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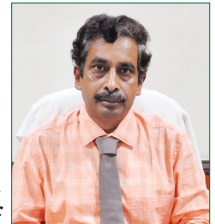
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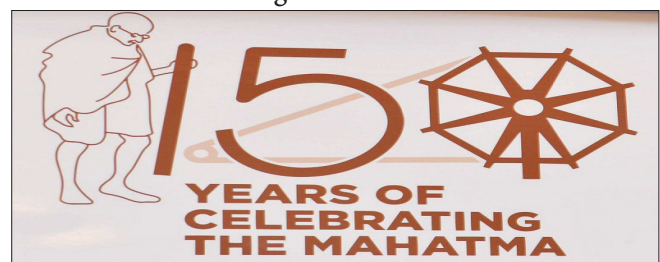
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FROM THE DIRECTOR'S DESK

Flax (*Linum usitatissimum* L.) is best known for the flax fibre popularly known as 'linen'. One of the crucial constraints of flourishing fibre flax cultivation in India is the scarcity of varieties suited for warm and humid Indian conditions. A lot of the onus rests on the scientific research disciplines like plant breeding and biotechnology to develop improved flax varieties for Indian conditions.



In recent years, the release of first Indian fibre flax variety, JRF-2 (Tiara) from ICAR-Central Research Institute for Jute and Allied Fibres (ICAR-CRIJAF) has promised to increase the area of cultivation of flax at National level. ICAR-CRIJAF is continuously working towards promoting fibre flax varieties with superior fibre quality and adapted to Indian weather conditions using both traditional and biotechnological means. ICAR-CRIJAF thus may lead from the front towards not merely strengthening scientific research on flax but also to boost different outreach programs and sensitize stakeholders for the production and utilization of domestic flax fibre with an ultimate aim to uplift farmers' economy and assist in nation-building.



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MEETINGS / EVENTS

Visit of Sri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers' Welfare

Hon'ble Union Minister of Agriculture and Farmers' Welfare, Sri Radha Mohan Singh visited ICAR-CRIJAF, Barrackpore on 16 November, 2018. He appealed to the scientist to actively involve in all development programmes like Soil Health Mission, Pradhan Mantri Fasal Beema Yojana and E-NAM. He reiterated that ICAR schemes like Mera Gaon Mera Gaurav (MGMG), Farmers' First, Oilseeds and Pulses Demonstration launched by Govt. of India will benefit the farmers. The minister emphasized to develop and demonstrate jute based farming system model for the farmers and to focus on higher revenue generation.

(Source : PME Cell)



Hon'ble Union Minister of Agriculture and Farmers' Welfare, Sh. Radha Mohan Singh interacting with scientists and staffs of ICAR-CRIJAF

QRT Meeting

The final QRT meeting was held on 03 July, 2018 at ICAR-CRIJAF. The agenda of this meeting was to finalize the future road map of research in jute and allied fibre crops after brief presentations on advances made in research on major disciplines. The Chairman asked the scientists to focus on the cutting edge research agenda primarily on jute first. The committee thoroughly discussed the content of the final report and crystalized the overall recommendations after considering administrative and financial issues with respect to budget, infrastructure, scientific and technical personnel.

(Source : S. Satpathy)



Final QRT meeting is in progress

RAC Meeting

The Research Advisory Committee (RAC) meeting of ICAR-CRIJAF was held during 26-27 July, 2018 under the Chairmanship of Dr. S. A. Patil, Ex-Director, IARI, New Delhi. The RAC discussed in detail the research activities of the scientists of ICAR-CRIJAF for the period of November 2017 to July 2018. The RAC made nine specific recommendations for further strengthening of the research activities of the Institute.

(Source : S. Datta)



Chairman and other Members of RAC interacting with scientists

Celebration of Farmers' Day-2018

Farmers' Day-2018 was organized on 04 August, 2018 with 150 nos. of progressive farmers from major jute growing districts of West Bengal like Nadia, Hooghly and North 24 Parganas, scientists, small entrepreneurs dealing with jute fabric, press and media personnel participated in this programme. Mr. Arvind Kumar, Secretary, National Jute Board, Kolkata was present as the Chief Guest in this programme. Mr. Dulal Biswas, Assistant Director of Agriculture (Jute), North 24 Parganas and Mr. Bhola Nath Mohanta, Branch Manager, State Bank of India, Nilganj Branch were present as the Special Guests in this programme. The meeting started with an exposure visit followed by tree plantation, deliberation of guests and farmer-scientist interaction, quiz competition and valedictory function.

(Source : S. K. Jha)



Field visit of the farmers during Farmers' Day-2018



Address of the Director during Farmers' Day-2018

National level Training on “Improved Retting Technology of Jute & Allied Fibres” under NFSM (CC) Jute

A national level training on “Improved Retting Technology of Jute & Allied Fibres” under NFSM (CC) Jute was organized during 7-9 August, 2018 with 14 agriculture officials from state department of agriculture of West Bengal, Bihar and Uttar Pradesh. The training covered subject matters like prospects of jute and allied fibre crops, retting process/mechanism with microbial formulation, sisal fibre extraction technique, extraction/retting technique for quality sunnhemp and flax fibre production and improved degumming technology for quality ramie fibre production. Ribbon extraction technique by manual/power operated jute fibre extractor, sisal and ramie fibre extractor and the retting of ribbon with microbial formulation were also demonstrated before the trainees.

(Source : C.S.Kar)



Demonstration of ribbon extraction at workshop



Dr. D.K. Kundu distributing the certificate to the trainees

IMC Meeting

The 34th Institute Management Committee (IMC) meeting of ICAR-CRIJAF for 2018-19 was held on 27 Aug., 2018. The meeting was chaired by Dr. J. Mitra, Director, ICAR-CRIJAF. The members present in the meeting were Dr. Sumana Roy, Director of Research (I/c), BCKV, Mohanpur; Dr. R. Raja, Principal Scientist, ICAR-CICR; Dr. S.K. Mishra, Principal Scientist, ICAR-NRRI; Dr. A. Talukdar, Principal Scientist, ICAR-IARI; Dr. A. Selvi, Principal Scientist, ICAR-SBI; Dr. A. Mohanty, DuPont India Pvt. Ltd., Mr. Ashok Kr. Das, farmers' representative. The agenda items were discussed in detail under the co-ordination of Mr. P.K. Jain, CAO and Member Secretary.

(Source: P. K. Jain)



34th IMC meeting under the Chairmanship of Director, ICAR-CRIJAF

संस्थान में हिन्दी पखवाड़ा का आयोजन

संस्थान में हिन्दी पखवाड़ा का आयोजन राजभाषा हिन्दी के प्रति जागरूकता पैदा करने तथा उसके प्रभावों में गति लाने हेतु संस्थान में दिनांक 14 से 28 सितम्बर, 2018 के दौरान हिन्दी पखवाड़ा का आयोजन किया गया जिसका उद्घाटन संस्थान के निदेशक महोदय, डा. जीवन मित्र द्वारा किया गया

MEETINGS / EVENTS

तथा मुख्य वक्ता/अतिथि के रूप में डा. चन्द्र गोपाल शर्मा, पूर्व उप महा प्रबंधक (राजभाषा), पूर्व रेलवे, कोलकाता को आमंत्रित किया गया था। इस अवसर पर विभिन्न प्रकार की हिन्दी प्रतियोगितायें जैसे— तत्कालिक भाषण, हिंदी टंकण, हिन्दी निबंध लेखन, हिन्दी अनुवाद, वाद-विवाद, हिन्दी टिप्पण तथा मसौदा/प्रारूप लेखन आदि आयोजित की गयीं। हिन्दी पखवाड़ा समापन समारोह का आयोजन दिनांक 28 सितम्बर, 2018 को किया गया। इस अवसर पर संस्थान की ओर से श्रीमती सुधा मिश्रा पूर्व राजभाषा अधिकारी, दक्षिण पूर्व रेलवे, गार्डनरीचए कोलकाता मुख्य वक्ता के रूप में सादर आमंत्रित थीं। समापन समारोह के दौरान विभिन्न प्रतियोगिताओं में सफल सभी विजेता प्रतियोगियों को प्रथम, द्वितीय एवं तृतीय पुरस्कार संस्थान के निदेशक तथा अन्य गणमान्य व्यक्तियों के कर कमलो द्वारा प्रदान कर सम्मानित किया गया।

(स्रोत: डा. एस.के. पाण्डेय)



हिन्दी पखवाड़ा के उपलक्ष्य पर निदेशक महोदय द्वारा संबोधन



हिन्दी निबंध लेखन प्रतियोगिता

“Swachhta hi Seva” campaign

“Swachhta hi Seva” campaign was celebrated during 15 September to 02 October, 2018. The programme started with ceremony in which the staffs were administered pledge by Director. Various programmes like Seva Divas, Samagra Swachhta Divas, Swachhta at nearby households, villages, schools, tourist spot, making wall paintings and constructions of low cost toilet making were performed during this period. On the eve of 150th birth Anniversary of Mahatma Gandhi branding of logo in the form of banner was displayed near main gate of the institute. A rally was conducted in the office campus. Officials and school children of nearby school including teachers actively participated in the rally. Cleanliness drive was conducted in and around the lawn of guest house through *Shramdaan* by officials. A pictorial exhibition reflecting the life of Mahatma Gandhi was organized.

(Source : R.K. Naik)



Various moments under “Swachhta hi Seva” campaign in ICAR-CRIJAF

Visit of Experts for Exploring Ramie Cultivation in North East Region

Prof. S. R. Joshi, Professor, Biotechnology and Bioinformatics Department, North Eastern Hill University and Mr. B. K. Sohliya, Director Meghalaya Institute of Entrepreneurship, Shilong visited the institute on 27 September, 2018 to discuss about various issues of ramie cultivation in Meghalaya for improvement of livelihood of farmers.

(Source : S. K. Sarkar)



Experts visiting the microbiology laboratory at ICAR-CRIJAF

Visit of French Delegation

Five member French Delegation headed by Aurelin Sostaponti visited ICAR-CRIJAF on 28 September, 2018. Director, CRIJAF welcomed the delegates and Dr. C.S. Kar, Principal Scientist presented a brief account of various activities and achievements of ICAR-CRIJAF. The issues like production and processing of jute and allied fibres and diversified uses of jute and allied fibres were also discussed.

(Source : S. K. Sarkar)



French delegation interacting with scientists at ICAR-CRIJAF field

Mahila Kisan Diwas -2018

ICAR-CRIJAF had organised the Mahila Kisan Diwas on 15 October, 2018. 65 women from different villages of Nadia and North 24 Parganas District participated in the programme. The programme included exhibition, essay and drawing competition, on the themes like role of women in agriculture and women empowerment. In addition to this women of various Self Help Groups from different villages shared their success stories with other farm women. Five best women entrepreneurs from different villages of Nadia and North 24 Parganas were also awarded Best Women Farmer Award during the concluding session. Prizes for the essay and drawing competitions were also distributed to successful participants during the concluding session.

(Source : Shamma, A.)



Mahila Kisan Diwas celebration at ICAR-CRIJAF

Celebration of Vigilance Awareness Week – 2018

ICAR-CRIJAF conducted awareness programmes within and outside the institute during the observance of Vigilance Awareness Week-2018 (29 October to 03 November, 2018). On the inaugural day, Director, ICAR-CRIJAF administered the Integrity Pledge to all the staffs of the institute followed by formation of human chain. Debate competition on the theme topic “Eradicate Corruption – Build a new India” and written quiz competition were organised to create interest and awareness about vigilance, corruption among the employees of the Institute. The winners of all the competitions of the Institute were felicitated with prizes in the concluding session. All the regional stations and KVKs also observed vigilance awareness week. ICAR-CRIJAF, Barrackpore also organized a village awareness programme on vigilance and corruption at Gheedah village of Barrackpore-II block in North 24 Parganas district. Apart from various activities at the institute, vigilance awareness programme was extended to several schools and universities. Quiz Competition cum sensitization programme was organized in Assembly of Angels Secondary School, Barrackpore, ADAMAS University, West Bengal State University, Barasat and Barasat MGM High School. The students were sensitized about significance of Vigilance Awareness, sources of corruption, its control measures and the role of students in building new India.

(Source : S. Satpathy)



Vigilance awareness week celebration at ICAR-CRIJAF and sub-centres

MEETINGS / EVENTS

संसदीय राजभाषा समिति की दूसरी उप समिति के द्वारा संस्थान की राजभाषा संबंधी कार्यों का निरीक्षण

संसदीय राजभाषा समिति की दूसरी उप समिति के द्वारा भाकृ-अनुप-केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता का दिनांक 02.11.2018 को राजभाषा संबंधी कार्यों का निरीक्षण किया गया। उक्त समिति में भाग लेने के लिए भाकृअनुप मुख्यालय के डा. आर. के सिंह, सहायक महा निदेशक (वाणिज्य फसल) एवं श्रीमती सीमा चोपड़ा, निदेशक (राजभाषा) उपस्थित थे तथा इस संस्थान की ओर से भाग लेने के लिए डा. जीवन मित्र, निदेशक, डा. एस. सतपथी, प्रभागाध्यक्ष, फसल सुरक्षा, डा. एस.के. पाण्डेय, प्रधान वैज्ञानिक एवं प्रभारी, राजभाषा कक्ष, श्री पी.के. जैन, मुख्य प्रशासनिक अधिकारी, मो. कासिम, सहायक मुख्य तकनीकी अधिकारी, भाकृअनुप-केन्द्रीय अंतर्स्थलीय मात्स्यिकी अनुसंधान संस्थान, बैरकपुर, श्री गौरांग घोष, वित्त एवं लेखा अधिकारी, श्री मनोज कुमार राय, सहायक तथा श्री सुरजीत बर्मन, सहायक उपस्थित थे।

(स्रोत: डा. एस.के. पाण्डेय)



संसदीय राजभाषा समिति की दूसरी उप समिति के सदस्यों द्वारा रा.भा. संबंधी कार्यों का निरीक्षण

ASCI Training programme on Agriculture Extension Service Provider

An ASCI training programme on Agriculture Extension Service Provider started from 30 November, 2018 at ICAR-CRIJAF, Barrackpore. 20 Rural youths with Higher Secondary education participated in this training programme. The training programme continued till 5 January, 2019. All the subjects essential to perform the job roles of an agriculture extension service provider were covered during this training programme. Resource persons from KVKs, Government Departments and Input Agencies were invited to train the trainees. Exposure visits were also conducted for better understanding of the trainees about the subject matter being taught. Experiential learning methodology was applied to train

the participants by which the trainees could learn by doing.

(Source : S. K. Jha)



Participants with Institute and ATARI personnel



Dr. S.K. Mondal, Pr. Scientist, ICAR-ATARI, Kolkata addressing the trainees

Celebration of World Soil Day and distribution of Soil Health Card

On the occasion of World Soil Day, ICAR-CRIJAF, Barrackpore distributed 618 soil health cards to the farmers. 252 soil health cards were distributed to the farmers of Bansbona village of Haringhata Block, Nadia District. 366 soil health cards were distributed to the farmers of Bhabanipur Village of Haringhata Block of Nadia District. In both the villages resource persons interacted with the farmers. Awareness was created among the farmers regarding maintenance of the soil health. Besides this, farmers were made aware regarding soil pollution.

(Source : A.R. Saha)



Dr. J. Mitra, Director, ICAR-CRIJAF distributing soil health card

Visit of Dr. A.K. Singh, DDG (Crop Science), ICAR, New Delhi

Dr. A. K. Singh, DDG (Crop Science) visited ICAR-CRIJAF on 15 December, 2018. He addressed the scientists of the institute and underlined the issues like wider popularization of institute technologies, large scale production of microbial consortium - CRIJAF Sona, resource generation etc. Various farm machineries developed by this institute, were demonstrated in front of him and he was highly satisfied with the institute development.

(Source : S.K. Sarkar)



Dr. A.K. Singh, DDG (Crop Science), ICAR at ICAR-CRIJAF technology demonstration

एक दिवसीय हिन्दी कार्यशाला का आयोजन

भाकृअनुप-केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान, बैरकपुर, कोलकाता की राजभाषा कार्यान्वयन समिति के तत्वावधान में दिनांक 29 दिसम्बर, 2018 को संस्थान के अधिकारियों/कर्मचारियों के लिए दैनिक कार्यालयीन कार्यों में हिंदी के प्रयोग विषय पर एक दिवसीय हिंदी कार्यशाला का आयोजन किया गया। कार्यशाला का मुख्य उद्देश्य संस्थान के अधिकारियों एवं कर्मचारियों को दैनिक कार्यालयीन कार्यों में राजभाषा हिंदी के सुगमतापूर्वक अधिकाधिक प्रयोग हेतु प्रशिक्षित करना था। कार्यशाला की अध्यक्षता संस्थान के निदेशक, डा. जीवन मित्र जी ने की। कार्यशाला में श्री अदालत प्रसाद, हिन्दी प्राध्यापक, हिंदी शिक्षण योजना, राजभाषा विभाग, गृह मंत्रालय, भारत सरकार निजाम पैलेस, कोलकाता को आमंत्रित किया गया था। उन्होंने उक्त राजभाषा में पत्राचार के विभिन्न रूपों जैसे कार्यालय टिप्पणी, परिपत्र, कार्यालय ज्ञापन, कार्यालय आदेश आदि तथा राजभाषा नीति के प्रमुख विन्दुओं पर विस्तार पूर्वक जानकारी दी तथा अभ्यास भी कराया।

(स्रोत: डा. एस.के. पाण्डेय)



हिन्दी कार्यशाला में प्रतिभागियों का स्वागत करते हुए राजभाषा प्रभारी, डा. एस.के.पाण्डेय

Swachhta Pakhwada Campaign

The campaign entitled "Swachhta Pakhwada" was celebrated during 16 - 31 December, 2018. The programme started with pledge taking ceremony. Various programmes like Cleanliness drive, Kisan diwas, Swachhta awareness at nearby households, villages, schools, and tourist spot were performed during this period.

(Source : R.K. Naik)



Swachhta pledge, cleanliness drive and other activities during Swachhta Pakhwada campaign

Events at Sub-stations and KVKs

Field Day cum Demonstration on Seed Production Technique at CSRSJAF, Budbud

A 'Field day cum demonstration on Seed production technique' was organized at CSRSJAF, Budbud on 20 November, 2018. Nearly 75 farmers from different villages of Burdwan district viz., Kondhaipur, Mankar, Sahebanga, BudBud, Kalaijhuty and Aligram participated in the programme. Mr. Milon Mondal, ADA (Adm.), WBSSA delivered a speech on quality seed production followed by a speech on seed production technologies of paddy crop. The farmers were exposed to seed chain system followed in India, nucleus seed plots of jute, mesta and sunnhemp, other on-farm activities in breeder seed

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production and germination test. They were also trained to seed processing plant making them aware of its utility in post-harvest operation. The farmers appreciated the seed chain system and became aware of the genetic purity and physical purity in seed production programme.

(Source : H.R. Bhandari)



Field day cum demonstration on Seed production technique organized at CSRSJAF, Budbud



Farmers visiting in seed processing unit of CSRSJAF, Budbud

सीसल अनुसंधान केन्द्र, बामरा में 'किसान दिवस' कार्यक्रम का आयोजन

दिनांक 23 दिसंबर, 2018 को बामरा स्थित सीसल अनुसंधान केंद्र में "किसान दिवस" कार्यक्रम का आयोजन किया गया। कार्यक्रम में भिन्न-भिन्न गाँव के लगभग 40 किसानों ने भाग लिया। इस अवसर पर प्रक्षेत्र प्रबन्धक ने सभा में उपस्थित किसानों की समस्याओं को सुना एवं उसके समाधान के उपायों के बारे में विस्तार से चर्चा किया। उन्होंने विशेषतः सीसल की खेती के संबंध में किसानों के साथ वार्ता की एवं अन्य महत्वपूर्ण कृषि-जानकारी भी किसानों के साथ साझा किया।

इस आयोजन को सफल बनाने में केंद्र के टी.एस.सी.एल. कर्मियों का योगदान एवं बड़ी संख्या में उपस्थित किसानों की भूमिका अहम रही। कार्यक्रम के अंत में सभी किसान बंधुओं को "किसान दिवस" कार्यक्रम में सामिल होने के लिए सीसल अनुसंधान केंद्र की तरफ से सभी का आभार प्रकट किया गया।

(स्रोत: ए. के. झा)

सीसल अनुसंधान केन्द्र, बामरा में 'हिन्दी सप्ताह' का आयोजन

सीसल अनुसंधान केंद्र, बामरा में 'हिन्दी सप्ताह' का आयोजन किया गया है। हिन्दी सप्ताह के आयोजन के दौरान केंद्र के कर्मचारियों में हिन्दी भाषा के प्रति जागरुकता बढ़ाने के लिए विभिन्न प्रकार के प्रतियोगिताओं का आयोजन किया गया, जिसमें इस केंद्र के कर्मचारियों ने बढ़-चढ़ कर हिस्सा लिया। इस आयोजन के समापन समारोह के अवसर पर भिन्न-भिन्न प्रतियोगिताओं के विजेताओं के नाम घोषित किए गए तथा प्रभारी द्वारा विजेता प्रतिभागियों को प्रमाण-पत्र एवं नकद पुरस्कार भेंट कर के सम्मानित भी किया गया।

(स्रोत: ए. के. झा)



'हिन्दी सप्ताह' समारोह के अवसर पर प्रमाण पत्र वितरण

Participation in "Howly Rash Mohotsab" by Ramie Research Station, ICAR-CRIJAF

Ramie Research Station of ICAR-CRIJAF attended and participated in "Howly Rash Mohotsab" organized by Howly Rash Mohotsab Udjapan Samity during 22 November, 2018 to 06 December, 2018 and demonstrated the technologies developed by RRS, Sorbhog with separate stall in the exhibition.

(Source : K. Das)



Ramie Research Station stall in "Howly Rash Mohotsab"

Mahila Kisan Diwas celebrated at ICAR-CRIJAF-KVK, Purba Bardhaman

As per the directives of ICAR, KVK, Purba Bardhaman duly observed 'Mahila Kisan Diwas' on 15 October, 2018 in its campus at Budbud with the objective of Doubling of Farmers Income. About 60 farm women from 7 villages in the blocks of Galsi-I & II, Ausgram-I participated in the programme. The Selected progressive farm women were conferred awards for their achievements.



Farm worker participating in Mohila Kisan Diwas at KVK, Purba Bardhaman

Celebration of World Food Day at ICAR-CRIJAF-KVK, Purba Bardhaman

ICAR-CRIJAF-KVK, Purba Bardhaman observed World Food Day, on 16 October, 2018 with the theme of "Our Actions are Our Future" at KVK. Total 62 practicing farmers and farm women from 6 villages, namely, Atpara, Gopalpur, Kasba and Simnori participated in the event. Deputy Director of Agriculture, Purba Bardhaman and other distinguished line department officials were present in the event.



Interaction with the farmers during World Food Day

Diploma Course in Agriculture Extension Service for Input Dealers (DAESI) at ICAR-CRIJAF-KVK, Purba Bardhaman

Self-financed course in Agriculture Extension Service of 40 input dealers was conducted during August, 2018. The

course was sanctioned by SAMETI with the objective of shaping the input dealers as para-extension professionals by providing requisite knowledge to the agri-input dealers, who are the prime source of farm information to the farming community.



Field visit of the Agri-input Dealers during Diploma Course in Agriculture Extension Service

Live Telecasting of Hon'ble PM's Interaction by ICAR-CRIJAF-KVK, Purba Bardhaman and ICAR-CRIJAF-KVK II, North 24 Parganas (Additional)

Programme was organised by KVK-II, North 24 Parganas at ICAR-CRIJAF, Barrackpore on 12 July, 2018 for live telecasting of the Hon'ble PM's direct interaction with the members of different SHGs and women groups working in various states of India. About 51 women from 15 SHGs working in Barrackpore-I, Barrackpore-II and Barasat-I blocks of North 24 Parganas district participated in this programme to experience this event. After the end of the programme, the Director of the Institute and In-charge of the KVK congratulated the women farmers for being audience of this interesting live programme and motivated them to be part of women-friendly and employment generating programmes of the Govt. of India in a large scale for their socio-economic development. Similar Programme was organised at ICAR-CRIJAF-KVK, Purba Bardhaman, with 48 SHG women members from various villages in Galsi I block on 12 July, 2018.



Live telecasting of Hon'ble PM's interaction with SHG and women group members

MEETINGS / EVENTS

Celebration of World Soil Day at ICAR-CRIJAF-KVK Purba Bardhaman and ICAR-CRIJAF-KVK II, North 24 Parganas (Additional)

World Soil Day was observed by KVK-II, North 24 Parganas on 5 December, 2018 at ICAR-CRIJAF, Barrackpore. A farmer-scientist interaction meeting regarding different soil health issues and a farmers' awareness programme was also organized on this occasion. About 40 farmers of North 24 Parganas district participated in this programme. They were made aware about soil health management practices, importance of soil testing, scientific method of soil sampling, utility of Soil Health Card Scheme. Farmers were also given hands-on training for taking soil samples from the field. A total of 146 soil health cards were distributed amongst the farmers.

Similarly, this event was observed in KVK, Purbo Bardhaman on 5 December, 2018 to make farmers aware about importance of soil health management for sustainable production. About 100 participants from various villages participated in the programme. Soil Health Cards were distributed to the farmers who submitted their soil samples to KVK. Experts from KVK and line department officials deliberated on importance of soil testing and maintaining of soil health for sustainable crop production.



Farmer-Scientist Interaction during World Soil Day - 2018



World Soil Day celebration at ICAR-CRIJAF-KVK, Purba Bardhaman

Independence day Celebration

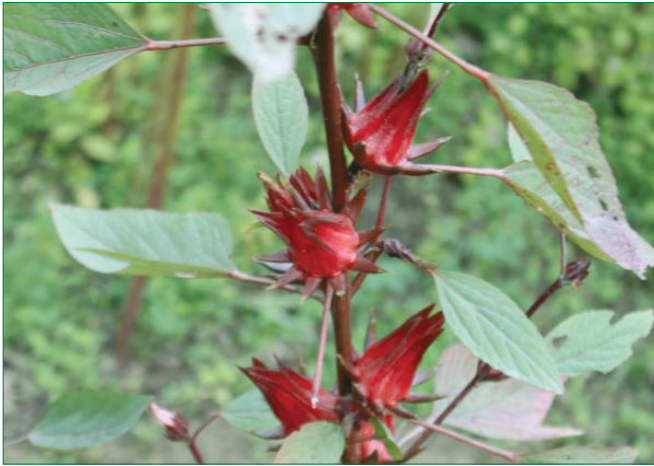
Independence day, 2018 was celebrated on 15 August, 2018 at ICAR-CRIJAF in presence of CRIJAF staff and their family members. Dr. Jiban Mitra, Director hoisted the National Flag followed by recitation of National Anthem. The ex-service security personnel of the institute paid Guard of Honour to the Tricolour. Director, Head of the Divisions, In-charges of the sections, Administrative officer, FAO and other senior officers conveyed the message of Independence Day in this occasion.



Dr. Jiban Mitra, Director, ICAR-CRIJAF addressing on Independence Day

HSLC 2-1: Promising Roselle (*Hibiscus sabdariffa* L.) Genotype with Long Calyx and High Calyx Yield

Roselle is predominantly used as fibre crop in India. Apart from fibre, it is valued for calyces production. Its calyces are good source of antioxidant, vitamins and minerals, which imparts health promoting, medicinal and therapeutic values to the crop. A long calyx line HSLC 2-1 (Long calyx × Deep red) with high calyx yield was developed in roselle. The line has very long calyx length (50.26 mm) and calyx yield (71.81 g). The identified line can be used as variety after multi-location testing.



Plant of HSLC 2-1

H.K. Sharma, S.B. Choudhary, A. Anil Kumar, Maruthi R.T.,
S.K. Pandey, P.G. Karmakar, C.S. Kar and J. Mitra
ICAR-CRIJAF, Barrackpore

Genetic Purity Testing of Kenaf Varieties MT 150 and HS 4288 using RAPD

Genetic purity of kenaf varieties (HS 4288 & MT 150) were tested under laboratory conditions. Genomic DNA

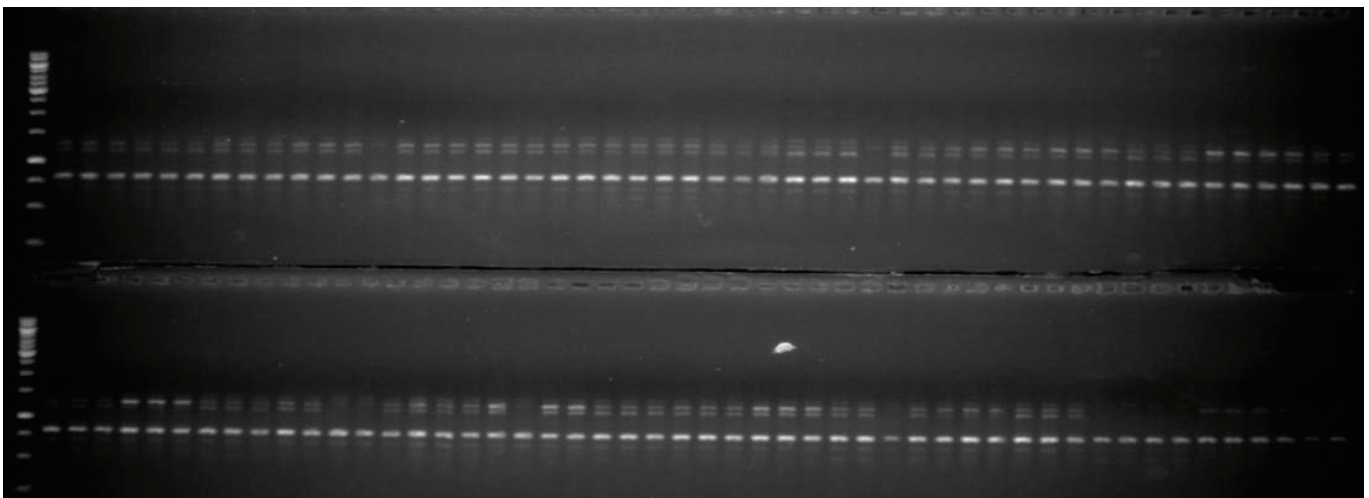
isolation done from individual seedlings after 5-6 days of germination and DNA was isolated for purity and quality using a spectrophotometer. Genomic DNA of individual seedling (100) from each of MT 150 & HS4288 was screened by PCR amplification of a polymorphic RAPD primer (OPA 11). The amplified products were separated on 1.2 % agarose gel. Many off-types were observed at molecular level in var. MT 150, the same was observed in the field (12 off-types). Whereas in variety HS 4288, the polymorphic RAPD marker did not show any off-types at molecular level, however in field, 5 off-types were observed.

Kanti Meena
ICAR-CRIJAF, Barrackpore

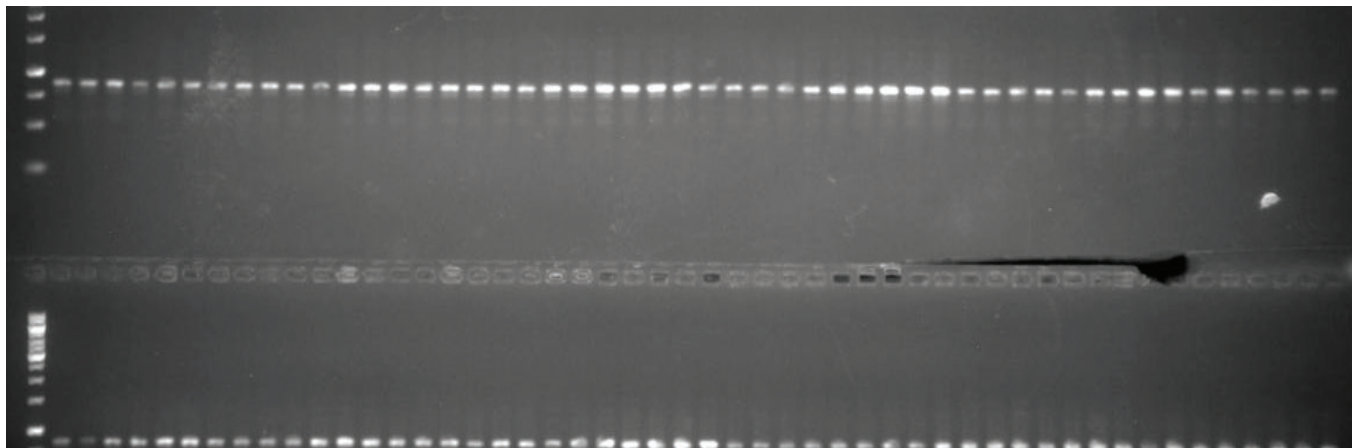
Infestation and Management of *Cuscuta*- a Parasitic Weed in Jute and Mesta

Cuscuta spp. (dodder) also known as *Akashbel* or *Amarbal*, *swarlata* etc. is a parasitic angiosperm belonging to the family Cuscutaceae. It infests almost all crops except the plants of Poaceae family but jute crop was not reported to be the host of *Cuscuta*. Recently this weed has been observed to infest jute and mesta also. *Cuscuta* seeds usually germinate on or near the soil surface. Its seedlings are rootless and have leafless stem. After emergence, the seedlings twine around the leaf or stem of host plant. Haustoria from the *Cuscuta* penetrate the host and establish a parasitic union. It reproduces mainly by seeds and to a lesser extent by shoot fragments. Its infestation causes complete failure of the crops. Even the fibre loss is up to 50% because the bark is damaged by hand pulling of the vine of *Cuscuta*.

Its seeds have a hard seed coat, remain viable and continue to germinate and emerge throughout the year, hence difficult to control. Because of close association between



Screening of 100 samples of var. MT-150 with polymorphic marker OPA 11



Screening of 100 samples of var. HS4288 with polymorphic marker OPA 11

host and parasite, a highly selective herbicide can control it. Pendimethalin as pre-emergence herbicide has been reported to control *Cuscuta* in linseed, niger, lucerne etc., but this herbicide is not selective for jute and metsa. Hence, mechanical methods by hand pulling in early establishment phase is the best way to control this weed in jute. Application of ethoxysulfuron 15 WG @ 0.075 g/l of water i.e 75 ppm (0.5 g/litre commercial product) at 35-40 DAS and consecutive spray of same dose at 10-12 interval effectively controlled *Cuscuta* in jute. When *Cuscuta* infestation is observed at 50 days of crop growth stage of jute crop higher dose i.e. ethoxysulfuron 15 WG @ 0.15 g /l , 150 ppm conc. (1.0 g/l commercial product) followed by a second spray of same dose at 10-12 days after spray is effective. Same dose and application procedure is effective in mesta/kenaf also.



10 days after second spray of ethoxysulfuron in *Cuscuta* infested jute

Mukesh Kumar, A.K. Ghorai and Amit Bera
ICAR-CRIJAF, Barrackpore

Feasibility of Growing Medicinal Tree Bael in Sisal Plantation for Augmenting Farm Income

The medicinal plant bael (*Agele marmelos* (L) Corr) was grown in interspaces of sisal plantation to study

the economic feasibility for enhancing the farm income and sustainable production. Bael, intercrop in sisal plantation, recorded fibre yield of 12.8 q ha⁻¹ compared to sole sisal plantation (7.84 q ha⁻¹). The enhancement in fibre yield of sisal in the intercropping system was registered, resulting in weed suppression and better nutrient availability. Additional management benefit was obtained during managing intercrop including reduction in pest and disease, particularly zebra disease of sisal. The sisal equivalent yield of 22.48 q ha⁻¹ was recorded in bael based intercropping system, where “NA-7” variety of bael was grown in interspaces of doubled row sisal plantation. Bael being a drought tolerant fruit tree, can be profitably intercropped with sisal plantations in Central Plateau region of India for better utilization of interspace, enhancing farm income, for health care employment opportunities and higher return per unit area.

M. S. Behera, D. K. Kundu, S. Satpathy, A. K. Jha and R. K. Naik
ICAR-CRIJAF, Barrackpore



Medicinal tree bael in sisal plantation

Net Ecosystem CO₂ Exchange in High Biomass Producing Jute Agro-ecosystem using Eddy Covariance Technique

The net ecosystem exchange (NEE) of CO₂ in high biomass producing jute agro-ecosystem was measured

during jute crop season (April to August, 2018) by the open path eddy covariance (EC) technique. CO₂ exchange was originally measured in 10 Hz resolution and automatically computed at half-hourly time steps by the EC system. The NEE of CO₂ was positive at sowing to germination stage, and thereafter it becomes negative up to the maturity stage (harvesting) of jute. The negative values of NEE indicate carbon-intake by jute crop when the rate of photosynthesis is more than the ecosystem respiration, and the positive values indicate its opposite. The highest NEE (-126.86 g C m⁻² or -465.15 g CO₂ m⁻²) was observed at fibre development stage of jute crop. The cumulative NEE from the jute agro-ecosystem over the entire jute growing season from 17 April to 5 August (111 days) was -268.49 g C m⁻² or -984.46 g CO₂ m⁻¹ (-2.68 t C ha⁻¹ or -9.84 t CO₂ ha⁻¹). This is the first report of NEE of CO₂ flux in jute agro-ecosystem measured by eddy covariance technique in India as well as in the world.

Net ecosystem exchange (NEE) of CO₂ at different jute growth stages during jute crop season

Growth stages (2017-18)	Days after sowing (DAS)	Cumulative NEE (g C m ⁻²)	Mean NEE (g C m ⁻² day ⁻¹)
Sowing to Germination	1-6	+9.98	+1.66
Seedling stage	7-36	-17.12	-0.57
Active vegetative stage	37-66	-96.87	-3.23
Fibre development	67-96	-126.86	-4.23
Maturity	97-111	-37.63	-2.51
Total		-268.49	

D. Barman, A. Chakraborty¹, D. K. Kundu, C. S. Murthy¹, P. K. Das², R. Saha, S. Bandyopadhyay², A.K. Singh, S. Mitra, S. Roy and S.P. Mazumdar
ICAR-CRIJAF, Barrackpore

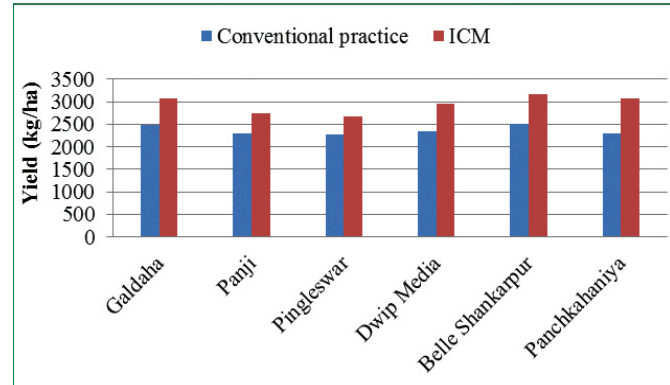
¹ISRO-National Remote Sensing Centre, Hyderabad

²ISRO-Regional Remote Sensing Centre-East (NRSC), Kolkata

Improving Resource Use Efficiency in Jute Cultivation Area of West Bengal to Ensure Better Productivity and Economic Benefits

Study was conducted in jute-growing areas of West Bengal to explore the potential resource use efficiency for economic benefits of selected climate smart practices to marginal landholder SC farmers. Integrated crop management (ICM) practices as part of climate smart jute farming (CSJF) was followed by 170 randomly selected farmers in six villages. An estimation of cost of

adoption, change in fibre yields, net returns and human development index (HDI) before and after ICM interventions was done. The mean HDI value increased by 38.85% and farm increased by 31.5%. The net benefits of adaptation to climate smart jute technologies



Production of jute fibre in conventional & ICM practices

were estimated based on specific adaptation actions. Empirical scientific evidence of the study indicates that the livelihoods of marginal landholders can be improved using new crop varieties, changing planting dates and bringing necessary changes in other variable inputs for line sowing, intercropping, weeding, nutrients, irrigation and retting.

A.K. Singh, S.K. Jha and B. Majumdar
ICAR-CRIJAF, Barrackpore

System Productivity, Resource and Radiation Use Efficiency under Conservation Agriculture in Jute Based Cropping Systems

Conservation agriculture (CA), based on no or minimum tillage, crop residue retention and crop rotations, has been proposed for climate smart agricultural practice so as to sustain agricultural productivity and resource conservation. The effect of tillage systems i.e. conventional tillage and no tillage (with or without crop residue retention, +R/-R) on crop physiology, radiation and water use efficiency and system productivity was evaluated under most predominant jute based cropping systems (jute-rice-wheat, jute-rice-lentil and jute-rice-mustard). Tillage practices and crop residues alter the surface properties of soil affecting both shortwave albedo and long wave emissivity. Results showed that radiation use efficiency in terms of photosynthetically active radiation (PAR) was higher in no tillage (+R) than conventional tillage (+R/-R). Similarly, the relative water contents (RWC; range: 73.9-88.3 %) and chlorophyll contents (SPAD; range: 7.8-16.2) are significantly higher in no tillage (+R) residue treatment

RESEARCH NOTES

than conventional tillage (+R/-R) in all crop rotations. The jute equivalent yield (JEY) and system productivity, both under no tillage (+R) were comparable to that under conventional tillage. The JEY among the cropping systems were in the order: jute-rice-lentil (7.32 t ha^{-1}) > jute-rice-wheat (7.19 t ha^{-1}) > jute-rice mustard (6.75 t ha^{-1}). However, the production efficiency and land use efficiency among the cropping systems varied between 0.028 to $0.033 \text{ kg ha}^{-1}\text{day}^{-1}$ and between 76.99 to 87.12% , respectively, the highest being in jute-rice-wheat cropping system. Thus, conservation agricultural practices improved radiation interception, crop growth and yield by modifying soil physical environment.

R. Saha, M.S. Behera, Laxmi Sharma, Mukesh Kumar, A.R. Saha, B. Majumdar, D. Barman, S.P. Mazumdar, R.K. Naik and D.K. Kundu
ICAR-CRIJAF, Barrackpore

Improved Retting of Jute using Bacterial Endospore

Three different strains of *Bacillus pumilus* in a talc based consortium mode as CRIJAF SONA are extensively used for jute retting with proven success. Besides short shelf-life of six months only, the talc based formulation is susceptible to high temperature, exposure to UV radiation during transport which may affect the viability of the constituent vegetative forms of *B. pumilus*. To overcome the short shelf-life of the consortium, retting of jute using endospores of the three strains of *B. pumilus* with extended shelf-life was attempted for quality fibre production. Endospores of *B. pumilus* recorded very high colony forming unit (10^9 to $10^8/\text{ml}$) compared to their vegetative cells (10^6 to $10^4/\text{ml}$) after 18 months of their preservation. The sensitivity of endospores to temperature, pH, UV irradiation and antibiotic indicated that endospores are highly resistant to the above parameters compared to their vegetative forms. Retting of jute was completed in 10 days by using 18 months old endospores with good quality jute fibre compared to talc based formulation (21 days). Thus, endospores of *B. pumilus* can be used in place of talc based microbial formulation for higher shelf life of the product, faster retting and better fibre quality of jute.

B. Majumdar, A. R. Saha, S. P. Mazumdar and R. Saha
ICAR-CRIJAF, Barrackpore

Probable Modifications in Fertilizer Use Pattern in Jute for Achieving Higher Productivity in Murshidabad

Murshidabad ranks first for jute area (1.48 lakh ha or 25.5% area) in West Bengal. In spite of highest jute area in the district, jute productivity in Murshidabad is quite low

(24.9 q ha^{-1}) which could be enhanced to 32 q/ha level (+28.5%) by few technological interventions related to nutrient management. The fertilizer use pattern in study areas (Domkal, Jalangi and Hariharpara) showed that the mean N, P_2O_5 , K_2O fertilizer use were 87.7 , 51.28 and 3.21 kg ha^{-1} , respectively, in Domkal block, 58.36 , 33.52 and 23.93 kg ha^{-1} , respectively in Hariharpara block and 76.35 , 61.29 and 23.82 kg ha^{-1} , respectively in Jalangi block. District as a whole, the quantum of fertilizer use in jute were 71.36 kg N , $48.98 \text{ kg P}_2\text{O}_5$ and $20.42 \text{ kg K}_2\text{O ha}^{-1}$.

Fertilizer use (kg ha^{-1}) pattern in jute at Murshidabad

Nutrients	(kg ha ⁻¹)			
	Domkal	Hariharpara	Jalangi	District
Nitrogen (N)	87.70	58.36	76.35	71.36
Phosphate (P_2O_5)	51.28	33.52	61.29	48.98
Potash (K_2O)	3.21	23.93	23.82	20.42

The jute farmers of Murshidabad district, in general, prefer and apply DAP (89.5 kg ha^{-1}) at later stage other than urea as one of the important sources of nutrients, without any K fertilizer application. Use of single super phosphate (SSP) as a source of P fertilizer in jute in the district was scanty (9.21 kg ha^{-1} of SSP). The lower yield (24.9 q ha^{-1}) and higher disease incidence in jute (>15%) in Murshidabad district directly related to imbalanced fertilizer use acutely skewed towards nitrogenous fertilizer and low use of K fertilizer (N: P_2O_5 : K_2O = 3.5:2.4:1.0). The situation was worst in Domkal block, where the ratio was 27.3:16.0:1.0. For getting higher productivity, the suggestive interventions with respect to fertilizer use in jute in Murshidabad are –

- Use of balanced application of fertilizer (N: P_2O_5 : K_2O = 2:1:1), especially by slightly lowering the present N fertilizer used rate (-16%) along with more amount of K fertilizer (+47%) addition for jute in Murshidabad.
- Use of DAP may be restricted to a moderate level for jute in the district, to reduce the anomaly of P application at later stage of crop growth.
- Special and immediate attention has to be given for Domkal block by increasing the K fertilizer amount from a meagre 3.21 kg to 30 kg ha^{-1} and at the same time reducing the N fertilizer amount (-31.6%) to $60\text{-}70 \text{ kg ha}^{-1}$ level based on soil test values.

Sitangshu Sarkar, B. Majumdar, R. Saha and S.K. Jha
ICAR-CRIJAF, Barrackpore

Ready Reckoner for Fertilizer Recommendations of Potato for Specific Yield Targets

The existing blanket recommendation for potato in West Bengal does not ensure efficient and economic fertilizer use, as it does not take into account the variations in inherent soil fertility status, resulting in imbalanced use of fertilizer nutrients. A fertilizer prescription equation for targeted yield of potato was formulated and a ready reckoner of

fertilizer doses for potato has been prepared which will be useful for extension workers, scientists and farmers in balanced fertilization of crops for targeted yield. The ready reckoner revealed that fertilizer requirement increased with increasing yield targets of potato and decreased with increasing soil test values. This will not only ensure sustainable crop production but will also steer the farmers towards economic use of costly fertilizer inputs.

Ready Reckoner for fertilizer recommendations for specific yield targets of potato under different soil fertility status

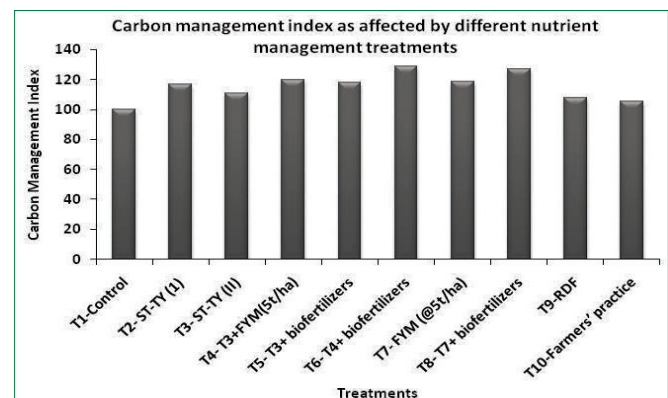
Available soil nutrient			Fertilizer nutrient required (kg bigha ⁻¹)					
N	P	K	2.9 t bigha ⁻¹			3.2 t bigha ⁻¹		
			UREA	SSP	MOP	UREA	SSP	MOP
kg ha ⁻¹			kg bigha ⁻¹					
175	5	125	58	56	24	67	62	28
200	10	150	52	53	21	61	59	25
225	15	175	46	50	18	55	56	22
250	20	200	40	47	15	49	53	19
275	25	225	35	44	12	44	49	16
300	30	250	29	41	9	38	46	13
325	35	275	23	37	6	32	43	10

A.R.Saha, S.P.Mazumdar, B.Majumdar and Mukesh Kumar
ICAR-CRIJAF, Barrackpore

Carbon Management Index as Affected by Soil Test Targeted Yield and IPNS Based Nutrient Management under Intensive Jute-Rice-Lentil Cropping System

The impacts of long term (8 years) nutrient management on Carbon Management Index (CMI) in jute-rice-lentil cropping system were evaluated under the treatments: (i) T1- unfertilized/ unmanured control; (ii) T2-ST-TY (1) - STCR based fertilizer NPK alone for yield target of 4 Mg ha⁻¹ of jute fibre, 5 Mg ha⁻¹ of rice and 2 Mg ha⁻¹ of lentil; (iii) T3-ST-TY (2)-STCR based fertilizer NPK alone for yield target of 3.5 Mg ha⁻¹ of jute fibre, 4 Mg ha⁻¹ of rice and 1.5 Mg ha⁻¹ of lentil; (iv) T4-T3+FYM @ 5 t ha⁻¹; (v) T5- T3+Biofertilizers; T6-T4+Biofertilizers; T7- FYM @ 5 t ha⁻¹; T8-T7+Biofertilizers; T9 - Recommended dose of fertilizers; T10- Farmer's Practice (FP). *Azotobacter chroococcum* and *Phosphobacterium var. megaterium* in jute, *Azospirillum brasilense* in rice, *Rhizobium leguminosarum* and *Phosphobacterium var. megaterium* in lentil were used as biofertilizer. The highest CMI value was obtained in the treatment where inorganic fertilizer and organic manure were applied

based on soil test and targeted yield approach indicating the system have better soil quality than the other management systems. Thus, integrated application of balanced fertilizers based on soil test and targeted yield in intensive cropping system like jute-rice-lentil system could be considered for sustainable crop management.



Carbon management index (CMI) values under various STCR treatments

S.P. Mazumdar, A.R. Saha, B. Majumdar, Mukesh Kumar, R. Saha, S. Sarkar and N. Alam
ICAR-CRIJAF, Barrackpore

RESEARCH NOTES

JuteMet - A Web-based Agrometeorological Database Management System-cum-agro-advisory System for Jute Production

An integrated web-based agro-meteorological database management system-cum-agro-advisory system named as JuteMet was developed to address the climate related jute production constraints. The agro-advisory module embedded in JuteMet is operated in client-server web-based interactive mode for site specific climate related advisories. JuteMet is developed using ASP.NET (C#) and SQL Server 12.0 for database management. The web pages are designed and configured with texts, figures, maps, and images to make it user-friendly and easily understandable to its end users including farmers. This DBMS-cum-agro advisory system has been developed in .NET environment scripting in C++/Java/html language. This increases the virtual proximity between the technocrats and farmers as well as the interaction between them to meet the timely climatic needs in jute production.

D. Barman, A.K. Chakraborty,
R. Saha and A.K. Singh
ICAR-CRIJAF, Barrackpore

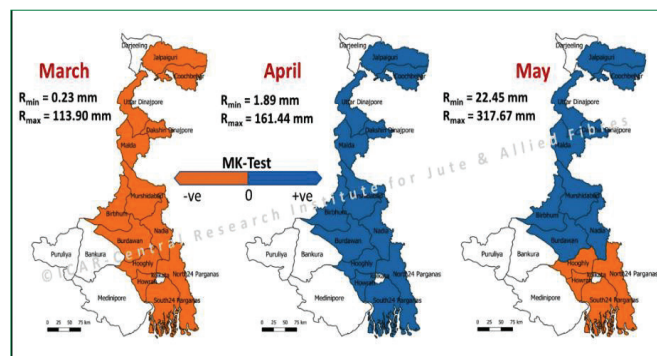
Rainfall Trend in Major Jute Growing Districts of West Bengal

Rainfall trend in major jute growing districts of West Bengal was evaluated through Mann-Kendall test based on 102-year (1901 -2002) monthly, seasonal (pre-kharif and kharif) and annual time scale data base. March-rainfall was in decreasing trend but April rainfall was in increasing trend in all the jute growing districts of West Bengal. May-rainfall was in increasing trend in entire northern part (Cooch Behar, Jalpaiguri, Uttar Dinajpur, Dakshin Dinajpur and Malda) and Murshidabad district of West Bengal, whereas it was in decreasing trend in the entire southern West Bengal (Birbhum, Burdwan, Hoogli, Howra, Nadia, North 24-Parganas, South 24-Parganas). Pre-kharif rainfall trend was similar as May-rainfall trend due to its maximum contribution in pre-kharif rainfall. Kharif-rainfall was in decreasing trend in Birbhum (-1.61 mm yr⁻¹), Dakshin Dinajpur (-1.63 mm yr⁻¹), Malda (-2.04 mm yr⁻¹) and Uttar Dinajpur (-1.74 mm yr⁻¹). In Murshidabad the rate of decrease in rainfall trend was -1.14 mm yr⁻¹ and was significant at 10% level of significance. Whereas, annual rainfall has significantly increased in North 24-Parganas and South 24-Parganas and the Sen's slope values were about 2 mm yr⁻¹.

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Best selected ARIMA model based on minimum AIC and SBC criteria

SPI Series	Model	AIC	SBC	MAPE
Jute area	ARIMA (1,2,2)	1096.41	1102.93	12.92
Jute production	ARIMA (0, 2, 2)	793.99	802.69	10.45



Mann-Kendall test of 102-year (1901-2002) monthly rainfall data in major jute growing districts of West Bengal

Forecasting Area and Production of Jute in India using Stochastic Model

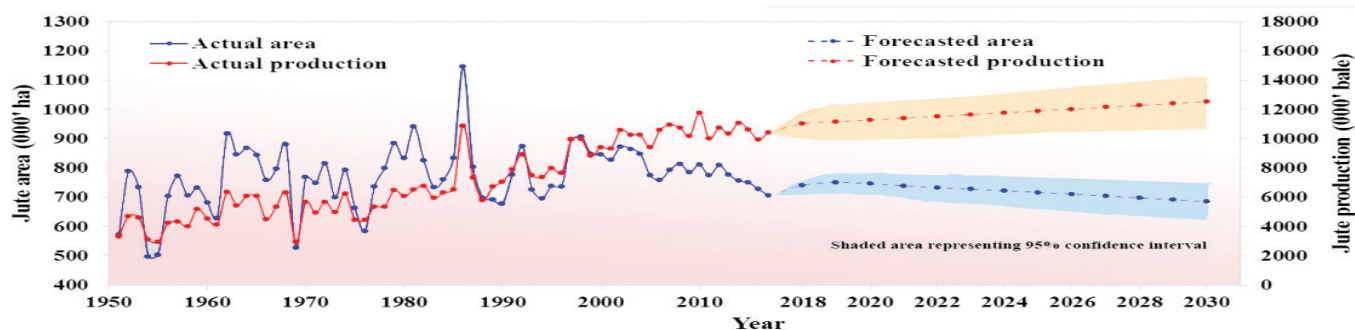
In India, area under jute and fibre yield had moved up and down in alternate years till late 90's. This has been possible mainly due to technological advancement. Using different forecasting models viz. ANN, ARIMA, etc, an attempt is made to understand the dynamics of area and production of jute in India and its future trend till the year 2030. ARIMA is found to be the best model fulfilling both model fitting and validation criteria. ARIMA model is one of the most widely used stochastic time series model. A stationary ARIMA (p, d, q) is defined by the equation:

$$y_t = \phi_1 y_{t-1} + \phi_2 y_{t-2} + \dots + \phi_p y_{t-p} - \theta_1 \varepsilon_{t-1} + \theta_2 \varepsilon_{t-2} + \dots + \theta_q \varepsilon_{t-q} + \varepsilon_t$$

Where, ε_t is error associated with tth year observation (y_t), $t = 1, 2, \dots, n$, ϕ_i is ith auto-regressive coefficient, θ_j is jth moving average coefficient, p is the order of the autoregressive model, d is the degree of differencing, and q is the order of the moving-average model. A model with low Akaike Information Criteria (AIC), Schwarz-Bayesian Information Criteria (SBC) and mean absolute percentage error (MAPE) is considered the best-fit ARIMA model. For jute area and production, ARIMA (1, 2, 2) and ARIMA (0, 2, 2) came out to be the best model, respectively.

ARIMA model predicted that by the year 2030, national area and production will be around 6.84 lac ha and 12.5 lac bale, respectively. Thereby, with 3% reduction in area, 20% increase in jute fibre production needs to be achieved with productivity of 32.94 q ha⁻¹.

N.M. Alam and A.K. Chakraborty
ICAR-CRIJAF, Barrackpore



Actual and forecasted area and production of jute in India N. M. Alam and A. K. Chakraborty
ICAR-CRIJAF, Barrackpore

Volatile Organic Compounds (VOCs) in Jute Conferring Specific Behavioral Response in Hairy Caterpillar

GC-MS analysis of the headspace plant volatiles from wild jute species indicated the presence of compounds with very specific effect on jute hairy caterpillar, *Spilosoma obliqua*. In *Corchorus aestuans* the repellent compounds, benzene-1 ethyl-3 methyl, dodecane and tridecane were eluted at 6.70, 12.13 and 14.17 min., respectively. Similarly, in case of *C. tridens* dodecane and linolenic acid compounds eluted at 12.13 and 25.44 min respectively. In *C. pseudo-olitorius* the volatile compounds eluted at different intervals are mesitylene (6.70 min.), naphthalene, albocarbon and dezod (8.05 min), n-heneicosane, n-heneicosanen (12.21) and squalene (30.26 min.). The chemical compounds linolenic acid and diisooctyl phthalate eluted at 25.26 and 32.23 min. respectively in *C. fascicularis*. The volatile compounds in *C. trilocularis* are dodecane and squalene which were eluted at 12.13 and 30.26 min respectively. In case of cultivated sps. *C. olitorius* (Cv. JRO-204) the volatile compound cis, cis, cis, 7, 10, 13 hexadecatrienal eluted at 21.88 min. *S. obliqua* moth showed behavioral

response antennal response at 0.2mV to a compound from *C. aestuans* at 9.5 min with GC-EAD programme. The volatile components of *C. aestuans* (WCIN 179) are different from the other wild and the cultivated species and the electrophysiological effect through EAG study revealed possible deterrence effect of the volatiles profiled for *C. aestuans* on host selection by hairy caterpillar moth.

B. S. Gotyal, S. Satpathy and V. Ramesh Babu
ICAR-CRIJAF, Barrackpore

Efficacy of Fungicides for the Management of Zebra Disease of Sisal (*Agave sisalana*)

Sisal (*Agave sisalana*), a fibre plant mostly suffers from zebra disease caused by *Phytophthora nicotianae* in major sisal growing area especially in hybrid sisal. A Field experiment conducted on four months old bulbils and one year old suckers of sisal to evaluate the efficacy of fungicides for the management of zebra disease. The various fungicides used were Metalaxyl 8% + Mancozeb 64% @ 2.5g/l, Carbendazim 12% + Mancozeb 63% WP @ 2.5g/l, Copper oxychloride @ 3.0g/l, Tebuconazole 50% + Trifloxystrobin 25% @ 3.0g/l, Azostrobilin

Efficacy of fungicides against zebra disease at nursery stage and one year suckers (*A. sisalana*) in vivo

Treatments (Fungicides application)	PDI at Nursery Stage	PDI at Sucker Stage
Matalaxyl 8% + Mancozeb 64% @2.5g/l	25.3 (30.2)	26.7 (31.0)
Carbendazim 12% + Mancozeb 63% WP @2.5g/l	36.5 (37.2)	41.1 (39.8)
Copper oxychloride @3.0g/l	26.0 (31.0)	29.9 (33.1)
Tebuconazole 50% + Trifloxystrobin 25% @3.0g/l	28.3 (32.1)	29.7 (33.0)
Azostrobilin@1.0g/l	18.1 (25.1)	19.7 (26.3)
Cymoxanil 8%WW + Mancozeb 64% WW@2.5g/l	23.6 (28.9)	26.3 (30.9)
Fenamidon 10% + Mancozeb 50% WG@2.0g/l	20.1 (26.6)	20.7 (27.0)
Fosetyl -Al @2.0g/l	16.8 (24.2)	18.7 (25.5)
Check	46.3 (42.9)	49.6 (44.8)
CD (P = 0.05)	4.5	3.9

RESEARCH NOTES

@1.0g/l, Cymoxanil 8% WW + Mancozeb 64% WW @ 2.5g/l, Fenamidon 10% + Mancozeb 50% WG @ 2.0g/l and Fosetyl –Al @ 2.0g/l. Bulbils and suckers of sisal were first treated with fungicides and two sprays were given at 10 days interval, just after appearance of the disease. All the 8 fungicides tested were effective in reducing the zebra disease of sisal in both nursery and sucker stage. However, Fosetyl –Al @ 2.0 g/lt gave the best control followed by Azostrobulin @1.0g/l and Fenamidon 10% + Mancozeb 50% WG @2.0g/l as compared to check. Among other Cymoxanil 8%WW + Mancozeb 64% WW, Matalaxyl 8% + Mancozeb 64% @2.5g/l, Copper oxychloride @3.0g/l and Tebuconazole 50% + Trifloxystrobin 25% also gave a considerable control of the disease.

Ajit Kumar Jha¹, Rajib De and Sitangshu Sarkar
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¹Sisal Research Station, Barma, ICAR-CRIJAF

Development of Power Operated Multi-Crop Seed drill

An experimental model of power operated 6-row seed drill machine has been developed to higher field capacity than manual machine and which can be attached with Power Tiller. Main parts of the machine are seed hopper, ground wheel, metering mechanism, frame/tool bar, furrow openers, seed covering device. The rectangular shape seed hopper is made of steel sheet of volume 0.0035 m³.



Field trial of seed drill (power operated) at village: Boraghata

Two ground wheels of 320 mm diameter transmit power to the metering shaft through chain and sprocket drive. Seed from hopper is collected by metering device and drops behind the furrow opener near the ground though seed tubes. Chains attached behind the furrow opener acts as ladder. The adjustable rubber wheel is used for transport of machine in road condition. The laboratory calibration of seed drill showed seed rate of 2.5-3.0 kg/ha and 50-60% uniformity of seed distribution along the rows with seed spacing of 30-50 mm. The field testing of machine showed average depth of seed placement 25-30

mm. The field capacity at average operational speed of 1.45-3.0 km/h was measured to be 0.35-0.40 ha/h.

R.K. Naik, A.K. Ghorai, S. Sarkar and S.K. Jha
ICAR-CRIJAF, Barrackpore

Vegetable Cultivation in Gunny Bag based Soil Columns in Transplanted Rice Field: A Profitable Venture for Small and Marginal Farmers

Vegetable cultivation in rice fields were demonstrated in Makaltala and Farmania villages in Habra II block under TSP. The technology involves the use of gunny bags in agricultural fields for making soil columns for increased and assured crop production. One of the tribal farmers, Mr. Khokhon Sardar had adopted the technology and cultivated vegetable in his 3 katta (200 m²) rice field with nine gunny bag based soil columns. Vegetables like Ash gourd, Sponge gourd, Bottle gourd, Snake gourd and Ceylon spinach were grown in the columns. He had incurred an expenditure of Rs 675 for the cost towards column preparation, treated vegetable seeds, fertiliser, pesticides, intercultural operations and labour (own) where as he had earned a net amount of Rs 2026 from his 3 katta rice field in addition to the profit from rice crop. The farmer testifies that vegetables from his rice field helped him to enhance the nutritional security of his family. The result of this innovative technology in small area of rice field created a ripple effect in the village and a few more farmers adopted the technology gradually. This technology proved to be effective for enhancing the economic and nutritional benefits to small and marginal farmers.

Shamna. A and A.K. Ghorai
ICAR-CRIJAF, Barrackpore

Impact of Tribal Sub Plan Interventions on Farm Women

Special emphasis was given on tribal farm women of Makaltala and Farmania villages of Habra II block, North 24 Parganas under Tribal Sub Plan (TSP) since majority of the agricultural activities were undertaken by the women folk of the village. The major interventions were improved jute varieties, line sowing, jute intercrop with mung, nail weeder, retting with CRIJAF SONA, improved rice cultivation practices, vegetable cultivation in rice crop, improved package and practices of mustard, coriander, Fisheries, Poultry and entrepreneurship development through value addition of jute fibre and fabrics. The impact of such interventions on farm women was evaluated after three years of continued guidance and support. It was observed that most of the women had reported an increase in annual income (Score 140) and increase in knowledge and self-confidence (Score 132). Thus, the interventions had left an indelible improvement in the personal, social and economic conditions of farm women.

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Hydro-physical Characterization of Soil in Jute Growing Areas of Assam

The most significant impact of the jute life cycle is carbon sequestration, which is directly related to soil hydro-physical characteristics. Soil samples were collected from various locations of Rupohi block, Assam and their subsequent physico-chemical analysis were done. The soils are acidic (range: 5.35 to 5.85) in nature and clay loam in texture. The clay content of the soils varies in between 31.7 to 40.4%, highest being in Barghat Puranigudam. There is no significant variation in bulk density (BD) of the soils ranging in between 1.39 and 1.41 Mg m⁻³. The organic carbon contents were significantly higher at all locations (range: 0.91 to 1.22%), the lowest being at Taliagaon and highest being at Keyagaon Puradigudam. The macro and micro-aggregates decreased with increasing soil depth owing to the lower content of organic matter in sub-surface soil. The water stable aggregate (WSA) and mean weight diameter (MWD) showed that of all the locations has significantly higher aggregate stability (WSA range:

75.78-81.95 %; MWD range: 0.83-1.10 mm). Saturated hydraulic conductivity (Ks) values varied between 0.44 and 1.38 cm hr⁻¹. Faster rate of steady infiltration was recorded in all locations (ranging in between 9.50-13.05 cm hr⁻¹, except in Boroma Rupahi, Rupahi district (6.43 cm hr⁻¹). The slow rate of infiltration in Boroma Rupahi, Nagaon indicated that the sealing of pores and broken capillaries inhibited the water movement within soil system. Available water content in various locations varies from 0.12 to 0.28 m³ m⁻³, lowest being at Taliagaon and Barghat Puranigudam, Rupahi district. Based on the analysed soil parameters, it can be concluded that the soils under jute growing areas of Rupohi block are conducive for sustainable crop production.

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PUBLICATIONS

Research Papers

- Alam, N.M., Jana, C., Bharman, D., Sharma, B., Singh, D., Mishra, P.K. and Sharma, N.K. (2018). Twentieth Century Rainfall Trends of Uttarakhand, India: A Spatio-Temporal Analysis. *Climate Change and Environmental Sustainability*, 6(2): 104-113.
- Bhattacharyya, N., Selvaraj, K., Satpathy, S. and Gotyal, B.S. (2018), Biology and life table study of *Spilarctia obliqua* Walker (Arctiidae: Lepidoptera) on different host bast fibre. *Journal of Entomological Research*, 42 (1): 97-102. DOI:10.5958/0974-4576.2018.00017.8.
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- Gotyal, B. S., Ramesh Babu, V., Satpathy, S. and Selvaraj, K. (2018), Biological Control of Key Pest of Jute, *Spilosoma obliqua* - A Case Study. *Journal of Biological Control*, 32(3): 172-174. DOI: 10.18311/jbc/2018/21225.
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- Naik, R.K., Mazumdar, S.P., Majumdar, B. and Behera M.S. (2018). Mechanical extraction of jute and mesta for quality fibre production. *Journal of the Indian Society of Coastal Agricultural Research*. 36(1): 76-79.
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- Ramesh Babu, V., Gotyal, B. S. and Satpathy, S. (2018). Study on larval growth and development of Bihar hairy caterpillar, *Spilarctia obliqua* Walker on semi synthetic diet. *Journal of Plant Protection and Environment*, 15 (1): 8-1.
- Ramesh Babu, V., Selvaraj, K., Gotyal, B S., Satpathy, S., Das, S. and Mitra, S. (2018). Efficacy of mineral oil against yellow mite, *Polyphagotarsonemus latus* in jute (*Corchorus olitorius*). *Journal of Entomology and Zoology Studies*, 6 (5): 833- 836.
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Technical / Popular Articles

- Majumdar, B., Saha, A. R., Sarkar, S., Jha, S. K., Mazumdar, S. P., Roy, M. L., Chattopadhyay, Lipi and Barai, Shrestha (2018). *Crijaf Sonadwara pater unnoto pachon padhhoti* (In Bengali). Leaflet, Jute-ICARE Project, ICAR-CRIJAF (August 2018).
- Majumdar, B., Saha, A. R., Sarkar, S., Jha, S. K., Mazumdar, S. P., Roy, M. L., Chattopadhyay, Lipi and Barai, Shrestha (2018). Improved Retting of Jute with CRIJAF SONA. Leaflet, Jute-ICARE Project, ICAR-CRIJAF (August 2018).
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- Sarkar, S., Majumdar, B., Jana, C., Goswami, B. and Dutta, J. (2018). Enhancement of livelihood security of tribal farm families of West Bengal: A success story. *Innovative Farming*, 3 (2): 88-93.

Book Chapter

Bhattacharyya, P., Dash, P.K., Swain, C.K., Nayak, A.K., Chatterjee, D., Padhy, S.R., Saha, R. and Barman, D. (2018). Carbon Dynamics in Soil-Plant-Environment System on Climate Change Perspective: Special Reference to Rice. In: Advances in Crop Environment Interaction. (Eds.) S.K. Bal., J, Mukherjee, B.U. Choudhury and A.K. Dhawan, Springer Publication, Singapore. ISBN 978-981-13-1861-0. pp. 3-24.

Training Manual

Majumdar, B., Sarkar, S., Kar, C. S. and Roy, M. L. (Eds.) (2018). Training Manual on “National Level

Training on Improved Retting Technology of Jute and Allied Fibres” under NFSM CC (Jute). ICAR-Central Research Institute for Jute and Allied Fibres (ICAR), Barrackpore, 7-9 August, 2018. pp. 41.

Radio Talk

Dr. B. Majumdar, Principal Scientist participated as an expert in the “Khetkhamarer Katha” programme for farming community of India and Bangladesh on a topic “*Unnata paddhatite pater pachan*” broadcasted by the Maitree Channel of All India Radio, Kolkata on 30 July, 2018.

HUMAN RESOURCE DEVELOPMENT

Training undergone by the Scientists/ Staff Members

Name of the Programme/training	Place and Date	Name of the Participants
Scientists		
Training programme on Handling of CAT cases	ISTM, New Delhi 23-25 July, 2018	Dr. M. S. Behera
Stress Management	ICAR-NAARM, Hyderabad 17- 20 Sept, 2018	Dr. S. Satpathy
Training programme on “Experimental Designs and Statistical Data Analysis”	ICAR-IASRI, Pusa, New Delhi 28 Sept – 8 Oct, 2018	Dr. Hem Raj Bhandari
Training Programme in the Job Role of “Agriculture Machine Operator” for the year 2018-19 under Agricultural Skill Council of India	BCKV, Kalyani 18 – 20 Nov, 2018	Dr. R. K. Naik Dr. Amit Bera
Skill Development Training under the supervision of Dr. B. Ramakrishnan, Division of Microbiology, IARI, New Delhi	IARI, New Delhi 12 Nov – 12 Dec, 2018	Dr. S. P. Mazumdar
Training Programme on “Basic Hindi Training in Computer” organized by Hindi Training Programme Division, Durgapur under Ministry of Home Affairs, Official Language	NIT, Durgapur 10 – 14 Dec, 2018	Dr. Hem Raj Bhandari
Short course on “Ergonomic Interventions for designing Women Friendly Agricultural Technologies for Reduction of Occupational Health Hazards”	CEAT, OUAT, Bhubaneswar, Odisha 11 – 20 Dec, 2018	Dr. R. K. Naik
Management Development Program (MDP) on “Priority setting, Monitoring and Evaluation (PME) of Agricultural Research Projects”	ICAR-NAARM, Hyderabad 17-22 Dec, 2018	Dr. S. K. Sarkar
Administrative Staffs		
Refresher course on Administration & Finance Management for Section Officer, AAOs, AFAOs and Assistants of ICAR Hqs & Institutes	ICAR-CCRI, Goa (Organized by NAARM) 05 – 10 July, 2018	Mr. Tridib Ghosh

OSP for newly recruited Assistants of ICAR Institutes	ISTM, New Delhi 11 June – 06 July, 2018	Ms. Satarupa Roy Chowdhury Mr. Ritesh Kumar Mr. Nilesh Ray Mr. Sonu Kumar Suman
Workshop cum awareness programme on pension & retirement benefits	ICAR-CIFRI, Barrackpore 03 – 04 Sept, 2018	Ms. Sohini Bhattacharya Mr. Amit Kr. Mondal
Technical Staffs		
Automobile Maintenance, Road Safety and Behavioural Skills	ICAR-CIAE, Bhopal 17 – 23 July, 2018	Mr. Sanjib Ghosh
Training Programme on “Farm Management” for the Technical Staff associated with farm management/ Farm Manager of ICAR Institutes	ICAR-IIFSR, Modipuram 14 – 20 Sept, 2018	Mr. Dilip Kumar Patra
Training programme on “Competence Enhancement Programme on Soft Skills and Personality Development for Technical Staff”	ICAR- NAARM, Hyderabad 18 – 27 Sept, 2018	Mr. B. L. Prasad
Training Programme on “Basic Hindi Training in Computer” organized by Hindi Training Programme Division, Durgapur under Ministry of Home Affairs, Official Language	NIT, Durgapur 10- 14 Dec, 2018	Dr. Monica Suresh Singh Mr. B. L. Prasad
Training cum workshop on Plant Protection	ICAR-ATARI, Kolkata 13 – 15 Dec, 2018	Mr. Sandipan Garai Mr. Soumya Sarathi Kundu

Training /Meeting/Interaction organized by ICAR-CRIJAF during July to December, 2018

Name of the Programme/training	Place and Date	No. of Participants
Training programme on “Hands-on training for agrometeorological data recording, storing, and climate change analysis with special reference to jute and allied fibre crops”	ICAR-CRIJAF, Barrackpore 27 Aug - 1 Sept, 2018	17
Training-cum-exposure visit on demonstration of “CRIJAF SONA” sponsored by ATMA	ICAR-CRIJAF, Barrackpore 6 August, 2018	80

Seminar/ Symposium/ Conferences attended:

Programme	Institute and date	Name of the participant
Workshop on “Application of Biosensor Technology in Inland Fisheries” organized by ICAR-CIFRI, Barrackpore	ICAR-CIFRI, Barrackpore 1 Aug, 2018	Dr. D. Barman
International Conference on “Agriculture & allied sciences: The productivity, food security and ecology”.	BCKV, Kalyani 13-14 Aug., 2018	Dr. Maruthi, R.T., Dr. Laxmi Sharma
1 st International Conference on Biological Control: Approaches and Applications”	Le Meridian, Bengaluru 27-29 Sept., 2018	Dr. B.S. Gotyal, Dr.S. Satpathy
DST-NRDMS Project Review Workshop Meeting	JNT University, Hyderabad 10-11 Nov., 2018	Dr. A.K. Singh
4th International Plant Physiology Congress (IPPC-2018)	CSIR-NBRI, Lucknow 02-05 Dec., 2018	Dr. Laxmi Sharma Dr. S. Roy

International Conference on “Livelihood Promotion, Bio-diversity Conservation and Social Security in Indian Sundarbans”	Eco-Tourism Hub, Jharkhali, S 24-Parganas, West Bengal Techno India University, West Bengal 7-9 Dec., 2018	Dr. D. Barman
National Symposium on “Role of resource management in agriculture in the context of food security, nutrition and economy”	Institute of Agril. Sci., University of Calcutta., Kolkata 15-17 Dec., 2018	Dr. Sitangshu Sarkar Dr. Ritesh Saha,
Training Workshop of Vigilance officers of ICAR Institutes	ICAR-NAARM, Hyderabad 31 Oct - 01 Nov, 2018	Dr. S. Satpathy
International Conference on Climate Change and Adaptive Crop Protection for Sustainable Agri-horticulture Landscape	ICAR-NRCSS, Ajmer 20-22 Dec, 2018	Dr. S. Satpathy

COMMERCIALIZATION

Registration and Commercialization of technologies

- Royalty earned from commercialized ICAR-CRIJAF technologies

Name of the technology	Name of the farm	Royalty earned (Rs.)
Multi Row Seed Drill	Joy Maa Tara Enterprise	1,25,000/-
CRIJAF SONA	Bengal Biotech and Research	6,12,702/-
	Next 2 Nature	13,60,000/-
Single Wheel Jute Weeder	Creative Displayers	93,750/-

(Source : R. Saha)

AWARDS & RECOGNITIONS

Dr. S. Satpathy, Head, Crop Protection Division was conferred with “PP Singhal Memorial Award-2018” instituted by Society for Plant Protection Sciences, New Delhi for outstanding contribution to research in Entomology.



Dr S. Satpathy receiving the P.P. Singhal Memorial Award from Padma Bhushan Dr. R. S. Paroda, Former Secy., DARE & DG, ICAR

Dr. S. Satpathy, Head, Crop Protection Division was invited for lead talk in the International Conference on Climate Change and Adaptive Crop Protection for Sustainable Agri-horticulture Landscape organized by Society for Plant Protection Sciences at ICAR-NRCSS, Ajmer during 20-22 Dec, 2018

Dr. Ritesh Saha, Principal Scientist was conferred the Distinguished Scientist Award in Soil Science by Venus International Foundation, Chennai for outstanding contribution, research excellence and accomplishments in the field of Soil Science during Venus International Research Awards Ceremony on 11 Aug., 2018.

Dr. A. Shamna, Scientist received Indian Society of Extension Education Young Scientist Award 2018 in ISEE National Seminar on “Integrated farming system for enhancing farmer’s income and nutritional security” from Dec 5 - 7, 2018 at WBUAFS, Kolkata.

DISTINGUISHED VISITORS



Dr A. Shamna, receiving the ISEE Young Scientist Award 2018

B. S. Gotyal, V. Ramesh Babu, S. Satpathy and K. Selvaraj awarded Best Poster Award for the paper “Biological Control of key Pest of jute, *Spilosoma obliqua*- A case study” In: The International Conference on Biological Control (ICBC-2018) Approaches and Applications, 27-29 September, 2018 at Le-Meridian, Bengaluru, India.



Dr. B. S. Gotyal receiving the Best poster Award from Dr. David Smith, Director, CABI, UK

Dr. A.K. Jha, Sr. Scientist received Distinguished Scientist Award for National Conference on Doubling Farmers Income for Sustainable & Harmonious Agriculture (DISHA, 2018) during 11-12 Aug, 2018 at ICAR-IINRG, Ranchi.

DISTINGUISHED VISITORS

Name of the Visitor	Affiliation	Date
Sh. Radha Mohan Singh	Hon'ble Union Minister of Agriculture and Farmers Welfare, New Delhi	14 Nov, 2018
Dr. C. D. Mayee	Chairman, QRT, ICAR-CRIJAF & Former Chairman, ASRB, New Delhi	03 July, 2018
Dr. S.A. Patil	Chairman, RAC, ICAR-CRIJAF & Former Director, IARI, New Delhi	26 July, 2018
Mr. Arvind Kumar	Secretary, National Jute Board, Kolkata	04 Aug, 2018
Dr. Chandra Gopal Sharma	Former Deputy General Manager (Official Language), Eastern Railway, Kolkata	14 Sept, 2018
Dr. R.K. Singh	Assistant Director General (Commercial Crops), ICAR, New Delhi	02 Nov, 2018
Dr. A. K. Singh	Deputy Director General (Crop Sciences), ICAR, New Delhi	15 Dec, 2018



Sh. Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare visiting ICAR-CRIJAF



Dr. A.K. Singh, DDG (Crop Science), ICAR, appraised the ICAR-CRIJAF technologies



Dr. S.A. Patil Chairman, RAC, ICAR-CRIJAF is being felicitated by Director



Dr. C. D. Mayee, Chairman, QRT, ICAR-CRIJAF is interacting with scientists








Mr. Arvind Kumar, Secretary, National Jute Board, Kolkata releasing farm literatures during Farmers' Day-2018



Dr. Chandra Gopal Sharma, Former Deputy General Manager, Eastern Railway, Kolkata addressing the staffs during Hindi Pakhwara- 2018




PERSONNEL

Promotion








	<p>Dr. Shailesh Kumar Sr. Scientist Promoted to Principal Scientist, RGP of Rs. 10,000 Date of Promotion: 27.07.2017</p>		<p>Dr. Dipankar Ghorai SMS (T-7/8) Promoted to Chief Technical Officer (T-9, SMS Level 12) Date of Promotion: 26.04.2018</p>
	<p>Dr. Subrata Sarkar SMS (T-7/8) Promoted to Chief Technical Officer (T-9, SMS Level 12) Date of Promotion: 04.05.2018</p>		<p>Dr. Sourindra Kishore Bhattacharyya Promoted to Technical Officer (T-5, Level 7), Field & Farm Date of Promotion: 17.07.2018</p>
	<p>Mr. Gopal Chandra Dey Assistant MACP Scheme to next higher grade (Level -7) Date of Promotion: 01.01.2018</p>		

PERSONNEL

New Colleagues			
	Dr. Tanmay Samajdar Sr. Scientist-cum-Head KVK, North 24 Parganas Date of joining: 17.12.2018		Dr. Sk. Md. Azizur Rahman Sr. Scientist-cum-Head KVK, Budbud, Burdwan Date of joining: 27.12.2018
	Dr. N.M. Alam Scientist (Agril. Statistics) Date of joining: 09.07.2018		Mr. Prahlad Singh Administrative Officer Date of joining: 06.08.2018
	Mr. Shivakumar K.V. Scientist Date of joining: 09.10.2018		Mr. Kajal Das Scientist Date of joining: 09.10.2018
	Ms. Pallavi Mandal Technical Assistant (T-3) Date of joining: 18.12.2018		Mr. Sandip Roy Technical Assistant (T-3) Date of joining: 10.12.2018
	Mr. Raktim Mitra Technical Assistant (T-3) Date of joining: 22.12.2018		Mr. Kallol Sarkar Technical Assistant (T-3) Date of joining: 29.12.2018
	Mr. Ashish Madan Pitre Technical Assistant (T-3) Date of joining: 31.12.2018		Mr. Biswajit Biswas Technical Trainee (T-1) Date of joining: 22.12.2018
	Ms. Sharmila Sarkar Technical Trainee (T-1) Date of joining: 24.12.2018		Mr. Sanjay Kumar Technical Trainee (T-1) Date of joining: 26.12.2018

	<p>Mr. Paritosh Roy Technical Trainee (T-1) Date of joining: 29.12.2018</p>		<p>Ms. Farheen Banu Lower Division Clerk Date of joining: 24.12.2018</p>
	<p>Mr. Ravi Patra Lower Division Clerk Date of joining: 24.12.2018</p>		

Superannuation

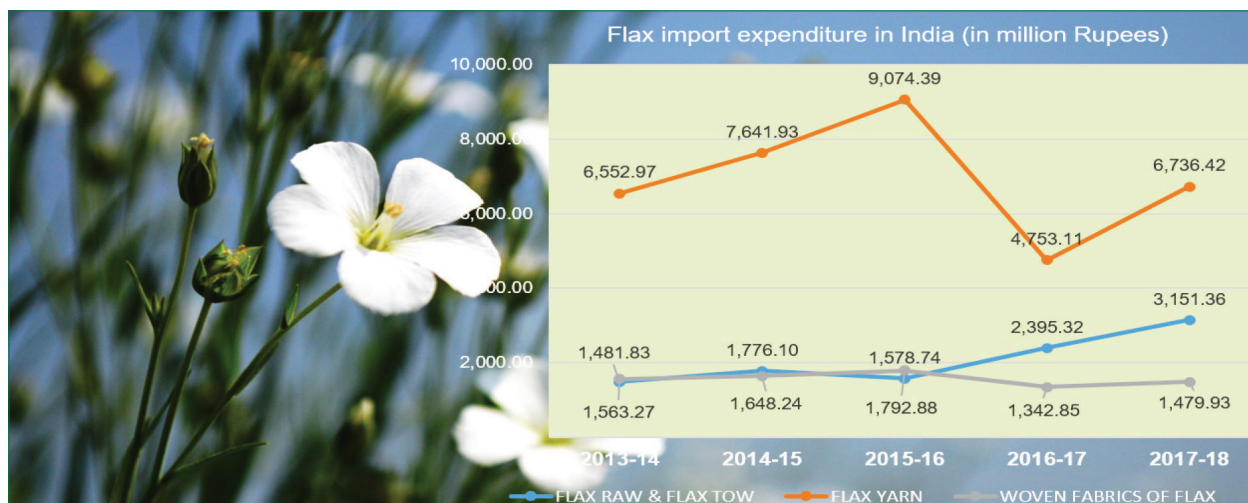
	<p>Mr. D.D. Pingh, SSS Place of posting: SRS, Bamra Date of retirement: 31.08.2018</p>		<p>Mr. P. Dey Chowdhury, T-4 Place of posting: CSRSJAF, BudBud Date of retirement: 31.10.2018</p>
	<p>Mr. S. Sarkar, T-5 Place of posting: ICAR-CRIJAF, HQ Date of retirement: 31.10.2018</p>		<p>Mr. S.K. Sen, Assistant Place of posting: ICAR-CRIJAF, HQ Date of retirement: 30.11.2018</p>
	<p>Mr. A. Basumatary Place of posting: RRS, Sorbhog Date of retirement: 30.11.2018</p>		<p>Mr. Durga Pada Dutta Skilled Support Staff Place of posting: ICAR-CRIJAF, HQ Date of retirement: 31.12.2018</p>
	<p>Mr. Shib Shankar Halder Skilled Support Staff Place of posting: ICAR-CRIJAF, HQ Date of retirement: 31.12.2018</p>		

Flax Fibre: Valuable alternative fibre crop

Flax (*Linum usitatissimum* L.; $2n=30$; Linaceae family) perhaps is one of the earliest crops domesticated by humankind during the Neolithic era by the farming communities of the 'Fertile Crescent region' of southwest Asia. Evidence of selective domestication history of flax can be traced for textile and oilseed purpose in the different region and time. This century-old selective cultivation of flax generated two distinct plant morphotypes, known for fibre flax and oilseed flax (linseed), both with significant commercial importance. Linseed oil is an excellent source of alpha-linolenic acid, lignans, high-quality protein, soluble fibre and phenolic compounds thus considered as an excellent nutraceutical or functional food. The linseed oil has many industrial applications, especially in paints and varnishes. The best known economic product from the fibre flax is its phloem fibre popularly known as 'linen'. This is the best learned actual bast fibre, which originates from the primary phloem tissue as sclerenchyma fibres. Good quality linen is an expensive fibre to produce, but its strength, smoothness, and lustre make it competitive and valued textile fibre to cater to the needs of commercial niche markets and the fashion industry. Besides, flax fibres are also used in industrial applications, such as composites, geo-textiles, insulation, and currency papers. Thus flax, especially fibre flax, has immense potential in uplifting the economy of farmers.

As per the FAOSTAT report 2019, though India (0.18 mt) is ranked among the top ten linseed producing countries in the world, the production and area under fibre flax cultivation are negligibly low to mark its record. As per the data of the Ministry of Commerce, Govt. of India (2018-19), the demand for raw fibre flax, yarn and woven fabrics result in the import of about 10,600 million rupees to meet the need of textile industries. Majority of these import of flax fibre types are met from the countries like Belgium, France and China. This huge currency incurred on importing flax fibre can contribute to improving farmers' economy if India achieves to produce good quality and quantity of fibre flax indigenously. With this burgeoning demand of flax fibres, a renewed prosperity is being witnessed for the cultivation of fibre flax in the Terai region of northern and Eastern India, especially in Uttarakhand and Himachal Pradesh.

Non-availability of adequate varieties suited for warm and humid Indian conditions is one of the limiting factors for expansion of flax crop. In recent years, with the release of first Indian fibre flax variety, JRF-2 (Tiara) from ICAR-Central Research Institute for Jute and Allied Fibres (ICAR-CRIJAF) has promised to increase an area of cultivation and production at the national level. In addition, recommending different agronomic package and practices for improved flax cultivation, mechanization of fibre extraction, quality control, and value chain establishment may also be enhanced in cooperation with other stakeholders and industry partners.



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