

Constraints and Motivation behind Jute Cultivation

Rajendra R. Chapke¹

ABSTRACT

Jute is an important cash crop of poor farmers of West Bengal. Productivity of jute is low as compared to achievable yield potential due to several reasons. The study was, therefore, conducted to identify constraints and motives of jute cultivation by the farmers in eight villages of three districts viz., North 24-Parganas, Nadia, and Hooghly of West Bengal with total 144 respondent farmers from different categories. The data were collected with the help of pre-tested semi-structured interview schedule and participatory rural appraisal (PRA) tool. The results reveal that more than 80 per cent of farmers are unaware about the improved production technologies due to lack of appropriate regularized market and grading system (93%) followed by huge labour required for performing manual retting operation of jute (81 %) and high wages of labour during peak season (79%). Non-availability of good quality water (42%) and insufficient water bodies for retting (28%) and irrigation are also reported and confined their severity on the basis of rank based quotient value. However, the farmers are cultivating jute to get the jute sticks for domestic fuel and utilize their family labourers, despite, getting low or no economic returns. A multi-prong strategic effort of research and development with emphasis on strengthening extension system is essentially needed for jute development.

In West Bengal, jute is an important fibre cash crop. The market is dominated by the synthetic materials. Jute has its own unique trait as it is bio-degradable, non-pollutant and eco-friendly. Of late, the whole world is thinking seriously to check the environment pollution by maximizing the use of natural fibre products, which are nature friendly. In this consciousness, Food and Agriculture Organization (FAO) has declared 2009 as the International Year for Natural Fibres. However, the environmental benefits of products derived from plant fibres are poorly communicated to the general public (Chapke et. al. 2008). About 60 per cent of the raw jute in the world is produced in India. West Bengal ranks first having the largest area under jute i.e. 5.58 lakh ha out of 7.70 lakh ha total area in the country during 2005-06.

There is a wide gap between national productivity (23.46 q h⁻¹) and productivity achieved in frontline demonstration programmes (31.68 q ha⁻¹ of JRO 524) during 2005-06 (Chapke et. al., 2006a). Jute is mostly

cultivated by small (25%) and marginal (65%) farmers and thereby, costly technologies are not acceptable to them. Pathak (2001) stated that the constraints are the factors, which operate to reduce achievable yield potential on the farmers fields. He recorded that non-use of seeds of high yielding jute varieties, imbalanced fertilizer use, intensive weeds in the field, soil problems, intensity of drought or floods in some areas, poor management and small farm sizes, were the major impediments for low productivity of jute. The other limiting factors in adoption of improved production technologies were; lack of appropriate market system, uncertainty in returns of the crop price, labour intensive crop, high cost of labourers, in-sufficient retting infrastructures, and non-availability of inputs at local level (Biswas, 2001). In view of these the present study was conducted to identify constraints pursued by the farmers in adoption of jute production technologies for increasing its productivity and seeking ideas for future development.

¹ Scientist (Sr. Scale), Agricultural Extension, Central Research Institute for Jute and Allied Fibres (CRIJAF), Barrackpore, Kolkata

METHODOLOGY

The study on constraint analysis of jute cultivation was conducted to find out problems or difficulties in details, which limit the process of technology adoption and increasing productivity of jute. For this purpose, one hundred forty four (144) farmers of different categories were selected randomly from eight villages i.e. thirty (30) jute farmers from two villages, namely, Manikpur (Block-Deganga) and Srikathi (Block- Rhaditria) of North 24-Parganas district; fifty two (52) farmers from three villages, namely, Sikorpur (Block-Chakdah), Doduabari (Block- Ranaghat-JI) and Daksin Majdia (Block-Ranaghat-I) of Nadia district and sixty two (62) farmers from three villages, namely, Haripur (Block- Singur) Panivhecia (Block- Haripal) and Gobindpur (Block-Jangiparai) of Hooghly district which are intensive jute growing areas of West Bengal. The data were collected through personal interviews, group discussion, field observations and empirical observations with the help of pre-tested semi-structured interview schedule and matrix ranking was done by using tools of participatory rural appraisal (PRA). All the constraints were collected according to frequencies and percentage recorded against each. To measure the intensity of the constraints in jute cultivation experienced by the farmers, ranking was done in a village of each district by using matrix ranking technique of the PRA and further quantified by rank-based quotient (RBQ) value using the following formula as given by (Sabaratnam, 2002).

$$RBQ = \left\{ \sum_{i=1}^n \frac{f_i}{(n+1-i)/N \times n} \right\} \times 100$$

(Where: f_i = Number of farmers reporting a particular problem under i th rank; N = Number of farmers. and n = Number of ranks)

Motives of the farmers and their ideas regarding improvement in jute cultivation were identified and analyzed on frequencies and percentage basis.

RESULTS AND DISCUSSION

The term constraint is being viewed differently by the different researchers. In this study constraints mean problems or difficulties experienced by the jute growers in adoption of improved production technologies and achieving potential productivity. The constraints were identified through the investigation and categorized as, technology and its dissemination, market related, retting related, labour related and other constraints.

Technology and its dissemination related constraints.

On perusal of Table 1, it is revealed that more than

83 per cent of the farmers were unaware about the technologies developed by Central Research Institute for Jute and Allied Fibres (CRIJAF), such as, latest high yielding jute varieties (98%), fibre extraction through bast fibre extractor machine (94%), chemical weed control and intercropping (92%) and use of recommended fertilizer dose (83%). This was followed by line sowing by four-row seed drill (73%) and seed rate and its treatment (64%). Shortage of sowing span whenever there is rain and non-availability of the seed drills in local markets compelled the farmers to opt for broadcast sowing. There was lack of knowledge about disease control measures (49%). The fibre yield had been lost by about 10 to 20% due to wilting of jute as reported by 40% of the farmers. Reason for their unawareness was poor extension services. Hardly, a few of the farmers (only six per cent) could avail the extension service from village extension personnel called as *krishi prajukti sahayak* (KPS). Most of the farmers were taking advice to solve their problems from fellow village farmers (SI %), local agro-centre (30%) and their relatives (18%). Limiting factor in adoption of latest jute technologies was non-availability of seeds of high yielding variety in the market except nobin (JRO-524) expressed by 27 per cent farmers. Few farmers were aware about one or two latest high yielding varieties chemical weed control and intercropping but did not implement in their fields due to lack of confidence. This implies that there is need of training and field demonstration on the latest technologies. Pesticides were found ineffective by 46 per cent of the farmers. Spurious seed available in the market was also a limiting factor as reported by 26 per cent of the farmers in use of latest high yielding varieties. Only, 27 per cent of the farmers of North 24-Parganas district were curious for soil testing facilities within their approach for balanced fertilizers use.

Market related constraints in jute cultivation

Majority of the farmers (93%) of North 24-Parganas district reported that there was no grading system available in the market and, therefore, they didn't bother for fibre quality. The farmers could not get desired price for their produce, due to lack of proper marketing system. Thus jute fibre reach to the mills from the Jute growers through the various trade channels through middlemen in marketing of jute fibre (89%). Jute growers generally do not have the holding capacity of the harvest and there is pressure to meet the expenditure on festival needs and next crop cultivation. Under the circumstances they felt quite relaxed to all out the fibres immediately after harvest of the crop instead of thinking much about proper market systems. Most of them were not aware about the

Table 1. Constraints in jute cultivation (N=144)

Sl. No.	Constraint	Frequency	%
I. Technology and its dissemination related constraints			
1.	Lack of awareness about latest improved jute varieties	141	98
2.	Lack of awareness about fiber extraction machine	135	94
3.	Lack of awareness about chemical weed control and intercropping	132	92
4.	Lack of awareness about recommended fertilizer dose	119	83
5.	Lack of awareness about line sowing by four- row seed drill	105	73
6.	Lack of awareness about seed rate and its treatment	92	64
7.	Lack of awareness about disease control measures	45	49
8.	Ineffectiveness if insectides	52	46
9.	Loss of yield by about 10 to 20% due to wilting of jute	57	40
10.	Lack of soil testing facilities	08	27
II. Market related			
11.	No grading system is available in market	28	92
12.	No regularized market and were facing middlemen in marketing of jute fibre	128	89
13.	Non-availability of seeds of high yielding variety in the market except nobin (JRO-524)	17	27
14.	No market for jute stick	37	26
III. Retting related			
15.	Good quality water not available for retting	61	42
16.	Non- availability of sufficient water ponds for retting of jute	41	28
IV. Labour related			
17.	More labour requirement for conducting retting process of jute	116	8
18.	High wages of labour during peak season i.e. at the time of weeding and harvesting	114	79
19.	Shortage of labour during the peak season	33	23
V. Others			
20.	Scarcity of irrigation water during dry spells	60	42
21.	Spurious uncertified seeds available in the market	21	26

Minimum Support Price (MSP), which is fixed by the Government in the interest of the farmers. However, any times the fibre price was below MSP in peak season, as per the opinion of a few farmers. The MSP does not have impact unless backed by efficient market structure and functions (Sen and Hazra, 2007). However, a few farmers (26%) felt that there was no market for jute sticks (26%), which may give support to earn some money out of surplus sticks, Therefore, most of the farmers sought a kind of Government control and direct linkage with the jute mills in marketing of jute fibre. It is crucial point to draw attention of the policy makers for development of systematic market infrastructures in jute areas.

Retting related constraints

The farmers depend almost entirely on rain water stored at nearby natural water bodies like, road side ditches, ponds and canals for retting. Consequently the farmers face constraints regarding retting of jute such as, non- availability of good quality water (42%), and insufficient water bodies at the time of retting (28%), which was, however, not reported in the villages of Nadia district due to existence of big canal of Ganga river. The reasons for such situation occur as large scale harvesting of jute is being done during short period. The problem is aggravated in a year of low monsoon rains. The farmers depend almost entirely on rain water stored at nearby natural water bodies like, road side ditches, ponds and canals for retting.

Labour related constraints

Labour related major constraints faced by the farmers more labour required for performing retting operation of jute (81 %) and high wages of labour during peak season i.e. at the time of weeding and harvesting (79%). About 23 per cent farmers experienced shortage of labour during peak season. Massive farm operations like weeding, harvesting and retting are done over a short span of time that may be the reason behind these constraints. However, some labourers preferred to work at brick-field due to higher wages than agriculture, which was experienced in the villages of North 24- Parganas district. A good number of brick-fields are in operations in this area.

Other constraints

Though, jute is a rainfed crop, water stress situation occurs at times at critical growth period due to vagaries of monsoon which created scarcity of irrigation water during dry spells (42%) resulting in lower fibre yield. Therefore, life saving irrigations was essential during the same period, wherever possible. It was further observed that the nature of constraints were not found much different on the basis of socio-economic profile of the farmers, except a few location-specific constraints reported.

Ranking of the constraints by the farmers

To measure intensity of the constraints in jute cultivation, experienced by the farmers, ranking was done by using matrix ranking technique of the PRA tool. Fifteen (15) farmers of the Village Srikaihi of North 24-Parganas (N 24-Pgs) district, Sikorpur of Nadia district and Gobincpur of Hooghly district, each, were asked to list out the top most constraints and ranked them as per severity against each, These constraints were further quantified by rank based quotient (RBQ) (Table 2).

Results revealed that the constraints placed order as per RBQ value Lack of appropriate regularized market and farmers were facing middlemen in marketing of jute fibre (87), which was foremost constraint as mentioned earlier. More labour required for conducting retting process of jute (76) and high wages of labour during peak season i.e. at the time of weeding and harvesting (71) ranked second and third place, respectively.

It has been elucidated in earlier discussion also that jute cultivation is labour intensive that consumes 77 per cent of cost of cultivation including family labours

(Chapke et al., 2006b). It has been pointed out that mechanization in jute cultivation, wherever possible, is needed to reduce the cost of cultivation. Fourth severe constraint was scarcity of water for irrigation during dry spells as well as at retting (54) in the village of Nadia and Hooghly districts.

However, in the village Srikathi of North 24-Parganas district the same constraint coupled with more labour requirement for conducting retting process and insufficient water bodies for retting (80) were the severe constraints. Reason may be that most of the farmers could not avail irrigation facilities at affordable costs due to availability of limited irrigation water and retting infrastructures, Fifth constraint was loss of yield due to wilting of jute and ineffectiveness of insecticides (47). This problem caused 20 per cent fibre yield loss. The farmers opined that ineffectiveness of insecticides may be due to continuous use of the same insecticides that helped to build up resistance in the insects.

The above data inferred that there was an essential need to empower the farmers at large with technological know-how through extensions strategy such as conducting training and demonstrations.

Motivational forces behind jute cultivation

Motivation is the process of initiating conscious and purposeful action. It is goal directed and need satisfying behaviour of individual. Jute growers expressed foremost motive as economic motive of getting monetary benefits. In reality they were engaged in discussion to reveal the non price benefits received from this crop. The results are illustrated in the Table 3. Data shows that major motives for jute crop cultivation by the farmers' were: jute provided them with sticks, which was used as fuel for cooking purpose (90). It is the second most motive of farmers behind this crop after fibre yield. It is threatened that availability of alternate sources for their domestic fuel at affordable cost and lack of diversified efforts for use of jute sticks like preparation of paper pulp, would reduce jute cultivation. Another motive recorded is that jute cultivation helps to keep the field clean for the next crop (63%), which reduces labourers requirement. More than fifty per cent of the farmers expressed their concern for engagement of family labour and use of their own resources (67%), which act as small money saving bank. They were earning money by selling fibres before festival time and next crop cultivation, which help to purchase essential items (49%) like, clothes, food and inputs for the next crop. Jute is one of the important green leaf manuring

Table 2. Ranking of constraints faced by the farmers of in jute cultivation

Sl. No.	Constraint	RBQ value			Mean
		N- 24 Pgs	Nadia	Hooghly	
1.	No appropriate regularized market middlemen in marketing of jute fibre	72	97	92	87
2.	More labour required for conducting retting process of jute and in-sufficient water bodies for retting	80	83	65	76
3.	High wages of labour during peak season i.e. at the time of weeding and harvesting	76	59	78	71
4.	Scarcity of water for irrigation during dry periods as well as retting purpose	81	40	41	54
5.	Loss of yield due to wilting of jute and ineffectiveness of insecticides	48	37	57	47

Table 3. Motivational forces behind jute cultivation

Sl. No.	Motivational forces	Frequency	%
1.	Provide fuel for cooking purpose	129	90
2.	Engagement of family labour and use of their resources	96	67
3.	Enable to keep the field clean for the next crop	91	63
4.	Earning money by selling fibres before festivals and next crop cultivation which help to purchase essential items	70	49
5.	Add green manure to the soil	22	35

crop. It helps to maintain soil fertility status through leaf shedding, which was experienced by 35 per cent of the farmers. These motives were also supported by the some other advantages such as, farmers keep about 10 per cent of the fibre at home for their own use. It is utilized to prepare hand made diversified products by the women and preparation of thin ropes for different farm and non-farm uses. Jute is also used as a vegetable from 25 to 30 days aged crop by most of the people in the jute area. It was made clear that sometimes jute does not give economic return but the farmers cultivate this crop to get the sticks for domestic fuel and utilize ,their family labourers along with other important motives as narrated above.

Philosophical motive

Some philosophical motives noted were just being a farmer, they had no other options for their livelihood and farming is an endowment tradition that came from

generation to generation, which add them capable to use available resources. It is very difficult for them for shifting to non-agricultural enterprises due to lack of confidence in organizing resources and risky competition in market. They also derive satisfaction from the thought that farming is one of the honest ways of earning independently and providing opportunity to serve the soil like mother.

Ideas of the farmers for improved jute cultivation

In fact, need-based technologies are more viable to adopt speedily for further development. In this context, ideas for improvements in jute cultivation as per the views of the farmers would play a vital role for technology development. The various ideas regarding improved jute cultivation desired by the farmer's in the light of their constraints were probed and placed in Table 4 . Most of the farmers are in favour to have appropriate regularized market for jute fibre (71 %), so that they can get desired

price on quality basis. They suggested to have mechanization in retting of jute, wherever possible (67%) especially for extraction of fibre, which is a very laborious job. Young generations are reluctant to do drudgerious farm work, who prefer to do work in non-agricultural sectors. Forty five per cent farmers were seeking information and availability of latest jute technologies at their vicinity and effective disease control measure (50%). These were the limiting factors in its adoption as mentioned earlier. They also like to have low cost technology for weed control (60%) because weeding and retting consume major portion of the cost of cultivation. Accessible soil testing facilities (23%) were expected, which would help to make use of balanced fertilizers. These technologies could reduce the cost of cultivation and thereby maximize the benefits. On hearing of availability of such technologies at CRIJAF, they were quite curious to avail latest jute production technologies and their trial on their field.

Strategy for further development

The findings of the study suggest that, it is necessary to put emphasis on consolidated strategy for jute development. There is a scope to enhance productivity of the crop vertically with the help of improved production technologies. In light of the analysis of the constraints made and ideas received for further improvement, the following points would be more relevant for consideration in strategic development.

1. Jute is a highly market oriented crop and therefore, appropriate regularized market is needed to be developed to assure due benefits to the jute growers

at grass root level.

2. Low cost production technologies and possible mechanization for weeding and retting instead of whole plant and long duration retting are need to be made available at local level.
3. Strengthening the input support systems by ensuring adequate availability of crucial inputs at local levels like, good quality seeds, implements, effective pesticides, fertilizers, etc.
4. To empower the farmer and educate the grass root level extension functionaries with latest improved production technologies through effective extension approach such as, training, field demonstration and participatory approach.
5. Efforts for effectiveness technology dissemination through suitable communication tools for providing the technical know-how at grass root level.
6. Extension system need to be reoriented by imparting trainings and workshops on latest improved production technologies.
7. Accessible soil testing facilities and effective disease control measures should be taken to take care of location-specific constraints.
8. The research and development (R&D) organizations on jute should put emphasis on diversified uses of jute sticks such as in preparation of paper pulp and all plant parts besides, jute fibre, which are equally important to maximize the non-price benefits.

Table 4. Ideas of the farmers for improvement in jute cultivation

Sl. No.	Idea for improvement	Frequency	%
1.	Appropriate regularized market for jute fibre	81	71
2.	Mechanization in extraction and retting system	97	67
3.	Low-cost technology for weed control	87	60
4.	Information and availability of latest jute technologies	65	45
5.	Disease control measures	15	50
6.	High yielding jute varieties	23	37
7.	Soil testing facilities	07	23

CONCLUSION

Income from jute fibre helped the poor farmers to meet their needs and purchase of essential items. Jute is highly market oriented crop. It shows that there is urgent

need to develop appropriate market systems and low-cost technologies to get due economic returns and reduction in cost of cultivation through mechanization, wherever possible as well. There is urgent need to strengthen the jute extension system by educating the extension

functionaries and farmers with the latest technological know-how through effective extension approaches like, training, demonstration and group discussions and strengthening the input support systems. Necessary efforts required to be initiated from concerned research and development (R&D) organization in diversified use of jute sticks such as, preparation of paper pulp and decorative items, which would create market for excess jute sticks and create awareness of eco-friendliness of natural fibers along with availability of such labeling facilities to the jute products.

ACKNOWLEDGEMENT

Author is grateful to Dr. B.S. Mahapatra, Director, CRIJAF for his moral encouragement in preparation of this manuscript. Support and guidance provided by Dr. S.K. Das, Ex- Head, Agricultural Extension, CRIJAF for preparation of this paper are acknowledged.

REFERENCES

- Biswas, S.K. (2001). Problem and prospects of raw jute agriculture and its development strategies. Proceedings, National Seminar on jute and allied fibres strategies for development, during June 21 -22,2001 at CRIJAF, Barrackpore, Kolkata. Pp. 30-40.
- Chapke, R., Biswas, C.R., Jha, S.K. and Das, S.K. (2006a). Technology Evaluation through Frontline Demonstrations and its Impact. CRIJAF Bulletin No. 03/2006. pp-19.
- Chapke, R., Biswas, C.R. and Jha, S.K. (2006b). Adaptability of improved technologies in jute cultivation. Indian Res. J of Ext. Edit. 6 (1&2) Jan, & May, 2006:6-8.
- Chapke, R.R, Jha, S.K. and Das S.K. (2008). Technology dissemination for jute and its impact. Jute and Allied Fibre Updates: Production and Technology, Central Research Institute for Jute and Allied Fibres, Barrackpore, Kolkata, Pp. 264-272.
- Pathak, S. (2001). Technology for increasing jute production in India. Bulletin, CRIJAF, Barrackpore, Kolkata-700 120. 45p.
- Sabaratnam, V. E. (2002). Rapid, Relaxed and Participatory Rural Appraisal for Research and Extension in Agriculture. (II' Edition) Varnsaravath Publishers, Hyderabad (India). pp. 348-370.
- Sen, H.S. and Hazra, S.K. (2007). Product diversification the key. The Hindu Survey of Indian Agriculture 2007.84.90.