

Jute & Allied Fibres

# CRIJAF

## BULLETIN



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ICAR-CRIJAF

### DIRECTOR'S MESSAGE

The ICAR-CRIJAF, Barrackpore has made outstanding contributions in advancing the scientific knowledge on jute and allied fibres (JAF) and in playing the pivotal role in science-led technology development. During the last five years, the Institute's progress is quite satisfactory in JAF research and extension. The institute has also made notable contributions in imparting training and skill development of farmers, and stakeholders who are engaged with production, processing and entrepreneurship development on JAF.

During July-December 2025, the institute has organized the Jute Industries-Stakeholders Meet under the Chairmanship of the Hon'ble Union Minister for Textiles; New Age Fibres Stakeholders Meet and signed the MoUs with Govt. of Nagaland for jute & allied fibre cultivation; Research Advisory Committee (RAC) meeting, Institute Research Council (IRC) meetings; celebrated National Days viz. 79th Independence Day, Samvidhan Diwas (Indian Constitution Day), Rashtriya Ekta Diwas, National Farmers' Day; organized several awareness programmes, and has been involved in multiple activities viz. celebration of Parthenium Awareness Week, launching programme of Pradhan Mantri Dhan Dhaanya Krishi Yojana (PM-DDKY) and Pulse Atmanirbhar Mission, Hindi Week, Vigilance Awareness Week, Swachhata Hi Seva Campaign and Swachhata Pledge, commemoration of 150 Years of National Song 'Vande Mataram', World Soil Day, etc. The Institute has organized Van Mahotsab, Farm Women Conclave, Field Day-cum-Farmer-Industry-Scientist Interaction Programme under SCSP scheme of the Govt of India, etc. ICAR-CRIJAF is actively involved in farmer-centric outreach programmes through training, skill development and capacity-building programs specifically for the jute-growing farmers. The KVK of the Institute is playing a crucial role in technology demonstration and dissemination. Scientists have very good research papers published in high rated journals, received the technology development certificates duly recognized by the Crop Science Division of the ICAR; CRIJAF Jute variety, 'JROBA-3' has been commercialized. Additionally, CRIJAF Scientists have been engaged as faculties for teaching and guiding research works undertaken by the UG, PG and Ph.D. students of IARI Kolkata Hub. Hence, this CRIJAF Bulletin delves into highlights of all those achievements, activities and significant contributions to the cause of farm science and JAF farmers in the country.

I would like to place on record the contributions of Institute scientists, the support of administration, finance, technical and all staff of the Institute in driving towards greater heights. I'm grateful to the DDG (Crop Science), and Secretary, DARE and Director General, ICAR for providing us with invaluable guidance and unwavering backing. I extend my appreciation to the dedicated editorial team and Scientists of the institute, whose tireless efforts have warranted seamless and timely publication of this bulletin.



प्राकृतिक रेशा अपनाएं  
प्लास्टिक को दूर भगाएं



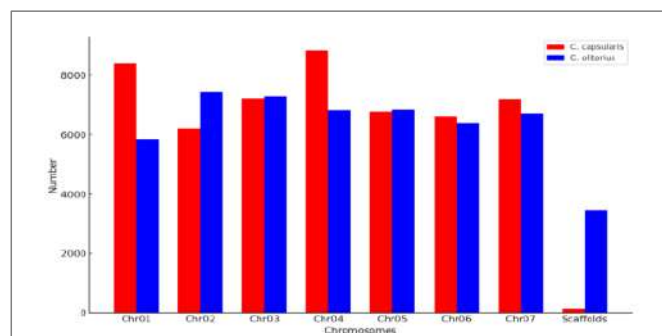
**Editors** : Dr. K. G. Mandal, Dr. T. Adak, Dr. N.M. Alam, Dr. K.N. Chourasia and Dr Gouranga Kar  
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# RESEARCH NOTES

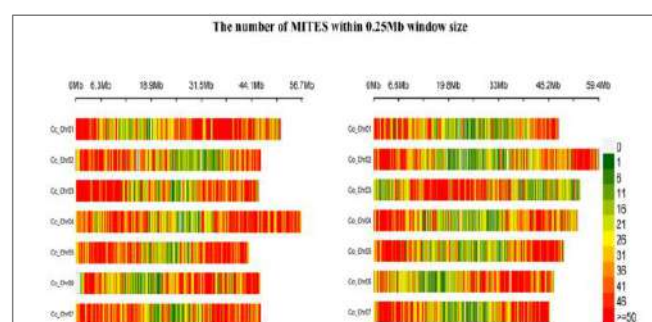
## Unlocking the genetic potential of jute: genomic landscape of MITEs and new MIP markers

Jute, often referred to as the "golden fibre," is a sustainable bast fibre crop from the Malvaceae family with immense industrial significance and ecological value, particularly in carbon sequestration. Despite its global importance, genetic improvement in jute has historically been constrained by a limited repertoire of genomic resources and molecular markers. To bridge this gap, a comprehensive study was conducted at ICAR-CRIJAF focusing on the two primary cultivated species: *Corchorus capsularis* (white jute) and *Corchorus olitorius* (tossa jute). The research pivoted on Miniature Inverted-Repeat Transposable Elements (MITEs)- non-autonomous DNA transposons known for their small size and ability to influence genome evolution. Through genome-wide analysis, the study identified a staggering 51,369 MITEs in *C. capsularis* and 50,829 in *C. olitorius*, categorized into 632 and 539 distinct families, respectively (Fig. 1 & 2). A critical discovery of this research was the strategic distribution of these elements. A significant proportion of MITEs were found located within or adjacent to genic regions. This "genic preference" suggests that MITEs are not merely "junk DNA" but are actively involved in the regulation of gene function and diversification. Furthermore, the study identified 11,801 and 10,921 MITE-derived microRNAs in white and tossa jute, respectively. These microRNAs act as key regulators in genetic and epigenetic pathways, potentially influencing traits related to fibre quality and stress resilience.

To translate these genomic insights into practical breeding tools, the researchers developed an in-house database of MITE Insertion Polymorphism (MIP) markers. Unlike traditional markers, MIPs leverage the high polymorphism and stable inheritance of MITEs. The efficacy of these markers was validated by testing 15 polymorphic MIPs across 30 diverse jute accessions, which successfully classified the genotypes into five distinct clusters. This pioneering work provides a robust genomic framework for jute. By harnessing these MIP markers, breeders can now perform more precise germplasm characterization and accelerated molecular breeding, ultimately enhancing the productivity and sustainability of this vital eco-friendly crop.



**Fig. 1.** Comparative distribution of MITE elements across seven chromosomes and scaffolds of *C. capsularis* and *C. olitorius*



**Fig. 2.** Density of MITE elements across chromosomes in a sliding window of 0.25 Mb.

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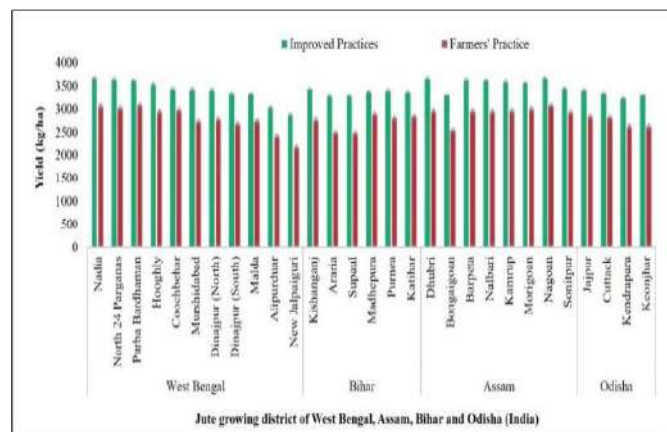
## Assessment of climate-soil-water-related ecosystem services on crop productivity

The assessment of climate-soil-water-related ecosystem services under the Jute-ICARE Project demonstrates substantial gains in productivity, environmental sustainability, and climate resilience in major jute-growing regions. Imbalanced fertilizer use remains a critical constraint in these systems, as prevailing farmer practices often involve excessive or poorly timed nutrient applications. Such practices degrade soil structure, deplete soil organic carbon, increase nutrient losses, and elevate greenhouse gas (GHG) emissions, thereby undermining long-term land productivity and ecosystem stability in marginal agro-ecosystems.

Adoption of the Improved Practice (IP) protocol developed by ICAR-CRIJAF delivered significant environmental and economic benefits over conventional farmer practices. IP reduced on-farm carbon footprints by 25%, indicating effective mitigation of GHG emissions through improved nutrient management and resource-use efficiency. Concurrently, soil carbon stocks increased by 11.5%, reflecting enhanced nutrient utilization, reduced reliance on chemical fertilizers, and improved soil biological functioning. Increased soil carbon not only supports higher crop productivity (Fig. 3) but also enhances soil resilience against erosion and climate-induced stresses. The environmental performance of IP was further validated by an increase in the Carbon



Sustainability Index from 1.41 to 2.14. Annual carbon sequestration reached up to 533 kg CO<sub>2</sub>eq ha<sup>-1</sup>, contributing meaningfully to climate mitigation efforts. These gains translate into economic opportunities, with carbon credit potential of up to 1.58 t CO<sub>2</sub> ha<sup>-1</sup>, valued at approximately US\$80 ha<sup>-1</sup> under current market conditions. Overall, jute cultivation under the IP framework emerges as a scalable climate-smart system that restores soil health, enhances farm incomes, and integrates productivity with carbon mitigation, offering a replicable pathway for sustainable intensification in Indian jute agriculture.

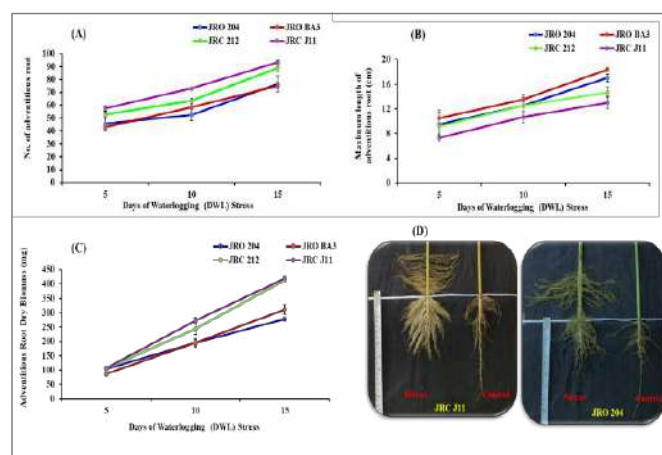


**Fig. 3:** Changes in jute fibre yield under Farmers' practice and Improved practices in jute growing states of India

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### Effect of waterlogging stress on adventitious root development in two jute species

A study was conducted on tossa jute (JRO 204 and JRO BA3) and white jute (JRC J11 and JRC 212) genotypes to study the impact of waterlogging stress on adventitious root development in two jute species. Forty-five (45) days old plants grown in the pot culture were subjected to waterlogging stress by maintaining a water level (15 cm) in pots for 5, 10 and 15 days. Waterlogging significantly influenced adventitious root development in both jute species, whereas no adventitious roots were observed under ambient conditions. This indicates that waterlogging induces adventitious root formation in jute, particularly near the stem base, as an adaptive response to waterlogging stress (Fig.4A-D). However, white jute produced a higher number (52.6-93.3 per plant) and greater dry biomass (106-419.6 mg per plant) of adventitious roots, with these effects becoming more pronounced under prolonged waterlogging. The length of adventitious roots ranged from 9.5 to 18.3 cm in tossa jute and from 9.1 to 14.6 cm in white jute across treatments. Overall, genotypic variation was evident, with waterlogging tolerant white jute genotypes showing greater adventitious root number and dry biomass, thereby contributing to improved growth and stress tolerance.



**Fig. 4.** (A) Number of adventitious root, (B) Maximum length of adventitious root, (C) Dry biomass of adventitious root of jute genotypes under 5, 10 and 15 days of waterlogging stress and (D) Photographs of root system architecture (RSA) of white jute (JRC 11) and tossa jute (JRO 204) at 15 days of waterlogging stress.

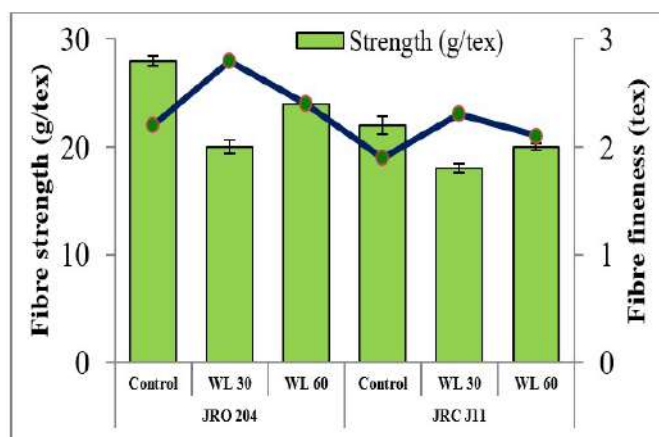
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### Waterlogging-induced changes in fibre quality traits in jute species at varying developmental stages

Waterlogging significantly influences fibre quality in jute, as reflected in changes in fibre strength and fineness across the two varieties, JRO 204 and JRCJ 11. Waterlogging for 15 days at 30 DAS reduced fibre strength by ~29% in JRO 204 and ~18% in JRCJ 11, while stress at 60 DAS showed partial recovery, compared to early stress. Under control conditions (normal condition with proper drainage), both varieties exhibit superior fibre strength and relatively finer fibres, indicating optimal cellulose deposition and organized fibre development.

However, exposure to waterlogging results in a noticeable decline in fibre strength, particularly under WL 30, suggesting that early-stage stress imposes greater physiological disruption. This reduction can be attributed to oxygen deficiency in the root zone, which impairs aerobic respiration, limits nutrient uptake, and restricts carbohydrate availability for secondary cell wall formation. As a consequence, cellulose synthesis and microfibril organization in fibre cells are compromised, leading to weaker and structurally inferior fibres. Interestingly, under WL 60, a partial recovery in fibre strength is observed, indicating that waterlogging imposed at a later growth stage causes comparatively less damage, as the plants are already physiologically mature. At this stage, structural tissues are more stable allowing fibre formation to proceed with minimal disruption. There was an increase in tex value due to waterlogging (Fig. 5), signifying coarser fibres. Under 30 DAS waterlogging, coarseness (tex) increased by ~27% in JRO 204 and

~21% in JRCJ 11, while at 60 DAS it improved slightly, decreasing by ~14% and 9%, respectively. Early waterlogging disrupts vascular differentiation, cell wall thickening, and cellulose deposition, producing coarser fibres. Besides reduced fibre strength, waterlogged plant samples also exhibited higher root content and other fibre defects, which adversely affected overall fibre quality. In summary, waterlogging not only reduces fibre yield but also degrades industrial quality traits-strength, fineness, lustre-thereby lowering the market grade

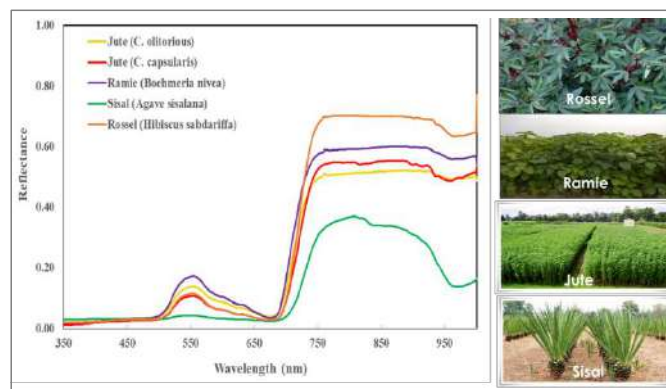


**Fig. 5.** Effect of waterlogging on fibre strength and fineness in JRO 204 and JRCJ 11

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### Assessing hyperspectral responses of fibre crops in field and laboratory conditions using hand-held spectroradiometer for disease identification

Hyperspectral reflectance patterns were measured in a maiden attempt from crop canopy of natural fibre crops such as white jute (*Corchorus capsularis*), to s s a j u t e ©. *olitorius*), roselle (*Hibiscus sabdariffa*), kenaf (*Hibiscus cannabinus*), ramie (*Boehmeria nivea*), sisal (*Agave sisalana*) and sunnhemp (*Crotalaria juncea*) using a hand-held radiometer both in field and laboratory conditions. Leave reflectance pattern was also examined in a laboratory under an artificial illumination condition. Although the canopy reflectance patterns of all the fibre crops were similar in nature, their magnitude varied



**Fig. 6.** Hyperspectral reflectance pattern of jute and allied fibre crops

The variability of normal and stem rot disease infected leaves were also recorded for discrimination between them. To relate the ground hyperspectral measurement with the satellite hyperspectral data, the Hyperion wave bands were computed from the ground hyperspectral data by using the full width at half maximum (FWHM) technique. Jeffries-Matusita (JM) distances were computed using Machine Learning (ML) technique for selection of suitable wavebands to easily identify the stem rot disease infected jute crops in advance for management purposes. For this the JM distances at each hyperion bands were computed for 2 DAI (days after inoculation), 4 DAI and 7 DAI. It revealed that average JM distances across the hyperion bands were highest in 7 DAI followed by 4 DAI and 2 DAI irrespective of the jute species. However, over the entire hyperion bands, the JM distance at a particular band was higher in *C. capsularis* than that of *C. olitorius*. JM distances were also correlated with disease symptoms of the infected jute crops, which was corroborated with other crop biophysical parameters such as leaf relative water content and membrane stability index. This technique can be successfully applied for stem rot disease identification in both the cultivated jute species.

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### Jute crop helps in carbon sequestration

Jute (*Corchorus olitorius*) can be grown as a carbon sequestering crop in the lower Gangetic plain of India for overall improvement in the soil health. In a long-term fertility trial for 50 years it has been revealed that in the control plot, without addition of any inorganic fertilizer and organic manures, the soil could able to produce 10.8 q/ha of jute fibre, 13.9 q/ha of rice and 7.9 q/ha of wheat for last fifty years in a jute-rice-wheat cropping sequence. During last 50 years, from the control plot, about 4052 kg of N, 870 kg of P and 4191 kg of K have been removed by crop uptake. On





the other hand, the recommended application of nutrients has produced about 23.2 q/ha of jute fibre, 34.9 q/ha of rice and 24.5 q/ha of wheat for last 50 years indicating the yield stability with the application of about 15375 kg of N, 3331 kg of P and 7688 kg of K in 50 years.



Field view of jute in control plot and RDF plot

After 50 years, in the control plot, the organic carbon content in the soil has increased from 4.2 g/kg to 6.0 g/kg and available N content from 223 kg/ha to 240.5 kg/ha and there was depletion in available P status from 41.5 kg/ha to 12.1 kg/ha. Similarly, during the same period, the organic carbon content in plots where RDF was applied, has increased from 4.2 g/kg to 7.4g/kg and available N and P to 310 kg/ha and 66 kg/ha respectively, obviously because of external application of NPK doses. So, the improvement in soil organic C and available N content in control plots might be because of addition of jute leaves during the whole growth period because of its leaf shedding characteristics and to some extent addition of jute roots and rice stubbles from the cropping sequence. So, jute crop in the jute-rice-wheat cropping sequence is helping in sequestering the carbon from the environment, which is clearly visible from the improvement in organic carbon and available N status of the soil after 50 years of cropping and supporting the crop growth which helped to produce a mean jute fibre yield of 10.8 q/ha, 13.9 q/ha of rice and 7.9 q/ha of wheat. Hence, it can be concluded from the study that, jute crop can be grown as a carbon sequestering crop in the lower Gangetic belt of India in the existing cropping sequence for carbon sequestration and overall soil fertility improvement.

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### Expansion of ramie and flax area in North-Eastern states

By utilizing the fund under the NER/ NEH activities, expansion of ramie crop has been done in different areas of Assam. In the 1st phase, farmers of Uttar Burikhamar village in Chirang district were convinced and trained for ramie plantation. About 3.5 ha new ramie plantation in the farmers' field of Uttar Burikhamar has been planted. The ramie crop is

growing well in the field and the concerned farmers are taking care of the plantation by following improved production technology provided by Ramie Research Station of the ICAR-CRIJAF. Further expansion of ramie plantation is happening in 2.5 ha in the Fehurakhowa village in Sorbhog of Barpeta district, 1 ha area in Dobapara village of Goalpara district of Assam.



Flax & Ramie area expansion in NE State

The soil and climatic condition of North-Eastern states are suitable for flax cultivation. Therefore, NER/NEH fund has been utilized for area expansion of flax. Flax has been planted in one-acre area of KVK, West Garo Hills, Meghalaya. Two other KVKs of Assam namely KVK, Chirang and KVK, Karbi Anglong sown flax crop in one acre each. Another 2 acres was planted at Medziphema, Nagaland, 2 acre area of Bolung, Lower Dibang Valley of Arunachal Pradesh; one acre area of flax in the Ramie Research Station, Sorbhog, Assam in the rabi season of 2025-26.

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## NEWS & EVENTS

### Launching programme of Pradhan Mantri Dhan Dhaanya Krishi Yojana (PM-DDKY) and Pulse Atmanirbhar Mission by Hon'ble Prime Minister of

The live launching programme of Pradhan Mantri Dhan Dhaanya Krishi Yojana (PM-DDKY) for transforming India's agricultural landscape is designed to catalyze growth in 100 agri-districts through saturation-based convergence of 36 central schemes across 11 Ministries, for a period of six years starting from FY 2025-2026 by Hon'ble Prime Minister was organized at ICAR-CRIJAF, Barrackpore on 11th October, 2025 in which Hon'ble Union Minister of State, Education and North Eastern Development, Dr. Sukanta Majumdar was the Chief Guest. About 470 farmers and farm women attended in the programme. Hon'ble Minister emphasized that the Indian Farmers particularly farm women must become Atmanirbhar by



adopting the benefits of Central Govt. Schemes. He opined that the Pulse Mission will reduce the import and increase the nutritional security to the next generation. He expressed that PM's visionary leadership will raise Indian Agriculture to new heights and make the country Atmanirbhar. Hon'ble Minister also visited the Exhibition Hall and Fibre Museum and inaugurated the exhibition of jute diversified products and was very much impressed to see the exhibits, and advised the farm women of the Self-Help Group (SHG) to explore e-platform for better marketing.



### The South India Natural Farming Summit (virtual mode)

A high-level South India Natural Farming Summit was telecasted at the ICAR-CRIJAF on November 19, 2025, featuring a virtual inauguration and address by Prime Minister Narendra Modi. The event focused on the scientific transition towards chemical-free agriculture, emphasizing the 'One Acre, One Season' initiative to encourage incremental adoption of natural farming practices. In a significant show of institutional commitment, all staff members of ICAR-CRIJAF participated in the online event, joining the Prime Minister's call to treat farmers' fields as living laboratories for research and innovation.



### Observation of Parthenium Awareness Week

The Institute has observed 'Parthenium Awareness Week' during August 16-22, 2025 to make aware among the staff members about the menace of Parthenium viz. health problems in human beings and animals, besides deteriorating environment, loss of productivity and biodiversity and also to ensure Parthenium-free CRIJAF campus. On the occasion, an 'Awareness Meeting' was organized at the Institute on August 21, 2025. More than 100 participants including the scientists, technical, administrative and other staff, the KVK staff, project staff and students of ICAR-IARI Kolkata Hub were present campaign. An eradication program was also taken up in the campus.



### ICAR-CRIJAF conducted Field Experience Training (FET) for ARS probationer scientists

ICAR-CRIJAF in association with KVK, North 24 Parganas (Additional) conducted the FET for multi-disciplinary team of 6 ARS probationer scientists of 115 FOCARS during 16 September to 17 October, 2025. The scientist probationers conducted their PRA at Panshila village of Barasat-I block, North 24 Parganas under the mentorship of Dr. Tanmay Samajdar and Dr. Ritesh Saha.







## Observed the Indian Constitution Day (Samvidhan Diwas)

ICAR-CRIJAF observed the Indian Constitution Day with great enthusiasm on 26th November 2025. Dr. Gouranga Kar, Director, ICAR-YPs Professionals, and students of the IARI-Kolkata Hub joined him in taking the pledge with sincerity and commitment. Following the pledge, participants read out the Preamble of the Constitution online and downloaded their participation certificates as part of the nationwide observance. The event reaffirmed our collective commitment to the ideals of justice, liberty, equality and fraternity enshrined in the Constitution of India.



## Vigilance Awareness Week

ICAR-CRIJAF observed the commencement of Vigilance Awareness Week-2025 on October 27, 2025. The highlight of the event was the administration of the Integrity Pledge, where all scientific, technical, and administrative staff gathered to reaffirm their commitment to transparency, accountability, and corruption-free governance. This initiative aligns with the national objective of promoting ethical conduct in public life and strengthening institutional integrity. Director, Dr. Gouranga Kar led the pledge-taking ceremony, emphasizing that vigilance is not merely a week-long observance but a continuous responsibility for every public servant.



## Celebration of Rashtriya Ekta Diwas

ICAR-CRIJAF, Barrackpore celebrated Rashtriya Ekta Diwas on 31 October 2025 to pay tribute to Sardar Vallabhbhai Patel, The Iron Man of India on his birth anniversary. Dr. Gouranga Kar, Director delivered a speech on the significance of Rashtriya Ekta Diwas programme, the great contribution of Revered Sardar Patel in freedom movement and unification of princely state to build a sovereign country. The Ekta Diwas Pledge was read out by the

Director and all the staff members, RAs, SRFs, YPs and students of IARI-Kolkata Hub. The pledge taking ceremony is followed by a Unity Walk. A short film on the life, vision and contribution of Sardar Vallabhbhai Patel was screened at Institute Lecture Hall which was followed by screening of some videos on the theme Ek Bharat, Shreshtha Bharat. Banner showcasing the portrait of revered Sardar Patel was displayed at Institute campus.



## ICAR-CRIJAF celebrated Swachhata Hi Seva Campaign

ICAR-CRIJAF organized Swachhata Hi Seva Campaign and Swachhta Pledge on 17th September, 2025. A massive Human Chain as a highlight of the Swachhata Hi Seva campaign on September 22, 2025. This event indicated a powerful visual demonstration of unity and collective responsibility towards the national goal of a 'Garbage Free India'. By forming a continuous chain across the institute's campus and surrounding areas, the scientific and administrative staff emphasized that environmental cleanliness is the foundation of sustainable development. The program was rooted in the participatory principles, treating the campus as a social laboratory where collective action induces positive change. The event concluded with a local cleanliness drive, reinforcing the institute's commitment to the holistic well-being of the stakeholders it serves.







## MEETINGS ORGANIZED

### The Jute Industries-Stakeholders Meet

A high-level review meeting of stakeholders from the Jute and Allied Fibre sector was held on 5 September 2025 at ICAR-CRIJAF, Barrackpore, under the chairmanship of the Hon'ble Union Minister for Textiles, Shri Giriraj Singh. The meeting showcased key technological innovations, policy initiatives, and industry collaborations aimed at modernizing the sector. The Hon'ble Minister inaugurated the Jute Ribboner Machine and the Bast Belter Decorticator, both designed to improve post-harvest efficiency by reducing labour, time, and production costs, thereby enhancing farm productivity and rural incomes. He also visited the Bast Mega Plantation and the Sisal + Tuberose integrated plantation, which demonstrate sustainable, diversified production models and serve as farmer training platforms. A major outcome was the signing of five MoUs with textile industry partners to promote new-age natural fibres such as flax, ramie, and sisal through strengthened research, technology transfer, and commercialization. Emphasis was placed on scaling innovative farming practices, tissue culture, and improved varieties to position India as a global leader in sustainable "farm-to-fashion" textiles.



### New Age Fibres Stakeholders Meet and signing of MoUs with Govt. of Nagaland for jute & allied fibres cultivation

Stakeholders meet including the framers, Agril. Department officials of Nagaland, officials of ICAR-CRIJAF, National Jute Board and Jute Corporation was organized at Medziphema, Nagaland on 25.09.2025 to make a detail planning for seed production of flax and find out the perspective areas for ramie and sisal cultivation. The objective of the stakeholders' meet was to introduce new age natural fibres on a pilot scale to explore the potential as alternate crop. These introductions will diversify the fibre production in the NE states. Detail discussion was made to find out the niche areas suitable for cultivation of these crops, mode of marketing of fibres, training of SHGs. More than 50 delegates in including the farmers and line department officials were present in the meeting.

MoU was signed with Nagaland Govt. by ICAR-CRIJAF, Barrackpore; JCI, Kolkata and NJB, Kolkata in the presence of Jt. Secretary Textiles, Govt. of India and Agriculture Production Commissioner, Govt. of Nagaland in Kohima. The MoU is executed for propagation and proliferation of new age fibre cultivation in the state of Nagaland. Efforts will also be made to expand the area under quality jute fibres in the NE states. ICAR-CRIJAF is going to provide the technical and scientific know how for proper implementation of the project in the NE states.



### Research Advisory Committee (RAC) Meeting

The Research Advisory Committee (RAC) meeting was held during December 22-23, 2025 at ICAR-CRIJAF, Barrackpore. Dr. Pradip C Deka, Chairman, RAC along with the members Dr. R.K. Singh, Dr. L.M. Garnayak, Dr. T Sreelata, Dr. A Bandyopadhyay, Dr. Sagar Mandal, Dr. Prashant K Dash, Dr. Gouranga Kar, Sh. Mahadev Sarkar, Dr. A.K. Mandal and Member Secretary, Dr. Sanjoy Saha attended the meeting at ICAR-CRIJAF, Barrackpore. The HoDs presented the salient achievements of respective Division. The committee discussed in details the research activities of the Institute for the period of December 2024 to November 2025. The meeting resulted in



recommendation for further strengthening of the research activities of the Institute with emphasis on mitigating the climate resilience including biotic and abiotic stress, sensor-based smart farming in jute and allied fibres in general and new age fibre in particular.



### Institute Research Council (IRC) Meetings

The Institute Research Council (IRC) meetings at ICAR-CRIJAF in 2025, chaired by Dr. Gouranga Kar, convened on July 29-30 and September 19-22 at Barrackpore, Kolkata, to advance jute and allied fibers research. All scientist of the Institute attended these sessions, which reviewed divisional achievements, ongoing projects, and new proposals while emphasizing ICAR reforms like competitive grants, IPR generation, high-impact publications, and demand-driven research on bioethanol, viscose pulp, mechanization, and genome editing.



## EVENTS ORGANIZED

### Commemoration of 150 Years of National Song, Vande Mataram

ICAR-CRIJAF organized a special program to celebrate the Commemoration of 150 Years of the National Song, *Vande Mataram*, on 7th November, 2025. The event was held to honour the historical and patriotic significance of the National song, which has served as a symbol of unity and inspiration for the nation since its composition. The ceremony began with a collective rendition of the song, bringing together the scientific, technical, and administrative staff in a spirit of national pride. Director, Dr. Gouranga Kar addressed the gathering, emphasizing the role of *Vande Mataram*

in India's struggle for independence and its enduring relevance in modern times.



### World Soil Day

The Institute celebrated World Soil Day on 5 December, 2025 on the theme, "Healthy Soils for Healthy Cities". Dr. Gouranga Kar, Director ICAR-CRIJAF delivered a key note address on the theme "Healthy Soils for Healthy Cities". He emphasized that healthy soils and availability of pure water can significantly contribute to end hunger and creating a healthy planet. On the occasion, 50 soil health cards were distributed to farmers of North 24 Parganas district in West Bengal. About 100 participants attended the programme including 50 farmers, students of IARI Kolkata hub & scientists of ICAR-CRIJAF. Topics such as soil health, integrated nutrient management, soil salinization in India, and ecological and social concerns were thoughtfully addressed. On this occasion, a leaflet entitled 'Healthy Soils, Developed Agriculture and Quality Life' (*Sustho Mati, Samriddha Krishi o Unnata Jiban*) was published.



### ICAR-CRIJAF organized National Farmers' Day

ICAR-CRIJAF organized National Farmers' Day on 23 December 2025 at Sundarbans, West Bengal, to commemorate the birth anniversary of Bharat Ratna Chaudhary Charan Singh and to strengthen farmer-centric development initiatives in the region. Prof. P.C. Deka, Former Vice Chancellor, Tezpur University and Chairman, RAC, ICAR-CRIJAF, graced the occasion as Chief Guest. Several eminent dignitaries from ICAR and agricultural universities participated with 1,600 farmers and farm women. The programme aimed to create awareness among farmers and farm women about the Viksit Bharat- Guarantee for Rozgar and





Ajeevika Mission (Gramin) Bill, 2025, while motivating them to adopt improved agricultural practices and alternative livelihood options to enhance livelihood security in the climate-vulnerable Sundarban region.



## CELEBRATIONS

### ICAR-CRIJAF celebrated 79th Independence Day

ICAR-CRIJAF celebrated the 79th Independence Day with patriotic fervor on 15th August, 2025. The ceremony commenced with the hoisting of the National Flag by the Director, Dr. Gouranga Kar, followed by a collective rendition of the National Anthem. In his address, Dr. Kar emphasized that August 15th represents more than political freedom, it symbolizes the nation's journey towards self-reliance. He articulated that "Atmanirbhar Bharat" in agriculture can only be achieved through rigorous innovation and the translation of lab findings into "real-life" field solutions. He urged the scientific community to view their research through the lens of stakeholder needs, much like the conceptual framework of "seeing is believing". The event concluded with a call to the staff to work with a multidisciplinary perspective to address the evolving challenges of the agricultural sector, ensuring that the fruits of independence reach every farmer.



### ICAR-CRIJAF celebrated Van Mahotsav

ICAR CRIJAF celebrated *Van Mahotsav* on July 4, 2025, the annual festival of trees, with an extensive plantation drive across the campus. The event aimed to promote environmental stewardship and ecological balance among all staff and participants. Director, Dr. Gouranga Kar spearheaded the initiative, personally planting saplings and delivering an inspiring address on the indispensable role of trees in our ecosystem. The program concluded with a collective pledge by the scientific and administrative community to continue expanding the green cover of the institute.



## SEMINAR/WORKSHOP

### Events on Agro & Rural Technology

Prof. Sudip Mitra, Head, School of Agro & Rural Technology, Indian Institute of Technology, Guwahati, Assam delivered a lecture in this event on "Agro-waste Derived Biochar: An Efficient Agent for Soil and Water Quality Management". The event was organized on 28th July, 2025 at ICAR-CRIJAF, Kolkata.





## Programme on quality seed production

ICAR-CRIJAF organized a specialized training programme titled 'Quality Seed Production Technology of Fibre Flax for Yield Maximization' on October 27, 2025. The session focused on the critical need to standardize production protocols for fibre flax to ensure high-quality seed availability for farmers. Scientists and technical experts highlighted that achieving yield maximization requires a precise integration of genetic purity and advanced agronomic practices. Key technical discussions covered the selection of elite varieties, optimal sowing techniques, monitoring of crop growth, integrated pest and disease management and the management of soil health specifically for flax cultivation. The session concluded with a roadmap for disseminating these technologies to the grassroots level through demonstration plots.



## हिन्दी

### भाकृअनुप - क्रिजैफ ने हिन्दी सप्ताह मनाया

भाकृअनुप-केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता में दिनांक 12-18 सितम्बर, 2025 तक हिन्दी सप्ताह का आयोजन किया गया। हिन्दी सप्ताह 2025-के अन्तर्गत विभिन्न हिन्दी प्रतियोगिताओं का आयोजन किया गया। दिनांक 12 सितम्बर, 2025 को तात्कालिक भाषण प्रतियोगिता, दिनांक 15 सितम्बर, 2025 को हिन्दी टिप्पण एवं मसौदा लेखन प्रतियोगिता, दिनांक 16 सितम्बर, 2025 को हिन्दी निबंध लेखन प्रतियोगिता तथा दिनांक 17 सितम्बर, 2025 को कम्प्यूटर पर हिन्दी टंकण प्रतियोगिता का आयोजन किया गया। इन सभी प्रतियोगिताओं में संस्थान के सभी वर्गों के अधिकारियों व कर्मचारियों ने उत्साहपूर्वक भाग लिया।



## भाकृअनुप - क्रिजैफ में "राजभाषा नीति एवं नियम" पर एक दिवसीय हिन्दी कार्यशाला का आयोजन

भाकृअनुप-केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता के व्याख्यान कक्ष में 17 दिसंबर 2025 को एक दिवसीय हिन्दी कार्यशाला का आयोजन किया गया। कार्यशाला का उद्घाटन डॉ. कुमार निशांत चौरसिया, वैज्ञानिक एवं प्रभारी, हिन्दी प्रकोष्ठ द्वारा किया गया। उन्होंने मुख्य अतिथि वक्ता श्री लखन कुमार सिंह, सहायक निदेशक, हिन्दी शिक्षण योजना, राजभाषा विभाग, गृह मंत्रालय, कोलकाता का तथा संस्थान के सभी प्रभागाध्यक्षों/अनुभाग प्रभारियों एवं प्रतिभागियों का हार्दिक स्वागत किया। कार्यशाला की अध्यक्षता डॉ. जीवन मित्रा, प्रभागाध्यक्ष, फसल सुधार प्रभाग एवं संस्थान के प्रभारी निदेशक द्वारा की गई। कार्यशाला के दौरान श्री लखन कुमार सिंह ने "राजभाषा नीति एवं नियम" विषय पर प्रस्तुति के माध्यम से कार्यक्रम का अत्यंत प्रभावशाली एवं रोचक ढंग से शुभारंभ किया। उन्होंने राजभाषा से संबंधित नीतियों, नियमों एवं संवैधानिक प्रावधानों पर विस्तृत चर्चा करते हुए अधिकारियों एवं कर्मचारियों का राजभाषा के प्रति उनकी नैतिक जिम्मेदारी की ओर ध्यान आकृष्ट किया। एक ओर उन्होंने कार्यालयीन कार्यों में राजभाषा के प्रयोग से जुड़े विभिन्न पहलुओं पर प्रकाश डाला, वहीं दूसरी ओर प्रतिभागियों को इस संबंध में उनकी व्यक्तिगत जिम्मेदारी से भी अवगत कराया।



## FARMERS LINKAGES

### ICAR-CRIJAF celebrated Farm Women Conclave

ICAR-CRIJAF organized "Women in Agriculture Conference" on October 9, 2025 under Scheduled Caste Sub-Plan (SCSP). The event was attended by approximately 200 women farmers, including self-help group members, from North 24 Parganas, South 24 Parganas, and Nadia districts. The chief guest, Dr. Tapas Biswas, Senior Research Scientist and Advisor, CSIRO (Commonwealth Scientific and Industrial Research Organization), Australia, emphasized women empowerment through value addition in jute. Dr. Shyamal Samant, IPS, DC, HQ, Howrah, West Bengal was also present as the guest of honour at the event. During the program, self-help group members also shared their experiences with the guests.



### Training Programme Basic Skill Development on making of Jute Bags

A ten-day “Basic Skill Development Training on Making of Jute Bags” was organized by KVK, North 24 Parganas (Addl.), ICAR-CRIJAF, Barrackpore during 18th – 27th August, 2025 under the Tribal Sub-Plan (TSP) Programme for rural women of Jogeshganj and Nabinganj villages of Hingalganj Block, North 24 Parganas. The programme aimed to empower Scheduled Tribe (ST) farm women by imparting practical skills in diversified jute products, thereby enabling them to generate additional off-farm income. A total of 15 Scheduled Tribe (ST) farm women actively participated in this training programme.



### Training programme on Integrated Fish Farming Systems

A three-day training programme on “Integrated Fish Farming Systems” was organized at KVK North 24 Parganas (Addl.), ICAR-CRIJAF, Barrackpore from 26th to 28th August, 2025, with the participation of 20 ST fish farmers from Kachurhula and Sastitala villages of Minakhan block, North 24 Parganas, West Bengal. The programme aimed to enhance the scientific knowledge and practical skills of farmers and rural youth on integrated fish farming systems to improve income and ensure sustainable livelihoods.



### Drone Technology Demonstration

A three-day training on Advanced Crop and Water Management using Drone and Sprinkler, was successfully conducted during 10–12 September at ICAR-CRIJAF under the leadership of Director, Dr. Gouranga Kar. A total of 25 farmers, including farm women, participated and received hands-on training on drone handling and operations, sprinkler irrigation technology, advanced pest and disease management, farm machineries, and the use of IoT in agriculture. The program aimed to empower farmers with modern, technology-driven solutions for efficient crop and water management, enhancing productivity and sustainability in farming practices.



### Field Day-cum- Farmer Industry Scientist Interaction Programme under SCSP

ICAR- CRIJAF, Barrackpore organized a Field Day- cum-Farmer-Industry -Scientist Interaction Programme on September 05, 2025 under Scheduled Caste Sub-Plan (SCSP) to showcase the field performance of the Institute technologies before the farmers and industry partners to accelerate its promotion and adoption. Around 160 participants including farmers, SHG/FPO members, industry partners, scientists and technical personnel participated in this programme. Shri Giriraj Singh,





Hon'ble Minister of Textiles, Govt. of India inaugurated the program and emphasized on new age fibres to promote as an alternate livelihood option to sustain in the complex, diverse and risk-prone agriculture under diverse agro-climatic conditions.



### Training Programme on Basic Skill Development Training on Making of Cost-Friendly Jute Bags

A seven-day Basic Skill Development Training on Making of Cost-friendly Jute bags was organized by ICAR-CRIJAF, Barrackpore for rural women and youth of Beraberia village, North 24 Parganas. The training was conducted at Institute's Skill Development Hall during September 10-16, 2025 under SCSP Programme (2025-26) of AINPJAF. Total 10 nos. of SC women and rural youth participated in this training programme. The training was organized under the guidance and supervision of Dr. Gouranga Kar, Hon'ble Director, ICAR-CRIJAF and Coordinator, AINPJAF with the objective to empower the farm women through building their skill in value addition of jute and pave the way for off-farm income generation.



### Input distribution programme under SCSP

An input distribution programme under SCSP was held at Dalpur, Bankura, under the esteemed chairmanship of Dr. Himanshu Pathak, Director General, ICRISAT and former Director General of ICAR & Secretary, DARE, New Delhi. The initiative was jointly organized in collaboration with ICAR-CRIJAF, Barrackpore, and ICAR-NRRI, Cuttack.



### Digital Initiative : Awareness on Cyber Crime

ICAR-CRIJAF successfully conducted its Digital Initiative: Awareness on Cyber Crime today, 31.10.2025. Protecting our digital presence is crucial. This initiative underscored the importance of cyber security protocols and raised vital awareness on mitigating online threats and

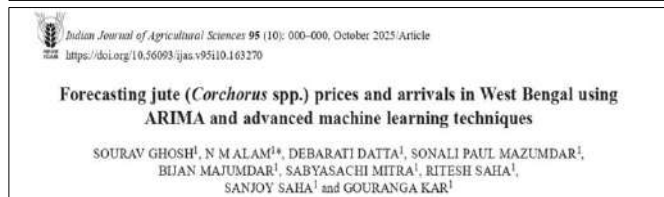
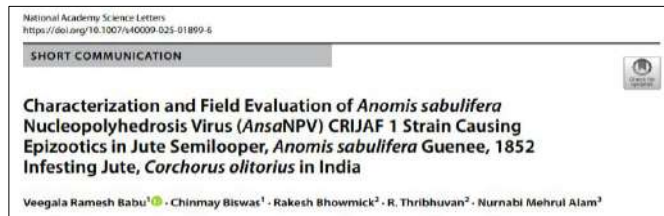
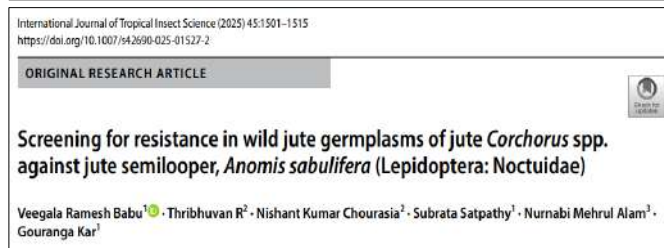
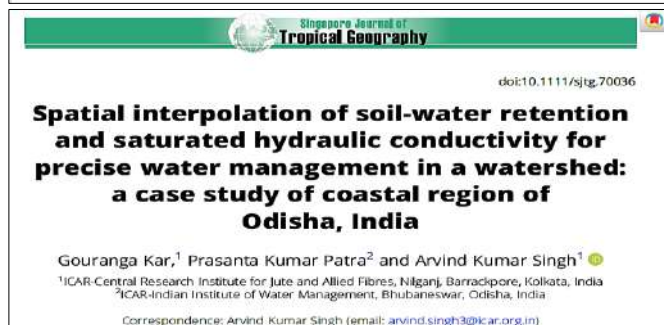
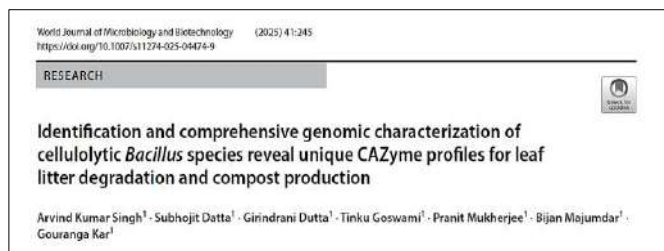


## CAPACITY BUILDING PROGRAMMES

| Capacity building programme                                                                                | Date/Place                                                 | No. of Participants |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------|
| Basic Skill Development Training on "Making of Jute Flower Bouquet"                                        | 16-25 July, 2025 at ICAR-CRIJAF, Barrackpore               | 15                  |
| Basic Skill Development Training Programme on "Making of Jute Handicrafts"                                 | 20-29 August, 2025 at ICAR-CRIJAF, Barrackpore             | 15                  |
| Advanced Skill Development Training on "Making of Jute Handicrafts"                                        | 29 October- 11 November, 2025 at ICAR- CRIJAF, Barrackpore | 15                  |
| Training-cum-Field Demonstration on "Improved Retting Technology for Quality Jute Fibre Production"        | 05 August. 2025 at Barasat-I, North 24 Parganas            | 50                  |
| Training-cum-Field Demonstration on "Improved Retting Technology for Quality Jute Fibre Production"        | 06 August. 2025 at Ranaghat, Nadia                         | 50                  |
| Training-cum-Field Demonstration on "Improved Retting Technology for Quality Jute Fibre Production"        | 07 August, 2025 at Hingalganj, North 24 Parganas           | 50                  |
| Awareness-cum-Input Distribution Programme on "poultry-fish-horticulture-based integrated farming systems" | 12 August, 2025 at Sandeshkhali, North 24 Parganas         | 50                  |
| Scientific Nursery raising Techniques in Winter vegetables                                                 | 24-26 November, at ICAR-CRIJAF, Barrackpore                | 15                  |
| Basic Skill Development Training Programme on "Making of Jute Handicrafts"                                 | 03-12 December, Manbazar, Purulia                          | 25                  |



## RESEARCH PUBLICATIONS



## AWARDS & RECOGNITIONS

### AWARD

Dr. Dipnarayan Saha, Principal Scientist, Division of Crop Improvement has received the NATIONAL FELLOW AWARD-2025 of the ICAR with a research project on "Exploring the roles of SNPs and non-coding RNAs in heat stress tolerance in fiber flax: a pragmatic functional genomic approach for developing climate-resilient flax" for a duration of five years.

### TECHNOLOGY

- PCR-based detection technique for seed-borne infection of *Macrophomina phaseolina*:** Chinmay Biswas, S Satpathy, S. K. Sarkar, Amit Bera
- Novel high throughput stem rot disease screening technique for jute:** Kunal Mandal, A. Anil Kumar



## REGISTRATION /COMMERCIALIZATION

### Commercialization

ICAR-CRIJAF developed technology/product and jute variety were commercialized during this period reported upon. The details are as follows:

| Name of the technology/variety | Name of the Licensee(s)                                                                  | Date of Licensing |
|--------------------------------|------------------------------------------------------------------------------------------|-------------------|
| CRIJAF Jute variety (JROBA-3)  | M/s. Sri Krishna Seeds, 239/1, Industrial Estate, Kallur, Kurnool, Andhra Pradesh-518003 | 10.09.2025        |





## Royalty earned

A total amount of Rs 84,15,805/- has been received as licensing fees and royalty payment of various commercialized technologies (CRIJAF seeds, CRIJAF SONA, CRIJAF Multi Row Seed Drill, CRIJAF Nail Weeder, CRIJAF Single Wheel Jute Weeder, CRIJAF flax fibre extractor, Ramie and sisal fibre extractor and CRIJAF Jute Seeder) from authorized manufacturer and sellers during this period reported upon.

## Foreigner visit

A foreigner from Germany visited on 8<sup>th</sup> July, 2025 at ICAR-CRIJAF Museum



## DISTINGUISHED VISITORS

|                                                                                                                           |               |
|---------------------------------------------------------------------------------------------------------------------------|---------------|
| Ms. Kanika Sood, Director, Vijaya Wellness Bioscience & Founder, India Hemp & Cannabis Network                            | 03.07.2025    |
| Dr. Klaus Kunt, PI Industries, Germany                                                                                    | 08.07.2025    |
| Smt. Tulika Datta Banerjee, Dy. Magistrate & Dy. Collector, Barrackpore                                                   | 29.08.2025    |
| Sh. Giriraj Singh, Hon'ble Union Minister for Textiles, Govt. of India, New Delhi                                         | 05.09.2025    |
| Dr. Swapan K. Datta, Former Vice-Chancellor, Visva-Bharati & former DDG (Crop Science), ICAR, New Delhi                   | 05.09.2025    |
| Sh. Jogendra Singh, IAS, Secretary to Ministry of Textiles, Govt. of India, New Delhi                                     | 05.09.2025    |
| Ms. Padmini Singla, IAS, Jt. Secretary (Fibre), Ministry of Textiles, Govt. of India, New Delhi                           | 05.09.2025    |
| Sh. Sashi Bhusan Singh, Secretary, National Jute Board, Kolkata                                                           | 05.09.2025    |
| Dr. A.K. Sharma, Director, IJIRA, Kolkata                                                                                 | 05.09.2025    |
| Dr. Tapas Kumar Biswas, CSIRO, Australia                                                                                  | 09.10.2025    |
| Dr. Shyamal Samanta, IPS, DCP, Howrah City Police                                                                         | 09.10.2025    |
| Dr. Sukanta Majumdar, Hon'ble Union Minister of State for Development of North Eastern Region & Education, Govt. of India | 11.10.2025    |
| Dr. D.K. Yadava, DDG (Crop Science), ICAR, New Delhi                                                                      | 18.09.2025    |
| Dr. Pradip C. Deka, Former Vice-Chancellor, Sir Padampat Singhania University, Udaipur, Rajasthan & Chairman, RAC         | 22-23.12.2025 |
| Dr. Prashant K. Dash, ADG (CC), Crop Science Division, ICAR & Member, RAC                                                 | 22-23.12.2025 |
| Dr. R.K. Singh, Former ADG (CC), Crop Science Division, ICAR & Dean, College of Agriculture, RLBCAU, Jhansi & Member, RAC | 22-23.12.2025 |

## PERSONNEL

### Promotion

| Sl. | Name                | Designation               | Promoted to                   | Date of promotion |
|-----|---------------------|---------------------------|-------------------------------|-------------------|
| 01. | Shri Vikash Keshari | Technical Assistant (T-4) | Technical Officer (T-5)       | 26.03.2025        |
| 02. | Shri Laxman Pradhan | Technical Assistant (T-3) | Sr. Technical Assistant (T-4) | 17.01.2023        |

### Transfer

| Sl. | Name             | Designation | Transferred to       | Date of transfer                      |
|-----|------------------|-------------|----------------------|---------------------------------------|
| 01. | Dr. Lavanya A.K. | Scientist   | ICAR-NRCG, Pune      | 29.10.2025 (A/N)                      |
| 02. | Shri Ravi Mishra | AO          | ICAR-NINFET, Kolkata | 31.12.2025 (A/N)<br>(Promoted to SAO) |

### Superannuation

| Sl. | Name                 | Designation   | Date of superannuation |
|-----|----------------------|---------------|------------------------|
| 01. | Dr. Debabrata Sarkar | Pr. Scientist | 31.10.2025             |

### Superannuation

| Sl. | Name            | Designation                        | Date of resignation                                 |
|-----|-----------------|------------------------------------|-----------------------------------------------------|
| 01. | Dr. Aravind. T. | SMS, KVK North 24 Parganas (Addl.) | 04.07.2025 (A/N)<br>(On selection of ARS scientist) |



## EDITORIAL

### New-Age Natural Fibres: prospective eco-friendly alternative to synthetics

New-age natural fibres are composed primarily of ligno-cellulosic bast and leaf fibres of ramie, flax, milkweed, sisal and sunnhemp. Those have been emerged as a 'New-age' portfolio of high-performance materials, offering eco-friendly alternative to traditional textiles and synthetic materials. These are gaining popularity in industries like fashion, home textiles, India's 'farm-to-fashion' initiatives, technical textiles including composites. They offer benefits like light weight and biodegradability. Ramie, flax and sisal are now being positioned as strategic crops, aligned with the broader goals of sustainability, circular economy, and climate-smart agriculture under National Fibre Scheme.



Ramie

Flax

Sisal

Ramie is durable and versatile bast fiber. It stands as one of the strongest and oldest natural fibres in existence, prized for its exceptional length-to-breadth ratio and high crystalline cellulose structure. Its unique mechanical properties such as tensile strength and its ability to gain strength when wet, has made it a superior candidate for high-end textiles as compared to cotton or silk. CRIJAF's Ramie Research Station in Sorbhog, Assam is pioneer in the country. A major breakthrough in ramie cultivation came with the release of the 'Hazarika' (R 1411) variety, with its potential to reach yields of 21 to 24 q/ha under irrigation and a reduced gum content of approximately 20%.

Flax (Linen) is strong and used in high-performance materials and summer wear; much dependent on the imports from Europe and China. However, the indigenous development of flax is bridging the critical gaps in India's technical textile industry. The release of 'Tiara' (JRF-2) in 2015 marked a milestone as the nation's first genetically improved flax variety specifically bred for fibre production. Optimized for a 120-day crop cycle, 'Tiara' fits efficiently into intensive

cropping sequences in the Indo-Gangetic plains. Complementing this genetic progress is the

development of indigenous scutching machinery by the ICAR-CRIJAF, which uses fluted rollers to separate fibres efficiently from the woody core. Indian flax viz. JRF 2 has huge potential for replacing European linen in India.

Sisal, derived from agave, is primarily known for its toughness, saltwater resistance, use for marine cordage and industrial ropes, and eco-friendly products. Sisal fits in the semi-arid and marginal lands where few other crops can survive. CRIJAF's Sisal Research Station in Bamra, Odisha pioneered the research on sisal. Sisal can be grown in drought-prone areas of Odisha and Jharkhand, acting as a live fence and soil stabilizer in marginal landscapes. Available information show that sisal-fibre-reinforced polypropylene can reduce the weight of automotive components by 20-30% compared to glass-fibre plastics.

Sunnhemp, also known as hemp, illustrates the versatility of this 'New-age' portfolio by serving as both a nitrogen-fixing leguminous crop and a source of high-quality cellulose. Industrially, sunnhemp boasts the highest alpha-cellulose content among indigenous bast fibres, which is very useful for manufacturing specialty products like currency notes, cigarette paper, and electrical condenser paper. Its strength and biodegradability have also led to its application in natural geo-nets and mulch mats for soil erosion control.

Hope in the coming years, these new-age fibres will supplement the mainstream natural fibres and the country will be self-reliant in natural fibre production, and thereby reducing imports.

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