

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

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**Agro-advisory to Farming Community of Jute and Allied Fibres
(Feb. 20 to March 06, 2022)**

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

State/Agro-climatic 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 is expected during 5-9 February, 2022 (Total rainfall up to 45 mm). Maximum temperature (T_{max}) is expected to be around 25-27°C, and minimum temperature (T_{min}) of around 11-15°C.
Sub-Himalayan West Bengal (Cooch Behar, Alipurduwar, Jalpaiguri, North Dinajpur, South Dinajpur and Malda)	Light to moderate rainfall is expected during 5-9 February, 2022 (Total rainfall up to 50 mm). Maximum temperature (T_{max}) is expected to be around 19-23°C, and minimum temperature (T_{min}) of around 6-9°C.
Assam: Central Brahmaputra Valley Zone (Marigaon, Nagaon)	Very light rainfall (total up to 6 mm) is expected during 5-9 February, 2022. Maximum temperature is expected to be around 20-23°C, minimum temperature of around 10-13°C.
Assam: Lower Brahmaputra Valley Zone (Goalpara, Dhubri, Kokrajhar, Baongaigaon, Barpeta, Nalbari, Kamrup, Baksa, Chirang)	Light rainfall (total up to 20 mm) is expected during 5-9 February, 2022. Maximum temperature is expected to be around 17-20°C, minimum temperature of around 11-14°C.
Bihar: Agro-climatic Zone II (Northern East) (Purnea, Katihar, Saharsa, Supaul, Madhepura, Khagaria, Araria, Kishanganj)	Light rainfall is expected during 5-9 February, 2022 (Total rainfall up to 10 mm). Maximum temperature is expected to be around 16-23°C, minimum temperature of around 9-10°C.
Odisha: North Eastern Coastal Plain (Balasore, Bhadrak, Jajpur)	Moderate rainfall is expected during 5-9 February, 2022. (Total rainfall up to 30 mm). Maximum temperature is expected to be around 25-29°C, minimum temperature of around 13-16°C.
Odisha: North East and South Eastern Coastal Plains Region (Kendrapara, Khurda, Jagatsinghpur, Puri, Nayagarh, parts of Cuttack, and parts of Ganjam)	Light rainfall is expected during 5-9 February, 2022 (Total rainfall up to 30 mm). Maximum temperature is expected to be around 26-29°C, minimum temperature of around 13-15°C.

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

II. Agro-advisory for allied fibre crops

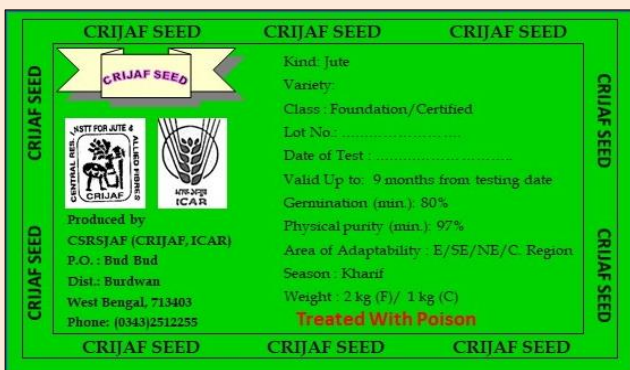
A. JUTE

Agro-advisory for jute seed production

- ❖ **Area of jute seed production in West Bengal:** Purulia, Bankura, Western part of Paschim Medinipur and Birbhum
- ❖ In both uplands (*tarh* land) (sowing completed within second fortnight of July) and medium lands (*Baid* land) (sowing during August and sowing during 1st week of September) harvesting, threshing, processing and packaging must have been completed.
- ❖ Maintain seed lot identity during storage. Avoid damage by rodents using precautionary measures and rodenticides like [zinc phosphide](#), Bromadiolone, warfarin and strychnine. Plan for marketing of seed well ahead of sowing time.
- ❖ Take due care in selecting seed marketing chain in targeted fibre growing areas. Seed should reach to the retailers before 10th March so that sowing can be done 15th March onwards in premature flowering resistant varieties. Those who have produced certified seeds can apply for subsidy under NFSM (subsidy amount Rs. 5000/- per quintal) or central sector scheme through Assistant Director of Agriculture (Admn.), seed certification.



A: Seed Processing



C = Seed Packet Sample

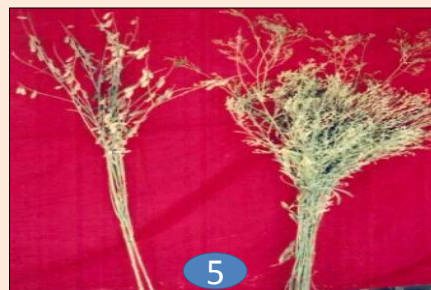
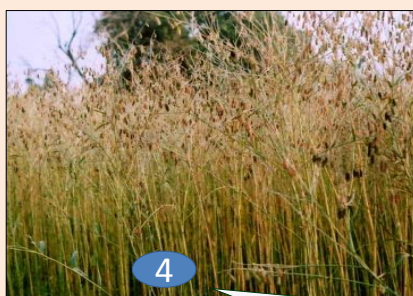


Jute seed crop

B. SUNNHEMP

Operations in Sunnhemp Seed Crop

- ❖ Harvesting should be done by sickle at 125-140 days of sowing when the seed inside the pod has started rattling. Threshing should be done by tractor or by beating pod on hard surface.
- ❖ After threshing and winnowing, dry the seeds to the extent of 10% moisture content before storing.
- ❖ The seeds should be stored in cool and dry place.



1. Threshing of sunnhemp seed crop 2. Winnowing of seed 3. Spraying to protect pod borer 4. harvesting stage 5. Phytoplasmal diseases – uproot and destroy the affected plant



Sunnhemp seed crop

C) FLAX



INTRODUCTION: Flax (*Linum Ussitatisimum* L.) fibre is pale yellow, cellulosic (70%), luxurious, thermo regulating, non-allergenic, antistatic and antibacterial fibre. Cultivation of flax require temperate, free from heavy rains and frost. It grows in between 50^o F to 100^o F. It prefers loamy soil. Such climates and soils usually prevails in foot hills and intermediate hill zone of Himalayan region comprising states of Jammu and Kashmir, Himachal Pradesh, Utrakhand, northern part of Uttar Pradesh, West Bengal and parts of North-East region. In India, flax cultivation is yet to take off substantially despite of having conducive agro-climatic conditions in different regions. This is due to unavailability of location specific high yielding varieties and improved production technology.

- ❖ Presently the crop in flower initiation stage, light irrigation may be provided in case of drought condition.
- ❖ In some areas weeds (*Convolvulus arvensis*) may be observed. If such problem noticed, it should be uprooted and destroyed.
- ❖ Farmers are also advised to be vigilant on infection of collar rot or *Fusarium* wilt in patches. Initially leaves turn yellowish and droop, if such symptoms noticed drenching of carbendazim+mancozeb @ 2g /lit is recommended. If wilted dead plants noticed that needs to be uprooted and destroyed.



Collar rot or Fusarium wilt affected crop



Light irrigation if the crop suffer water stress



Weed (*Convolvulus arvensis*) infestation



Crop growth at 60-65 DAS and 100 DAS



D) 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 ft³ 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: P₂O₅: K₂O:: 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 1st 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 Oxylchloride @ 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:

- ❖ Mulching, Lifesaving irrigation and plant protection measure should be taken for guava and mango plants grown in interspace of sisal for higher yield and income. Similarly, where lemon grass has been taken as intercrop in sisal, after each cutting, application of nitrogen fertilizer and irrigation should be taken up for enhancing far income.



1



2



3

Intercropping 1. Lemon grass 2. Guava 3. Mango

Sisal based Integrated Farming System

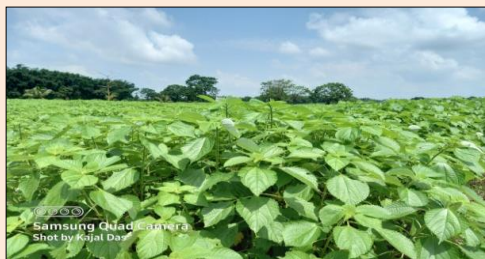
Integrated Farming System in Sisal Plantation can be adopted successfully as a profitable venture in Tribal and Drought Prone areas for employment generation, enhancing farm income and sustainable agriculture. The efficient use of available resources will help in generating adequate income due to integration 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

E) RAMIE



- ❖ Farmers may start new plantation during this period. Stage back operation is recommended for old plantation followed by application of fertilizers and irrigation for uniform growth and better yield.
- ❖ Use good quality rhizomes/ plantlets of R1411 (Hazarika) variety of ramie. Seed treatment with any systemic fungicide before sowing is recommended.
- ❖ Sowing should be done in line and required seed rate will be only 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. Make a furrow of about 4-5 cm deep. 10-12 cm length pieces of rhizome/ plantlet/ stem cutting are to be planted in the furrow at a distance of 30-40 cm by keeping the row to row distance 60-75 cm in order to get the optimum growth and productivity.
- ❖ Inter row space may be utilize for intercropping with any short duration crops (locally preferred) compatible with ramie. Inter cropping with pineapple, papaya, coconut, arecanut etc is recommended for higher income.
- ❖ Integrated applications of organic (FYM or Ramie compost as per availability) and inorganic sources of nutrients are recommended for balanced nutrition to the crop and for maintaining good soil health. For new plantation application of 20:10:10 kg NPK/ha after 40-50 days of planting is recommended. Subsequently 30:15:15 kg NPK/ha after each cutting is recommended. Apply 10-12 t FYM before 15-20 days of planting as per the availability.
- ❖ During this period the growth is very less due to low temperatures; therefore, care should be taken at this period. Most importantly 1-2 irrigations may be applied at 15-20 days interval for better crop stand.
- ❖ Based on the incidence of insect-pests and diseases spraying of 0.04% Chlorpyrifos and Mancozeb @2.5 ml/lit or Propiconazole @1 ml/lit are recommended, respectively.
- ❖ Spraying of Quizalofop Ethyl 5% EC @ 40 g a.i./ha is recommended which reduces all grassy weeds.
- ❖ The crop is very sensitive to water-logging, therefore provision of drainage may be kept and field should be well drained during heavy rains.



Ramie plantation



Harvesting of ramie crop



Ramie fibre extraction



Weeding by Jungle Jim after harvest of ramie



Spraying of non-selective herbicide like Paraquat or Glyphosate



Ramie fibre after extraction (un-degummed)

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 m². 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.

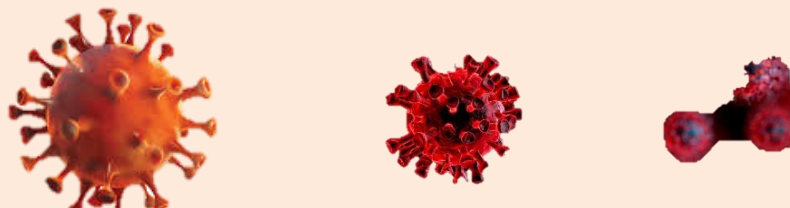


In-situ Jute Retting Tank based Self Reliant Eco-farming System

- ❖ 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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