

# AGRO-ADVISORY TO GROWERS OF JUTE AND ALLIED FIBRES

*issued by*

**ICAR-CRIJAF, Barrackpore**

**23 July to 6 August, 2022 (Issue No: 14/2022)**



**भा.कृ.अ.प. -केन्द्रीय पटसन एवं समवर्गीय रेशा अनुसंधान संस्थान  
ICAR-Central Research Institute for Jute and Allied Fibers**

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**Agro-advisory to Farming Community of Jute and Allied Fibres  
(July 23 to August 07, 2022)**

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

State/Agro-climatic Zone/Region	Weather Forecast
<p><b>Gangetic West Bengal</b> (Murshidabad, Nadia, Hoogly, Howrah, North 24-Prganas, Purba Burdwan, Paschim Burdwan, South 24-Parganas, Bankura, Birbhum)</p>	<p>Total rainfall up to 75 mm is expected during 23-26 July, 2022. Maximum temperature (<math>T_{max}</math>) is expected to be around 33-35°C, and minimum temperature (<math>T_{min}</math>) of around 25-27°C.</p>
<p><b>Sub-Himalayan West Bengal</b> (Cooch Behar, Alipurduwar, Jalpaiguri, North Dinajpur, South Dinajpur and Malda)</p>	<p>Total rainfall up to 70 mm is expected during 23-26 July, 2022. Maximum temperature (<math>T_{max}</math>) is expected to be around 32-34°C, and minimum temperature (<math>T_{min}</math>) of around 22-24°C.</p>
<p><b>Assam: Central Brahmaputra Valley Zone</b> (Marigaon, Nagaon)</p>	<p>Total rainfall up to 25 mm is expected during 23-26 July, 2022. Maximum temperature is expected to be around 31-33°C, minimum temperature of around 22-24°C.</p>
<p><b>Assam: Lower Brahmaputra Valley Zone</b> (Goalpara, Dhubri, Kokrajhar, Baongaigaon, Barpeta, Nalbari, Kamrup, Baksa, Chirang)</p>	<p>Total rainfall up to 30 mm is expected during 23-26 July, 2022. Maximum temperature is expected to be around 30-33°C, minimum temperature of around 22-24°C.</p>
<p><b>Bihar: Agro-climatic Zone II (Northern East</b> (Purnea, Katihar, Saharsa, Supaul, Madhepura, Khagaria, Araria, Kishanganj)</p>	<p>Total rainfall up to 40 mm is expected during 23-26 July, 2022. Maximum temperature is expected to be around 30-34°C, minimum temperature of around 21-23°C.</p>
<p><b>Odisha: North Eastern Coastal Plain</b> (Balasore, Bhadrak, Jajpur)</p>	<p>Total rainfall up to 100 mm is expected during 23-26 July, 2022. Maximum temperature is expected to be around 32-35°C, minimum temperature of around 24-26°C.</p>
<p><b>Odisha: North East and South Eastern Coastal Plains Region</b> (Kendrapara, Khurda, Jagatsinghpur, Puri, Nayagarh, parts of Cuttack, and parts of Ganjam)</p>	<p>Total rainfall up to 70 mm is expected during 23-26 July, 2022. Maximum temperature is expected to be around 32-34°C, minimum temperature of around 24-27°C.</p>

Source: IMD (<https://mausam.imd.gov.in/> and [www.weather.com](http://www.weather.com))

## II. Agro-advisory of Jute

### 1. Those who has sown the crop between April 26-May 10: (Crop Age 90-105 days)

- The farmers are advised not to take any crop protection measure if the crop is harvested in time (120 days crop age). However, he should be vigilant on infestation and outbreak of hairy caterpillar if harvesting is delayed.
- Waterlogging at this stage may aggravate the incidence of stem rot/root rot. Therefore, remove water through proper drainage. Remove the affected plants and plant with lanky growth which do not add any effective fibre yield.
- Under the condition when removal of stagnant water from low land jute field is not possible and the crop is 100-110 days old, farmers may harvest the crop to realize 70-80 % of normal fibre yield. This exceptional practice may meet the return from investment. As water stagnation is there, it is not possible to keep the crop for leaf shedding in the field, in such case, prepare the “jak” in 2 to 3 layers depending on the depth of water in the retting tank.
- Do not use banana stems as covering material over the jak. Direct use of mud or soil over the jak should be avoided, instead, farmers can keep the mud or soil in the old cement or fertilizer bags as weighing material. Direct use of banana stem and mud over the jak will produce black coloured jute fibre with very low fibre quality.
- Farmers can use “Crijaf Sona” for faster retting with quality improvement and higher fibre recovery @ 4 kg/ bigha of harvested jute plants. Crijaf Sona should be applied during the preparation of jak at each layer of jute plants, in such a way that, more amount of the Crijaf Sona powder will be applied at the basal portion of the jute plants and less amount at the top portion of the plants.



100-110 days old crop



At emergency and continuous waterlogged condition, harvesting of 90-100 days old crop may be done

Preparation of 'Jak' in nearby water body after harvesting

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/litre or Indoxacarb 14,5 SC@ 1.0 ml/litre in extreme

## 2. Jute crop sown during April 11-25: Crop Age- 105-120 Days

- The farmers are advised not to take any crop protection measure if the crop is harvested in time (120 days crop age). However, he should be vigilant on infestation and outbreak of hairy caterpillar if harvesting is delayed.
- Waterlogging at this stage may aggravate the incidence of stem rot/root rot. Therefore, remove water through proper drainage. Remove the affected plants and plant with lanky growth which do not add any effective fibre yield.
- Under the condition when removal of stagnant water from low land jute field is not possible and the crop is 100-110 days old, farmers may harvest the crop to realize 70-80 % of normal fibre yield. This exceptional practice may meet the return from investment. As water stagnation is there, it is not possible to keep the crop for leaf shedding in the field, in such case, prepare the “jak” in 2 to 3 layers depending on the depth of water in the retting tank.
- As the jute crop is in mature stage (120 days old), farmers can harvest their jute crop. After harvest of the crop, jute bundles should be kept upright in the field for 3 to 4 days for leaf shedding, these leaves after decomposition will return some amount of plant nutrients taken by the plants during growth. Sort the chads pat (< 1.5 m) properly for smooth retting.
- Do not use banana stems as covering material over the jak. Direct use of mud or soil over the ‘jak’ also leads to poor quality fibre which should be avoided, instead, farmers can keep the mud or soil in the old cement or fertilizer bags as weighing material. Farmers can use reusable plastic bags filled with water as weighing material over jak for better fibre quality.
- Farmers can use “CRIJAF Sona” for faster retting with quality improvement and higher fibre recovery @ 4 kg/ bigha (30kg/ha)of harvested jute plants. CRIJAF Sona should be applied during the preparation of jak at each layer of jute plants, in such a way that, more amount of the CRIJAF Sona powder will be applied at the basal portion of the jute plants and less amount at the top portion of the plants.



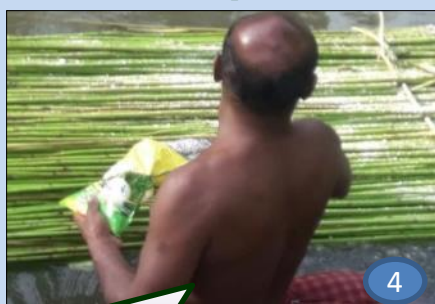
1. Harvesting of 120 days old crop



2. Bundle making allow for leaf shedding



3. Jak preparation



4. Application of CRIJAF Sona over the jak for quality retting and reducing retting duration



5. Application of load (sand/stone/soil etc.) in cement bag over the jak to submerge the jak



6. Alternative load i.e. water in plastic bag put over the jak to submerge it

### 3. Timely sown jute crop (March 25 to April 10): Crop Age: 120-135 Days

- Immediately harvesting of jute crop, make bundle of convenient size, keep these jute bundles in the field for 3 to 4 days for leaf shedding, as leaves after decomposition will add organic matter and some amount of plant nutrients in the soil. Then bring these bundles in nearby water bodies to prepare jak.
- Do not use banana stems as covering material over the 'jak'. Direct use of mud or soil over the jak leads to poor quality fibre which should be avoided, instead, farmers can use old cement or fertilizer bags filled with soil or mud as weighing material. If available, farmers can use water hyacinth over the 'jak', it improves fibre quality.
- Use of reusable plastic bags filled with water can also be an alternate option as weighing material.
- Use 'Crijaf Sona' for faster retting with quality improvement and higher fibre recovery @ 4 kg/ bigha of harvested jute plants. 'Crijaf Sona' should be applied in each layer of jak, higher amount at the basal portion and less amount at the top portion of the 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.

#### Fibre extraction and drying of fibre

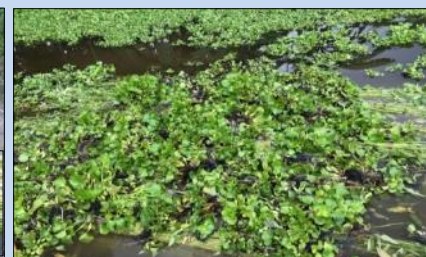
- Retting of jak may be completed in those cases when jak was given about 10-20 days back. If retting completed then extract the fibre, wash it and dry under sunny condition



Harvesting of 120 days old crop, and keep the bundle in field for 3-4 days for leaf shedding



'Jak' preparation in nearby water body and use of CRIJAF Sona over jak



Covering of 'jak' with water hyacinth (if available) that improve fibre quality



Apply load (sand/stone/soil) in cement bag to submerged the jak



Alternative load i.e. water in plastic bag to submerge the jak



Ensure that 'jak' should be submerged for proper retting



1. Fibre extraction and washing 2. Drying of fibre under sunshine 3. Preparation of fibre bundle

### III. Agro-Advisory for Allied Fibres

#### A) SUNNHEMP



#### 1. Those who sown the crop in between May 11-25: (crop age- 70-85 days)

- Maximum and minimum temperature are predicted to be 31-34°C and 26-27°C, respectively and heavy rainfall is likely to occur during next one week.
- Due to high rainfall, water logging conditions in sunnhemp field may occurs that adversely affects the crop and aggravate the incidence of vascular wilt. Water stagnant in the field has to be removed by making suitable ditch along the slope.
- In case of dense crop foliage and warm weather vigilant about the infestation of hairy caterpillar. The pest should be managed depending on the severity of damage with spraying of Lambda Cyhalothrin 5EC@ 1ml/lit or Indoxacarb 14.5 SC@ 1.0 ml/litre in extreme cases.



80-85 days old crop



Removing of water from the field

## 2. Sunnhemp crop sown between April 26-May 10: (crop age 85-100 Days)

- The crop may be harvested at 90-100 days. The crop is harvested with the help of sickle and plants are tied in small bundles of 15-20 cm in diameter to facilitate retting and washing. The upper tender portion of the plants are cut and used either as a fodder for cattle or incorporated into soil for green manuring.
- Bundles are then taken to the retting tank where these are kept side by side horizontally to form a plate form of any convenient size and then pressed deep into water (20-25 cm) with the help of bamboo or stones or wooden logs for retting. The retting process requires generally 3-5 days depending upon prevalent temperature. The test for completion of retting is done by separation of bark from the stick.



Harvesting of crop at 90-100days



Bundling of harvested plant



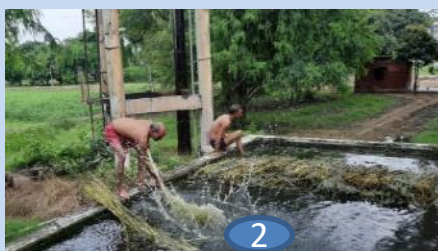
Making of Jak in nearby water body

## 3. Farmers sown the crop in Mid-April (Crop age: 100-115 days)

- The farmers are advised to check for completion of retting process, if retting is completed, the bundles are dashed against water for 3 to 4 times to remove excess lignin and then bundles are moved in water to and fro. Washed bundles are stacked vertically for dripping of water from the sticks and fibres.
- When washed bundles of sunnhemp are dried. Fibre from each plant is extracted/peeled off manually from bottom to top side in long strip. The extracted fibre is again dried in the sun, put up in twists and bundles for marketing.



1



2



3



4



5

1, 2, 3: Steeping and washing of retted fibre 4. Removal of fibre 5. Drying of fibres

## B) Mesta



Kenaf



Roselle

### 1. Those who has sown the crop on Mid-June (crop age 40-55 days)

- Under warm and humid condition foot and stem rot may occurs which spread very fast with high rainfall. Avoid waterlogging and improve drainage. Spray Copper oxychloride 50% @ 4-5g/litre towards the basal region of the plant.
- Similarly, phoma leaf blight is a common disease which affect the leaf from margin and progress inwards. Under humid condition the disease spread fast and defoliate the plant. If substantial infection (>5%) is noticed spray Copper oxychloride 50% @ 4-5g/litre or Mancozeb @ 2g/litre.
- In case of stretches of dry period, mealybug infestation may occur. Foliar spray of Profenophos 50EC @ 2ml/litre may be taken up after monitoring and removal of mealybug colonies if spotted in large numbers.



60 days old crop



Phoma leaf blight of mesta

### 2. Sowing of mesta within First week of June (crop age 45-60 days)

- Avoid waterlogging and improve drainage so that the crop remain free from biotic and abiotic stress. Very often food and stem rot may aggravate due to water logging. Spray Copper oxychloride 50% @ 4-5g/litre towards the basal region of the plant.
- Similarly, phoma leaf blight is a common disease which affect the leaf from margin and progress inwards. Under humid condition the disease spread fast and defoliate the plant. If substantial infection (>5%) is noticed spray Copper oxychloride 50% @ 4-5g/litre or Mancozeb @ 2g/litre.



60-75 days old crop



Foot and stem rot



Phoma leaf blight of mesta



### 3. Sowing of mesta in mid May (crop age 60-75 days)

- Avoid waterlogging and 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. Spray Copper oxychloride 50% @ 4-5g/litre towards the basal region of the plant.
- Similarly, phoma leaf blight is a common disease which affect the leaf from margin and progress inwards. Under humid condition the disease spread fast and defoliate the plant. If substantial infection (>5%) is noticed spray Copper oxychloride 50% @ 4-5g/litre or Mancozeb @ 2g/litre
- In some mesta growing areas yellow vein mosaic of mesta may be occurred which is transmitted by white fly. Foliar application of Imidacloprid 17.8 SL @ 0.5-1ml/lit reduced the vector population which reduce the spread of yellow vein mosaic disease.



60-70 days old crop



Foot and stem rot



Phoma leaf blight of mesta



Mesta yellow vein mosaic(MYMV) affected field

## C) SISAL

**Introduction:** Sisal (*Agave sisalana*) is a xerophytic semi-perennial, leaf fibre producing plant. Sisal fibre is commonly used in the shipping industry for mooring small craft, lashing, and handling cargo. Presently the main sisal producer and exporter is Brazil and main importer is China. In India, sisal is mainly grown in arid and semi-arid regions of Andhra Pradesh, Bihar, Orissa, Karnataka, Maharashtra and West Bengal. The yield of sisal in our country is very low, due to lack of proper management. The total area under sisal cultivation is 7770 ha out of which 4816 ha is grown under soil conservation purpose. Suitability to the Indian climate with little water requirement and maintenance, makes sisal a fit crop for sustainable development in the country particularly in rural India. Sisal, a CAM plant, can be successfully grown in 40-45°C with 60-125 cm rainfall. The cultivation of sisal and its allied activities will augment the employment opportunities and livelihood security of tribal/local farmers through generation of man days (113 man-days/ha) and promotion of cottage industries through value addition. Besides, sisal is efficient in reducing runoff by 34.6%, soil loss by 61.9% and conserve soil moisture.

**Collection of bulbils:** Growth of Sisal plant is terminated with emergence of flowering stalk know as pole. Each pole contains about 200-500 bulbils, consisting of 4-7 reduced leaves. The same should be collected and raised in primary nursery as planting material.

**Preparation of Primary Nursery:** Primary nursery be raised for getting suckers from fresh bulbils with intensive care. The bulbils should be spaced at 10 x 7 cm in flat raised beds of 1 m width. N:P:K @ 30:15:30 kg/ha is applied in addition to organic matters. Bulbils are very much sensitive to weed competition, water stress and stagnation at the early growth phase for which nurseries should be kept weed free and proper irrigation and drainage may be made.

**Maintenance of Secondary Nursery:** Nursery should be made weed free with provision of irrigation and drainage facility. 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 72000-76000 suckers. It is assumed that mortality of bulbils in secondary nursery is 5-10 percent. The top dressing with nitrogen fertilizer should be taken up after onset of monsoon for proper growth of the plantlets. The above practices are same for Hybrid sisal.

**Maintenance 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. 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. These suckers available in the main field should be made weed free and plant protection measures should be taken so that the healthy suckers can be uprooted after the onset of the monsoon.



Harvesting of leaves (A), fibre extraction (B), Intercultural operation of primary nursery (C) weeding in primary nursery (D) and Spraying of Copper Oxychloride @ 2-3 g/litre water to control Zebra disease of sisal

### Maintenance of New Sisal Plantation

- Weeding 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 zebra disease or alternaria leaf spot of sisal, should be taken up. Application of sisal compost 2 ton/ha should be taken up immediately for optimum growth and yield. NPK @60:30:60 kg/ha should be applied by making ring around the sisal plant at least in the first year of plantation after onset of monsoon.

### Sisal plantation in the Main field

- Farmers who have not prepared main field for sisal plantation till now, may go for field preparation without delay selecting well drained soil depth of 15 cm. 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 ft<sup>3</sup> size with spacing 3.5 m + 1m × 1m for Double-row sisal plantation should be done and about of 4500 suckers/ha are required. However, planting can also be taken at spacing of 3.0 m + 1m × 1m under adverse situation with plant population of 5000/ha.
- 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.
- After onset of monsoon, 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/ litre of water for 20 minutes. Suckers should be planted in a hole made in the center of the pits. 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 having 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: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O:: 60:30:60 Kg/ha should be. Nitrogen should be applied in two equal splits: 50 % during pre-monsoon period and rest during post-monsoon period and the post-monsoon dose should be started immediately taking the advantage of soil moisture.
- 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. The planting of the suckers is to be completed within 45 days of collection. Atleast 100 suckers per hectare should be kept as reserve 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.

### Harvesting of Sisal Leaves

- Harvesting of leaves 3 years after plantation and in the 1<sup>st</sup> cutting, leaving 16 leaves, all leaves should be harvested whereas in the subsequent cutting 12 leaves are left. Farmers who have not harvested the leaves yet, can take up harvesting and extraction in afternoon hours and it should be completed immediately. Spraying of Copper Oxychloride @ 2-3 g/litre water may be taken up against disease infestation after harvesting of leaves. Extracted fibre after cleaning and drying should be bailed and stored properly.

### Intercropping in sisal plantation for additional income

Lemon grass may be taken as intercrop in sisal plantation, that will conserve soil, water and increase income of about Rs. 65,000 /- per ha. Horse gram can be taken in the interspace of sisal to increase the soil fertility, to check weed infestation as well as for obtaining additional income of about Rs. 36,000 per ha. The short duration green gram may be taken to conserve soil, water and to increase the fertility status of soil. An additional income of Rs. 38,000 per ha can be obtained by the sisal growing farmer during the gestation period of sisal.



Intercropping 1. Lemon grass 2. Horse gram 3. green gram

## 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 intercrops 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

## D) RAMIE



- As per forecast, medium to heavy/ thunder showers are very likely to occur in Assam (Barpeta district) , therefore, provision of draining out of rain water is very much essential as the crop is very sensitive to waterlogging.
- Timely harvesting of ramie crop is most important operation, which is to be done after every 45-60 days old plant. Stem colour turns green to brown beyond this period, which is indication of over maturity of fibre and poor quality as well. Ramie farmers must be attentive to avoid this situation.
- Stage back operation is recommended in old plantation for uniform crop stand and followed by application of recommended dose of fertilizers i.e. 30-15-15 kg/ha of NPK.
- For new plantation gap filling may be done if uniformity in crop stand is not achieved.
- Application of Quizalofop Ethyl 5% EC @ 40 g a.i./ha significantly reduces all grassy weeds. Application should be based on intensity of weeds more especially grassy weeds.
- Insect pests like Indian red admiral caterpillar, Hairy caterpillar, Lady bird beetle, Termites, Leaf beetle and Leaf roller may be seen in the field. Based on the incidence of these pests spraying of 0.04% Chlorpyrifos is recommended.
- Diseases like Cercospora leaf spot, Sclerotium rot, Anthracnose leaf spot, Damping off and yellow mosaic may be seen during these times. Based on the occurrence of these diseases foliar spraying of fungicides such as Mancozeb @2.5 ml/litre or Propiconazole @1 ml/litre is recommended.



Planting of rhizomes



New ramie plantation



Harvesting of ramie crop



Defoliation of leaves after harvesting



Ramie fibre extraction



Drying of extracted fibre after extraction (ungummed)



## Water Harvesting for In-situ Retting and Sustainable Eco-farming

- ❖ 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.

### Completion of retting pond before monsoon:

- ❖ To overcome the problems of insufficient retting water at harvesting time, farmers are advised to complete the preparation of in-situ retting tank before rainy season i.e. June in the lower most corner of the field so that rain water which goes as runoff (30-40% of the rainfall amounting around 1200-2000 mm) can be harvested and used for retting and make jute and mesta farming more profitable.

### 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 m<sup>2</sup>. If farmers want to afford more land under farming system, pond dimension of 50 ft x 30 ft x 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 based horticulture (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 losing 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.

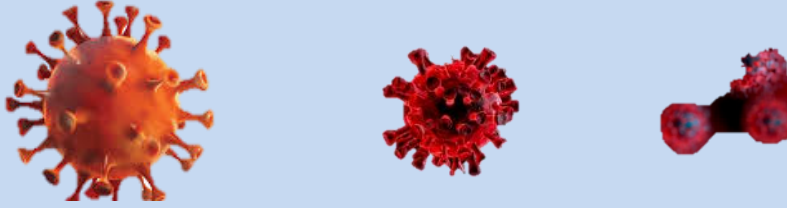


## In-situ Jute Retting Tank based Self Reliant Eco-farming System

- ❖ Jute Retting
- ❖ Fish culture
- ❖ On-dyke Vegetable farming
- ❖ Vermicomposting around retting tank

- ❖ Duckery
- ❖ Apiculture
- ❖ Fruit ( Papaya and Banana)

#### IV. Safety and Preventive Measures to be Taken to Prevent Spread of COVID-19 Virus

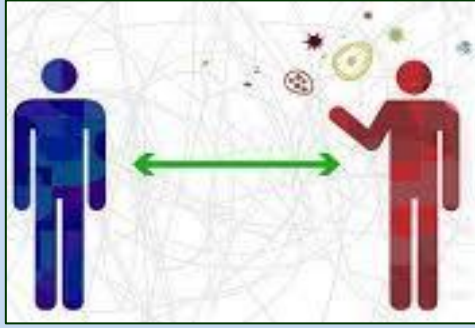


- 1) Farmers should follow social distancing, safety measures and to maintain personal hygiene by washing hands with soap, wearing of face mask and protective clothing at each and every step in the entire process of field operations like land preparation, sowing, weeding, irrigation.
- 2) Proper sanitation 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.
- 3) Also maintain safe distance of 6 feet during rest, taking of meals, seed treatment at home, loading/unloading of manures and fertilisers.
- 4) 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.
- 5) 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.
- 6) 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 to be relocated so that sufficient distances are maintained among the workers 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, levers 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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