

Indian Council of Agricultural Research

ICAR-NINFET

(Erstwhile ICAR-NIRJAFT)

ANNUAL REPORT 2018-19



भाकृअनुप-राष्ट्रीय प्राकृतिक रेशा अभियांत्रिकी एवं प्रौद्योगिकी संस्थान

ICAR-National Institute of
Natural Fibre Engineering and Technology

(An ISO 9001:2015 Certified Institute)



*Plantation of
saplings
during
Swachhta Hi Seva*

*Visit of French
Delegates*

*Mera Gaon Mera Gaurav
Program in an Adopted Village*

*Cleanliness
drive during
Swachh Bharat*

**ICAR-NINFET
MAIN BUILDING**

*Dignitaries unveiled the
stone of ICAR-
NINFET at
Institute's premises*

*Demonstration of the
handloom to a distinguished
visitor*

*Prize for student
under Swachh
Bharat Abhiyaan*

*Exposure Visit of
Students from
Agricultural
College of Mandya*



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12, Regent Park, Kolkata -700040

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(पूर्व भाकृअनुप-निरजैफ्ट)

भारतीय कृषि अनुसंधान परिषद

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FOREWORD



Worldwide textile fibre production is 111 million metric tons in 2018 in which natural fibre contributes 29%. Among natural fibres, cotton fibre contributes 26.12 million tons and other natural fibres yield 6.08 million tons. After petrochemical industry, textile sector is the most polluting industry since it produces 1.2 billion tons of CO₂ equivalents every year and dumps nearly 70 million tons of fashion waste. Fashion clothing based

on synthetic fibre leads to generation of micro-plastic pollutants and it will be a major threat to the mankind in the coming years. Being aware about the sustainable development, consumers are slowly adapted to green ways and preferred the natural fibre based products. It is reported that 36% of fashion clothing made from natural fibres in 2018 and it is increased gradually @ 3% since 2010.

This is a good indication of high scope for the development of diversified value added textile products from natural fibres. To fulfill the needs of the nation, ICAR-NIRJAFT had worked basic and applied researches in post harvest technology and processes for jute and allied fibres and their subsequent dissemination to its stakeholders. Being a lead research institute and working incessantly in knowledge transfer and economic development activities of all natural fibres, the council in its 245th Governing Body (GB) meeting held on 10th November 2018, promoted the institute to work continuously in the area of natural fibres and accordingly renamed as ICAR-National Institute of Natural Fibre Engineering and Technology.

Institute has already conducted research works in the area of flax fibre, yak hair, silk fibre, ramie fibre, banana fibre, sisal fibre and pineapple fibre, starting from their extraction to product development for their promotion. During 2018-2019, institute have conducted twenty six field level demonstration on jute power ribboner & accelerated chemical retting on jute & mesta plant in the eastern regions of our country; four National level training programs sponsored by National Food Security Mission (NFSM); eight self-sponsored training program in the area of jute handicrafts, dyeing & bleaching & pulp and paper production; three externally sponsored training programs in the area of jute handicrafts; one training programs in the area of jute handicrafts under SCSP; eight training programs on jute diversified products in jute growing areas of the eastern region; one Agri-entrepreneurs meet for motivation of entrepreneurs in the area of natural fibres; one technology demonstration mela; one industry delegate meet ; one machinery demonstration at northeast region; one interface meeting for the promotion of yak hair blended textiles; one IPR clinic cum workshop to sensitize the intellectual property rights and participated in fifteen exhibitions to display institute products & technologies for the benefit of natural fibers' stakeholders.

Institute is constantly working to develop the need based technologies for the economic upliftment of stakeholders of natural fibres. I hope the R&D outputs combined with extension services will play a major role in sustaining development of natural fibres. I appreciate the efforts taken by the editorial team for bringing out this annual report.

Nimai Chandra Pan
Director



GLIMPSE OF 2018-19

ICAR-National Institute of Natural Fibre Engineering and Technology (Erstwhile ICAR-NIRJAFT) is a premier R&D institute for post harvest technologies on jute and allied fibres and presently carrying research on all natural fibres and has developed the technologies, products or processes. Among them, some have potential for commercialization to enhance the remuneration of entrepreneurs, industries and farmers. Utilization of agro-waste, advanced fibre extraction, fibre and fabric evaluation, utilization of lesser known natural fibres, processing for new/eco-friendly products and polymer composites, functional finishing, sustainable chemical processing & eco-friendly dyes have been addressed by the developed technologies.

PRODUCTS / PROCESS / MACHINE / INSTRUMENT / TECHNOLOGY DEVELOPED

- ⊙ Development of banana adhesive bonded & sunnhemp-polypropylene thermal bonded product for interlinear/garment stiffener/filler
- ⊙ Development of Indian flax fibre based technical textiles with quality ratio of around 130
- ⊙ Development of Low area density jute non-woven: PLA thermal bonded fabric for low cost bags, strong bags and fancy bags
- ⊙ Development of ternary blended yarn using jute, banana and viscose fibers for the development of home textiles.
- ⊙ Hybrid bleaching of jute using peracetic acid followed by hydrogen peroxide by two step two bath method .
- ⊙ Methodology to utilise the nonwoven jute composite sheet as table top for a prototype table , as decorative examination pad, as designed handicraft and as an ornamental pen stand.
- ⊙ Optimisation of jute stick based activated carbon for removal of heavy metals (Pd, Cd, As) from water , removal of synthetic dyes from effluent and as a matrix clean-up in pesticide residue analysis
- ⊙ Optimization of spinning parameters for the production of Jute/raw yak fibres, Jute/washed yak fibres, Jute/chemically modified, and jute/coloured yak fibres based yarns
- ⊙ Pectinolytic bacterial isolates for softening of barky root portion of jute fibre to improve its spinnability
- ⊙ Development of light weight open mesh jute based fabric with multicoloured check effect.
- ⊙ Development of fabric with different design from yarn of coarser yak fibre/jute blends
- ⊙ Proto-type working model of the handy jute fibre bundle strength tester
- ⊙ Tool for weaving narrow width prayer/yoga mats from coarse jute yarn/jute roving in hand loom
- ⊙ Process for development of semi-durable fragrance jute based home textiles

INSTITUTE ACTIVITIES

- ① 81st Foundation Day was celebrated on January 03, 2019 & foundation lecture was delivered by Dr. C.D.Mayee, Former ASRB Chairman
- ① Independence day and Republic day were celebrated in the institute premises.
- ① Honourable Shri. Aroop Biswas, Minister of Public Works and Youth Development & Housing, Govt. of West Bengal has visited the institute on June 12, 2018.
- ① Paid tribute to former Prime Minister of India Bharat Ratna late Shri Atal Bihari Vajpayee on September 16, 2018.
- ① Conducted a commemoration of the 150th Birthday of Mahatma Gandhi at the institute on October 02, 2018
- ① Conducted the web launching program on Pradhan Mantri Kisan Samman Nidhi Yojna on February 24, 2019
- ① Host the Web Cast Interaction of Hon'ble Prime Minister with SHG Members on the occasion of International Women's day on March 08, 2019
- ① Twenty six field level demonstrations on power ribboner (08) and accelerated retting Technology (18) under National Food Security Mission for the year 2018-19 were conducted
- ① Two NITI meetings, One RAC meeting, one IMC Meeting and two PMC Meetings were conducted
- ① Workshop on "Role of library as information tool in modern research" was held on August 08, 2018.
- ① Indian Jute Mills Association' Technical Committee has visited the institute on May 19, 2018.
- ① National Seminar on "Natural Fibre Resource Management for sustainable Development" was organized on February 02-03, 2019 in association with TINFS, NJB & NABARD
- ① ITMU conducted four ITMC meetings on 02.06.2018, 15.09.2018, 22.12.2018 and 16.03.2019 and two patents were filed
- ① A Farmers' Fair-cum-Technology Demonstration was organized on September 28, 2018
- ① Organized Mahila Kishan Divas (Women Farmers' Day) on October 15, 2018 at institute premises
- ① One-day Awareness Workshop cum IPR Clinic was organized on March 2, 2019
- ① An interface meeting was organised in collaboration with ICAR-NRC on Yak at Dirang on November 17, 2018
- ① Organized an Agri-Entrepreneur's Meet 2019 held on March 25, 2019
- ① Swachhta workshop under Swachh Bharat mission was organized at the institute on June 28, 2018
- ① Institute observed the Vigilance Awareness Week during October 30 to November 5, 2018
- ① World Soil Day was celebrated on December 5, 2018 in Babpur village, Barasat-1, North 24-parganas.
- ① Conducted four(4) NFSM sponsored National level Training programs on "Production and retting





technology of Jute/Mesta/Ramie/Sunn hemp including other related aspects” on July 11-13, July 17-19, July 23-25 and August 1-3, 2018.

- ⊙ Official Language (Hindi) Implementation Committee meeting for the four quarters were held.
- ⊙ Four Hindi Workshop were organised on 23.06.2018, 25.08.2018, 22.12.2018 and 16.02.2019.
- ⊙ Hindi Fortnight was celebrated in the Institute during 14-29 September, 2018 in which different competitions among staff members were organised.
- ⊙ “Parangat” Training for nine staff members was organized from July, 2018 to November, 2018.
- ⊙ “Praveen” Training for nine staff members was organised from January-May, 2018.
- ⊙ Thirteen(13) in-house seminar lectures were organised
- ⊙ Eight(08) self-sponsored training programs, three externally funded training programs, eight training programs under ABI project, one training program under SCSP programs were conducted
- ⊙ Institute participated & displayed the R&D products and technologies in thirteen different exhibitions / Melas
- ⊙ The institute budget was ₹ 23,56,41,000/= out of which the actual expenditure was ₹ 23,13,35,099 (98.2% utilisation).
- ⊙ Resource generation of the institute was ₹ 32,02,163/=

PATENTS

- ⊙ Granted = 01
- ⊙ Filed = 02

TRAINING / WORKSHOP/ EXTENSION ACTIVITIES

- ⊙ Exposure visit to institute = 04
- ⊙ Externally sponsored training programs = 06
- ⊙ Field level demonstrations = 26
- ⊙ In-house seminar = 13
- ⊙ Interface meeting = 03
- ⊙ NFSM sponsored national level training programs = 04
- ⊙ Participation in exhibition = 15
- ⊙ Self-sponsored training programs = 08
- ⊙ Technology Demonstration Mela = 01
- ⊙ Training program under SCSP = 01
- ⊙ Training programs on JDP = 08
- ⊙ Workshop cum IPR clinic = 01
- ⊙ Research paper presentation = 49
- ⊙ Invited /Keynote /Lead paper presentation = 04
- ⊙ MoU signed = 01

AWARDS

⊙ Best Paper / Poster	=	02
⊙ Appreciation received	=	01

PUBLICATIONS

⊙ Research Papers	=	36
⊙ Technical Articles	=	04
⊙ Popular articles	=	12
⊙ Book Chapters	=	07
⊙ Seminar/conference papers	=	16
⊙ Books/Manual/	=	07
⊙ Others	=	10
⊙ Multimedia CDs	=	03

PROJECT DETAILS AS ON 31ST MARCH 2019

Division	Number of projects			
	Ongoing	Completed	Extended	Started
Quality Evaluation and Improvement (QEI) Division	3	4	--	—
Mechanical Processing (MP) Division	4	3	1	1
Chemical and Biochemical Processing (CBP) Division	1	5	1	2
Transfer of Technology (TOT) Division	2	1	—	1
External funded projects*	6	2	--	—
Total	16	15	02	04

* The projects are sponsored by Coordinated Research Project (Fibre Platform) ICAR; National Agricultural Science Fund (NASF), ICAR; National Agricultural Innovation Fund (NAIF), ICAR and Ministry of Textiles, Govt. of India.



ABOUT THE INSTITUTE

ICAR - National Institute of Natural Fibre Engineering and Technology

This research institute was initially set up by the Indian Central Jute Committee, Government of India on the recommendation of the Royal Commission on Agriculture in 1936 at Calcutta. Then it was officially established as a research institute on January 3, 1939 by Lord Linlithgow, the then Viceroy and Governor-General of India.

In 1965, the institute became a constituent unit under the centralized administrative control of the Indian Council of Agricultural Research (ICAR), New Delhi and named as Jute Technological Research Laboratory (JTRL). JTRL had prospered with multifarious dimensions and developed many indigenous technologies for jute as well as for allied fibres.

In reorganization of R&D activities, ICAR had renamed the institute as “National Institute of Research on Jute and Allied Fibre Technology (NIRJAFT)” and also declared as a centre of excellence. ICAR-NIRJAFT has carried out basic and applied researches related to post harvest processes of jute and allied fibres such as mesta, linseed/flax, sisal, ramie, banana, sunnhemp, pineapple leaf, dhaincha, coconut fibre, yak hair, Indian wool fibre, silk fibre and other lesser known long vegetable fibres.

Being a lead research institute which was working in knowledge transfer and economic development activities for all natural fibres,

the council in its 245th Governing Body (GB) meeting held on November 10, 2018, promoted the institute to work continuously in the area of natural fibres and accordingly renamed as ICAR-National Institute of Natural Fibre Engineering and Technology (ICAR-NINFET).



MANDATE *(as per ICAR-NIRJAFT)*

- ① Basic and strategic research on processing jute & allied fibres and their agro-residues, development of value added products and quality assessment.
- ② Skill development and business incubation service on jute and allied fibre technologies

The institute is located on the southern fringe of Kolkata, known as Tollygunge, with a total plot area around 17,628 square meters. During last seven decades, the institute has flourished with multifarious disciplines and carved a niche as a centre of excellence for research on jute and allied fibres catering to the need of entrepreneurs and industry. The institute is adequately equipped with the state of the art laboratories having sophisticated tools, instruments and processing machinery. Institute is also recently certified for ISO 9001:2015 QMS for a period up to January 5, 2020.

The administration is headed by the Director and he manages the system with the help of Management

Committee, Joint Council and Grievance Cell. The R & D is being managed by Research Advisory Committee and Institute Research Council.

The institute has efficient administrative sections to support the research and dissemination activities. It also contains well managed guest house called scientists' home, trainees' hostel, and farmers' hostel. Institute has an auditorium (100 seats), BPD conference hall (60 seats), conference room (30 seats) and meeting room (20 seats) with well equipped air-conditioner and seating arrangements in order to organize seminars, meetings and other programs regularly.

The R&D programs of the institute are implemented through the following four divisions & different sections.

Quality Evaluation and Improvement (QEI) Division

QEI division engages in the area of fibre extraction, evaluation, quality assurance and grading. Up gradation of quality, evaluation of physiochemical properties of jute and allied fibres are the major contributions of this division including extraction of useful chemicals from agricultural by-products of fibre crops.

Mechanical Processing (MP) Division

MP division carries out basic and applied research on mechanical processing, quality control and product development from long vegetable fibres. Improvement of process, productivity & product quality; design & development of product, machinery & instrument; quality assessment on geo-textile, agro-textile, apparel, packaging, automotive and industrial textiles are the main areas of research of this division.

Chemical and Biochemical Processing (CBP) Division

CBP division works in the area of chemical/ biochemical processing, quality control and product development from all natural fibres. It has major contributions on pulp & paper; bleaching, dyeing & finishing; particle & fibre board; composites from jute and allied fibres. Advanced textile processing and biomass utilization are also important areas.

Transfer of Technology (TOT) Division

ToT division disseminates the institute's technologies, develops entrepreneurship providing the technical training and capacity building, arranges the front line demonstrations and participates in different exhibitions, fairs and Mela for promoting the developed technologies. It is also developing the project profile of viable technologies and rendering technical assistance for incubators.

In addition to the above division, the following sections are assisting to carry R&D works in the institute

Design, Development and Maintenance Section

DDM section assists in design and development or modification of machinery/prototype, equipment, and instruments for institutional purposes. It is also engaged in customary maintenance of machines and instruments; civil & electrical infrastructure of campus; security aspects, new infrastructure building activities and monitoring of car.



Priority setting, Monitoring & Evaluation Cell

PME cell helps to design and monitor the R&D programs of the institute. It is responsible for convening meetings of the Institute Research Council, Research Advisory Committee, and compiling the monthly, quarterly, half-yearly and annual technical reports of the institute. This unit also coordinates in technical inquiries from the council as well as Parliament questions from time to time.

Quality Assurance Section

QA section deals with evaluation of fibre quality and grading of jute and allied fibres. It is also associated with All India Network Project (AINP) for Jute and Mesta fibres. The section coordinates the system for acquiring and maintenance of ISO certification of the institute.

Library

Library acts as a centre of repository for scientific and technological information of jute & allied fibres including other ancillary disciplines by maintaining a large number of books, journals, reports, reprints, pamphlets. The library has developed suitable infrastructure for computerized operation.

STAFF POSITION AS ON MARCH 31, 2019

<i>CATEGORY</i>	<i>SANCTIONED</i>	<i>FILLED</i>	<i>VACANT</i>
RMP (Director)	01	--	01
Scientific	44	23	21
Technical	60	41	19
Administrative	35	22	13
Skilled Support Staff	41	16	25
Auxiliary(Canteen Staff)	04	02	02
Total	185	104	81

INSTITUTE' ORGANOGRAM

DIRECTOR



Research Divisions

- QEI DIVISION
- MP DIVISION
- CBP DIVISION
- ToT DIVISION

Research Management

- INSTITUTE RESEARCH COMMITTEE
- RESEARCH ADVISORY COMMITTEE

Administration & Finance

- ADMINISTRATION-I
- ADMINISTRATION-II
- ADMINISTRATION-III
- FINANCE & ACCOUNTS

Research Support Services

- PME CELL
- DDM SECTION
- QA SECTION
- LIBRARY
- ARIS CELL
- ITMU
- HINDI CELL

General Management

- DIRECTOR' CELL
- INSTITUTE MANAGEMENT COMMITTEE
- INSTITUTE JOINT COUNCIL
- INSTITUTE GRIEVANCE CELL

Common Facilities

- INSTITUTE GUEST HOUSE
- TRAINING HOSTEL
- FARMERS' HOSTEL
- INSTITUTE SALES COUNTER
- INCUBATION CENTRE
- PILOT PLANT
- RECREATION CLUB



RESEARCH HIGHLIGHTS



INSTITUTIONAL PROJECTS

QEI 17 : LACCASE FROM MICROBES FOR VALUE ADDITION IN JUTE

Dr. A. Das and Dr. B.Saha

One laccase producing fungal culture named P26 was isolated from rotten wood. The fungus produced both laccase and xylanase activities in broth as well as on solid state matrix. The cultures were further characterized and a protocol for bio-bleaching was developed.

Table 1: Density of bleached and unbleached jute fabric		
Sample		Density (g/m ²)
Scoured Jute Fibre		519.2
Laccase treated Jute fibre for	8 days	481.2
	10 days	453.7
	12 days	409.2

Jute fibre and grey jute fabric after scouring was treated with crude extract of P26 fungus (1.6 U laccase/ml) buffered with 0.1 M sodium acetate buffer (pH 4.3) for 8, 10 and 12 days at 40°C with gentle shaking. In case of fibre, there was about 57% increase in brightness index, 21% increase in whiteness index and about 18% decline in yellowness index after 12 days of bio-bleaching treatment.



In case fabric, there was about 59% increase in brightness index, 150% increase in whiteness index and about 7% decline in yellowness index after 12 days of bio-bleaching treatment. There was 21% decrease in density of jute fabric after 12 days of bio-bleaching treatment. Bio-bleaching treatment resulted in loss of strength down to 39% in fabric and 15% in fibre after 12 days of bio-bleaching treatment. Treatment of jute fibre with crude enzyme extract of P26 for 12 days resulted in 37% decrease in lignin and 40% decrease in pentosan content.

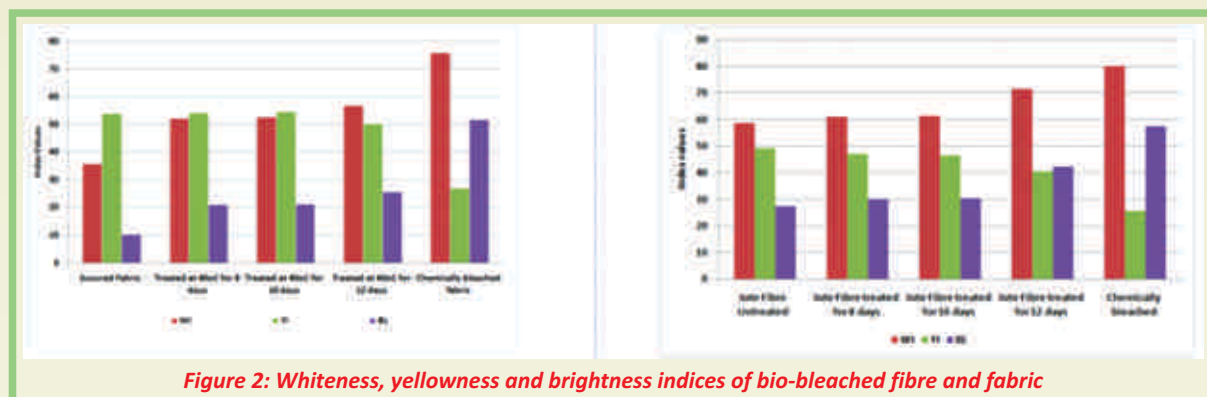


Figure 2: Whiteness, yellowness and brightness indices of bio-bleached fibre and fabric

QE19 : DEVELOPMENT OF TECHNOLOGY FOR EXTRACTION AND CHARACTERIZATION OF NANOCELLULOSE FROM JUTE CADDIES/ JUTE STICK

Dr. D.P. Ray, Dr. R.K.Ghosh and Dr. A. Singha

Nanocellulose is nano-structured cellulose and it may be either cellulose nano fibers or bacterial nanocellulose, which refers to nano-structured cellulose produced by bacteria. In this project an approach was made to obtain nano cellulose from two major by-products of jute i.e. jute sticks and jute caddies. In our study, the optimization of acid hydrolysis of alpha cellulose has been reported. The conversion of alpha cellulose to nanocellulose yielded 30% irrespective of the source of alpha cellulose.

For microbial and enzymatic conversion of alpha-cellulose, a few fungal strains have been identified and deployed for further degradation of cellulose. The enzyme assay was also done to find the effect of enzymes on the further fragmentation. Ten fungal populations were screened and out of which three were found to be effective for cellulose degradation. W4 was found to most effective transformer of cellulose. These fungal strains were incubated from 48 to 144 hours and the results are presented in Table 2.

Table 2: Conversion of a-cellulose to nanocellulose by fungal

Time	W1	W2	W3	W4	W5	W6	F1	F2	F3	S1
48h	35	0	61	0	35	9	0	9	9	53
72h	683	0	254	534	289	70	79	0	61	236
96h	420	0	324	630	315	744	0	0	35	175
120h	508	0	333	989	385	744	0	0	0	166
144h	263	0	333	639	315	656	0	0	0	88

The nanocellulose obtained through chemical, chemi-microbial and enzymatic process was characterized through instrumental technique. For application purpose the nanocellulose was used for preparation of nano-composites. Polyvinyl alcohol (PVA) and Carboxy methyl cellulose (CMC) based nano-composites were prepared in the laboratory which is water soluble and can be utilized for preparation of packaging and pharmaceutical purposes.



Figure 3: Preparation of nano-composite

QEI 21 : HANDY JUTE FIBRE BUNDLE STRENGTH TESTER FOR FARMERS

Dr. B. Saha and Sh. A. Sarkar



Figure 4: Handy bundle strength tester

In continuation of previous work, design of the first prototype instrument has been slightly changed for making it more convenient, precise and accurate. Second proto-type working model of the handy instrument has been developed with more sophisticated gripper arrangement with rubber pad. More trial runs have been done with six hundred samples. The instrument has been made with lighter metal sheet which made it lighter in weight. Metal chain has substituted ordinary thread to return back the pointer at initial position. Arrangement has been made to prevent movement of needle after breaking the fibre. Trial runs have been done with six hundred samples. Calibration with existing manual and electronic bundle strength tester has been done. Results have been compared with electronic and manual bundle strength tester

QEI 22 : DEVELOPMENT OF ACCELERATED RETTING TECHNOLOGY FOR JUTE AND MESTA PLANTS

Dr. D.P. Ray, Dr. R.K. Ghosh, Dr. A. Singha and Sh. A. Sarkar

Among the different recipes developed in laboratory, a nutrient based retting accelerator with combination of two other additives was found to be most effective in terms of retting of jute. The nutrient based formulation with two other additives was found to be most effective in faster retting of jute. The ratio variation in level of fortification and other components causes improper retting and thus screened out on the basis of its overall results. The recipes developed in laboratory were tested through initial screening of laboratory followed by field level experiment. The standardization of the application method and amount of formulation required was standardized through repeated trials.



Table 3: Evaluation trials of retting accelerator

<i>Sample</i>	<i>Root Content(%) by weight</i>	<i>Defects (%)</i>	<i>Strength (g/tex)</i>	<i>Fineness (tex)</i>	<i>Colour</i>	<i>B.D.</i>	<i>Grade</i>
Kalyanpur-T	5	1.0	24.14	3.2	F.Good	H.Bodied	TD-3+30% ↑
Kalyanpur-Con	15	1.0	16.5	3.4	F.Average	H.Bodied	TD-5+60% ↑
Bakshgarh-T	5	1.0	22.8	2.9	F.Good	H.Bodied	TD-3+15% ↑
Bakshagarh-Con	15	1.0	21.1	3.3	F.Average	M.Bodied	TD-4+30% ↑
Babuchara-T	8	1.0	22.7	2.9	F.Good	H.Bodied	TD-3
Babuchara-Con	8	1.0	17.1	3.3	F.Average	M.Bodied	TD-4
Barrackpore –T	5	0.5	19.0	3.1	V.Good	H.Bodied	TD-2+30% ↑
Barrackpore-Con	10	1.0	19.3	3.2	F.Good	H.Bodied	TD-4+75% ↑

It was found from the trials that around 10 kg powders is sufficient for retting of jute plant obtained from a bigha of land (~ 50 quintals). Large scale retting evaluation (~ 75 kg/ ha) was done using the formulation in following trials and results were analyzed. The results revealed that in all the evaluation trials, the formulation yielded better quality of fibre and the grades were improved around 1-2 grades over the control trials. Lowering of root content, diminishing of defects in fibres, improvement in strength, fineness and colour has contributed to the production of quality fibre over the control trials as per table 3. For environmental studies, pre- and post-retted water samples were collected from retting spots and tested in NABL accredited water testing laboratory. Results revealed that the contribution of retting formulation was at par with the conventional retting system and no additional burden was mingled with the retting process for use of retting formulation when it is compared with conventional process. Rather the retting process enriches the soil and water with nutrient inputs like major nutrients N, P, K, and micronutrients, Fe, Mn and Zn.

QE123 : JUTE MAPPING AND ESTIMATION OF FIBRE QUALITY

Dr. B. Saha, Dr. S.C. Saha, Sh. S Das and Sh. K. Manna

Soil samples were collected and tested in respect of micronutrients B, Mn, Zn, and macronutrients potassium (K_2O) and (P_2O_5) from selected blocks of North 24 Parganas and Nadia districts of West Bengal. Geo-referenced jute fibre samples were collected and tested using BIS grading system in respect of each surveyed location of respective blocks. Data compilation, uploading and processing were done in GIS platform using ArcGIS software. Thematic maps of fibre quality of *C. Olitorius (Tossa jute)* were developed in respect of jute growing blocks of North 24 Parganas and Nadia districts of West Bengal.

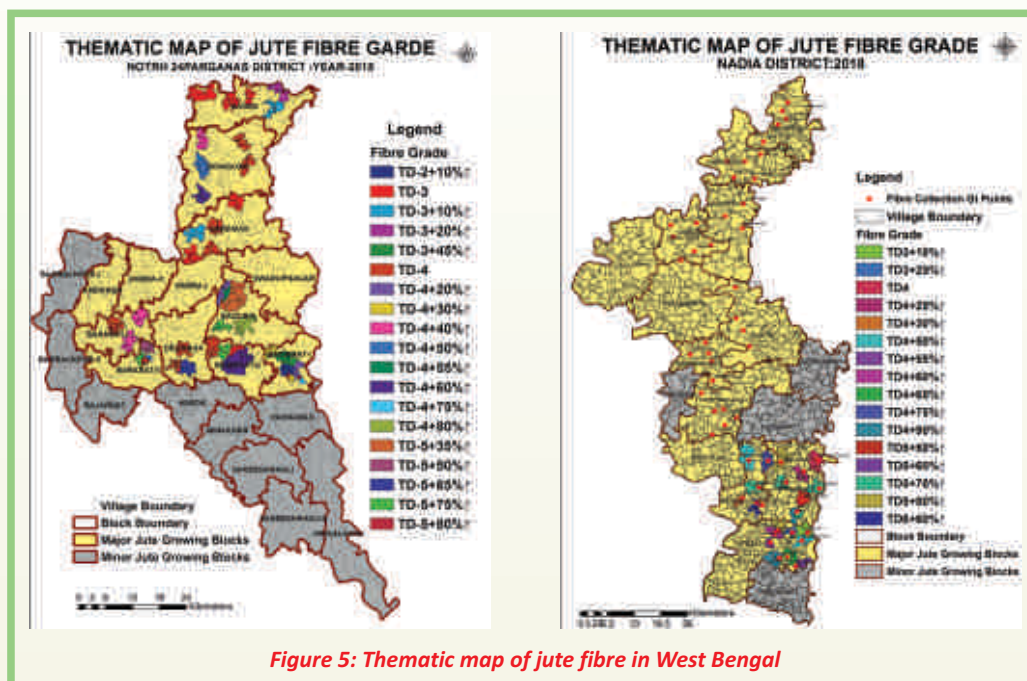


Figure 5: Thematic map of jute fibre in West Bengal

Comparing the nutrient status of jute growing fields of North 24 Parganas and Nadia districts it was observed that fields of North 24 Parganas were richer in nutrient contents during crop growing season. Fibre quality varied from TD5+35% \uparrow to TD2+10% \uparrow in case of North 24 Parganas district and TD6+30% \uparrow to TD3 in case of Nadia. Best quality jute fibre of North 24 Parganas district was found to be associated with availability of higher quantity of specific macro (P₂O₅ and K₂O) and micro-nutrients (B, Zn and Mn).

QE1 24 : MICROBIAL TREATMENT OF BARKY ROOT PORTION OF JUTE FIBRE FOR IMPROVEMENT OF SPINNABILITY

Dr. A. Singha, Dr. A. Das, Shri A. Sarkar

For softening of barky root portion of jute fibre through microbial treatment in order to improve its spinnability, 46 bacterial isolates were screened for pectinolytic activity. Out of which, two best strains AS11 and AS20 (potency index 4.1 and 4.0, respectively) were selected based on efficient pectinolytic activity. In an experiment, 87% reduction in barky portion was achieved with the bacterial consortium consisting of strain AS11 and AS20 in 10 days. When the sample amount was increased from 20 to 80g, 95% reduction of barky jute was achieved in 10 days as compared to control (55%) in a medium supplemented with 0.5% DAP (medium to culture ratio, 20:1). In another experiment with 8 kg sample 75 % barks had been removed in 10 days with 5% bacterial consortium. The treated fibre had a bundle strength 14.2-17.1 g/Tex, fineness 2.8-2.9 Tex and 54-59 colour %. The treated fibre was spun to make 12lb yarn. The quality ratio of the yarn was 60.5.



Figure 6: Microbial treated barky root cutting along with control

An up-scaling of the treatment was carried out with 25 kg fibre with media supplement (0.5%), water ratio (1:15) and 3% bacterial consortium (AS11:AS20, 1:1 ratio) in 4 days. Two types of jute yarn (12lb) had been successfully spun from the treated fibre. One yarn are from 100% treated fibre with mechanically softened cuttings and another yarn had been made mixing/batching with TD-4 grade jute fibre with a 50:50 ratio which enhanced quality ratio from 46.6 (100% treated fibre) to 68.9 (50:50 ratio).



Figure 7 : Untreated and treated barky root cuttings

MP 14 : DEVELOPMENT OF YARN FROM INDIAN FLAX FIBRE FOR TECHNICAL TEXTILES

Dr. S. Debnath and Dr. G. Basu

Flax is one of the oldest natural plant fibres as found from literature. In India flax is mainly cultivated for oilseed purpose to extract linseed oil. However there are good possibilities to extract good quality fibre for technical applications. During this period, procured 30 kg of decorticated Indian flax fibre of TIARA (JRF-2) variety from ICAR-CRIJAF, Sunnhemp Research Station, Pratapgarh, U.P. contained lot of broken sticks (around 30%), which are adhering with the fibres were cleaned prior to spinning process using manual hackling system has been designed, fabricated and perfected under this project earlier.

Industrial trial of Indian flax fibre for fine technical at Jaya Shree Textiles Ltd., Rishra, Hooghly-712249 on 17.08.2018, 21.08.2018 and 28.08.2018. Mild alkali treatment of 2% followed by salt of potassium iodine and non-ionic detergent treatment of raw flax fibre, ensure better opening and cleaning of

pectinous/gummy material present during manual hackling and carding processes. This improves in spinning performance. Indian flax of 'Tiara' variety, grown in Pratapgarh, could successfully processed at Jaya Shree Textiles, Hooghly for spinning 42 and 67 tex bleached yarn in line spinning (wet) system. The yarn is much suitable for manufacturing of technical textiles. However, line fibre was 50% only. The remaining 50% tow fibre can be converted into high tenacity industrial yarn of 276 Tex in jute spinning (dry) system having strength of 14.19 g/Tex. The quality ratio of this yarn is around 130.

MP 15 : DEVELOPMENT OF LOW AREA DENSITY JUTE NON-WOVEN FABRIC FOR CARRY BAGS

Dr. S. Sengupta and Mrs. P. Ghosh

Low area density jute non-woven fabric may be used to manufacture carry bags and is one of the promising alternatives for the jute industry in view of its high productivity and low wage component of the production cost associated with it. Jute-PLA thermal bonded fabric was optimized in terms of energy to break, porosity, extrinsic sorptive capacity, creep, tear strength considering PLA content percent, calendar roller pressure and calendar roller temperature. Jute adhesive bonded fabric was optimized in terms of air permeability, creep and moisture content considering adhesive concentration percent, squeezing pressure and curing temperature.

The developed fabrics were compared with market available commercial fabric of spun bonded and plastic sheet bag in terms of area density, tenacity, breaking elongation, initial modulus, creep, bursting strength, seam strength, tear strength and bending load. It was found that developed fabrics have higher area density, initial modulus, tear strength and bending load whereas lower breaking elongation and creep. Benchmark for the properties was suggested with proper reasons.

The decoration and finishing of fabric/bag were carried out by treatment with Silicone emulsion, dyed adhesive, processing with colored fibres, Fibre/fabric dyeing, calendaring, Fabric/ bag printing

Motif stitching and decoration by colored tapes or cords. Hanging test has been carried out and found that the developed bags are superior to commercial bag considering deformation percent. The developed bags have been absorbed by water and subsequently dried for 10 times. It was found that weight loss of jute adhesive bag and jute PLA bag are 0.2% and 0.5% respectively where as there was no dimensional change for both the bags. Drop test with 5 kg sand shows jute-PLA, Jute adhesive and commercial bag burst in 2, 3 and 1 fall respectively.

If those bags are kept in open atmosphere for 30 days colour change observed in all the bags but strength loss is much higher in commercial bag compared to developed bags. Cost of production, selling price and profit were calculated for both types of developed bags.





Strong bags



Fancy bags



Figure 8: Different type of bags

MP 16 : DEVELOPMENT OF INTERLINEAR/GARMENT STIFFENER/FILLER FROM SUNNHEMP AND BANANA NONWOVEN

Dr. S. Sengupta, Mrs. P. Ghosh and Sh. I. Mustafa

Products out of nonwoven from natural fibres would help to control pollution and solve the disposal problems, which various countries are facing with synthetics material. Sunnhemp and banana have many qualities for ideal replacements of synthetic fibres. An attempt may be made to make interlinear/garment stiffener/filler from sunnhemp and banana nonwoven. Depending on the outcome of central composite rotatable design based on independent parameters of adhesive concentration, squeezing pressure & curing temperature for banana adhesive bonded fabric; and polypropylene percent, calendar roller pressure & roller temperature for sunnhemp-polypropylene thermal bonded fabric, fabrics have been prepared with optimized parameters.

Functional properties of the above mentioned fabrics have been tested in terms of bending load, water absorbency, electrical and thermal resistance, air permeability and frictional force. The products like tea cozy, gloves, jacket, collar and bag were tested for thickness, insulation and bending and compared with commercial products and they are found comparable.



Figure 9: Different end products from sunnhemp & banana fibre nonwoven

MP 17 : DEVELOPMENT OF JUTE YARN DIAMETER IRREGULARITY TESTER

Sh. S. Das, Sh. M. Bhowmick and Sh. T.K. Kundu

Fabrication of yarn winding machine with USB camera arrangement has been completed. This machine has incorporated with two bobbins, black box with light arrangement, camera with stand, regulator, stop switch, motor and guides. Image processing software has been done which measure the yarn diameter and finally calculate diameter irregularity CV (%) in real time.

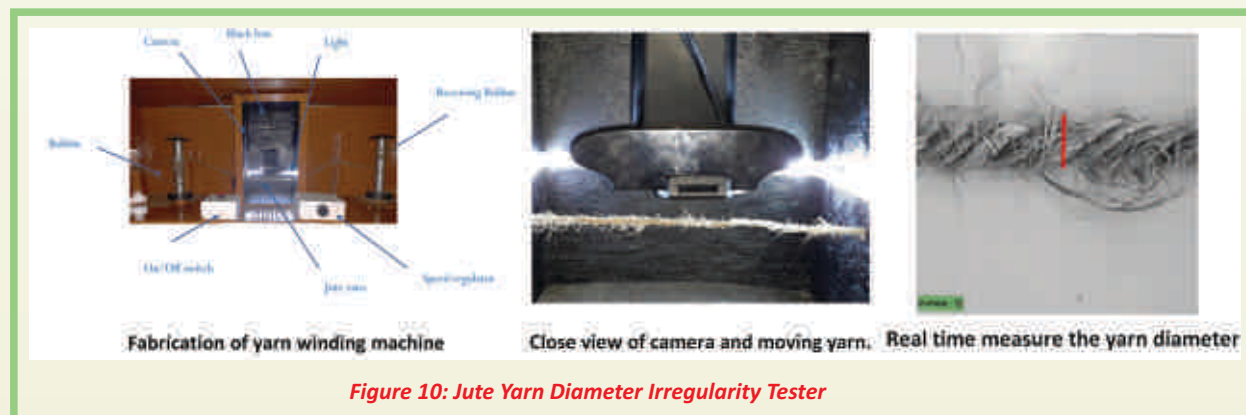


Figure 10: Jute Yarn Diameter Irregularity Tester

The moving jute yarn images are continuously captured by USB based camera in real time. Image processing has been done of the jute yarn image of each frame in real time of captured video processed like feature extraction, histogram equalization, filtration served to remove the excess hairiness of the yarn, the image intensity was adjusted to facilitate further processing next step a threshold value was calculated for the contrast adjusted image. Software has been done which detects exact edge of jute yarn. This software is removing the hairiness part of jute yarn and finally gives exact yarn area in black. Processed image of a yarn and the equivalent diameter variation plot and analyze the same to count the number of thick and thin places in the yarn have been done. Software is continuous measure the yarn diameter, coefficient of variation of the diameter is calculated to characterize the yarn diameter irregularity.



MP 18 : DEVELOPMENT OF DIGITAL DRAPE METER

Sh. M. Bhowmick, Dr. G. Basu, Sh. I. Mustafa and Sh. B. Das

Drape is the fabric quality used to describe the way a fabric hangs under its own weight. It defines how good a garment looks in use. Fabric drape is measured as per BIS standard IS: 8357-1977. In the digital drape meter to be developed the drape co-efficient will be measured digitally. The initial mechanical design of the super structure of the digital drape meter was carried out using computer aided design. Fabrication of the first



Figure 11 : Digital Drape meter

prototype of super structure was carried out at design development and maintenance section of the institute. For sensing the area under draped fabric a sensor based sensing assembly was designed and fabricated. For sensing the area under draped fabric an Infra-red sensor based sensing assembly was designed. Mechanism for precise rotation in a measured manner of the sensor assembly has been designed and fabricated. To display the results a LCD display unit was developed. The display unit could show the drape coefficient in percentage along with the area under shaded area and a representation picture of the cloth shaded area. The display will also show the different stages and instruction during the testing.

MP 19 : APPLICATION OF JUTE BASED AGRO-TEXTILES AS MULCHING MATERIAL FOR WIDE-SCALE AWARENESS OF FARMERS.

Sh. M. Bhowmick, Dr. S. Debnath, Dr. A. Singha, Er. H. Baite, Dr. N. Mridha and Mr. S. Karmakar

Jute agro textile is used as environment friendly material developed from jute fibre and used for protection of river banks, canals, slope management, road conservation. It can also be used for maintaining soil moisture, for controlling weed growth and to reduce soil erosion. A farmers field trial of Jute agro textile nonwoven material was conducted at Satyapole village, Haringhata, Nadia, West Bengal, 22°55'23"



Figure 12 : Weed control with jute mulch

(Latitude) and 88°34'33.6" (Longitude) in approximately 100 m² of area. Two types of jute mulches like jute mulch from good quality jute fibre and jute mulch from waste jute fibre were used for this experiment and compared with no-mulch as control. The high value horticultural crop selected was Broccoli (*Brassica oleracea* var. *italica*). The

Broccoli seeds were sown in nursery bed on November 2, 2018. Broccoli seedlings were transplanted to farmers' field on November 29, 2018. The plant to plant spacing was kept at 37 cm and the row to row spacing was kept at 45 cm.

Mulches were prepared from fresh jute fibre as well as from jute caddies were applied along with control as non-mulched area. The weed growth was seen negligible in the mulched area in comparison with non-mulched area. Soil moisture content was found to be highest under the cover of fresh jute mulch followed by

waste jute mulch and was lowest in the area without mulch. Soil temperature variation at both depths (15 & 30cm) was minimum (1.8%) in soil under fresh jute mulch followed by waste jute mulch (5.4%) and highest (10%) in control (without mulch).

MP 20 : DEVELOPMENT OF NATURAL FIBRE BASED MOULDED / LAMINATED PRODUCTS

Dr. S. Debnath, Dr. P.C. Sarkar, Sh. M. Bhowmick, Sh. I. Mustafa and Sh. T.K. Kundu

During the reported period, Jute cotton blended union fabric had been designed and developed for coated/moulded/laminated material as base material. Water insoluble synthetic polymer resin dissolve in suitable solvent was applied on the fabric by padding and hand spray methods followed by cured for 30 minutes at 120°C. Rigidity of the coated fabric has been improved significantly after curing and the polymer add-on was 12% and 25% in case of padding and hand spray method, respectively. No significant difference in air permeability in both the methods of coated/lamination observed. Thickness of the coated/lamination material increased significantly. Comparison of the commercial window blink material was made and found some similar properties like stiffness and recovery of bending. Lamination with some polymeric sheet was attempted but no promising result was achieved.

MP 21 : DEVELOPMENT OF LAMINATED NEEDLE PUNCHED NONWOVEN FOR IMPERMEABLE LIGHT WEIGHT PACKAGING

Dr. S. Sengupta, Dr. N. Mridha, Sh. I. Mustafa and Mrs. P. Ghosh

To impart impermeability and non-absorbency in the fabric without much increase of GSM, light impermeable lamination is required. Therefore, a work is carried out to standardize the process, product and quality for laminated nonwoven which may be used for packaging.



Pre-needle /needled nonwoven of 86, 160, 225 and 284 g/m² were prepared for lamination with 40 GSM polysheet. After lamination, delaminating force was tested for nip and line calendar, nip and dot calendar, flat calendar. Also, delaminating force of 86 GSM and 284 GSM fabric were tested for 90, 120, 150 and 1800C. Two types laminated nonwoven were tested for area density, thickness, density, bending modulus,

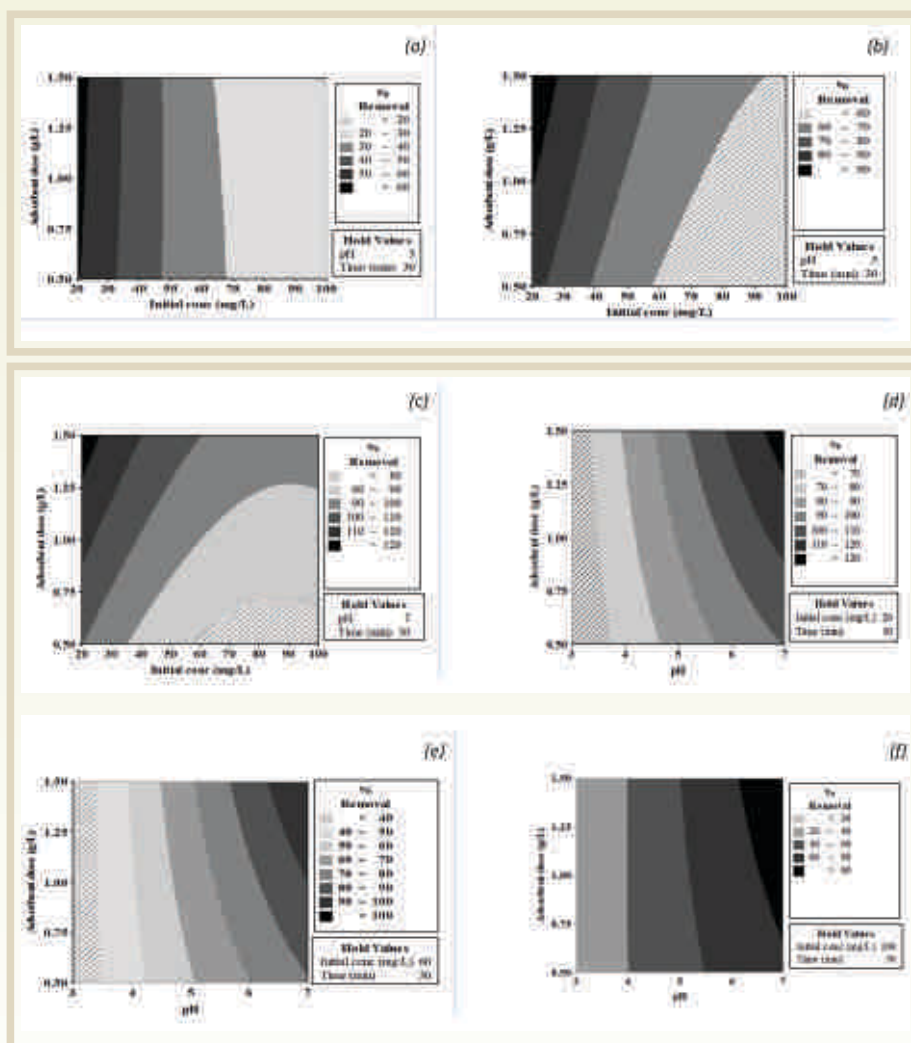


seam strength, tearing strength, thermal insulation, water absorbency, water permeability, air permeability, hanging deformation, vertical wetting test. Results show that addition of poly sheet increases tenacity, total energy, bending modulus, seam strength, tear strength, water absorbency, drop strength but reduces thermal insulation; and makes air & water permeability to zero.

CBP 12 : PREPARATION OF ACTIVATED CARBON FROM JUTE STICKS BY CHEMICAL ACTIVATION

Dr. R.K. Ghosh and Dr. D.P. Ray

Heavy metal removal by adsorption process is the most popular method to treat contaminated aqueous medium across the world and hence, search for an efficient and reusable adsorbent is ever evolving. In this study, activated carbon (JS-AC) from jute stick has been evaluated as a new adsorbent for removing cadmium (Cd), lead (Pb) and arsenic (As) from the aqueous medium. The direct and interaction effects of four independent adsorption factors namely, initial Cd concentration; adsorbent dose, solution pH, and time were investigated by applying response surface methodology (RSM).



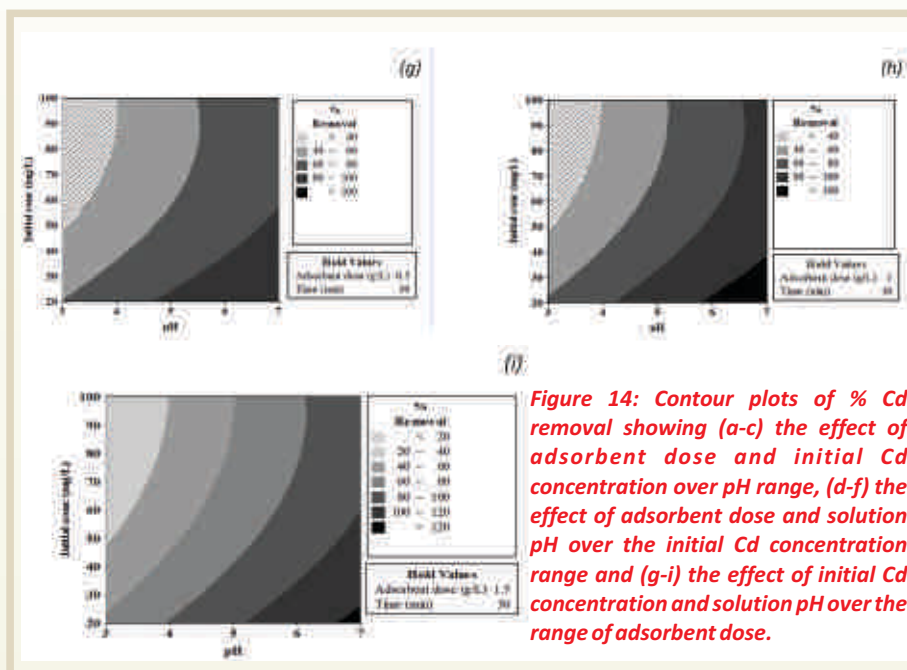


Figure 14: Contour plots of % Cd removal showing (a-c) the effect of adsorbent dose and initial Cd concentration over pH range, (d-f) the effect of adsorbent dose and solution pH over the initial Cd concentration range and (g-i) the effect of initial Cd concentration and solution pH over the range of adsorbent dose.

A 24 Box-Behnken matrix model with three centre points was applied. Process factors mainly, initial metal concentration, solution pH and adsorbent dose were the critical independent factor and time was a non-significant factor under present level of investigation on metal removal.


 भाकृअनुप-राष्ट्रीय अंगूर अनुसंधान केन्द्र ICAR-National Research Centre for Grapes											
NATIONAL REFERRAL LABORATORY											
Matrix Effect of different carbon treatments compared to commercial GCB											
PESTICIDES	RT (min)	Matrix Effect (%)									
		COMMERCIAL		ACTIVATED CARBON							
		5 mg GCB	10 mg GCB	5 mg C1	10 mg C1	5 mg C2	10 mg C2	5 mg C3	10 mg C3	5 mg C4	10 mg C4
Bifenthrin	5.52	20.70	38.17	44.40	40.00	11.48	6.00	11.93	10.81	16.39	18.97
Permethrin	7.02	21.95	40.75	100.00	57.45	7.89	9.25	54.00	26.00	15.63	23.50
alpha-BHC	6.95	27.40	42.71	54.56	41.10	11.42	10.70	17.09	30.71	17.00	18.17
Hexachlorocyclopentadiene	10.05	25.48	40.40	39.50	38.58	6.01	11.89	54.00	25.80	10.03	18.38
gamma-BHC	6.53	21.30	38.50	35.70	37.11	17.96	11.84	54.71	26.42	11.00	14.70
transfluthrin	10.89	21.15	44.29	29.11	54.70	25.30	24.11	56.58	32.60	25.20	17.80
Alfater	13.77	32.29	40.37	68.03	42.00	10.70	19.85	58.06	32.70	13.44	12.62
alpha-Chlorozone	11.90	26.22	45.03	42.40	40.88	15.46	15.34	35.08	34.50	26.80	31.53
Imidacloprid	15.82	54.47	60.85	59.54	56.94	45.17	39.53	50.12	46.95	40.62	45.15
alpha-THIO	14.44	39.01	46.34	42.41	51.30	10.02	17.82	45.93	39.52	15.41	42.00

Figure 15: Use of activated carbon for the detection of pesticide

At 10 ppm contamination level, JSAC was found effective adsorbent (>99% removal). Figure 14 represented the various interactions among the factors responsible for Cd adsorption. Similar, investigations were made for other studied metals also. JSAC was found effective and efficient as a clean-up material in comparison with GCB during a multi-residue analysis of pesticide in GC-MS (at pesticide residue laboratories of ICAR-NRCG, Pune & ICAR-CIFT, Cochin). Figure 15 indicated performance of various carbons in comparison with commercial GCB during pesticide residue analysis in okra matrix. It was found that Carbon-2 was very effective and performed better than the commercial product (report from ICAR-NRCG, Pune).



CBP 14 : MODIFICATION OF YAK FIBRE FOR MAKING IT SUITABLE FOR BLENDED YARN PRODUCTION IN JUTE SPINNING SYSTEM

Dr. K.K. Samanta, Dr. A.N. Roy, Dr. S. Debnath, Sh. K. Patra and Sh. K. Mitra

Yak hair fibre is mainly produced by the China, Mongolia and India. The fibre is available in three different fineness namely fine, coarse, and middle type fibres. The coarse fibre is quite thicker and stiffer, and hence does not utilize for high value end applications, including textile. Blending of yak fibre with jute fibre to develop blended yarn and fabric has not been reported to the best of our knowledge. In our work, physical, chemical and morphological properties of coarser black yak fibre before and after chemical treatment were studied in details to find out the possibility of blending with jute fibre for value added products development. Effort was also directed to change its black colour into golden yellow, a similar colour like jute fibre.

Coarser grade black colour yak fibre was also chemically modified to make it suitable for production of jute/yak fibres blended yarns by improving the co-efficient of friction. Jute/yak fibres blended yarns of count 275 tex were produced with different blend ratios viz. 100/0, 75/25, 50/50 and 25/75 (modified fibre) and used in weft direction for fabric development. It was noticed that the blended yarn, containing more than 50% untreated yak fibre component, was not possible to spin. It was due to instability and slippage of the jute/yak fibres blended sliver attributed to low co-efficient of friction (0.28) of untreated yak fibre.



Figure:16 Jute/yak fibres blended (a) jacket (b) carpet and (c) long coat

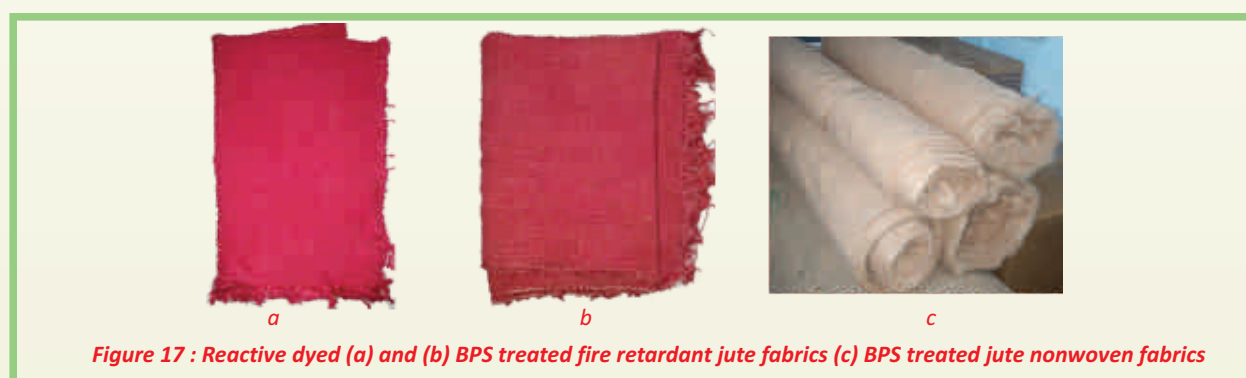
On the other hand, after chemical modification 75% yak fibre was possible to blend with 25% jute fibre to produce 25/75 jute/yak fibres blended yarn. Tenacity and tensile strain at break of the 50:50 jute/yak fibres blended yarn were 5.1 cN/tex and 1.1%. These values for the 25:75 jute/yak fibres blended yarn were 3.4 cN/tex and 1.9%, respectively. The 50:50 and 25:75 jute/yak fibres blended yarns were used as weft to produce plain weave (1×1) fabrics, where the black colour polyester spun yarn (29.5 Tex) was used as a warp. Jute/yak fibres blended textile products, such as jacket, over coat, blazer, carpet, etc were developed using dyed and un-dyed blended yarns in jute processing machineries. Blending length of those above fabrics varied from 5.3 cm to 6.0 cm. Ultraviolet protection factor (UPF) values of those fabrics were measured and all the samples showed UPF value of 50+ i.e., excellent category. An effort was made to use the coarser yak fibre for textile application for making novel warm garments to be used in cold climatic condition. The jute/yak fibre blended textile showed a thermal insulation value of 0.97 CLO. To improve the feel of jute/yak fibres (50:50) blended woven textile, it was finished with suitable softener. After application, fabric softness

improved notably; thus the total hand value (THV) of the samples increased from 2.38 in control sample to 3.28 in treated sample (1 means poor and 5 means excellent). Six long coats prepared from the jute/yak fibre blended and softening finished fabric, were given to the Indian Army and Paramilitary forces for their feedback.

CBP 15 : SUSTAINABLE FLAME RETARDANT FINISHING OF JUTE AND JUTE-COTTON FABRICS USING PLANT EXTRACTS

Dr. K.K. Samanta, Dr. S.N. Chattopadhyay and Sh. K. Patra

Natural fibres based textiles like jute, flax, ramie, banana, silk, etc. readily catch flame in an open atmosphere that needs to be reduced using suitable flame retardant finishing. Banana pseudo stem sap (BPS), an agro-residue, has been successfully used for flame retardant treatment of jute fabric. It is an environment friendly, natural and sustainable material produced from the renewable source. It is a by-product obtained during the extraction of fibres from the banana pseudo stem.



A jute fabric of 520 g/m² areal density with 37 ends and picks per inch was scoured and bleached with hydrogen peroxide before application of banana pseudo stem sap (BPS). The sap (BPS) was applied in the unbleached, bleached and dyed jute fabrics in alkaline condition by exhaust process. After application, the fabric was not catching flame and its limiting oxygen index (LOI) value improved notably from 22 to 30-34. All the treated samples could be considered as flame retardant, as their LOI value >27. The maximum average rate of heat emission in the untreated and banana sap treated fabrics were 76.0 and 69.4 kW/m², respectively. Bleached jute fabric was treated with commercial flame retardant (Eco-flame CT6) and compared with banana pseudo stem sap (BPS) applied jute fabric. The limiting oxygen index (LOI) value of BPS treated jute fabric was 30, whereas the Eco-flame CT6 treated sample showed value of 40. Bleached jute fabric was dyed using reactive dye and then BPS was applied in alkaline condition. After application, red value (a*) decreased from 57.2 to 39.7 and yellow value (b*) increased from 8.7 to 13.6 and the treated sample showed fire retardancy property. Raw jute fibre was treated with BPS and converted into fire retardant jute non-woven of 250, 480 and 750 g/m² areal densities.



CBP 16 : AROMA FINISHING OF JUTE TEXTILES

Dr. N.C. Pan, Dr. L. Ammayappan and Sh. A. Khan

During this period, different microcapsules i.e. Sodium Alginate/Polyvinyl Alcohol: Rosemary Oil, β -cyclodextrin: Rosemary Oil and Ethyl Cellulose: Lavender were prepared in the laboratory condition and their production yield (%), particle size (μ) and release kinetics were studied.

Results inferred that the yield is ranged from 53 to 68% in which the highest yield was observed in Sodium Alginate/Polyvinyl Alcohol: rosemary oil based microcapsule and lowest observed in Ethyl cellulose: lavender oil based microcapsule which may be due to less formation of homogenized wall polymer and improper encapsulation of the lavender oil in this polymer system. The particle sizes of the different microcapsules were analyzed and they ranged between 16 and 42, in which the higher size microcapsules observed in the β -cyclodextrin: rosemary oil based microcapsule and lower size observed in Sodium Alginate/Polyvinyl Alcohol: rosemary Oil based microcapsule.

Table 5: Fragrance grading after washing

Washing cycles →		0		5		10		15	
Microcapsule↓	Dye→	Syn	Nat	Syn	Nat	Syn	Nat	Syn	Nat
Chitosan: Jasmine oil based microcapsule		8.3	8.8	3.9	4.5	2.1	2.5	1.1	1.4
Chitosan: Citronella oil based microcapsule		8.1	8.6	3.6	4.1	1.8	2.1	0.8	1
Sodium Alginate/Polyvinyl Alcohol: Citronella Oil based microcapsule		7.9	8.4	3.5	4	1.7	2	0.7	0.9
Gum Arabic: Citronella Oil based microcapsule		8	8.5	3.4	4.2	1.6	2.2	0.6	1.1
Ethyl cellulose / Lavender oil based microcapsule		7.6	8.1	3.5	4	1.7	2	0.7	0.9
Rosemary : Beta-cyclodextrin based microcapsule		7.7	8.2	3.4	4	1.6	2	0.6	0.9
Rosemary : Sodium Alginate/ PVA based microcapsule		7.4	7.8	3.3	3.9	1.5	1.9	0.5	0.8

Syn – Synthetic dye (reactive dye); Nat-Natural dye (Annatto)

Bleached jute fabric dyed with reactive dye (Procion Green) & Natural dye (Annatto) in the dark shade. 10 g/L microcapsule stock solutions were prepared and the pH of the stock was adjusted to 6.0 by adding dilute acetic acid solution. Dyed jute fabric was impregnated in the aroma finishing solution for 5 minutes and padded with 95±5 % expression and dried at 70°C for 10 minutes. Washing durability of fragrance finished jute fabric was carried as per AATCC 61(2A)-1996 test method. After each five washing cycles, fragrance of the finished jute fabrics was evaluated by a subjective assessment method. Dyed jute fabric does not have

any smell / fragrance due to removal of the added and adhered impurities from the jute fabric during dyeing process.

After fragrance finishing, obviously all judges gave excellent grade to finished jute fabric (0 washes), while after washing the fragrance grade is significantly reduced with increasing in the washing cycles. However, the fragrance grade is better in natural dye dyed jute fabric than synthetic dye dyed fabrics and it may be due to presence of additional metallic mordants which can make strong bonding with wall material. After 5 home laundering washes, there is a mild fragrance is available in the dyed jute fabric. With increasing in the number of washing cycles, there is no fragrance on the dyed fabric which may be due to removal of microcapsules.

Among the different microcapsules, Chitosan based microcapsule shown better fragrance than Ethyl cellulose / Gum Arabic / Beta-cyclodextrin / Sodium Alginate & PVA based microcapsules, which may be due to improper formation of microcapsules by the methods. Among the fragrance oil, Jasmine oil & Citronella oil showed better stability than Lavender oil & Rosemary oil, which may be due to its flash point (77.0) and less solubility in water. Bleached jute fabrics were dyed with reactive dyes in dark shade and then finished with three microcapsules i.e. Chitosan: Jasmine oil based microcapsule, Gum Arabic: Citronella Oil based microcapsule and Rosemary: Sodium Alginate/PVA based microcapsule.

After fragrance finishing, those fabrics used for development of home textiles like kitchen apron, indoor curtains, laboratory hanging and pillow cover. All products were kept at conventional atmospheric condition and every week their fragrance grades were assessed. It is found that all microcapsule finished products sustained up to 30 days and also last their fragrance up to five home launderings.

CBP 17 : DEVELOPMENT OF JUTE BASED COMPOSITE PRODUCTS

Dr. L. Ammayappan, Dr. K.K. Samanta and Sh. K. Patra

During this period, physically (dry heat treatment at 100, 120, 140 & 160°C) at and chemically (acrylonitrile 0.25, 0.50, 1.0 & 2.0%) modified jute nonwoven fabrics of 300 GSM in 60 X 60 cm dimension used for preparation of composite sheet as per hand laying cum compression moulding method and evaluated for their mechanical properties.

The tensile properties of dry heat treated (DHJNWC) and acrylonitrile modified (ANJNWC) jute nonwoven fabric based composites inferred that tensile load required to break the physically & chemically modified JNWC are higher than control composites (CNWC). It is also revealed that the tensile strength of DHJNWC is 17 to 55% higher and ANJNWC is 40 to 56% higher than CNWC respectively. It is clearly indicated that CJBC has poor interfacial adhesion between jute and polyester resin, which initiates flaws and subsequently weakening the composite during tensile loading. With respect to chemically modified JNWC, the range of improvement in tensile strength after chemical modification is lower (16%) while after physical modification is higher (38%).

Flexural strength results inferred that flexural load required to break the physically & chemically modified JNWC are higher than control composites. The flexural strength of DHJNWC is 6 to 51% higher and ANJNWC is 32 to 66% higher than CNWC respectively. Similarly in tensile properties, chemically modified JNWC, the



range of improvement in flexural strength after chemical modification is lower (34%) while after physical modification is higher (45%).

Results inferred that, the inter-laminar shear strength of the composite is improved significantly after dry heat treatment in the range between 7.2 and 11.2 N/mm² @ 19 to 56%. It is attributed to the fact that dry heat treatment improved the roughness of jute fibre that ultimately increases the mechanical interlocking between fibre and polyester resin to a greater extent. However after 150°C dry heat treatment; there may be degradation of the jute fibre which results in the reduction of the strength from 7.2 to 5.9 @ 17%. It is also well known that good interfacial adhesion can increase mechanical interlocking, chemical bonding and inter-diffusion bonding between fibre reinforcement and polymer matrix. Chemically modified jute fibre leads improvement in interfacial adhesion between jute reinforcement and UPR polymer matrix which results in an improvement in short beam shear strength.

Table 6: Mechanical properties of modified jute nonwoven fabric based composites

Treatment condition		Tensile Strength (Mpa)		Tensile Modulus (Gpa)		Flexural Strength (Mpa)		ILSS(N/mm ²)	
Physical	Chemical	Physical	Chemical	Physical	Chemical	Physical	Chemical	Physical	Chemical
Control		35.6		3.42		53.3		7.2	
100 °C	0.25%	41.6	50.0	3.95	3.95	56.5	70.1	8.8	9.3
120 °C	0.50%	49.9	54.2	4.55	4.48	67.9	83.1	11.2	7.7
140 °C	1.0%	55.3	55.7	4.85	4.78	80.5	88.6	7.9	9.5
160 °C	2.0%	42.4	50.9	4.22	3.95	60.8	73.3	5.9	7.2

To study the stability of the developed jute based biocomposites, the environmental studies i.e. Accelerated ageing, Water absorbency test and Hot water swelling test have been carried and their flexural strength were evaluated and the respective data were presented in the table 4. It is found that the flexural strength of the composite samples were reduced after exposure to water swelling, accelerated ageing and hot water swelling and it may be due to change in the physical properties of the fibre reinforcement as well as weakness in the interface between the fibre reinforcement and polymer.

Table 7: Flexural properties (MPa) of dry heat treated jute nonwoven fabric based composites

Treatment condition		Before treatment		After Accelerated ageing		After Water swelling		After Hot water treatment	
Physical	Chemical	Physical	Chemical	Physical	Chemical	Physical	Chemical	Physical	Chemical
Control		53.3		30.1		40.9		40.4	
100 °C	0.25%	56.5	70.1	35.5	44.9	44.9	44.9	44.9	70.1
120 °C	0.50%	67.9	83.1	43.9	54.2	54.2	47.5	47.5	83.1
140 °C	1.0%	80.5	88.6	52.3	64.8	64.8	52.9	52.9	88.6
160 °C	2.0%	60.8	73.3	39.4	46.9	46.9	42.6	42.6	73.3

The flexural strength of the control composite is reduced from 53.3 MPa to 30.1-40.9 MPa and the reduction in the flexural strength is higher in accelerated ageing (30.1 MPa) than water ageing (40.4 MPa) and it may be due to accelerated ageing and explanation as follows: First, the internal thermal stress of the composites is accumulated at higher temperatures, which promotes the weakening of the polymer chains. The percentage of reduction of flexural strength due to water ageing and thermal ageing in the control sample are 44% (53.3MPa to 30.1 in accelerated ageing) and 24% (53.3 MPA to 40.3MPa) respectively due to the hydrophilic character of jute fibers and the presence of voids at the polymer–fiber interface may increase the ability of water molecules to penetrate into the composites.



CBP 18 : DEVELOPMENT OF UNIVERSAL BLEACHING PROCESS OF JUTE FOR TEXTILE AND NON-TEXTILE APPLICATIONS

Dr. S.N. Chattopadhyay, Dr. N.C. Pan, Sh. A. Khan and Sh. S. Bhowmick

Standardization of bleaching process using per acetic acid was carried on jute fibres considering whiteness, tensile strength retention and weight loss as important parameters.

During the period under report of comparative study of bleaching using standardized recipe for PAA bleaching and conventional hot hydrogen peroxide bleaching has been done. A preliminary study on hybrid



bleaching of jute using the both oxidizing bleaching agent i.e. per acetic acid and hydrogen peroxide by two step two bath method is on progress. Results inferred that jute fibre, yarn and fabric can be bleached with per acetic acid with satisfactory whiteness (75-80 whiteness index in HUNTER Scale) which is comparable to that produced by conventional hydrogen peroxide bleaching (whiteness index is 77-84 in HUNTER Scale).

Table 8: Bleaching of jute materials using per acetic acid (PAA) and hydrogen peroxide (HP)

Sample name	Whiteness Index (HUNTER)			Bundle strength of fibre (g/tex)
	Fibre	Yarn	Fabric	
RAW JUTE	50.5	44.1	50.6	21.0
PAA JUTE	77.4	74.2	77.7	19.5
PAA JUTE NID	81.3	--	--	19.6
HP JUTE	84.6	77.5	81.6	16.5

It is revealed that retention of tensile properties after bleaching is excellent in per acetic acid bleaching (95%) whereas it is only 75-80% in case of conventional hydrogen peroxide bleaching. Hybrid bleaching of jute using per acetic acid followed by hydrogen peroxide by two step two bath method results in better whiteness and brightness

Table 9: Optical properties of hybrid bleached jute yarn

Sample name	Whiteness Index (HUNTER)	Sample name	Whiteness Index (HUNTER)
HP 25 > PAA 25	75.3	PAA 25 > HP 25	76.6
HP 50 > PAA 25	79.8	PAA 50 > HP 25	80.3
HP 75 > PAA 25	80.5	PAA 75 > HP25	81.7
HP 50 > PAA 50	77.8	PAA 50 > HP 50	80.9

CBP 19 : COATING JUTE FABRIC TO IMPROVE ITS FUNCTIONAL PROPERTIES FOR USE AS RIGID / SEMI RIGID PACKING MATERIAL

Dr. P.C. Sarkar, Dr. L. Ammayappan, Sh. A. Khan and Sh. I. Mustafa



Two numbers of semi-synthetic coating formulations based on lac and synthetic resins i.e. polyvinyl butyral and butylated melamine formaldehyde were formulated in solvent medium and they designated as Fabric Coat-3 and Fabric Coat-4 (FC-3 and FC-4), their nano-derivatives using commercial zinc oxide and silica nano-particles were also prepared. These six formulations were applied on plain 2 x 2 weave jute fabric using pad-dry-cure as well as manual spray techniques. It was observed that padding was not suitable as it led to wastage of

coating material and excessive impregnation of fabric. Hence, spray technique was adopted for application purposes. The coated fabrics were air dried and cured in oven at 120°C for 20 minutes.

The treated fabrics were then subject to tests for bending, flexural rigidity, pore size, tensile strength, imaging analysis, colour, and FT-IR. GSM and add-on % were calculated. It was observed that resin add-on ranged from 7.2–7.5% in FC-3 and 7.2-9.8% in FC-4 series, FC-3 imparted greater rigidity to the fabric, as compared to FC- 4. Both formulations suppressed the hairiness of the fabric. Coating treatment did not drastically alter tensile strength; initial modulus was higher in FC-3 and FC- 4 as compared to control fabric. As expected, pore size was reduced after coating, but pores were not fully blocked, which would be a desirable feature in 'breathable' packaging applications. Incorporation of nano-particles did not bring about any drastic difference in the functional properties of the coated fabrics.

TOT 10 : DEVELOPING AND UNDERTAKING OF EXTENSION SERVICES FOR EFFECTIVE DISSEMINATION OF INSTITUTE TECHNOLOGIES

Dr. S.B. Roy, Dr. L.K. Nayak, Dr. D.P. Ray, Dr. V.B. Shambhu, Dr. S.C. Saha, Sh. S.Das and Sh.K.Mitra

During the period, institute organised seven self-sponsored training programs, three externally sponsored training programs, twenty one field-level demonstrations on accelerated retting on jute plants, eight FLD on jute ribboner and participated in thirteen exhibitions for the successful dissemination of technologies.

Self-sponsored training programs

Seven numbers of Self-sponsored basic and advanced training on Jute Handicrafts, Bleaching & Dyeing, Jute Advanced Jewellery and Jute Handbags/ Shopping Bags, Handmade Paper from Jute imparted during the reporting period.

Table 10: Details of the self-sponsored training programs

S.No	Training on	Period	Male	Female
1	Jute Hand/Shopping Bag	May 21-June 2, 2018	08	10
2	Jute Advanced Jewellery	July 16-28, 2018	01	12
3	Bleaching and dyeing of Jute	August 6-10, 2018	03	06
4	Jute Hand/Shopping Bag	September 10-25, 2018	09	09
5	Handmade paper from Jute	November 27- December 1, 2018	10	00
6	Handmade paper from Jute	December 3-7, 2018	09	00
7	Jute Handicrafts and Jute Jewellery	January 7 – 21, 2019	04	11



Figure 19: Self-sponsored training programs

Externally sponsored training programs

Three skill development training programs (12 days duration) on “Jute Handicrafts, Jute Bag Design Development & Bleaching Dyeing” sponsored by Office of Additional Chief Secretary, Co-operation Department, Govt. of West Bengal have been conducted by the institute during the following period at different places.

Table 11: Details of the externally sponsored training programs

S.No	Duration & Venue	Venue	Beneficiary
1	July 16 – August 14, 2018	ICAR-NIRJAFT, Kolkata.	25 progressive female farmers of South 24 Parganas district, West Bengal
2	September 10-29, 2018	Coochbehar, West Bengal	25 progressive female farmers of Coochbehar district, West Bengal
3	September 25 – October 12, 2018	Krishnagar, Nadia, West Bengal	25 progressive female farmers of Nadia district, West Bengal



a) Training on jute handicraft at ICAR-NIRJAFT



b) Certificate distribution by
Shri M.V.Rao, IAS, Additional Chief Secretary



c) Inauguration of training program
at Coochbehar



d) Training progress at Coochbehar



e) Inauguration of training program
at Krishnanagar



f) Products developed by participants
at Krishnanagar

Figure 20: Externally sponsored training programs

FLDs on Accelerated Retting of Jute

Eighteen (18 Nos) of field level demonstration on Accelerated Jute Retting Technology for whole jute plant were conducted during the reporting period with the collaboration with different stakeholders.

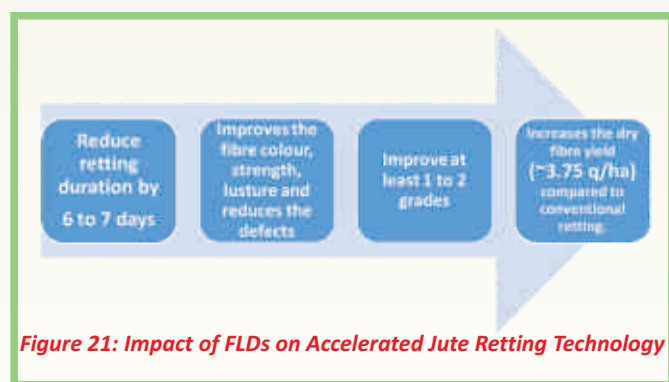


Table 12: Details of FLD on accelerated retting

S.No	Date	Places of FLD	Organised in collaboration with
1.	20.07.2018	Barrackpore	Nuziveedu Seed Company
2.	20.07.2018	Kirtipur, Barasat-II	Department of Agriculture, Govt. of WB
3.	27.07.2018	Kalyanpur, Burdwan	Hooghly Farmer Producer Company Ltd
4.	27.07.2018	Babuchara, Hooghly	Hooghly Farmer Producer Company Ltd
5.	30.07.2018	Bakshagarh, Hooghly	Hooghly Farmer Producer Company Ltd
6.	30.07.2018	Icchapur, Hooghly	Hooghly Farmer Producer Company Ltd
7.	06.08.2018	Bhavanipur, Nadia	Haringhata Farmers Co-operative Society
8.	06.08.2018	Satyapole, Nadia	Haringhata Farmers Co-operative Society
9.	07.08.2018	Kalna, Burdwan	Hooghly Farmer Producer Company Ltd
10.	07.08.2018	Tinchara, Burdwan	KVK, Hooghly
11.	13.08.2018	Khamarpara, N-24 Pgs	Department of Agriculture, Govt. of WB
12.	13.08.2018	Saiberia, N-24 Pgs	Department of Agriculture, Govt. of WB
13.	03.09.2018	Badshanagar, Naoda	Ramakrishna Mission, Sargachhi, WB
14.	03.09.2018	Sarbangapur, Murshidabad	Ramakrishna Mission, Sargachhi, WB
15.	04.09.2018	Sonatikuri, Murshidabad	Ramakrishna Mission, Sargachhi, WB
16.	14.09.2018	Pitambarpur, Chapra	Farmers Field
17.	14.09.2018	Pukhuria, Nadia	Farmers Field
18.	17.09.2018	Pareshnathpur, Naoda	Ramakrishna Mission, Sargachhi, WB
19.	02.10.2018	Sonatikuri North,	Ramakrishna Mission, Sargachhi Murshidabad
20.	02.10.2018	Sarbangapur, Murshidabad	Ramakrishna Mission, Sargachhi
21.	03.10.2018	Badshanagar, Naoda	Ramakrishna Mission, Sargachhi

Data analysis based on above FLD revealed the following findings:

- Reduce retting duration by 6 to 7 days, and Improve at least 1 to 2 grades
- Improves the fibre colour, strength, lustre and reduces the defects
- Increases the dry fibre yield (~3.75 q/ha) compared to conventional retting



Data analysis based on above FLD revealed that Ribbons/ barks peeling capacity of improved ribboner is about 150 kg green biomass/ hour which impacts on retting period that reduced to 5-8 days.

FLDs on Jute Ribboner

- Eight (08) field level demonstrations on “Improved retting technology through power ribboner” were organised at different villages of west Bengal during 2018-19

Table 13: Details of FLD on Jute Ribboner

S.N	Date	Places of FLD	In collaboration with
1.	20.07.2018	Ranigachi, Bhangar – I, 24 Parganas (S)	Sasya Shyamala KVK Sonarpur
2.	25.07.2018	Pukhuria, Chapra, Nadia	Farmers Field
3.	03.08.2018	Shridharpur, Ranaghat- 2, Nadia	Farmers Field
4.	08.08.2018	Badai, Barasat - I, 24 Parganas (N)	Badai Farmers club
5.	01.09.2018	Pitamberpur, Chapra, Nadia	Farmers Field
6.	03.09.2018	Chakudanga, Chakdah, Nadia	Farmers Field
7.	05.09.2018	Dubramatpara, Chakdah, Nadia	Farmers Field
8.	12.09.2018	Rasulpur, Gopalnagar, 24 Parganas (N)	Farmers Field



a) FLD at Shridharpur



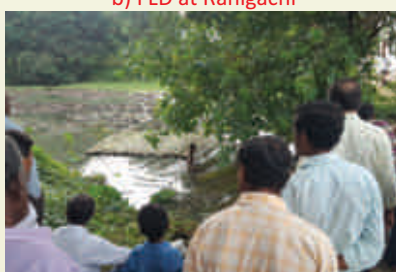
b) FLD at Ranigachi



c) FLD at Pukuria



d) FLD at Murshidabad



e) FLD at Balagarh



f) FLD at Bakshagarh

Figure 22: FLD on Jute ribboner and accelerated retting technology at different fields

Participation in Exhibitions

ICAR-NIRJAFT organized an Exhibition on the occasions of visit of Mr. Arup Biswas, Minister of Youth Development and Housing, West Bengal at ICAR-NIRJAFT on June 12, 2018. Institute also organized an exhibition on the occasions of Women Farmer's Day in the institute campus on 15th October 2018. Fifteen numbers of exhibitions have been participated to display institute technologies throughout India.



Table 14: Details of exhibitions participated

Program	Organized by	Venue	Duration
Visit of Mr. Aroop Biswas, Minister of Youth Development and Housing, West Bengal	ICAR-NINFET	ICAR-NINFET	June 12, 2018
22nd National Exhibition	Central Calcutta Science & Culture Organisation for Youth	Milan Samity Maidan, Nimta, Belgharia	August 3-6, 2018
Farmers' Fair-cum-Technology Demonstration	ICAR- NINFET, Kolkata	ICAR-NINFET	September 28, 2018
Exhibition in a seminar cum workshop on Agricultural activities	Govt of West Bengal	Mahar Brahmanmoyee High School, Sabang, Paschim Medinipur	October 3, 2018
Agri-Start up & Entrepreneurship Conclave	IPTM Unit, ICAR, New Delhi	NASC Complex, New Delhi	October 16-17, 2018.
Indian Handicrafts & Gift Fair (IHGF) Delhi	Export Promotion Council of Handicrafts	Greater Noida, New Delhi	October 14-18, 2018
Women Farmer's Day, 2018	ICAR- NINFET, Kolkata	ICAR-NINFET	October 15, 2018
Exhibition Kumbh Mela 2019	ICAR & IISR	IISR, Lucknow, Uttar Pradesh	October 26-28, 2018
India International Trade Fair 2018	India Trade Promotion Organisation (ITPO)	Pragati Maidan, New Delhi	November 14-27, 2018
Krishi Samridhi Mela 2018 cum National Workshop on Integrated Farming System	RMA, Sargachi & Dhaanyaganga KVK, ICAR -CISH, RRRS, Malda & DoA, Murshidabad, Govt of WB	Ramakrishna Mission Ashrama, Sargachi, Murshidabad, West Bengal	December 28-31, 2018
Exhibition Technology week and District Krishi Mela 2019	Krishi Vigyan Kendra, Jagatballabpur	Krishi Vigyan Jagatballabpur, Howrah	January 14-16, 2019
National seminar on Natural Fibre Resource Management for sustainable Development	TINFS, ICAR-NINFET, NJB and NABARD	ICAR-NINFET, Kolkata	February 2-3, 2019
Krishi Kumbh Mela 2019	ICAR-MGIFRI, Motihari, ICAR-RCER, Patna & Dr.RPCAUI, Pusa, Samastipur	Motihari, Bihar	February 9-11, 2019
District Krishi Mela and Technology Week Celebration	Sasya Shyamala KVK & Ramakrishna Mission Vivekananda Educational and Research Institute	KVK premises at Arapanch, Sonarpur	February 14-16, 2019
12th All India People's Technology Congress	Forum of Scientists, Engineers & Technologists, Kolkata	Kolkata	February 17, 2019



India International Trade Fair 2018



Krishi Samridhi Mela 2018



FOSET 2019



22nd National Exhibition 2018



Krishi Kumbh Mela 2019



Krishi Mela 2019, Howrah



Institute's stall at NASC Complex, New Delhi



Institute's stall at Noida

Figure 23: Institute's stall at different exhibitions / Mela



The impact of different capacity building programs and empowerment of stake holders through self-sponsored training programs and their participation in different exhibitions were reflected in institute sales corner by sale of raw materials by prospective entrepreneurs and it reaches about 124 in numbers. The distribution of prospective entrepreneurs who purchased raw materials from sales corner of ICAR-NINFET with different proportions of male and female in different districts of west Bengal are given in the following figure.



TOT 11 : IMPROVEMENT, UPSCALING AND POPULARIZATION OF POWER RIBBONER

Dr. V.B. Shambhu, Dr. A.K. Thakur, Dr. L.K. Nayak, and Sh. B. Das

Jute and Mesta are commercially important for the farmers to grow as a cash crop and conventionally water retting is used to extract jute fibres. Retting is the single most critical parameter which largely contributes to the quality of fibre. The erratic and scanty rain fall at the time of harvesting as well as depleting water body provided a difficult situation for farmers to get the proper retting of jute and Mesta.



Figure 24: Jute Ribboner

Key findings

- Prototype of improved power ribboner with enhanced capacity and with easy transportability has been developed and tested for ribbons separation.
- Diesel/ kerosene engine was also incorporated as an alternate source of power.
- The retting time for ribbons was reduced to about 6-8 days as compared to about 18-20 days in conventional retting with whole plants in farmers' fields.

Various components/parts of power ribboner machine like fluted rollers with improved flute profile, conveying rollers, different gears, rubber rollers, different types of slots etc. and frame base was fabricated for development of new and improved prototype ribboner machine. Suitable wheels were provided for easy transportability. Assembled / fitted various components/ parts such as special designed fluted rollers, spring pressure system to rear fluted rollers, conveying system, spring loaded rubber rollers, gears and scrapper with felt to develop a new and improved power ribboner machine. Trial run of the improved ribboner was conducted at Institute laboratory. Based on the trials, the shortcomings are being improved for its better performance.

TOT 12 : DEVELOPMENTS AND PERFORMANCE EVALUATION OF PORTABLE WATER TANK FOR RETTING OF JUTE RIBBONS AND ROOT CUTTINGS

Dr. A.K. Thakur, Dr. A. Singha and Dr. V. B. Shambhu

The method of jute retting typically involves two different phases; one is physical and another is biochemical phase. The conventional retting process of jute is dependent on many natural factors and the process contributes a reasonable environmental pollution. Availability of high grade good quality fibre is limited due to scarcity of large volume of free flowing water and improper retting technologies. Thus conventional retting process in ditches and ponds leads to shorter fibre length, dull colour and rough surface with increased proportion of cuttings and faults. Retting of whole plant in inadequate poor quality water yields more baky jute which is of no use in the mill. The jute mills normally discard 10-12 inches length of baky jute during the mechanical processing for yarn making. Considering the above facts and gaps in the area of retting technology, it is visualized that the retting process of jute needs to be mechanized or semi-

mechanized by developing a water tank with controlled flowing of water for artificial retting of jute ribbons and jute cuttings. The project also aimed to suggest a package for improvement in retting quality in short time duration with minimum water.

A functional design and dimensions was decided for fabrication of water tank for retting of jute ribbons and root cuttings. Three separate water tank was fabricated using FRP material having dimensions of each tank LxWxH::0.61mx0.91mx1.37m. All three tanks was fitted on a iron frame to make it a single unit and essential arrangements using water pump and pipelines are suitably made in the tanks to create necessary water circulation within the tanks during retting process. Preliminary trails were conducted for retting of jute ribbons and baky jute (25 a, b & c). Tank-retting of jute ribbons suggested that it is working satisfactorily and retted the jute-ribbons in 6-7 days without addition of any bacterial inoculums or other food supplement for bacteria. The time taken for retting of baky jute in batch of 25 kg was observed four days with addition of suitable bacterial culture.



Retting tank

Jute ribbons

Baky jute cutting

Figure 25: Retting tank and retting trail in progress



EXTERNALLY FUNDED PROJECTS

CRP-NIRJAFT 1 : DEVELOPMENT OF MACHINERIES FOR EXTRACTION OF FIBRE FROM SISAL, FLAX AND PINEAPPLE

Dr. L.K. Nayak, Dr. S. Debnath and Dr. V.B. Shambhu

For optimization of parameters, retting of machine processed green pineapple leaves were carried out with the addition of DAP (0.5%, 0.75% & 1.0%) with retting duration varying from 3-6 days. It was observed that retting of processed pineapple leaves for 3-4 days with 0.75% DAP gives better fibre than in comparison to other retting conditions. Retting of machine processed leaves with “Sonali Sathi”, the formulation developed at ICAR-NIRJAFT has shown that retting of processed pineapple leaves for 4 days with 3% “Sonali Sathi” gives better fibre than in comparison to other retting conditions. An improved flax fibre extractor was designed & developed at the Institute (Figure 26). Dry stalks are fed manually into the machine which passes through a set of five revolving rollers. The stalks are broken at multiple contact points after coming in contact with the rollers. Stalks fed to the extractor, fibre obtained & the small broken stalks are shown in the Figure. The extractor runs by a 1 H.P. motor with output capacity of 7.5 Kg dry fibre/hour.



Figure 26: Developed flax fibre extractor and the extracted fibre, dried stalk and broken stalk

CRP-NIRJAFT 2 : DEVELOPMENT OF GRADING SYSTEM AND ELECTRONIC INSTRUMENTATION FOR FIBRES ALLIED TO JUTE

Dr. D.P. Ray and Sh. M. Bhowmick

Beside jute, there are other important natural fibres available like sunnhemp, sisal, flax and ramie which can be used in many applications and products. At present there is no specific grading system available for sunnhemp, sisal, flax and ramie fibres. Different countries adopt different types of grading system for sunnhemp, sisal, flax and ramie. There are no such instrument and methodologies available for such allied fibres till date. Being the leading research institute and having all sorts of credentials in the research of jute and allied fibres, NINFET has undertaken the research activities of allied fibre in grading and instrument development domain. Salient achievements of this project are as follows:

- Prepared draft specification on “Grading system for ramie fibre” as per BIS format.
- Published operation manuals for Automated Electronic Bundle strength tester for lignocellulosic

fibres; Digital Fibre Fineness Tester for Lignocellulosic fibres and Digital Colour Lustre Meter for lignocellulosic fibres.

- Collected fresh flax (Indian variety) for statistical validation of automated Bundle strength tester and Digital Fibre Fineness Tester for Lignocellulosic fibres.
- Published Success story on developed instruments
- Prepared structured format for validation of Instruments.

CRP-NIRJAFT 3 : ECO-FRIENDLY CHEMICAL PROCESSING OF LIGNOCELLULOSIC FIBRES FOR THE PREPARATION OF HOME TEXTILES

Dr. S. N. Chattopadhyay, Dr. N. C. Pan, Dr. A. N. Roy and Dr. K. K. Samanta

During this period jute and banana fibers were blended in three different proportions to produce blended yarn. Union fabrics were produced from them as follows:

- Sample A fabric using Jute/Banana (25:75) blended yarn
- Sample B fabric using Jute/Banana (50:50) blended yarn
- Sample C fabric using Jute/Banana (75:25) blended yarn

All here fabrics were bleached by conventional hot hydrogen peroxide bleaching and the bleaching weight loss ranged from 8 TO 9.8% with whiteness index (Hunter) from 84 to 87. Weight loss of the fabrics during bleaching was found to be more in case of banana rich fabric whereas jute rich fabrics show more whiteness/brightness after bleaching. All these fabrics were subjected to integrate finishing using Ecofinish 480, Ecofinish UV500 and Ecoflame CT-6 by pad-dry-cure process. Evaluation of the results clearly indicate that integrated finishing of the samples have no detrimental effect on the optical properties of the finished fabric.

Table 15: Handle properties of blended fabrics

Sample	Bending length(cm)		Bending modulus		Tenacity (g/Tex)	
	Warp	Weft	Warp	Weft	Warp	Weft
A	3.0	136	0.56	25	2.93	4.62
B	2.5	122	0.47	23	2.93	5.27
C	2.5	97	0.49	19	3.15	4.71

Analyses of the handle property of the jute/banana blended fabrics are more drapable. This may be due to softer, finer and pliable nature of jute fibre compared to that of banana fibre. The functional properties of those fabrics were evaluated by standard procedures for crease recovery, flame retardancy and fire retardancy.

All the fabrics show very good fire retardancy properties with LOI³⁶. Banana rich fabrics show excellent UV-protection properties (45) but the crease recovery properties are very poor in all fabrics (144-146°). The scoured and bleached union fabric produced from cotton yarn in warp and jute/banana blended yarn as weft was dyed with Procion Golden Yellow HER and manjistha by exhaustion method. The colour yield



($K/S=12.7$) and wash fastness (3-4) is very good in case of reactive dyeing whereas bright but light shade can be produced using natural dyes ($K/S=1.1$) with good wash fastness properties(3). All these fabrics can be utilized for making home appliances, cover, curtains, upholsteries etc.

It is already established that the tenacity of jute / banana blended yarn produced from bleached fibres are much higher than that produced from grey fibres irrespective of blend ratios. An innovative, sustainable and eco-friendly bleaching process using peracetic acid as bleaching agent was adopted for bleaching of jute / banana fibres to achieve even more high tenacity as the process does not degrade lignocellulosic fibres. Conventional hydrogen peroxide bleaching was also carried out for comparison. The comparative results of optical and physical properties of peroxide and PAA bleached jute / banana fibres were evaluated. Raw jute fibre shows 21 g/Tex bundle strength and 51 whiteness index and raw banana fibre shows 20 g/Tex bundle strength and 62 whiteness index. Results shows that bleached fibres produced by peroxide bleaching process are whiter ($WI>80$) but there is about 20% reduction of tensile strength during the bleaching process. Whereas tensile strength retention of PAA bleached fibres are very high by sacrificing a little whiteness index. So, for production of high tenacity jute / banana blended yarn, PAA bleached jute, banana fibres may be used.

In order to produce jute/banana blended yarn with lesser hair, smooth and soft feel , regenerated plant fibers i.e. viscose has been used as a component fibre in the blend to produce ternary blended yarn. 8lb yarn has been produced in the jute spinning system using the blend ratio 35/35/30 as jute: banana: viscose. The ternary blended yarn with 8 pound is found soft and smooth and shown tenacity of 6.1 cN/Tex and 2.2% elongation at break. The further work is continuing to produce finer ternary blended yarn and development of eco-friendly preparatory process for retention of high tensile properties with minimum weight loss during processing. The salient achievements of the project are:

- Integrated finishing of the samples has no detrimental effect on the optical properties of the finished fabric.
- The finished fabrics show excellent flame retardancy, UV-protection properties very much suitable for curtain and interior decoration.
- The bright coloured home textile items can be produced using eco-friendly reactive and natural dyes.
- An innovative, eco-friendly and sustainable bleaching process for lignocellulosic fibres has been developed using Peracetic acid as bleaching agent for producing bleached fibre with satisfactory whiteness and high retention of tenacity.
- Ternary blended yarn using jute banana and viscose fibers can be produced to produce soft and smooth yarns with good tensile properties for making value added home textile items.

CRP-NIRJAFT 4 : SURFACE MODIFICATION OF COARSER YAK FIBRE FOR DEVELOPMENT OF JUTE/YAK FIBRES BLENDED TEXTILE PRODUCT

Dr. A. N. Roy, Dr. S. Debnath, Dr. K. K. Samanta and Dr. H. Baite

Yak hair fibre is mainly produced by the China, Mongolia and India. The fibre is available in three different

fineness namely fine, coarse, and middle type fibres. The coarse fibre is quite thick and stiff, and hence does not utilized for high value end applications including textile. In our work, both the coarser and finer yak fibres were used for textile development. The physical properties of both these fibres were evaluated as per ASTM D3822-01 standard using Instron Tensile Tester. Initial modulus and fibre length of the coarser yak fibre are much more than the finer yak fibre, where as elongation at break percentage of finer fibre is more. Yak hair being an animal fibre, it contains lot of surface impurities that needs to be removed by scouring treatment. There was a scouring loss of 4.1% and 12% for the coarser and finer yak fibres, respectively.

Diameter of the fine and coarse yak fibres was measured using high resolution optical microscope as shown in Figure 27. After successful initial trial, 200 Kg of jute/yak (50/50) fibres blended yarn has been produced to be used for fabric production. The ATR-FTIR spectroscopy analysis of both the fibres showed the peak of bond at 1625 cm⁻¹ due to Amide I, 1519 cm⁻¹ due to Amide II and 1235 cm⁻¹ due to Amide III. Fifteen (15) meters jute/yak fibres blended fabric has been developed in handloom. Approximately, 5 kg coarser yak fibre has been modified chemically for production of jute fibre blended yarns.



Figure 27: Microscopic view of coarser and fine yak fibres & Jute/yak (50/50) fibres blended yarn

CRP-NIRJAF 5 : DESIGN AND DEVELOPMENT OF DISPOSABLE CARRY BAG FROM NATURAL FIBRE-BASED MATERIAL

Dr. S. Debnath, Sh. M. Bhowmick and Dr. A. N. Roy

Jute open weave structured fabric has been developed in laboratory using 340 tex jute yarn of 3.5 twist/inch both in warp and weft directions. The tensile strength of the yarn is 10.5 cN/tex. The warp and weft yarn density of the fabric is 40 ends/dcm and 20 picks per dcm, respectively. Three different sizes (30 × 40 cm, 33 × 43 cm, 35 × 32 cm) carry bag has been designed and fabricated. Tensile strength of the developed open weave fabric has been measured and found satisfactory (over 20 kg). Developed high strength 2-ply jute yarn of 689 tex (tenacity 15 cN/tex) and 413 tex (tenacity 12.2 cN/tex) which are bleached and dyed with reactive dye (orange and blue colours). These two yarns are used in group in warp direction along with 2ply-cotton yarn (59.05 Tex) with a certain pattern. These two jute yarns are also used in weft direction to form coloured designed bag fabric. Seven different plain weave fabrics developed in combination of these yarns.



Four different decorative designed bags are developed out of these fabrics having weight between 281 g/m² and 363 g/m². Other designed bags are in progress. Another commercial hessian fabric (250 g/m²) sample procured from market and subsequently bleached and dyed with yellow coloured reactive dye in laboratory. Three different utility carry bags have been developed out of this yellow dyed bag fabric.



Figure 28: Different types of disposal carry bags

DMCC-1008269 : DEVELOPMENT OF MICROCRYSTALLINE CELLULOSE FROM JUTE CADDIES/STICKS

Dr. R. K. Ghosh, Dr. S. N. Chattopadhyay and Dr. D. P. Ray

Cellulose was extracted from jute sticks at room temperature (27±1 oC) which was converted to microcrystalline cellulose (MCC) by enzymatic/ chemical degradation in the laboratory. A total of 6 different combinations were developed for conversion of jute stick to MCC. Final products were characterized by measuring yield and degree of polymerization.

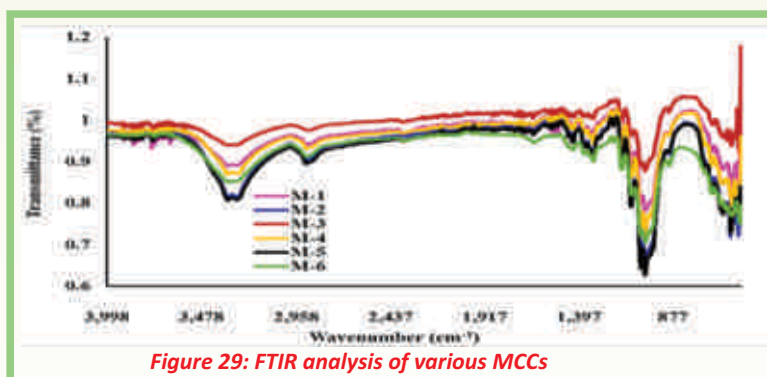


Figure 29: FTIR analysis of various MCCs

The number-average DP_n was calculated as the ratio of glucosyl monomer concentration determined by the phenol-sulfuric acid method divided by the reducing-end concentration determined by the modified 2,2'-bichinchoninate (BCA) method. Various routes resulted in MCC of different properties. DP-wise order of studied routes was M-3 (367) > M-5 (283) > M-1 (265) > M-4 (257) > M-6 (240) > M-2 (234) > commercial product (220). FTIR analysis was used to study the physico-chemical and conformational properties of developed MCCs (Figure 2). Peaks at 3200 – 3450 cm⁻¹ are assigned to stretching of –H bond of –OH group. Further, peaks at 1430, 1158, 1109, 1025, 1000 and 970 cm⁻¹ are typical characteristic peaks of cellulose. Peak around 1150-1158 cm⁻¹ was associated with the –C–O–C– stretch of the β-1,4- glycosidic linkage of cellulose. The present study indicated that application of a proper chemi-bio method for converting jute stick to MCC. The DP of MCC varied with nature of conversion method. By considering the cost of chemicals, time requirement for conversion and energy requirement, the preference order for the methods were M5 > M6 ≥ M1 > M2 > M3 > M4. Hence, under studied condition M-5 was found to be the best method for MCC production. The FTIR analysis and DP testing indicated purity of the products as compared to commercial one.

AGRIBUSINESS INCUBATION

Dr. A.N. Roy, Dr. S.B. Roy, Dr. S. Debnath and Dr. L.K. Nayak

Training Program on Jute Handicrafts

A six days duration skill development training program on “Manufacture of jute Handicrafts” was organized at KVK Jagatsingpur, Odisha from July 2-7, 2018. Twenty progressive female farmers associated with agro-based craft works from Jagatsingpur district, Odisha have participated in this program. In the inaugural session, Smt. Sujata Mohanty, Chairman, Panchayat Samiti, Tirtol, Jagatsinghpur graced the occasion as Chief Guest and spoke about the importance of jute-based handicrafts. Shri Balaram Subudhi, Agronomist, DAO, Jagatsinghpur graced the occasion as Guest of Honour and highlighted upon the market demand of jute products.



Figure 30: Inauguration of training program at Jagatsingpur & progress of the training

Two skill development training programs (12 days duration) on “Manufacture of jute Handicrafts” were organized at ICAR-NINFET, Kolkata during August 1-14, 2018 and August 27 - September 10, 2018. In the inauguration session, Shri. Aroop Biswas, Honorable Minister for Public Works, Youth Services & Sports, Government of West Bengal has graced the occasion as Chief Guest and lauded the efforts made by ICAR-NINFET in imparting skill development training programs & emphasized upon the need of diversification in jute sector. Shri Tapan Dasgupta, Honorable Chairman, Borough-X & Councilor, Ward No. 95, Kolkata Municipal Corporation (KMC) graced the occasion as Guest of Honour and spoken about the importance of jute handicrafts in creating opportunities amongst un-employed youths.



Dr. Alok Nath Roy, Director briefed about the skill development programs taken-up by the Institute and their role in developing entrepreneurship in jute sector. Thirty eight progressive female candidates associated with agro-based craft works of Kolkata district, West Bengal were trained in these programs. Certificates were distributed to the trainee participants in the valedictory function held on 11th September, 2018.



Address by Shri. Aroop Biswas



Display of jute based handicrafts



Training on jute handicrafts



Certificate distribution to trainees

Figure 31: Skill development training programs

Furthermore, four 12 days skill development training programs on “Manufacture of Jute Handicrafts” and one 18 days skill development training program on “Manufacture of Advanced Jute Handicrafts” were organized at Howrah, Malda, Siliguri & Murshidabad districts respectively during February 21 – March 15, 2019.

Training Category	Duration	Venue
Manufacture of Jute Handicrafts	February 21 – March 4, 2019	Jhingra Farmers Club, Jagatballavpur, Howrah
Manufacture of Jute Handicrafts	February 22 – March 5, 2019	ICAR-CISH, Krishi Vigyan Kendra, Malda, West Bengal
Manufacture of Jute Handicrafts	February 22 – March 7, 2019	Shiv Mandir, Matigara, Darjeeling, West Bengal
Manufacture of Jute Handicrafts	February 22 – March 7, 2019	Naxalbari, Darjeeling, West Bengal
Manufacture of Advanced Jute Handicrafts	February 23 – March 15, 2019	Ramakrishna Mission Ashrama, Sargachi, Murshidabad, West Bengal



Figure 32: Trainee at Jagatballavpur & Inauguration of the training program at Naxalbari

Twenty progressive female farmers in each training programs associated with agro-based craft works have participated in these programs.

Interface meeting

An interface meeting with farmers, entrepreneurs & other stake holders associated with yak husbandry & entrepreneurship under ABI Project, ICAR-NINFET was organised in collaboration with ICAR-NRC on Yak at Dirang, Arunachal Pradesh on 17th November, 2018. In the inauguration, Dr.Vijay Paul, Director (Officiating), ICAR-NRCY welcomed the guests and participants and spoken about the objectives of this interface meeting in sustaining the livelihood of yak farmers.



Figure 33: Lighting of lamps in the inauguration session & Presentation of yak hair blended coat to army personnel by Dr. S.N.Jha, ADG

Dr. S.N. Jha, ADG (Process Engineering) has graced the occasion as Chief Guest and appreciated the efforts being taken by ICAR-NINFET & ICAR-NRC on Yak on developing value-added products from yak fibre. He has distributed the long coats developed from jute/yak fibre blended fabric to the officials from Indian Army and Paramilitary Forces. Shri Suresh Subramaniam, Commandant, 30th Battalion, Sashatra Seem Bal (SSB) has graced the occasion as Guest of Honour and highlighted upon the importance of long coats made of jute/yak fibre for the personnel working at very high altitude. Dr. A.N. Roy, Director (Acting), ICAR-NINFET has briefed the audience about the association of two ICAR institutes in their effort of making diversified products from jute/yak fibre. He has also emphasized upon the development of entrepreneurship in this sector. Farmers &



Entrepreneurs associated with yak husbandry; R&D personnel from SAU, KVK, ICAR; Army personnel from Mahar Regiment of Indian Army, Indo Tibetan Border Police (ITBP), Sashatra Seem Bal (SSB), Border Roads Organization (BRO), National Institute for Mountaineering & Allied Sports (NIMAS) have participated in the program.

Agri-Entrepreneur's Meet

An Agri-Entrepreneur's Meet 2019 was organized at ICAR-NINFET on March 25, 2019 with the objectives to explore the possibilities of expansion of the business ventures by the young and enthusiastic energetic entrepreneurs, especially who have received the training from NINFET earlier. Shri. Arvind Kumar, IAS, Secretary, National Jute Board was graced the occasion as chief guest, Dr.S.N. Jha, ADG(PE), ICAR and Dr. Shiv Dutt, PS, IP&TM, ICAR, Dr. Mahadeb Datta, Deputy Director, (Technical) have graced the program as guest of honour. 20 entrepreneurs, 18 incubate and start-ups along with the Scientists of the Institute attended the program and interacted with the speakers with relevant points.

Dr. N. C. Pan, Director has addressed the participants and spoken about the importance of the program. Dr. A. N. Roy, PI, ABI has ensured that this program will create a platform for all the stakeholders who came together and to exchange their need and required solutions. Dr. Shiv Dutt in his address informed that the basic objective of the Department of IP&TM was to help the Entrepreneurs in various ways, such as through suitable technology supply to finance support system creation etc. Dr. S. N. Jha encouraged the new innovations for their products and stressed to create a brand identity and novel products for the consumers which will fetch high value in near future. Shri. Arvind Kumar described about the different Schemes and facilities NJB offering for the Start-ups and stand ups. He shared some novel ideas by which new entrepreneurs can start their venture in near future.



Figure 34: Dignitaries at the dais and Interaction of entrepreneurs with guest

In technical session, Shri Rajsirshi Maji, Assistant Director, MSME Development Institute, elaborately described about the schemes and projects of their department. Shri. Prasant Dubey, Assistant General Manager, NABARD, spoken about the vision and policies of NABARD. Sri. Sudipta Saha, Joint Director, Directorate of Micro, Small and Medium Enterprises and Sri. Dhurjati Prasad Bose, Assistant Director, Directorate of Micro, Small and Medium Enterprises, also presented their views to the stakeholders. Dr. A. N. Roy, PS-ABI has elaborated upon the opportunities of Jute and other natural fibre related small scale trade for the start-ups. He urged for convergence of the start-ups and the facilitators. Dr. L. K. Nayak, Principal Scientist, expressed his gratitude to all the participants including the Resource persons for their involvement in making the meet a successful one.

RESEARCH & DEVELOPMENT PROGRAMS FOR 2018-2019

QUALITY EVALUATION & IMPROVEMENT DIVISION

1. **Project No.** : **QEI-17**
Title : ***Laccase from microbes for value addition in jute***
Principal Investigator : Dr. A. Das, Principal Scientist
Co-Principal Investigator(s) : Dr. B. Saha, Principal Scientist
Date of start : October 01, 2015
Date of completion : September 30, 2018
Objective(s) : i. Characterization of laccase producing bacterial isolate
ii. Optimization of growth conditions for laccase production from the bacteria isolate
iii. Characterization of laccase from bacterial isolate
iv. Optimization of bio-bleaching technique with laccase enzyme from the bacterial isolate

2. **Project No.** : **QEI-19**
Title : ***Development of technology for extraction and characterization of nano-cellulose from jute caddis/jute stick***
Principal Investigator : Dr. D.P. Ray, Principal Scientist
Co-Principal Investigator(s) : Dr. R.K. Ghosh, Scientist
Date of start : April 01, 2016
Date of completion : March 31, 2019
Objective(s) : i. To prepare nano-cellulose from jute stick/jute wastes by novel chemical, chemo-mechanical and chemical microbial processes and their characterization
ii. To evaluate the synthesized nano-cellulose for high end application

3. **Project No.** : **QEI-20**
Title : ***Development of digital hairiness meter for jute yarn***
Principal Investigator : Dr. Gautam Bose, Principal Scientist
Co-Principal Investigator(s) : Dr. S.C. Saha, Senior Scientist
Sh. M. Bhowmick Scientist
Sh. G. Sardar, Technical Assistant
Date of start : April 1, 2017
Date of completion : March 31, 2019
Objective(s) : i. Development of one Digital Hairiness Meter for jute yarn will be developed
ii. Working methodology & user manual be developed

4. **Project No.** : **QEI-21**
Title : ***Handy jute fibre bundle strength tester for farmers***
Principal Investigator : Dr. S.C. Saha, Senior Scientist (up to 30th October 2018)
Dr. B. Saha, Principal Scientist (since November 2018)
Co-Principal Investigator(s) : Sh. A. Sarkar, Technical Officer
Date of start : April 01, 2017
Date of completion : March 31, 2019
Objective(s) : i. To introduce as easy instrument for the benefits of farmers and end users



5. **Project No.** : **QEI-22**
Title : **Development of accelerated retting technology for jute and mesta plants**
Principal Investigator : Dr. D.P. Ray, Principal Scientist
Co-Principal Investigator(s) : Dr. S.C. Saha, Senior Scientist (up to October 2018)
Dr. R.K. Ghosh, Scientist
Dr. A. Singha, Scientist
Sh. A. Sarkar, Technical Officer
Date of start : April 01, 2017
Date of completion : March 31, 2020
Objective(s) : i. To develop a suitable retting accelerator for effective retting of jute & mesta
ii. To evaluate the efficacy of the retting accelerator through on-field application
6. **Project No.** : **QEI-23**
Title : **Jute mapping and estimation of fibre quality**
Principal Investigator : Dr. B. Saha, Principal Scientist
Co-Principal Investigator(s) : Dr. S.C. Saha, Senior Scientist (up to 31st October 2018)
Dr. S. Das, Scientist
Sh. K. Manna, Technical Officer
Date of start : April 01, 2017
Date of completion : March 31, 2020
Objective(s) : i. Development of digital thematic maps of jute clusters of jute growing districts of West Bengal
ii. Establishment of relations between different bio-physical parameters with quality of jute fibre
iii. Development of Decision Support System for predicting jute grade to help jute growers and jute industries.
7. **Project No.** : **QEI-24**
Title : **Microbial treatment of barks portion of jute fibre for improvement its spinnability**
Principal Investigator : Dr. A. Singha, Scientist
Co-Principal Investigator(s) : Dr. A. Das, Principal Scientist
Date of start : April 01, 2018
Date of completion : March 31, 2021
Objective(s) : i. Selection and characterization of bacterial strains having pectinolytic activity
ii. Modification of barks portion of jute fibre by selected bacterial strains for improvement of spinnability
iii. Demonstration and refinement of technology for modification of barks portion of jute fibre

MECHANICAL PROCESSING DIVISION

8. **Project No.** : **MP-14**
Title : **Development of yarn from Indian flax for technical textile**
Principal Investigator : Dr. S. Debnath, Principal Scientist
Co-Principal Investigator(s) : Dr. G. Basu, Principal Scientist
Date of start : October 01, 2015

Date of completion : September 30, 2017 (extended up to September 2018)
 Objective(s) : i. To study the major textile related fibre properties of Indian flax fibre
 ii. To develop flax and flax-based yarns

9. Project No. : **MP-15**
Title : **Development of low area density jute non-woven fabric for carry bags**
 Principal Investigator : Dr. S. Sengupta, Principal Scientist
 Co-PI (s) : Mrs. Papai Ghosh, Technical Assistant
 Date of start : October 01, 2015
 Date of completion : September 30, 2018
 Objective(s) : i. To develop well covered low gsm jute nonwoven fabric
 ii. To impart functional properties in the fabric
 iii. Performance study as carry bags and cost calculation

10. Project No. : **MP-16**
Title : **Development of interlinear/garment stiffener/filler from sunhemp and banana nonwoven**
 Principal Investigator : Dr. S. Sengupta, Principal Scientist
 Co-PI (s) : Mrs. Papai Ghosh, Technical Assistant
 Date of start : April 01, 2016
 Date of completion : March 31, 2019
 Objective(s) : i. To develop nonwoven fabric from sunhemp and banana fibres
 ii. To impart functional properties in the fabric
 iii. Performance study and cost calculation as interlinear/garment stiffener/filler

11. Project No. : **MP-17**
Title : **Development of jute yarn diameter irregularity tester**
 Principal Investigator : Sh. S. Das, Scientist (SS)
 Co-Principal Investigator(s) : Sh. M. Bhowmick, Scientist
 Sh. T. K. Kundu, Technical Assistant
 Date of start : April 01, 2016
 Date of completion : March 31, 2019 (extended up to 30th September 2019)
 Objective(s) : i. Fabrication of instrument for measuring the yarn diameter
 ii. Develop the decision support system for yarn irregularity

12. Project No. : **MP-18**
Title : **Development of digital drape meter**
 Principal Investigator : Sh. M. Bhowmick, Scientist
 Co-PI (s) : Dr. G. Basu, Principal Scientist
 Date of start : April 01, 2017
 Date of completion : March 31, 2020
 Objective(s) : i. Design and development of digital drape meter
 ii. Standardization of the digital drape meter developed

13. Project No. : **MP-19**
Title : **Application of jute based agro-textiles as mulching material for wide-scale awareness of farmers**
 Principal Investigator : Sh. M. Bhowmick, Scientist
 Co-Principal Investigator(s) : Dr. B. Saha, Principal Scientist



Dr. S. Debnath, Principal Scientist
 Dr. N. Mridha, Scientist
 Dr. A. Singha, Scientist
 Sh. H. Baite, Scientist and Sh. S. Karmaker, Technical Assistant

Date of start : April 01, 2018
 Date of completion : March 31, 2021
 Objective(s) : i. Large scale production of natural fibre based agro-textile
 ii. Field trials of natural fibre based agro-textile material in different agro-climatic zones
 iii. Performance evaluation of crop specific natural fibre based agro-textile materials

14. Project No. : **MP-20**
Title : **Development of natural fibre based moulded / laminated products**
 Principal Investigator : Dr. S. Debnath, Principal Scientist
 Co-Principal Investigator(s) : Dr. P.C. Sarkar, Principal Scientist
 Sh. M. Bhowmick, Scientist
 Sh. H. Baite, Scientist
 Sh. I. Mustafa, Technical Assistant
 Sh. T.K. Kundu, Technical Assistant

Date of start : April 01, 2018
 Date of completion : March 31, 2021
 Objective(s) : i. Design and development of natural fibre-based moulded/ laminated products

15. Project No. : **MP-21**
Title : **Development of laminated needle punched nonwoven for impermeable light weight packaging**
 Principal Investigator : Dr. S. Sengupta, Principal Scientist
 Co-Principal Investigator(s) : Dr. N. Mridha, Scientist
 Sh. I. Mustafa, Technical Assistant
 Mrs. Papai Ghosh, Technical Assistant

Date of start : October 01, 2018
 Date of completion : March 31, 2020
 Objective(s) : i. To explore the possibilities of low cost low GSM impermeable fabric from needle punched nonwoven fabric

CHEMICAL & BIOCHEMICAL PROCESSING DIVISION

16. Project No. : **CBP-12**
Title : **Preparation of activated carbon from jute stick by chemical activation**
 Principal Investigator : Dr. R.K. Ghosh, Scientist
 Co-PI (s) : Dr. D.P. Ray, Principal Scientist
 Date of start : April 01, 2015
 Date of completion : March 31, 2018 (Extended up to 31st March 2019)
 Objective(s) : i. Preparation of activated carbon from jute stick by chemical (phosphoric acid) activation
 ii. Characterization of activated carbon
 iii. Application of activated carbon to treat water contaminated with dyes and pesticides

- 17. Project No.** : **CBP-14**
Title : ***Modification of yak fibre for making it suitable for blended yarn production in jute spinning system***
Principal Investigator : Dr. K.K. Samanta, Scientist
Co-Principal Investigator(s) : Dr. A.N. Roy, Principal Scientist
Sh. K. Patra, Technical Officer
Sh. K. Mitra, Technical Officer
Date of start : October 01, 2015
Date of completion : September 30, 2018
Objective(s) : i. Modification of coarser grade yak fibre for making it suitable for yarn production in jute spinning system
ii. Dyeing of yak and jute fibres for the development of jute/yak fibres blended fancy yarn for diversified end applications
iii. Optimization of spinning parameters for the production of jute/raw yak fibres, jute/washed yak fibres, jute /chemically modified and jute/coloured yak fibres yarns
iv. Development of jute/yak fibres blended woven fabrics
- 18. Project No.** : **CBP-15**
Title : ***Sustainable flame retardant finishing of jute and jute-cotton fabrics using plant extracts***
Principal Investigator : Dr. K.K. Samanta, Scientist
Co-Principal Investigator(s) : Dr. S.N. Chattopadhyay, Principal Scientist
Sh. K. Patra, Technical Officer
Date of start : October 01, 2015
Date of completion : September 30, 2017 (Extended up to 30th September 2018)
Objective(s) : i. Utilization of by-products during extraction of banana fibre and other agro-residue for making fire retardant jute and jute-cotton union textiles
ii. Evaluation and characterization of by-products (banana pseudo-stem sap) and identification of factors responsible for imparting fire retardancy property in jute and jute-cotton union textiles
- 19. Project No.** : **CBP-16**
Title : ***Aroma finishing on jute textiles***
Principal Investigator : Dr. N.C. Pan, Principal Scientist
Co-Principal Investigator(s) : Dr. L. Ammayappan, Principal Scientist
Sh. A. Khan, Senior Technical Officer
Date of start : April 01, 2016
Date of completion : March 31, 2019
Objective(s) : i. To develop the suitable method of incorporation of aroma on jute textiles
ii. Development of microcapsules for aroma finishing with different essence release characteristics
iii. Making of different value added products from aroma finished textiles
- 20. Project No.** : **CBP-17**
Title : ***Development of jute based composite products***
Principal Investigator : Dr. L. Ammayappan, Principal Scientist
Co-Principal Investigator(s) : Dr. K.K. Samanta, Scientist (since 1st October 2017)
Sh. K. Patra, Technical Officer



Date of start : April 01, 2016
Date of completion : March 31, 2019
Objective(s) : i. To optimize the non woven reinforcing fabric for composite preparation
ii. To improve the interfacial adhesion between jute fiber and polymer resin by suitable surface modifications
iii. To prepare the composite from non woven fabric and thermosetting resin
iv. To develop composite products

21. Project No. : **CBP-18**
Title : ***Development of universal bleaching process of jute for textile and non-textile applications***
Principal Investigator : Dr. S.N. Chattopadhyay, Principal Scientist
Co-Principal Investigator(s) : Dr. N.C. Pan, Principal Scientist
Sh. A. Khan, Senior Technical Officer
Sh. S. Bhowmick, Senior Technical Assistant
Date of start : April 01, 2016
Date of completion : March 31, 2019 (extended up to March 2020)
Objective(s) : i. Bleaching of jute superior whiteness, feel and retention of strength following eco-friendly per-acetic acid bleaching process
ii. Bleaching of different jute pulps following eco-friendly process for making writing paper, tissue paper, etc
iii. Evaluation of bleached fibre, pulps and papers for optimization of bleaching process

22. Project No. : **CBP-19**
Title : ***Coating jute fabric to improve its functional properties for use as rigid/semi rigid packing material***
Principal Investigator : Dr. P.C. Sarkar, Principal Scientist
Co-Principal Investigator(s) : Dr. L. Ammayappan, Principal Scientist
Sh. A. Khan, Senior Technical Officer
Sh. I. Mustafa, Senior Technical Assistant
Date of start : April 01, 2018
Date of completion : March 31, 2020
Objective(s) : i. To generate a synthetic/semi-synthetic coating technology for treating jute fabric, thereby improving upon its functional properties and possible end use as high performance packaging material

TRANSFER OF TECHNOLOGY DIVISION

23. Project No. : **TOT-10**
Title : ***Developing and undertaking of extension services for effective dissemination of institute technologies***
Principal Investigator : Dr. S.B. Roy, Principal Scientist
Co-Principal Investigator(s) : Dr. A. Das, Principal Scientist
Dr. L.K. Nayak, Principal Scientist
Dr. D.P. Ray, Principal Scientist
Dr. V.B. Shambhu, Senior Scientist

	Dr. S.C. Saha, Senior Scientist (up to 31st October 2018)
	Sh. K. Mitra, Technical Officer
Date of start	: October 01, 2015
Date of completion	: September 30, 2018
Objective(s)	: i. Capacity building and empowerment of stake holders ii. Front line demonstration of ICAR-NIRJAFT's developed technologies and multimedia information creation iii. Collaboration with organizations engaged in promotion of jute & allied fibres

24. Project No.

: **TOT-11**

Title

: **Improvement, up scaling and popularization of power ribboner**

Principal Investigator

: Dr. V.B. Shambhu, Senior Scientist

Co-Principal Investigator(s)

: Dr. A.K.Thakur, Principal Scientist

Dr. L.K.Nayak, Principal Scientist

Sh. B. Das, Technical Assistant

Date of start

: April 01, 2017

Date of completion

: March 31, 2020

Objective(s)

- : i. Improvements in the existing power ribboner for better portability, transportability and ribboning capacity
ii. To develop a system/mechanism for mechanical collection of peeled ribbons
iii. To demonstrate the improved power ribboner machine for extraction of ribbons/barks from jute/mesta plants

25. Project No.

: **TOT-12**

Title

: **Developments and performance evaluation of portable water tank for retting of jute ribbons and root cuttings**

Principal Investigator

: Dr. A.K.Thakur, Principal Scientist

Co-Principal Investigator(s)

: Dr. V. B. Shambhu, Senior Scientist

Dr. A.Singha, Scientist

Date of start

: October 01, 2018

Date of completion

: March 31, 2020

Objective(s)

- : i. To develop a functional design and to fabricate a portable retting tank with the arrangement of water circulating mechanism
ii. To analyze the working performance of portable water tank for retting of jute ribbons and root cuttings
iii. To suggest a package for improvement in retting quality in short duration with minimum water

EXTERNALLY FUNDED PROJECTS

26. Project No

: **NASF-ME-5016**

Title

: **Investigation of effect of structure of jute & allied fibre products on sound insulation property**

Sponsored by

: National Agricultural Science Fund (NASF), ICAR

Lead Centre

: ICAR-NIRJAFT

PI: Dr. G. Basu, Principal Scientist

Co-PI: Dr. S. Sengupta, Principal Scientist

Co-PI: Dr. K.K. Samanta, Scientist



- Cooperating Centre(s) : i. Government College of Engineering and Textile Technology, Serampore, Government of West Bengal, 12 William Carey Road, Serampore-712201.
CCPI-1: Ms. Mallika Datta, Assistant Professor, Department of Textile Technology
- ii. Indian Institute of Engineering Science and Technology, Shibpur, Botanic Garden, Howrah – 711103
CCPI-2: Dr. Sampad Mukherjee, Co-Principal Investigator(s) Professor, Department of Physics
- Date of start : July 01, 2015
- Date of Completion : June 30, 2018
- Objective(s) : i. Understanding of science of acoustical and non-acoustical properties of jute and allied fibres assembly in relation to its structure.
ii. Study the effect of engineered fibrous structure(s) on frequency dependent sound propagation
iii. Effect of surface modification of natural fibre on sound insulation.
iv. Study the effect of temperature, heat tolerance and climatic condition on acoustic behaviour

- 27. Project No** : **CRP-NIRJAFT 1**
- Title** : ***Development of machinery for extraction of fibre from sisal, flax and pineapple leaf***
- Sponsored by : CRP-Project, ICAR
- Lead Centre : ICAR-NIRJAFT
PI: Dr. L.K. Nayak, Principal Scientist
Co- PI: Dr. V.B. Shambhu, Senior Scientist
Co-PI: Dr. S. Debnath, Principal Scientist
- Date of start : August 01, 2015
- Date of completion : March 31, 2017 (Extended up to 31st March 2020)
- Objective(s) : i. Design, development and demonstration of high capacity extractors for pineapple leaf, sisal and flax fibre

- 28. Project No** : **CRP-NIRJAFT 2**
- Title** : ***Development of grading system and instruments for jute and allied fibres***
- Sponsored by : CRP-Project, ICAR
- Lead Centre : ICAR-NIRJAFT
PI: Dr. G. Roy, Principal Scientist
Co-PI: Dr. SC. Saha, Senior Scientist
- Date of start : August 01, 2015
- Date of Completion : March 31, 2017 (Extended up to 31st March 2020)
- Objective(s) : i. To develop standardize methods of grading of Sisal, Sunnhemp, Flax and Ramie fibres
ii. To develop new electronic instruments to measure their grading parameters

- 29. Project No** : **CRP-NIRJAFT 3**
- Title** : ***Eco-friendly chemical processing of ligno-cellulosic fibres for the preparation of home textiles***
- Sponsored by : CRP-Project, ICAR
- Lead Centre : ICAR-NIRJAFT

PI: Dr. S.N. Chattopadhyay, Principal Scientist
 Co-PI: Dr. N.C. Pan, Principal Scientist
 Co-PI: Dr. A.N. Roy, Principal Scientist
 Co-PI: Dr. K.K. Samanta, Scientist
 Date of start : August 01, 2015
 Date of Completion : March 31, 2017 (Extended up to 31st March 2020)
 Objective(s) : i. Development of eco-friendly preparatory processing technology for jute and banana fibres and their blends
 ii. Colouration of home textiles by innovative dyeing and printing process using natural and reactive dyes for development of attractive shades
 iii. Imparting functional properties to lingo-cellulosic textiles using eco-friendly chemicals for fire resistance, UV-resistance, etc with improved handle properties
 iv. Development of contemporary fashion home textiles like curtains, upholstery, appliances cover, etc

30. Project No : **CRP-NIRJAFT 4**
Title : ***Surface modification of coarser yak fibre for development of jute/yak fibres blended textile product***

Sponsored by : CRP-Project, ICAR
 Lead Centre : ICAR-NIRJAFT
 PI: Dr. A.N. Roy, Principal Scientist
 Co-PI: Dr. K. K. Samanta, Scientist
 Co-PI: Dr. S. Debnath, Principal Scientist
 Co-PI: Sh. H. Baite, Scientist
 Date of start : April 01, 2018
 Date of Completion : March 31, 2020
 Objective(s) : i. Physical, chemical and thermal properties evaluation of different under-utilized yak fibres for blending with jute fibre
 ii. Spinning trial and process optimization for production of jute/yak fibres blended yarns with different blend ratios
 iii. Surface modification of yak fibre (physical/ chemical) to enhance the jute/yak fibres spinnability and dyeing of jute/yak fibre blended yarn/fabric
 iv. Weaving, product development and selective chemical finishing of jute/yak fibres blended textile for application in apparel and technical textile

31. Project No : **CRP-NIRJAFT 5**
Title : ***Design and development of disposable carry bag from natural fibre based material***

Sponsored by : CRP-Project, ICAR
 Lead Centre : ICAR-NIRJAFT
 PI: Dr. Sanjoy Debnath, Principal Scientist
 Co-PI: Dr. Alok Nath Roy, Principal Scientist
 Co-PI: Sh. Manik Bhowmick, Scientist
 Date of start : April 01, 2018
 Date of Completion : March 31, 2020
 Objective(s) : i. To explore the potential utilization of natural fibre for making durable/semi-durable carry bag
 ii. Designing of bag for different load bearing capacity



32. Project No

Title

Sponsored by

Lead Centre

Date of start

Date of Completion

Objective(s)

: **DMCC 1008269**

: **Development of microcrystalline cellulose from jute caddies/sticks**

: National Jute Board, Ministry of Textiles, Govt. of India

: ICAR-NIRJAFT

PI: Dr. R.K. Ghosh, Scientist

Co-PI: Dr. D.P. Ray, Principal Scientist

Co-PI: Dr. S.N. Chattopadhyay, Principal Scientist

: September 01, 2016

: August 31, 2018

- i. Preparation and characterization of microcrystalline cellulose from jute caddies/stick
- ii. Evaluating synthesized microcrystalline cellulose for high end application

33. Project No

Title

Sponsored by

Lead Centre

Date of start

Date of Completion

Objective(s)

: **NAIF**

: **Agri Business Incubation**

: National Agriculture Innovation Fund, ICAR

: ICAR-NIRJAFT

PI: Dr. A.N. Roy, Principal Scientist

Co-PI: Dr. S.B. Roy, Principal Scientist

Co-PI: Dr. S. Debnath, Principal Scientist

Co-PI: Dr. L.K. Nayak, Senior Scientist

: January 01, 2016

: March 31, 2017 (Extended up to 31st March 2020)

- i. To impart consultancy & training for creating prospective entrepreneurs
- ii. To act as a centre of excellence in providing technological services on natural fibres
- iii. To organize promotion program viz. Investor's Meet, Industry Interface, etc
- iv. To facilitate prospective entrepreneurs for setting up new business

SUMMARY OF R&D PROGRAMS FOR THE YEAR 2018-2019

Continuing Projects for 2019-20	Projects granted for extension (extended period)	Projects completed / terminated in 2018-19	New projects initiated from 1st April 2019
QEI-22; QEI-23 QEI-24; MP-18 MP-19; MP-20 MP-21; CBP-19 TOT-11; TOT-12 CRP-NIRJAFT-01 CRP-NIRJAFT-02 CRP-NIRJAFT-03 CRP-NIRJAFT-04 CRP-NIRJAFT-05 NAIF-ABI	MP-17 (Extended upto September, 2019) CBP-18 (Extended upto March 2020)	QEI-17; QEI-19 QEI-20; QEI-21 MP-14; MP-15 MP-16; CBP-12 CBP-14; CBP-15 CBP-16; CBP-17 TOT-10 NASF-ME-5016 NJB : DMCC 1008269	MP-22 CBP-20 CBP-21 TOT-13
Total: 16	02	15	04



INSTITUTIONAL ACTIVITIES





VISIT OF THE STATE MINISTER

Honourable Shri. Aroop Biswas, Minister of Public Works and Youth Development & Housing, Govt. of West Bengal has visited the institute on June 12, 2018. He has addressed the gathering and stressed upon the scientists of the institute to develop the potential technologies for the benefit of the jute farmers and jute entrepreneurs. He then visited the institute exhibition stall to know about various products & different technologies. The minister has appreciated



Warm reception to Shri. Aroop Biswas



Demonstration of products to dignitaries

IJMA TECHNICAL COMMITTEE' VISIT

Four members of Indian Jute Mills Association' Technical Committee led by Shri. S.K.Chandra, Chief Executive (Works), Hooghly Infrastructure Pvt. Limited, Hazinagar, have visited the institute on 19th May 2018. Dr. N.C.Pan, Director (Officiating) welcomed the delegates.



Scientists at Interactive meet



Presentation by Dr. G.Bose



Demonstration of jute grading



Demonstration of Accelerated retting

Shri. S.K.Chandra stressed upon the grading of jute by developed instrument for the effective utilization of quality jute for the high quality jute products with better remuneration to the farmers. Dr. G.Bose, Principal Scientist & Head, MP Division presented the activities of the institute i.e. services offered, technology developed by the institute, training offered, infrastructure & facilities available, R&D works carried as per market demand.

The Committee had an interaction with the scientists of the institute in the area of jute industries' requirement and had suggested for R&D in the following areas. i.e. (a) Modernization of jute spinning machinery (b) Substitute for the Jute Batching oil (JBO) with better retention of the moisture regain for the development of food grade hessian fabrics ; (c) Implementation of new jute grading; (d) To enhance the quality of baky jute with suitable micro-organism and (e) large scale demonstration of accelerated jute retting process. Director Dr.N.C.Pan has suggested the team to participate such interactive meets once in three months in order to exchange the benefits of the developed potential technologies of the institute to the industry. Dr. G.Bose offered the vote of thanks. After completion of the interactive meet, the team visited the laboratories of the institute.

81st FOUNDATION DAY CELEBRATION

Institute has celebrated its 81st Foundation Day on 3rd January 2019. Dr. C. D. Mayee, President, South Asia Biotech Centre & Ex-Chairman, Agricultural Scientist Recruitment Board (ASRB) marked his presence as the Chief Guest and delivered Foundation Day Lecture on the topic "Talent Search for Manning Agri-Tree". In his lecture, he emphasized that value addition to fibre wealth of India viz. Jute, Okra, Pineapple, Banana, Ramie, Coconut has tremendous potential in India for increasing employment in the rural areas, reducing post-harvest losses and increasing income of the farmers and agri-entrepreneurs for doubling farmers income by 2022.



Dignitaries on the dais



Lighting of lamp by dignitaries

Dr. S. N. Jha, Assistant Director General (Process Engineering), ICAR graced the occasion as the Guest of Honour and expressed his profound satisfaction on the achievements of NINFET in the area of Natural Fibre Engineering & Technology with special emphasis on diversified product from different natural fibres. He appreciated the contribution of institute for the nation during the last 80 years. He has emphasized upon the setting up of its future priorities to move ahead with a focused approach recognizing the changes that have taken place in the area of natural fibers' engineering and technology. He wishes said that new name of the Institute will give a new paradigm in new research area through new technological intervention.



Dr. Alok Nath Roy, Director(Acting), NINFET in his welcome address, briefed about the historical progress made by the institute from JTRL to NIRJAFT culminating to its present rename as NINFET. He spoke on the current focus and future strategies of NINFET. Dr Gautam Bose, Head, MP Division presented an overview of the contribution of NINFET to the nation including research, technology generation and human resources development. In-house Rajbhasha Magazine “Devanjali” for the year 2019 was released by the dignitaries. Wards of employee who have shown their excellence in matriculation and +2 exams were awarded. All the staff members from NINFET including large number of retired employees of the institute along with other invited dignitaries graced this occasion and participated in the program. Dr. S. N. Chattopadhyay presented vote of thanks on the occasion. A cultural program and a quiz competition were organized.



Dr. C.D. Mayee, Chief Guest delivered his lecture



Dignitaries unveiled the stone of ICAR-NINFET

INTERNATIONAL YOGA DAY

Institute celebrated the international yoga day on 6th June 2018. Yoga trainers from World Yoga Society, Kolkata demonstrated different asans such as Bhujangasan, Pabanmuktaasan, Salvasan, Uthhanpadasan, Gomukhasan and Padahastasan; different Mudra i.e. Jalabandha mudra, Sahaj agnisha, Pranyam i.e. Kapalbhati, Ujjai pranyam and Bhamri and Meditation for attaining the stress-free life way to the institute staff members.



Institute staff participating in the yoga day

NATIONAL SEMINAR

The Indian Natural Fibre Society (TINFS), Kolkata organized a two-day National Seminar on “Natural Fibre Resource Management for Sustainable Development” in collaboration with ICAR- National Institute of Natural Fibre Engineering and Technology (NINFET), National Jute Board, Ministry of Textile and National Bank for Agriculture and Rural Development (NABARD) during February 2-3, 2019 at NINFET, Kolkata.

Dr. Alok Nath Roy, President of the society welcomed all delegates and deliberated the achievements by the Society in connection with sustainable development of farmers. He also mentioned about the journey of the institute from JTRL to NINFET and its impact on the society. He stressed upon that ICAR-NINFET would come out with a large research domain including silk, ramie and special emphasis on flax fibre. He has also elaborated up on the collaborations with organizations like NJB and NABARD for the Natural Fibre Resource Management. Shri Arvind Kumar M, chief guest of the event, congratulated TINFS and NINFET for organizing the event for making a common platform for exchanging more innovative research ideas for sustainable development of natural fibre sectors. He stressed to develop a Jute Mark for the benefit of the jute farmers in order to fetch more value for their crops. He focused the strategies which could be adopted for natural fibre management for sustainable development and very optimistic for employment generation through use of natural fibres and contribution of NINFET in this area.



Address by the President Dr. A.N.Roy



Lightening of Lamp by dignitaries

Shri Arvind Kumar M, Chief Guest of the program, congratulated TINFS and NINFET for organizing the national seminar which is the best platform for exchanging the research ideas for sustainable development of natural fibre sector. He also talked about the strategies that can be adopted for Natural Fibre Management for sustainable development. He was very optimistic for employment generation through use of natural fibres and contribution of NINFET in this area.

Dr. K.K. Satapathy, focused on strong promotion of materials made from natural fibres and stressed upon the use of products in our daily life from it. He mentioned the adverse effect of use of synthetic fibres on human life and environment in present day scenario. He expressed his happiness for transformation of JTRL to NIRJAFT and now NINFET, which deals with research and development program in the field of natural fibre. The two-day seminar was attended by the scientists and researchers on natural fibre from different parts of the country.



Address by the Chief guest



Release of Book of Abstract of the seminar



There were four technical sessions and one poster session in which 47 research papers were presented by the delegates from different parts of the country. In each technical sessions, a lead paper on the theme of Production & Quality Enhancement of Natural Fibres-A Way Forward; Strategies & Future Perspectives for Value Addition in Natural Fibres ; Opportunities in Natural Fibres Waste Utilization and Natural Fibre Technology Promotion & Deployment were presented. Different products developed by the institute were displayed as a stall on both days of the seminar and all were appreciated the products. A cultural program was organized in the institute premises by NINFET Recreation club followed by dinner in the first day.



Felicitation to chief guest



Felicitation to Director, ICAR-NINFET

Shri.A.K.Jolly, Chief Managing Director, Jute Corporation of India has graced the valedictory session as Chief Guest and complemented the efforts of The Indian Natural Fibre Society (TINFS) & NINFET for organizing the National Seminar. Shri. Gautam Sen, General Manager, NABARD has graced the session as Guest of Honour and briefed the participants about various schemes and supports offered by NABARD in order to develop enterprises in natural fibre sector. He urged for the collaboration of stakeholders with financial institutions for the sustenance and growth of their enterprises. The recommendations of each technical session were presented by the concerned rapporteur of the sessions separately. The conclusive remarks about the technical sessions were delivered by Dr. N.C. Pan, Director, NINFET. He thanked all delegates for their active participation in this 2-days event. To promote the research activities in the national level gathering, TINFS announced to award best papers in each technical session. The best paper for each session was selected by the session' chairman and those five awards have been presented in the valedictory session

70th IMC MEETING

The 70th meeting of the Institute Management Committee held on 05.10.2018 in presence of Dr. A.N.Roy, Director (Acting) & Chairman, Dr. S.N. Jha ADG (PE) ICAR, Dr. Ratan Tiwari, Principal Scientist, IIWBR Karnal, Dr. N.C.Pan, Head C&BP, Dr. G. Basu, Head, MPD, Dr. Biplav Saha Head QE & I, Dr. S. Satpathy, Principal Scientist, CRIJAF, Sh. Soumik De Sarkar, Sh. Sanatan Sarkar, Sh. Amitabh Singh FAO and Sh. Navin Kumar Jha SAO.

The members expressed satisfaction over the action taken by the Institute on recommendations of the 69th Meeting of the committee and settlement of audit paras. The Committee also expressed satisfaction on expenditure in current financial year which is 55% of B.E. and 91% of remittance. The chairman briefed about the achievements made in research, training, extension, patent, transfer of technology, publications and consultancy work of the Institute. Proposal on empanelment of 11 private hospitals was also discussed and recommended in the meeting. Dr. D.P. Ray, Principal Scientist delivered a scientific presentation “Accelerated Retting of Jute for Quality Fibre Yield”. The meeting ended with a formal vote of thanks given by Sh. Navin Kumar Jha, SAO of Institute.



Dignitaries of IMC meeting



Address by Chairman in the IMC

WOMEN FARMERS' DAY

NINFET, Kolkata organized Mahila Kishan Divas (Women Farmers' Day) on 15.10.2018 at its campus. Around 43 Farmers from three different districts, viz., Nadia, 24 Parganas-South and Hooghly, participated this program. Dr. N.C. Pan, P.S. Director (Officiating) welcomed and addressed the farmers about the program followed by Dr. S.N. Chattopadhyay, P.S. discussed the importance of this program and institute activities. Women farmers visited different departments, products, and technologies developed by NINFET and found benefited through live demonstration video and processing of natural fibres for yarn, fabric and handmade paper making. Farmers appreciated the effort of ICAR to recognize the importance of women farmers in agriculture.



Farm women in Mahila Kishan Divas



Address by Dr. N.C.Pan, Director



WORKSHOP-CUM-IPR CLINIC

One day workshop cum Intellectual Property Rights (IPR) Clinic was organized on March 2, 2019. Various aspects of institutes like IPR like Patents, Copyrights, Trademarks, and biodiversity laws and their application in scientific research and commercialization have been discussed. Similarly, identification and settlement of the problems faced by the researchers during filing of the patent and their queries about the delay of their patent applications at Patent Office also discussed. Scientists, FAO and SAO of NINFET, five Scientists from ICAR-CIFRI, two Scientists from ICAR-CRIJAF and Officer from NJB have joined the program. Dr. N.C. Pan, Director (Acting) welcomed the august participants and Dr. A.N. Roy, In-Charge, ITMU and PI, ABI and Head, TOT Division, delivered the introductory speech.

Dr. Sushil Kumar Mitra, Ex. Deputy Controller of Patent & Design, delivered two lectures on “Intellectual Properties: A tool of strategic business in present century” and “Importance for protection of Traditional Knowledge & Biodiversity under The Biodiversity Act”. Dr. Santanu Dey, Deputy Controller of Patent & Design, Kolkata Patent Office, presented elaborately the topic “Patent System in India” to the Participants. Mr. Anjan Sen, the enlisted Patent Attorney of ICAR, delivered lecture on “Legal Issues in IPR Protection” very vigilantly, followed by a successful discussion about difficulties faced by the inventors regarding legal matter.



Presentation in IPR clinic



Address by Sh. Anjan Sen, Patent Attorney of ICAR

TECH MELA 2018

A Farmers' Fair-cum-Technology Demonstration Mela was organized on September 28, 2018 at institute premises. Dr. A.N. Roy, Director, briefed the farmers about the present scenario of Jute sector in West Bengal and focused on the role of NINFET in improvement of livelihood of jute growing farmers.

Prof. P.K. Das, Ex-Professor, BCKV, West Bengal graced the occasion as Chief Guest and highlighted upon the importance of jute and its by-products. He also discussed about the benefits of adopting these technologies in their profession for increasing of their income and livelihood. Different value-added products from jute & allied fibres developed in the Institute were exhibited to the participants. Farmers also visited all divisions to get exposure on different technologies. A quiz competition was also arranged for the participants comprising on different questions on areas of agriculture focused on jute cultivation. About 120 farmers have participated in this program from different jute growing districts of West Bengal like Murshidabad, Bardwan, Nadia, Howrah, North and South 24 Parganas.



Inaugural Address by Dr. A.N.Roy



Guests on the dais



Interaction of farmers



Demonstration for grading



An view of exhibition during Mela



Demonstration on bleaching

SWACHH BHARAT ABHIYAN

Swachhta workshop under Swachh Bharat mission was organized at the institute on 28th June 2018. Dr. Alok Nath Roy, Director briefed about the positive impacts of swachhata both at an individual and societal level. He urged the staff members of the institute to act as catalyst in spreading this campaign for bringing remarkable changes in the society. Dr. Rina Naiya, Nodal Officer, Swachh Bharat Abhiyaan appreciated the whole hearted efforts of all staff members in joining hands for this noble campaign.



Welcome to Dr. T.R. Choudhury



Audience in the workshop

Dr. Tarit Roy Choudhury, Director, School of Environmental Study, Jadavpur University, Kolkata has graced the occasion as Chief Guest and emphasized upon the benefits of clean environment and our responsibilities to keep it safe & green. Dr. S.C. Saha, Senior Scientist offered hearty vote of thanks to the dignitaries on dais and the participants.



Swachhta Hi Sewa awareness in public



Clearing activity by institute' staff

Institute celebrated Swachhta Hi Sewa from 15.9.2018 to 02.10.2018 under Swachh Bharat Mission. On first day, staff members took Swachhta pledge and took participation in cleanliness drive in and around Institute campus. A health check-up camp was arranged in collaboration of Apollo Hospital, Kolkata at Institute campus for all staff members. Institute took initiative to dispose the scrap materials of the different divisions, sections, cells. Essay competition among the NINFET staff members and debate competition among the local school students were arranged to increase awareness on Swachhta. Saplings were planted by Director and staff members at Institute campus. Staff members have also participated in a rally with banner on Swachhta in the local area and displayed the posters on various theme of Swachhta for public awareness.



Essay competition on Swachhta Hi Sewa



Medical camp in the Institute' camp



Cleanliness drive by staff at a public place



Planting of a sapling by staff members



Disposal of scrap



Weekly cleaning at DDM Section



Awareness on cleanliness by displaying poster at public



Disposal of old books/newspapers

SWACHHTA PAKWADA

Institute has celebrated Swachhta Pakwada during December 16-31, 2018. During this period, saplings were planted in the institute campus. Swachh Bharat team have visited the Bargachia, Dhahin Gobindapur, Sonarpur, South 24 Parganas (adopted village under Mera Gaon Mera Gaurav) on 19.12.2018 and conducted awareness program on cleanliness and sanitation to the farmers. A group of 40 women farmers and 5 men farmers participated in this program. Kishan Diwas (Farmer's Day) celebration has been organized on December 22, 2018 and 40 farmers were participated. Dr. A.N.Roy, Director (Acting) stressed upon the importance of the program and Swachhta initiatives need to be taken by farmers and civil society officials during his deliberations. Dr. Rina Naiya, Nodal Officer of Swachhta Bhatat Mission, discussed different aspects of Swachhta initiatives taken by this institute and importance of Swachhta and cleanness to the community towards cleanliness of country.



Chief guest addressing the audience



Certificate distribution by Director

Staff members have visited at Bansdroni local market, displayed banner of Swachhta Pakwada and made awareness on cleanliness drive specially to avoid plastics with vendors and publics of market places. Under this program, drawing competition among twenty five school students of different classes have been organized under the theme of Swachh Bharat Abhiyaan and an essay competition among staff members of the institute also organized.

The closing ceremony was held on 31.12.2018. Smt. Jayanti Ray, Principal of Narmada School graced the occasion as Chief Guest and mentioned the importance of cleanliness in our society, she also highlighted role of mother towards the children who learn cleanliness drive first from her mother then teacher. She explained the value of clean environment and the responsibility of the citizen to keep our globe clean and green. The Chief Guest and Director of our institute distributed prizes to the winners of school students and staff members who participated in different competition on swachhta awareness.

VIGILANCE AWARENESS WEEK

NINFET, Kolkata observed Vigilance Awareness Week Program in the Institute. Pledge taking Ceremony was administered to all officials and staff on 29th October, 2018. Week long programs like Debate Competition, Quiz Competition, Essay Writing Competition was arranged in the Institute as well as in a nearby school. Closing Ceremony for Vigilance Awareness Week program was held on 3rd November, 2018. In this Ceremony Dr. N.C. Pan, Vigilance Officer has given welcome address. Dr. A.N. Roy, Director, NINFET elaborated the importance of Vigilance Awareness Week. In this occasion, Chief Guest was Mr. D. M. Sharma, SP, CBI, Kolkata and Guest of Honour is Mr. B.K. Pradhan, DSP, CBI. He has given the overview of vigilance awareness and different ways to make India corruption free as well as govt. rules and regulation in this regard.



Competition on Vigilance awareness by staff



Dignitaries on the dais at closing ceremony

WORLD SOIL DAY



The World Soil Day has been successfully celebrated by the NINFET at the village Bansbana, P.O. Fatapur, P.S. Haringhata, Dist. Nadia, West Bengal on 5th December, 2018. Dr. Biplab Saha, Principal Scientist, Dr. Sanjoy Debnath, Principal Scientist and Dr. Atul Singha, Scientist has organized the program along with Mr. Abdullah

Mondal, Panchayat Member, Fatepur Village, Mr. Partha Roy, Ex-Panchayat Pradhan of Bansbana village and Mr. Pintu Mandal, Secretary, Bhabanipur Horticulture Development Co-Operative Society Ltd and members of Bhabanipur Horticulture Development Co-Operative Society Ltd., Haringhata, Dist. Nadia, West Bengal. Forty-five villagers including two female members have attended the meeting. Local village representatives have expressed their gratitude to the NINFET, Kolkata for organizing the program for awareness on soil. Dr. Biplab Saha has narrated the significance of World Soil Day and different aspects of soil through recommendations given in a soil health card. He appealed villagers to form a farmers' club for addressing various soil health related issues. Dr. Atul Singha, discussed the importance of different microorganisms for good soil health and improvement of soil health using scientific methods of adding bio-manure. Dr. Sanjoy Debnath delivered a lecture on advantages of application of Jute Agro-Textile (JAT) mulching over plastic and other natural mulches and its multiple benefits. Farmers were discussed with scientists of NINFET and clarified the various aspects for maintaining good soil health.

LIBRARY WORKSHOP

One-day workshop on theme "Role of library as information tool in modern research" was held on 08.08.2018. Dr. N C. Pan, Director (Officiating), ICAR-NIRJAFT welcomed the participants and highlighted upon the theme of workshop. Dr. N. C. Ghosh, Chief Librarian, Indian Institute of Chemical Biology, Kolkata graced the occasion as chief guest and emphasized that workshop is highly valuable for users' awareness as well as for librarians. Dr. Sabuj Kumar Chaudhuri, Assistant Professor (Stage III), Department of Library & Information Science Calcutta University, Chaired the technical session. Three technical papers i.e. "NIRJAFT library at a glance", "Role of Library and Librarians in Modern Day Research" and "Effective Role and Value Addition by Libraries in R&D Activities" were presented. Dr. Rina Naiya briefed the participants about the facilities available in the library, CeRA and highlighted about institute repository etc. Mr. Rabi Sankar Giri, Assistant Librarian and In-Charge of Information Communication technology of Presidency University in his presentation highlighted the role of library in assisting a researcher, and discussed regarding modern tools use in the field of research. Dr. N. C. Ghosh, Librarian, CSIR- Indian Institute of Chemical Biology, Kolkata discussed about "Plagiarism" and Plagiarism checker tool. Librarians from adjoining research institutes, scientists, technical, administrative staff of NINFET have participated in the workshop which was successfully completed with the hearty vote of thanks to the dignitaries on the dais and the participants.



Inaugural address by Dr. N.C.Pan



Lighting of lamp by dignitaries

NATIONAL LEVEL TRAINING PROGRAM UNDER NFSM

Four (04) National level training programs on “Production and retting technology of Jute/Mesta/Ramie/Sunnhemp including other related aspects” sponsored by National Food Security Mission (NFSM) - Commercial Crops, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India were organized at the Institute. The details of the trainings are given in the table below.

Duration	Participants	State from where trainees participated
July 11-13, 2018	25	West Bengal, Bihar, Andhra Pradesh & Uttar Pradesh
July 17-19, 2018	25	Andhra Pradesh, West Bengal, Bihar & Uttar Pradesh
July 23-25, 2018	25	Odisha, West Bengal, Bihar, Andhra Pradesh & Uttar Pradesh
August 1-3, 2018	25	Meghalaya, Assam, Odisha, West Bengal, Bihar, Andhra Pradesh & Uttar Pradesh

In the inaugural function of all training programs, Dr. A.N. Roy, Director (Acting) welcomed the participants and briefed about the technologies developed at the Institute for better processing & value addition in jute and allied fibres. One hundred trainees have participated under these training programs & learned about different post harvest processing & value addition aspects of jute and allied fibres through lecture and live demonstrations. Visit to the different divisions of the institute and the experimental mill were also part of the training program where the trainees have exposed to various R&D and transfer of technology activities carried out by the institute. Dr. L.K. Nayak, Principal Scientist, NINFET, Kolkata & Co-Course Director have coordinated all four training programs.



Participants of training program



Address by Dr. A.N.Roy, Course Director

INTERFACE MEETING ON CRP PROJECTS

An interface meeting on the ongoing CRP projects at NINFET, Kolkata was held at the institute on February 26, 2019. Participants from different organizations like, NABARD, NJB, IJMA, IJIRA, ICAR-CRIJAF, MSME, MSME development institute, Bengal National Chamber of Commerce and Industry, National Jute Manufacturers Corporation Ltd., Directorate of Jute Development, Hastings Jute Mill, M/s Milltex Ecofibre Pvt. Ltd., Coimbatore, M/s Deep Microsystem, M/s Piyali Handicrafts, M/s Bipottarini Textiles, M/s Anisur Rahaman, M/s Sudharma Krishi Consultant Pvt. Ltd., and M/s Social organization have participated. Dr N.C. Pan, Director, NINFET and Nodal officer, CRP projects welcomed the guests and participants of the meeting and stress on the importance of the CRP projects in the current scenario, where natural fibres are emerging again in a big way. Dr S.N.Chattopadhyay, Co-Nodal officer addressed the gathering and spoken about the importance of the interface meeting in transferring the technologies developed under CRP projects



Director addressing the CRP delegates



Dr. S.Debnath presented the project' progress

The progress of the five CRP projects were presented by Dr. S. N. Chattopadhyay, Dr.V.B.Shambhu, Dr. D.P.Ray, Dr. K. K. Samanta & Dr. S. Debnath, and discussed in detail. All the participants visited the exhibition of the products and machines developed under CRP projects.

ITMU MEETING

Institute Technology Management Unit of the institute has conducted four ITMC meetings on 02.06.2018, 15.09.2018, 22.12.2018 and 16.03.2019 respectively. ITMU is also facilitated the documentation process of patentable / non-patentable technologies , commercialization of the technology and overview the liaison between Patent Office as well as in the process of new patent filing and follow up old cases. A memorandum of agreement (MoA) was signed with M/s. Deep Micro System, Bhandardaha, P. O. Antisara, Singur, Hooghly-712 223, West Bengal has MoA signed for the technology for the development of Electronic Fibre Bundle Strength Tester for Jute (Semi-Auto) on 28.07.2018



ITMC Meetings



HINDI CELL ACTIVITIES

The meeting of Official Language Implementation Committee under the chairmanship of Dr. Alok Nath Roy, Director (Acting), NINFET for the first and second quarter were held on June 29, 2018 and September 10, 2018 respectively. The agenda items of the previous meeting were confirmed and new agenda were placed in the meeting. The meetings of the Official Language Implementation Committee for the third and fourth quarter were held on December 17, 2018 and February 27, 2019 respectively under the chairmanship of Director. In each meeting, previous quarter agenda items were confirmed and new agenda items were discussed for the promotion of official languages in the institute.



Quiz Competition



Extempore competition



Hindi noting & writing competition



Hindi Fortnight Closing Celebration

HINDI FORTNIGHT CELEBRATION

Hindi Fortnight was celebrated in the Institute during September 14-29, 2018. During this period Quiz competition, Extempore Competition, Debate Competition, Recitation Competition, maximum work in Hindi and Hindi Noting Writing Competition were organized among the staff members of the Institute. During Hindi Fortnight closing ceremony, Prof. (Dr.) Soma Bandyopadhyay, Vice Chancellor, West Bengal University of Teachers Training, Education, Planning and Administration graced the occasion as Chief Guest. Prof. Bandyopadhyay suggested to work more and more in Hindi and appreciated the enthusiasm of the staff members for participating in different competitions during Hindi Fortnight Celebration. Prizes were distributed to the winner of the different competitions organized during this period. Dr. A.N. Roy stressed upon the use of Hindi language to the maximum possible extent by the staff members. Dr. L.K. Nayak, Principal Scientist offered a vote of thanks.

HINDI WORKSHOP

First Hindi Workshop on Bilingual Policy of the Govt of India and Rajbhasha ke Badhte Kadam was held on June 23, 2018 in which 30 participants (07 Officers and 23 staff members) were participated. Mr.R.D.Sharma, welcomed the participants and Dr. Chandra Gopal Sharma, Ex-Deputy General Manager (OL), Eastern Railway, Kolkata discussed about Dhara 3(3) and bilingual policy of the Govt of India. During the second session Mr. RD Sharma presented the use of Hindi as Official Language before achieving the independence and progressive use of Hindi after independence.

Second Hindi Workshop on *Hindi Bhasha ka Saralakaran and Computer par Hindi* was held on August 25, 2018 in which twenty nine (29) participants (04 Officers and 25 staff members) were participated. Smt. Rita



Bhattacharya, Ex- Chief Manager (official Language), UBI (Bank) delivered lecture on history of Hindi language as well as use of gender, case, number etc. in Hindi. During the second session Mr. RD Sharma had a presentation on "Use of Hindi on computer". During discussion, typing in Hindi on Unicode and typing in Hindi by means of Google Voice Typing Tools was taught to participants.

Third and final Hindi Workshop on the topic "*Hindi Tippni evam Masauda Lekhan*" and "*Bharat Sarkar ki Rajbhasha Niti evam Anupalan*" as well as fourth hindi workshop on "*Computer par Hindi*" and "*Rajbhasha*

Hindi mein Takniki Karya" were organized in the Institute on December 22, 2018 and February 16, 2019 respectively.

There are three in-house Seminar in Hindi have been delivered in the Institute on 14.08.2018, 02.10.2018 and 31.10.2018 on the topic "*Rishi Aurobindo*", "*Mahatma Gandhi*" and "*Sardar Patel*" respectively.

NITI-INSTITUTE RESEARCH COUNCIL (IRC) MEETING

First Institute Research Council (IRC) Meetings was conducted to review and discuss the progress of research projects on September 24, 2018. Dr. P. K. Das, Former Professor, Bidhan Chandra Krishi Vivasvidyalaya, Mohanpur, Kalyani, Nadia and Dr. Sadhan Chandra Ray, Former Professor, Department of Jute Fibre Technology, University of Calcutta were experts for this meeting. Four new ad-hoc projects proposals, three on-going ad-hoc projects and progress of twenty three on-going research projects were discussed.



Chairman, NITI-IRC addressed the gathering



Expert delivered at NITI-IRC



Second NITI-IV Institute Research Council (IRC) Meeting was held on March 15-16, 2019. Dr.P.K.Das, Former Professor, Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur, Kalyani, Nadia, Dr. T. K. Guha Roy, Former Deputy Director, IJIRA, Kolkata, Dr. Sunil Kumar Sett, Former Professor, Department of Jute Fibre Technology, University of Calcutta and Dr. Debasis Nag, Former Director, ICAR-NIRJAFT, Kolkata were experts for this meeting. Four new ad-hoc projects proposals, four on-going ad-hoc projects and progress of twenty two on-going research projects were discussed. After thorough discussion, four new research projects were approved.



**Dr. B.C.Mal, Chairman,
RAC addressed the gathering**



**Dr. S.N.Chattopadhyay,
Member Secretary, RAC presented the ATR**

Prior to NITI-IRC Meeting, two Project Monitoring and Evaluation Committee (PMC) were held on September 19, 2018 and March 11, 2019 respectively. Director of the institute, Heads of Division and In-Charge, PME Cell were discussed the newly proposed project proposals (eleven) and after through discussion, PMC recommended six proposals for their further consideration in the IRC meeting.

RESEARCH ADVISORY COMMITTEE MEETING

XXVIII Research Advisory Committee Meeting was organized during March 26-27, 2019 under the Chairmanship of Dr. B. C. Mal, Vice Chancellor, JIS University, Kolkata. The committee was constituted by the Council and has six members from different fields of Indian Agriculture and allied sectors including one nominated member from Council. Dr. B.C. Mal, Chairman addressed the gathering and stressed the scientific forum to focus on the new technological approached for the value addition of natural fibres. Dr. S.N.Chattopadhyay, Member Secretary presented the action taken report against the previous RAC meeting recommendations and all members appreciated the efforts of the team. All head of the division were presented the progress of on-going institute research activities and the future area of work. Dr. G.Basu has also presented a brainstorming lecture on Status of Natural Fibres in India. RAC members suggested to design the future research program by considering institute name to emphasize on natural fibre exploration and exploitation.



Lecture on Status of natural fibres in India by Dr.G.Basu Dr. B.Saha presented the progress of QEI Division

MERA GAON MERA GAURAV PROGRAM

Under MGMG program, NINFET has adopted 25 villages belongs to Howrah, Hooghly, Nadia, North 24 Parganas and South 24 Parganas and each village has been allotted to a scientist of the institute for adoption by disseminating required information , guidance and awareness through lectures, demonstration and training. Activities carried out in different parts of the West Bengal during 2018-19 have been depicted below.



Different lectures delivered by institute scientist at ASHA Farmers Club, Pancharul, Howrah



Field visit on 28.06.2018 at Durlavpur village



Interaction with farmers on 18.06.2018 in a village of South 24 Parganas



Lecture & demonstration of jute based mulch on high value horticultural crops at Nadia on 29.11.2018



Demonstration of retting of jute plant on 06.08.2018



Interaction with farmers at Satyapole on 07.02.2019



TRAINING PROGRAM UNDER SCHEDULED CASTE SUB-PLAN (SCSP)

Skill development training program for five days duration on “Manufacture of Jute Handicrafts” under Scheduled Caste Sub-Plan (SCSP) was organized at the institute during March 25-29, 2019. Twenty Scheduled Caste category farmers in each training associated with agro-based craft works have participated in this program.



Training is in progress



Certificate & kit distribution

EXPOSURE VISIT & OUTREACH PROGRAMS

Participants from	Date of visit	Participants
DAESI participants accompanied by Howrah KVK staff Members.	May 31, 2018	45
Progressive farmers from adopted villages under MGMG	September 28, 2018	100
Demonstration of Pineapple Leaf Fibre Extractor at Bidhannagar, Siliguri, West Bengal	October 28, 2018	26
Students from Agricultural College, Mandya, University of Agricultural Sciences, Bangalore	December 11, 2018	75
Progressive farmers from adopted villages under MGMG	December 22, 2018	40
Farmers from Murshidabad, West Bengal (Under ATMA Scheme)	January 18, 2019	27
Students from BN College of Agriculture, Assam Agricultural University, Biswanath Charial, Assam	January 23, 2019	45
Students from College of Community Sciences, University of Agricultural Sciences, Dharwad	February 12, 2019	40



*Visit of students from
Agricultural College, Mandya*



*Visit of University of
Agricultural Sciences students*



Visit of Assam Agricultural University students



Visit of farmers under ATMA Scheme



Demonstration on Pineapple extractor



Address by director to progressive farmers



RESEARCH PUBLICATIONS

RESEARCH PAPERS

1. Adak, S., Bandyopadhyay, K.K, Sahoo, R.N., Purakayastha, T.J., Shrivastava M., and Mridha, N., 2018. Assessment of Soil Health Parameters using Proximal Hyperspectral Remote Sensing. *Journal of Agricultural Physics*. 18(1): 2018.
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12. Ghosh RK, Ray DP, Chattopadhyay SN, Bhandari K, Kundu A, Tiwari A, & Das I, 2018. A method for microwave assisted synthesis of microcrystalline cellulose from jute stick alpha cellulose, *International Journal of Agriculture, Environment and Biotechnology*, 11(4): 697-701.
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14. Mahato B, Panda P, Ray DP, Choudhury A, 2018. Effect of soil drying and Rewetting on nitrogen mineralization from soil amended with organic matters, *International Journal of Bioresource Science*, 5(1): 75-79
15. Manjunatha, B.S., Paul, S., Aggarwal, C., Bandeppa, S., Govindasamy, V., Ajinath, S.D., Rath, M.S., Satyavathi, C.T and Annapurna, K., 2018. Diversity and tissue preference of osmotolerant bacterial endophytes associated with pearl millet genotypes having differential drought susceptibilities. *Microbial ecology*, 77: 676-688.
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PRESENTATIONS IN SEMINAR/CONFERENCE/WORKSHOP/ MEETING

1. Adak, S., Bandyopadhyay, K.K., Sahoo R.N, and Mridha, N., 2019. Assessment of Soil Health Parameters using Hyperspectral Remote Sensing. International Workshop on Earth Observations for Agricultural Monitoring, IARI, New Delhi, 18-20 February, 2019.
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3. Ammayappan, L., Chakraborty, S., and Pan, N.C, 2019. Effect of resin modification on the performance of jute based biocomposite, National Seminar on "Natural Fibre resource management for Sustainable Development" at ICAR-NINFET, Kolkata, 02-03rd February 2019.
4. Ammayappan, L., Pan, N.C., Khan A., and Chakraborty, S., 2019. Eco-friendly dyeing and aroma finishing on jute textiles, 68th Annual conference on Eco-friendly Aspects of Textile Manufacturing, Department of Jute and Fibre Technology, Kolkata, 16th February 2019.
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14. Das, S., NIRJAFT *developed Technology & ICT in Agriculture*, Technology week cum Rabi Kisan Sammelan 2019, Howrah, 18th January, 2019.
15. Debnath S, Jute Non-Woven Materials, as Guest Lecturer delivered to students of B.Sc. (Hons.) and M.Sc. in Textile Science, Clothing and Fashion Studies students of J.D. Birla Institute, Kolkata on October 04, 2018
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17. Debnath S, Jute based ornamental fabrics in Handloom, National Handloom Day Celebration, Indian Council for Culture Relations (ICCR), Kolkata, 07th August 2018
18. Debnath S, Jute grading and diversification of jute fibre, Jute Grading Training Programme, Bethuadahari Krishak Bazar, Nadia-741103, 17th July 2018.
19. Debnath S, Jute grading and diversification of jute fibre, Two Days Jute Grading Training Camp, Murshidabad-742101, West Bengal, 18th July 2018.
20. Debnath S, Jute-yak-wool blended products in jute spinning system, Soft Intervention Program in Sheep Wool Blanket Manufacturing Cluster, Mamudpur, Purbasthali-II, March 08, 2019.
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35. Ray D.P. 2018. Modern Jute Grading system and Diversified Products from Jute, State level officers and Farmers training program at office Deputy Director of Agriculture, 24 Parganas (North), Govt. of West Bengal.
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41. Saha, B., Debnath, S., Roy, S.B. and Das, D, 2018. Effect of non-woven jute agro-textile mulches on improvement of soil health and broccoli production in coastal alluvial soil, National Symposium on Advancement in natural resources management for sustained productivity, Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, , 28 September to 01 October, 2018.
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43. Samanta KK, Eco-friendly Value Addition of Natural Fibre using Nanotechnology, Annual conference on Eco-friendly Aspects of Textile Manufacturing, DJFT, CU, Kolkata, 16th February, 2019,
44. Samanta K.K., 2019. Sustainability in Textile Chemical Processing, Workshop under TEQIP III, UPTTI, Kanpur, 12th January 2019.
45. Shambhu V B, Thakur A K and Nayak LK, 2019. Improved Power Ribboner for Separation of Green Bark from Jute and Mesta Plants, National Seminar on Natural Fibre Resource Management for Sustainable Development, at ICAR-NINFET Kolkata, February 02-03, 2019
46. Shambhu, V. B., 2019. Improved retting techniques of Jute, Training program on “Jute farmers of South 24 Parganas, Sasya Shyamala Krishi Vigyan Kendra Arapanch, Sonarpur, March 28, 2019.
47. Shambhu, V. B., 2019. Power Tiller, its components and repair & maintenance, Skill India Program of Agriculture Skill Council of India (ASCI) for the Job Role on “Agriculture Machinery Operator” from 23rd January to 27th February, 2019, ICAR-CRIJAF, Barrackpore.
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2. Nayak, L.K., 2019. *New avenues on value added fibre based products*, KRUSHI ODISHA – a Conference on Multiplying Farmers Income: Grampreneurship, Confederation of Indian Industry (CII) , Biju Patnaik Exhibition Ground, BBSR, Odisha, January 15-19, 2019.



3. Nayak, L.K., 2019. *Perspectives of Some Fibre Extraction Technologies (FETs) for Agri-Business Start-Ups in North-Eastern Region*, National Agri-Business Entrepreneurship Conclave, ICAR Research Complex for North Eastern Hill Region, Umiam, Meghalaya, February 09-11, 2019.
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5. Bose A.M., Thiruvalar Selvan P., Ammayappan L, Chakraborty S, et.al, 2018. A novel jute substrate material based flexible monopole antenna, Proceeding of ISSS National Conference on MEMS, Smart Materials, Structures and Systems, Madurai, pp. 6-10.
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7. Debnath, S, Bose G, Mishra L, Das R and Karmakar S, 2018. Extraction and Spinning of Indian Flax fibre, Proceeding of National Seminar on Market Driven Innovations in Natural Fibres, TINFS, Kolkata, pp 33-39.
8. Debnath S, Middya S, Nath D, Bose G and Datta M, Jute Based Sound Absorber, Proceeding of National Seminar on Market Driven Innovations in Natural Fibres, TINFS, Kolkata, pp 208-213.
9. Ghosh RK, Ray DP, and Tewari A, 2018. New application area of jute stick activated carbon for sample matrix cleanup in pesticide residue analysis, Proceeding of National Seminar on “Market Driven Innovations in Natural Fibres”, The Indian Natural Fibre Society, Kolkata, pp. 107-111.
10. Manna K, Saha B, Kundu MC, and Ghosh GK, 2018. Effect of nonwoven jute agro-textile mulch on soil health and productivity of maize (*Zea mays* L) in lateritic belt of West Bengal, Proceeding of National Seminar on Market Driven Innovations in Natural Fibres, TINFS, Kolkata, pp 72-80.
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14. Ray DP, Sarkar A, Saha SC, and Chatterjee N, 2018. Evaluation of Available Jute Retting Technologies and its Socio-Economic Impact, Proceeding of National Seminar on "Market Driven Innovation in Natural Fibres", TINFS, Kolkata, pp. 124-130.
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SOUVENIR /PROCEEDINGS EDITED

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- Chattopadhyay S.N., Ammayappan, L., and Nayak L.K, 2019. Souvenir cum Book of Abstracts of National Seminar on "Natural Fibre resource management for Sustainable Development", The Indian Natural Fibre Society, Kolkata, pp.48.

BOOK

- Ray DP and Ghosh RK (2019) Botanicals as Insect Control Agent, New Delhi Publishers, 90, Sainik Vihar, Mohan Garden, Uttam Nagar, New Delhi-110059 (ISBN: 978-93-86453-01-3)



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2. Das A, 2018. *Fungal retting technology of jute fibre*, In: *Innovative Food Science and Emerging Technologies*, Eds Thomas S, et.al., Apple Academic Press, USA, pp.511- 527.
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6. Rabi N. Sahoo, V. Bajpai, H. Patra, Gopal Krishna, Mridha N., 2018. Soil organic carbon in crop fields. Spectrum of India. AVIRIS-NG coffee table book of ISRO-NASA collaboration. ISBN No-9789382760290.
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- Roy, A.N., Ammayappan, L., Basu, G., Nayak, L.K. and Ghosh, R.K., 2018. Annual Report in Hindi (2017-18) of ICAR-National Institute of Research on Jute & Allied Fibre Technology, Kolkata-700040, pp.120
- Roy, A.N., Ammayappan, L., Basu, G., Nayak, L.K. and Ghosh, R.K., 2018. News Letter in English Edition (Volume 20, No. 2) of ICAR-National Institute of Research on Jute & Allied Fibre Technology, Kolkata-700040., pp.16
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SUCCESS STORY/ INSTRUCTION MANUAL/REPORTS

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2. Saha SC, Ray DP, Sarkar A, Bhowmick M and Sardar G., 2018.Technical Instruction Manual of Electronic Fineness Meter for Lignocellulosic Fibres developed under CRP Natural Fibres (CRP/NIRJAFT-2), ICAR-NIRJAFT Publication, English, 2018.
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MULTIMEDIA CDs

- Three CDs were developed for training programs organized at ICAR-NIRJAFT, Kolkata under ABI project and SCSP program.

PATENTS GRANTED

- S. Debnath, G.K. Bhattacharryya & U. S. Singh, A blanket from jute-hollow polyester blended bulk yarn and method of preparing the same, Patent No.310348, Date of Grant 29.03.2019, Application No. 1102/KOL/2009 dated August 28, 2009.

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- L.K. Nayak, V.B. Shambhu and S. Debnath, 2018. A Leaf fibre extractor for extraction of fibres from green sisal leaves, e-filed on 20th April, 2018 (Application No. 201831015037).
- L.K. Nayak, S. Debnath, V.B. Shambhu and A. Das, 2018. A Leaf processing device for extraction of fibre from pineapple leaves, e-filed on 08th May, 2018 (Application No. 201831017352).



Cleanliness drive at public place



Awareness on cleanliness among children



Swachhta Pledge by institute' staff on 16th December 2018



PARTICIPATION IN MEETING / WORKSHOP/ CONFERENCE / SEMINAR/TRAINING

Program	Organized by	Date	Participants
Brainstorming meeting on “Promising future of jute”	CRIJAF, Barrackpore	April 10, 2018	G.Basu
Meeting on Unified communication system	ICAR- NIRJAFT	April 12, 2018	All Staff
8th meeting of Project Appraisal and Monitoring Committee	Jute Commissioners’ office, Salt Lake, Kolkata	April 12, 2018	R. K. Ghosh
Lecture on “Bhasa, Sanskriti and Samaj”	Nagar Rajbasha Karanavith Samiti at CGCRI, Kolkata	April 27, 2018	S. Das
Training on Jute Grading	ICAR-NIRJAFT	May 2-5, 2018	All Staff
NJB Board meeting	NJB, Kolkata	May 5, 2018; Sep 20, 2018	A.N.Roy
Lecture on “Enabling the positive use of Artificial Intelligence for all”	Institute of Engineers (India), Kolkata	May 17, 2018	S. Das
Interactive meeting with Technical Committee of IJMA	ICAR-NIRJAFT	May 19, 2018	All scientists
Seminar on “Google I/ O extended”	Google Developer group, Salt Lake, Kolkata	May 19, 2018	S. Das
Fifth meeting of Indian Grain Storage Working Group (IGSWG)	NASC Complex, New Delhi	21st May 2018	A.N.Roy
State Level Officers Training Meeting Program under NFSM (CC)-Jute Based Cropping System	Office of the DDA (Admn), Hooghly, Department of Agriculture, Govt. of WB	June 11-12, 2018	D.P. Ray
Basic Training Program for working in Hindi on Computer which	Dept of Official Language, Ministry of Home Affairs at CGCRI, Kolkata	June 18-22, 2018	R.D.Sharma
Video Conferencing of Hon’ble Prime Ministers interaction with the farmers of the country	ICAR-NIRJAFT	June 20, 2018	All scientists
One-Day seminar on “Internet of Things (IOT) – Technologies & Applications”	The Institution of Engineers (IEI), WBSC, Kolkata	June 21, 2018	L.K. Nayak
Seminar on “Slope Stabilization Challenges in Infrastructure Projects”	Central Board of Irrigation and Power, Chanakyapuri, New Delhi	June 21-22, 2018	A.N.Roy G.Basu
ICAR Regional Committee Meeting, Region-II at OUAT, Bhubaneswar	ICAR-CIRI, Barrackpore jointly with ICAR-CIFA, Bhubaneswar, Odisha	June 22-23, 2018	S.N.Chattopadhyay
Swachhta workshop	ICAR-NIRJAFT	June 28, 2018	All staffs
EC meeting of Indian Society of Coastal Agricultural Research	ISCAR at CIFE, regional centre, Kolkata	July 07 & 12, 2018	B. Saha

Program	Organized by	Date	Participants
National Level Training Program on 'Production and retting technology of Jute/Mesta/Ramie/ Sun-hemp including other related aspects	'NFSM, Department of Agriculture, Co-operation and Farmers Welfare, Ministry of Agriculture, Government of India at ICAR-NIRJAFT	July 11-13, 2018	N. Mridha
		July 23-25, 2018	H. Baite
Technical Evaluation Committee Meeting	NJB, Kolkata	July 13, 2018	G. Basu
Special Workshop on Quarterly Progress Report	Town Official Language Implementation Committee, Kolkata	July 17, 2018	R. D. Sharma
A lecture-cum-meeting on "Food Safety for Public Health Protection"	IEI, Kolkata	July 24, 2018	V. B. Shambhu L. K. Nayak
One day Seminar on "Green Polymer Composite and its Applications"	IEST Shibpur	July 25, 2018	S. N. Chattopadhyay L. Ammayappan K. K. Samanta
FLD-cum farmers' meet on accelerated retting technology	Balagarh, Hooghly	July 30, 2018	A. N. Roy D. P. Ray
22nd National exhibition at Belgharia, Kolkata	Central Calcutta Science & Culture Organization For Youth	August 3-6, 2018	A. N. Roy S. Das
Training program on jute handicrafts	Assistant Director of Agriculture Marketing (Administrative)	August 06, 07 & 08, 2018	L. K. Nayak
One day workshop on "Role of library as information tool in modern research"	ICAR-NIRJAFT	August 08, 2018	All Scientists
Performance review meeting of ABI project under NAIF	NAIF, ICAR, New Delhi	August 28, 2018	A. N. Roy L. K. Nayak
Seminar on "Artificial intelligence and robotics using Matlab and simulation"	Mathworks, Kolkata	September 04, 2018	S. Das
Meeting of "NABARD Task Force for promotion of handicrafts"	NABARD, Regional Office, Kolkata	September 12, 2018	L. K. Nayak
National Conference On Advances In Clay Science Towards Agriculture, Environment And Industry	NBSS&LUP, Kolkata centre	September 14, 2018	B. Saha
Evening Lecture on Recent Advances In Polymeric Composites	The Indian Natural Fibre Society (TINFS)	September 14, 2018	All Staff
ITMU meeting	ICAR-NIRJAFT	September 15, 2018	Members of ITMU
Tribute to former Prime Minister of India Bharat Ratna late Shri Atal Bihari Vajpayee	ICAR-NIRJAFT	September 16, 2018	All Staff
2nd Half-yearly meeting on official language	Town Official Language Implementation Committee, Kolkata	September 18, 2018	R. D. Saharma



Program	Organized by	Date	Participants
5th Meeting of the Scientific Advisory Committee	Sasya Shyamala KVK, South 24 Parganas	September 24, 2018	D.P. Ray
NITI-III Institute Research Council Meeting	ICAR-NINFET	September 24, 2018	All Scientists
Indo-French Seminar on "Jute & Natural Fibres"	French Trade & Investment Commission in India, Embassy of France, Kolkata	September 26, 2018	N.C. Pan , G.Basu B. Saha S.N.Chattopadhyay L.K. Nayak
Institute management committee (IMC) meeting	ATARI, Kolkata	September 27, 2018	A.N. Roy
Farmers' Fair cum Technology demonstration Mela -2018	ICAR-NIRJAFT	September 28, 2018	All staffs
Commemoration of the 150th Birthday of Mahatma Gandhi	ICAR-NIRJAFT	October 2, 2018	All staffs
Exhibition in a seminar cum workshop on Agricultural activities	Mahar Brahmamoyee High School (H.S), Sabang, Paschim Medinipur	October 3, 2018	A.N. Roy
Institute Management Committee meeting	ICAR-NIRJAFT	October 05, 2018	IMC Members
Mahila Kisan Divas	ICAR-NIRJAFT	October 05, 2018	All staffs
Indian Handicrafts & Gift Fair (IHGF) Delhi Fair	India Expo Centre & Mart, Greater Noida	October 14-18, 2018	A.N. Roy L.K. Nayak
Mahila Kisan Divas (Woman Farmers' Day)	ICAR-NIRJAFT	October 15, 2018	All staffs
Agri-startup & Entrepreneurship Conclave	NASC Complex, New Delhi	October 16-17, 2018	A.N. Roy L.K. Nayak
Exhibition Kumbh Mela 2019	IISR, Lucknow, Uttar Pradesh	October 26-28, 2018	A.N. Roy
State Level Officers Training Meeting under NFSM	Department of Agriculture, Govt. of West Bengal	November 2, 2018	D.P. Ray
Advances in Integrated Watershed Management for Rural Livelihood	DST, Government of India at ICAR-IISWC, Research Centre, Ooty, Tamilnadu	November 12-23, 2018	N. Mridha
Professional Attachment Training Program on "Construction of RNAi Vector for Targeting Potato Invertase Gene and Fungal Enzyme Characterization"	ICAR-NRCPB, New Delhi under the supervision of Debasis Pattanayak, Principal Scientist	November 12, 2018 to February 12, 2019	Manjunatha B S
Meeting for a New Project presentation on "Jute Leaf Tea"	National Jute Board, Kolkata	November 14, 2018	A.N. Roy D.P. Ray
International trade fair 2018	Trade Promotion, Pragati Maidan, New Delhi	November 14-27, 2018	A. N. Roy S. Das

Program	Organized by	Date	Participants
5th Yak Mela & 5th Interface Meeting on “Improvement of yak husbandry through technological interventions -way forward for livelihood security of yak farmers”	ICAR-NRC on Yak and ICAR-NIRJAFT at Dirang, Arunachal Pradesh	November 16-17, 2018	A. N. Roy L. K. Nayak K. K. Samanta
Workshop on “Menstrual Hygiene management: Access, livelihood and disposal issues “	Fulcrum Consortium, Rotary Sadan, Kolkata	November 28, 2018	S.N.Chattopadhyay
World Soil Day celebration	ICAR-NINFET, at Bansbana village	December 05, 2018	B.Saha S.Debnath A.Singha
Review meeting of CRP- Natural Fibre projects	ICAR-CIRCOT, Mumbai	December 12-13, 2018	S.N. Chattopadhyay S.Debnath D.P. Ray L.K. Nayak K.K. Samanta
Swachchata farmers’ meet	ICAR-NIRJAFT	December 12, 2018	All staffs
International Conference on Innovation in Material Science & Technology	Amity University, Kolkata and Indian Rubber Institute, Kolkata Branch	December 14-16, 2018	A.N.Roy K. K. Samanta
Meeting on fibre crop and its technology	DG ICAR, DDG (Engg.), DDG (Crop Science) and other high officials	December 18, 2018	A. N. Roy
Carbohydrate Conference CARBO-XXXIII on “Sweet 18, Glyco-chemistry, Biology and Technology”	IISER, Kolkata and ACCTI	December 19-21, 2018	N.C. Pan S.N. Chattopadhyay
Meeting on fibre crop and its technology	MOS (AFW), MOS (Textile), DG ICAR and other high officials	December 27, 2018	A. N. Roy
Krihi Samridhi Mela Cum National Workshop	KVK, Sargachi, Murshidabad	December 28-31, 2018	A. N. Roy S. Das
Workshop on “Artisan Speak”	NJB, Ministry of Textiles at Old Currency Building, Kolkata	January 07, 2019	S.N.Chattopadhyay B.Saha S. Das
Panel discussion: KRUSHI ODISHA – a Conference on Multiplying Farmers Income: Grampreneurship	CII in collaboration with Department of Agriculture & Farmers Empowerment at Bhubaneswar	January 15-19, 2019	L.K. Nayak
Technology week and District Krishi Mela 2019	Krishi Vigyan Kendra, Jagatballabpur, Howrah	January 14-16, 2019	A. N. Roy S. Das
53rd Annual Convention of Indian Society of Agricultural Engineers (ISAE) & International Symposium on Engineering Technology for Precision and Climate Smart Agricultural	Indian Society of Agricultural Engineers (ISAE), BHU, Varanasi	January 28-30, 2019	V. B. Shambhu



Program	Organized by	Date	Participants
National Seminar on Natural Fibre Resource Management for Sustainable Development	TINFS, NJB, and NABARD at ICAR-NINFET, Kolkata	February 02-03, 2019	All Staff
National Agri-Business Entrepreneurship Conclave on 'Building Agri-Business Start-Up Ecosystem'	ICAR Research Complex for North Eastern Hill Region, Umiam, Meghalaya	February 09-11, 2019	S. Debnath L.K. Nayak
Krishi Kumbh Mela 2019 30th workshop of AINPJAF at Bihar Agricultural University, Bhagalpur	Motihari, Bihar Bihar Agricultural University & ICAR-CRIJAF, Barrackpore	February 09-11, 2019 February 14-15, 2019	S. Das B. Saha
District Krishi Mela 2019	Sasya Shyamala Krishi Vigyan Kendra, Sonarpur	February 14-16, 2019	A. N. Roy S. Das
68th Annual conference on Eco-friendly Aspects of Textile Manufacturing	DJFT, CU, Kolkata	February 16, 2019	N.C. Pan S.N.Chattopadhyay S.Sengupta S.Debnath L.Ammayappan K.K.Samanta
12th AIPTC	FOSET at NITTTR, Kolkata	February 17, 2019	A. N. Roy S. Das
Web launched program on Pradhan Mantri Kisan Samman Nidhi Yojna	ICAR-NINFET	February 24, 2019	All Staff
33rd Meeting of Jute and Jute Products sub-committee	BIS, Kolkata	March 1, 2019	G. Basu
Interactive meeting-cum-workshop on "National Consultation on ICT in Agriculture"	ICAR-DKMA at NASC complex, New Delhi.	March 06, 2019	S. Das
Soft Intervention Program in Sheep Wool Blanket Manufacturing Cluster	District Industry Centre, Directorate of MSME, Mamudpur, Purbasthali-II	March 08, 2019	S. Debnath
Special Workshop on "Information Technology and Hindi"	Town Official Language Implementation Committee, Kolkata	March 12, 2019	R.D.Sharma
One day training cum workshop on jute	DJD and ICAR-CRIJAF	March 14, 2019	B. Saha
Annual review workshop of CRP-Natural Fibre projects	ICAR-CIRCOT at TNAU, Coimbatore	March 14-15, 2019	S. Debnath D. P. Ray L. K. Nayak K. K. Samanta
World Water Day Observation	The Institution of Engineers, WBSC, Kolkata	March 23, 2019	L.K. Nayak
Institute Management Committee (IMC) meeting	ICAR-CIPHET, Ludhiana	March 28, 2019	A. K. Thakur

IN-HOUSE SEMINAR

Date	Presenter	Topic
27.04.2018	Dr. D.P.Ray	Synthesis and Application of Chemical Compatibilizers to Enhance the Properties of Jute based Biocomposites
04.05.2018	Mr. Amitava Sarkar	Quality Evaluation & Grading of Jute & Mesta Fibres
11.05.2018	Mr. T.K.Kundu, Mrs.I.Das, Mr. R.Das, Sh.I.Mustafa & Mr.S.Bhowmick	Grading of Jute Fibres
18.05.2018	Dr. G. Basu	Danger in Science Communication
25.05.2018	Sh. H. Baite	Dyeing Process Variables study on Soybean treated Cotton and Jute Fabric
01.06.2018	Dr. A. Singha	Prospects of Application of Microorganisms in Quality Up-gradation of Jute and allied fibres
15.06.2018	Dr. P.C. Sarkar	The Enigma of Lac
24.08.2018	Dr. L.K. Nayak	A Scutching Devise for Extraction of Fibre from Flax Stalk
08.11.2018	Mr. Manjunatha BS	Orientation Training at ICAR-NIRJAFT
22.02.2019	Dr. L.Ammayappan	Eco-friendly aroma finishing on jute textiles
01.03.2019	Dr. K. K. Samanta	Eco-friendly value addition of natural Fibre using nanotechnology
08.03.2019	Sh. N. K. Jha	eOffice : An introduction

DISTINGUISHED VISITORS

Date	Visitor
19 th May 2018	Indian Jute Mills Association' Technical Committee led by Shri. S.K.Chandra, Chief Executive (Works), Hooghly Infrastructure Pvt. Limited, Hazinagar
12 th June 2018	Honorable Shri. Aroop Biswas, Minister of Public Works and Youth Development & Housing, Govt. of West Bengal
28 th June 2018	Dr. Tarit Roy Choudhury, Director, School of Environmental Study, Jadavpur University, Kolkata
8 th August 2018	Dr. N. C. Ghosh, Chief Librarian, Indian Institute of Chemical Biology, Kolkata
14 th August 2018	Shri M.V.Rao, IAS, Additional Chief Secretary, Government of West Bengal
21 st September 2018	Shri Raghvendra Singh, Secretary, Ministry of Textiles and officials
25 th September 2018	Delegates from French Trade & Investment Commission
3 rd November 2018	Mr. D. M. Sharma, SP, CBI, Kolkata Mr. B.K. Pradhan, DSP, CBI
31 st December 2018	Smt. Jayanti Ray, Principal, Narmada School
3 rd January 2019	Dr. Charudatta Digambarrao Mayee, Ex-Chairman, ASRB
2 nd February 2019	Shri Arvind Kumar M, Secretary, NJB



AWARDS/ RECOGNITIONS RECEIVED

DR. NIMAI CHANDRA PAN

- Peer reviewer for Indian Journal of Fibre & Textile Research and Textile Research Journal.
- External examiner for Comprehensive Viva-Voce Examination for M.Tech Textile Technology (Technical Textiles) under University of Calcutta on 8th June, 2018.

DR. ALOK NATH ROY

- Member of the National Jute Board (Ministry of Textiles), Kolkata.
- Member of the Institute Management Committee of ATARI II, Salt Lake, Kolkata.
- Co-chairman & core-committee member of an interface meeting cum 5th Yak Mela at NRC on Yak, Dirang.
- Member of National Advisory Committee of “Krishi Samridhhi Mela cum National Workshop” at Ramakrishna Mission Ashrama, Sargachi, WB
- Steering Committee to review the Performance of National Agriculture Innovation Fund
- Outside observer for ARS 2018 examination

DR. GAUTAM BASU

- Acted as a member of the Cordage Sectional Committee (TX 09), Geo-synthetics Sectional Committee (TX 30) and Technical Textiles Sectional Committee (TX 33) of Textile Division of Bureau of Indian Standard, from 2005 till this date.
- Acted as a member of the Jute and Jute Products Sectional Committee (TX 03) to formulate Indian Standards for terminology, grading, specifications and packaging for jute, Mesta and other related bast fibres and their products.
- Guided a Ph. D. Student (Dr. Leena Mishra) who has been awarded Ph.D. (Technology) degree on 01.10.2018 under the University of Calcutta, Kolkata
- Consultant for evaluation of soil erosion of embankment of river Hooghly at Haldia near a Multimodal IWT Terminal under construction and evaluation of integrity of Embankment to M/s Pollution & Project Consultants, Kolkata.
- Member of Board of Studies for the under graduate and postgraduate studies in Fibre Technology/Technical Textiles of the University of Calcutta, Kolkata.

DR. SAMBHU NATH CHATTOPADHYAY

- Member of the assessment committee for promotion of ARS scientists under CAS in Textile Chemistry Discipline at ICAR-CSWRI, Avikanagar, Rajasthan on 9th August 2018.
- Peer reviewer for Indian Journal of Fibre & Textile Research (CSIR)
- External Examiner for conducting M.Tech., Textile Technology (Technical Textiles) Examination 3rd Semester Course in the field of Chemical Processing and Functional Finishing under DJFT, IJT, University of Calcutta on 4th January, 2019
- Member of the Institute Management Committee of ICAR-CIRCOT, Matunga, Mumbai.
- Principal Member of Textile Speciality Chemicals & Dyestuff sectional committee (TXD07) for BIS standard.

DR. BIPLAB SAHA

- Member of Executive Council of Indian Society of Coastal Agricultural Research
- Guided a Ph. D. Student (Dr. Koushik Manna) under the Visva Bharati.
- Acted as an Indian examiner to evaluate a PhD thesis under BCKV, West Bengal.
- Peer Reviewer for the journal Bioresource Technology

DR. ABHAY KUMAR THAKUR

- Member of Institute Management Committee of ICAR-Central Institute of Post Harvest Engineering & Technology, Ludhiana for a period of three years (2018-2021).
- Member of Institute Management Committee of ICAR-Indian Institute of Natural Resins and Gums, Ranchi for a period of three years (2018-2021).
- Member of the Agricultural Engineering Divisional Sub-committee of West Bengal State Centre of Institution of Engineers (India)
- Peer reviewer for the Journal of Food Science and Technology (Springer) and Journal of Agricultural Engineering (ISAE)

DR. SURAJIT SENGUPTA

- Convenor of Textile Engineering Division, WB State Centre, Institute of Engineers (I), Kolkata
- Peer reviewer for Indian Journal of Fibre and Textile Research, Textile Research Journal, Journal of Industrial Textiles and Journal of Natural Fibres
- Member of TX-35, BSI, New Delhi during 2018-19

DR. AVIJIT DAS

- Member of an assessment committee for promotion of a scientist under CAS in Biochemistry (Plant Science) at CRRI, Cuttack on November 03, 2018
- Peer reviewer for the Journal of Experimental Botany

DR. SANJOY DEBNATH

- Member of 'Technical Textiles for Agro-tech Sectional Committee', TX 35, Bureau of Indian Standards, New Delhi during 2018-2019.
- External Examiner for Major Project work for M. Tech (4th Semester), for B. Tech (8th Semester) and Minor Project work of B. Tech (7th Semester) in DJFT, IIT, University of Calcutta.
- External Examiner for Paper-VI (DJT-456) for the students of 4th Semester of Post Graduate Diploma Course in DJFT, IIT, University of Calcutta on 24.08.2018.
- Indian Examiner to evaluate a Ph.D. Thesis of under Anna University, Chennai and Banasthali University, Rajasthan during 2018-2019.
- Peer reviewer of Journal of Industrial Textiles, Indian Journal of Fibre & Textiles Research, Textile Research Journal and Polymer Composites during 2018-2019.

DR. L. AMMAYAPPAN

- Nominated as an expert to inspect the food testing laboratory of M/s. N.D. International Kolkata under the scheme of Setting up / up gradation of food testing laboratories by D.D.G (Engg.), ICAR, New Delhi.
- Indian examiner to evaluate the PhD thesis & as an external examiner / expert to conduct the Viva Voce examination under Anna University, Chennai, Tamilnadu.
- Peer reviewer for the following journals : Cellulose, Fibers and Polymers, Indian Journal of Fiber & Textile Research, Journal of Industrial Textiles, Journal of Natural Fibers, Textile Research Journal, The Journal of the Textile Institute, Indian Journal of Natural Fibres, Journal of Textile Clothing and Science and Journal of Advanced Manufacturing & Processing

DR. DEB PRASAD RAY

- Councillor of the Society of Plant Protection Sciences, Division of Nematology, IARI, LBS Centre, New Delhi-110012
- Guided a Ph. D. Student (Dr. P. Banerjee) who has been awarded Ph.D. degree on 11.05.2018 under Visva Bharati.



- Winter Internship supervisor for B.Tech. Students (five) from Bengal Institute of Technology, Tech Town, Bantala, Kolkata
- Acted as Internship supervisor of Summer Project of B.Tech Biotechnology student from Department of Biotechnology, Heritage Institute of Technology, Kolkata.
- External Examiner for the B.Sc., (Agri) to conduct practical Examinations at The Neotia University (TNU), Sarisa, South 24 Parganas.
- External Examiner for conducting the Pre-PhD thesis seminar in the Department of Soil Science and Agricultural Chemistry, Visva-Bharati, Santiniketan.
- Acted as Vice-President of Society of Pesticide Science India
- Associated Chief Editor for International Journal of Agriculture, Environment and Biotechnology (NAAS rating 4.69).
- Chief Editor for International Journal of Bioresource Science (NAAS rating 3.54)

DR. LAXMIKANTA NAYAK

- Member, Institute Management Committee (IMC) of ICAR-CIRCOT, Mumbai for a period of three years (2019-2022).
- Member of the Executive Council of The Indian Society of Coastal Agricultural Research (ISCAR) for a period of two years (2019-2021).
- Received Best oral presentation award in the Seminar on “Natural Fibre Resource Management for Sustainable Development” held at ICAR-NINFET, Kolkata during February 02-03, 2019.
- Co-Chairman in a Technical Session in National Agri-Business Entrepreneurship Conclave organized by ICAR RC-NEHR, Umiam during February 09-11, 2019.
- Member, West Bengal State Committee (WBSC), The Institution of Engineers (India) for the session 2018-19 & 2019-20.
- Convenor, Agricultural Engineering Divisional Sub-Committee, WBSC, The Institution of Engineers (India) for the session 2018-19 & 2019-20.
- External Examiner for evaluation of project dissertations & conducting the viva-voce of M. Tech students of Farm Machinery & Power of IIT, Kharagpur.
- Expert Member for the D.P.C. under Career Advancement Scheme of scientist in the discipline of Agricultural Structure & Process Engineering at ICAR-NRC on Pomegranate, Solapur, Maharashtra.
- Coordinator/Course Director for one month practical training of B. Tech (Agricultural Engineering) students from Dr. Annasaheb Shinde College of Agricultural Engineering & Technology, MPKV, Rahuri, Maharashtra.
- Editorial Board Member of Journal of the Indian Society of Coastal Agricultural Research.
- Reviewer for Journal of the Indian Society of Coastal Agricultural Research.
- Principal Member for Agricultural Tractors & Power Tillers Sectional Committee (FAD 11), Bureau of Indian Standards, New Delhi.
- Member for Cordage Sectional Committee (TXD 09), Bureau of Indian Standards, New Delhi.

DR. VIDYA BHUSHAN SHAMBHU

- Received “Distinguish Service Award -2018” for significant contribution in the field of Farm Machinery and Power engineering by Indian Society of Agricultural Engineers, New Delhi.
- Co- Chairman in Technical Section on Mechanisation, Tillage and Seeding during 53rd Annual Convention of ISAE and International Symposium on Engineering Technology for Precision and Climate Smart Agricultural held at BHU, Varanasi during January 28-30, 2019
- Member of the Agricultural Engineering Divisional Sub-committee of West Bengal State Centre of Institution of Engineers (India)

- Peer reviewer for The Indian journal of Agricultural Science (ICAR) and Environmental Monitoring and Assessment (Springer)
- Editorial Board member for Amity Journal of Agribusiness
- Member for Agricultural Tractors & Power Tillers Sectional Committee (FAD 11), Bureau of Indian Standards, New Delhi.

SH. SUJAI DAS

- External expert member for selection of Young Professional-II (Computer) at ICAR- CRIJAF, Barrackpore on 14th January 2019.

DR. KARTICK KUMAR SAMANTA

- Nominated as alternative member of Textiles Speciality Chemicals and Dyestuffs Sectional Committee (TXD07) for BIS Standardization.
- External Examiner for conducting a Viva-Voce for evaluation of Term Assignment of 1st Year M. Sc. in Textile & Clothing course, J. D. Birla Institute
- External Examiner of Minor Project Work B. Tech. 7th Semester, DJFT, CU, Kolkata
- Editorial Board Member of the journal Internal Journal of Bioresource Science
- Peer reviewer for the following journals : Fibers and Polymers, Journal of Industrial Textiles and Journal of Cleaner Production

DR. RAKESH KUMAR GHOSH

- Received Best oral presentation award in the Seminar on “Natural Fibre Resource Management for Sustainable Development” held at ICAR-NINFET, Kolkata during February 02-03, 2019.
- Reviewer of International Journal of Environmental Analytical Chemistry; Separation science and Technology and Pesticide Research Journal.
- Editorial board member for International Journal of Bioresource Science and Krishi Samachar (Bengali Magazine)

MR. HAOKHOTANG BAITE

- Got Bronze medal in Javelin throw at ICAR-Zonal Sports Tournaments 2018 held at ICAR- IINRG, Ranchi
- Peer Reviewer for Nagaland University Research Journal & Journal of Food Processing and Preservation



A Group photo during NFSM training program



RESEARCH SUPPORTING SERVICES

DESIGN, DEVELOPMENT AND MAINTENANCE (DDM) SECTION

The Design, Development & Maintenance Section (DDM Section) of the Institute has Mechanical, Electrical and Carpentry Workshop, This section is mainly responsible for fabrication, assembly and supply of different instruments like Bundle Strength Tester, Air Flow Fineness Tester, Colour & Lustre Meter & Bulk Density Meter developed by the institute to different national organizations like National Jute Board, IJIRA, different Jute Mills, private entrepreneurs and other stake holders on order basis.

The Section is also providing the technical support to all scientists in development, design, upgradation and



modifications of various types of fibre extractors and also assisting in extension activities in farmers' field through field level demonstrations of those machines. Minor repair of machines in the Institute can be carried by the technical staff of the section.

Infrastructure development along with estate management is the basic necessity for smooth function of R&D works is also undertaken by this section. Section has been also successfully monitored and completed the work of 'Upgradation of Electrical Substation from 6KV to 11KV' coordinating with multiple agencies like CPWD, CESC and Central Electrical Authority (GOI) at an estimate of Rs 95,15,252/=.

Section also co-ordinates and monitors all civil, electrical, mechanical, sanitary and plumbing repair / maintenance services essential for the day to day smooth functioning of the Institute. Planning and coordinating the execution of major infrastructure development works of the Institute through external agencies like CPWD, regularization and digitization of Land Records and Institute Master Plan works are also taken care of by this Section. This

section is assisted the Accounts section by pursuing with the CPWD for receipt of the updated (2015-16 2016-17 and 2017-18) 'Statement of Expenditure'.



Awareness on fire extinguisher



Service to the needs

One of the landmarks of the section is the Land Digitization of the Institute which has been completed, uploaded and reflected in the ICAR publication 'Land Resources of ICAR', 2018.

Providing of other support services like Vehicle movement, Watch and Ward, Fire Fighting, operation of DG set and daily water pumping & distribution are among the other functions of this section. The DDM section is instrumental in implementation of some of the important Central schemes like Swatch Bharat Abhiyan. The section also monitors 13 nos of Annual Maintenance Contracts/ Annual Rate Contracts of the Institute dealing with fire extinguishers, AC units, anti termite/pest control, water reservoirs/tank cleaning, different water purifiers, DG sets, EPABX system etc.

Inter-Departmental works dealing with important public safety issues like coordinating with Public Health Engineering Department of the State Govt. for water sampling & testing vis-a-vis adverse water quality report, efforts for supply of safe drinking water to the Institute and liaison with Kolkata Municipal Corporation (KMC) for treated water supply, Land Records, better drainage, garbage disposal etc are some of the other works the onus of which is also borne by this Section.

High impurities in the drinking water have been brought down to the acceptable level of standard. Institute has five gardens, one children's park and one small farm area within its 4.34 acre campus and all of which are beautifully maintained. In 2018-19, section received 605 requisitions/complaints and achieved cent percent success in rectifying those problems in different sectors. DDM section coordinated with CPWD for receipt of 23 PEs (Civil 13nos and Electrical 10nos). Budget utilization for 'Works –Repair/Maintenance' was 99.99 percent at Rs 1.716 crores

LIBRARY

Institute' library has a holding of about 18,670 books in the area of agriculture, science and material science. Library subscribed CeRA (Consortium e-resources in agriculture) and accessible to 3,900+ e-journals in agricultural sciences. Library renders reference services, photocopy services, current awareness services and abstracting services to fulfill the user's requirements. Library keeps contact with reputed Institutes/organizations for exchange of articles and information through internet. Library interacts with different Institutes/organizations by mailing annual reports, newsletters and Institute's publications at a regular frequency and receives the same from different Institutes. Visitors from different Institutes/organizations enjoy facilities of reading, consulting CeRA (consortium e-resource in agriculture) and photocopy services. At present users of NINFET can access to e-resources of different ICAR research Institutes and universities through local server available in the library and connected with central server at IARI, New Delhi.



Collection of old journals



Digitization of old books



Hindi books, different Swamy's compilation, different Standards, Specifications have been purchased for library as per requirement of scientists, researchers, technical and administrative staff. All staff can have access to the on-line Library Catalogue to browse entire library from their comfort zones. Users can access e-resources of Library from outside of Institute through On-Line remote access to fulfill their need. Partial digitization has been made of old, rare and valuable books of library (206 Nos.). The digitized books treated as e-books and kept all those in the CD and in computer for users. Library rendered abstracting services and published "Jute and allied fibre abstract" and disseminated the soft copies to researchers, scientific community and technical staff for their required information.

INSTITUTE TECHNOLOGY MANAGEMENT UNIT (ITMU)

ITMU of this institute is maintaining liaison between Patent Office, GOI, Patent attorney in the process of new patent filing and follow up old cases. This unit also facilitating the documentation process of IP assets for patentable / non-patentable technologies of the institute and the process of patent /commercialization of the technology. It is assisting in the scientist for developing a project in the light of IPR and organized various meetings in connection with Institute patent related decisions and policy formulation.

PRIORITY SETTING, MONITORING & EVALUATION (PME) CELL

Prioritization Monitoring & Evaluation Cell (PME) is an integrated priority and monitoring of all the institute funded projects. It coordinates and blends the recommendations of QRT, RAC and NITI meeting of institute and to recommend research priorities of the institution for short, medium and long term listing priority researchable problems on natural fibres. It also coordinates and assembles for annual monitoring of each on-going project and evaluation of completed projects through internal and external experts. In addition to these, replies to the parliamentary questions on technical and scientific matter addressed to the institute by ICAR.

ARIS CELL

ARIS cell take care of establishment of IT facility, development and maintenance. During this period, new firewall device has been installed for better security and proper monitoring of the institute Internet facility. Login & password has been provided to individual users to access the Internet. Clientless account for staff mobile phone has been provided through campus Wi-Fi. Frequently monitoring the user internet utilization trend, bandwidth utilization, policy configures etc. using firewall software. Software has facility to monitor the gateway, firewalls configure, user policy, intrusion prevention, routing and host configure. Campus Wi-Fi has been monitoring through integrated Wi-Fi software. In this software, institute map with deployed device location is easy to located fault device. Software has monitoring facility like fault device, user activity & device location.

QUALITY ASSURANCE SECTION (QAS)

Quality Assurance Section (under Quality Evaluation & Improvement Division) associates with the quality evaluation of fibres from different breeding, agronomical and quality trials on jute, mesta, sunnhemp, flax and ramie fibre under All India Network Project (AINP) headed by CRIJAF and NIRJAFT. Section has developed a new user-friendly grading system for jute, Mesta and Bimli which is with BIS for confirmation. Different jute grading instruments are developed by the institute like Fibre Bundle Strength Tester, Air-flow Fineness tester, Colour & Lustre Meter and Bulk Density Meter has been calibrated by this section.

PERSONNEL

Dr. Nimai Chandra Pan

Director (Acting) w.e.f 05.01.2019

Dr. Alok Nath Roy

Director (Acting) up to 04.01.2019

QUALITY EVALUATION & IMPROVEMENT DIVISION

Dr. Biplab Saha, M.Sc, Ph.D

Principal Scientist & I/c Head

Dr. Avijit Das, M.Sc, Ph.D

Principal Scientist

Dr. Deb Prasad Ray, M.Sc, Ph.D, PGDTMA

Principal Scientist

Dr. Subhas Chandra Saha, M.Sc, Ph.D

Principal Scientist (*Up to 31st October 2018*)

Dr. Atul Singha, M.Sc, Ph.D

Scientist

Dr. Manjunatha, BS, M.Sc, Ph.D

Scientist (*Joined on 9th October 2018*)

Sh. Koushik Manna, M.Sc, B.Ed

Technical Officer

Sh. Roben Soren, ITI

Senior Technical assistant

Smt. Ruby Das, M.Sc

Technical Assistant

Sh. Gunasindhu Sardar, M.Tech

Technical Assistant

Sh. Jayanta Mandal, B.Sc

Technical Assistant

Dr. (Mrs.) Ipsita Das, M.Sc, Ph.D

Technical Assistant

Sh. Amit Das, B.Sc

Technical Assistant (*Joined on 1st November 2018*)

Sh. Basanta Nayak

Skilled Supporting Staff

MECHANICAL PROCESSING DIVISION

Dr. Gautam Basu, B.Sc, M.Tech, Ph.D, FIE (I), PGDJT

Principal Scientist & I/c Head

Dr. Surajit Sengupta,

Principal Scientist

M.Tech, Ph.D, FIE(I), C.Engg, PGDFM

Dr. Sanjoy Debnath, M.Tech, Ph.D, MIE (I)

Principal Scientist

Dr. Kartick Kumar Samanta, M.Tech, Ph.D

Scientist

Sh. Manik Bhowmik, M.Tech

Scientist

Dr. Nilimesh Mridha, M.Sc, Ph.D

Scientist (*Transferred from IARI, New Delhi on 2nd July 2018*)

Sh. Izhar Mustafa, M.Tech

Senior Technical Assistant

Sh. Robin Das, M.Tech

Technical Assistant

Sh. Sujoy Karmakar, B.Tech

Technical Assistant

Mrs. Papai Ghosh, M.Tech

Technical assistant

Dr. (Mrs.) Leena Mishra, M.Tech, Ph.D

Technical Assistant

Sh. Saurav Pal, ITI, D.M.E

Senior Technician

Sh. Pravat Kumar Munda, ITI, D.M.E

Senior Technician

Md. Naim, ITI, B.Sc

Senior Technician (*Up to 31st January 2019*)

Sh. Sudarshan Murmu, Madhyamik

Technician

Sh. Rajat Sen, Class VIII

Skilled supporting stuff

CHEMICAL & BIO-CHEMICAL PROCESSING DIVISION

Dr. Nimai Chandra Pan, M.Tech, Ph.D, FIE (I), FTA

Principal Scientist & Head

Dr. Sambhu Nath Chattopadhyay,

Principal Scientist

M.Tech, Ph.D, FIE (I), FTA



Dr. Purna Chandra Sarkar, M.Sc, Ph.D	Principal Scientist
Dr. Ammayappan Lakshmanan, M.Sc, Ph.D, PGDCA,	Principal Scientist
Dr. Rakesh Kumar Ghosh, M.Sc, Ph.D	Scientist
Sh. Amalesh Khan, B.Sc	Senior Technical Officer
Sh. Vikas Chandra, Intermediate	Technical Officer
Sh. Sudipta Bhowmick, M.Sc	Technical Officer
Sh. Avisek Tewari, ITI	Technician
Sh. Subir Kumar Bardhan, Class VIII	Skilled Supporting Staff
Sh. Biswajit Halder, Class VIII	Skilled Supporting Staff

TRANSFER OF TECHNOLOGY DIVISION

Dr. Alok Nath Roy, M.Tech, Ph.D, FIE (I)	Principal Scientist & I/c Head
Dr. Abhay Kumar Thakur M.Tech, Ph.D	Principal Scientist
Dr. Samir Baran Roy, M.Sc, Ph.D	Principal Scientist
Dr. Laxmikanta Nayak, M.Tech, Ph.D	Principal Scientist
Dr. Vidya Bhushan Shambhu, M.Tech, Ph.D	Senior Scientist
Sh. Sujai Das, M.Sc	Scientist
Sh. Haokhothang Baite, M.Tech	Scientist
Sh. Koushik Mitra, B.A	Technical Officer
Smt. Chandra Karmakar, School Final	Technical Officer
Sh. Amitava Sarkar, HS	Technical Officer
Sh. Rama Kant Mishra, ITI	Senior Technical Assistant
Sh. Tarun Kumar Kundu, M.Tech	Technical Assistant
Sh. Pintu Nandi, D.E.T	Senior Technician
Sh. Kanchan Roy, Madhyamik	Technician

DESIGN, DEVELOPMENT & MAINTENANCE SECTION

Dr. Gautam Basu, B.Sc, M.Tech, Ph.D, FIE (I), PGDJT	Principal Scientist & I/c
Sh. Prosenjit Sanyal, B.Sc, M.Sc, PGDRD	Chief Technical Officer
Sh. Chanchal Kundu, D.M.E	Technical Officer
Sh. Karunamoy Patra, D.E.E	Technical Officer
Sh. Subir Kundu, B.Sc	Technical Assistant
Sh. Biman Das, ITI, B.Com	Technical Assistant
Sh. Amalesh Ghosh, Madhyamik	Technical assistant
Sh. Ashok Kumar Das, ITI	Senior Technician
Sh. Nandu Sharma, Madhyamik	Technician
Sh. Surajit Saha, ITI, D.C.E	Technician
Sh. Gopal Chandra Das, Class VIII	Skilled Supporting Staff
Sh. Raman Naskar, Class VIII	Skilled Supporting Staff
Sh. Swapan Kumar Ghosh, Madhyamik	Skilled Supporting Staff
Sh. Prabir Naskar, Class VIII	Skilled Supporting Staff

PROJECT MONITORING & EVALUATION CELL

Dr. Samir Baran Roy, M.Sc, Ph.D	Principal Scientist & I/c
Dr. Utpal Sen, M.Sc, Ph.D	Chief Technical Officer
Dr. Debabrata Das, M.Sc, Ph.D	Senior Technical Officer
Sh. Kishun Lal Ahirwar M.A	Senior Technical Officer
Sh. Krishna Gopal Nath, M.C.A	Technical Officer

LIBRARY

Dr. (Smt). Rina Naiya, B.Sc, B.LISc, M.LISc, Ph.D	Senior Technical Officer & I/c Library
Sh. Srikumar Chowdhuri	Technical Officer (<i>up to 28th February 2019</i>)
Sh. Tuhin Subhra Ghosh, B.A, B.LISc, M.Li.Sc	Technical Assistant
Sh. Bhikari Nayak	Skilled Supporting Staff

HINDI CELL

Sh. Ram Dayal Sharma, M.A, DHT, P.G.D.T	Assistant Director (Office Language) & I/c
Sh. Pintoo Kumar, M.A	Skilled Supporting Staff

ADMINISTRATION

Sh. Navin Kumar Jha, B.A	Senior Administrative Officer
Sh. Amitabh Singh M.A	Finance & Account Officer
Mrs. Anasua Majumder, M.Sc	Assistant Finance & Account Officer
Sh. Ratan Roy, B.Com	Assistant Administrative Officer – Adm I
Sh. Sujit Kar, B.A	Assistant Administrative Officer – Adm II
Ms. Swarnali Mukherjee, M.Sc	Assistant Administrative Officer – Adm III
Sh. Shahzad Javed, B.Com, PGDPM	Assistant Administrative Officer
Sh. Balaram Chatterjee, B.Com	Personal Secretary to Director
Smt. Dipa Roy, B.A	Personal Assistant
Smt. Poonam Keshri, B.Sc	Assistant
Sh. Satish Kumar, B.Com	Assistant
Sh. Raj Kumar Shaw	Assistant
Sh. Ajay Ghosh, B.Com	Assistant
Smt. Rita Sarkar, B.A	Assistant
Sh. Manav, M.Sc	Assistant
Sh. Om Prakash Singh, B.A	Assistant
Smt. Basanti Murmu, B.Com	Upper Divisional Clerk
Sh. Shyco Manna, B.A	Upper Divisional Clerk
Sh. Prasun Kumar Nath, B.Com	Lower Divisional Clerk
Sh. Rajiv Ranjan, B.A	Lower Division Clerk (<i>Joined on 15th January 2019</i>)
Sh. Sabir Chowdhury, B.A	Lower Division Clerk (<i>Joined on 12th February 2019</i>)
Sh. Dulal Chandra Sardar, Class IV	Skilled Supporting Staff (<i>Up to 31st August 2018</i>)
Sh. Bimal Das, Class VIII	Skilled Supporting Staff



Sh. Prasanta Mondal, Class VIII
Sh. Lalmohar Prasad, Class IX
Sh. Rajendra Pandey, Class VII

Skilled Supporting Staff
Skilled Supporting Staff
Skilled Supporting Staff

GUEST HOUSE

Sh. Kush Kumar Rajak, Class VII
Sh. Morshed Biswas, Class VIII

Skilled Supporting Staff
Skilled Supporting Staff

CANTEEN & AUXILIARY STAFF

Sh. Nandan Chakraborty, Class IX
Sh. Kamal Kumar Ghosh, Class VII

Skilled Supporting Staff
Skilled Supporting Staff

RETIREMENT ON SUPERANNUATION/ TRANSFER

- Dr. Subhas Chandra Saha, M.Sc, PhD, Principal Scientist (Retired on 31st October 2018)
- Sh. Srikumar Chowdhuri, Technical Officer (Retired on 28th February 2019)
- Md. Naim, Senior Technician (Transferred to ICAR-CIFRI, Barrackpore on February 01, 2019)
- Sh. Dulal Chandra Sardar, Supporting Staff (Retired on 31st August 2018)

FINANCE

BALANCE SHEET AS ON 31ST MARCH, 2019

Corpus/Capital Fund & Liabilities	Schedule	2018-19 (₹)
Capital Fund	1	165838759
Reserves	2	-
Earmarked/Endowment Fund	3	-
Current Liabilities & Provisions	4	23567168
Total		189405927
Assets		
Fixed Assets	5	157551986
Investments-Earmarked/Endowment Funds	6	-
Current Assets, Loans & Advances	7	31853941
Total		189405927

A. THE BUDGET PROVISION & ACTUAL UTILIZATION UNDER GRANTS & PLAN SCHEMES DURING 2018-19

S.No	Name of Heads	Fund Received (')	Actual Utilization (')	Closing Balance (')*
1	Grants	235641000	231335099	4305901
2	Plan Schemes	10353309	9147170	793430

*- As per annual account 2018-19 submitted to ICAR

B. SUB-HEAD WISE BUDGET PROVISION AND ACTUAL UTILIZATION UNDER GRANTS DURING 2018-19

S.No	Sub-Head	Grants (₹)	
		Budget Provision	Actual Utilization
A) REVENUE EXPENDITURE			
1	Establishment Expenses	1141018000	137595009
2	Pension & Other Retirement Benefits	40089000	40038247
3	Travelling Allowances	950000	942329
4	Research & Operational Expenses	7755000	7733356
5	Administrative Expenses	37695000	37811289
6	Miscellaneous Expenses	2609000	2524518
	Total of A	230116000	226644748
B) CAPITAL EXPENDITURE			
1	Equipment	3735000	2105576
2	Library Books & Journals	82000	81406
3	Furniture & Fixture	428000	412840
4	Information Technology	580000	576114
5	Vehicle	700000	0
	Total of B	5525000	4690351
	Total (A+B)	235641000	231335099



INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2019

A. Income	Schedule	2018-19 (₹)
Income from Sales/Service	8	1827590
Grants in aid/subsidies	9	232896991
Fees/Subscriptions	10	0
Income from Investments	11	0
Income from Royalty, Publications	12	0
Interest earned	13	40490
Other Income	14	935088
Prior Period Income	15	0
	Total (A)	235700159
B. Expenditure		
Establishment expenses	16	179101827
Research & Operational Expenses	17	12728120
Administrative expenses	18	43217001
Grants and subsidies	19	0
Miscellaneous expenses	20	2524518
Depreciation	5	18741773
Prior period expenditure	21	0
	Total (B)	256313239
Balance being surplus/(Deficit) carried to corpus/Capital Fund		-20613080

ABSTRACT OF 'OTHER RECEIPTS' FOR THE YEAR 2018-19

S.No	Head of account	Amount (₹)
1	Sale of farm produce	409640
2	Sale of vehicle, other machine tools	—
3	License fee	76405
4	Interest earned on loans & advances	216999
5	Analytical and testing fee	711350
6	Income from service	—
7	Application fee from candidates	19000
8	Receipts from services rendered	581600
9	Interest earned on short term deposits	—
10	Income generated from Internal Resource Generation Schemes	
	a) Training	13000
	b) Consultancy	112000
	b) Sale of technology	—
11	Recoveries of Loans & Advances(including the refund of S-Advance)	222486
12	Miscellaneous Receipts	839683
	TOTAL	3202163

INSTRUMENT/ MACHINERY DEVELOPED BY ICAR-NINFET, KOLKATA

SI No	Name of Instrument/ Machinery	Model No
1	Air Flow Fineness Tester	-
2	Automatic Electronic Fibre Bundle Strength Tester for Multiple Fibres (with PC interface)	NIRJAFT-AEFBST-MF01
3	Auto speed controller of spinning frame (without motor)	-
4	Bulk Density Meter	-
5	Colour & Lustre Meter	-
6	Fibre Bundle Strength Tester	-
7	Digital Colour Lustre Meter (Laboratory Type)	NIRJAFT-DCLM-LT01
8	Digital Colour Lustre Meter for multiple fibres	NIRJAFT-DCLM-MF01
9	Digital Colour Range Indicator (Handy type)	NIRJAFT-DCRI-HT01
10	Digital Fineness Meter for Jute	NIRJAFT-DFM-J01
11	Digital Fineness Meter for multiple fibres (Ramie, Sunnhemp, Sisal, Flax)	NIRJAFT-DFM-MF01
12	Digital Moisture Meter for Jute (Handy Type)	NIRJAFT-DMM-HT01
13	Digital Moisture Meter (Laboratory Type with probes)	NIRJAFT-DMM-LT01
14	Electronic Fibre Bundle Strength Tester for Jute (Semi-Auto)	NIRJAFT-EFBST-SA01
15	Fibre clamp (attachment with bundle strength tester)	-
16	Grading Aid Album for Jute	-
17	Graded Sample Box	-
18	Manual Ribboner	-
19	Portable Hard Fibre Tensile Tester (without computer)	-
20	Portable Hard Fibre Tensile Tester (with computer)	-
21	Power Jute Ribboner	-
22	Ramie Degumming Plant (10 Kg. capacity)	-
23	Thermal Insulation Value Tester (with PC interface)	NIRJAFT-TIV-01

For detail, please visit our website <http://nirjaft.res.in/>



SERVICES OFFERED

Institute has highly qualified scientists and highly skilled and trained technical staffs in the research of the natural fibres and provided the services in the following areas.

1. Spinning trial of various lingo-cellulosic fibres
2. Grading of jute fibre
3. Property evaluation of fibre, yarn and fabric.
4. Trial on chemical processing of fibre, yarn and fabric.
5. Non-woven trial of various natural fibres
6. Analysis of chemical composition of various natural fibres
7. Blend analysis of textile materials
8. Field trial of Geo-textiles and Agro-textiles
9. Property evaluation of pulp and paper
10. Property evaluation of composites
11. Training on different modules related to Jute and Allied fibres
12. Business Incubation Centre
13. Sales counter at our campus
14. Entrepreneurship Development Program
15. Geotextile testing facility
16. Patterning, Cutting and Stitching training infrastructure

In addition, institute has Sophisticated Analytical Instruments Facility (SAIF) and offers the students and researchers working in the area of material science can utilize these facilities on charge basis.

SOPHISTICATED ANALYTICAL INSTRUMENTS FACILITY (SAIF)

Sophisticated analytical instruments have been procured at ICAR-NINFET and they are maintained in different divisions of the institute. The students and researchers working in different institutions can utilize these facilities on charge basis. All the communications regarding use of facility should be addressed to the Director, ICAR- NINFET, who will then redirect to concerned Head of Division based on the instrumental facility asked for. The Payment of testing may be done by Demand Draft in the name of ICAR NINFET payable at Kolkata. All the requisitions received will be arranged serially and testing of samples will be done accordingly. The results will be communicated as per available standards.

For detail, please visit our website <http://nirjaft.res.in/TestFees>

EQUIPMENT / INSTRUMENT PROCURED (2018-19)

- o Microscope
- o Portable Soil Moisture Meter
- o Tensile Tester For Paper Board And Tissue Paper
- o Padding Mangle With Stenter
- o CCTV Camera
- o Rapier Weaving machine
- o Autoclave
- o Stitching machine
- o Beam Winding machine
- o Washing machine for yarn
- o Digital Oscilloscope
- o Infrastructure for training under SCSP at ICAR-CISH, Malda KVK & Sargachhi Ramkrishna Mission.



भाकृअनुप-राष्ट्रीय प्राकृतिक रेशा अभियांत्रिकी एवं प्रौद्योगिकी संस्थान
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(Erstwhile ICAR-NIRJAFT)

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