AGRO-ADVISORY TO GROWERS OF JUTE AND ALLIED FIBRES

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भा.कृ.अ.प. -केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान
ICAR-Central Research Institute for Jute and Allied Fibers
An ISO 9001: 2015 Certified Institute
Barrackpore, Kolkata-700120, West Bengal
www.crijaf.org.in

Agro-advisory to Farming Community of Jute and Allied Fibres (06 May to 15 May , 2020)

I. Likely weather in the coming week in jute and allied fibre growing states

State/Agroclimatic Zone/Region	Weather Forecast
Gangetic West Bengal (Murshidabad, Nadia, Hoogly, Howrah, North 24-Prganas, Purba Burdwan, Paschim Burdwan, South 24-Parganas, Bankura, Birbhum)	Light to moderate rainfall/thunder shower is expected in next 4 days (total rain upto 35 mm). Maximum temperature is expected to be around 31-32°C, and minimum temperature of around 21-28°C
Sub-Himalayan West Bengal (Cooch Behar, Alipurduwar, Jalpaiguri, North Dinajpur, South Dinajpur and Malda)	Light to heavy rainfall/thunder shower is expected in next 4 days (total rain upto 112 mm). Maximum temperature (T_{max}) is expected to be around 31-34°C, and minimum temperature (T_{min}) of around 17-23°C. In Malda and South Dinajpur - T_{max} will be 33-37°C and T_{min} of 22-25°C, light to heavy rainfall is expected (total upto 100 mm)
Assam: Central Brahmaputra Valley Zone (Marigaon, Nagaon)	Light rainfall/thunder shower is expected in next 4 days (upto rain 16 mm). Maximum temperature is expected to be around 30-32°C, minimum temperature of around 20-22°C.
Assam: Lower Brahmaputra Valley Zone (Goalpara, Dhubri, Kokrajhar, Baongaigaon, Barpeta, Nalbari, Kamrup, Baksa, Chirang)	Moderate to heavy rainfall/thunder shower is expected in next 4 days (total rain upto 75 mm). Maximum temperature is expected to be around 29-33°C, minimum temperature of around 19-23°C.
Bihar: Agro-climatic Zone II (Northern East, (Purnea, Katihar, Saharsa, Supaul, Madhepura, Khagaria, Araria, Kishanganj)	Light to moderate rainfall is expected in next 4 days (total rain upto 72 mm). Maximum temperature is expected to be around 31-37°C, minimum temperature of around 21-24°C.
Odisha: North Eastern Coastal Plain (Balasore, Bhadrak, Jajpur)	Light to heavy rainfall/thunder shower is expected in next 4 days (total rain upto 55 mm). Maximum temperature is expected to be around 33-37°C, minimum temperature of around 22-25°C.
Odisha: North East and South Eastern Coastal Plains Region: Kendrapara, Khurda, Jagatsinghpur, Puri, Nayagarh, parts of Cuttack, and parts of Ganjam	Light to moderate rainfall/thunder shower is expected in next 4 days (total rain upto 28 mm). Maximum temperature is expected to be around 34-37°C, minimum temperature of around 22-25°C.

Source: IMD (https://mausam.imd.gov.in/) and www.weather.com

II. Agro-advisory for jute crop

1. Late sown jute crop: Those farmers have not yet sown particularly in Bihar and Odisha

- Complete the land preparation and sow the crop immediately utilizing "Norwester rainfall". For medium and high fertility land, apply N:P_2O_5:K_2O @ 60:30:30 kg/ha. For low fertility land it will be 80:40:40 kg/ha. Apply nitrogen in 2-3 spilt doses. However, phosphorus and potash should be applied as basal. Farmers may refer Soil Health Card for actual NPK application as per their soil test. Apply elemental sulphur @ 30 kg/ha in sulpuhr deficient (<20 kg/ha) soil. Apply 25% of plant nutrients in the form of FYM.
- Make drainage channels (20 cm wide x 20cm deep) after final land preparation at 10m intervals to remove excess water during heavy rainfall particularly in clay soil.
- Use JRO 204 (Suren) variety and treat the seed with Carbendazim (Bavistin) 50 WP (2g/kg seed), 4 hours before sowing. If JRO 204 variety is not available then JRO 524, IRA, Tarun and NJ 7010 variety can be grown. These can also be used as leafy vegetable purpose if harvested at early stage. Sowing should be done in line with row spacing 20-25 cm through ICAR-CRIJAF Multi-row seed drill and required seed rate will be only 350-400 gm/bigha (2.5-3.0 kg/ha).
- In case of non-availability of Seed drill, broadcast seed @800g /bigha (6.0 kg/ha) in criss-cross manner. Laddering after sowing will conserve soil moisture and improve germination. Operate ICAR-CRIJAF Nail Weeder strictly at field capacity (4-5 days after sowing for alluvial soil and 7-8 days after sowing for clay soil) keeping 10 cm intervals in-between two successive runs for simultaneous line arrangement, weeding, thinning, aeration and soil moisture conservation. ICAR-CRIJAF Nail Weeder operation creates soil mulching which maintains 5–6% more moisture in root zone, keeps the soil cooler, helps the jute seedling to escape the early drought stress till 30 days of sowing.
- Under irrigated condition, spray Pretilachlor 50EC @ 3 ml/Litre water after 48 hrs of sowing with irrigation to control weeds. But under rainfed condition, spray Butachlor 50EC @ 4ml/Litre water within 48 hrs of sowing to control weeds.

Step-1: Land preparation and basal dose of NPK fertilizer application for jute field

Step-2: Seed treatment with Bavistin 50 WP or Carbendazim (2g per kg seed), at least 4 hours before

Step-3a: Line sowing of fungicide treated jute seed using CRIJAF Multi-row seed drill

Step-3b: Sowing of treated jute seed by broadcasting method followed by nail weeding at 4-8 days after sowing

Step-4: Preparation of drainage channel to remove excess rain water

Step-5: Under irrigated condition, spraying of Pretilachlore 50EC @ 3 ml/Litre water after 48 hrs of sowing with irrigation to control weeds. For 1 bigha land 80 litre water is required

Under rainfed condition (no irrigation), spray Butachlore 50EC @ 4ml/Litre water after 48 hrs of sowing to control weeds.

2. Timely sown jute crop at 25 March-10 April (Crop age: 40-50 days)

- If last top dressing is due, apply 20 N/ha under assured moisture condition or apply one irrigation after top dressing and maintain 50-55 plants/square meter.
- During excess rain due to 'Norwester' / 'Cyclonic Depression' the field may be waterlogged that adversely affect crop growth. Remove excess water from field immediately creating field ditches (20 cm wide and 20 cm depth) along the gradient at 10 m intervals.
- Unopened tender leaves of 30-50 day old jute crop may damaged by grey weevils usually after rain. The damage portions in leaves broaden as the plant grows. Weevils are grey in colour with dark white spots, elongated head, visible on plants. Spray combination of (Chlorpyriphos 50EC+Cypermethrin 5EC) @ 1-1.5 ml/l or Chlorpyriphos 20EC @2ml/litre or Quinalphos 25 EC@1.25 ml/litre
- Farmers should be alert about the initial infestation of hairy caterpillar after rain when the temperature raises with high humidity. Eggs and young larvae are seen in bunch on the leaf surface. The pest spreads quickly and damage the leaves. Monitor to spot early infestation. Remove the egg masses and newly emerged larvae in bunch. Spray Lambda Cyhalothrin 5EC@ 1ml/lit or Indoxacarb 14,5 SC@ 1.0 ml/litre in extreme cases.
- The mite insect appears at 30-35 DAS with the symptom of thickening and interveinal crinkling in the terminal young leaves which later turn coppery-brown. Avoid water stress, maintain soil moisture at field capacity to reduce the damage by mite infestation. Foliar spray of Fenpyroximate 5 EC @ 1.5 ml/litre or Spiromesifen 240 SC @ 0.7 ml/litre or Propargite 57 EC @ 2.5 ml / litre alternatively in rotation at 10 days interval if infestation persist beyond 10 days. In case of rain, wait for at least 5-6 days to initiate the Acaricide spray if symptoms initiates/persists

Timely sown (40-50 days old) crop

Infestation of grey weevils usually after rain.

Spray combination of Chlorpyriphos 50EC+cypermethrin 5EC @ 1-1.5 ml/l or Chlorpyriphos 20EC @2ml/l or Quinalphos 25 EC@1.25 ml/l

Hairy caterpillar infestation with high temperature and humidity after rainfall. The pest spreads very quickly. Monitor to spot early infestation and remove the egg masses and newly emerged larvae in bunch. Spray lambda cyhalothrin 5EC@ 1ml/lit or indoxacarb 14,5 SC@ 1.0 ml/l in extreme cases.

A. Mite infested crop at 30-35 days after sowing

B. Avoid water stress, maintain soil moisture and foliar spray of Fenpyroximate 5 EC @ 1.5 ml/litre or Spiromesifen 240 SC @ 0.7 ml/lit or Propargite 57 EC @ 2.5 ml / lit alternatively in rotation at 10 days interval

Crop affected by water logging. Drain the excess water through surface drainage

Damaged caused by hailstorm. If damage is > 50-60% resowing may be done otherwise improve the field condition through inter cultural operation

3. Jute sown after 15 April (Crop Age: 20-30 days)

- For post emergence grass weed control, spray Quizalofop Ethyl 5 EC @ 2-2.5 ml/Litre of water at 20-25 days after sowing and follow one hand weeding after death of grasses.
- If weeding and thinning operation is not done at 3rd week stage, operate mechanical weeders with scraper of ICAR-CRIJAF Nail Weeder or Single Wheel Weeder to remove established weeds. Maintain the plant population (50-55 plant/square meter) by thinning.
- After weeding and thinning, apply top dressing of Nitrogen fertilizer @ 20kg/ha in medium and high fertile soil (20 DAS) and irrigate the crop. In low fertile soil apply Nitrogen @ 27 kg/ha.
- During excess rain due to 'Norwester' / 'Cyclonic Depression' the field may be waterlogged that adversely affect crop growth. Remove excess water from field immediately creating field ditches (20 cm wide and 20 cm depth) along the gradient at 10 m intervals.
- The mite insect appears at 30-35 DAS with the symptom of thickening and interveinal crinkling in the terminal young leaves which later turn coppery-brown. Avoid water stress, maintain soil moisture at field capacity to reduce the damage by mite infestation. Foliar spray of Fenpyroximate 5 EC @ 1.5 ml/litre or Spiromesifen 240 SC @ 0.7 ml/litre or Propargite 57 EC @ 2.5 ml / litre alternatively in rotation at 10 days interval if infestation persist beyond 10 days. In case of rain, wait for at least 5-6 days to initiate the Acaricide spray if symptoms initiates/persists.
- The farmers are advised to be vigilant at this stage on the infestation of indigo caterpillar also. Spray Chlorpyriphos 20EC @ 2ml/Litre of water in the afternoon if infestation persists.

30 days old crop

A. Broadcasted

B. Line sown

A. Mite infested crop at 30-35 days after sowing

B. Avoid water stress, and foliar spray of Fenpyroximate 5 EC @ 1.5 ml/litre or Spiromesifen 240 SC @ 0.7 ml/lit or Propargite 57 EC @ 2.5 ml / lit alternatively in rotation at 10 days interval

To control Indigo cater pillar, at 15 DAS, Chloropyriphos 20EC @ 2ml/litre may be sprayed in the afternoon. Repeat it at 8 - 10 days interval, if the problem persists.

Collar rot caused by soil fungi due to dry soil condition. Apply copper oxychloride @0.5% solution if incidence is >5%.

Drain the excess rain water through surface drainage as early as possible

4. Jute sown after 20 April (Crop age: 15-25 days)

- Operate mechanical weeders with scraper of ICAR-CRIJAF Nail Weeder or Single Wheel Weeder to remove established weeds at 15-20 days after sowing. During continuous rains, weeding by Nail weeder may not be possible. In that situation, apply Quizalofop Ethyl 5EC @ 1.5-2.0 ml/Litre for grass weed control followed by one hand weeding to kill the other weeds.
- Remove excess water from jute fields immediately, creating field ditches (20 cm wide and 20 cm depth) along the gradient at 10 m intervals.
- Apply 1st top dressing of Nitrogen @20 kg /ha at 20 DAS after final weeding and thinning.
- The farmers are also advised to be vigilant at this stage on the infestation of indigo caterpillar. Spray Chlorpyriphos 20EC @ 2ml/Litre of water in the afternoon if infestation persists.
- Collar rot might appear in dry soil condition. Irrigate the field and spray Copper Oxychloride (Blitox 50WP) @ 0.5% if incidence is more than 5%. However, in heavy rain condition, first remove the excess water from the field and then one protective spray with Copper Oxychloride (Blitox 50WP) @ 0.5% or Mancozeb@0.2% is advocated to control seedling blight.

Use scraper of Nail Weeder at 20-21 days after sowing

Use of Single Wheel Weeder at 20-21 days after sowing

To control Indigo cater pillar, at 15 DAS, Chloropyriphos 20EC @ 2ml/litre may be sprayed in the afternoon. Repeat it at 8 - 10 days interval, if the problem persists.

Collar rot caused by fungi due to dry soil condition. Apply copper oxychloride @0.5% solution if incidence is >5%.

Drain the water through surface drainage as early as possible

5. Jute sown after 25-30 April (Crop age: 10-15 days)

- For post emergence grass weed control, spray Quizalofop Ethyl 5 EC @ 1.5 to 2.0 ml/Litre of water at 15-20 days after sowing and follow one hand weeding to kill the other weeds.
- To remove excess water from jute fields immediately, create field ditches (20 cm wide and 20 cm depth) along the gradient at 10 m intervals.
- Collar rot might appear in dry soil condition. Irrigate the field and spray Copper oxychloride (Blitox 50WP) @ 0.5% if incidence is more than 5%. However, in heavy rain condition, first remove the excess water from the field and then one protective spray with Copper Oxychloride (Blitox 50WP) @ 0.5% or Mancozeb@0.2% is advocated to control seedling blight.

Drain the water through surface drainage as early as possible

If possible use Nail Weeder at 10 days after sowing for composite weed control or apply Quizalofop Ethyl @ 1.0 ml/litre for grass weed control

III. Agro-Advisory for Allied Fibres

A) SISAL

- Collection of bulbils having healthy and bulbous base, dark green coloration and dense rosette leaves to plant immediately in primary nursery at a spacing of 10 cm x 7 cm
- Irrigation at weekly interval and weeding should be taken on priority in secondary nursery for getting healthy planting material.
- Mulching with sisal waste @ 10 t ha^{-1} or paddy straw @ 5 ha^{-1} or with other locally available mulch material in 1-2 years new sisal planation for weed suppression, enhancing water holding capacity and checking soil erosion, resulting in reduction of gestation period of three years by six months.
- Spraying of Bordeaux Mixture @ proportion of 4:4:40 @ 500 litre ha^{-1} to main crop sisal after harvest of sisal leaves for checking bole rot and leaf spot/zebra disease and to intercrops against disease infestation.
- Composting of sisal waste produced during extraction of sisal leaf, which is a good source of nutrient containing 1.5 % N_2O, 0.20% P_2O_5, 1.8% K_2O, 2.1% Calcium and 1.0% Mg and can be applied @ 20 t ha^{-1} for increased sisal productivity.
- Maintenance of aromatic grasses like lemon grass, palmorosa, vetiver, citronella etc. taken in sisal plantation as vegetative barrier for increasing the soil water storage, erosion control and income augmentation.

Collection of quality bulbils for planting in primary nursery

Intercultural operation in secondary sisal nursery

Mulching with sisal waste in 1-2 year old sisal plantation

Mulching with paddy straw in 1-2 year old sisal plantation

Inter crops with mango

Inter cropping with lemon grass

B) RAMIE

- Those farmers have not yet sown, they are suggested to complete the planting immediately. using quality rhizomes/ plantlets of R1411 (Hazarika) variety of ramie.
- Make a furrow of about 4-5 cm deep with row to row distance 60-75 cm. Pieces of 10-15 cm length rhizome/ plantlet/ stem cutting are to be planted in the furrow at a distance of 30 cm.
- Application of 20:10:10 kg NPK/ha after is recommended those completed sowing during 1st fortnight of march.
- Integrated applications of organic (FYM or Ramie compost about 20-25%) and inorganic sources of nutrients are recommended for balanced nutrition to the crop and for maintaining good soil health.
- Application of Quizalofop Ethyl 5% EC @ 40 g a.i./ha at 20 days of sowing as well as after each cutting significantly reduces all grassy weeds.
- Stage back operation is recommended for old Ramie plantation for uniform crop stand.
- As per weather forecast of Assam, medium to heavy/ thunder showers are very likely to occur. Ramie crop is very much sensitive to waterlogging, therefore field should be well drained during heavy rains.

Harvesting of rhizome for planting

Planting of ramie in well prepared soil by furrow method

Stage back operation for uniform crop stand and growth

C) SUNNHEMP

1. Farmers who have not yet sown

- Maximum and minimum temperature are predicted to be 38-40^{O}C and 24-25^{O}C, respectively and scanty rainfall is likely to occur.
- The Farmers are advised for land preparation and sowing of sunnhemp with a pre-monsoon rainfall. Sowing must be done with certified seed of improved varieties of sunnhemp such as Prankur (JRJ 610), Ankur (SUIN 037), Shailesh (SH-4), Swastik (SUIN 053) and K-12 (Black)
- Seed treatment with carbendazim @ 2g/ kg seed before sowing is recommended as it protect the crop from seed borne diseases.
- Line-sowing with row to row spacing of 20 cm and plant to plant spacing of 5 – 7 cm at the depth of 2-3 cm. A seed rate of 25 kg/ha for line sowing and 35 kg/ha for broadcasting is recommended.
- Basal dose of N: P_2O_5: K_2O @ 20:40-50:40 kg/ha (Urea: SSP: MOP @ 20: 312.5:66.7 kg/h) is recommended for sowing and should be mixed thoroughly with soil during final tilth.

2. Farmers already completed sowing during mid April (Crop age: 20 -25 days)

- If no rainfall occurs or water stress is observed one light irrigation is advocated. One hand weeding after irrigation is required at 25 days after sowing for better growth and maintain plant population (55-60 plant/sqare meter).
- If dry condition persists flea beetle infestation may occurs which feeds on the leaves making small holes. Farmers are also advised to be vigilant on the infestation of hair caterpillar, if substantial infestation observed, spraying of Chloropyriphos 20EC @ 2ml/litre any Neem based formulations @ 3-4ml /litre is recommended.

3. Farmers sown the crop after 20 April (Crop age: 15-20 days)

- If drought condition persist after sowing, leaf hopper infestation may observed which weaken the young seedlings by sucking the sap from leaf. Therefore, one light irrigation is needed.
- After irrigation one scrapper/ wheel hoe or hand weeding may be given after 15-20 days of sowing in between rows to control weeds, thinning of excess plants need to be done to maintain optimum plant population (55-60 plant/square meter).
- The farmers are advised to be vigilant on the infestation of stem girdler or hairy caterpillar. In case of infestation observed, spraying of Chlorpyriphos 20 EC @ 2ml/l is recommended.

4. Farmers sown the crop in last week of April (Crop age: 10-15 days)

- Irrigation and drainage channel to be prepared
- One scrapper may be given around 15 days after sowing to reduce weed growth as well as soil mulching
- The farmers are advised to be vigilant on the infestation of stem girdler. In case of infestation observed, spraying of Chlorpyriphos 20 EC @ 2ml/litre is recommended.

1. Farmers who have not yet sown

Sunnhemp seed
K-12 yellow
Shailesh (SH 4)

A. Seed treatment with carbendazim @2g/kg seed or carbendazim 12% + mancozeb 63 %
B. Land preparation and sowing

2. Crop sown during mid April (Crop age: 20-25 days)

Crop growth at 20-25 days

Infestation of flea beetle, spray Imidacloprid 17.6 SL @ 3ml/ 10 litre or Prophenophos 50EC @2ml/litre

Hairy cater pillar of sunnhemp

3. Farmers sown the crop after 20 April (Crop age: 15-20 days)

Weeding and thinning

Leaf hopper infestation under prolonged drought condition

Protective spraying with chlorpyriphos 20 EC @ 2ml/l

4. Farmers sown the crop after 20 April (Crop age: 15-20 days)

Preparation of irrigation and drainage channel and one scrapping /hand weeding at around 15 days after sowing to reduce weed growth as well as soil mulching

V. Safety and preventive measures to be taken to prevent spread of COVID-19 virus

1) Farmers should follow social distancing, safety measures and to maintain personal hygiene by washing hands with soap, wearing of face mask and protective clothing at each and every step in the entire process of field operations like land preparation, sowing, weeding, irrigation.
2) Prefer sowing operations by CRIJAF seed drill over the broadcasting wherever feasible. Also stagger the field operations wherever possible and avoid engaging more number of persons for sowing and land preparation on the same day.
3) Proper sanitation and cleanliness of machine like seed drill, nail weeder, irrigation pump, tilling equipment, tractor etc. are to be maintained especially when machines are shared and used by farmer groups.
4) Also maintain safe distance of 3-4 feet during rest, taking of meals, seed treatment at home, loading/unloading of manures and fertilisers.
5) Engage only familiar persons to the extent possible and after reasonable enquiry as to avoid the entry of any suspect or likely carrier during field activity.
6) Collect the seed, fertilizer, pesticides and other inputs from known shop and after returning from market immediately wash your hands and exposed parts of the body. Always use face masks while going market for seed purchase.
7) Install **Aarogya Setu** app in your mobile to know the essential health services related to COVID-19

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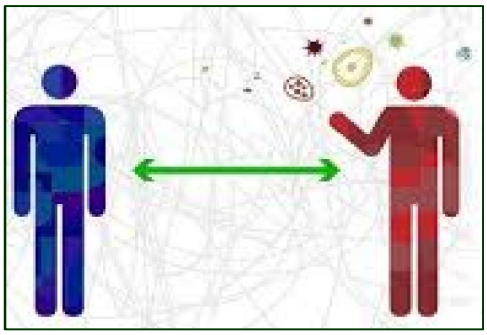
VI. Advisory for jute mill workers



- The workers staying inside the mills may be engaged in multiple numbers of short duration shifts (with minimum number of workers/shift) for running the mills in staggered manner.
- In general adequate numbers of washing points are to be given inside the mills so that the workers can wash hands more frequently. During the duty the workers should not smoke.
- The toilets must be cleaned, sanitized for more number of times to check the spread of virus infection.
- The workers are advised to use gloves, face mask, shoes, proper protective clothing while working in the mill.
- Inside the mill, the working points are to be relocated so that sufficient distances are maintained among the personnel as per the need of social distancing to suppress the transmission of the virus.
- The workers who are exposed to working surfaces more frequently, most of the time touch and handle important points of machines like switches, livers etc. should be extra precautions in hand sanitization and hand washing with soap. Besides, such surfaces and machine parts should be cleaned with soap water to remove the infective virus.
- The aged high risk workers should be allowed to work in more isolated places inside the mill premises so that their chances of exposure to others is reduced to great extent.
- The mill workers must avoid gathering during tiffin/lunch hours, must maintain 6-8 ft distance between two individuals and wash their hands properly before taking foods.
- The workers must report the doctor or the mill owners immediately in case any type of symptoms related to the COVID infection

Wish you all a healthy and safe stay

Conceptualized & Published by
Dr Gouranga Kar
Director
ICAR-CRIJAF
Nilganj, Barrackpore
Kolkata-700120, West Bengal

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