AGRO-ADVISORY TO GROWERS OF JUTE AND ALLIED FIBRES

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Barrackpore, Kolkata - 700121, West Bengal

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

<table>
<thead>
<tr>
<th>State/Agroclimatic Zone/Region</th>
<th>Weather Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gangetic West Bengal</strong></td>
<td></td>
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<tr>
<td>Murshidabad, Nadia, Hoogly, Howrah, North 24-Parganas, Purba Burdwan, Paschim Burdwan, South 24-Parganas, Bankura, Birbhum</td>
<td>Light to moderate rainfall is expected during 04-07 October, 2020 (total rain upto 36 mm). Maximum temperature (T&lt;sub&gt;max&lt;/sub&gt;) is expected to be around 31-34°C, and minimum temperature (T&lt;sub&gt;min&lt;/sub&gt;) of around 25-27°C.</td>
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<tr>
<td><strong>Sub-Himalayan West Bengal</strong></td>
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<td>Cooch Behar, Alipurduwar, Jalpaiguri, North Dinajpur, South Dinajpur and Malda</td>
<td>Light to moderate rainfall is expected during 04-07 October, 2020 (total rain upto 30 mm). Maximum temperature (T&lt;sub&gt;max&lt;/sub&gt;) is expected to be around 28-30°C, and minimum temperature (T&lt;sub&gt;min&lt;/sub&gt;) of around 22-25°C. In Malda, moderate rainfall is expected up to 85 mm.</td>
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<tr>
<td><strong>Assam: Central Brahmaputra Valley Zone</strong></td>
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<tr>
<td>Marigaon, Nagaon</td>
<td>Very light to moderate rainfall is expected during 04-07 October, 2020 (total rain upto 44 mm). Maximum temperature is expected to be around 29-32°C, minimum temperature of around 23-24°C.</td>
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<td><strong>Assam: Lower Brahmaputra Valley Zone</strong></td>
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<td>Goalpara, Dhubri, Kokrajhar, Baongaigaon, Barpeta, Nalbari, Kamrup, Baksa, Chirang</td>
<td>Light to moderate rainfall/thunder shower is expected during 04-07 October, 2020 (total rain upto 45 mm). Maximum temperature is expected to be around 27-30°C, minimum temperature of around 23-24°C.</td>
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<tr>
<td><strong>Bihar: Agro-climatic Zone II (Northern East)</strong></td>
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<tr>
<td>Purnea, Katihar, Saharsa, Supaul, Madhepura, Khagaria, Araria, Kishanganj</td>
<td>Light rainfall is expected during 04-07 October, 2020 (total rain upto 15 mm). Maximum temperature is expected to be around 27-32°C, minimum temperature of around 24-25°C.</td>
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<tr>
<td><strong>Odisha: North Eastern Coastal Plain</strong></td>
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<tr>
<td>Balasore, Bhadrak, Jajpur</td>
<td>Light to moderate rainfall is expected during 04-07 October, 2020 (total rain up to 22 mm). Maximum temperature is expected to be around 30-31°C, minimum temperature of around 24-25°C.</td>
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<tr>
<td><strong>Odisha: North East and South Eastern Coastal Plains Region</strong></td>
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<tr>
<td>Kendrapara, Khurda, Jagatsinghpur, Puri, Nayagarh, parts of Cuttack, and parts of Ganjam</td>
<td>Light to moderate rainfall is expected during 04-07 October, 2020 (total rain upto 38 mm). Maximum temperature is expected to be around 31-32°C, minimum temperature of around 25-26°C.</td>
</tr>
</tbody>
</table>

Source: IMD (https://mausam.imd.gov.in/ and www.weather.com)
II) Agro-advisory for Mesta fibre crop

1. Mesta crop (120-30 days old)

- **Harvesting of crop:** Those who have yet not harvested kenaf (*H. cannabinus*) crop may immediately harvest the crop at 120 days. After harvesting the crop bundled it into convenient size, kept in standing position in 50-60 cm depth in flowing water for 3-4 days. After that, Jak can be prepared in nearby water bodies.

- During Jak preparation do not use banana stems as covering material over the jak. Direct use of mud or soil over the jak instead use old cement or fertilizer bags filled with soil or mud as weighing material. Use of reusable plastic bags filled with water can be an alternative option as weighing material. Use “Crijaf Sona” for faster retting with quality improvement and higher fibre recovery @ 4 kg/ bigha of harvested jute plants during jak preparation.

- **Fibre extraction and drying of fibre:** Those who have already harvested the crop (10-15 days back) and prepared the Jak using ‘Crijaf Sona’ should check the ‘jak’ after 8 to 10 days of its application to avoid over retting. If retting is over, extract the fibre, wash it in water and dry it in the sun, dry fibre should not have more than 10% moisture.

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1. Checking of ‘jak’ (for complete retting) should be done after 10 days if applied CRIJAF Sona
2. Ensure that the ‘jak’ should be in submerged condition for proper retting

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1. Fibre extraction and washing  2. Drying of fibre under sunshine  3. Preparation of fibre bundle
## 2. Mesta crop (100-120 days old crop)

- Kenaf (*H. cannabinus*) crop may be harvested at 120 days crop age. The plants are to be cut at the base, bundled into convenient size, kept in standing position in 50-60 cm depth in flowing water for 3-4 days. After that, *Jak* can be prepared in nearby water bodies.
- Do not use banana stems as covering material over the jak. Direct use of mud or soil over the jak instead use old cement or fertilizer bags filled with soil or mud as weighing material. Use of reusable plastic bags filled with water can be an alternative option as weighing material.
- Use “CRIAF Sona” for faster retting with quality improvement and higher fibre recovery @ 4 kg/ bigha of harvested jute plants during jak preparation. Farmers using CRIJAF SONA for jute retting should check the “Jak” after 8 to 10 days of its application to avoid over retting. Retting is completed in about 12-15 days. In stagnant water use of CRIJAF microbial retting consortium @ 3-4 kg talc based formulation/bigha of land.
- The crop which are at 100 days old, remove stagnant water from the field to keep the crop healthy and for easy harvesting.

## 3. Mesta crop (below 100 days old)

- Waterlogging due to rainfall may occurs. In such condition improve drainage so that the crop remain free from biotic and abiotic stress. Very often foot and stem rot may aggravate due to water logging. If substantial incidence occurs then spray Copper oxychloride 50% @ 4-5g/litre towards the basal region of the plant.
- Some times due to wind the crop may lodge, in such cases tied the adjacent plants to keep it in upright condition and prevent crop loss.
Keeping in view the erratic distribution of rainfall, non-availability of community retting tank, declined per capita availability of water resources, high cost of cultivation and labour and dryness of rivers, ponds/canals, farmers face problems of proper retting of jute and mesta. Due to retting with poor quality water of community pond and sometimes with insufficient water, quality of fibre is affected and is not internationally competitive.

To overcome such problems, in-situ retting tank based farming system model can be adapted by the farmers before rainy season to make jute and mesta farming more profitable. Since the rainfall of jute growing states are high, ranges from 1200 to 2000 mm and 30-40% of the rainfall goes as runoff, some portion of runoff water can be harvested by constructing a tank in the lower most corner of the the field.

**Dimension of the Pond and Retting Process for one acre of harvested raw jute**

The pond dimension of 40 ft × 30 ft × 5 ft was sufficient for retting of jute harvested from half acre of land at a time. Jute harvested from one acre can be used for retting easily in two cycles. The pond bund should have sufficient width (1.5-1.8 m) to grow plants like papaya, banana and vegetables. The total area of farming system which includes digging and bund area will be 180 m². If farmers want to afford more land under farming system, pond dimension of 50 ft × 40 ft × 5 ft can be adopted.

Provision should be made for appropriate lining of in-situ retting tank with LDPE agri-film of 150-300 microns to minimize the seepage and percolation loss, particularly in light textured soil.

Three jaks should be prepared at a time and each jak should consist of three layers. Gap of 20-30 cm from jak to the soil bottom and 20-30 cm water above the jak should be maintained.

**Advantages of in-situ retting tank**

The cost of transporting the harvested jute bundles to the conventional retting spot (about Rs. 4000 - 5000/ acre) can be saved by constructing in-situ retting pond.

By using CRIJAF Sona, retting can be completed with in 12 to 15 days compared to 18 to 21 days under conventional retting. CRIJAF Sona @14 kg per acre should be used for retting purpose. During 2nd cycle retting, dose of CRIJAF Sona can be reduced to 50% by which Rs. 400/- can also be saved.

Fibre quality can be improved by at least one to two grades because retting will be performed in freshly harvested rainwater and also with free flowing rainwater of the rainy season.

**In addition to retting of jute and mesta, the harvested water can be utilized in multiple ways**

1. Dyke basedhorticulture (papaya, banana, seasonal vegetables (Profit of about Rs. 10,000-12,000/- per tank
2. Rearing of air breathing fish like telapia, magur and singhi, 50-60 kg
3. Apiaries (Profit from honey around Rs. 7000/- per tank) and also honey bees will help in pollination
4. Mushroom cultivation and vermicomposting
5. Approximately 50 nos. ducks can be reared in the pond which result in additional income of Rs. 5000 /-
6. After retting, the water can be utilized for providing supplement irrigation to crops in jute based cropping sequence resulting additional income of Rs 4000/acre.

Thus, by loosing jute of Rs. 1000 to 1200 after construction of in-situ retting tank in the field, farmers can earn about Rs. 30,000/- in that area from multiple farming with saving of transport cost another about Rs. 4000-5000/- This technology will also be helpful in reducing negative impacts from extreme weather events like drought, cyclone, flood etc.
**In-situ Jute Retting Tank based Self Reliant Eco-farming System**

- Jute Retting
- Fish culture
- Vegetable growing
- Duckery
- Epiculture
- Fruit (Papaya and Banana)
III. Agro-Advisory for Allied Fibres

A) SISAL

Maintenance of Secondary Nursery
- Nursery should be made weed free and drainage facility should be made to avoid water stagnation. Spraying with Metalaxyl, 25% + Mancozeb 72% WP (0.25%) should be taken up as a preventive measure against disease for obtaining healthy sucker. Application of sisal compost will be helpful for supplying nutrient to the soil as well as for suppression of weed growth due to its herbicidal property. Out of 80,000 bulbils raised in one-hectare nursery, if properly maintained, farmers can get minimum 72,000-76,000 suckers. It is assumed that mortality of bulbils in secondary nursery is 5-10 percent. The top dressing with nitrogen fertilizer should be completed at the earliest for proper growth of the plantlets. The above practices are same for Hybrid sisal.

Collection of Sucker from Main Field
- In addition to growing of bulbil in primary nursery followed by secondary nursery to produce the sucker as planting material, sisal sucker can also be collected from the main plantation. Generally, 2-3 suckers are produced per annum, which is also a potential source of planting material and can be directly planted in the main field. These suckers are uprooted after the onset of the monsoon. The old roots should be trimmed and damaged withered leaves also should be removed before planting. Care should be taken so that bole (crown region) of the plant is not damaged during trimming of old roots.

Maintenance of New Sisal Plantation
- Weeding should be done in 1-2 years old sisal plantation to reduce competition for nutrient and water. Spraying of Copper oxy-chloride @3.0 g/lit or Mancozeb 64% + Metalaxyl 8% @ 2.5 g per litre of water in case of appearance of first symptom of the zebra disease or alternaria leaf spot of sisal should be taken up. Application of sisal compost 2 ton/ha with 60:30:60 kg/ha should be taken up immediately for optimum growth and yield. Fertilizer should be applied by making ring around the sisal plant at least in the first year of plantation.
Sisal plantation in the Main field

- Suckers raised in the secondary nursery or collected from sisal plantation should be planted in main field after trimming/pruning of older lower leaves and roots after treatment with Mancozeb 64% + Metalaxyl 8% @ 2.5 g per litre of water for 20 minutes. Suckers should be planted in a hole made in the center of the pits with the help of sharp pointed wood/hoe. The suckers should be planted in such a way that neck region is at ground level.
- The suckers should have length greater than 30 cm, weight of at least 250 g and consist of 5-6 leaves. Furthermore, suckers having any disease and/or stress symptoms should be avoided for planting.
- Sisal compost or FYM @ 5 tonnes/ha and N: P2O5: K2O:: 60:30:60 Kg/ha should be applied for rapid development of sisal plant. Nitrogen should be applied in two equal splits: 50 % during pre-monsoon period and rest during post-monsoon period.
- Farmers who have not prepared main field for sisal plantation till now, may select well drained field having minimum soil depth of 15 cm for sisal plantation. The entire should not be ploughed, when sisal plantation is taken in sloppy land.
- Demarcation of land for the main field, cleaning of bushes, removal of weeds and pitting of 1 ft³ size with spacing 3.5 m + 1m × 1m for Double-row sisal plantation should be done and about of 4500 suckers per hectare are required. However, even planting can also be taken at spacing of 3.0 m + 1m × 1m under adverse situation with plant population of 5000 per hectare.
- Pit should be filled up with mixture of soil and sisal compost or FYM for making soil porous. Lime should also be applied as soil amendment @ 2.5 tonnes per hectare in acidic soil and the filling of soil in the pit should be 1-2 inch above the ground level for proper establishment of the suckers.
- Sisal suckers should be planted across the slopes and parallel to the contours to check soil erosion. Suckers should not be kept in heap and should be kept in single layer under shade for better survival of plants. The planting of the suckers is to be completed within 45 days of collection. Atleast 100 suckers per hectare should be kept as reserved for gap filling to maintain required plant population.
- Sisal Suckers raised in the secondary nursery should be preferred as planting material compared to sucker obtained from sisal plants from main field to have uniform crop stand.

Intercropping in sisal plantation for additional income

- In the interspace of double row sisal plantation, vegetables like French bean, tomato, brinjal, cowpea can be raised along with fruit plants for additional income. Post-monsoon fertilizer application to the fruit plants should also be taken up after weeding.
Sisal based Integrated Farming System

Integrated Farming System in Sisal Plantation can be adopted successfully as a profitable venture in Tribal and Drought Prone areas for employment generation, enhancing farm income and sustainable agriculture. The efficient use of available resources will help in generating adequate income due to integration of various farm enterprises and recycling of crop residue and by products within the system itself. Various animal components and crop components along with base crop sisal can be successfully integrated in Sisal based IFS system.

1. Backyard poultry can be incorporated by rearing 100 nos improved breeds of chicks like Vanaraja, Red Rooster and Kadaknath with net profit of Rs. 8,000-10,000 /- per annum.
2. Farmers can add net profit of Rs. 25,000/- per annum by taking dairy activities with two cows and the cows can be fed with different fodder crops including the other crop residues taken in interspace of double row sisal plantation.
3. An additional net income of Rs. 12,000-15,000 /- per annum can be generated by rearing 10 nos goats.
4. Mushroom Cultivation with six beds can also be taken up with the toe fibre and paddy straw of aerobic rice, grown in the interspace of sisal, resulting in net income of Rs. 12000/- per year.
5. The vermicomposting can be taken up utilizing the sisal waste, other crop residues and leftover material of mushroom cultivation for raising different intercrops as well as for the main crop sisal, thereby reducing the cost on fertilizer and improving soil health with additional net income of Rs. 14,000 /- per annum.
6. As sisal is generally grown in sloppy and undulated land, rain water can be profitably harvested. Moreover, taking into consideration of irregular and scanty rainfall and lack of persistent and sustained irrigation facilities, the construction of rainwater harvesting structures can empower sisal growers by providing additional net income through multiple uses of the harvested water. The water harvesting structure should be constructed at the lowest corner of the field in an area of 0.1 Hectare out of 1-hectare total sisal plantation. The dimensions of the structure if 30 m x 30 m x 1.8 m with embankment width of about 1.5 m. The harvested rainwater in this tank can be utilized in multiple way and has following advantages:
   - The harvested water can be utilized for providing supplementary irrigation at critical stage of inter-crops as well as base crop sisal for getting additional income and to increase the production and productivity of the sisal-based cropping system.
   - The stored water can be utilized for proper washing of fibre during extraction process of sisal.
   - Profit of about Rs. 15,000-20,000 /- per annum can be generated through dike height horticulture such as papaya, banana, coconut, drumstick and other seasonal vegetables:
   - Composite Pisciculture actives can be taken up in water harvesting structures by rearing catla, rohu and mrigal, by which the farmers can earn Rs. 10,000-12,000 /- per annum.
   - An additional income of about Rs. 8,000 per annum can be obtained by rearing 100 nos ducks in the water body.

Sisal based Integrated Farming System at Bamra, Odisha
For old plantation

- Indian red admiral caterpillar, Hairy caterpillar, Lady bird beetle, Termites, Leaf beetle and Leaf roller may be seen in the field and based on the incidence of these pests spraying of 0.04% Chlorpyriphos is recommended.
- Cercospora leaf spot, Sclerotium rot, Anthracnose leaf spot, Damping off and yellow mosaic may be seen during these times. Spraying of fungicides such as Mancozeb @2.5 ml/lit or Propiconazole @1 ml/lit is recommended based on the occurrences.
- In some fields yellowing of leaves has been found due to water stagnation. Draining of excess water is recommended.
- Spraying of Quinalofop Ethyl 5% EC @ 1.0 ml/litre is recommended which significantly reduces all grassy weeds.

For new plantation

- Use good quality rhizomes/ plantlets of R1411 (Hazarika) for planting. Farmers may complete the next phase of sowing by October and may be extended up to December based on variation in temperature and availability of irrigation facilities.
- Treat the planting materials rhizomes/plantlets with systemic fungicide (Carbendazim)
- Sowing should be done in line and required seed rate 6-8q rhizome/ ha or 55,000 – 60,000 plantlets or stem cuttings/ha. Land should be prepared by 3-4 cross ploughing followed by planking. Drainage facility should be created as the crop is sensitive to water logging.
- Make a furrow of about 4-5 cm deep. 10-15 cm length pieces of rhizome/ plantlet/ stem cutting are to be planted in the furrow at a distance of 30 cm by keeping the row to row distance of 75-90 cm in order to get the optimum plant population and productivity.
- Integrated applications of organic (FYM or Ramie compost) and inorganic sources of nutrients are recommended for balanced nutrition to the crop and for maintaining good soil health.
Agro-advisory for jute seed production

- **Area of jute seed production in West Bengal:** Purulia, Bankura, Western part of Paschim Medinipur and Birbhum

- **Drainage of excess rain water:** Immediately remove stagnant water from the fields through proper drainage as jute seedlings cannot withstand water-logging. If the growth of the crop becomes sickly, then after removing stagnant water turn the soil with Nailweeder/wheel hoe and apply nitrogen fertilizer @10-15 kg/ha to boost the growth.

- **Irrigation:** If moisture stress is noticed one surface irrigation may be applied after weeding and thinning operation is completed.

- **Weed Management:** If the crop is sown in first week of September in medium (Baid) land and no weeding done so far, then immediately remove the weeds in between lines with the help of CRIJAF Nail Weeder or manual weeding.

- **Management of diseases:** If substantial incidence of leaf spot is noticed, foliar spray of Copper Oxycloride 50% @ 5-7g/litre or Mancozeb @ 2-3g/litre may be done.

- **Detopping:** In uplands (tarh land) if sowing completed within second fortnight of August, then check for natural branching initiation. In absence of natural branching detopping should be done at 35-40 DAS. If it is not done, do it immediately.

- **Rouging:** Rouging should be done before flowering to eradicate off-type plants. Observe stem colour, leaf colour, leaf shape to identify off-type plants.
If no rainfall occurs or water stress is observed, one irrigation is recommended for the crop sown in mid August.

Those who completed sowing in the last week of August or there after, detopping should be done at 40 DAS to maximize the branching.

Those who completed sowing in the first fortnight of September, one weeding with wheel hoe or manual weeding may be done to reduce weed competition and to enhance the crop growth. Maintain plant population by thinning (55-60 plant/sq meter).

The farmers should be vigilant on the infestation of flea beetles which feeds on leaves by making holes on it and defoliator Spodoptera litura. If substantial infestation observed, spraying of any Neem based formulations @ 3-4ml/litre or Chloropyriphos 2ml/litre is recommended.

It is also advised to monitor the field and to destroy the phyllody and other virus infected plants. Foliar application of Imidacloprid 17.8 SL @ 0.5-1ml/lit or Dimethoate 1.6ml/litre checks the vector population.
IV. 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) During harvesting of jute and preparation of jak in nearby water body, maintain proper distance and use face mask. Engage only familiar persons to the extent possible to prevent the entry of any suspect or likely carrier of COVID-19 virus.

3) Proper sanitation and cleanliness of machine like sickle, 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.
V. 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

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