti, Mr. A.C. Deka, Mr. S. De, Mr. A.R. Dewan, Ms. Ipsita Roy

Objectives :

i) To develop an accelerated, farmer friendly, innovative faster-retting technology of whole jute plant

ii) To improve quality of Jute fibre for value added diversified applications and better price realization

iii) To commercialize the innovative jute retting process

Work done

- IJIRA has developed a microbial consortium (IJIRA-SUBHRA) which can ret jute plant in a faster way than that of conventional retting process and produces better quality fibre. The microbial consortium developed consists of efficient jute retting microorganisms e.g. Pseudomonas sp., Mycoplana sp. and Bacillus sp. belonging to category of BSL-1 (harmless to the environment). The compatibility of these retting microbes in combination has been studied and the formulation has been optimized along with its identified growth enhancers (at optimized conc. 0.01%) to ensure the rapid growth of the microbes in the jute retting ambience.

- The efficacy of the microbial consortium in jute retting has been observed both at laboratory and field levels. Farmer's awareness programmes with IJIRA-SUBHRA, have been conducted at 14 places in the major jute growing districts e.g. Hooghly, North 24 Paraganas , Nadia and Murshidabad. In 2016 a total number of 125 field demonstration trials on jute plant retting using IJIRA- SUBHRA have been carried out involving 18 blocks of the said jute growing districts of West Bengal. It has been observed that IJIRA microbial consortium can ret jute plants within only 9-11 days (water limiting condition observed in Hooghly, Nadia and Murshidabad) and the fibres obtained are lustrous, almost free from root content and hence are of improved quality.

- Grading of Jute fibres obtained either from conventional retting process or with IJIRA-SUBHRA have been carried out as per IS:271-2003 and subsequently compared (Table-2). Most of the jute fibres retted with IJIRA- SUBHRA are of better quality (TD3-TD4) and there is 1.0-1.5 grade improvement over the conventional counterpart. Considering the above, large scale retting demonstration trials with IJIRA- SUBHRA have been envisaged in 2017 encompassing two more districts of North Bengal (Jalpaiguri and Coochbehar).

Awareness programmes on Faster Retting of Jute plant Using IJIRA–SUBHRA

District : North 24 -Parganas

District : Hooghly

District : Nadia

District : Murshidabad

Field trials on faster retting of Jute plants using IJIRA–SUBHRA

Table-2 : Evaluation of Jute fibre quality

Places of field demonstration trials conducted	Grade of Jute Fibres*	
	Conventionally Retted	**Faster Retted with IJIRA-SUBHRA**
District: North 24 -Paraganas		
Beliakhali, Deganga	10% higher than TD 5	6.7% lower than TD 3
Kankrasuti, Baduria	46.7% higher than TD 6	6.7% lower than TD 3
Bansjhari, Basirhat	20.0% higher than TD 5	6.7% lower than TD 3
Hooghly		
Chadur, Tarakeswar	26.7% higher than TD 5	5.0% lower than TD 3
Champadanga, Tarakeswar	20.0% higher than TD 5	80.0% higher than TD 4
Kalaikundu, Tarakeswar	86.7% higher than TD 6	76.0% higher than TD 4
Nadia		
Kuchiadanga, Karimpur	6.7% higher than TD 5	5.0% lower than TD 3
Hatara, Chapra	20.0% higher than TD 5	6.7% lower than TD 3
Baroandulia, Chapra	95.0% higher than TD 6	13.3% lower than TD 3
Nakashipara, Nadia	33.3% higher than TD 5	75.0% higher than TD 4
Murshidabad		
Naserpara, Murshidabad	73.3% higher than TD 6	80.0% higher than TD 4
Dubrakhali, Murshidabad	90.0% higher than TD 6	53.3% higher than TD 4
Ghoshpara, Kalidanga	26.7% higher than TD 5	20.0% lower than TD 3
Pecherpara, Domkal	53.3% lower than TD 5	5.0% lower than TD 3

**As per BIS 271:2003

Project Serial No. 4.

Project Title : Biochemical Softening of Hard Root Cuttings of Jute for Better Utilization

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industry

Project Group : Dr. S. K. Chakrabarti (Principal Investigator), Mr. S. G. Saha, Mr. S. De, Mr. A.R.Dewan, Mr. G. Mukhopadhyay, Dr. U.S.Sarma (Advisor), Dr.Arundhati Chowdhury (Sr. Research Associate)

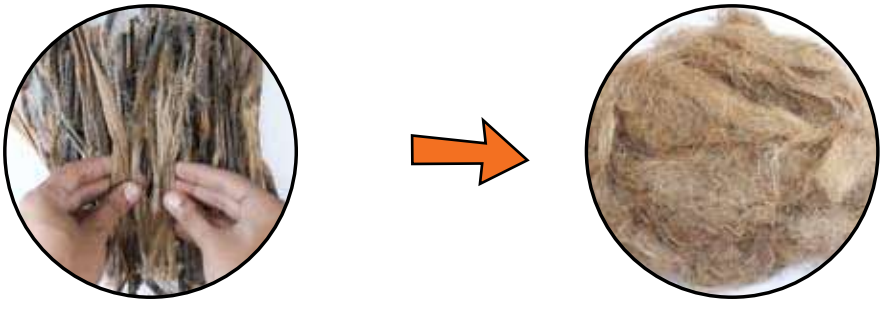
Objectives :

- ❖ To study the techno-commercial viability of Rice Bran Oil as Jute fibre lubricant (process and production efficiency
- ❖ 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

Work done

A biochemical formulation for softening of hard root cuttings of jute has been developed by IJIRA for their gainful utilization in sacking warp batch. The formulation consists of one identified jute root softening bacteria, Pseudomonous sp. and two low cost growth promoters (nitrogen and carbon containing). The formulation has been optimized through laboratory and IJIRA Pilot plant experiments incorporating different percentage of softened root cuttings in the fibre batch of sacking warp quality (10-13 lb/spy). It has been observed that the biochemical root softening formulation developed is compatible with oil-in-water emulsion and can be accommodated in the existing jute processing system. It is also observed that the biochemical formulation substantially reduces the flexural rigidity (Table-3) of the hard root cuttings (41-52%). Shop floor trials on biochemical hard root softening process have been conducted in five Jute mills (Hukumchand Jute Mill, Naihati Jute Mill, Ganges Jute Pvt. Ltd., Caledonian Jute Mill and Fort William Jute Mill) wherein about 10-15% biochemically softened root cuttings has been incorporated in sacking warp batch (10-13 lb/spy) without compromising with yarn quality and spinning performance and there is substantial savings in batch cost observed (Table-4 to 18). Efficacy of such root softening formulation on uncut jute fibre is under investigation. Commercialization of the biochemical root softening process has been successfully completed at Caledonian Jute & Industries Ltd. Further commercialization of this process technology is in progress.

Trials on Biochemical Softening of Hard Root Cuttings of Jute at IJIRA Pilot Plant
(No. of trials conducted: 16)



Hard Root Cuttings of Jute **Fleece of softened Root Cuttings of Jute**

Table-3 : Assessment of Flexural Rigidity of Softened Jute Fibres

Sample treatment	Flexural Rigidity (cN- mm^2) of Jute Fibres		
	F.R at 24 Hrs	F.R at 48 Hrs.	F.R at 72 Hrs.
Root cuttings (Untreated)	86.7		
Root cuttings + Water	81.2	78.3	71.9
Root cuttings + JBO Emulsion (E)	78.8	73.6	69.4
Root cuttings + Nutrients (N1,N2) + JBO Emulsion	57.4	53.6	49.2
Root cuttings + Bacteria+ Nutrients (N1,N2) + JBO emulsion	50.8	44.3	41.4

Reduction in Flexural Rigidity: 41-52%

SHOP FLOOR TRIALS ON BIOCHEMICAL ROOT SOFTENING PROCESS OF JUTE

Study Report in Mill-A

Table-4 : Batch Composition (Mill-A)
(Quality : Sacking warp, 10.0 lb/Spy)

Quality of Jute Fibres	Mill Normal Batch	Experimental Batch
DTD5	36%	36%
ATD5	32%	26%
JTD5	32%	26%
Softened Root Cutting	-	12%
Line waste	-	-
Total	**100%**	**100%**

Table-5 : Comparative Spinning Performance (Mill-A)

Process Parameters Tested	Mill Normal	Experimental
Actual count of yarn (lb)	9.77	10.05
Avg. end breakage/100 spindle /hr	131.0	117.40
Range of end breakage/100 spindle/ hr	82-165	77-162
Avg. doff weight (Kg)	24.42	27.26
Range of doff weight(Kg)	22 - 28	22.2 -31.0
Nominal T.P.I.	4.02	4.02
Flyer R.P.M.	4200	4200

Table-6 : Evaluation of Yarn Quality (Mill-A)

Quality Parameters	Mill Normal	Experimental
Actual count (lb)	9.77	10.05
Avg. MR%	14.25	14.50
Converted count at 20% MR	10.28	10.53
Count CV%	6.99	5.15
Avg. breaking strength (lb)	7.78	7.99
Strength CV%	17.32	16.15
Quality ratio	75.99	75.68
Min quality ratio	55.00	56.33
Avg. T.P.I.	4.11	4.14
T.P.I. CV%	5.82	5.67

Study Report in Mill-B

Table-7: Batch Composition (Mill-B)
(Quality : Sacking warp, 10.5 lb/Spy)

Mill Normal Batch		Experimental Batch	
Quality of Jute Fibres	**Percentage**	**Quality of Jute Fibres**	**Percentage**
Local TD-5	24.24	Local TD-5	19.77
Loose TD 4/5	12.12	W-5	12.12
W-4	12.12	Local TD-4	12.12
Samsi TD-4	12.12	SNTD-5	12.12
Northern TD- 10	12.12	Northern TD-10	12.12
W-5	10.90	Purnia-5 (hand feed)	9.91
Line Waste	5.46	Line Waste	5.46
Mesta middle	5.46	Mesta middle	5.46
Cutting	**5.46**	**Cutting**	**10.92**
Total	100.00 %		100.00%

Table-8 : Comparative Spinning Performance (Mill-B)
(Quality : Sacking Warp, 10.5 lb/Spy)

Process Parameters Tested	Mill Normal	Experimental
Avg. end breakage/100 spindle /hr	116.70	110.60
Range of end breakage/100 spindle/ hr	95-145	77-161
Avg. doff weight (Kg)	29.81	29.60
Range of doff weight(Kg)	26-34	26-34
Nominal T.P.I.	4.10	4.10
Flyer R.P.M.	3800	3800

Table-9 : Evaluation of Yarn Quality (Mill-B)

Quality Parameters	Mill Normal	Experimental
Actual count	9.97	10.00
Avg. MR%	15.20	14.90
Converted count at 20% MR	10.38	10.47
Count CV%	7.55	7.79
Avg. breaking strength (lb)	7.63	7.81
Strength CV%	22.35	23.49
Quality ratio	72.61	74.78
Min quality ratio	45.57	45.76
Avg. T.P.I.	3.92	4.01
T.P.I. CV%	10.26	9.95

Study Report in Mill-C

Table-10 : Batch Composition (Mill-C)
(Quality : Sacking warp, 9.5 lb/Spy)

Mill Normal Batch		Experimental Batch			
		Phase - I		Phase - II	
Quality of Jute Fibres	**Percentage**	**Quality of Jute Fibres**	**Percentage**	**Quality of Jute Fibres**	**Percentage**
DTD 4 DTD 5	70%	DTD 4 DTD 5	62.5%	DTD 4 DTD 5	55%
JTD5	30%	JTD5	30%	JTD5	30%
		Cutting*	7.5%	Cutting*	15%
Total	100.00 %	Total	100.00%	Total	100.00%

*** Root cuttings include the hard root cuttings of semi-northern 5, Jungli TD5, Daisee TD4 / TD5)**

Table-11 : Comparative Spinning Performance (Mill-C)
(Quality : Sacking Warp, 9.5 lb/Spy)

Process Parameters Tested	Mill Normal	Experimental
Avg. end breakage/100 spindle/hr	95.5	84.50
Range of end breakage/100 spindle/hr	68.4 – 122.5	55.8 – 132.5
Avg. doff weight (Kg)	29.81	32.90
Range of doff weight(Kg)	25 - 34	28 – 36.5
Nominal T.P.I.	4.28	4.28
Flyer R.P.M.	3750	3750

Table-12 : Evaluation of Yarn Quality (Mill-C)

Quality parameter	Mill Normal	Experimental
Observed count	9.92	9.66
MR%	11.8	12.59
Corrected count	10.65	10.31
Count CV%	8.12	7.26
Average breaking strength	7.45	7.14
Average QR%	74.98	74.01
Minimum QR%	50.00	51.27
Strength CV%	20.04	20.46
Nominal T.P.I.	4.25	4.25
Average T.P.I.	4.15	4.21

Study Report in Mill-D

Table-13 : Batch Composition (Mill-D)
(Quality: Sacking warp, 9.5 lb/Spy)

Mill Normal Batch		Experimental Batch			
		Phase - I		Phase - II	
Quality of Jute Fibres	**Percentage**	**Quality of Jute Fibres**	**Percentage**	**Quality of Jute Fibres**	**Percentage**
Line waste	6.61	Line waste	6.61	Line waste	6.61
Assam TD 5	9.91	Assam TD 5	9.91	Assam TD 5	9.91
SNTD5	4.96	SNTD5	4.96	SNTD5	4.96
DTD 4	67.91	DTD 4	59.25	DTD 4	53.05
DTD 5	10.61	DTD 5	11.84	DTD 5	10.61
Cuttings	**-**	**Cutting***	**7.43**	**Cutting***	**14.86**
Total	**100.00 %**	**Total**	**100.00%**	**Total**	**100.00%**

*** Root cuttings include the hard root cuttings of Assam 4/5, Daisee TD4 / TD5 and SNTD5**

Table-14 : Comparative Spinning Performance (Mill-D)
(Quality : Sacking Warp, 9.5 lb/Spy)

Process Parameters Tested	Mill Normal	Experimental
Avg. end breakage/100 spindle /hr	91.2	93.7
Range of end breakage/100 spindle/ hr	59.1 - 140	60.0 – 116.6
Avg. doff weight (Kg)	25.4	25.9
Range of doff weight(Kg)	22 - 28	24 – 30
Nominal T.P.I.	4.09	4.09
Flyer R.P.M.	3736	3736

Table-15 : Evaluation of Yarn Quality (Mill-D)

Quality Parameter	Mill Normal	Experimental
Observed count (lb)	10.39	10.21
MR%	16.6	15.5
Corrected count (lb)	10.69	10.60
Count CV%	7.02	7.26
Average breaking strength (lbf)	7.82	7.69
Average QR%	73.0	72.50
Minimum QR%	38.5	39.0
Strength CV%	20.87	18.56
Nominal T.P.I.	4.09	4.09
Average T.P.I.	3.97	3.95
TPI CV%	7.14	6.60

Study Report in Mill-E

Table-16 : Batch Composition (Mill-E)
(Quality: Sacking warp, 9.5 lb/Spy)

Quality of Jute Fibres	Mill Normal	Experimental		
	Percentage (%)	Percentage (%) (Phase-I)	Percentage (%) (Phase-II)	Percentage (%) (Phase-III)
South Bengal TD-5	41.56	41.56	41.56	40.00
Lower Assam TD- 6	20.78	20.78	20.78	20.00
Semi NorthernTD-5	10.39	10.39	10.39	10.00
Mesta -4	7.44	7.44	7.44	8.18
Northern Cutting*	10.14	5.63	3.38	6.20
Sacking Cutting**	**2.25**	**6.76**	**9.01**	**7.44**
Line Waste	7.44	7.44	7.44	8.18
Total	**100.00 %**	**100.00%**	**100.00%**	**100.00%**

Table-17 : Comparative Spinning Performance (Mill-E)
(Quality : Sacking Warp, 9.5 lb/Spy)

Process Parameters Tested	Mill Normal	Experimental (Phase – I)	Experimental (Phase – II)	Experimental (Phase – III)
	41/4″	41/4″	41/4″	41/4″
Maker's Name	Golden Eagle	Golden Eagle	Golden Eagle	Golden Eagle
No. of Spindle	110	110	110	110
Flyer R.P.M	3900	3910	3895	3980
Nominal T.P.I.	3.72	3.72	3.72	3.72
Avg. end breakage/100 spindle /hr	105.48	60.12	90.53	58.09
Range of end breakage/100 spindle/ hr	67.27 – 136.36	45.14 – 87.27	76.36 – 109.09	45.56 – 66.86
Avg. Yarn Count @ 20% MR	13.51	13.01	13.23	13.11
Avg. MR%	10.94	12.75	13.19	10.0
Avg. Running Time/doff	29.5	29.67	29.83	29.67
Avg. doff weight (Kg)	29.13	32.08	29.83	32.6
Range of doff weight(Kg)	23 – 35	31 – 34	28 – 32	31 – 35
Gain/Loss (%) doff wt.	----	(+) 10.13	(+) 2.30	(+) 11.91

Table-18: Evaluation of Yarn Quality (Mill-E)

Quality Parameter	Mill Normal	Experimental		
		Phase – I	Phase – II	Phase – III
Quality	12.5 lb/spy Sacking Warp for S4A			
Range of Actual count	11.17 – 13.81	11.70 – 12.70	11.64 – 13.76	11.29 – 13.33
Range of MR%	9.0 – 13.0	11.5 – 14.0	12.5 – 14.0	9.0 – 12.0
Converted Count Range at 20% MR	12.07 – 15.07	12.42 – 13.67	12.31 – 14.48	12.23 – 14.48
Range of Count CV%	4.38 – 13.26	5.68 – 11.16	3.42 – 9.51	5.16 – 9.66
Range of Avg. Breaking Strength (lb)	8.01 – 10.37	8.37 – 10.48	9.30 – 10.46	8.11 – 11.04
Range of Strength CV%	13.67 – 25.77	17.24 – 23.99	16.80 – 27.14	15.39 – 20.10
Average Quality Ratio	78.90	79.52	79.07	82.56
Range of Actual Quality Ratio	71.45 – 86.83	69.0 – 84.18	75.5 – 81.70	79.34 – 86.98
Range of Converted Quality Ratio	65.49 – 79.59	64.68 – 80.96	71.75 – 76.94	72.53 – 79.0
Average Minimum Quality Ratio	48.94	49.63	49.0	57.38
Range of Minimum Quality Ratio	42.0 – 56.0	45.0 – 59.0	42.0 – 63.0	52.0 – 66.0

Project Serial No. 5.

Project Title : Jute-Thermoplastic Composites for Green Product Development

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Project Group : Dr. Md. S. Rahman, Mr. D. Biswas, Ms. M. Sarkar, Mr. D. Panda and Mr. M. K. Singh

Major Achievements :

The technology for incorporation of Jute fibre into thermoplastic composite has been developed utilizing shear mixing mechanism at Kneader Extruder system.

One of the important achievements of the work is incorporation upto 20% Jute caddies mainly loom caddies into the thermoplastic composites and moulding products out of them.

In association with technology partner M/s Patton International Ltd. the process of 20% Jute incorporated LLDPE composite tank manufacturing process has been established in industrial scale.

Work done

Facility creation at IJIRA for Jute-thermoplastic composite processing-

Pilot scale infrastructure for Jute thermoplastic composite processing has been created under the project. The following machines have been fabricated as per the recommendations and installed at IJIRA.

- Laboratory scale (7 Kg batch) Kneader - Extruder &
- Pilot scale (50 Kg batch) Kneader - Extruder Systems

The machines have been installed at IJIRA and trial runs are being conducted with different thermoplastic materials like Low & Linear Density Polyethylene (LLDPE), High Density Polyethylene (HDPE) and Polypropylene (PP).

Kneader –Extruder machines installed at IJIRA(7 kgs)

Kneader Extruder machine (50 Kgs)

Experimentations & observations

Quality evaluation of Loom caddies - Samples have been collected from different Jute mills analysed and selection of Quality parameters is completed.

Quality Parameters :

Parameters	Allowable percentatge
Dust content	1.0 %
Remnant thread waste	1.5 %
Oil content	5.0%

Experimental Trials -

- ✓ Effect of Compatibilizer in the Jute-Thermoplastic composites have been studied.
- ✓ Repeated trials of 20% Jute caddies incorporated LLDPE composite granules processing in a kneader-extruder system have been conducted under Industrial set up of M/s Patton International Ltd. Also moulding of water tanks have been conducted.

- ✓ Pilot scale trials using Jute / Jute loom caddies – PP & Jute / Jute loom caddies – HDPE have been conducted in the installed Kneader Extruder machine.
- ✓ Different commodity plastics e.g. LLDPE, HDPE and PP are being experimented in the in-house facility.



Experimental Trials conducted at Patton International Ltd. with Jute- LLDPE

Optimization of processing parameters -

Parameters of processing like kneader temp., mixing duration, extrusion temp. machine speed, cutter speed synchronization are being established for Jute-LLDPE composites.

Sampling & Testing -

- ✓ A test mould has been designed and fabricated through CIPET Haldia for preparation of test samples by Injection moulding of Jute plastic composite materials

Fabricated Test Mould

Injection moulded test samples

Characterization -

Characterization of composites is being carried out for Jute-LLDPE/ Jute-PP incorporated composite materials in CIPET laboratories.

Increase in Impact properties have been found due to incorporation of jute fibres in thermoplastic composites. Detailed analysis of functional properties is in progress.

Patent – Final Patent Filed in March' 2017

"A Process for Manufacturing Jute Fibre Reinforced Linear Low Density Polyethylene (LLDPE) Composite Product" (Application No.: 201631008771)

Caps of Suthol bottle

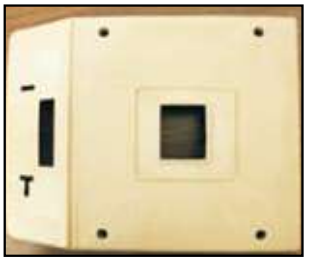
Caps of Pen

Syringe

Water Tank

Caps of Jar

Pen Stand



Weiging scale cover (Kgs)

Injection moulded Sample Products prepared from Jute-Plastic Composites

Project Serial No. 6

Project Title : Development of Standards for use of Jute Geotextiles (JGTs) in Rural Roads

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Project Group : Dr. Mahuya Ghosh (PI), Mr. Koushik Das, Mr. Palash Paul, Ms. Rumki Saha, Mr. Ayanjyoti Pal (SRA), Mr. Supriya Paul (JRA), Dr. G.V. Rao (Advisor), Dr. U.S. Sarma (Advisor)

Objectives :

1. To engineer JGTs of various constructions depending on different applications in road.
2. To construct prototype models of the proposed pavement in the laboratory and to evaluate its performance. Comparative analysis of JGTs, synthetic geotextiles embedded pavement models and control (i.e. without any geotextiles) pavement models.
3. To carry out Objective No. 2, four different types of soils from different parts of India, viz., Alluvial soil, Black cotton soil, Red soil and Lateritic soil (covering rural hinterland of the country) will be used.
4. To design and supervise the construction of a rural road incorporating jute geotextiles at various layers and interfaces.
5. To evaluate the performance of rural roads incorporating jute geotextiles at various layers and interfaces.
6. To obtain approval of JGT by competent authorities.

Progress of Work :

- A Soil Testing Laboratory has been set up at IJIRA which includes cyclic loading equipment and on-site road monitoring apparatus.
- Fabric engineering of JGTs for different applications in rural road:

Three different types of JGTs for different applications in rural road are under development.

a) Synthetic blended JGT: Polypropylene (PP) tape has been used to blend with jute finisher drawing sliver at the spinning stage to prepare blended yarn. This blended yarn has been used to prepare a plain-woven JGT fabric at laboratory and mill level. One prototype of synthetic blended JGTs has been developed at mill level.

Table 19 : Tested properties of blended JGT- prototype 1

Sl. No.	Tested Property	Results	ASTM method
1.	Ends / dm X Picks / dm	81.00 x 37.00	D-3775 –12
2.	Mass per unit area (g/m²)	728.81	D3776M-09a (Reapproved 2013)
3.	Wide width Tensile Strength (kN/m) MD CD	 31.91 18.69	D 4595 – 11
4.	Elongation at break (%) MD CD	 31.22 12.48	D 4595 – 11
5.	Puncture Resistance (CBR push through) (kN)	0.2837	D 6241 – 14
6.	Permittivity (s-1)	0.44	D4491M – 15
7.	Apparent opening size (O_{95}) µ	407.5	D 4751 – 12

b) Rot-proof JGTs : Two types of rot proofing treatment on commercially available 724 g /m² JGT with IJIRA-developed formulations having lesser environmental hazards viz., one anti-microbial and another a combination of anti-microbial and water repellant have been completed at mill level and their properties are being tested at IJIRA.

Related physical and mechanical property evaluation along with compressibility study on different types of JGTs have been completed.

c) Development of JGT for reinforcement: A leno-based jute woven grid fabric structure has been conceptualized and its development is under progress at mill level. One prototype jute leno-woven grid fabric has been prepared so far.

- Different types of soil from different parts of India, e.g., swelling Black Cotton Soil from Andhra Pradesh, Red Lateritic Sandy Soil from Guwahati , Locally available Alluvium Silty Soil (nearby Kolkata) 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 (Liquid Limit, Plastic Limit, Shrinkage Limit, Plasticity Index), grain size distribution, Compaction test, California Bearing Ratio (CBR), etc. have been carried out. Consolidation test, Direct Shear test, Vane shear test, Tri-axial test, etc. are under progress.

Table 20 : Characteristics of Experimental Soils

Sl.No	Soil Parameters	Soil Type 1	Soil Type 2	Soil Type 3
1	Liquid Limit (%)	37	33	85
2	Plastic Limit (%)	25	23	37
3	Plasticity Index	12	10	48
4	Sand (%)	69	10	22
5	Silt (%)	20	65	19
6	Clay (%)	11	25	59
7	Soil Classification	Clayey Silty SAND	Sandy Clayey SILT	Silty Sandy CLAY
		Guwahati Lateritic Red Soil	**Kolkata Alluvial Silty soil**	**Andhra Pradesh Black Cotton Soil**

Table : Summary of Light Compaction Test Results

	Guwahati Lateritic Red Soil	Kolkata Alluvial Silty Soil	Andhra Pradesh Black Cotton Soil
OMC %	**14.2**	**15.0**	**34.0**
MDD (kN/m3)	**17.9**	**17.7**	**13.0**
Soaked CBR %	**8.2**	**4.2**	**1.7**

- Laboratory pavement performance simulation study with JGT and control pavement : Two types of tanks, viz. plastic (made of acrylic sheet) and metallic have been fabricated for carrying out pavement model tests. These tanks with drainage valve have dimension of 50 cm x 50 cm x 45 cm. Drainage system has been provided with each tank to allow consolidation of subgrade soil.

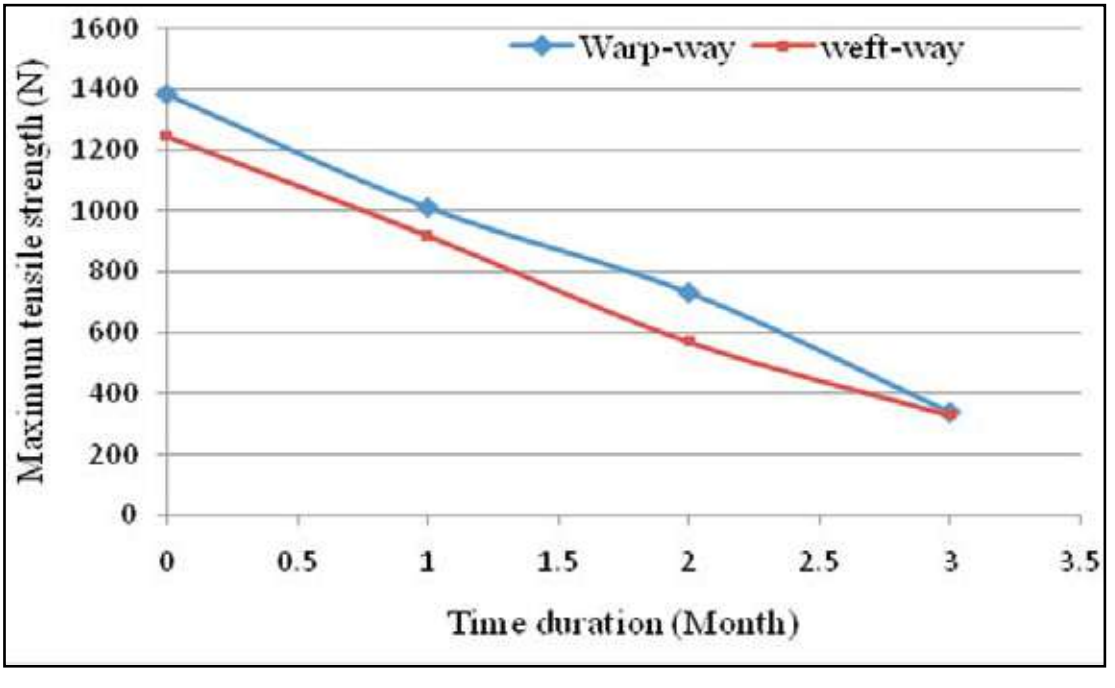
Preparation of pavement model tanks of different compositions (i.e. only Subgrade, Control- Subgrade + Modeled Wet Mix Macadam, Subgrade + JGT + Modeled WMM, etc.) according to experimental plan is under progress for static and cyclic loading. Pavement models are being subjected to water treatment for different durations to make the subgrade 100 % saturated uninterruptedly. So far, model tanks have been prepared for 1-week and 4-week durations. Water treated Pavement Models are being subjected to static and cyclic loading both using a Cyclic Loading Apparatus with pneumatic actuator. Some models have been already tested.

Actual Photograph of Pavement Model Testing on Cyclic Loading Equipment

- Degradability study on JGTs: Degradability study of different untreated, blended and rot-proof treated JGTs
  - embedded in different subgrade soils (100% saturated) along with study of soil pH with time
  - submerged under water and
  - kept in ambient condition for different durations are under progress.

Residual strength testing of exhumed JGTs has been already carried out up to 3 month duration in some cases.

Degradation study on JGTs in different saturated soils



Degradation profile of grey 724 g/m^2 JGT embedded under Saturated Kolkata Silty Soil

- Field study: The project team visited the actual road site in Thoubal District, Manipur in December 2016 to carry out necessary tests e.g., Dynamic Cone Penetrometer (DCP) tests on the road subgrade, measurement of Field Dry Density by Sand Replacement method, etc. at site and collect soil samples.

Measurement of Field Dry Density of Soil by Sand Replacement Method at Road Site in Manipur

Project Serial No. 7.

Project Title : **Development of High Speed Roller Drafting System for Improvement in Jute Drawing Frame Productivity**

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Duration : 18 months

Project Group : Mr. Partha Sanyal (PI), Mr. Debiprasad Gon, Mr. Palash Paul, Mr. Gopal Mukhopadhyay.

Objective :

- Development of roller drafting system for jute finisher drawing frame for achieving higher production (at least double production i.e. Delivery speed of 300 fpm than the conventional Screw-Gill drawing frame)
- Standardization of the machine and process parameters
- Commercialisation and industrial acceptance of Roller Drafting Jute Finisher drawing frame

Introduction:

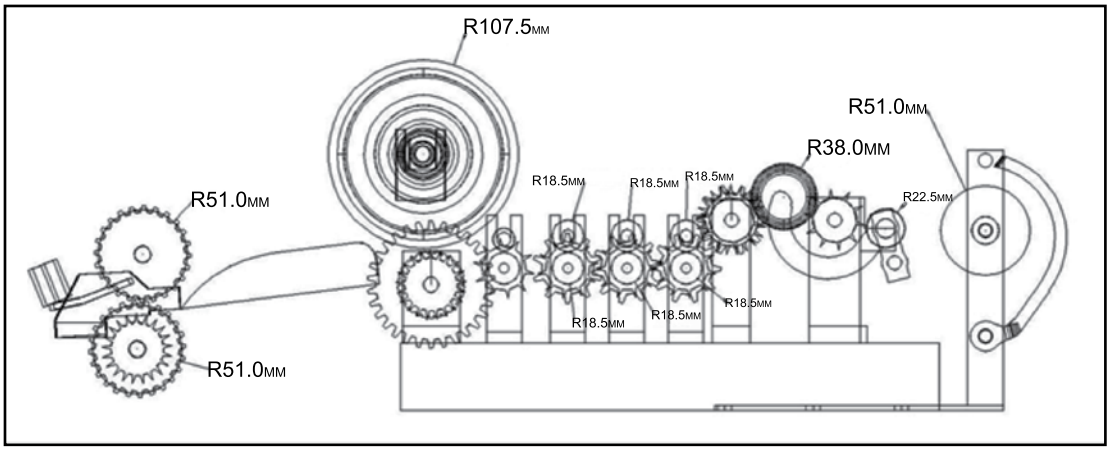
The most common and widely used Jute Screw Gill (SG) finisher draw frames have possibly reached an optimum level of performance with respect to productivity, though the delivery speed is quite low compared to draw frames used for processing cotton and synthetic staple fibres.

Increase in the running speed of the jute screw gill finisher draw-frames with prevailing drafting system might be possible but would lead to considerable increase in machine breakdowns, maintenance cost and poor sliver quality.

It is perceived that, a rational approach to overcome the technical limits of the existing screw gill jute drawing frames, a roller drafting system may be developed similar to cotton/ synthetic drawing system with simplified design for ease of operation and maintenance while efficient enough to control fibre movement in the drafting zone. Since, the controlling mechanism is rollers; it would also be possible to achieve increased production speed.

Work done :

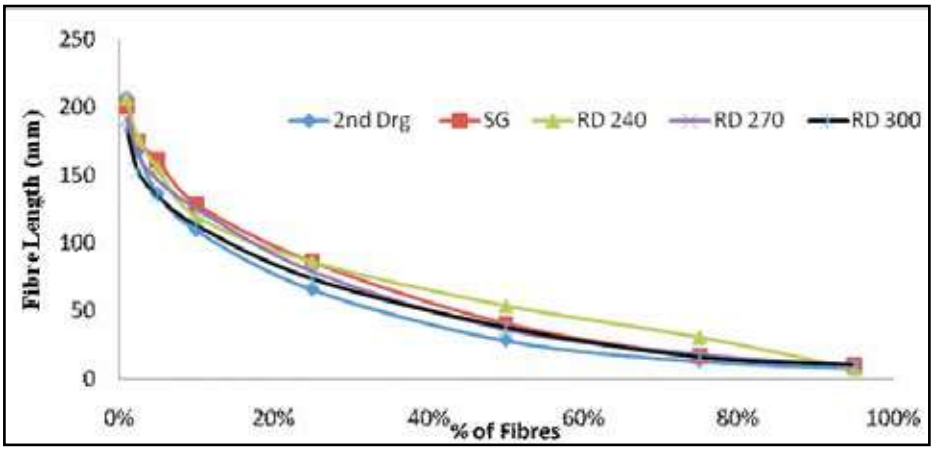
Under this project, a table top model of roller drafting finisher drawing frame has been fabricated. The schematic diagram of the fabricated model is shown in figure: 1



Schematic diagram of table top roller drafting jute finisher drawing frame

The roller drafting finisher drawing frame has been run with different speeds of 240 fpm, 270 fpm and 300 fpm. To see the efficacy of the roller drafting finisher drawing frame, comparative studies have been carried out to produce sacking warp quality yarn (9.5 lb/spy) with the slivers of standard batch quality from roller drafting frame at various speeds of 240 fpm, 270 fpm and 300 fpm and sliver from corresponding screw gill finisher drawing frame at a delivery speed of 160 fpm.

Fibre length distribution from 2nd drawing screw gill frame and finisher drawing frames of both roller drafting and corresponding screw gill drawing frame has been checked and has been shown in figure 2. It has been observed from the figure that there is no significant fibre breakage taking place while running the roller drafting frame at a delivery speed of 300fpm.



Comparative fibre length distribution result

Comparative study on yarn quality parameters has also been carried out and the results are tabulated in Table 20 & 21.

Table -20 : Yarn Test Report

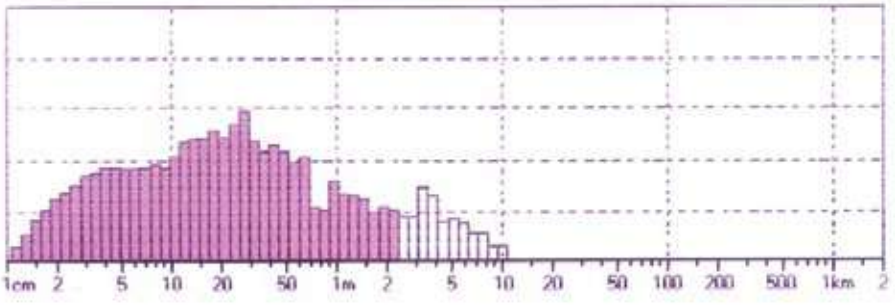
Parameters	SG-160	RD-240	RD-270	RD-300
Count (lb/spy)	9.10	9.25	9.27	9.25
Count CV%	3.23	2.95	5.44	4.68
Avg. Breaking Load (lb)	8.02	7.75	7.88	7.93
Min. Breaking Load (lb)	5.70	4.60	5.10	5.10
Avg. Quality Ratio	88.13	83.78	85.01	85.73
Min. Quality Ratio	62.64	49.73	55.02	55.14
Strength CV%	14.98	19.37	16.03	17.07

Table -21 : Yarn Evenness Report

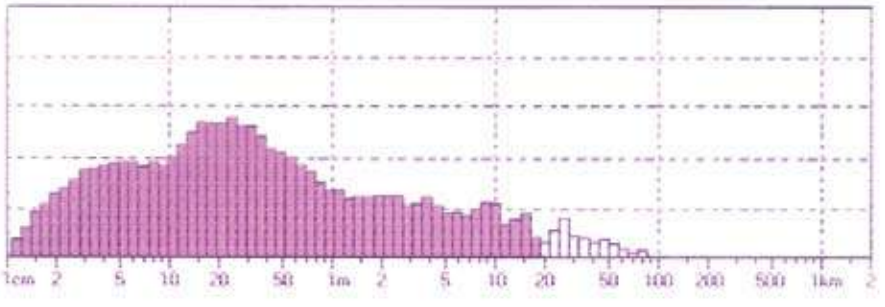
Evenness Parameters	Fr. Drg-SG	Fr. Drg-RD		
Delivery Speed (f.p.m.)	**160**	**240**	**270**	**300**
U%	26.61	22.55	23.57	25.72
CV (1m)	14.22	10.76	11.33	14.86
CV (3m)	11.27	6.76	7.89	11.36
Thin (-50%)	4448	1360	2296	3956
Thick (+50%)	1972	1556	1604	1676
Neps (+280%)	124	56	84	116

T - Test has been carried out to check the test of significance between different strength values & minimum quality ratio of yarn samples from roller drafting frame at above mentioned speeds and screw gill drawing frame. It has been found that there is no significant difference in yarn strength values both at 1 % and 5 % level of significance.

Yarn evenness parameters for all the above mentioned samples are tested and found comparable. The mass spectrogram for all the sets of yarns have been shown in figure. From the figures, it is observed that there is no periodic variation and the mass spectrogram for all sets of yarn samples follow standard profile.

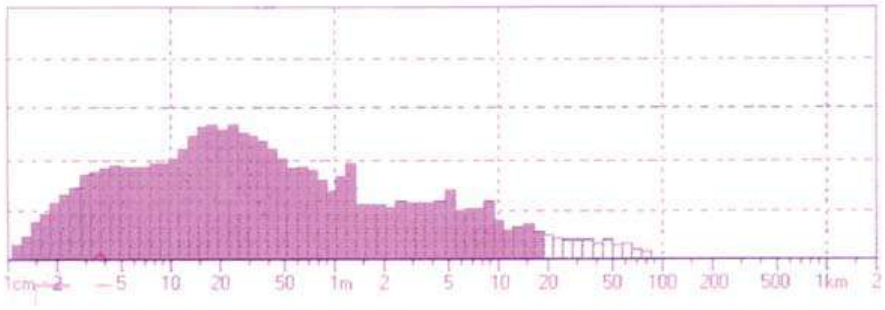


Spectogram (Mass) Diagram of Yarn made Finisher Drawing Sliver (Screw Gill)
[Speed-160 f.p.m.]



Spectogram (Mass) Diagram of Yarn made Finisher Drawing Sliver (Roller Drafting)
[Speed-240 f.p.m.]

Spectogram (Mass) Diagram of Yarn made Finisher Drawing Sliver (Roller Drafting)
[Speed-270 f.p.m.]



Spectogram (Mass) Diagram of Yarn made Finisher Drawing Sliver (Roller Drafting) [Speed-300 f.p.m.]

Demonstration of Table Top Roller Drafting Machine for Jute before Shri A. Madhukumar Reddy, IRTS, Joint Secretary (Jute) and Jute Commissioner, GoI, MoT

Project Serial No. 8.

Project Title : Jute based Air Filter media having Anti-Microbial & Odour Absorbing Propertie

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Deliverables

- Bio-compostable Air filtration media based on Jute textiles having functional properties.
- Possibility of utilizing jute textile mainly nonwoven in unconventional application.

Project Serial No. 9.

Project Title : Development of PLA Laminated Jute as Bio-Compostable Packaging Material

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Deliverables

- 100% bio-compostable polymer film laminated jute sheet for packaging applications.
- Value addition in the polymer film laminated packaging product for niche market..

Project Serial No. 10.

Project Title : Development of Jute based Textile Preforms and Pultruded Composite Products

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Deliverables

- Pultrusion is one of the cost effective mass production technologies for composite profile production.
- Jute thermoset composite profile using pultrusion technology with fibres oriented in axial direction for maximum realization of properties.
- Production of pultruded jute composite profiles.

Project Serial No. 11.

Project Title : Feasibility Study of Oil-free Processing of Jute Fibres

Sponsored by : Office of the Jute Commissioner, Ministry of Textiles

Project Group : Mr. Ritwik Chakraborty (Principal Investigator), Mr. A. C. Deka, Mr. Bishwarup Nandi, Mr. Gopal Mukhopadhyay, Mr. Samar De, Dr. S.K. Chakrabarti (Advisor)

Objective :

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

Project Activities :

The project commenced in January, 2017 is intended to investigate the feasibility of oil-free lubrication for processing of jute. Comprehensive review of technical papers, books has been carried out so far. Work is undergoing to develop different oil-free formulations. Few pilot-scale trials have conducted to spin jute yarn of 8 lb/spy with oil-free formulations.

Project Serial No. 12.

Project Title : Design and Development of Continuous Damping, Calendaring and Cutting Machine for Jute Fabric

Sponsored by : Ministry of Textiles, Govt. of India and Indian Jute Industy

Project Group : Mr. Palash Paul (PI), Mr. Partha Sanyal, Mr. Gopal Mukhopadhyay, Mr. Joyjit Mukherjee

Objectives:

1. Design and development of continuous damping, calendering and cutting/folding machine for jute fabric
2. Modified set-up for running damping, calendering and cloth cutting/folding in tandem without making much changes in existing machine designs
3. Standardization of the process parameters

Project Activities :

The existing machinery used in the jute mills lack in automation for which the industry is very much labour intensive. In the mechanical finishing section of a jute mill, there are too many batch processes. These involve high manpower requirement in the feed and delivery side of the machine along with manpower for material handling from one machine to the next process. Considering this fact, this machinery development project has been undertaken with an aim to bring automation in the finishing section of a jute mill.

The design concept of the machine has been identified in consultation with approved machinery manufacturer, i.e. M/s Madhabi Engineering Works. Pvt. Ltd. Development of prototype model will be started shortly after completing formal procedures of collaboration with the machinery manufacturer partner.

Project Serial No. 13.

Project Title : Process Development, Automation and Pilot Scale Manufacturing of Jute Based Low Cost Sanitary Napkins

Sponsored by : National Jute Board and Indian Jute Mills Association

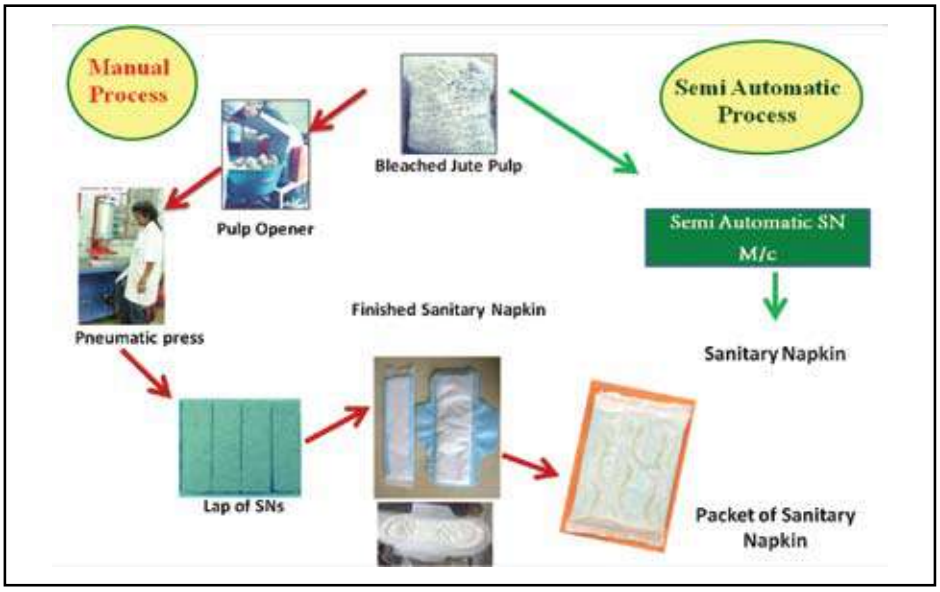
Project Group : Dr. S. K. Chakrabarti (Principal Investigator), Dr. S. Basu, Mr. A. C. Deka, Mr. R. Chakraborty, Mr. A. R. Dewan, Dr. U. S. Sarma (Advisor), Mr. Sumit Das (Project Associate), Ms. Nomita Dutta (Project Attendant), Ms. Asalata Mandal (Project Attendant), Ms. M.Bandhopadyay (Project Attendant)

Objectives:

- 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/ 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

Work done :

- ❖ A novel 100% jute based core material has been developed for making Sanitary Napkin.
- ❖ Napkins developed from jute fibre & stick conform to IS 5405:1980 and certified by National Test House, Kolkata
- ❖ Patent on jute based sanitary napkins has been filed (Application No. 201631014268 dated 25.4.2016)
- ❖ Promotional activity and awareness programme of jute based SNs have been carried out in seven places including four jute mills and three WSHGs
- ❖ Commercialization initiative has been undertaken with Intech Safety Pvt. Ltd., Kolkata. against a technology transfer fees of Rs. 50.0 Lakh .MoA has been signed .
- ❖ Pilot scale production of jute based core material has been continuing at IJIRA (8.0 kg/ day).
- ❖ For test marketing amongst rural women , jute based pulp and SNs have been supplied to 'Balia Gram Unnayan Samity', Hooghly, Brace Foundation , Murshidabad & Ushagram Lokshikshaniketan, Nadia
- ❖ Customization of semi Automatic SN-Machine for WSHG is in progress with Aakar Innovations, Navi Mumbai & M/s Milltex Engineers Pvt. Ltd., Coimbatore to develop a sustainable model of SNs for WSHG.



Production Model of Jute Based Sanitary Napkin

Promotional activity at Gloster Limited

Promotional activity at Bowreah Jute Mill

Promotional activity at Ludlow Jute & Specialties Ltd.



Promotional activity at Hukumchand Jute Mill


Promotional activity organised by Brace Foundation in collaboration with IJIRA, at Town Club, Gorabazar, Berhampur



Promotional activity at Balia Gram Unnayan Samity, Hooghly



Promotional activity at Ushagram Lokshikshaniketan, Birpur, Nadia

Promotional activities cum awareness programme of Jute Based Sanitary Napkins

Commercialisation Initiative of Jute Based Sanitary Napkins
(IJIRA, BJEL & Intech Safety Pvt. Ltd.)

Project Serial No. 14.

Project Title : NABL Accreditation of IJIRA Laboratories

Project Group : Mr. Debi Prasad Gon, Mr. S. G. Saha, Ms. S. Chowdhury

Sponsored by : National Jute Board (NJB)

Work done :

IJIRA Physical and Chemical Testing Laboratories have been accredited by the NABL with effect from 16.06.2016 and valid up to 15.06.2018. 17 parameters in Mechanical Testing and 6 parameters in chemical testing areas have been accredited by the NABL.

a) Accreditation Certificate No. for IJIRA Chemical Testing Laboratory: T - 3992

b) Accreditation Certificate No. for IJIRA Physical Testing Laboratory: T - 3993.

SECTION IV

Activities under Centre of Excellence (CoE) for Jute Geotextiles (JGT) in the NER (2016-17)

1. Centre of Excellence (CoE) Activities

A. Techno Economic Viability studies for Application of Jute Geotextiles (JGT)

a) Techno Economic Viability study for slope stabilization and soil erosion control alongside of Highways of Meghalaya

Techno Economic Viability (TEV) studies of 07 projects were carried out on various dates in the month of April 2016.

Sites where TEV being prepared for slope stabilization using Jute Geotextiles are as given below :

i) NH Shillong Bypass Division: Two numbers of sites

TEV study in Jongksha/Kharang/ Dienglieng Nongjrong Road

TEV study in 12th mile of ST road NH-40 to Mawan

ii) Nongstoin Division: Two numbers of sites

TEV study in Mawshynrut-Hahim Road

TEV study in Rwiang – Langja – Langpih Road

iii) North Jowai Division: Two numbers of sites

TEV study in the internal Village road (Raliang)

TEV study in Passyih – Mynso – Mookynshnian Road

iv) NEC Division, Jowai: One numbers of site

TEV study in the Wapung Sohkymphor to Byrwai Road

b) Techno Economic Viability study for slope stabilization and soil erosion control alongside of Highways of Sikkim.

Techno Economic Viability (TEV) studies of 04 sites were carried out from 25th April to 30th April 2016 with the concerned BRO officials Project Swastik, Gangtok, Sikkim for Pilot Trial of Jute Geotextiles Application for Slope Stabilization.

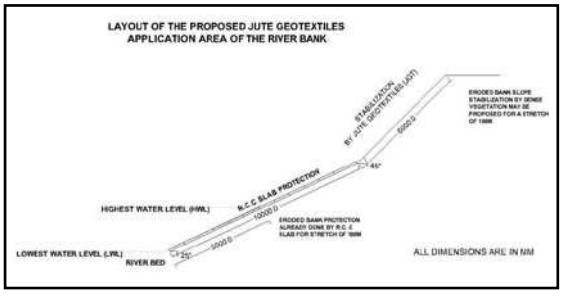
Sites where TEV were being prepared for slope stabilization using Jute Geotextiles are as given below :

Sl. No.	Name of Road	Loc (Km)
1.	Gangtok – Sherathang – Nathula (JNM) (NH-310)	09.30-09.50 
2.	Gangtok – Sherathang – Nathula (JNM) (NH-310)	12.70-12.90  
3.	Gangtok – Sherathang – Nathula (JNM) (NH-310)	18.80-19.30  
4.	Dimdim – Algarah - Rishi	62.30- 62.50  

c) Investigation cum TEV study of site for pilot trial of Jute Geotextiles application in Dimapur :

A team comprising of Textile Technologist and Civil Engineer of IJIRA along with CIHSR Hospital officials visited a site in 4th Mile besides CIHSR Hospital to explore the use of Jute Geotextiles (JGT) to protect river banks from further degradation from 06th May to 07th May 2016.

The specific objective of study was to determine remedial measures using Jute Geotextiles with appropriate technical specifications to curtail probability of river bank erosion.



d) Techno Economic Viability study for strengthening of Pavement under PMGSY Projects of Manipur State Rural Road Development Agency, Govt. of Manipur.

Techno Economic Viability (TEV) studies of 04 projects were carried out from 23rd to 24th May 2016 to explore the use of Jute Geotextiles for strengthening of Road Pavement under MSRRDA, Govt. of Manipur

Sites where TEV being prepared are as given below :

i) Thoubal District :

Thounaojam to Elangkhangpokpi Road

Hiyanglam to Hiranmei Road

ii) Imphal East District

Khongman Zone-I to NH-39 Road (Pt.1)

Khongman Zone-I to NH-39 Road (Pt.II)

e) Techno Economic Viability study for strengthening of Pavement under Executive Engineer, PWD, Nongstoin Division, Govt. of Meghalaya.

TEV study for strengthening of pavement using JGT in Riayando – Bamil Road, Sonaphar Sub-division

f) Investigation cum TEV study of site for exploring use of Jute Geotextiles application in Road at Siang District in Arunachal Pradesh under Project Brahmank, Border Road Organization

As desired by the Project Brahmank, Border Road Organization, site visit were carried out to investigate the site for exploring use of Jute Geotextiles with the concerned BRO officials.

The problematic stretch at Chainage 74.5 km on road Along (Pangin) – Yingkiong in Siang District were examined where the area is vulnerable to sinking and the lower stretches remained wet which may be because of stagnant water and Ground water level. For analysis of the site and preparation of the Techno Economic Viability Study (TEV), soil test and analysis report are awaited from the BRO.

Few snaps of the site on road Along (Pangin) –Yingkiong is at km 74.50 are attached.

g) TEV studies of 3 Projects under Environment and Forest Department, Government of Assam and 8 slope stabilization projects under Soil Conservation Department, Assam.

i. Techno Economic Viability (TEV) study of 2 Road and 1 slope stabilization Projects had been completed in October 2016 as per the detail given below :

State: Assam **PIU : Environment and Forest Dept, Govt. of Assam**			
Report Preparation	TEV study	Type of TEV Study	JGT Viability
Different dates in the month of October	"Improvement of Lokhora – Garbhanga Forest Road"	Road Construction	Road is Gravel Road for 5Km stretch and JGT may be viable for 3 Km stretch if GSB laid as per the specification of rural Road. DPR 1 approval awaited.
	"Improvement of Road From Boko to Upper Lumpi, Forest Road"	Road Construction	JGT may be proposed for 10Km stretch from 15.8 Km to 25.8 km provided the construction of Road as per the DPR. DPR 1 approval awaited.
	"Improvement of Road From Boko to Upper Lumpi, Forest Road"	Slope Erosion Control	JGT may be proposed for 7150 sq. m of slope area at different chainages of the Road

Earthen Road start at 15.8Km, proposed for JGT application for strengthening of pavement

A View of an Eroded Spot of Uphill Slope

ii. Techno Economic Viability (TEV) study of 8 slope stabilization Projects had been conducted during the month of September - October with officials of Soil Conservation department, Assam. Almost 88, 400 sq. m got affected due to erosion and landslide and needs to be treated for slope stabilization.

Few of the site snapshots taken during site analysis in Assam

h) TEV study of 2 slope sites proposed by Geology and Mineral Resources Department, Govt. of Mizoram

The first slope site which is located at Pehlawn Village is landslide and Eroded slope. The erosion cum landslide took place on 28.08.2016 and 05.09.2016.. The affected slope is of 4000 sq. m area approx

The Second slope site which is found approx. 3 km away from the first site located at Kepran Village is a completely Landslide area and of Global Shear failure of soil mass by Cracking was found. Accordingly detailed study of slope has been carried out visually in affected failure pattern of soil mass where 15-20cm thick crack of soil mass observed at uphill causing most vulnerable/ possibility to landslide due to extra pore water pressure from rainfall.

i) TEV for 07 Road projects had been carried out and DPR II preparation completed. The same has been recommended by the SLCC, Manipur held on 26.12.2016 to Ministry of Textiles.

Techno Economic Viability (TEV) Study along with DPR 2 with Jute Geotextiles Component of Seven (07) Road projects of Approx. 23.42 km under RED (MSRRDA) where four in Imphal East District, two in Imphal West District and rest one is from Thoubal District had been completed as per the below details :

DISTRICT	PROJECT	DPR 1 Amount (Rs in Lakhs)	DPR 2 Amount (Rs in Lakhs)	Incremental Amount (Rs in Lakhs)	REMARKS
IMPHAL EAST	Ekou Bazar to Sadu Yengkhumman" Imphal East District under PMGSY-Phase-X 5.00 Km PACKAGE NO. MN0441	219.51	252.264	32.754	JGT Component Incremental cost of 14.92%
IMPHAL EAST	"Saikul Road to Hangoipat" Imphal East District under PMGSY-Phase-X 2.50 Km PACKAGE NO. MN0442	142.86	159.29	16.43	JGT Component Incremental cost of 11.50%
IMPHAL EAST	"Yumnam Khunou to Sinamkom" Imphal East District under PMGSY-Phase-X, 2.07 Km PACKAGE NO. MN0443	116.33	129.898	13.568	JGT Component Incremental cost of 11.66%
IMPHAL EAST	"NH-39 to Urup" Imphal East District under PMGSY-Phase-X 4.10 Km PACKAGE NO. MN0451	186.89	213.814	26.924	JGT Component Incremental cost of 14.41%
IMPHAL WEST	"NH-39 to Chajing Karam" Imphal West District under PMGSY-Phase-X 4.40 Km PACKAGE NO. MN0537	179.44	208.272	28.832	JGT Component Incremental cost of 16.07%
IMPHAL WEST	"Waikhom Leikkai to Lilando Lampak" Imphal West District under PMGSY-Phase-X, 2.35 Km PACKAGE NO. MN0538	94.71	110.186	15.476	JGT Component Incremental cost of 16.34%
THOUBAL	Leishangthem to Ashem Leikei" In Thoubal District under PMGSY-Phase-X 3.00 Km PACKAGE NO. MN0850	156.26	175.976	19.716	JGT Component Incremental cost of 12.62%

Few of the site photographs taken during TEV studies of the road projects as per the above table

j) TEV for 07 slope stabilization projects had been carried out and DPR II preparation completed. The same has been recommended by the SLCC, Manipur held on 26.12.2016 to Ministry of Textiles.

Techno Economic Viability (TEV) Study along with DPR 2 with Jute Geotextiles Component of Seven (07) Slope stabilization projects of Approx. 2, 19, 500.00 sq. m area under RED (MSRRDA) where Five in Tamenglong District and two in Senapati District had been completed as per the below details :

DISTRICT	PROJECT	Area (sq. m)	DPR 1 Amount (Rs in Lakhs)	DPR 2 Amount (Rs in Lakhs)	Incremental Amount (Rs in Lakhs)	REMARKS
TAMENGLONG	IT Road (Genel) to Kuilong III Pt. I, 10 Km PACKAGE NO. MN0769	24, 800	420.14	436.26	16.12	JGT Component Incremental cost of 3.84%
	IT Road (Genel) to Kuilong III Pt. II, 10 Km PACKAGE NO. MN0778	37, 000	464.23	488.28	24.05	JGT Component Incremental cost of 5.18%
	Tamei to Atang Khunou Pt II, 10 Km, PACKAGE NO. MN7106	35, 000	499.22	521.97	22.75	JGT Component Incremental cost of 4.56%
	T03 to Lukhambi, 6.60 Km PACKAGE NO. MN7116	28, 700	346.98	365.68	18.70	JGT Component Incremental cost of 5.39%
	T02 to Barak Waterfall, 10.50 Km PACKAGE NO. MN7117	42, 000	411.18	438.48	27.30	JGT Component Incremental cost of 6.64%
SENAPATI	Rishophung to Kamlaching, 10 Km PACKAGE NO. MN6257	30, 000	409.45	428.95	19.50	JGT Component Incremental cost of 4.76%
	Harup Khopi to Rajathar, 4.0 Km PACKAGE NO. MN6267	22, 000	173.68	187.98	14.30	JGT Component Incremental cost of 8.23%

Few of the site photographs taken during TEV studies of the projects as per the above table

k) TEV for 22 Slope Stabilization projects under Forest Department, Manipur in 06 Districts

TEV for 22 Slope Stabilization projects under Forest Department, Manipur in 06 Districts has been carried out and DPR II preparation completed in the month of January and February 2017 where the DPR II are to be placed in next SLCC for recommendation to MoT.

Few of the site photographs taken during TEV studies of the Slope stabilization projects

B. Preparation of Detailed Project Report (DPR II)

a) DPR II preparation for slope stabilization and soil erosion control alongside of Highways of Meghalaya.

List of Project sites where DPR-II were being prepared for slope stabilization using Jute Geotextiles are as given below :

S. No.	Division	Project Name for which slope stabilization using Jute Geotextiles is proposed	Amount of Jute Geotextiles component (Rs.)
1	NH Shillong Bypass Division	Upgradation of Jongksha – Kharang – Dienglieng – Nongjrong – Road (L = 10.00 km)	23,20,500.00
2	NH Shillong Bypass Division	Improvement including strengthening of the weak pavement for 12th mile of ST road NH-40 to Mawan (L= 3.764 km)	1,84,800.00
3	Nongstoin Division	Revised estimate for Upgradation of Mawshynrut – Hahim Road (37.365 km) under Upgradation of State Highways and Major District Roads	59,32,500.00
4	Nongstoin Division	Improvement including Mettaling and Black Topping of Rwiang – Langja – Langpih – Road (32 km) under Special Plan Assistance	3, 99,000.00
5	North Jowai Division	Construction including Metalling and black topping of internal village road at Raliang - 3.00 kms (Under Special Plan Assistance – 2013-14	12,01,200.00
6	NEC Division, Jowai	Construction and Improvement including MBT of Wapung Sohkymphor to Byrwai Road, Total length – 15.00 km	2,03,700.00
		TOTAL	**1,02,41,70.00**

b) DPR-II preparation for the four Road projects for strengthening of Pavement under PMGSY of Manipur State Rural Road Development Agency, Govt. of Manipur.

List of Project sites where DPR-II were being prepared for strengthening of Pavement under PMGSY of Manipur State Rural Road Development Agency, Govt. of Manipur using Jute Geotextiles are as given below :

Project Name	DPR-1 Original Cost (Rs.)	Incremental Cost due to use of Jute Geotextiles (Rs.)
Proposed Construction of Road from Hiyanglam to Hiranmei, Package No. MN0832 in Thoubal District under PMGSY/Phase-X - 4.800 km	2,43,14,000	26, 78, 000.00
Proposed Construction of Roads from Thounaojam to Elangkhangpokpi, Package No. MN0833 in Thoubal District under PMGSY/ Phase-X – 5.200 km	2,82,73,000	29,09,750.00
Proposed Construction of Roads from Khongman Zone-I to NH-39, Package No. MN0480 in Imphal East District under PMGSY/ Phase-X – 6.600 km	3,43,33,000	36, 82, 250.00
Proposed Construction of Roads from Khongman Zone-I to NH-39, Package No. MN0481 in Imphal East District under PMGSY/ Phase-X – 6.000 km	3,06,21,000	33, 47, 500.00

c) DPR II has been prepared for the following of total nine (09) projects for Slope stabilization under Environment and Forest department and soil conservation department, Assam.

SL	Department	TEV study	Type of Work	Approx. Area (Sq. m)	JGT COST COMPONENT
1	Environment and Forest Dept. Assam	"Improvement of Road From Boko to Upper Lumpi, Forest Road"	Slope Erosion Control	28,000 sq. m	Rs. 18, 60, 000.00
2	Soil Conservation Dept, Govt. of Assam	Sarania Hill	Slope Erosion Control	8, 100 sq. m	Rs. 5, 67, 000.00
3	Soil Conservation Dept, Govt. of Assam	Hengrabari	Slope Erosion Control	18, 500 sq. m	Rs. 12, 95, 000.00

4	Soil Conservation Dept, Govt. of Assam	Noon Mati	Slope Erosion Control	13, 000 sq. m	Rs. 9, 10, 000.00
5	Soil Conservation Dept, Govt. of Assam	Nabagraha	Slope Erosion Control	5, 500 sq. m	Rs. 3, 85, 000.00
6	Soil Conservation Dept, Govt. of Assam	Gitanagar	Slope Erosion Control	15, 000 sq. m	Rs. 10, 50, 000.00
7	Soil Conservation Dept, Govt. of Assam	Kharguli	Slope Erosion Control	11, 100 sq. m	Rs. 7, 77, 000.00
8	Soil Conservation Dept, Govt. of Assam	Jyotinagar	Slope Erosion Control	6, 000 sq. m	Rs. 4, 20, 000.00
9	Soil Conservation Dept, Govt. of Assam	Kahilipara	Slope Erosion Control	11, 200 sq. m	Rs. 7, 84, 000.00
			Total	**1, 16, 400 sq. m**	**Rs. 80, 48,000.00**

d) DPR 2 has been prepared for one slope sites proposed by Geology and Mineral Resources Department, Govt. of Mizoram

SL no	**Department**	**TEV study**	**Type of Work**	**Approx. Area (Sq. m)**	**JGT COST COMPONENT**
1	Geology and Mineral Resources dept., Mizoram	"Landslide area of Pehlawn Village"	Slope Erosion Control	4,000 sq. m	Rs. 2, 94, 000.00

e) DPR 2 has been prepared for seven (07) Road construction projects under Rural Engineering Department, MSRRDA, Manipur

DISTRICT	PROJECT	DPR 1 Amount (Rs in Lakhs)	DPR 2 Amount (Rs in Lakhs)	Incremental Amount (Rs in Lakhs)	REMARKS
IMPHAL EAST	Ekou Bazar to Sadu Yengkhumman" Imphal East District under PMGSY-Phase-X 5.00 Km PACKAGE NO. MN0441	219.51	252.264	32.754	JGT Component Incremental cost of 14.92%
IMPHAL EAST	"Saikul Road to Hangoipat" Imphal East District under PMGSY-Phase-X 2.50 Km PACKAGE NO. MN0442	142.86	159.29	16.43	JGT Component Incremental cost of 11.50%
IMPHAL EAST	"Yumnam Khunou to Sinamkom" Imphal East District under PMGSY-Phase-X, 2.07 Km PACKAGE NO. MN0443	116.33	129.898	13.568	JGT Component Incremental cost of 11.66%
IMPHAL EAST	"NH-39 to Urup" Imphal East District under PMGSY-Phase-X 4.10 Km PACKAGE NO. MN0451	186.89	213.814	26.924	JGT Component Incremental cost of 14.41%
IMPHAL WEST	"NH-39 to Chajing Karam" Imphal West District under PMGSY-Phase-X 4.40 Km PACKAGE NO. MN0537	179.44	208.272	28.832	JGT Component Incremental cost of 16.07%
IMPHAL WEST	"Waikhom Leikkai to Lilando Lampak" Imphal West District under PMGSY-Phase-X, 2.35 Km PACKAGE NO. MN0538	94.71	110.186	15.476	JGT Component Incremental cost of 16.34%
THOUBAL	Leishangthem to Ashem Leikei" In Thoubal District under PMGSY-Phase-X 3.00 Km PACKAGE NO. MN0850	156.26	175.976	19.716	JGT Component Incremental cost of 12.62%

f) ***DPR 2 has been prepared for seven (07) slope stabilization projects under Rural Engineering Department, MSRRDA, Manipur.***

DISTRICT	PROJECT	Area (sq. m)	DPR 1 Amount (Rs in Lakhs)	DPR 2 Amount (Rs in Lakhs)	Incremental Amount (Rs in Lakhs)	REMARKS
TAMENGLONG	IT Road (Genel) to Kuilong III Pt. I, 10 km, PACKAGE NO. MN0769	24, 800	420.14	436.26	16.12	JGT Component Incremental cost of 3.84%
	IT Road (Genel) to Kuilong III Pt. II, 10 km, PACKAGE NO. MN0778	37, 000	464.23	488.28	24.05	JGT Component Incremental cost of 5.18%
	Tamei to Atang Khunou Pt II, 10 km, PACKAGE NO. MN7106	35, 000	499.22	521.97	22.75	JGT Component Incremental cost of 4.56%
	T03 to Lukhambi, 6.60 km PACKAGE NO. MN7116	28, 700	346.98	365.68	18.70	JGT Component Incremental cost of 5.39%
	T02 to Barak Waterfall, 10.50 km PACKAGE NO. MN7117	42, 000	411.18	438.48	27.30	JGT Component Incremental cost of 6.64%
SENAPATI	Rishophung to Kamlaching, 10 km PACKAGE NO. MN6257	30, 000	409.45	428.95	19.50	JGT Component Incremental cost of 4.76%
	Harup Khopi to Rajathar, 4.0 km PACKAGE NO. MN6267	22, 000	173.68	187.98	14.30	JGT Component Incremental cost of 8.23%

g) DPR 2 has been prepared for Fifteen (15) slope stabilization sites in Six District under Forest Department, Govt. of Manipur

SL	Department	District	Type of Work	Approx. Area (Sq. m)	JGT COST COMPONENT
1	Forest Department, Govt. of Manipur	Churchandpur	Slope Erosion Control	30, 900.00	Rs. 20, 08, 500.00
2	Forest Department, Govt. of Manipur	Chandel	Slope Erosion Control	41, 200.00	Rs. 26, 78, 000.00
3	Forest Department, Govt. of Manipur	Senapati	Slope Erosion Control	30, 900.00	Rs. 20, 08, 500.00
4	Forest Department, Govt. of Manipur	Tamenglong	Slope Erosion Control	30, 900.00	Rs. 20, 08, 500.00
5	Forest Department, Govt. of Manipur	Ukhrul	Slope Erosion Control	30, 900.00	Rs. 20, 08, 500.00
6	Forest Department, Govt. of Manipur	Thoubal	Slope Erosion Control	20, 600.00	Rs. 13, 39, 000.00

C) Tendering of Projects

a) Tendering work for Project proposed to apply JGT on Hill slope at the construction site of 400 Mega Power project at Thoubal, Manipur.

As desired by the Manipur State Power Company Ltd. , assistance has been provided in initiating the Tendering process on the approval of the Project proposed to apply JGT on hill slope at the construction site of 400 Mega Power project at Thoubal Khunao, Manipur. IJIRA being a CoE on Jute Geotextiles fully assisted the Tender document preparation for limited tender and notification to the suppliers as per the Bill of Quantities of DPR 2 prepared by IJIRA-NERC.

b) Tendering work for the Slope stabilization Projects of PWD, Meghalaya approved by Ministry of Textiles.

IJIRA being a CoE on Jute Geotextiles fully assisted the Tender document preparation and to float the Tender for supply of Jute Geotextiles material as per Scheme Guidelines for the six slope projects for limited tender as per the Bill of Quantities and DPR 2 prepared by CoE - IJIRA.

c) Tendering work for the four Road Construction project of RED, MSRRDA approved by Ministry of Textiles.

IJIRA being a CoE on Jute Geotextiles fully assisted the Tender document preparation and to float the Tender for supply of Jute Geotextiles material as per Scheme Guidelines for the four projects for limited tender as per the Bill of Quantities and DPR 2 prepared by CoE - IJIRA.

D) Execution of Jute Geotextiles (JGT)

a) JGT application in Kangla Moat Lining, Imphal, Manipur

Applied Area- 753 sq. m. by 627 gsm woven JGT
Work carried out by IJIRA in collaboration with PWD, Manipur

Before

During

Finished

b) Execution of Jute Geotextiles application work status at outer rampart of Kangla Fort, Imphal for beau vegetation using 500 gsm Open Weave Jute Geotextiles

Work carried out by IJIRA in collaboration with PWD, Manipur

Applied area – 2892 sq. m for 555m stretch

Slope angle - 27°

Soil Type – Silty Clay, **Plant used -** Rooted grass slip
Status – Completed on 24.11.2016

Dressed slope before application

JGT laying on progress

Rooted grass slip planting

Complete vegetated slope over JGT

E) Soil Testing of various soil samples.

a) Soil analysis and Testing of the samples collected from the two vulnerable sites alongside of Highways of Meghalaya

b) Soil analysis and Testing of the samples collected from the sites alongside of Highways of Sikkim.

c) Soil analysis and Testing of the samples collected from the river bank site of Chathe River, Dimapur.

d) Soil analysis and Testing of the samples collected from the Riangdo Bamil Road site of PWD, Nongstoin Division, Govt. of Meghalaya.

Soil test parameters such as Natural Water content, Soil Classification, Specific Gravity, Grain Size Analysis, Atterbergs Limits has been determined at IJIRA-NERC to identify soil properties and for suitability for application of Jute Geotextiles.

e) Testing of three different soil samples taken from the sites of SLCC approved projects from Assam tested at Soil testing laboratory of IJIRA-NERC.

SAMPLE	Parameters
Sample No. 1: Lokhora - Gharbanga Road, Kamrup (East).	*Natural Water Content, Grain Size analysisLiquid Limit, Plastic Limit, Optimum Moisture Content, Void Ratio & Soaked CBR had been found out.*
Sample No. 2: Boko-Upper Lumpi Road, Kamrup (West).	*Natural Water Content, Liquid Limit, Plastic Limit, Optimum Moisture Content, Void Ratio & Soaked CBR had been found out.*
Sample No. 3: Boko – Upper Lumpi Road, at 15Km slope sample	*Natural Water Content, Liquid Limit, Grain Size analysis had been Carried out.*

F) Work status for Ministry of Textiles (MoT) approved projects.

Details of Approved projects by Ministry of Textiles (MoT), GOI

State	Approved Project	Area/ stretch	JGT cost component	Work Status
Meghalaya	6 Nos of slope stabilization project under PWD, Meghalaya	1,35,450 sq.m	Rs.98,63,700/-	a) Work order (WO) issued for all the projects. b) Two sites Material delivered as informed verbally. c) Installation work expected to start in mid April, 2017
Manipur	Thoubal slope stabilization project under Manipur State Power Company Limited	18,000 sq. m	Rs.12,36,500/-	a) Work order issued b) Material delivery awaited
	4 Nos of Road construction Projects with JGT under RED/MSRRDA	Length = 22.6 km	Rs.1,22,50,000/-	a) Work orders issued b) Agreement yet to be sign and Material delivery awaited

G) Work status for SLCC recommended projects.

i. Details of Approved projects by SLCC & Ministry of Textiles approval awaited

State	Approved Project	Area/ stretch	JGT cost component	Work Status
Manipur	7 Nos of Road construction Projects with JGT under RED/ MSRRDA	23.42 km	Rs.1,53,70,000/-	a) Recommended to AMC/ EC for administrative and Financial Approval. b) AMC/EC approval awaited
	7 Nos of slope stabilization projects under RED/MSRRDA	Area = 2,19,500 sq. m	Rs.1,42,72,000/-	a) Recommended to AMC/ EC for administrative and Financial Approval. b) AMC/EC approval awaited

Assam	8 nos of slope stabilization project under Soil Conservation Department, Assam	88,400 sq. m	Rs.61,88,000/-	a) Placed in the SLCC for approval of DPR II and recommendation to AMC for administrative & financial approval b) SLCC Minutes awaited
	1 Nos of slope stabilization project under Forest Department	28,000 sq. m	Rs. 18,60,000/-	Dropped by SLCC, Assam till next SLCC

ii. Details of Approved projects by SLCC for TEV studies and DPR 2 preparation

State	Project	Area/ stretch	JGT cost component	Work Status
Manipur	15 Nos of slope stabilization site under Forest Department, Manipur	1,90,550 sq. m	Rs.1,22,42,632/-	a) TEV studies and DPR 2 preparation of all the projects completed b) To be placed in next SLCC for recommendation to MoT
Manipur	Roads/ Slopes under Rural Engineering Department/ MSRRDA – 17 nos. Projects	--	Appx. 3,40,00,000/-	TEV yet to be done
Mizoram	1 nos of slope stabilization under Geology and Mineral Resources Department	Area = 4,200 sq.m	Rs.2,94,000/-	a) TEV studies and DPR 2 preparation of all the projects completed b) To be placed in next SLCC for recommendation to MoT
Assam	Roads under PWD – 05 nos. Project	Length = 15.00 km	Appx. 98,58,000/-	a) Cleared by Project Authority, SLCC minutes awaited b) TEV studies to be done once Minutes are confirmed

iii. Details of Projects were found not viable as per TEV studies

State	Project	Work Status
Meghalaya	1 Nos of Road construction Project with JGT under PWD, Meghalaya	Dropped as found not viable to use Jute Geotextiles as per TEV studies **TOTAL = 17 NOS OF PROJECT**
	1 Nos of Slope Stabilization Project with JGT under PWD, Meghalaya	
Assam	2 Nos of Road construction Projects with JGT under Forest Department, Assam	
Mizoram	1 Nos of Slope Stabilization Project under Geology and Mineral Resources Department	
Manipur	7 Nos of Slope Stabilization Project under Forest Department, Manipur	
Nagaland	1 Nos of River Bank Erosion Control Project of Chathe River Dimapur	
Sikkim	4 Nos of Slope Stabilization Projects under BRO Gangtok, Sikkim.	

H) Promotional Activities on JGT

i. Back to back Workshop cum Exhibition on "Application of JGT" at Guwahati and Itanagar

Back to back One Day Technical Workshop cum Exhibition on "Applications of Jute Geotextiles" was held on 14th September, 2016 at Radisson Blu Hotel, Guwahati and on 16th September, 2016 at Hotel Donyi Polo Ashok, Itanagar, Arunachal Pradesh. The seminar was organized by Indian Jute Industries' Research Association in association with Ministry of Textiles, Govt. of India and National Jute Board. The workshop which was organized with special focus to create awareness of Jute Geotextiles application in Civil Engineering projects in the state of Assam and Arunachal Pradesh was attended by Engineers and Officials from various organizations like Public Works Department, Forest and Environment Dept., Soil Conservation Dept., Water Resource Dept., Rural Works Dept., Border Road Organization, PHED amongst others.

Shri Parimal Shuklabaidya , Honorable Minister of Assam, PWD, Fisheries & Excise , Smti. T.Y.Das, IAS, Additional Chief Secretary, PWD & Irrigation Department , Govt. of Assam and Dr. Subrata Gupta, IAS, Jute Commissioner, Ministry of Textiles, Govt. of India, Dr. U. S. Sarma, Director of IJIRA inaugurating the seminar at Guwahati on 14th Sept. 2016

Shri Parimal Shuklabaidya , Honorable Minister of Assam, PWD, Fisheries & Excise addressing the gathering during seminar on 14th Sept. 2016 at Guwahati

Shri T.H. Tayung, Secretary, Rural Works Dept., Govt. of Arunachal Pradesh, Dr. Subrata Gupta, IAS, Jute Commissioner, Ministry of Textiles, Govt. of India, Shri Kago Tabiyo, Chief Engineer, Rural Works Dept., Govt. of Arunachal Pradesh, Dr. U.S. Sarma, Director, IJIRA inaugurating the One Day Technical Workshop cum Exhibition on "Applications of Jute Geotextiles" on 16th September, 2016 at Hotel Donyi Polo Ashok, Itanagar, Arunachal Pradesh.

Dr. Subrata Gupta, IAS, Jute Commissioner, Ministry of Textiles, Govt. of India addressing the gathering during seminar on 16th September, 2016 at Itanagar, Arunachal Pradesh.

ii. *Exhibition Cum Awareness of Jute Geotextiles application in Sangai Festival, 2016 at Imphal, Manipur held on 21st to 30th November as a promotional activity under " Scheme for promoting usage of Geotechnical Textiles in NER"*

IJIRA had put an Exhibition Stall in the Manipur Sangai Festival 2016 at Hapta Kangjeibung, Palace Compound which was inaugurated by Governor Dr Najma Heptulla, Chief Minister Shri Okram Ibobi, 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 from 21st Nov. to 30th Nov. 2016.

Few of the photographs taken during exhibition cum awareness at Sangai Festival

iii. Release of Handy Book on Jute Geotextiles for Strengthening of Road Pavement and Hill Slope Stabilization

Hon'ble Minister of Textiles. Smti Smriti Zubin Irani releasing the Handy Book on Jute Geotextiles for Strengthening of Road Pavement and Hill Slope Stabilization 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 on 27th November 2016.

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".**

iv. IJIRA at Curtain raiser of Technotex 2017 and Stakeholders Consultation Meeting on Technical Textiles in New Delhi

IJIRA put up a stall during the program of Curtain raiser of Technotex 2017 on Technical Textiles at Federation House, FICCI, New Delhi on 17th January 2017 displaying various activities as CoE along with different Jute Geotextiles products, Displaying banner, Reading materials like Case studies, literature, Book published by IJIRA and Brochure/ leaflets etc. The program on curtain raiser of Technotex 2017 on Technical Textiles was presided over by Smt. Smriti Zubin Irani, Hon'ble Union Minister of Textiles, Government of India.

Visit of Hon'ble Union Minister of Textiles, Government of India at the IJIRA stall, curtain raiser of Technotex 2017, Delhi

I) Team Visit for Field testing

Visit of team led by Dr. U.S Sarma, Director IJIRA and Dr. G.V. Rao along with Scientist and Technologist to Manipur regarding Promotional activities of Jute Geotextiles and On site Testing at approved road projects.

A team comprising 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 held on the importance of using Jute Geotextiles especially in PMGSY road.

b) The team 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) The team had carried out field testing to determine various engineering properties of subsoil on the approved road project of Ministry of Textiles under "Scheme for Promoting Usage of Geotechnical Textiles in North East Region".

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 DPRII 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 for necessary action. 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.

SECTION V

Machine Development / Technology Transfer & Technical Services (2016-17)

Machine Development

To address the issues of age old technology used by the jute mills, the Indian jute industry needs strong technological change in the concept of fibre processing starting from batching to spinning, improvement in productivity to meet the growing market demand, to produce better quality yarn for diversified applications and opening up of new avenues for the jute sector and also to lessen the too dependency on workers through automation to address the scarcity of the jute mill workers.

Accordingly a committee, comprising of the members from IJIRA, Govt. of India and jute mills have conceptualized the following process techniques for technological upgradation of the jute industry –

- Keep the fibres as long as possible and avoid generation of short fibres in the process of splitting the fibres, so that the fibre length distribution gets improve which will finally provide a stronger yarn suitable for high-end and industrial applications
- Use of autoleveller, wherever possible, so that the evenness of the sliver can be improved which will subsequently reduce thread breakage in spinning, winding, beaming and weaving. Substantial gain in the efficiency of the machinery is therefore expected.
- Improvement in the machine speed through proper engineering design, metallurgy and driving system
- Increase in the delivery package size to minimize the efficiency loss due to frequent doffing
- Continuous process instead of batch processes, wherever possible, to reduce material handling in between process and savings in manpower cost
- Automation, wherever possible, to manufacture quality products in addition to savings in wages

Subsequently the committee suggested IJIRA to formulate suitable machinery development projects. IJIRA thereafter formulated the following eight machinery development projects in order to achieve the ultimate objective of productivity and quality improvement.

1. Development of New Generation Carding and Drawing Machines for improved Jute Yarn Quality
2. Development of Flat Card for Jute Processing
3. Development of Chain Gill Drawing with Autoleveller as Second Drawing for Jute Processing
4. Development of Ring Spinning Frame for Jute Yarn

5. Development of Automatic Winding Machine for Jute
6. Development of High Speed Shuttleless Loom for Jute Weaving
7. Design and Development of Continuous Damping, Calendering and Cutting Machine for Jute Fabric
8. Design and Development of Automatic Jute Bag Stitching Machine

Subsequently these projects have been submitted to the Ministry of Textiles, Govt. of India which is currently under their consideration.

Transfer of technologies to the Jute mills

Technology Transfer No. 1.

Title : **Process improvement for producing better quality yarn**

Group : Mr. Anup Nandi, Mr. Suvankar Bej, Mr. Biswarup Nandi, Mr. Arindam Das, Mr. Joyjit Mukherjee, Mr. Dharmendra Singh

Work done

Achieving better quality yarn is one of the major focus areas of industry for holistic improvement and smooth functioning of jute processing. But it needs multi prong interventions in each and individual process steps starting from selection of raw jute quality, regular feeding at each and every stage of processing, proper moisture control and retention, machine maintenance, regular monitoring of sliver quality etc.

In the present year, this study was conducted in Hukumchand Jute Mills. During study, IJIRA team provided support to find out the reasons for generation of irregularities and variation in yarn quality through diagnostic study. Accordingly recommendations were made to rectify the process and machine parameters.

Technology Transfer No. 2.

Title : **Rice Bran Oil (RBO) technology for the manufacturing of Food Grade Jute Products (FGJP)**

Group : Dr. S.K.Chakrabarti, Mr. S.G.Saha, Mr. S.De, Mr. Gopal Mukhopadhyay, Mr. Suvankar Bej, Mr. Biswarup Nandi, Mr. Dharmendra Singh

Work done

RBO technology has been developed by IJIRA to manufacture undesired hydrocarbon-free Food Grade Jute Products safe for food contact application. It fully complies with the specification

IJO 98/01 set for Food Grade Jute Products (un-saponifiable matter content < 1250 mg/kg). Twenty jute mills have already adopted this technology from IJIRA for the manufacturing of FGJP. Technical support on RBO technology is available at IJIRA.

Technology Transfer No. 3.

Title : **Bio-chemical softening of hard root-cuttings of jute**

Group : Dr. S.K.Chakrabarti, Mr. S.G.Saha, Mr. Anup Nandi, Mr. Debi Prasad Gon, Mr. Gopal Mukhopadhyay, Mr. Suvankar Bej, Mr. Biswarup Nandi, Mr. Dharmendra Singh, Mr. S. De.

Work done

A low-cost biochemical formulation has been developed by IJIRA to adequately soften hard root-cuttings of jute for its gainful utilization in sacking warp batch. This process technology ensures substantial reduction in batch cost without affecting the yarn quality as well as productivity. Extensive shop floor trials in number of mills have been conducted on such biochemical root softening process which has been found promising. Details of the new bio-chemical root softening process are available at IJIRA.

Technology Transfer No. 4.

Title : **Study on modern looms and to suggest ways to achieve standard productivity**

Group : Mr. Koushik Das, Mr. Debi Prasad Gon, Mr. Buddhadeb das, Mr. Wasim Ali

Work done

Recently, in the process of modernization, introduction of high speed shuttleless looms (Rapier/ S4A/ Projectile) have taken place in jute weaving because of its high productivity and superior quality in terms of firmness and appearance, as compared to the traditional jute fabrics. Due to the advantage of high pick insertion rate and weaving of wider width cloth, the productivity of these shuttleless looms are quite high in comparison to the conventional shuttle loom. However, to rip the benefit of high productivity, the yarns should be of optimum quality, because poor yarn quality will ultimately lead to frequent machine stop, reduced weaving efficiency and downgrade fabric quality.

Considering the fact, Hukumachand Jute Mills approached IJIRA to carry out the diagnostic study on modern looms and to suggest ways to achieve standard productivity. Accordingly JIRA undertook the study and provided recommendation to the mill to optimise process as well as yarn quality for achieving best possible productivity.

Technical Services

Technical Service No. 1

Title : **Productivity Norms for 50 kg capacity B.Twill jute bag (580g/ bag)**

Team : Mr. Partha Sanyal, Mr. Palash Paul, Mr. Gopal Mukhopadhyay, Mr. Suvankar Bej, Mr. Biswarup Nandi, Mr. Arindam Das, Mr. Joyjit Mukherjee, Mr. Wasim Ali, Mr. Dharmendra Singh, Mr. Buddhadeb Das

The study for the formulation of 'Productivity Norms' for B. Twill jute bags (665g/bag) as stipulated under IS 12650: 2003 (2nd revision, 3rd amendment) was carried out by IJIRA in the year 2014. But from December 2015, these B. Twill jute bags had been phased out and replaced by light weight B. Twill jute bags of 580g/bag as stipulated under IS 16186: 2014.

From December 2015 onwards, 580g B. Twill Jute bags are being produced and Food Corporation of India and different State Agencies have started procuring these 580g B. Twill jute bags. Under these circumstances, it is being felt necessary to formulate new 'Productivity Norms' for these bags considering the real time data.

Considering this fact, the Jute Commissioner directed the National Jute Board to take an initiative for the formulation of new Productivity Norms for B. Twill bags as stipulated in IS 16186: 2014. To proceed further in this matter, a 'Technical Committee' was formed by the National Jute Board covering representatives from all the stakeholders of jute industry. The 'Technical Committee' finally nominated 22 composite jute mills comprising of 21 mills from West Bengal and one mill from Andhra Pradesh for conducting the detailed study and Indian Jute Industries' Research Association (IJIRA) was entrusted to carry out the study.

Work done

Accordingly, IJIRA prepared necessary proforma for the data collection for Type 'A' and Type 'B' - B. Twill bags in consultation with the Technical committee. The same was circulated to the mills to collect process-wise and machine-wise data for the first quarter of 2016.

After receiving the data for man, machine, process and power consumption parameters from 18 mills for Type 'A' bag and 22 mills for Type 'B' Bag respectively, IJIRA representatives verified all major and contributing parameters provided by the mills through physical verification.

Mill-wise data for each process parameters was then compiled to make a comparative statement amongst the mills. From the comparative statement, the average of top quartile values for each parameter was worked out to obtain the 'Norms' for each parameter. Before finalizing the 'Norms' for each parameter, the same was technically justified for feasibility of practical adoption and application.

The methodology adopted, format for data collection, the compilation of data received from Jute mills and the findings of the study have been discussed in details in the 2nd meeting of Technical Committee on Productivity Norms chaired by Jute Commissioner held on 23rd September 2016 and the Productivity Norms have been unanimously approved in the said meeting by the members of the Technical Committee. The said report is under printing.

Technical Service No. 2.

Title : **Testing services of Physical Testing Division**

Team : Ms. Soumita Chowdhury (In-Charge), Mr. Utpal Banerjee, Mr. K.N. Singh and Mr. Dipankar Das

Physical testing division is providing testing services to the Jute industry as well as other government and non-government organizations. Fibre, yarn and fabrics (including Geotextiles) are tested at the laboratory regularly. This division has served 12 Jute Mills, IJMA, 13 Govt. organizations and 25 non-jute organizations.

Total no. of commercial tests done for member and non member organisations –

Various tests related to fibre, yarn , fabric, Geotextiles and jute bags have been carried out. Details are given below :

- Total no. of samples of Jute Bags tested - **1500**
- Total no. of general samples tested (including Geotextiles) - **1037**
- Total no. of IJIRA Moisture Meter calibrated - **10**
- Total no. of IJIRA Fibre and Yarn Strength Machine calibrated - **4**
- Total no. of sample tested for Directorate of Disaster Management, Govt. of West Bengal - **4418**

Total no. of tests done for different internal project and pre-projects –

- Total number of tests done for project and pre-project works are - **663**

Services provided to the Jute mills are given below :

1. Vijayshree Pvt. Ltd.
2. Empire Jute Company Ltd.
3. Jutex Industries Private Ltd.
4. Premchand Jute Mill
5. Murlidhar Ratanlal Exports Ltd.

6. Ambika Jute Mills Ltd.
7. Gloster Ltd.
8. Ludlow Jute & Specialties Ltd.
9. New Central Jute Mills Co. Ltd.
10. Reliance Jute Mills (International)Ltd.
11. Hukumchand Jute Mills
12. Aditya Translink Pvt. Ltd.

Services provided to different organisations related to jute are given below :

1. National Jute Board
2. Jute Corporation of India
3. Semuda Corporation
4. CTRONIX

Services provided to the non-Jute organisations are given below :

1. Hada Enterprise
2. Aparna Singh
3. Rohan Engineering Enterprises
4. Rujhaan Creations Pvt. Ltd.
5. Satvinder Kaur
6. Bijan Chandra Singha
7. MMP Filtration Pvt. Ltd.
8. Birendra Enterprise
9. M D Enterprises
10. Duratex Manufacturing Company
11. Kharkia Exim Pvt. Ltd.
12. Pidlite Industries Ltd.
13. Novozymes South Asia Pvt. Ltd.
14. Khan Enterprise
15. Himadri Das
16. National Collateral Management Services Ltd.

17. Induson Overseas
18. S B Construction & Co.
19. Gangadin Shaw & Associates
20. Krishna Kumar Tiwari
21. Prasant Sarma

Services given to different Govt. organisations are given below :

1. Bureau of Indian Standard
2. Institute of Jute Technology
3. Directorate of Disaster Management, Govt. of West Bengal
4. N.F.Railway
5. Office of the Jute Commissioner
6. West Bengal State Consumers Co-operative Federation Ltd.
7. National Co-operative Consumers Federation of India Ltd.
8. The West Bengal state Handloom Weavers Co-operative Society Ltd. (Tantuja)
9. Refugee Handicrafts
10. Govt. of west Bengal, Office of the Refugee Rehabilitation Commissioner, RR & R Directorate
11. West Bengal Handloom and Power Loom Corporation Ltd.
12. The National Small Industries Corporation Ltd.
13. The West Bengal Handicrafts Development Corporation (Manjusha)

Technical Service No. 3.

Title : **Testing services of Chemical and FGJP Testing Division**

Team : Mr.S.G.Saha(In-Charge),Mr.D.Ghosh,Mr.A.C.Deka,Mr.K.S.Kansabanik, Mr. S.De, Mr.P.K.Das, Mr.D.Samanta, Mr.R.K.Paral, Mr. A. R.Dewan & Dr. S.K.Chakrabarti

- Services on quality assurance of Food Grade Jute Products (FGJP) have been provided to sixteen Jute Mills who has renewed their Process Capability license from IJIRA to manufacture FGJP for the year 2016-17.
- In the same year, total 85 lots (No. of FGJP samples 171) have been inspected, tested as per IJO 98/01 and certified by IJIRA for export. In addition, interim process audit

of the manufacturing process of FGJP at the licensed mills has also been carried out by IJIRA.

- Transfer of Rice Bran Oil (RBO) technology for the manufacturing of FGJP has been carried out in East India commercial co. (Unit: Krishna hessian) ,Eluru, Andhra Pradesh.
- No. of chemical tests carried out = 170

Technical Service No. 4.

Title : **Incentive Scheme for Acquisition of Plant and Machinery (ISAPM)**

Team : Mr. Partha Sanyal, Mr. G. Mukhopadhyay, Mr. A. Das, Mr. J. Mukherjee, Mr. B. Nandi and Mr. S. Bej

IJIRA is providing Technical support to the National Jute Board for smooth functioning of ISAPM Scheme for the benefits of Jute Industry and Jute Diversified Products Manufacturing Units. Under this scheme, IJIRA has been involved in making Technical Appraisal Reports (TAR) for various claims made under the said scheme by the Jute mills and has participated in joint inspection. Apart from that, IJIRA is also involved in Vendor registration of indigenous and overseas vendors.

Work done

Technical Appraisal Reports have been submitted for Modernization/ Up-gradation of Jute Mill under Scheme of ISAPM - 32 nos.

Year	Finance From	No. of Cases
2016-17	Own Source	24
	Bank Finance	8
	Grand Total	32

- Forty three numbers of Joint Inspection have been carried out for ma chinery installed and claimed under ISAPM.
- Registration of two indigenous vendors and five overseas vendors have been done under ISAPM Scheme

Technical Service No. 5.

Title : **Quality assurance for relief materials of Disaster Management Department of Govt. of West Bengal**

Group : Ms. S. Chowdhury, Mr. S.G. Saha, Dr. S. Ghosh, Mr. U. Bandyopadhyay, Mr. K. N. Singh, Mr. D. Samanta, Mr. Dipankar Das

A quality inspection program has been under taken on behalf of the Directorate of Disaster Management, Govt. of West Bengal to inspect the quality parameters of different relief materials procured by the Govt. The total quantity of garments and clothing procured by Directorate of Disaster Management for the financial year 2016-2017 have been tested by IJIRA successfully. All Physical, Visual and Chemical testing have been done by dedicated team of IJIRA. With the satisfactory performance by IJIRA for this assignment, the West Bengal government has decided to continue this inspection program through IJIRA for 2017 -18.

Technical Service No. 6

Title : Training to the F.C.I. Officials

As desired by the Food Corporation of India, New Delhi and the Office of the Jute Commissioner, IJIRA has provided Technical Training to the officials of Food Corporation of India on procedure for carrying out inspection of B. Twill jute bags (IS 16186: 2014, as amended) on 26.04.2017. Twenty two officials from across the country have attended the training program. A mill visit for the officials has also been conducted at Hukumchand Jute Mills.

Training to FCI Officials at IJIRA

Mill Visit by FCI Officials

SECTION VI

26th Technological Conference of IJIRA

26th Technological Conference of IJIRA

The 26th Techological Conference of IJIRA on "New Developments and Future Strategy for Jute Industry" has been held on 1st March, 2017 at IJIRA Auditorium Hall. After a long gap of 14 years, IJIRA has resumed organizing its technological conference with support from the Govt. of India and the entire jute sector. The sub-themese of the technological conference have been –

- Current challenges of Jute Industry
- Potential applications of jute fibres in technical textiles
- Jute fibre upgradation and its optimum utilization
- Process control and quality assurance in Jute mills
- Moisture management in Jute processing
- Waste management in Jute industry
- Development of high productive machinery for Jute sector
- Jute fibre based nonwoven for various end uses

Joint Secretary (Jute) & Jute Commissioner, MoT, GoI, cutting the rope for inauguration of exhibition hall

Shri A. Madhukumar Reddy, Joint Secretary (Jute) & Jute Commissioner, Ministry of Textiles, Govt. of India has graced the occasion as Chief Guest and Shri Arvind Kumar M, Secretary, National Jute Board has been the Guest-of-Honour. Dr. K.V.R. Murthy, CMD, The Jute Corporation of India, Shri Arun Kumar Lohia, Chairman, IJIRA, Shri Raghavendra Gupta, Chairman, Indian Jute Mills Association and many other dignitaries have graced the occasion.

Joint Secretary (Jute) & Jute Commissioner, MoT, GoI, with other dignitaries at Inaugural function at 26th Techological Conference of IJIRA

Joint Secretary (Jute) & Jute Commissioner, MoT, GoI, delivering inaugural address

There have been two technical session in the conference followed by a panel discussion. A total of eleven technical papers have been presented by IJIRA Scientists and Technologists as well as Industry representatives during the technical sessions. Aproximately three hundreds of technocrats/industry representatives have actively perticipated in the day long conference. Apart from the technical papers, one machinery manufacture and two fibre lubricant producers also delivered lecture before the house.

Audience of 26th Techological Conference of IJIRA

Apart from the technological conference, IJIRA has also fecilited machinery manufacturers and spare parts manufacturers to exhibit their products for the jute industry. A total of fourteen stalls have been placed by various manufacturers during this occasion.

Visitors at Exhibition Stall

SECTION VII

Organizational Highlights (2016-17)

Organizational Highlights

1. Meetings

Annual General Meeting

50th Annual General Meeting was held at IJIRA on 24th March 2017.

Council Meetings

The Council of Management of IJIRA held following four meetings during the year 2015-16

(a) 195th Council Meeting was held on 20th June 2016
(b) 196th Council Meeting was held on 5th July 2016
(c) 197th Council Meeting was held on 25th November 2016
(d) 198th Council Meeting was held on 24th March 2017

Finance and Executive Committee Meetings

Meeting of the Finance and Executive Committee of IJIRA

(a) 106th FEC meeting was held on 10th August 2016
(b) 107th FEC meeting was held on 3rd October 2016
(c) 108th FEC meeting was held on 24th March 2017

2. Staff

(a) Director - Dr. Uma Sankar Sarma
(b) Deputy Directors - Dr. Md. Safikur Rahman
Dr. S. K. Chakrabarti
(c) Staff Strength

(i) **Under IJIRA Pay Roll**

Scientific Staff	-	15	
Technical Staff	-	35	
Administrative	-	09	**Total : 59**

(ii) **Contractual Staff**

Scientific	-	-	
Technical	-	04	
Administrative	-	03	**Total : 07**
(including Legal & Medical Officer)			

(iii) **Outsourced Staff**

Scientific	-	-	
Technical	-	03	
Administrative	-	06	**Total : 09**

3. Retirement: 03

Shri Sankar Kumar Som	Accounts Assistant	30.04.2016
Shri Utpal Kumar Bandyopadhyay	Technical Officer	30.06.2016
Shri Debarata Ghosh	Technician	31.03.2017

4. Resignation: 02

Shri Surojit Sanyal	Librarian	12.07.2016
Shri Sampurna Chatterjee	Technical Officer	30.11.2016

6. Staff Welfare :

Like previous years, the staff members continued to enjoy the benefit of the monthly Medical Allowances including free physician's services.

7. Library

a. Acquisition Status as on 31st March, 2017

Type	Addition during the year 2016-2017	Total Holding
Books	2	5394
Bound Journals Volumes	-----	7953

b. Online Databases Subscribed

Name of the Database	Details
EBSCO – "Textile Technology Complete"	This database contains more than 470 periodical titles and over 905000 records drawn from sources such as books, conferences, theses, technical reports and trade literature. It includes nearly 75 full-text journals and over 50 books and monographs.
EBSCO – "World Textiles"	This database covers more than four decades of information relating to developments and innovations in the textile industry. It consists of records from 1970 onwards from different scientific, trade, technical, and economic publications related to textiles. It is also a source of American, British and European patents and International Standards information. It delivers a uniquely comprehensive source of information for anyone involved in textiles.

c. Print Journals / Periodicals Subscribed / Received during the year 2014-15

Foreign Journals / Periodicals (Subscribed)	5
Foreign Journals / Periodicals (Gratis)	4
Indian Journals / Periodicals (Subscribed)	11
Indian Journals / Periodicals (Gratis)	10

External users from other organizations as well as individual research workers consulted IJIRA-Library for their information needs.

SECTION VIII

Annexures

ANNEXURE - I

IJIRA COUNCIL OF MANAGEMENT AND ITS COMMITTEES 2016-17

LIST OF COUNCIL MEMBERS 2016-17

Sl. No.	Name and Address	Sl. No.	Name and Address
Members Representing Industry			
01.	**Shri Raghavendra Gupta** Chairman, I.J.M.A. Royal Exchange 6, Netaji Subhas Road Kolkata 700001	06.	**Shri A.K. Kankaria** Promoter Bally Jute Co. Ltd. 5, Middleton Street (Ground Floor), Kolkata-700071
02.	**Shri Arun Kumar Lohia** Chairman, IJIRA & Managing Director Alliance Mills (Lessees) Ltd. 18, Netaji Subhas Road Kolkata-700001	07.	**Shri Raghav Kajaria** Director Murlidhar Ratanlal Exports Ltd. Unit: Gondalpara Jute Mill 15B, Hemanta Basu Sarani Kolkata-700001
03.	**Shri Sushant Kumar Agarwal** Director Kamarhatty Co. Ltd. 16A, Biplabi Troilakya Maharaj Sarani Kolkata-700001	08.	**Shri Ramesh Chandra Saboo** Consultant (Technical) N.J.M.C Ltd. 4, N.S. Road Kolkata-700 001 (resigned)
04.	**Shri D.C. Baheti** Managing Director Gloster Ltd., 21, Strand Road Kolkata – 700 001	09.	**Shri Anirudh Kajaria** Director Murlidhar Ratanlal Exports Ltd. (Unit : Hastings Jute Mill) 15B, Hemanta Basu Sarani, Kolkata-700001
05.	**Shri Varun Maskara** Senior Executive The Mahabir Jute Mills Ltd. 142A, Betiahata Near Hanuman Mandir Gorakhpur-273209, (U.P)	10.	**Shri Sanjay Hada** Managing Director Reliance Jute Mills(International) Ltd VNSS Business Centre Ideal Plaza, South Block 11/1, Sarat Bose Road (4th Floor) Kolkata-700020

11.	**Shri Samir Kumar Chandra** Director Hooghly Infrastructure Pvt Ltd Unit: Hukumchand Jute Mill P.O. Hazinagar, Dist. 24 Paraganas(N), West Bengal , Pin-743135	13	**Shri Ajay Kumar Todi** Managing Director M/S Ludlow Jute & Specialities Ltd KCI Plaza, 4th Floor, 23C, Ashutosh Chowdhury Avenue Kolkata- 700019
12.	**Shri Ghisaram Verma** Senior Joint President Birla Corporation Ltd Unit: Birla Jute Mills Birla Building 9/1, R.N. Mukherjee Road Kolkata-700 001	14.	**Special Invitee** **Shri Jagdish Sarda** Advisor The Empire Jute Co. Ltd 21A, Shakespeare Sarani, 2nd Floor Kolkata-700017
Permanent Members			
14.	**Shri A Madhukumar Reddy** Joint Secretary (Jute) and Jute Commissioner Govt. of India, Ministry of Textiles Udyog Bhavan New Delhi-110011	15.	**Nominees of Ministry of Textiles** **Shri S.R. Gaikwad** Director (Jute) Govt. of India, Ministry of Textiles, Room No 231A, Udyog Bhavan, New Delhi-110011
16.	**Shri Arvind Kumar M.** Secretary National Jute Board 3A&B, Park Plaza 71, Park Street Kolkata-700 016	17.	**Nominee of Ministry of Science and Technology** Dr. A Mukhopadhyay Advisor & Head (INSPIRE & FIST Programme) Gov of India, Ministry of Science and Technology Dept. of Science and Technology Technology Bhavan, New Mehrauli Road, New Delhi-110016
18.	**Nominee of Planning Commission** (Presently Vacant)	19.	**Nominee of CSIR** **Prof. Samit Chattopadhyay** Director CSIR-Indian Institute of Chemical Biology 4, Raja S. C. Mullick Road, Kolkata-700 032

20.	**Shri Dipankar Mahto** Deputy Jute Commissioner Govt. of India, Ministry of Textiles, Office of the Jute Commissioner 3rd MSO Building, E & F Wing, CGO Complex, Sector – 1, DF Block, Salt Lake City, Kolkata-700 064	21.	**Dr. Pradip Das** Principal Scientist and In-Charge AINP on Jute and Allied Fibres Regional Agricultural Research Station, Assam Agriculture University Sillongani, Nagaon- 782 002 Assam (representative of Vice Chancellor Assam Agricultural University, Jorhat)
22.	**Prof. Siddhartha Roy** Director Bose Institute Centenary Building P-1/12, CIT Scheme VII-M Kolkata-700054	23.	**Prof. Subhasish Basu Majumdar** Professor, Polymer Division Material Science Centre I.I.T, Kharagpur, P.O.- Kharagpur, Pin -721 302
24.	**Ex-Officio Member** **Dr U.S. Sarma** Director IJIRA 17, Taratala Road, Kolkata-700088		

Members of Research Advisory Committee (RAC)

1. Mr. A. Madhukumar Reddy, Joint Secretary(Jute) & Jute Commissioner- Chairman
2. Mr. Arvind Kumar M., Secretary, National Jute Board
3. Mr. Dipankar Mahto, Deputy Jute Commissioner
4. Mr. Raghavendra Gupta, Chairman, IJMA
5. Mr. A.K. Lohia, Chairman, IJIRA, Managing Director, Alliance Mills (Lessess) Ltd.
6. Mr. S.K. Agarwal, Vice-Chairman, IJIRA, Director, Kamarhatty Co. Ltd
7. D.C. Baheti, Managing Director, Gloster Ltd.
8. Mr. A.K. Todi, Managing Director, Ludlow Jute& Specialities Ltd.
9. Mr. S.K. Chandra, Chief Executive (Works), Hukmchand Jute Mills
10. Mr. Anirudh Kajaria, Director, MERL, Unit: Hastings Jute Mills
11. Mr. R.K. Roy, Consultant (Technical), Office of the Jute Commissioner
12. Mr. Ghisaram Verma, Senior Joint President, Birla Jute Mills
13. Dr. U.S. Sarma, Director, IJIRA – Convener

Finance and Executive Committee (FEC)

To subsume the HR Sub-Committee, additional members had been recommended to the FEC during the 197th Meeting of the Council of Management, held on 25th November, 2016. The 50th AGM, held on 24th March, 2017 approved the amendment. Therefore the following list comprises total of 16 members.

1. Director of the Association, Ex-Officio Chairman
2. Deputy Director of the Association
3. Chairman, IJMA
4. Chairman, IJIRA
5. Jute Commissioner or his nominee
6. Secretary, NJB or his nominee
7. Chief Finance Officer, National Jute Board (Nominated member from IJIRA Council)
8. Vice-Chairman, IJMA (Nominated member from IJIRA Council)
9. Chief Administrative Officer, IJIRA
10. Vice-Chairman, IJIRA
11. Admin Officer, Office of the Jute Commissioner
12. Mr. S.K. Chandra, Chief Executive (Works), Hukmchand Jute Mills
13. Mr. A.K. Todi, Managing Director, Ludlow Jute& Specialities Ltd.
14. Mr. Ghisaram Verma, Senior Joint President, Birla Jute Mills
15. Mr. Harsha Nahata, Director, Kamakshi Jute Industries Ltd.
16. Mr. Jagdish Sarda, Advisor, The Empire Jute Co. Ltd

ANNEXURE – II

Representation of IJIRA in Outside Committees (BIS)

Sl. No.	Sectional Committee	Representative of IJIRA
01.	TXDC Main Committee	Dr U.S. Sarma, Director IJIRA Dr S K Chakrabarti (Alternate)
02.	Composition of Physical Methods of Test Sectional Committee (TXD 01)	Ms. Soumita Chowdhury Mr. D P Gon (Alternate)
03.	Composition of Jute and Jute Products Sectional Committee (TXD 03)	Mr. Palash Paul Mr. Partha Sanyal (Alternate)
04.	Composition of Textile Sizing, Finishing Materials and Dyestuffs Sectional Committee (TXD 07)	Dr. S. K. Chakrabarti Dr. Sandip Basu (Alternate)
05.	Composition of Cordage Sectional Committee (TXD 09)	Mr. Palash Paul Mr.Koushik Das (Alternate)
06.	Composition of Geotextiles and Industrial Fabrics Sectional Committee (TXD 30)	Mr. P. K. Choudhury Mr. Koushik Das (Alternate)
07.	Industrial Fabric Sectional Committee (TXD 33)	Mr. D. K. Biswas Mr. Koushik Das (Alternate)
08.	Technical Textile for Agro-tech Sectional Committee (TX-35)	Mr. P. K. Choudhury Mr. D. K. Biswas (Alternate)

ANNEXURE – III

IJIRA Events (Seminars, Conferences, Meetings, Workshops and Visits)

Organization/Participation in Conference

1. National Jute Board in association with IJIRA has organized a National workshop on the Dissemination of the activities "Development and Application of Potentially Important Jute Geotextiles CFC/IJSG/21". Twelve research papers, including three papers from IJIRA have been presented in the workshop by eminent speakers.
2. Shri Gopal Mukhopadhyay had given training to the Officials of Odisha State Civil Supplies Corporation Limited, Bhubaneswar on 11th and 12th April 2016 regarding the quick assessment of B. Twill Jute Bags
3. Dr. U. S. Sarma, Director, IJIRA participated a 2nd Global Geosynthetics Summit held at New Delhi on 19th – 20th May 2016.
4. Mr. Partha Sanyal and Shri Gopal Mukhopadhyay attended an interactive meeting with registered Vendors under ISAPM on 26th May 2016 at National Jute Board, Kolkata.
5. Director, IJIRA along with Dr. S K Chakrabarti, Deputy Director, Shri Koushik Das and Ms Rumki Saha participated in "International Seminar on CFC/IJSG/21 project" at New Delhi on 22nd – 23rd June, 2016
6. A paper titled "Textile coloration with natural resources of Northeast India" by Ritwik Chakraborty, Th. Basanta Singh, A. K. Haloi & S. K. Chakrabarti had been selected for publication as well as for oral presentation for two-days national workshop on natural dyeing of 'Textiles: In Batik and Shibori Style' organized by TElQIP Cell, University of Calcutta and Department of Jute and Fibre Technology, University of Calcutta on16th & 17th September 20I6. In this connection, a presentation was delivered by Shri Ritwik Chakraborty depicting the R&D work carried out on Parkia speciosa &.Clerodendrum bracteatum found in NER of India
7. 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.
8. One Day Technical Workshop cum Exhibition on "Applications of Jute Geotextiles" was held on 14th September, 2016 at Radisson Blu Hotel, Guwahati and on 16th September, 2016 at Hotel Donyi Polo Ashok, Itanagar, Arunachal Pradesh. The seminar was organized by Indian Jute Industries' Research Association in association with Ministry of Textiles, Govt. of India and National Jute Board.

9. Mr. 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.

10. 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"

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

12. IJIRA-NERC&PSC in association with Regional office of the Textile Commissioner, Kolkata have conducted three seminar programs on "Schemes / Initiatives of Ministry of Textiles, Govt. of India for the development of decentralized Powerloom Sector in the North East Region".
    a) Guwahati, Assam on 12th January 2017
    b) Shillong, Meghalaya on 13th February 2017
    c) Aizawl, Mizoram on 29th March 2017

13. Dr. U. S. Sarma, Director, IJIRA along with Shri Koushik Das, Scientist, IJIRA, attended a conference on Natural Fibre Based Geotextiles in Chennai followed by an interactive entrepreneurs meet.

14. Dr. U. S. Sarma, Director, IJIRA along with Sh. Arvind Kumar, Secretary , National Jute Board, Shri Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati and Shri Arup Kumar Haloi, Technical Officer, IJIRA – NERC, Guwahati have attended the North East Textile Summit, Shillong held from 29th to 30th January 2017 at State Convention Centre, Pinwood Hotel Shillong.

    The Union Textiles Minister Smt. Smriti Zubin Irani inaugurated the 1st North East Investors' Summit, organized jointly by the Ministry of Textiles and the Ministry of DoNER, at the State Convention Centre, in Shillong on 29th January 2017.

15. The 26th Techological Conference of IJIRA on "New Developments and Future Strategy for Jute Industry" has been held on 1st March, 2017 at IJIRA Auditorium Hall. Shri A. Madhukumar Reddy, Joint Secretary (Jute) & Jute Commissioner, Ministry of Textiles, Govt. of India has graced the occasion as Chief Guest and Shri Arvind Kumar M, Secretary, National Jute Board has been the Guest-of-Honour. Dr. K.V.R. Murthy, CMD, The Jute Corporation of India, Shri Arun Kumar Lohia, Chairman, IJIRA, Shri Raghavendra Gupta, Chairman, Indian Jute Mills Association and many other dignitaries have graced the occasion.

Meetings and Summits

a) **2nd SLCC Meeting of Meghalaya :** Dr. U.S. Sarma, Director, IJIRA along with Shri Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati and Shri Rafi Ahmed, T.O. (Civil Engineer), IJIRA-NERC, Guwahati had attended the 2nd State Level Coordination Committee (SLCC), Meghalaya on 07th June 2016 to deliberate and recommend the six projects where IJIRA had carried out Techno Economic Viability (TEV) study and subsequently DPR2 has been prepared. This was followed by meeting with the Concerned Division Engineers and Senior Officials on 10th June 2016.

b) **5th AMC Meeting :** Dr. U.S. Sarma, Director, IJIRA attended the fifth meeting of the Apex Monitoring Committee (AMC) under the Scheme for Promoting Usage of Geotechnical Textiles in North East Region which was held under the Chairpersonship of Smt. Anu Garg, Joint Secretary, Ministry of Textiles on 27.06.2016 at 4.00 P.M at Room No 162, Udyog Bhawan, Ministry of Textiles, New Delhi 110 107 to deliberate and approval for project proposals on Jute-Geo Textiles submitted by IJIRA.

c) **1st SLCC Meeting at Kohima, Nagaland :** Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati had attended the 1st State Level Coordination Committee (SLCC), Nagaland held on 12th August 2016.

d) **5th SLCC Meeting at Imphal, Manipur :** Dr. U.S. Sarma, Director, IJIRA along with Mr.Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati) had attended the meeting of 5th State Level Coordination Committee (SLCC), Manipur on 17th August 2016 to deliberate for ratification of four Road projects and to put up the new proposals for Jute Geotextiles application identified by Manipur State Rural Road Development Agency and Forest Department, Government of Manipur for recommendation by SLCC to carry out Techno Economic Viability (TEV) study and subsequently DPR2 preparation. This was followed by meeting and interaction cum discussion with the Concerned Engineers and Senior Officials during the period of Imphal Visit.

e) **Officials Meet for project identification from state Government Department, Assam :** To create awareness to the State Government Department officials about Jute Geotextiles application and its importance in Civil Engineering projects a team from IJIRA-NERC visited to the departments like PWD (Roads), Environment and Forest Department etc. for identification of few projects from the state Assam which could be placed in the next SLCC, Guwahati which was scheduled to be held on 6th September, 2016 for recommendation of TEV/DPR 2 preparation by using Jute Geotextiles

f) **2nd SLCC Meting at Guwahati, Assam :** Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati along with Mr. A.K. Haloi and Mr. Rafi Ahmed of NERC-IJIRA, Guwahati attended the 2nd meeting of the SLCC, Assam held under the Chairpersonship of Smt. T.Y. Das, IAS, Additional Chief Secretary to the Government

of Assam, PWD (R), PWD (NH & B), on 6th September'2016 at 12.00 Noon in the conference room of the Commissioner & Special Secretary, Govt. of Assam, PWRD, Block B, Assam Secretariat, Dispur.

g) 6th SLCC Meeting at Imphal, Manipur : Dr. U. S. Sarma, Director, IJIRA along with Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati and Mr. Rafi Ahmed of IJIRA – NERC attended the 6th SLCC Meeting, Manipur held on 26.12.2016 at 1:00 PM in the Office of the Chief Secretary, Govt. of Manipur.

In the meeting the committee recommended 14 projects to be placed before the Apex Monitoring Committee/ Empowered Committee of Ministry of Textiles for availing necessary Administrative approval and financial sanction submitted by IJIRA (CoE-JGT) out of which 07 (seven) projects is for Strengthening of road pavement in three Districts namely, Imphal East, Imphal West and Thoubal and 07 (Seven) for slope stabilization alongside of Road in Hill District of Tamenglong and Senapati, Manipur.

h) Appraisal and Monitoring Committee (PAMC) Meeting, Mumbai : Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati attended the 3rd Project Appraisal and Monitoring Committee (PAMC) of R & D Scheme for the period 2014-15 to 2018-19 on 04.07.2016 at Office of Textile Commissioner, Mumbai.

i) Meeting at the Office of the Textile Commissioner, Mumbai : Mr. 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.

j) One day seminar cum workshop for disseminating awareness of use of Jute Geotextiles : Mr. 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 region 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.

k) Officers meet at Conference Hall of PWD, Assam : Mr. Th. Basanta Singh and Mr. 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 region 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.

l) Technical presentation and meeting with Engineers at Conference Hall of PWD, Assam : Mr. 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 region 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.

m) North East Textile Summit, Shillong held from 29th to 30th January 2017 : Dr. U. S. Sarma, Director, IJIRA along with Sh. Arvind Kumar, Secretary, National Jute Board, Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati and Mr. Arup Kumar Haloi, Technical Officer, IJIRA – NERC, Guwahati attended the North East Textile Summit, Shillong held from 29th to 30th January 2017 at State Convention Centre, Pinewood Hotel, Shillong.

n) 3rd SLCC Meting at Guwahati, Assam : Mr. Th. Basanta Singh and Mr. Rafi Ahmed of NERC-IJIRA attended 3rd State Level Coordination Committee Meeting (SLCC), Assam under the Scheme for Promoting Usage of Geotechnical Textiles in NER, held on 28.03.2017.

o) Curtain raiser of Technotex 2017 : Mr. Th. Basanta Singh, Officer in Charge, NERC-IJIRA, Guwahati attended Curtain raiser of Technotex 2017 on Technical Textiles at Federation House, FICCI, New Delhi on 17th January 2017.

p) Stakeholders Consultation Meeting : Mr. Th. Basanta Singh, Guwahati attended Stakeholders Consultation Meeting on 18.01.2017 at 3.00 pm at Constitution Club of India New Delhi under the Chairpersonship of Hon'ble Minister of Textiles.

q) 26th Technological Conference : Mr. Th. Basanta Singh, Officer in Charge, NERC-IJIRA, Guwahati attended 26th Technological Conference of IJIRA on New Developments and Future Strategy for Jute Industry on 1st March 2017 at Head Office and also gave presentation on Activities of IJIRA as CoE for Jute Geotextiles.

r) Officials Meet regarding awareness of JGT at Tripura : Mr. Arup Kumar Haloi of NERC-Guwahati visited Agartala on JGT application work in South Tripura in between Birchandra Manur Mukh Road to Nishi Kanta Mura Singh Para by NBCC under NRRDA on 23rd Feb to 24th Feb 2017. Also met Principal Secretary, PWD, Govt. of Tripura and Chief Engineer, PWD relating to organizing Seminar program.


Dr. Subrata Gupta, IAS, Jute Commissioner, Ministry of Textiles, Govt. of India interacting with NERC officials and local artisan at NERC, Guwahati on 13th September 2016

Indian Jute Industries' Research Association (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.

Minister's Visit

Visit of Mr. Ajay Tamta, Hon'ble Minister of State, Ministry of Textiles, Govt. of India at NERC - IJIRA.

Hon'ble Minister of State for Textiles along with senior delegates visited North Eastern Regional Centre of Indian Jute Industries' Research Association situated at EPIP Campus, Amingaon, Guwahati on 17th January 2017 where interaction were held with Artisans on JDP and Ready Made Garment. Hon'ble Minister was briefed about the completed R & D project of Natural dying of Textiles and Clothing sector with dyes from the plants of North Eastern Region for the benefit of the dyers, weavers etc and also drew attention by displaying the various samples of natural dyed. He was also broadly explained about Jute Geotextile application and its technology with the help of various types of Jute Geotextiles (JGT) samples and case studies and Booklets. Detail activities of IJIRA with a special focus on CoE for Jute Geotextiles carried out in North Eastern Region were also highlighted during the visit.


Random shots during Shri Ajay Tamta, Hon'ble Minister of State visit

Meetings Attended

1. Dr. U. S. Sarma, Director, IJIRA attended National Jute Board's 12th Board Meeting on 11th April, 2016 at Ministry of Textiles, New Delhi
2. Mr. Gopal Mukhopadhyay had given training to the Officials of Odisha State Civil Supplies Corporation Limited, Bhubaneswar on 11th and 12th April 2016 regarding the quick assessment of B. Twill Jute Bags
3. Director, IJIRA along with IJIRA team attended 1st Review meeting on the progress of approved R & D Projects of IJIRA on 18th April 2016 at IJIRA, Kolkata. Monitoring committee has taken the meeting.
4. Director, IJIRA along with Mr. Partha Sanyal and Mr.Gopal Mukhopadhyay attended 1st Technical Committee Meeting on Productivity Norms of 580g B.Twill Jute bags for jute industry on 3rd May 2016 at Conference Hall, National Jute Board.
5. Dr. U. S. Sarma, Director, IJIRA attended a review meeting on activities under R & D Scheme on 24th May, 2016 at Ministry of Textiles, New Delhi
6. Dr. U. S. Sarma, Director, IJIRA attended a two meetings on the activities under "Scheme for Promoting uses of Geotechnical Textiles in NER" and "Scheme for Promoting uses of Agro Textiles in NER" on 24th May, 2016 at Ministry of Textiles, New Delhi
7. Dr. U. S. Sarma, Director, IJIRA attended a 4th meeting of the "Apex Monitoring committee under the Scheme for Promoting uses of Geotechnical Textiles in NER" on 25th May 2016 at Ministry of Textiles, New Delhi
8. Mr. Partha Sanyal and Shri Gopal Mukhopadhyay attended an interactive meeting with registered Vendors under ISAPM on 26th May 2016 at National Jute Board, Kolkata
9. Dr. U. S. Sarma, Director, IJIRA attended a meeting on 27th May 2016, taken by Hon'ble M.A. Khan Yusufi, Information Commissioner, at the office of the Central information Commission.
10. Director, IJIRA along with IJIRA team attended 2nd Review meeting on the progress of approved R & D Projects of IJIRA on 13th June 2016 at Indian Jute Mills Association (IJMA), Kolkata. Monitoring committee has taken the meeting.
11. Dr. U. S. Sarma, Director, IJIRA along with Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati attended a 5th meeting of the "Apex Monitoring committee under the Scheme for Promoting uses of Geotechnical Textiles in NER" on 27th June 2016 at Ministry of Textiles, New Delhi

12. Dr. U. S. Sarma, Director, IJIRA attended a 4th meeting on "Empowered Committee under the Scheme for Promoting uses of Geotechnical Textiles in NER" on 24th June 2016 at Ministry of Textiles, New Delhi

13. Mr. Partha Sanyal and Mr. Gopal Mukhopadhyay attended the 7th Technical Committee Meeting of ISAPM held on 4th July 2016 at National Jute Board Kolkata

14. Dr. U. S. Sarma, Director, IJIRA along with Mr. Palash Paul, Scientist, IJIRA attended Stakeholders meeting on online procurement of B. Twill Sacking Bag on 8th September 2016 at Krishi Bhavan, New Delhi

15. Dr. U. S. Sarma, Director, IJIRA attended a 10th meeting of "Empowered Committee" constituted under Technology Mission on Technical textiles (TMTT) on 9th Semtember 2016 at Ministry of Textiles, New Delhi

16. Mr. Partha Sanyal attended the meeting on " Upgradation of estimated provisional pricing formula for B.Twill Jute Bagsfor both type A and type B bags of 580g" at Ministry of Textile, Udyog Bhawan, New Delhi on 9th September 2016 and 20th September 2016.
17. 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
18. 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
19. 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

State Level Coordination Committee (SLCC) and Empowered Committee (EC) Meeting

1. Mr. Th. Basanta Singh along with Mr. A.K. Haloi and Mr. Rafi Ahmed of IJIRA – NERC attended the 2nd State Level Coordination Committee (SLCC) Meeting of Assam under the Scheme for Promoting uses of Geotechnical Textiles in NER on 06th September 2016 at conference room of the Commissioner & Special Secretary, Govt. of Assam, PWRD, Block B, Assam Secretariat, Dispur.

2. Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati attended the following State Level Coordination Committee (SLCC) Meeting under the Scheme for Promoting uses of Geotechnical Textiles in NER
    a) 1st SLCC Meeting of Nagaland on 12th August 2016 at the Office Chamber of Commissioner & Secretary (Works & Housing), Kohima, Nagaland.
    b) 5th SLCC Meeting of Manipur on 17th August 2016 at the Office Chamber of Chief Secretary, Govt. Of Manipur.
    c) 3rd SLCC meeting of Mizoram on 24th August 2016 at the Office Chamber of Chief Secretary, Govt. of Mizoram.

3. Dr. U. S. Sarma, Director, IJIRA along with Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati and Mr. 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.

Project Approval & Monitoring Committee (PAMC) and Project Approval Committee Meetings (PAC), meetings

1. Mr. Th. Basanta Singh, Officer in Charge, IJIRA-NERC, Guwahati attended the 3rd Project Appraisal and Monitoring Committee (PAMC) of R & D Scheme for the period 2014-15 to 2018-19 on 04.07.2016 at Office of Textile Commissioner, Mumbai.

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

BIS Meetings

- Mr. Palash Paul and Mr. Partha Sanyal has attended the 31st Meeting of Jute & Jute Products Sectional Committee, TXD 03, on 4th July, 2016 at Kolkata

RAC Meeting

- The Research Advisory Committee (RAC) meeting for reviewing the development of R&D projects of IJIRA were held on 10th August, 2016 (3rd Meeting), 6th January, 2017 (4th Meeting at J.C. Office under the chairmanship of Mr. A.Madhukumar Reddy, Jute Commissioner & Joint Secretary (Jute) and Dr. Subrata Gupta, Joint Secretary (exports).

SECTION - IX

Financial Report
(2016-2017)

GHOSAL BARNWAL & Co.
Chartered Accountants

7A, Bentinck Street, (New Wing)
4th Floor, Room No. - 405
Kolkata - 700 001
Telefax : 91-33-22438226
E-mail : ghosalbarnwal@gmail.com

Auditors' Report to the Members of
The Indian Jute Industries' Research Association

1. We have audited the attached Balance Sheet of The Indian Jute Industries' Research Association as at 31st March 2017 and the related Income & Expenditure Account and Receipt & Payment with the Cash and Bank Books maintained by the Association for the year ended on the date both of which we have signed under reference to this report. These financial statements are responsibility of the management of the Association. Our responsibility is to express an opinion on these financial statements based on our audit.

2. We have conducted our audit in accordance with the auditing standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the management, as well as evaluating the overall financial statements presentation. We believe that our audit provides a reasonable basis for our opinion.

3. (a) We report that all income and expenses are accounted for on Mercantile basis except lease Rental, Membership Subscription, which are accounted for on cash basis.

(b) Your attention is drawn to the note nos. 2 & 3 in Schedule 15 Re: Provision for Liability on account of Leave encashment & Gratuity.

4. Further to our comments in paragraph 3 above, we report that:

I. We have obtained all information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit ;

II. In our opinion, proper books of accounts have been kept by the Association so far as appears from our examination of these books ;

III. The Balance Sheet and Income and Expenditure account dealt with by this report are in agreement with the books of account ;

IV. In our opinion and to best of our information and according to the explanations given to us subject to Para 3 (a) above, the Balance Sheet and Income Expenditure Account together with the notes thereon and attached thereto give information required in the prescribed manner and gives a true and fair view in conformity with the accounting principles generally accepted in India;

- in the case of the Balance Sheet of the State of Affairs of the Association as at 31st March, 2017 and
- in the cause of the Income and Expenditure Account of the excess of expenditure over income for the year ended on the date.

For Ghosal Barnwal & Co.
Chartered Accountants
(S Ghosal)
Partner
Membership No. 54151

18/08/2017

GHOSAL BARNWAL & CO. 7A, Bentinck Street Kolkata-700 001 Chartered Accountants

18/5B, Dover Lane, Kolkata - 700 029, Phone : 6540 3939, E-mail : ghosalbarnwal@gmail.com

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION
BALANCE SHEET AS AT 31ST MARCH, 2017

AMOUNT IN RUPEES

	SCHEDULE	AS AT 31ST MARCH,2017 AMOUNT	AS AT 31ST MARCH,2016 AMOUNT
CORPUS FUND AND LIABILITIES			
CORPUS FUND	1	22,261,030	22,161,030
RESERVES AND SURPLUS	2	83,792,220	65,982,875
EARMARKED/ENDOWMENT FUND	3	4,204,329	(1,201,767)
CURRENT LIABILITIES AND PROVISIONS	4	37,446,813	19,617,520
TOTAL		**147,704,392**	**106,559,658**
ASSETS			
FIXED ASSETS	5	10,455,064	6,092,418
ADVANCE TO PARTIES		3,286,102	946,130
INVESTMENTS-OTHERS	6	-	-
CURRENT ASSETS, LOANS AND ADVANCES	7	133,963,226	99,521,110
TOTAL		**147,704,392**	**106,559,658**

In terms of our report of even date

For Ghosal Barnwal & Co.
Chartered Accountants

(S Ghosal)
Partner
Membership No. 54151

Place : Kolkata
Dated : 18/08/2017

GHOSAL BARNWAL & CO. 7A, Bentinck Street Kolkata-700 001 Chartered Accountants

Director

Chairman
Council of Management

Indian Jute Industries' Research Association ijira Kolkata- 700 088 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2017

AMOUNT IN RUPEES

	SCHEDULE	YEAR ENDED 31ST MARCH,2017	YEAR ENDED 31ST MARCH,2017	YEAR ENDED 31ST MARCH,2016	YEAR ENDED 31ST MARCH,2016
INCOME					
INCOME FROM SALES/SERVICES	8		33,336,535		10,850,295
GRANT / SUBSIDIES	-		35,000,000		35,000,000
FEES / SUBSCRIPTION	9		5,171,240		5,165,500
INTEREST EARNED	10		5,715,586		6,986,533
OTHER INCOME	11		1,052,729		263,985
SPECIAL CONTRIBUTION FROM INDUSTRIES FOR R & D ACTIVITIES	-		8,450,000		700,000
CONTRIBUTION FOR TECHNOLOGICAL CONFERENCE	-		1,677,577		
PRIOR PERIOD INCOME			174,878		10,000
TOTAL (A)			**90,578,545**		**58,976,313**
EXPENDITURE					
ESTABLISHMENT EXPENSES & OTHER ADMINISTRATIVE EXPENSES	12		21,135,695		17,832,829
RESEARCH AND DEVELOPMENT EXPENSES	13		50,594,316		41,936,853
PRIOR PERIOD EXPENDITURE	-		6,000		155,848
DEPRECIATION	5	1,033,188		803,545	
Less: Transferred to Capital Reserve	-	129,439	903,749	107,161	696,384
TOTAL (B)			**72,639,760**		**60,621,914**
SURPLUS/(DEFICIT) TRANSFERRED TO GENERAL RESERVE **(A - B)**			**17,938,785**		**(1,645,602)**
SIGNIFICANT ACCOUNTING POLICIES	14				
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	15				

In terms of our report of even date

For Ghosal Barnwal & Co
Chartered Accountants

(S Ghosal)
Partner
Membership No. 54151

Place : Kolkata
Dated : 18/08/2017

GHOSAL BARNWAL & CO
7A, Bentinck Street
Kolkata-700 001
Chartered Accountants

Director

Chairman
Council of Management

Indian Jute Industries' Research Association
ijira
Kolkata- 700 088
17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

AMOUNT IN RUPEES

PARTICULARS		AS AT 31ST MARCH,2017	AS AT 31ST MARCH,2017	AS AT 31ST MARCH,2016	AS AT 31ST MARCH,2016
SCHEDULE - 1					
CORPUS FUND					
Balance as at the beginning of the year		22,161,030		22,011,030	
Add: Admission Fees transferred to Corpus fund		100,000	22,261,030	150,000	22,161,030
	TOTAL		22,261,030		22,161,030
SCHEDULE - 2					
RESERVES AND SURPLUS					
1. CAPITAL RESERVE					
As per last Account		763,267		870,428	
Less: Depreciation on Fixed Assets		129,439		107,161	
			633,828		763,267
2. GENERAL RESERVE					
As per last Account		65,219,608		66,865,210	
Transferred from Income and Expenditure account		17,938,785		(1,645,602)	
			83,158,393		65,219,608
	TOTAL		83,792,220		65,982,875
SCHEDULE - 4					
A. CURRENT LIABILITIES					
1. Sundry Creditors					
a) For Goods		545,724		582,179	
b) Others		2,787,255	3,332,979	650,379	1,232,558
2. Security Deposit			371158		171158
3. Advance Received-Subscription/Others			316,130		25,257
4. Other Current Liabilities					
(a) Unpaid and Undischarged Liabilities			3229334		3047450
(b) Outstanding Liabilities			3238648		1402819
(c) Tax Deducted at Source					
On Contractor		36,940		12,581	
On Salary		375,736		-	
On Professionals		115,544		25,720	
Sales Tax Deducted at source		25,119		-	
Professional Tax		12,170	565,509	11,110	49,411
(d) Provident Fund			388,915		289,701
(e) Group Insurance Maturity Settlement			11,802		-
B. PROVISIONS					
1. Leave Encashment		5,073,180		3,668,530	
2. Gratuity		8,258,285		6,587,084	
3. Expenses for Project and Others		12,660,873	25,992,338	3,143,552	13,399,166
	TOTAL		37,446,813		19,617,520

GHOSAL BARNWAL & CO. Chartered Accountants

Indian Jute Industries' Research Association ijira Kolkata- 700 088 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

SCHEDULE - 7

CURRENT ASSETS, LOANS AND ADVANCES				
A. CURRENT ASSETS				
1. Sundry Debtors				
a) Debts outstanding for a period not exceeding six months				
Considered Good	13,662,156		1,867,957	
Considered Doubtful	-		-	
	13,662,156		1,867,957	
Less: Provision for Doubtful Debt	-	13,662,156	-	1,867,957
b) Other Debts		-		-
		13,662,156		1,867,957
2. Inventories of Stores & Spares		477,154		517,878
3. Cash Balances in Hand (Including Cheques/Drafts and Imprest)		11,286		18,526
4. Bank Balances				
a) With Scheduled banks				
in Current Account/Savings Accounts	44,753,618		20,365,542	
in Fixed Deposit Account	57,886,950	102,640,568	64,689,925	85,055,467
b) With non-scheduled Banks		-		-
c) Cheque in Hand		101,260		-
TOTAL (A)		116,892,423		87,459,828
B. LOANS, ADVANCES AND OTHER ASSETS				
(Unsecured - Considered Good)				
1. Advances and other amount recoverable in cash or in kind or for value to be received				
(a) Advances to Staffs	86,537		52,968	
(b) Deposits with Others	4,720,981		3,766,907	
(c') Festival Advances	152,000		81,600	
(d) Pre Paid Expenses	604,260		662,973	
(e) Income Tax Deducted at source	3,605,943		3,187,231	
(f) Sundry Receivables	76,767		50,510	
(g) Earnest Money Deposit	100,000	9,346,489	-	7,802,189
2. Accrued interest on Fixed Deposit		7,724,314		4,259,093
TOTAL (B)		17,070,803		12,061,282
TOTAL (A) + (B)		133,963,226		99,521,110

GHOSAL BARNWAL & CO. 7A, Beliaghata Street, Kolkata-700 010, Chartered Accountants

Indian Jute Industries' Research Association, ijira, Kolkata- 700 088, 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

SCHEDULE - 8

INCOME FROM SALES/SERVICES

1) Income From Services-Others				
BIOCHEMICAL SOLUTION	6,500		-	
CERTIFICATION FEES PROCESS CAPABILITY	669,600		620,000	
CONSULTANCY CHARGES	260,000		125,708	
ELETRICITY FEES AT PSC	35,672		-	
FEES FOR NJB INCENTIVE SCHEME	732,779		1,396,287	
INSPECTION CHARGES	10,484,700		-	
MACHINERY USER FEES AT PSC	63,000		-	
PRIVATE SECURITY FEES_PSC	61,481		-	
PROCESS AUDIT OF FGJP	180,000		202,260	
PROFESSIONAL FEES FOR DISASTER MANAGEMENT	6,204,503		4,411,588	
PROFESSIONAL FEES FROM MMIS	-		102,866	
TECHNOLOGY TRANSFER FEES	3,411,250		-	
MISCCELLANEOUS RECEIPTS	-		7,521	
TESTING CHARGES	1,996,020	24,105,505	1,691,810	8,558,040
		24,105,505		8,558,040
2) Services towards Sponsored Projects				
Jute Geo Tex.	462,443		970,155	
DEVELOPMENT OF SMALLER CAPACITY JUTE	553,521		-	
SANITARY NAPKIN PROJECTS	387,579		-	
STUDIES ON THRESHOLD BREAKING STRENGT	330,878		-	
TECHNO COMMERCIAL STUDY ON RBO	440,000		680,000	
TRANSMIGRATION OF MINERAL OIL HYDRO	300,000		-	
BIOTECHNICAL_SOFTENING_HARD_ROOT_MOT_04	643,044		-	
DEV_HIGH_SPEED_ROLLER_DRAFTING_MOT-07	265,128		-	
DEV_STANDARD_FOR USE_JGT_RURAL ROAD_MOT_06	774,696		-	
FASTER_RETTING_JUTE_PLANT_MOT_03	634,090		-	
DESIGN_DEV_50KG_BAGS_ MOT_01	400,039		-	
REVISION_PROD_NORMS	217,752		-	
JUTE_THERMOPLASTIC_GREEN_PROD_MOT_05	801,307		-	
PROD_NORMS_580GM_ BTWILL_ BAGS	1,268,469		-	
UTLIZATION_JUTE_STCIKS_MOT_02	600,000		-	
DESIGN_DEV_CONTI_DAMPING_CALENDERING_MOT_12	287,499		-	
DEV_JUTE_TEX_PERFORMS_PULTRU_MOT_8	218,751		-	
DEV_PLA_LAMINATED_BIO-COMPO_MOT-9	266,667		-	
FEASIBI_OIL FREE_PRO_JUTE_FIBR_MOT_11	162,501		-	
JUTE_BASE_AIR_FILTER_MICROBIAL_MOT-10	216,666		-	
PSC	-		49,469	
DYEING SILK COTTON AND ART SILK	-		592,631	
	-	9,231,030	-	2,292,255
		9,231,030		2,292,255
	TOTAL	33,336,535		10,850,295

SCHEDULE - 9

FEES / SUBSCRIPTION

Annual Fees/Subscription		5,171,240	5,165,500
	TOTAL	5,171,240	5,165,500

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

SCHEDULE - 10

INTEREST EARNED				
1. On Fixed Deposit				
a) With Scheduled Banks on Short Term Deposit	89,411		1,025,172	
Special Reserve Account	4,917,530	5,006,941	5,374,296	6,399,468
		5,006,941		6,399,468
b) Others		-		-
		64,689		-
2. On Savings Account				-
With Scheduled Banks		643,956		523,383
				-
3. On Loans				-
a) Employees/Staffs		-		-
b) Others-Interest		-		63,682
TOTAL		5,715,586		6,986,533

SCHEDULE - 11

OTHER INCOME			
1. Liability no longer required-Written back	3,558		221,698
2. Miscellaneous Income	122,604		15,000
3. Recovery from Staffs	286,173		27,287
4. Rental Income	53,808		-
5. Sales of Scraps	586,586		-
TOTAL	1,052,729		263,985

SCHEDULE - 12

ESTABLISHMENT EXPENSES & OTHER ADMINISTRATIVE EXPENSES

Salary and Wages	33,463,655		33,568,783	
Contribution to Provident Fund	3,616,021		3,581,528	
EDLI Charges	77,663		62,631	
PF Administrative Charges	283,631		253,693	
EDLI Administrative Charges	2,781		2,400	
Contribution to Group Insurance	5,195		5,462	
Gratuity and other Terminal Benefit	2,426,206		570,125	
Leave Travel Allowances	1,630,054		636,786	
Leave Encashment	2,059,542		717,254	
Exgratia	35,000		38,500	
Staff Training and Welfare Expenses	115,107		65,807	
Fellowship, Honorarium and Retainer ship	2,133,888		546,791	
Salary For Outsourced Staffs	1,520,070		1,579,150	
	47,368,812		**41,628,909**	
Less: Pertaining to Research and Development Exp	**40,632,018**	**6,736,795**	**33,088,823**	**8,540,086**
Compensations for Debabrata Sarkar for earlier years				
(As per Court Order)				
Salary and Wages	4,096,758		-	
Contribution to Provident Fund	405,031	4,501,789	-	

GHOSAL BARNWAL & CO. Chartered Accountants 7A, Kiran Shankar Roy Street, Kolkata-700 001

Indian Jute Industries' Research Association ijira 17, Taratala Road Kolkata- 700 088

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

Rent, Rates and Taxes		449,601		526,536
Insurance		14,588		12,178
Data Processing Charges		469,239		326,155
Printing and Stationery		381,636		201,498
Postage, Telephone & Communication Charges	623,107		703,911	
Less: Pertaining to Research and Development Exp	311,554	311,554	351,956	351,956
Traveling Expenses				
Foreign	59,936		-	
Domestic				
Boarding and Lodging	186,460		233,632	
Cost of Tickets	459,101		493,535	
Others	262,842	968,339	294,986	1,022,153
Vehicle Operation Charges			-	
Hire Charges	694,851	694,851	787,548	787,548
Energy Cost	4,339,295		4,259,328	
Less: Pertaining to Research and Development Exp	3,037,506	1,301,788	2,981,530	1,277,798
Water Charges	-		154,400	
Less :Pertaining to Research and Development Exp	-	-	108,080	46,320
Upkeep & Maintenance				
General Upkeep (Horticulture, Sweeping, Pest Control)	1,079,465		1,026,908	
Freight	5,477		2,000	
Repair and Maintenance of Building	840,680		846,836	
Maintenance of Office Equipment, Furniture	329,435		200,069	
Security Charges	1,334,007		1,122,309	
Others	273,185	3,862,249	47,029	3,245,151
Public Relation & Hospitality Expenditure		-		7,200
Legal & Professional Charges		1,204,170		864,126
Auditors' Remuneration & Charges				
Statutory Audit Fee	42,000		50,000	
Internal Audit Fee, Certification etc.,	58,500	100,500	50,000	100,000
Meeting Expenses		40,623		182,310
Advertisement & Publicity		90,192		48,647
Bank Charges , Commission and Exchange Variation		769		1,005
Sundry Balances Written off		7,012		292,162
TOTAL		21,135,695		17,832,829

SCHEDULE - 13

RESEARCH AND DEVELOPMENT EXPENSES

Salary and Wages	33,463,655		33,568,783	
Contribution to Provident Fund	3,616,021		3,581,528	
EDLI Charges	77,663		62,631	
PF Administrative Charges	283,631		253,693	
EDLI Administrative Charges	2,781		2,400	
Contribution to Group Insurance	5,195		5,462	
Gratuity and other Terminal Benefit	2,426,206		570,125	
Leave Travel Allowances	1,630,054		636,786	
Leave Encashment	2,059,542		717,254	
Exgratia	35,000		38,500	
Staff Training and Welfare Expenses	115,107		65,807	
Fellowship, Honorarium and Retainer ship	2,133,888		546,791	
Salary For Outsourced Staffs	1,520,070		1,579,150	
	47,368,812		**41,628,909**	
Less: Pertaining to Establishment and Other Adm Exp	**6,736,795**	**40,632,018**	**8,540,086**	**33,088,823**

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH, 2017

Eco Lab-Kolkata		56,974		139,790
Expenditure for Inspection		1,342,443		-
Expenditure for Technological Conference		1,427,209		-
Expenses for Disaster Management		482,600		485,954
Expenses For Appl of JGT in NER		-		222,576
Expenses For Denovo Registration		80		98,747
Expenses For Digital Printing		-		41,640
Institutional Membership Fees		-		950
Patent Renewal Expenses		263,429		274,925
Seminar, Workshop & Symposium		2,290		13,443
Scientific Tools & Apparatus		-		4,350
Residual Tech. Service and Pre Project Study		86,222		940,649
Laboratory Stores & Chemicals		20,471		77,738
Repair & Maintenance -				-
Scientific Equipments		158,969		311,452
Plant & Machinery		860,687		306,152
Software		106,839		155,022
Hardware & IT		810,000		1,332,000
Office Equipment		204,972		270,869
Pilot Plant Maintenance		38,157		88,694
Energy Cost	4,339,295	-	4,259,328	
Less: Pertaining to Establishment and Other Adm Exp	1,301,788	3,037,506	1,277,798	2,981,530
Water Charges	-		154,400	
Less : Pertaining to Establishment and Other Adm Exp	-	-	46,320	108,080
Postage, Telephone & Communication Charges	623,107		703,911	
Less: Pertaining to Establishment and Other Adm Exp	311,554	311,554	351,956	351,956
Journal & Periodical Subscription Expenses		751,897		641,514
TOTAL		**50,594,316**		**41,936,853**

GHOSAL BARNWAL & CO Chartered Accountants

Indian Jute Industries' Research Association Kolkata- 700 088

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION
SCHEDULES FORMING PART OF THE BALANCE SHEET AS AT 31ST MARCH 2017
SCHEDULE-3
Earmarked/Endowment Funds

AMOUNT IN RUPEES

Sl No	Particulars of the Projects	FUND						UTILISATION					REPAYMENT	NET BALANCE
		Fund Received as per last account Amount	Donation/Grants received during the year	Income from Investments made on account of Funds	Other Additions/Adjustme nts/ Received as Industry Contribution	Additions to the fund during the year (b)(i)+(b)(ii)+(b)(iii)	Total including Additions (a)+(c)	Total Expenditure As per last account	Expenditure during the year- Capital Expenditure	Expenditure during the year-Revenue Expenditure	Total Expenditure during the year (c)(i)+(c)(ii)	Up to date Total Expenditure (c)(i)+(e)	Refund during the year/Adjustment	Net Balance at the year end
		(a)	(b)(i)	(b)(ii)	(b)(iii)	(c)	(d)	(e)(i)	(e)(ii)	(e)(iii)	(e)	(f)	(g)	(h)
1	**Power loom Service Centre (GHT) GOI**													
	Current Year	21,996,383	1,200,000	-	-	1,200,000	23,196,383	17,725,868	-	1,200,000	1,200,000	18,925,868	4,924,633	(654,118)
	Previous Year	20,796,383	1,200,000	-	-	1,200,000	21,996,383	16,525,868	-	2,400,000	1,200,000	17,725,668	4,924,633	(654,118)
2	**DEVELOPMENT OF LOW COST JUTE BAGS FOR FOODS GRAIN**													
	Current Year	-	-	-	-	-	-	-	-	-	-	-	-	-
	Previous Year	6,020,000	2,284,610	-	-	2,284,610	8,304,610	8,600,000	-	-	-	8,600,000	295,390	-
3	**Powerloom Service Centre (GHT) Others**													
	Current Year	602,750	455,000	-	-	455,000	1,057,750	602,750	455,000		455,000	1,057,750	-	-
	Previous Year	602,750	-	-	-	-	602,750	-	602,750		602,750	602,750	-	-
4	**DEVELOPMENT & APPLOF POTENTIALITY IMP. JUTE GEOTEX**													
	Current Year	-	-	-	-	-	-	-	-	-	-	-	-	-
	Previous Year	516,541	-	-	-	-	516,541	555,118	-	-	-	555,118	-	(38,577)
		516,541	-	-	-	-	516,541	555,118	-	-	-	555,118	-	(38,577)
5	**DEVELOPMENT OF PORTABLE JUTE FIBRE STRENGTH TESTER**													
	Current Year	-	-	-	-	-	-	-	-	-	-	-	-	-
	Previous Year	1,885,000	-	-	-	-	1,885,000	1,931,674	-	-	-	1,931,674	-	(46,674)
		1,885,000	-	-	-	-	1,885,000	1,931,674	-	-	-	1,931,674	-	(46,674)
6	**DEVELOPMENT OF SMALLER CAPACITY JUTE BAGS**													
	Current Year	274,500	640,500	-	-	640,500	915,000	306,907	301,210	608,093	608,093	915,000	-	-
	Previous Year	274,500	-	-	-	-	274,500	-	-	1,697	306,907	306,907	-	(32,407)
7	**NABL ACCREDIATION**													
	Current Year	621,900	621,900	-	-	621,900	1,243,800	542,936	228,748	223,114	451,862	994,798	-	249,002
	Previous Year	-	621,900	-	-	621,900	621,900	83,129	24,388	435,419	459,807	542,936	-	78,964
8	**STUDIES ON ESTIMATION OF THRESHOLD BREAKING STRENGTH**													
	Current Year	353,413	245,000	-	-	245,000	598,413	255,165	-	343,248	343,248	598,413	-	-
	Previous Year	105,000	248,413	-	-	248,413	353,413	248,545	-	6,620	6,620	255,165	-	98,248
9	**STUDIES ON THE RELATIONSHIP BETWEEN AOS AND WATER PERMIBILITY**													
	Current Year	100,000	-	-	-	-	100,000	3,365	-	-	-	3,365	-	96,635
	Previous Year	100,000	-	-	-	-	100,000	968	-	2,397	2,397	3,365	-	96,635
10	**TECHNOCOMMERCIAL FEASIBILITY STUDY RBO**													
	Current Year	536,000	-	-	-	-	536,000	703,213	-	446,589	446,589	1,149,802	-	(613,802)
	Previous Year	268,000	268,000	-	-	268,000	536,000	-	-	703,213	703,213	703,213	-	(167,213)
11	**TRANSSEGRATION OF MINERAL OIL HYDROCARBONS**													
	Current Year	2,137,500	-	-	-	-	2,137,500	727,357	-	1,375,142	1,375,142	2,102,500	-	35,000
	Previous Year	2,137,500	-	-	-	-	2,137,500	-	-	727,357	727,357	727,357	-	1,410,143

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION
SCHEDULES FORMING PART OF THE BALANCE SHEET AS AT 31ST MARCH 2017
SCHEDULE-3
Earmarked/Endowment Funds

AMOUNT IN RUPEES

Sl No	Particulars of the Projects	FUND						UTILISATION					REPAYMENT	NET BALANCE
		Fund Received as per last account Amount	Donation/Grants received during the year	Income from Investments made on account of Funds	Other Additions/Adjustments/ Received as Industry Contribution	Additions to the fund during the year (b)(i)+(b)(ii)+(b)(iii)	Total Including Additions (a)+(c)	UTILISATION Total Expenditure As per last account	Expenditure during the year-Capital Expenditure	Expenditure during the year-Revenue Expenditure	Total Expenditure during the year (c)(ii)+(c)(iii)	Up to date Total Expenditure (c)(i)+(e)	Refund during the year/Adjustment	Net Balance at the year end
		(a)	(b)(i)	(b)(ii)	(b)(iii)	(c)	(d)	(c)(i)	(c)(ii)	(c)(iii)	(e)	(f)	(g)	(h)
12	INTEGRATED SKILL DEVELOPMENT SCHEME													
	Current Year	14,951,281	-	-	-	-	14,951,281	13,907,859	-	-	-	13,907,859	-	1,043,422
	Previous Year	14,951,281	-	-	-	-	14,951,281	13,673,275	-	234,584	234,584	13,907,859	-	1,043,422
13	DYEING OF SILK AND ART SILK													
	Current Year	2,910,000	-	-	-	-	2,910,000	4,500,000	-	-	-	4,500,000	-	(1,590,000)
	Previous Year	1,800,000	1,110,000	-	-	1,110,000	2,910,000	2,220,864	751,238	1,527,898	2,279,136	4,500,000	-	(1,590,000)
14	INTEGRATED PROJECT ON ENZYME BASED JUTE RETTING													
	Current Year	3,883,000		-	-	-	3,883,000	5,285,797	-	-	-	5,285,797	-	(1,402,797)
	Previous Year	3,883,000	-	-	-	-	3,883,000	410	2,809,028	2,476,359	5,285,387	5,285,797	-	(1,402,797)
15	BIO CHEMICAL SOFTENING OF HARD TOOL CUTTINGS													
	Current Year	-	1,309,000	-	178,183	1,487,183	1,487,183	480	692,878	1,342,320	2,035,198	2,035,678	-	(548,495)
	Previous Year	-	-	-	-	-	-	480	-	-	-	480	-	(480)
16	DESIGN AND DEV OF 50 KG CAPACITY EFECTIVE JUTE BAGS													
	Current Year	-	1,225,000	-	262,035	1,487,035	1,487,035	-	-	844,288	844,288	844,288	-	642,747
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
17	DESIGN AND DEV CONT.DAMPING AND CALENDERING MACHINE													
	Current Year	-	4,065,600	-	-	4,065,600	4,065,600	-	-	287,499	287,499	287,499	-	3,778,101
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
18	DEV OF HIGH SPEED ROLLER DRAFTING SYSTEM													
	Current Year	-	1,344,000	-	88,044	1,432,044	1,432,044	-		415,338	415,338	415,338	-	1,016,706
	Previous Year	-	-	-	-	-	-	-		-	-	-	-	-
19	DEV. OF JUTE BASED TEXTILE PREFORMS AND PULTRUDED													
	Current Year	-	2,895,200	-	-	2,895,200	2,895,200	-	2,800	229,476	232,276	232,276	-	2,662,924
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
20	DEV. OF PLA LAMINATED JUTE AS BIO COMP PACK MATERIALS													
	Current Year	-	2,688,000	-	-	2,688,000	2,688,000	-	-	266,667	266,667	266,667	-	2,421,333
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
21	FASTER RETTING OF JUTE PLANT													
	Current Year	-	2,037,400	-	145,342	2,182,742	2,182,742	-	760,880	2,167,495	2,928,375	2,928,375	-	(745,633)
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
22	FEASIBILITY STUDY OF OIL FREE PROC. OF JUTE FIBRES													
	Current Year	-	1,548,000	-	-	1,548,000	1,548,000	-	-	181,419	181,419	181,419	-	1,366,581
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
23	JUTE BASED AIR FILTER MEDIA HAV ANTI MICROBIAL													
	Current Year	-	728,000	-	1,092,000	1,820,000	1,820,000	-	-	218,153	218,153	218,153	-	1,601,847
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION
SCHEDULES FORMING PART OF THE BALANCE SHEET AS AT 31ST MARCH 2017
SCHEDULE-3
Earmarked/Endowment Funds

AMOUNT IN RUPEES

Sl No	Particulars of the Projects	FUND						UTILISATION				REPAYMENT	NET BALANCE
		Fund Received as per last account Amount	Donation/Grants received during the year	Income from investments made on account of Funds	Other Additions/Adjustme nts/ Received as PSU Research Industry Contribution	Additions to the Fund during the year (2a(i)+(ii)+(iii)+(iv)+(v))	Total Pending Additions (a)+(c)	Total Expenditure As per last account	Expenditure during the year- Capital Expenditure	Expenditure during the year-Revenue Expenditure	Total Expenditure during the year (c)+(d)+(e)	Up to date Total Expenditure (c)+(d)+(e)	Refund during the year/Adjustment	Net Balance at the year end
		(a)	(b)(i)	(b)(ii)	(b)(iii)	(c)	(d)	(c)(i)	(c)(ii)	(c)(iii)	(e)	(f)	(g)	(h)
24	SETTING-UP OF FCI DIGITAL PRINTING													
	Current Year	-	3,311,000	-	-	3,311,000	3,311,000	-	3,315,385	-	3,315,385	3,315,385	-	(4,385)
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
25	UTILIZATION OF JUTE STICKS AND JUTE WASTE FOR													
	Current Year	-	1,901,600	-	220,284	2,121,884	2,121,884	-	771,226	1,193,152	1,964,378	1,964,378	-	157,506
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
26	PRODUCTIVITY NORMS 580GM B TWILL BAGS													
	Current Year	-	1,300,000	-	-	1,300,000	1,300,000	-	-	1,300,000	1,300,000	1,300,000	-	-
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
27	PROJECT WITH SHELL INDIA													
	Current Year	-	-	-	-	-	-	-	-	16,303	16,303	16,303	-	(16,303)
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	-
28	DEVE. OF STANDARD FOR USE OF JUTE GEOTEXTILE (JGT) RUR													
	Current Year	-	4,189,500	-	358,463	4,547,963	4,547,963	101,316	1,872,770	4,491,758	6,364,528	6,465,844	-	(1,917,881)
	Previous Year	-	-	-	-	-	-	-	-	101,316	101,316	101,316	-	(101,316)
29	JUTE THERMOPLASTIC COMPOSITE FOR GREEN PRODUCT													
	Current Year	-	3,957,800	-	174,690	4,132,490	4,132,490	15,630	1,114,755	1,918,820	3,033,575	3,049,205	-	1,083,285
	Previous Year	-	-	-	-	-	-	-	-	15,630	15,630	15,630	-	(15,630)
30	FIELD TRIAL OF LIGHT WEIGHT FOOD GRAIN 600 GM BAGS													
	Current Year	-	-	-	10,256	10,256	10,256	10,256	-	10,256	10,256	10,256	-	-
	Previous Year	-	-	-	-	-	-	-	-	-	-	-	-	(10,256)
31	MASS SCALE PROD UCTION OF MICROBIAL CONSORTIUM													
	Current Year	-	-	-	-	-	-	1,552,407	7,134	789,407	796,541	2,348,948	-	(2,348,948)
	Previous Year	-	-	-	-	-	-	-	738,326	814,081	1,552,407	1,552,407	-	(1,552,407)
32	PRO DEV AUTOMATION SANITARY NAPKINS													
	Current Year	1,225,000	-	-	-	-	1,225,000	11,691	2,594,056	1,179,006	3,773,062	3,784,753	-	(2,559,753)
	Previous Year	-	1,225,000	-	-	1,225,000	1,225,000	-	-	11,691	11,691	11,691	-	1,213,309
33	PROMOTING THE USAGE OF GEOTEXTILES IN NER													
	Current Year	800,000	2,500,000	-	-	2,500,000	3,300,000	300,000	-	2,463,394	2,463,394	2,763,394	-	536,606
	Previous Year	-	800,000	-	-	800,000	800,000	-	-	300,000	300,000	300,000	-	500,000
34	REVISION OF PRODUCTIVITY NORMS													
	Current Year	2,520,000	280,000	-	-	280,000	2,800,000	2,550,613	-	249,387	249,387	2,800,000	-	-
	Previous Year	2,520,000	-	-	-	-	2,520,000	2,541,257	-	9,356	9,356	2,550,613	-	(30,613)
	Current Year-Total	55,313,468	38,442,500	-	2,529,297	40,971,797	96,285,265	51,590,402	11,815,632	23,750,069	35,565,701	87,156,103	4,924,633	4,204,329
	Previous Year-Total	55,859,955	7,757,923	-	-	7,757,923	63,617,878	46,381,588	5,230,940	9,777,874	15,008,814	60,190,402	5,220,023	(1,291,467)

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULES FORMING PART OF THE BALANCE SHEET AS AT 31ST MARCH 2017

SCHEDULE-5

FIXED ASSETS

AMOUNT IN RUPEES

Sl No	Description	GROSS BLOCK				DEPRECIATION						NET BLOCK	
		Cost/Valuation as at the beginning of the year	Additions during the year	Deductions during the year	Cost/valuation at year end	As at the beginning of the year	During the year	On additions during the year	Depreciation for the year	On deductions during the year	Total up to the year end	As at the current year end	As at the previous year end
1	LAND												
	a) Freehold	-			-	-	-	-	-	-	-	-	-
	b) Leasehold	-			-	-	-	-	-	-	-	-	-
2	BUILDINGS	-			-	-	-		-	-	-		
	a) On Freehold Land	-			-	-	-		-	-	-	-	-
	b) On Leasehold Land	15,640,220	4,933,495	-	20,573,715	13,993,788	164,643	279,836	444,479	-	14,438,267	6,135,448	1,646,432
	c) Ownership Flats/Premises	1,644,684		-	1,644,684	919,498	36,259	-	36,259	-	955,757	688,927	725,186
3	PLANT MACHINERY & EQUIPMENT	19,312,093	-	-	19,312,093	18,953,995	53,715	-	53,715		19,007,710	304,383	358,098
4	SCIENTIFIC APPARATUS	11,214,347	150,000	-	11,364,347	10,719,547	74,220	22,500	96,720	-	10,816,267	548,080	494,800
5	FURNITURE & FIXTURES	3,410,156	-	-	3,410,156	2,569,563	84,059	-	84,059	-	2,653,622	756,534	840,593
6	OFFICE EQUIPMENTS	2,784,630	56,522	-	2,841,152	2,185,990	59,864	6,002	65,866	-	2,251,856	589,296	598,640
7	COMPUTER	6,203,037	-	-	6,203,037	6,182,012	12,615	-	12,615	-	6,194,627	8,410	21,025
8	AIR CONDITIONING PLANT	2,704,094	-	-	2,704,094	2,422,239	42,278	-	42,278	-	2,464,517	239,577	281,855
9	TELEPHONE INSTALLATION	780,483	-	-	780,483	735,106	4,538	-	4,538	-	739,644	40,839	45,377
10	PATENTS	208,401	-	-	208,401	199,326	2,269	-	2,269	-	201,595	6,806	9,074
11	LIBRARY BOOKS	1,319,963	3,355	-	1,323,318	1,317,495	2,467	1,839	4,306	-	1,321,801	1,517	2,468
12	COMPUTER SOFTWARE	5,067,809	-	-	5,067,809	5,052,654	9,093	-	9,093	-	5,061,747	6,062	15,154
13	ELECTRICAL INSTALLATION	1,960,150	252,461	-	2,212,611	906,434	158,057	18,935	176,992	-	1,083,426	1,129,185	1,053,716
	TOTAL OF CURRENT YEAR	72,250,067	5,395,833	-	77,645,900	66,157,647	704,077	329,111	1,033,189	-	67,190,836	10,455,064	6,092,418
	PREVIOUS YEAR	71,880,992	369,075	-	72,250,067	65,354,105	772,170	31,375	803,545	-	66,157,549	6,092,418	6,526,887
	CAPITAL WORK IN PROGRESS	-	-	-	-	-	-	-	-	-	-	-	-

Note:	Current Year	Previous Year
Total Cost of Fixed Assets Acquired out of Grant-in-Aid (Net of disposal/adjustment)	55,911,725	55,911,725
Total Cost of Fixed Assets Acquired out of Association's own Fund (Net of disposal/adjustment)	21,734,175	16,338,342
Total	77,645,900	72,250,067

WDV at the beginning of the year		6,092,418
Balance of Capital Reserve at the beginning of the year		763,267
		5,329,151
Apportionment of Depreciation		
Total depreciation	1,033,189	
Transferred to Capital Reserve		129,439
Charged to Revenue		903,749

GHOSAL BARNWAL & CO. Chartered Accountants 74 Bentinck Street Kolkata-700001

Indian Jute Industries' Research Association ijira Kolkata- 700 088 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2017

(AMOUNT IN RUPEES)

RECEIPTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
I. Opening Balances				
a) Cash & Cheques in Hand	18.526		115.329	
b)Bank Balance	-		-	
i) In Current Accounts	6.785.709		2.327.418	
ii)In Deposit Accounts	64.689.925		59.092.507	
iii) Savings Accounts	13.579.833	**85.073.993**	20.566.370	**82.101.623**
Admission Fees		100.000		150.000
Special Contribution From Industries		8,390,000		700,000
II. Grants Received				
a) From Govt. of India				
Grant-In-Aid from GOI	35.000.000		35.000.000	
b) From Other sources	-	**35.000.000**	-	**35.000.000**
Sponsored Projects Fund				
JUTE THER-COMP-FOR GREEN PROD-DEVLOP	3,957,800		-	
JUTE_BASED_AIR_FILTER_HAV_ANTT_MICRO_	1,820,000		-	
SETTING UP_FCI_DIGITAL_PRINTING	3,311,000		-	
UTILIZATION OF JUTE STICKS AND JUTE WASTE FOR EXTRA	1,901,600		-	
Integrated Enzyme Retting				
NABL Accreditation Project	621,900		621,900	
Development & Application of potentially imp jute geotex	-		-	
Development of Portable Jute Fiber Strength Tester	-		-	
BIO CHEMICAL SOFTENING OF HARD ROOT CUTTINGS	1,309,000		-	
Jute Geo Textiles	-		-	
Integrated Skill Development Scheme	-		855	
Power loom Service Centre Plan	1,200,000		1,200,000	
Power loom Service Centre Others	455,000		-	
Dyeing of Silk Cotton and Art Silk	-		1,110,000	
Dev. Of Low Cost Jute Bags	-		2,284,610	
Enzyme Based Jute Retting	-		7,407	
DEV. OF STAND.FOR USE JGT IN RURAL ROADS	4,400,722		-	
DEV_OF_JUTE_BASE_TEX_PRE_AND PULTRU COM	2,895,200		-	
DEV_OF_PLA_LAMI_JUTE_BIO_COM PACK	2,688,000		-	
DEVELOPMENT OF HIGH SPEED ROLLER DRAFTING SYSTEM	1,344,000		-	
Promoting the usage of Geotextile	2,500,000		1,151,319	
DESIGN_AND DEV_OF CONTI_DAMP_CALENDR_CUTTING_MACHIN	4,065,600		-	
Productivity Norms for Type A 50 Kgs Capacity Bags	1,225,000			

PAYMENTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
I. Opening Balances				
Bank Balance	-		-	
Book Overdraft with United Bank of India	-		-	-
II. Expenses				
a) Establishment Expenses				
Retainer shio Fees	1.603.684		424.547	
Salaries & Wages	30,899,743		29,348,587	
Contribution to Gr. Insurance	4,755		32.909	
Contribution to PF	3.632.137		3.291.827	
Gratuity	-		-	
Ex-Gratia/VRS	35.000		35.000	
Leave Travel Allowance	1.630.054		633.964	
Leave Encashment		**37.805.373**		**33.766.834**
Recovery from Staff Salary				
Professional Tax	168,210		124,360	
Provident Fund Deduction	3,632,137		3,291,827	
Group Insurance Premium	5,239	**3,805,586**	5,462	**3,421,649**
b) Administrative Expenses				
Advertisement	90,362		44,056	
Audit Fees, Certification etc	12,500		-	
Legal Expenses	919,161		420,720	
Postage & Telephone	614,220		644,596	
Printing	304,177		164,166	
Prior Period Adjustment	400		74,576	
Stationery & Consumables	160,631		298,565	
Travelling Expenses	851,245		877,380	
Vehicle & Transport	623,423		711,927	
Gas & Electricity	3,889,263		3,956,076	
			-	
Data Processing Services	966		494	

GHOSAL BARNWAL & CO. Chartered Accountants 7A Beadon Street Kolkata-700 006

Indian Jute Industries' Research Association ijira Kolkata- 700 088 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2017

(AMOUNT IN RUPEES)

RECEIPTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
Revision of Productivity Norms	1,580,000		-	
Studies on the Relationship Between AOS and Water Permeability	-		-	
Techno commercial Feasibility Study RBO	-		268,000	
Transmigration of Mineral Hydrocarbons	-		172,522	
Threshold Breaking Strength	245,000		-	
Pro-Dev Auto Jute Based Sanitary Napkin			1,225,000	
DEVELOPMENT OF SMALLER CAPACITY JUTE BAGS	640,500		-	
FASTER RETTING OF JUTE PLANT	2,037,400		-	
FEASIBI_STUDY_OF_OIL_FREE_P ROCE OF_JUTE_FIBRE	1,548,000		-	
INDUSTRY CONT FROM MOT FUNDED PROJ	1,404,949		-	
		41.150.671		8.041.613
II Income on Investment From I.				
a) Earmarked/Endow. Funds	-		-	
b) Own Funds (Oth. Investment)	-	-	-	-
IV Interest Received				
a) Interest on Refund	-		-	
b) On Fixed Deposit	70.229		569.041	
c) Interest on Savings A/c	645,696		523.383	
d) Interest on Spl. Reserve	-	715,925	123,621	1,216,045
V. Other Income				
Subscription	5.171.240		5.165.500	
	-		-	
Certification Fees	669,600		589,000	
Sale of Scrap	586,586		-	
Consultancy Charges	436,424		22,562	
FGJP Testing Charges	189,600		278,236	
Professional Fees For Disaster Management	5,828,713		4,411,588	
Testing Charges	1,704,270		1,354,061	
26th Technological Conference	1.377.577		-	
ELECTRCITY CHARGES FEES	16.658		-	
MACHINERIES USER FEES	45.000		-	
PRIVATE SECURITY FEES	43.915		-	
RENTAL INCOME	53.808		-	
Process Audit of FGJP	169,200		144,000	
Technology Transfer Fees	2.761.250		-	
Processing Charges			-	
Professional Fees	195,488		368,442	
Fees from NJB Incentive Scheme	515,091	19,764,420	1,126,289	13,459,678

PAYMENTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
General Upkeep	974,463		936.013	
Maintenance Stores	125,948		37,973	
Office Maintenance	198,749		151,551	
Repairs & Maintenance	966,624		1,400,549	
Security Service	1,104,198		937,009	
Water Charges			130,300	
Seminar & Conference	2,290		21,943	
Maintenance of Hardware & Infrastructure	810,000		1,221,000	
Bank Charges, Exchange Variation	775		1,018	
Liaison Expenses			7,200	
Journals & Periodicals	219.935		151.378	
Professional Fees & Charges	69.675		67.920	
Insurance	14.588		12.178	
Rent, Rates & Taxes	415,896		400,387	
Eco-Lab Expenses- Calcutta	56.102		117.152	
Eco-Lab Expenses-Guwahati	-		-	
Meeting Expenses	46,186		183,199	
Patent Renewal	263.429		274.925	
			-	
EDLI Admn. Charges	2.581		6.875	
EDLI Charges	68.981		53.189	
P F Admin. Charges	257.786		233.172	
Consultancy Expenses/ Technical Appraisal and Inspection	1,014,050		-	
Pilot Plant Maintenance Expenses for study on Lubrication System	26,187		81,854	
Seminar. Workshop. Seminar			-	
Residual.Pre Project Expenses	53.722		401,704	
Expenses for Disaster Management	405,918		425,345	
Expenses for NABL	-		-	
EXPENDITURE FOR TECHNOLOGICAL CONFERENCE	1,087,957		-	
Expenses for P.S Winding Study	-		-	
Freight	5,477		6,000	
		15.657.865		14.452.390
III. PAYMENTS MADE AGAINST FUNDS FOR VARIOUS PROJECTS				
Development & Application of potentially imp jute geotex			-	
Development of Smaller Capacity Jute Bags			1,697	

GHOSAL BARNWAL & CO. 7A, Beltala Street Kolkata 700 001 *Chartered Accountants*

Indian Jute Industries' Research Association Kolkata- 700 088 • 17, Taratala Road •

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2017

(AMOUNT IN RUPEES)

RECEIPTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
VI Any Other Receipts				
a) Deductions on Salary and Other Payments				
Professional Tax	-		-	
TDS on salary	-		-	
Provident Fund Deduction	-		-	
Staff Club Subscription	-	-	-	-
b) Contra with Establishment, Admin, & Other Payments				
Group Insurance Maturity Settlement	17,041	**17,041**	31,392	**31,392**
c) Others				
Advance From Party	-		-	
Refund From Sundry Creditors	-		-	
Refund of tour advance	133,637		216,110	
Refund of Festival Advance	10,200		-	
Refund of Others Advances	148,171		-	
Service Tax	1,073,635		1,053,230	
I. Tax Deducted at Source(From Bills)	66,290		-	
Recovery From Study of Light weight Jute Bags			-	
Accrued Interest on short term and Special Reserve Fixed Deposit	978,156		8,776,393	
Prior period Adjustment	174,878		10,000	
Other Receipt	150,443		20,031	
Administrative Expenses	-		-	
	-		-	
Sundry Debtors	375,268		24,775	
Expenses for 75 Years celebrations	-		-	
Recovery From staffs	-		1,132	

PAYMENTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
Bio Chemical Softening of Hard Root Cutting	1,126,571		480	
Studies on Estimation of Threshold Breaking Strength	-		2,767	
Techno commercial Feasibility Study RBO	6,426		15,271	
Transmigration of Mineral Hydrocarbons	804,912		1,093,792	
Development of Portable Jute Fiber Strength Tester	-		-	
Provision For Exp For PSC Plan	-		-	
Provision For Exp For Development of Low Cost Jute Bags	-		80,550	
Dyeing of Silk Cotton and Art Silk	-		219,743	
Jute Thermoplastic Components For Automotive	-		-	
Promoting the usage of Geotextile	973,667		1,199,269	
Dev.of standard for use JGT in Rural Roads	5,181,735		31,511	
Dev. of standard for Use Jute Geo (JGT)	-		25,066	
Studies on the Relationship Between AOS and Water Permeability	-		-	
Power loom Service Centre Plan	1,093,040		1,168,830	
Power loom Service Centre others	489,000		-	
DEV_OF_JUTE_BASE_TEX_PRE_AND_PULTRU_COM	13,571		-	
Integrated Enzyme Retting of. Jute Ribbon			172,560	
Pro-Dev Auto Jute Based Sanitary Napkin	863,328		11,691	
Provision For Exp for Enzyme Based Jute Retting			-	
NABL Accreditation	457.025		454.510	
Provision For Exp For Portable Jute (DST)			1,387	
Provision For Dveing Silk	121.298		-	
Enzyme Based Jute Retting			-	
Mass Scale Microbial	69,813		1,879,226	
Field Trail for Light weight Jute Bags	-		10,057	
Study and Documentation of Jute Loss	-		-	

GHOSAL BARNWAL & CO. Chartered Accountants

Indian Jute Industries' Research Association ijira Kolkata- 700 088 17, Taratala Road

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2017

(AMOUNT IN RUPEES)

RECEIPTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
Recovery From Jute Geo Tex	462,443		970,155	
Earnest Deposit	481,746		-	
REFUND OF SALARY ADVANCE	13,400		-	
Security Deposit	200,000		-	
SHORT TERM LOANS AND ADVANCE	3,000,000		-	
		7,268,267		**11,071,826**

PAYMENTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
Productivity Norms for Type A 50 Kgs Capacity Bags	598,855		-	
Revision of Productivity Norms	29,966		9,356	
Integrated Skill Development Scheme			232,141	
DEVELOPMENT OF HIGH SPEED ROLLER DRAFTING SYSTEM	65,396		-	
FASTER RETTING OF JUTE PLANT	2,040,712		-	
FEASIBI_STUDY_OF_OIL_FREE_PROCE OF JUTE FIBRE	2,466		-	
JUTE THER-COMP-FOR GREEN PROD-DEVLOP	3,102,925		-	
SETTING	1,632		-	
UP_FCI_DIGITAL_PRINTING				
UTILIZATION OF JUTE STICKS AND JUTE WASTE FOR EXTRA	721,573		-	
PROJECT WITH SHELL INDIA	5,250		-	
CAPACITY COST EFFECTIVENESS	-		-	
			-	
		17,769,162	-	**6,609,903**
IV. EXPENDITURE ON FIXED ASSETS AND CAPITAL WIP				
Computer	-		5,670	
Library Books	3,355		5,695	
Office Equipment	69,192		73,430	
Software	-		-	
Building	3,993,210		-	
Scientific Apparatus	150,000		35,780	
Electricals Fittings	184,108		217,120	
Plant & Machinery	-		-	
Furniture & Fixtures	-	**4,399,865**	28,500	**366,195**
V. OTHER PAYMENTS				
Security Deposit	118,293		-	
Prepaid Expenses	405,511		1,179,740	
Earnest Money Deposit	396,622		-	
Gr. Insurance Maturity Settlement	31,755		31,392	
Laboratory Stores & Chemical	11,499		28,636	
Unpaid/Undischarged Liability	-		-	
Outstanding Liabilities	2,333,983		684,295	
Service Tax	2,266,989		1,006,817	
Advance To Parties	78,873		27,480	
Sundry Creditors	338,060		-	
Paid of Sundry Debtors	251,983		449,327	
I. Tax Deducted at Source(From Bills)			-	
Festival Advance	410,000		216,000	
Purchase Advance	7,800		-	
Other Advance to Staffs	174,356		10,970	
Staff Salary Advance	167,200		121,100	
Staff Welfare Exp	102,417		67,411	
Honorarium	196,000		11,000	
SHORT TERM LOANS AND ADVANCE	3,000,000		-	
Software Development & Upgradation	139,518		77,000	
Tds on Contractor	173,065		118,749	
Tds on Professionals	524,243		182,622	
Tds on salary	2,313,303		1,469,058	
Miscellaneous Exp	17,090		-	

Indian Jute Industries' Research Association
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Kolkata- 700 088
17, Taratala Road

GHOSAL BARNWAL & CO.
7A, Beni
Chartered Accountants

THE INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2017

(AMOUNT IN RUPEES)

RECEIPTS	Year Ended 31/03/2017	Year Ended 31/03/2017	Year Ended 31/03/2016	Year Ended 31/03/2016
PAYMENTS	**Year Ended 31/03/2017**	**Year Ended 31/03/2017**	**Year Ended 31/03/2016**	**Year Ended 31/03/2016**
Scientific Apparatus	-		4,350	
Expenses for De novo Registration	-		98,683	
Institutional Membership fees			950	
Liability for Gratuity	755,005		992,709	
Expenses for Digital printing			37,790	
Expenses for Focused Incubation	-		18,476	
Liabiltiy for Leave Encashment	633,250		886,401	
Tour Advance	277,162		320,050	
Sales Tax Deducted at Source	165,375		40,208	
		15.289.352		8.081.214
VI. **CLOSING BALANCES**				
Cash & Cheques in Hand	112,546		18,526	
Bank Balances				
In Current Account	28.649.950		6.785.709	
In Deposit Account	57.886.950		64.689.925	
In Savings Account	16.103.669	102.753.114	13.579.833	85.073.993
		197.480.317		151.772.177

Note: The Receipts and Payments Account of the Association has been prepared based on the draft format as recommended by the Govt. of India, Ministry of Textiles vide their Office memorandum No. 26008/10/2000-B&A/271 dated 20/10/2000. The draft format is duly modified to suit the requirement of disclosures in certain cases.

AUDITORS' CERTIFICATE

We have examined the above Receipts & Payments Accounts of The Indian Jute Industries' For the year ended 31st March , 2017 with the Cash & Bank books maintained by the Association at Kolkata and certify that the same are in accordance therewith and inconformity with the intimation and explanations given to us and read with the note above.

DIRECTOR

For Ghosal Barnwal & Co
Chartered Accountants

(S Ghosal)
Partner
Membership No. 54151

Place: KOLKATA
Dated: 18/08/2017

GHOSAL BARNWAL & CO * Chartered Accountants * 7A, Bentinck Street, Kolkata-700 001

Indian Jute Industries' Research Association * 17, Taratala Road * Kolkata- 700 088

INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

Significant Accounting Policies forming part of the Balance Sheet as at 31st March 2017 and Income and Expenditure Account for the year ended 31st March 2017.

SCHEME 14 – SIGNIFICANT ACCOUNTING POLICIES

1. **ACCOUNTING CONVENTION**

The financial statements are prepared on the basis of historical cost conventions, unless otherwise stated and on accrual method of accounting except Income from Subscription from members and Income from Lease Rentals which are accounted for on cash basis.

2. **INVENTORY VALUATION**

Stores and Spares (including machinery spares) are valued at cost.

Raw materials semi-finished goods are valued at lower of cost and net realizable value. The costs are based on weighted average cost. Cost of semi-finished goods is determined by considering material, labour and related overheads.

3. **INVESTMENTS**

Investments classified as "long term" are carried at cost. Provision for decline, other than temporary, is made in carrying cost of such investments. Investments classified as "current" are carried at lower of cost and fair market value Provision for shortfall on the value of such investments is made for each investment considered individually and not on a global basis. Cost includes acquisition expenses like brokerage, transfer stamps.

4. **FIXED ASSETS**

Fixed assets are stated at cost of acquisition inclusive of freight, duties and taxes and incidental and direct expenses related to acquisition. Fixed assets acquired through project fund are not capitalized in the books of the association.

5. **DEPRECIATION**

Depreciation is provided on written down value method at the rates specified in the Income Tax Act, 1961 and the rules framed there under. Depreciation on assets acquired through grant-in-aid is charged to Capital Reserve. Depreciation on assets acquired through association's own fund is charged to Income and Expenditure Account. Depreciation on assets acquired through project fund is not accounted for.

6. **APPORTIONMENT OF DEPRECIATION**

Depreciation on Fixed Assets acquired out of grant-in-aid and association's own funds are apportioned in the ratio of written down value of assets acquired by the Association's own fund and the written down value of the assets out of grant-in-aid at the beginning of the year.

7. **INCOME RECOGNITION**

(i) **Interest Income:**

Interest on Savings Bank accounts are accounted for on cash basis i.e., as and when it is credited in bank account. Interests earned from Fixed Deposits are accounts for on accrual basis.

(ii) **Income from Subscription from Member and Admission Fee:**

Income from Membership Subscription is recognized as per the Accounting Standard AS-9 issued by the Institute of Chartered Accountants of India, and accordingly the same is recognized as and when it is received. The amount outstanding from Primary Members as on 31/03/2017 was Rs.31, 12,620/- (Previous Year Rs. 16,94,900) and Associate Membership is Rs. 2,00,000/- (Previous Year Rs. 100,000/-).

(iii) **Service Charges from Project Work:**

Services Charges are recognized for the Project Works undertaken by the association on the basis of manpower utilized, overheads, absorbed, other services utilized on individual project during the financial year.

(iv) **Certification Fee, Testing Charges etc.**

Incomes from Certification Fee, Testing Charges etc., are accounted for on mercantile basis.

(v) **Grants/Subsidy from Government of India (Plan)**

The grant of the capital nature is accounted for by showing fixed assets at gross amount and corresponding credit given to Capital Reserve Account.

8. **TERMINAL BENEFITS**

Liability for Gratuity is provided on the basis of actuarial valuation and provided in the accounts. Liability for Leave Encashment is estimated by the Association.

9. **RESEARCH AND DEVELOPMENT EXPENDITURE**

Revenue Expenditure on Research and Development are charged to Income and Expenditure Account in the year in which these are incurred. Capital Expenditure is considered as addition to fixed assets.

10. **GOVERNMENT GRANT**

a. **Revenue:**

The total Grant-in-Aid sanctioned under non-plan recurring expenditure is recognized as income and is credited to Income and Expenditure Account.

b. **Capital:**

The grant of the capital nature is accounted for by showing fixed assets at gross value and corresponding credit given to Capital Reserve Account. The Depreciation/amortization etc. of such assets are adjusted with Capital Reserve.

11. **EARMARKED/ENDOWMENT FUNDS:**

Amount received as grant or assistance for specific purposes and remaining to be expended/utilized for the specific purpose for which these are intended, are disclosed under this head and are subject to compliance of certain terms and conditions in the respective contracts/agreements.

12. **APPPRTIONMENT OF CERTAIN EXPENSES**

Expenses namely Energy Cost Account, Water Charges Account, and Postage, Telephone & Communication charges, Maintenance of Hardware & IT (Research) Account have been apportioned between Establishment Expenses & other Administrative Expenses AND Research & Development Expenses in the ratio of 30:70, 30:70 & 50:50 respectively. Accordingly previous year's figures have been regrouped / rearranged in respect of above accounts for the purpose of comparison.

13. **GENERAL RESERVE**

Surplus of income & expenditure account is transferred to General Reserve.

14. **FORMAT OF ANNUAL ACCOUNTS**

The accounts of the association has been prepared in the draft format for submission of annual accounts recommended by Government of India, Ministry of Textiles vide their office memorandum no.CCA/COM&TEX/2005/95 dated 22/07/2005. The format is duly modified to suit the requirements of disclosures in certain cases.

15. **CORPUS FUND**

Corpus Fund includes: Admission Fee of the Members.

16. **PRIOR PERIOD INCOME**

Since the matter is sub-judice, IJIRA returned back the cheques to M/s. B E Pumps for the whole year of 2013-14 as instructed by the IJIRA Legal Cell. Thereafter, the IJIRA legal cell revoked the order and accordingly instructed to receive the cheques from M/s. B.E. Pumps since January, 2013. The amount of Rs. 1, 74,877.56/- received as rent prior to March-2016 from M/s B.E.Pumps has now been accounted for as Prior Period Income.

INDIAN JUTE INDUSTRIES' RESEARCH ASSOCIATION

SCHEDULE 15 – CONTINGENT LIABILITIES & NOTES ON ACCOUNTS

1. **CONTINGENT LIABILITIES**

(i) Claims against the association not acknowledged as debt is Rs. 10,36,90,716.40/- as per order No. 36 dated 18th March,2013, proceedings No.1051 of 2010 issued by The Estate Officer, Kolkata Port Trust.

(ii) Kolkata Port Trust (KoPT) has finally raised a claim of **Rs.24,16,53,036.04as total dues on 31/03/2017** including Rs.14,25,36,024.80 as outstanding principle dues as on 31/3/2017 and Rs.9,91,17,011.24 as outstanding interest as on 31/03/2017, vide their letter Ref. No. Lnd 4083/X/17/1607 dated 13 June 2017.

2. **LEAVE ENCASHMENT**

Liability on account of leave encashment has been determined by the association is Rs 50, 73,180/- and provided in the accounts.

3. **GRATUITY**

Liability on account of Gratuity as at 31/03/2017 payable to employees on retirement has been determined on the basis of actuarial valuation of Rs. 82,58,285/- and provided in accounts.

4. **COMPARATIVES**

Previous year's figures have been rearranged and regrouped wherever necessary.

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