

CRIJAF BULLETIN

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Editorial Board:

Dr. A.K. Singh
Principal Scientist

Dr. N.M. Alam
Senior Scientist

Dr. S. Satpathy
HOD & Principal Scientist

Dr. Gouranga Kar
Director

DIRECTOR'S MESSAGE

Greetings !

The institute has made some significant achievements in research and development through coordinated efforts of scientists, extension specialists, and farmers. We have successfully outreached the technology to the stakeholders through various programs meant for specific target groups. The positive impact of adoption of CRIJAF technologies has been evidenced by an increase in average productivity, fibre quality and additional return across the beneficiary areas. The policy making institutes like NJB, JCI, and the state agriculture department have acknowledged and supported the promotion of these technologies. Regularly, the institute organizes capacity building programs for SHGs on jute based handicrafts and value-added products for off-farm income. Also, ICAR-IARI, New Delhi, has recognized ICAR-CRIJAF as one of IARI-Mega University Hubs to initiate UG/PG/PhD teaching in agriculture. In this session, ICAR-CRIJAF has offered 20 seats for UG, 10 seats for PG and Ph.D in association with 8 sister ICAR institutes.

We thankfully acknowledge all our stakeholders and farmers who have supported us, and their trust in our mission enables our effort. I am highly grateful to Dr. Himanshu Pathak, Secretary, DARE, Govt. of India and Director General of ICAR, for his visit to our institute and providing all his support and guidance. I express my sincere gratitude and thanks to Dr. S.K. Datta, Chairman (RAC & QRT) and his team for their constant encouragement and support. I also acknowledge the efforts of the editorial team and scientists of the institute for publishing this bulletin on time.

----- Wish You All Happy, Healthy and Safe Stay -----



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आत्मनिर्भर भारत

RESEARCH NOTES

GHG Emissions for Bioethanol Production: Potential of Jute and Kenaf Feedstock

Energy security and the transition to a thriving low-carbon economy are essential for a developing nation like India. We examined the life-cycle greenhouse gas emissions (GHG) and environmental impact of bioethanol production from the fermentation of sugars made from jute and kenaf feedstock combining soil carbon changes in accordance with the Renewable Energy Directive. It was observed that net GHG emissions from crop production and bio-refinery from jute and kenaf ethanol were only 3.45 g/MJ and 5.88 g/MJ, respectively. This result is much lower than any other feedstock like sugarcane bagasse, corn stover, rice straw, and wheat straw. LCA analysis revealed that ethanol produced from jute and kenaf cellulosic biomass can reduce GHG emissions by 78–81 percent when compared with fossil fuels. Bioethanol made from jute and kenaf biomass material has the least negative effects on the environment and resource depletion. It might deliver roughly 70–75 percent of the ethanol requirement annually and may prove to be a workable technology for meeting ethanol-to-petrol blend targets, in addition to promoting ethanol as a domestic, non-polluting, environmentally friendly, and practically inexhaustible fuel.

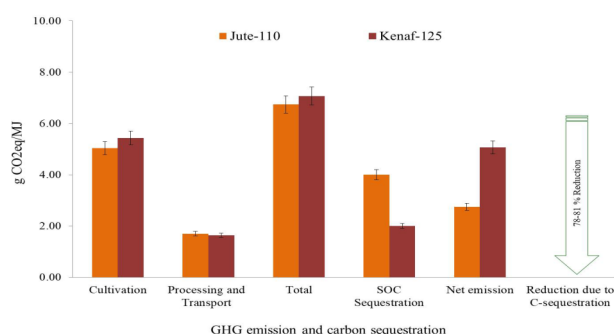


Fig. 1. GHG emissions for the production of bioethanol (jute and kenaf) and carbon sequestration

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AsNPV: A potential Biopesticide for Management of Semilooper, *Anomis sabulifera*

During a regular survey an epizootic was observed in the field population of jute semilooper, *Anomis sabulifera* Guenee (Lepidoptera: Noctuidae) caused by a nucleopolyhedrosis virus. Isolation, characterization using electron microscopy was investigated while the efficacy of *Anomis sabulifera* nucleopolyhedrosis virus (AsNPV) were assessed both under laboratory and field conditions. Electron microscopic studies revealed that typical baculovirus occlusion bodies of type

nucleopolyhedrosis virus with spherical and oval in shape with the size ranging from 2.11 - 2.63 μ m with an average size of 2.37 μ m. Bioassay studies showed the larval mortality at low concentration of AsNPV i.e. 3.75×10^2 POBs/ml. The virus was identified from infected *A. sabulifera* through the amplification of polyhedrin, polh gene sequences of the viral genome with the available sequences in public database, GenBank, NCBI. The sequence data generated for the polyhedrin gene (polh) was deposited in GenBank and accession number was obtained, MT863564. Pooled mean of larval reduction in the field experiment conducted for two consecutive years revealed that *A. sabulifera* nucleopolyhedrosis virus caused 41.88%, 56.10% and 82.13% larval reductions, respectively at 2, 4 and 7 days after spray. The present study revealed *A. sabulifera* nucleopolyhedrosis virus (AsNPV) as a very effective microbial biopesticide in the integrated pest management of the jute semilooper, *A. sabulifera*.

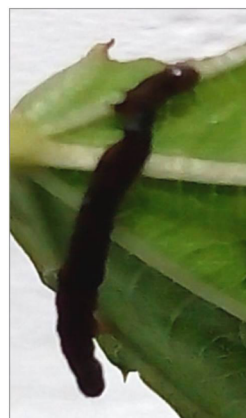


Fig.2. Larvae infected with AsNPV

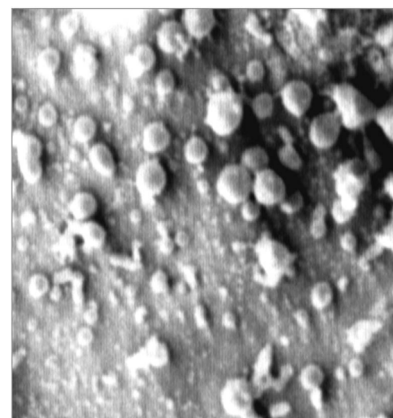


Fig. 3. Electron microscopy of polyhedral appearing in oval to circular shape

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Fifty Years of Long Term Fertilizer Experiment on Jute-Rice-Wheat Cropping Sequence

The long term fertilizer experiment (AICRP-LTFE) was initiated in the year 1971 at ICAR-Central Research Institute for Jute and Allied Fibres, Barrackpore, with jute-rice-wheat cropping sequence to study the continuous application of nutrients on yield, nutrient uptake, soil properties and nutrient build-up in the soil. After 50 years of experimentation, the yield of jute, rice, and wheat were significantly higher in 150% NPK and 100% NPK+FYM treatments over 100% NPK, and 150% NPK and 100% NPK+FYM were at par. Application of 100% NPK recorded significantly higher yield of jute, rice and wheat over control and imbalanced treatments like 50% NPK, 100% NP & 100% N. The sustainable yield index (SYI) ranged from 0.52 to 0.68 in 100% NPK, 150% NPK & 100% NPK+FYM for the three crops while

it ranged between 0.15 to 0.21 in control plots. After 50 years of cropping, the SYI values of control, 50% NPK and 100% N showed lower values which suggested imbalanced fertilization. The soil study indicates that in almost all the treatments, apparent Nitrogen balance was found positive except 50% NPK and control. Apparent P balance was found positive in all the treatments except P omitted treatments i.e. 100% N and control. Apparent K balance was found negative in all the treatments. It indicates in subsequent years K may emerge as growth limiting nutrient. The balanced nutrition of crops and integration of inorganic nutrients with organics helped in maintenance of sustainable yield of the jute, rice and wheat after 50 years of experimentation.



Fig.4. The field view of wheat crop in a) control and b) 100% NPK treated plot in LTFE

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Precision Irrigation Scheduling for Augmenting Yield and Water Productivity in Jute-Based Cropping Systems

Sprinkler irrigation in the jute-rice-flax cropping system was evaluated for various plant growth and yield parameters as well as soil physico-chemical properties. In the first year of study, flax under sprinkler irrigation (15 mm) at 50% depletion of available soil moisture showed superior crop biometric parameters throughout the growing period, which led to significantly higher fibre yield (14.2 q/ha) over conventional practice (surface irrigation 50 mm at 25, 45, and 75 DAS). Sprinkler irrigation at 50% DASM (145 mm irrigation application) obtained 28% higher irrigation water use efficiency compared with conventional practice. In Jute during 2023, sprinkler irrigation at 50% DASM (15 mm per application) and 75% DASM (20 mm per application) obtained superior plant growth and yield parameters and was at par with surface irrigation at 75% DASM (40 mm per application). Sprinkler irrigation at 50% DASM showed 36% higher jute fibre yield compared with control (1 post-sowing irrigation). Irrigation application under different treatments, viz., sprinkler at 50% DASM, sprinkler at 75% DASM, surface irrigation at 75% DASM, and control (1 post-sowing irrigation), was 130 mm, 120 mm, 170 mm, and 50 mm, respectively, while total rainfall during the jute growing period was 555 mm. Sprinkler irrigation at 50%

DASM obtained 21% higher total water productivity (irrigation + rainfall) compared with control.



Fig. 5. Performance of sprinkler irrigation in flax and jute

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Effect of Waterlogging on Jute Ecotypes

Waterlogging was imposed at 30, 45, and 60 DAS for 15 days and was compared with a normal sowing condition with proper drainage. Two varieties were selected, viz., JRO 204 (*C. olitorius*) and JRC J11 (*C. capsularis*). A severe reduction in plant height by 30–35% was noticed when waterlogging was imposed on 30 days of seedling. However, when standing water was imposed at the relatively mature stage (60 DAS), plant height reduction was much less than before (11–15%). The waterlogging condition on 30 days of seedling for 15 days reduced SPAD values by 10–12% in both *capsularis* and *olitorius*. Variety JRCJ 11 recorded better plant height when subjected to waterlogging at 30 and 45 DAS than JRO 204. There was a decrease in the fibre yield of JRO 204 and JRC J11 by 39–44% when waterlogging was imposed at 30 DAS and 17–21% at 45 DAS, while the decrease was only 4–9% when waterlogging was imposed on 60 DAS crops. Waterlogging reduced fibre yield more in JRO 204 and both species were able to tolerate waterlogging imposed at later stages of growth.

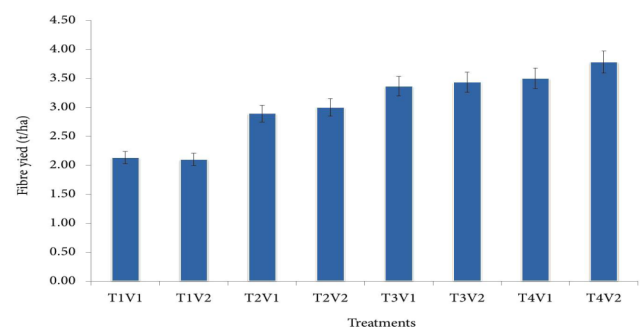


Fig. 6. T1 is waterlogging imposed at 30 DAS, T2 is waterlogging imposed at 45 DAS, T3 is waterlogging imposed at 60 DAS, T4 is normal sowing condition with proper drainage, V1 is JRCJ 11, and V2 is JRO 204

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Effect of Conservation Agriculture Practices on Carbon Management Indices in Jute Based Cropping Systems

The impact of no-tillage and crop residue management on soil carbon management indices (CMI) were evaluated with tillage treatments (Conventional tillage: CT, no-tillage: NT and no-tillage with additional crop residue of Sesbania @ 2 t/ha:NT+R) under jute-rice-wheat/lentil/mustard cropping systems. The tillage-cropping system interactions had significant impact on soil organic carbon (SOC) content as it is evidenced from much higher SOC under NT+R, maximum being in jute-rice-lentil (6.02 and 7.29 g/kg, respectively in 0-15 and 15-30 cm soil depth) followed by jute-rice-wheat (5.68 and 6.23 g/kg, respectively) and jute-rice-mustard (5.32 and 5.90 g/kg, respectively). The lability of carbon appears to be more under CT than NT and NT+R. More carbon pools were observed in NT+R followed by NT and CT. CMI was higher in the 15-30 cm layer than the 0-15 cm soil layer in respective tillage treatments. However, CMI values were high in NT+R (range: 150.22±7.37) as compared to other tillage treatments. Thus, the study suggests that no-tillage with additional residue retention improves CMI values in the soil improving soil fertility and quality for sustainable crop management under jute based cropping systems.

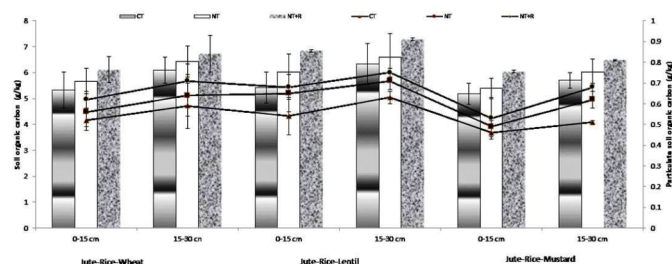


Fig. 5. Effect of no-tillage and residue management on soil organic carbon pools

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Technological and Economic Empowerment of SC Farm Families through Jute Based Farming, Value Addition and Value Chain Establishment

The project was initiated in 2021 with the objective of improving the socio-economic status of farmers during the post-COVID period by promoting the best package of practices in jute-based farming, value chain in jute, and entrepreneurship among farm women for undertaking activities in the value chain. For assessing the suitable jute production technologies, eight different jute varieties, like JRO 204, JRO BA3, JROMU1, JRO 524, JRO 2407, and CO58, were demonstrated in the project area. All the varieties were sown in line using a multi-row seed drill. The jute variety JRO BA3 yielded the highest (49.94 q/ha) among the different varieties demonstrated, followed by JROMU1 (46.22 q/ha), JRO 204

(45.14 q/ha), CO 58 (43.48 q/ha), JRO 2407 (42.30 q/ha), JRO 524 (41.37 q/ha), JROG 1 (36.8 q/ha), and JROM 1 (35.27 q/ha). Jute varieties JRO BA3 and JRO 204 were cultivated by most of the farmers, and the yield in the farmers field varied from 30 to 45 q/ha for JRO BA3 and 26.25 to 39 q/ha for JRO 204. Drudgery reduction in jute cultivation was given the main focus. Single-wheeled jute weeder was used for weeding, especially by farm women. Single-wheel jute weeder along with multi-row seed drill reduced the cultivation cost of the jute crop to the tune of ₹14000 to 15000/ha. CRIJAF Sona was adopted by the majority of the beneficiaries in jute retting for fibre quality improvement. It was found that the additional income of the farmer could obtain by saving the cost and improving the yield was approximately ₹40000/ha. Altogether 24 farm women from the project area were also trained on the making of jute-diversified products



Fig. 7. Jute fibre production activities in project area

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Screening of the Phosphate and Potassium Solubilization Abilities of Bacterial Isolates from Rhizosphere Soil of Jute-Growing Areas of West Bengal

Bacterial isolates were screened from the rhizosphere soil of jute-growing fields in Nadia, North 24 Parganas, Hooghly, and Murshidabad districts. Quantitative estimation of phosphate and potassium solubilization in Pikovskaya's and Aleksandrov broth, respectively, was carried out with the bacterial isolate (0.3 ml inoculum), and autoclaved un-inoculated medium served as a control. Among fifty-three phosphate solubilizing bacterial isolates, 23 isolates had higher phosphate solubilization ability; among them, 7 isolates exhibited the highest solubilization ability (>200 µg/ml): I-335, I-123, I-347, I-49, I-60, and I-42 (highest, I-97: 258 µg/ml), whereas among eighteen potassium solubilizing bacterial isolates, 6 isolates exhibited higher potassium solubilization ability (>5 µg/ml): I-294, I-248, I-287, I-240, and I-361 (highest, I-169: 6.72 µg/ml). Based on the results, these bacterial isolates will be used for further studies.

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NEWS & EVENTS

MEETINGS

RAC Meeting of ICAR-CRIJAF

The Research Advisory Committee (RAC) meeting of ICAR-CRIJAF, Barrackpore, was held on November 16–17, 2023, under the chairmanship of Dr. Swapan Kr. Datta, Vice-Chancellor, Biswa Bangla University, Former Vice-Chancellor of Visva Bharati, and Deputy Director General (Crop Sciences), ICAR, New Delhi. The committee discussed in detail the research activities of the scientists of ICAR-CRIJAF for the period of July 2022 to November 2023. Under the broad mandate of the Institute presented by the Director, the Chairman advised the scientists to orient the research activities according to the mandate of the Institute as decided by the ICAR. The RAC made seven specific recommendations for further strengthening of the research activities of the Institute.



Meeting of RAC on 16-17 November 2023

On this occasion, ICAR-CRIJAF, Barrackpore organized a Kisan Sangosthi under SCSP on 17 November 2023. Prof. S.K. Datta, Former DDG (Crop Science), ICAR & RAC Chairman, ICAR-CRIJAF was the chief guest of this programme. Dr. Gouranga Kar, Director, ICAR -CRIJAF motivated the farmers to produce as per market demand and consumer preference to get more profit. He also put emphasis on off-farm income generation through value addition in jute. Total 150 farmers from Belle Shankarpur, Taraberia and Beraberia villages of North 24 Parganas participated in this programme.



Kisan Sangosthi under SCSP on 17 November 2023

Orientation Programme for Faculties of IARI-Mega University Hub, Kolkata

ICAR-CRIJAF organized an orientation meeting for the faculties of the IARI-Mega University Hub, Kolkata, on September 5, 2023, under the chairmanship of the Director, ICAR-CRIJAF, to discuss the plan and preparedness for the smooth conduct of these academic programs with all sorts of cooperation and help from the hub partners. Kolkata hub has introduced these programs in association with 8 sister ICAR institutes, namely, ICAR-CIFRI, Barrackpore; ICAR-NINFET, Kolkata; ICAR-NBSSLUP, Kolkata Centre; ICAR-CSSRI, Canning Town Centre; ICAR-NDRI, Kalyani Centre; ICAR-IVRI, Kolkata; ICAR-CIFA, Rahara Centre; and ICAR-CIFE, Kolkata Centre, as hub partners.



Faculty Meet of IARI-Mega University Hub, Kolkata
on September 5, 2023

Industry Interface Meeting on Flax Area Expansion

Research-Industry Interface Meet on Flax area upscaling was held on 9 November 2023 in hybrid mode (online & offline) under the Chairmanship of Director, ICAR-CRIJAF. The meeting was attended by 12 representatives from the Industry (Jayshree International, EVE Fabrics, Gurunanak Enterprise, Chlorohemp Agrotech, Krishi Rasayan Lifesciences Pvt. Ltd., OG hemp, WFB India, Indetex India, AICL India) and 14 scientists from ICAR-CRIJAF. Director, ICAR-CRIJAF, expressed his satisfaction over the willingness and interest shown by various stakeholders and representatives of industries towards the promotion and expansion of flax cultivation in the country by the industries on pilot scale with Indian flax variety JRF-2 developed by ICAR-CRIJAF.

Interactive Meeting on One Health Program

An interactive meeting on “One Health Program” was organized on 18 August 2023 in ICAR-CRIJAF. The lecture on "Sunn hemp: a green manure, fibre & fodder crop for soil, animal and environment health" was delivered by Dr. A.K. Singh, Principal Scientist. Sri Dhruvajyoti De, Joint Commissioner, Kolkata Police, Dr. Gouranga Kar, Director, along with all scientists and project fellows of the Crop production division were present in the meeting.

Press Meet on Improved Jute Ribboner

A press conference on improved jute ribboner was held on 11 August 2023. Officials from different press and media were present on the meet.



Director of ICAR-CRIJAF during Press Meet on 11 November 2023

WORKSHOP & SEMINAR

Clean Water Supply in Changing Climates and Increasing Global Demands

A seminar on "Can we secure clean water supply in changing climates and increasing global demands?" was organised on 7 November 2023 at ICAR-CRIJAF, Barrackpore. Prof. Tapas K. Biswas, Commonwealth Scientific and Industrial Research Organization and Australian National University delivered the lecture on the topic. Prof S. K. Datta, Former DDG (CS), ICAR and Former VC (Viswabharati, & Biswa Bangla Univ.) chaired the Seminar. Total 66 participants attended the seminar.



Prof. T.K. Biswas delivering the seminar on clean water supply in changing climates & increasing global demands

Lecture on "Ethics and Governance" at ICAR-CRIJAF

Swami Kamalasthananda, Principal, Ramakrishna Mission Vivekananda Centenary College, Rahara delivered a lecture on "Ethics and Governance" at ICAR-CRIJAF, Barrackpore on 4th October 2023. In the public sector, ethics refers to well based standards of right and wrong, and prescribe what public servants ought to do. Good corporate governance is an aspect

of ethics which refers to the set of systems, principles and processes by which public service organizations are governed. Director, scientists and other staff of the institute present during program.



Swami Kamalasthananda delivering during lecture on Ethics and Governance

Monthly Seminar conducted

Topic	Speaker
Biochar: Application for a crop of majestic motivations on 18 August 2023	Dr. Tanmoy Karak, Professor, Soil Science, Nagaland University
Deciphering bast fibre retting by a multimodal approach on 1 November 2023	Mr. Sujait Mukherjee, PhD Scholar, University of Lille, France

CELEBRATIONS

The 77th Independence Day Celebrated

ICAR-CRIJAF celebrated its 77th Independence Day on 15th August 2023 with pride and remembered the great sacrifice made by freedom fighter of the country. Dr Gouranga Kar, Director, ICAR-CRIJAF hoisted the national flag and delivered the speech.



Director ICAR-CRIJAF hoisting the National Flag

World Soil Day 2023

World Soil Day was celebrated on December 5, 2023, with the theme "Soil and Water: A source of Life." Prof. Tapas K. Biswas, Australian National University, Canberra, Australia, lent his expertise on online mode. Shri Dhrubajyoti Dey, Joint Commissioner, Kolkata Police, graced the occasion as the chief guest. Dr. Gouranga Kar, Director, ICAR-CRIJAF, emphasized in his key note speech that healthy soils and the availability of pure water can significantly contribute to ending hunger and creating a healthy planet. On this occasion, 100 soil health cards were prepared and distributed to farmers in different villages of the North 24-Parganas district in West Bengal. The event witnessed the participation of over 200 participants, including 100 farmers, students of the IARI Kolkata hub, students of the KP Law Institute, and research scholars and scientists from ICAR-CRIJAF.



Farmer receiving Soil Health Card during World Soil Day 2023

Swachhta Pakhwada 2023

ICAR-CRIJAF, Barrackpore organized community cleaning drive, awareness programme, Kisan Diwas, quiz competition to sensitize different section of citizens including institute staff, college students, farm women, residents, farmers, general public and other stakeholders. Waste recycling, composting, replacing SUP, organic farming, personal sanitation, sewage disposal, market place cleaning, waste segregation, *shramdan* for sewage cleaning etc related to clean environment and swachhta were highlighted during community cleaning drive awareness program. During the pakhwada period various activities were planned and executed on day to day basis. The scientists, technical, RA, SRFs of different divisions and students of IARI Kolkata Hub actively participated in the swachhata initiatives of institute. More than 564 participants from different categories were took part in the pakhwada.



Director planting a sapling during Swachhta Pakhwada 2023

Vigilance Awareness Week-2023

ICAR-CRIJAF and its Research Stations and KVK observed Vigilance Awareness Week-2023 during during 30 October to 5 November, 2023. Dr. J. Mitra, HoD (Crop Improvement) administered the Integrity Pledge to all the staffs and appealed to the employees to be honest and disciplined in the organization as well as in public life. Several programs related to vigilance like speech competition, sensitization lecture, drawing competition and quiz competition were organised.



Integrity pledge by all the scientists and staffs during Vigilance Awareness Week 2023

Participation in ICAR Zonal Sports Competition

ICAR-CRIJAF participated in the ICAR Zonal Sports Tournament for Eastern Zone-2023 held at ICAR-NRRI (Cuttack) and bagged 13 medals in individual events (Athletics, Chess, Carrom and 1 medal in team event (Volleyball smashing). Ritesh Kumar, AAO became the Best Athlete (men) after winning 3 Gold and 2 Silver medals.



Staff of ICAR-CRIJAF with trophies won in ICAR Zonal Sports Competition (East Zone)

District Magistrate, North 24 Parganas, West Bengal Visited ICAR-CRIJAF

Sri Sharad Kumar Dwivedi, IAS, District Magistrate, North 24 Parganas district, along with senior officials of district administration, visited ICAR-CRIJAF, Barrackpore, on July 20, 2023, to learn about the current activities of ICAR-CRIJAF, particularly new technologies for jute cultivation and promotional activities that can be further intensified through different government schemes at the district level. The DM and other senior officials visited the exhibition hall, museum, and field of ICAR-CRIJAF. Dr. Gouranga Kar, Director, ICAR-CRIJAF, presented a brief overview of the activities and achievements of the institute.



Director interacting with District Magistrate, North 24 Parganas during his visit to ICAR-CRIJAF

Orientation Program and Freshers' Meet of UG & PG Students of IARI-Kolkata Hub

The classes for the current academic session started on 4 December 2023, for which the orientation program started on November 28, 2023. In this session, ICAR-CRIJAF has offered 20 seats for UG, 10 seats for PG and Ph.D in association with 8 sister ICAR institutes. A Fresher's welcome program for UG, PG and Ph.D. students was organised on 20 December 2023.



Students admitted to UG and PG course of IARI Mega University, Kolkata Hub during Fresher's evening at ICAR-CRIJAF

FARMERS LINKAGES

Farm Pond Based Integrated Farming System for Higher Income Opportunities

Three days training programme was organized for ST farmers on "Pond-based integrated farming systems for augmenting farm income" under SCSP during 25-27 July, 2023. Farmers from Joykrishnapur, Dudkumar, Chhatimtala and Gouripur villages of Nadia district participated in this training programme. Another program was conducted during 16-18 August 2023 under TSP scheme. Farmers of Rupamari, Bailani villages of Hingaljanj, North 24 Parganas participated in the programme. During this training programme, resource persons from ICAR-CRIJAF delivered lectures on improved production technologies of jute, rice, vegetables, animal husbandry, vermicomposting, leaf litter composting, natural farming, organic farming, micro-irrigation, weed management, resource conservation technology, & integrated farming system. Trainees were felicitated with certificates and agriculture implements (sprayer, CRIJAF single wheel jute weeder, CRIJAF jute seeder) by the Director, ICAR-CRIJAF.



Participating farmers of training on 'Farm Pond based IFS' at ICAR-CRIJAF, Barrackpore

Improved Retting Technology for Quality Jute Fibre Production

ICAR-CRIJAF organized a three days farmers' training on 'Improved Retting Technology for Quality Jute Fibre Production' during 18-20 July, and 28 July 2023 for the SC community of Gaighata block, North 24 Parganas district under SCSP. Another training was organized for SC farmers of Nadia district on 4 August, 2023. A total of 230 farmers from Tarangahati, Moraldanga and Chandigar villages of North 24 Parganas district and Mashra and Dudhkumar villages of Nadia district participated in the programme. Field demonstrations were conducted in all the villages following farmer's

participatory approach. During the programme, the farmers learned about the different aspects of improved production and retting technologies of jute in West Bengal particularly (a) Improved production technology of jute (b) Improved retting with CIRIJA SONA, (c) Pest and disease management of jute, (d) Practical classes on In-situ and free flowing retting technology, and pond based integrated farming system, (e) Use of advanced machinery in jute cultivation, (f) Educational, visit to the Fibre museum. The farmers actively interacted with the resource persons regarding the problems faced by them in jute retting and was satisfied with the solutions advised by the experts.



Participating farmers interacting with scientist during training

Krishak Sammelan under SCSP

ICAR-CIRIJA, Barrackpore organized “Krishak Sammelan” on 29 October 2023 at Kultali, South 24 Parganas in association with Kultali Milon Tirtha Society for livelihood and technological improvement of SC farmers of Sundarban. The mega event was attended by more than 3000 resource poor farmers and representative from Press and Media. In this programme 150 Jute Seeder, 150 Single Wheel Jute Weeder, 300 Nail Weeder, 150 Vermi Bed, 200 small farm implements, 750 irrigation kits, 300 units of Pesticide kits and 75 battery operated sprayers were distributed among the farmers.



QRT team and Director of ICAR-CIRIJA during Krishak Sammelan

Another Kisan Sangosthi was organized on 17 November 2023. There were 150 farmers from Belle Shankarpur, Taraberia and Beraberia villages of North 24 Parganas who participated in this programme. During the farmer-scientist interaction, farmers gave their feedback about CIRIJA technologies as well as expressed their various need for agriculture. Prof. S.K.Datta, Former DDG (Crop Science), ICAR & RAC Chairman (ICAR-CIRIJA) said the farmers to adopt modern farming practices and innovative models of farming for income enhancement and socio-economic upliftment.

Jute Fabric Based Value Added Products

A seven days skill development training on “Jute Fabric based Value Added Products” was organised for farm women from 26 July to 3 August, 2023 under Scheduled Caste Sub Plan (SCSP) scheme at ICAR-CIRIJA, Barrackpore. Thirteen number of SC farm women from Basudebpur, Beliaghata, Karna Madhavpur, Dakshin Hansia and Beraberia villages of North 24 Parganas district had participated in the training programme. The training was basic in nature and focussed on skill enhancement in making of various types of jute bags which are of great demand in the national market. The trainees were very much satisfied with the training content and had actively participated in the sessions.



Farm women during training on jute based value added products

Improved Production Technology for Making of Natural Fibre-Based Value Added Products

A fifteen days skill training programme entitled “Improved production technology of jute & allied fibres and making of natural fibre based value added products” was organized at ICAR-CIRIJA, Barrackpore during 18 September to 10 October 2023 for the Women Self Help Group members sponsored by North 24 Parganas District Rural Development Cell. Dr. Gouranga Kar, Director, ICAR-CIRIJA explained the trainees

about the importance of natural fibres in the present scenario of global demand on biodegradable products for green environment. Dr. Kar informed the trainees that the group must utilize the skill imparted during the training in improving the business of the respective SHGs by making products of newer design and enhance their income and livelihood. Total 14 nos. of trainees from three Blocks of North 24 Parganas District i.e. Barrackpore-I, Barrackpore-II and Amdanga were enrolled in the training programme.



Trainees participating in improved production technology for making of natural fibre-based value added products

हिन्दी कार्यशाला का आयोजन

भाकृअनुप-केंद्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता में दिनांक 29 सितम्बर एवं 29 दिसम्बर 2023 को कार्यशाला का आयोजन किया गया। इस कार्यशाला की अध्यक्षता संस्थान के माननीय निदेशक, डॉ. गौरांग कर जी के द्वारा किया गया। 29 सितम्बर 2023 के हिन्दी कार्यशाला में श्रीमती पूनम दीक्षित, पूर्व उपनिदेशक, हिन्दी शिक्षण योजना, राजभाषा विभाग, गृह मंत्रालय, भारत सरकार, गुवाहाटी ने निदेशक महोदय एवं सभी प्रतिभागियों को अभिनंदन करते हुए राजभाषा अधिनियम, नीति, नियम व प्रमुख बिन्दुओं पर विस्तारपूर्वक जानकारी प्रदान की तथा विभिन्न बिन्दुओं पर चर्चा की। माननीय निदेशक, डॉ. गौरांग कर ने सरल, सुबोध एवं आसान शब्दों का प्रयोग करने पर जोर देते हुए यह उद्घोष किया कि राजभाषा संबंधी आदेशों का शत प्रतिशत अनुपालन किया जाए। उन्होंने आगे कहा कि हिन्दी के प्रयोग को बढ़ाने के लिए सरकार ने भी बहुत प्रोत्साहन योजनाएं शुरू की हैं तथा इन प्रयासों से हिन्दी के प्रयोग को बढ़ावा मिल रहा है। हमारा संकल्प है कि राजभाषा हिन्दी के साथ-साथ सभी प्रांतीय भाषाएं विकसित हों और हम इस दिशा में प्रयासरत हैं। उन्होंने यह भी कहा कि हिन्दी में कार्य करने में कोई कठिनाई महसूस हो तो उसे निःसंकोच हिन्दी कक्ष के माध्यम से दूर किया जा सकता है। उन्होंने राजभाषा विभाग द्वारा विनिर्दिष्ट नीति का पालन करते हुए कार्यशालाओं के माध्यम से हिन्दी के प्रचार-प्रसार पर बल देते हुए प्रशिक्षणार्थियों से कार्यालयीन कार्य हिन्दी में करने तथा अन्य समस्त कर्मचारियों से भी कार्यालयीन कार्य हिन्दी में करने का आग्रह किया। निदेशक महोदय ने इस बात पर खुशी व्यक्त किया कि प्रशासनिक अनुभागों तथा लेखा परीक्षा व लेखा अनुभाग में ई ऑफिस के माध्यम से टिप्पण एवं मसौदा हिन्दी में किए जा रहे हैं तथा परिपत्र आदि भी द्विभाषी रूप (हिन्दी-अंग्रेजी) में जारी किए जा रहे हैं। साथ ही साथ उन्होंने यह भी कहा कि वैज्ञानिकगण कार्यालयीन कार्य हिन्दी में करते हैं। कार्यशाला बहुत ही उपयोगी एवं उद्देश्यपूर्ण रही।

हिन्दी पखवाड़ा का आयोजन

भाकृअनुप-केंद्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता में दिनांक 14-29 सितम्बर, 2023 तक हिन्दी पखवाड़ा का आयोजन किया गया। उद्घाटन समारोह के अध्यक्ष एवं संस्थान के निदेशक, डॉ. गौरांग कर ने अपने संबोधन में कहा कि संविधान सभा द्वारा राज-काज चलाने के लिए तथा केन्द्र व राज्यों के बीच सम्पर्क भाषा की भूमिका निभाने का उत्तरदायित्व हिन्दी को ही सौंपा है, क्योंकि यह देश के अधिकांश भाग में बोली व समझी जाती है। किसी भी देश या वर्ग विशेष की पहचान उसकी भाषा और संस्कृति से होती है, इसलिए हमें अपनी पहचान बनाए रखने के लिए हिन्दी को अपनाना आवश्यक है। हिन्दी भाषा को हम राष्ट्र भाषा के रूप में पहचानते हैं। उन्होंने आगे कहा कि हमें केवल हिन्दी पखवाड़ा मनाने मात्र तक सीमित नहीं रहना चाहिए, बल्कि यह संकल्प भी लेना चाहिए कि हम अपना अधिकाधिक कार्यालयीन कार्य हिन्दी में करने का प्रयत्न करें। इस पखवाड़ा के अन्तर्गत कई कार्यक्रम आयोजित किए गए। दिनांक 18 सितम्बर, 2023 को तात्कालिक भाषण, दिनांक 19 सितम्बर, 2023 को हिन्दी टंकण प्रतियोगिता, दिनांक 21 सितम्बर, 2023 को वाद-विवाद प्रतियोगिता, दिनांक 22 सितम्बर, 2023 को हिन्दी श्रुतलेखन एवं पठन प्रतियोगिता, दिनांक 25 सितम्बर, 2023 को अनुवाद प्रतियोगिता, दिनांक 26 सितम्बर, 2023 को हिन्दी निबंध लेखन प्रतियोगिता तथा दिनांक 27 सितम्बर, 2023 को हिन्दी टिप्पण एवं मसौदा लेखन प्रतियोगिताओं का आयोजन किया गया। इन कार्यक्रमों में संस्थान के सभी वर्गों के अधिकारियों व कर्मचारियों ने उत्साहपूर्वक भाग लिया। दिनांक 29 सितम्बर, 2023 को हिन्दी पखवाड़ा का समापन एवं पुरस्कार वितरण समारोह का आयोजन किया गया। विभिन्न प्रतियोगिताओं में प्रथम, द्वितीय व तृतीय स्थान प्राप्त करने वाले अधिकारियों/कर्मचारियों को निदेशक, डॉ. गौरांग कर तथा श्रीमती पूनम दीक्षित, पूर्व उप-निदेशक, हिन्दी शिक्षण योजना, राजभाषा विभाग, गृह मंत्रालय, भारत सरकार के कर कमलों द्वारा पुरस्कार प्रदान किए गए। कार्यक्रम का समापन डॉ. कुमार निशान्त चौरसिया, वैज्ञानिक एवं प्रभारी हिन्दी कक्ष के धन्यवाद ज्ञापन के साथ सम्पन्न हुआ।



हिन्दी पखवाड़ा के दौरान संस्थान के निदेशक, डॉ. गौरांग कर विजेता प्रतियोगियों को संबोधन करते हुए

राजभाषा कार्यान्वयन समिति की बैठक

संस्थान में राजभाषा कार्यान्वयन समिति की चार बैठकें क्रमशः दिनांक 27.09.2023 एवं 28.12.2023 को माननीय निदेशक, डॉ. गौरांग कर जी की अध्यक्षता में आयोजित की गई। इन बैठकों में संस्थान में हो रही विभिन्न गतिविधियों में हिन्दी के प्रगतिशील प्रयोग के तरीकों और साधनों पर चर्चा की गई। इसके अलावा इन बैठकों में संस्थान के अधिकारियों / कर्मचारियों को राजभाषा विभाग द्वारा जारी वार्षिक कार्यक्रम (2023-24) के अनुसार "न" क्षेत्र के लिए निर्धारित 55 प्रतिशत लक्ष्यों पर भी चर्चा की गई।

RESEARCH PUBLICATIONS

Industrial Crops & Products 202 (2023) 117064

Contents lists available at ScienceDirect

Industrial Crops & Products

journal homepage: www.elsevier.com/locate/indcrop

De novo transcriptome of a bast fibre crop *Crotalaria juncea* reveals T2 ribonuclease genes to investigate late-acting self-rejection of pollens

Dipnarayan Saha^{a,1}, Subhojit Datta^{a,2}, Arun Kumar Shaw, Maruthi Rangappa Thimmaiah, Pratik Satya, Jiban Mitra, Gouranga Kar

^aICAR-Central Research Institute for Jute and Allied Fibres, Barrackpore, Kolkata, West Bengal 700121, India

COMMUNICATIONS IN SOIL SCIENCE AND PLANT ANALYSIS
<https://doi.org/10.1080/00103624.2023.2271402>

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Mitigation of CO₂ Emissions in Agro-Ecosystems by Composting of Tree Leaf Litter with Effective Microorganisms and Green Sunn hemp Plants

Arvind Kumar Singh^a, Tinku Goswami^b, Bijan Majumdar^a, and Gouranga Kar^b

^aCrop Production Division, ICAR-Central Research Institute for Jute and Allied Fibre, Barrackpore, India; ^bICAR-Central

ARCHIVES OF AGRONOMY AND SOIL SCIENCE
<https://doi.org/10.1080/03650340.2023.2271402>

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RESEARCH ARTICLE

Changes in seed yield and oil quality of flax (*Linum usitatissimum* L.) for industrial use in response to nitrogen and potassium fertilization

Sabyasachi Mitra^a, Biswanath Adhikary^a, Sariful Islam^a, Subir Kumar Nag^b, Nurnabi Meherul Alam^b, Sonali Paul Mazumdar^a, Mukesh Kumar^a, Arvind Kumar Singh^a, Debarati Datta^a, Chandan Sourav Kar^a, Surendra Kumar Pandey^a

Microbiological Research 279 (2024) 127551

Contents lists available at ScienceDirect

Microbiological Research

journal homepage: www.elsevier.com/locate/micres

Microbial biosurfactants: Multifarious applications in sustainable agriculture

Debarati Datta^a, Sourav Ghosh^{a,b}, Saurabh Kumar^b, Saurabh Gangola^c, Bijan Majumdar^a, Ritesh Saha^a, Sonali Paul Mazumdar^a, Shivendra Singh^a, Gouranga Kar^a

^aICAR-Central Research Institute for Jute and Allied Fibres, Barrackpore, Kolkata 700 121, India

Plant Soil
<https://doi.org/10.1007/s11104-023-06415-7>

RESEARCH ARTICLE

System productivity, soil carbon and nitrogen sequestration of intensive rice-based cropping systems can be improved through legume crop inclusion with appropriate fertilizer application and crop residues incorporation in the eastern Indo-Gangatic plain

Mukesh Kumar^a, S. Mitra^a, S. P. Mazumdar^a, B. C. Verma^a, Biswajit Pramanick^a

JOURNAL OF NATURAL FIBERS
2023, VOL. 20, NO. 1, 2139327
<https://doi.org/10.1080/15440478.2022.2139327>

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Sui Generis Development of Molecular Markers from Transcriptome of *Crotalaria juncea*, a Fabaceae Family Bast Fiber Crop

Dipnarayan Saha^a, Arun Kumar Shaw^a, Pallavi Mandal^a, Maruthi Rangappa Thimmaiah^{a,b}, Subhojit Datta^a, Pratik Satya^a, Jiban Mitra^a, and Gouranga Kar^a

AWARDS & RECOGNITIONS

- भाकृअनुप-क्रिजैफ, कोलकाता को गृह मंत्रालय, भारत सरकार के प्रतिष्ठित "क्षेत्रीय राजभाषा" को प्रथम पुरस्कार से सम्मानित किया गया।
- Co-Organiser of International Workshop (2-3 Nov. 2023, Vizag), on Nonconventional Water for Irrigated Agriculture- benefits of advanced technologies, 25th ICID International Congress/74th IEC Meeting, ICID and Irrigation Australia- G. Kar, Director
- Foreign Visit (Australia, 10-14 July 2023) under the Multinational Project funded by APN-GCR & UniSC, Australia- G. Kar, Director and D. Barman, Senior Scientist.
- Dr. J.S. Kanwar XII International Congress Commemoration Award by Indian Society of Soil Science, New Delhi, 3 October, 2023; National Academy of Biological Sciences Fellowship for the year 2022 by National Academy of Biological Sciences, Chennai, Tamil Nadu- R. Saha, Principal Scientist
- Lead paper presentation on 'Jute and Allied fibres for Environmental sustainability', National Conference on Natural Fibre for sustainable societal development, 3-4 January, 2023, The Indian Natural Fibre Society - G. Kar, Director
- Lead paper presentation on 'Jute and allied fibre crops for sustainable organic farming through their ecosystem services' at National Conference on Natural and Organic farming for ecological, economical and Nutritional Security, 7-9 June 2023, CSK HPKV, Palampur- A.K. Singh, Principal Scientist

DISTINGUISHED VISITORS

1.	Prof. Swapan Kumar Datta Vice Chancellor, Biswa Bangla Univ. and former DDG (Crop Sci.), ICAR, New Delhi	16.11.2023
2.	Dr. Tapas Biswas, Sr. Research Scientist, CSIRO, Australia	7.11.2023
3.	Sri Rajinder Kumar Director, ASRB, New Delhi	1.12.2023
4.	Sri Sharad Kr. Dwivedi, I.A.S. District Magistrate, 24 Parganas (N), W.B.	20.7.2023
5.	Sri Sourav Sengupta Project Director, DRDC, North 24 Parganas	20.7.2023
6.	Sri Ratanlal Daga Expert (Organic Farming) & Member (CACP)	6.9.2023
7.	Vivek Shukla Co-founder, Rice Hydroponics	6.9.2023

PERSONNEL

New Joining

Name	Designation	Date
Divte Pandurang Raghunath	Scientist	21.07.2023
Chanchal Kundu	Sr. Technical Officer	11.12.2023

Transfer

Name of the Person	Transferred to (date)
N. Mohan, Scientist	ICAR-IARI, New Delhi on 08.12.2023
P. K. Das, AAO	ICAR-ATARI, Guwahati on 13.10.2023
S. Barman, Assistant	ICAR-NEHR, Umium on 25.09.2023
S. Barik, Tech. Asstt.	ICAR-NRRI, Cuttack on 24.11.2023

Superannuation

Name of the Person	Designation	Date (w.e.f.)
Shri Kamal Dasgupta	Assistant	19.12.2023
Sri Sunil Patra	S.S.S.	31.12.2023
Sri Naba Kumar Dutta	S.S.S.	31.12.2023

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Copyright registration of A Decision Support System (DSS) for Pest Management of Jute and Mesta' has been accomplished with registration no. SW-17998/2023 on 28 December 2023.



EDITORIAL

Hon'ble Prime Minister's 5F Vision for Natural Fibre "Farm to Fibre to Factory to Fashion to Foreign"

The jute sector plays a crucial role in the Indian economy by providing direct and indirect employment opportunities and generating export revenue. India is the world's largest producer of jute, and exports make up approximately 15% of jute production. West Bengal tops the chart in total raw jute production in India with a share of around 81–82%, followed by Assam (8%) and Bihar (8%). Other jute-producing states are Andhra Pradesh, Madhya Pradesh, Chhattisgarh, Odisha, Meghalaya, Tripura, and Nagaland. Despite a slight reduction in demand in FY2023, the export of jute products is expected to continue growing by 12–15%. Key players in the industry have been able to maintain healthy operating margins by investing in modern looms and product diversification, while a majority of the mills still use obsolete and labour-intensive plant and machinery, which hampers the quality and quantity of production.

There are about 95 jute mills in the country, out of which about 75 are currently operational. The majority of the mills are located in the state of West Bengal. The size of the industry is Rs. 12,000 crore, with the majority offtake by the government for the packaging of food grains. The government sets the MSP for raw jute based on recommendations from the Commission for Agricultural Costs and Prices (CACP). On March 24, 2023, the government increased the MSP for raw jute for Jute Year 2023-2024 by ₹300 per quintal to ₹5,050 per quintal to boost farmers' revenue and address the issue of shrinking acreage. The Jute Corporation of India Ltd. (JCI), under the Ministry of Textile, acts as a price-stabilizing agency and undertakes the procurement and sale of raw jute under MSP operations. The government also provides subsidies to JCI for its market operations.

The Jute Packaging Material Act (JPMA) of 1987 mandates the use of jute bags for 100% of food grains and 20% of sugar for jute years 2022–2023. As a result, the jute industry is heavily reliant on government food grain procuring agencies such as the Food Corporation of India and State Procurement Agencies, which account for around 65-70% of total jute goods production. While most mills focus on fulfilling assured government orders, a few large, modernized mills export their products and venture into value-added Jute Diversified Products (JDPs). However, with further investments, innovations, and expertise, this segment could expand rapidly.

Additionally, the industry is grappling with the issue of obsolete and labour intensive plants and machinery, leading to a reduction in both the quality and quantity of production. Mills equipped with modernized facilities and diversified product offerings have better margins compared to those with older machinery. The operating margin of top mills ranged from 10 to 14%, while the industry average was 5.5-7.5% during FY20-FY22.

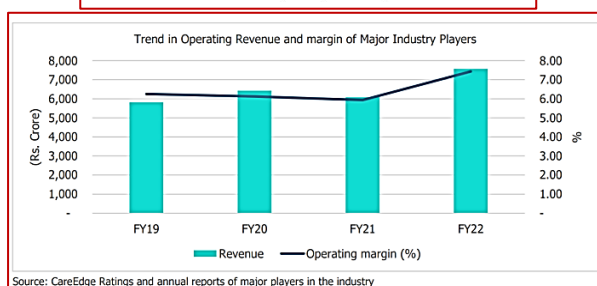
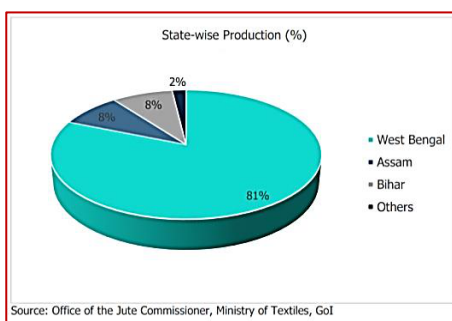
Large players have recently announced significant capacity additions both in traditional and value-added jute products. The government has also announced the PLI scheme for the production of JDPs and the Amended Technology Upgradation Fund Scheme (A-TUFS) for the upgradation of existing machinery and the installation of modern looms. Investment in technology upgradation and product diversification is the need of the industry. Healthy Export Growth to Sustain the overall export of

jute products has seen traction over FY16–FY22, witnessing a compounded average growth rate of 12% from ₹ 1,892 crore in FY16 to ₹3,786 crore in FY22, driven by both volume and price increases.

The ICAR-CRIJAF recommended jute as eco-friendly because it is fully biodegradable and recyclable. Its strength, versatility, and highly spinnable traits are likely to attract more attention from the user industries in

the long term due to concerns over the usage of synthetic products. With increasing awareness about the adverse effects of synthetic packaging material on the environment, the demand for jute goods is poised to grow both domestically and internationally. Demand for environmentally friendly products augurs well for value-added JDPs like woven and non-woven jute

geotextile, jute agro-textile, jute blended fibre yarn, river embankments, and lifestyle products like floor coverings, jute shopping bags, and apparel. The potential for jute diversification is promising, offering environmentally friendly solutions in many sectors' value chains. The urgent industry requirement is to modernize, adopt new industry standards and technologies, and progress through time. Indian jute exports are well poised to witness a growth trajectory of 12–15% in FY24, despite global uncertainties. While the industry margin is expected to remain range-bound between 5% and 7%, the panacea for improvement lies in modernization and diversification so as to meet the Hon'ble Prime Minister's 5F Vision (from Farm to Fibre to Factory to Fashion to Foreign).



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