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# Profitable Production of Jute through Mechanization

Shailesh Kumar<sup>1</sup>, R.K. Naik<sup>2</sup> and V.B. Shambhu<sup>3</sup>

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**Jute being a labour intensive crop, lesser degree of importance given to its mechanization. Rising cost of manual labour has affected the profitability. Conventional weeding involves around 30% of total cost of cultivation. Line sowing through multi row seed drill and mechanical weeding is able to give higher profitability by reducing the cost of cultivation as well as time required for weed management.**

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Jute is an important eco-friendly fibre crop grown in Eastern and Northern states of India. It is cultivated by about 40 lakh small and marginal farmers of West Bengal, Bihar, Assam, Odisha, Tripura, Meghalaya and limited area of Uttar Pradesh in about 8 lakh hectare.

An abundant availability of skilled labourer at cheaper rate in these areas was a major reason of its lesser degree of mechanization. The jute fibre is mainly used in packaging, textiles or non-textiles, construction and agriculture field. Arrival of cheap synthetic materials in the decade of early seventies resulted in gradual decline in demand of jute and its value added products. Simultaneously, at operational level there was continuous rise in cost of production of jute. Major factors responsible for this were gradual increase in cost of agro inputs as well as labour charges for weeding, retting and fibre extraction. Hence, jute cultivation has become a non-profitable enterprise for majority of the jute growers (total cost of production about ₹ 60,000-70,000/ha). In this situation it has become necessary to promote such technologies that could reduce the cost of production. Mechanization is one of the viable option to make jute cultivation more profitable by cost saving mechanism.

Application of improved tools, equipment and machines by farmers

or labourers in jute cultivation is called mechanized cultivation of jute. Mechanization helps in increase the field performance. It also reduces the cost of production and drudgery related to farming. A wide range of farm equipment/tools available for jute cultivation are tractor/power tiller, sprayer, seed drill, nail weeder/wheel hoe etc. For a normal farmer having small land holding, a power tiller (6-14 hp) is more useful and less expensive than a tractor (35-40 hp).

Jute is a crop of about four months. It grows well in hot and humid climate. Its cultivation starts from land preparation in the month of March-April. It consumes about 10-15 per cent of total cost of production. Land preparation by means of a power tiller is more economical and fast (about one acre land is covered in 3.5 h @ ₹ 400/h) than traditional deshi plough. In this way with the help of power tiller cost of land preparation comes around ₹ 6000/ha as compared to about ₹ 8000/ha for deshi plough. There is a net saving of ₹ 2000/ha. Besides, a power tiller can also be used for the purpose of transportation.

After land preparation, sowing is the second most important farm operation. Sowing of fungicide treated (viz. Bavistin) seeds are always advantageous as it reduces the possibility of seedling mortality at

younger stage of crop. Generally farmers do cultivation of jute in 0.5-1.0 ha area. For that, smaller quantity of seeds is required for treatment with fungicide. An earthen pot can be used for the treatment of seed. About 6 lakh/ha healthy seedlings are required to get optimum fibre production of jute (about 35 q/ha). Majority of the farmers follow broadcast method of sowing. Higher seed rate (6-7 kg/ha) is used to maintain the optimum plant population in the field. Later on, excess unwanted seedlings are removed during field operation of weeding and thinning. It involves extra labour and time. Line sowing facilitates in carrying out other agricultural operations in the field. Spraying of plant protection chemicals becomes easier to manage the attack of disease and pest. A multi-row manual seed drill has been developed by ICAR-CRIJAF, Barrackpore for line sowing of jute (Fig. 1).

In this method, lesser amount of seed (3-4 kg/ha) is required in comparison to broadcast method. Thus, a farmer can cover 0.5-0.6 hectare area in a working day.

Weeding is the third most important field operation. Usually weeding in jute field is carried out in 30-40 days after sowing manually (90-160 labourers/ha). Consequently,

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**Fig.1: Sowing of jute seed through multi row seed drill**

it requires huge expenditure on labour force and time. Manual weeding contributes about 30 per cent of total cost of production. To economize it, different types of herbicides are available in the market i.e. Pre-emergence non-selective (Glyphosate) or Post-emergence selective (Quizalofop ethyl, Pretilachlor). It can be sprayed depending upon the types of weed infestation in jute field. It is cheaper and convenient in comparison to manual weeding. Now a day s due to growing environmental concern/awareness people hesitate to use chemical method of weed management. Use of wheel hoe or CRIJAF Nail weeder is an alternative option in terms of saving of cost and time. Manual operated wheel hoe is easy to operate. It is 5-10 times more effective than a manual khurpi. A farmer can cover about 1/3<sup>rd</sup> of a hectare in a working day. It help in saving of about 40-80 labourers/ha.

CRIJAF Nail weeder is developed by ICAR-CRIJAF, Barrackpore, Kolkata (Fig.2). This equipment can be used at 5 days interval (5-30 days of crop age) in between lines.

In this way, about 80-85 per cent composite type of weeds can be managed. Rest 15-20 per cent of weeds have to be removed by hand. Therefore, a Nail weeder requires only 7-10 labours/ha to manage the weed flora. There is a minimum saving of about 15000/ha. This



**Fig.2: Eradication of composite type of weeds in jute crop**

**“Majority of the farmers follow broadcast method of sowing. Higher seed rate (6-7 kg/ha) is used to maintain the optimum plant population in the field. Later on, excess unwanted seedlings are removed during field operation of weeding and thinning. It involves extra labour and time. Line sowing facilitates in carrying out other agricultural operations in the field. Spraying of plant protection chemicals becomes easier to manage the attack of disease and pest.”**

weeder can also be successfully applied for managing weed flora in line sown crops like paddy, mung, vegetables (French bean), flax etc.

Jute plants are generally harvested at about 120 days i.e. July-August. After harvest plants are kept in the field for 3-4 days for shedding of leaf. Then jute bundles (18-20 cm diameter) are put below/under slow moving water for about 18-21 days (for retting). During this process the fibres adhered to stem of plant get loosened and easily come out.

**“A wide range of farm equipment/tools available for jute cultivation are tractor/power tiller, sprayer, seed drill, nail weeder/wheel hoe etc. For a normal farmer having small land holding, a power tiller (6-14 hp) is more useful and less expensive than a tractor (35-40 hp).”**

Afterwards the fibres are separated from the stem and washed in clean water. The fibres are dried in sun and tied into bundles for its sale. The whole process of fibre extraction starting from harvesting to drying of fibre is done manually. It involves about 35 per cent of total cost of production. In traditional method of retting (whole plant) huge amount of water and large number of water bodies are required. Several fibre extraction machines (manual and power operated) are in developmental stage at ICAR-NIRJAFT, ICAR-CRIJAF and Universities. Acceptability/popularity of these machines is negligible among jute farmers because of high cost of machine, dependent on electricity and breaking of sticks. To meet out the challenges, there is a need to change the priorities and mindset of the jute growers and research institutions.

It is assumed that in future more efficient fibre extraction machineries would come up which could extract green ribbons and reduce the volume of water and time required for retting to a large extent. Thus, a farmer through mechanized jute cultivation could effectively minimize the cost of cultivation i.e. land preparation, sowing and weeding which would ultimately raise his net income. **For more information contact Mob. No. 9477447517 & Email ID: shk\_98@rediffmail.com**