SOCIO-ECONOMIC STUDY OF TOSSA JUTE SEED GROWERS IN SOME SELECTED AREAS OF BANGLADESH

[1]M. A. F. MOLLAH, [2]M. A. ALAM, [3]N. ISLAM, [4]H.Q.M. MOSADDEQUE AND [5]M. A. H. KHAN

[1]Senior Scientific officer, BJRI, Kishoreganj, [2]Scientific Officer, BJRI, Kishoreganj, [3] Scientific officer, BJRI, Dinajpur, , [4]Scientific Officer, Pest Management Division, BJRI, Dhaka, [5]Scientific Officer, On-Farm Research Division, BARI, Kishoreganj, Bangladesh

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ABSTRACT

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Study on socio-economic performance of Tosa Jute seed growers was conducted during February to March, 2005 in Rangpur and Natore district. Farmers of Rangpur area used animal power for both land preparation and carrying jute. But in Natore areas farmers used animal power for land preparation. Farmers used recommended seed rate in both the areas. They purchased jute seed from BADC and local market. The farmers in the study areas used traditional practices of using inputs. The farmers of Rangpur received higher yield than the farmers of Natore. It might be due to Rangpur farmers use manure and fertilizer in previous crop potato. So residual effect of fertilizer, incentive land preparation and better management practices followed by Rangpur farmers. The total variable cost per hectare was higher in Natore (Tk. 24604/ha) than that of Rangpur (Tk. 22118/ha). The major cost items was human lobour (56%) followed by animal and mechanical power (31%). About 50% of total cost was spent in cash for jute cultivation which indicated the credit need for poor farmers. However, Tossa jute seed production appeared promising at farm level but there is a member of constraints which greatly influenced the jute seed production. Hence, a concerted effort is needed to solve the problem and motivate farmers to follow improved management practices in the production process to achieve to desired yield and substantial return to the investment.

Key words: Socio-economic, quality seed, fibre crop

INTRODUCTION

Jute (*corchorus* sp) is considered as the main cash crop of Bangladesh. It covers about 4.14% of total cropped area and accounts for about 16% of total foreign exchange through export of row jute and jute product (BBS, 2004). Besides, jute fibre and jute sticks are largely used for different domestic purposes. In addition, jute plants improved soil productivity because of its massive leaf fall and root proliferation in the field.

Jute is predominately grown for fibre and thus little attention is given to its seed production. Conventionally, farmers grow jute seed along with the fibre crop. Jute crop requires few months more to produce seeds and farmers keep some plants at the corner of the field during harvesting of fibre crop. After harvesting fibre crop, the seed crop remains almost uncared for a long period. Due to long stay in the field, the seed crop is affected by diseased and insects and produces poor quality seed. Quality jute seeds improved variety itself provides about 20% additional yields although there is and acute shortage of quality seed in every year (Hossain *et al*., 1994). It requires about 4000 metric tons of jute seeds of which only 12% to 15% is produced and distributed by the Bangladesh Agricultural Development Corporation (Salim *et al*., 1998). Rest jute seed is solely produced and utilized by the farmers themselves. The quality of these farmers` seed is not controlled carefully during production, processing or storing period. Due to unawareness of seed quality, farmers sow jute seed whatever they store in their houses or purchase from the local market. From these seeds, farmers sometimes get good germination and a good crop, sometimes poor germination and a poor crop, and occasionally the germination is almost nil which results in total crop failure(Hossain *et al*, 1994)

Jute seed quality however does not vary only from farmer to farmer but also from source to source, species to species and even from variety to variety of each species. Information relating such variability of jute seed quality is very scanty under Bangladesh condition. Moreover, the category and extent of jute seed quality of different sources, species and varieties are yet to be elucidated. With this view, the present study therefore, was undertaken to assess the production performance, as well as, economic return of the farmers under their own production environments at Rangpur and Natore area. The specific objectives of the study were as follows:

i) To know the agronomic management practices and resource use pattern in jute seed production systems under farmers environment and

ii) To estimate the cost and return aspects of the technology at farm level.

MATERIALS AND METHODS

Information of the study were collected through field survey of farmers plot of Rangpur and Natore region representing *olitorius* growing areas of Bangladesh. Twenty farmers from each location were selected randomly for data collection. Plot wise information of all pre and post harvest operations have been collected by personal interview through a structured questionnaire prepared for this purpose. The data collection was conducted during February to March 2005. The collected data were then compiled, tabulated and analyzed in accordance with the objectives of the study. Simple descriptive statistics was followed in analysis data. Variable cost was worked out from the collected data and gross margin and benefit cost ratio were estimated (Perrin *et. al*. 1976).

RESULTS AND DISCUSSION

The average land holding and utilization pattern of different resources is shown in Table 1. On an average, about 85 percent of the total cultivated land of the farmers was brought under Deshi jute cultivation. In total, 181 man days per hectare were required for Deshi Jute cultivation out of which 61 percent was farmers own labour and the rest was hired casual labour. Major part of the total labour was required for land preparation, weeding, harvesting and carrying of jute. Animal and mechanical power was mainly used for land preparation but some farmers also used it for carrying of jute in the study area. On an average, 19 animal pair days per hectare and 6 days per hectare were required for Jute cultivation. Farmers of Rangpur area used animal power for both land preparation and carrying jute. So, they required higher (20 days/ha) animal power in this area (pair days). In Natore, farmers used animal power for land preparation and they mostly used mechanical power for carrying Jute. The average seed rate in the study area was 5.22 kg per hectare with 4.94 kg per hectare in Rangpur and 5.5 kg per hectare in Natore. Farmers used recommended seed rate (5-5.5kg/ha) in both the areas. The farmers in both areas purchased jute seed from BADC and local market. The farmers in Rangpur area used cow dung 2500 kg/ha in their jute plots in addition to commercial fertilizer which were 60-50-30 kg/ha Urea, TSP and MP, respectively. On the other hand, the farmers in Natore area used cow dung 2200 kg/ha in addition to 70-50-30 kg/ha of Urea, TSP and MP, respectively. The farmers in the study areas used traditional practices of using inputs. This was mainly due to lack of available technology of jute in the farmers fields and also farmers had problem of managing cash money for purchasing inputs like fertilizers, seeds etc.

Table1. Land holding and use of inputs in jute seed cultivation

Parameter	Rangpur (Tosa jute growing area)	Natore (Tosa jute growing area)	Average
Land holding (ha/farm)			
Total area	2.55	3.50	3.03
Cultivated area	1.75	3.00	2.38
Jute area	0.15	0.25	0.20
Human labour (days/ha)			
Family	128	116	122
Hired	74	84	79
Total	202	200	201
Animal power (days/ha)			
Own	25	19	22
Hired	15	15	15
Total	20	17	19
Mechanical power (days/ha)			
Own power tiller	2.50	2.60	2.55
Hired power tiller	3.00	3.20	3.10
Total	5.50	5.80	5.65
Purchased seed (kg/ha)	4.94	5.50	5.22
Manure (kg/ha)			
Cowdung	2500	2200	2350
Fertilizer (kg/ha)			
Urea	60	70	65
TSP	50	50	50
MP	30	30	30

The source of jute seed was mostly self-grown by the farmers or purchased from the local market (Table 2). The use of market jute seed at Rangpur and Natore area was (39%) which was higher than self grown and Government seed. The quality of Government seed was better than the quality of self-grown or market purchased jute seeds.

Table 2. Seed sources of jute growers over the location

Locations	Jute crop area (ha)		Type of seed crop		Source of seed (%)		
	Fibre crop	Seed crop	Capsularis	Olitorius	Self grown	Market seed	Govt. seed
Rangpur	0.39	0.15	-	O-9897	27	38	35
Natore	0.28	0.25	-	O-4	25	40	35
Average	0.34	0.20	-	-	26	39	35

Sowing time of seed crop varied widely depending on the agro climatic condition of the area (Table 3). Rangpur region is consisted of high land and most of the farmers adopted the late seeding techniques of jute seed production. Jute research regional station, Rangpur organized a massive programme to train up the farmers for late sown technology of jute seed production. Under late sown condition, *olitorius* jute seed was sown from 11-19 September at Rangpur region. At Natore area, *olitorius* jute seed was sown from 15-30 May which served as both fibre and seed crop. The farmers grew jute seeds along with fibre crop, a part of which is kept for seed at the corner of the field. None of the farmers tested their seeds before sowing in the field.

Jute seed growers were interviewed whether they had taken any special care those were not normally taken for fibre crops. Farmers of the different region responded differently about special management practices of seed crop. Most of the farmers did not rogue out the off type plants from the seed crop (Table 3). However, the farmers (50 %) of Natore area were more aware of rouging than those of Rangpur area. Number of weeding ranged from 1 to 3 by the farmers of different tested areas. Fertilizers were applied only during the fibre crop production and no additional fertilizers were applied for seed crop. Any farmer of different jute growing area did not do applications of irrigation or plant protection measures. Harvesting time did not vary widely among the farmers of different location. Table 3 reveals that most of the farmers of all the locations harvested their seed crop when about 67% fruit turned brown colour. However, good quality of jute seed may also be obtained by harvesting crop even at green mature stage of fruits when some black tings appear on the fruit surface (Hossain *et al.*, 1982; Wahab and Talukdar, 1978). In this context, Khandakar (1985) reported that 60% browning for *capsularis* and 70% browning for *olitorius* indicates the physiological maturity of jute seeds.

Table 3. Agronomic practices followed by jute seed growers of different locality

Locations	Sowing date (range)	Farmers responded (%)							
		Use of non tested seeds	Rouging	Number of weeding			Plant protection	Harvesting brown fruit at	
				1	2	3		67%	50%
Rangpur	11-19 Sept.	100	30	30	50	20	-	100	-
Natore	15-30 May	100	50	21	68	11	-	100	-
Average	-	100	40	26	59	16	-	100	-

Drying of seed crop before threshing persuades for consistently better seed quality. Besides, it becomes easier to thresh seeds and need less sunning after threshing. Farmers of all the locations dried seed crops around 4 days, which seemed not to be enough for drying the crop (Table 4). Table 4 further shows that 100% farmers of Rangpur and 60% of Natore, areas threshed their seed crops by beating with sticks. This practice seems to be ideal for threshing of jute seeds. However, 40% farmers of Natore threshed their seeds by cattle threshing are generally discouraged, because enormous seeds are damaged due to heavy pressure of cattle feet.

Cent percent sampled farmers of Rangpur and Natore threshed their seeds in earthen floor. Cemented floor is certainly conductive for processing of jute seeds. Damp earthen floor does not support proper drying of the seeds and different diseases are likely being associated and carried to the field in the following season. Earthen floor also aids in contamination to different inert materials with the seeds. Drying is important in seed processing. If seed is not dried properly, the viability declines very quickly with the pass of time. Generally, 8% moisture content in jute seed is safe for storing. Normally five full sunny days are required to bring moisture content near this level. Cent percent farmers of both location responded that they dried seeds by four full day sunning (Table 4).

Table 4. Seed processing procedures of jute seed growers of different locality

Locations	Seed top drying (days)	Farmers responded (%)				
		Threshing method		Threshing floor		Four sunning
		Sticks	Cattle	Earthen floor	Cemented floor	
Rangpur	5.6	90	10	100	-	100
Natore	6.7	60	40	100	-	100
Average	6.15	75	25	100	0	100

Seed viability and vigor highly depend on the type of strong container. Closed metal containers like tin, cans and polyethylene bags were found to be better for storage jute seeds at farmer level (Ali, 1963). Table 5 indicates that 50% and 60 % farmers of Rangpur and Natore used earthen pot, respectively. Other farmers of these areas stored their seeds in polyethylene bags or in gunny bag. Earthen pot and gunny bags are highly detrimental for preservation of quality seed.

Generally seeds need cool and dry storage in order to conserve its viability for longer period. Building and Katcha house are better than tin shed house for seed storing. In tin shed house, fluctuation of temperature is very rapid and fluctuation of temperature certainly affects viability of seed in the storage. Table 5 indicates that 40% farmers of Rangpur area stored their seeds in katcha house. In Natore area 40% farmers stored their seeds in tin shed house and 30% in katcha house.

Table 5. Storage container and storage condition of jute seed growers of different locality

Locations	Farmers responded (%)							
	Storage containers				Storage condition			
	Metal	Earthen	Polybag	Gunny bag	Building	Semi building	Tin shed	Katcha house
Rangpur	-	50	15	35	7	20	33	40
Natore	-	60	15	30	5	25	40	30
Average	-	55	15	32.5	6	22.5	36	35

The cost of production included only the variable cost items like human labour, animal power, mechanical power, seed, manure, fertilizers etc. Both cash expenses and imputed value of the family-supplied inputs were included in calculating the cost of production of jute. It was observed that the average cost of production of jute was Tk. 23361 and Tk. 11666 per hectare on full cost and cash cost basis, respectively (Table 6). It was found that the total variable cost per hectare was higher in Natore (Tk.24604/ha) than that in Rangpur (Tk. 22118/ha) mainly due to higher cost in human labour, animal & mechanical power and chemical fertilizers. In the study areas, the major cost item was human labour (56%) followed by animal & mechanical power (31%), manure (5%) and chemical fertilizers (5%). About 50% of the total cost was spent in cash for jute cultivation. It indicated the credit need for poor farmers to support the cash requirement for jute cultivation.

Table 6. Cost of production of jute seed

Parameter	Cost (Tk/ha)		
	Rangpur (Tosa jute growing area)	Natore (Tosa jute growing area)	Average
Human labour			
Family	7680	8120	7900
Hired	4440	5880	5160
Total	12120	14000	13060 (56)
Own draft animal power	2000	2400	2200
Hired draft animal power	2500	2600	2550
Hired tractor/power tiller	2400	2544	2472
Total	6900	7544	7222(31)
Seed (purchased)	248	220	234 (1)
Manure			
Cowdung (Own)	1236	1100	1168 (5)
Fertilizer (kg/ha)			
Urea	319	385	352
TSP	563	572	568
MP	336	324	330
Total	1218	1281	1250 (5)
Interest on cash cost*	396	459	428 (2)
Total cost			
Full cost basis	22118	22640	23361(100)
Cash cost basis	10806	12525	11666

Figures in the parentheses represent the percentages of the total cost
* Calculated @ 11% for 4 months

The average yield of jute fibre, stick and seed was 1740 kg, 3500 kg and 516 kg/ha, respectively. The sample farmers of Rangpur received higher yield than farmers of Natore (Table 7). The higher yields at Rangpur might be due to the use of manure & fertilizers in potato cultivation, incentive land preparation and better intercultural practices. The higher yield at Rangpur results in higher gross return as well as higher gross margin both on full cost and cash cost basis. The benefit cost ratio on full cost basis was higher at Rangpur mainly due to lower per unit cost of production. Another efficiency criterion was return to labour per day. It was also found higher at Rangpur (Tk. 225/days) than in Natore (Tk 216/day) against the wage rate of Tk. 60/days at Rangpur and Tk. 70/days at Natore areas.

Table 7. Returns from jute seed cultivation

Parameter	Rangpur	Natore	Average
Total cost (Tk/ha)			
Full cost basis	22118	24604	23361
Cash cost basis	10806	12525	11666
Yield (kg/ha)			
Fibre yield	1800	1680	1740
Stick yield	3600	3400	3500
Seed yield	478	553	516
Gross return (Tk/ha)	55510	53830	54670
Gross margin (Tk/ha)			
Full cost basis	33392	29226	31309
Cash cost basis	44704	41305	43005
Benefit-cost ratio			
Full cost basis	2.51	2.19	2.34
Cash cost basis	5.14	4.30	4.69
Return to labour (Tk/day)	225	216	221

Farmers in the study areas reported different problems of jute cultivation. At Rangpur, the first ranked was poor seed germination followed by the lack of quality seeds and high price of fertilizers. At Natore, the farmers faced acute problems of getting labour timely high price of fertilizers, lack of credit, fertilizer are also the major constraints to jute cultivation at Natore (Table 8). Good quality seeds of jute should be made locally available to the farmers at a reasonable price than will encourage them to bring move area under jute cultivation. Extension people can help

greatly in this matter. More high yielding verities of jute should be released for higher production of the crop. More research work is needed for this purpose.

Table 8. Problems confronted by the growers for jute seed cultivation

Problems	Location		
	Rangpur	Natore	Average
Problem of seed germination	11	04	7.5
Lack of quality seed	10	08	9.0
High price of fertilizer	09	12	10.5
High price of insecticide	05	07	6.0
Labour availability	05	06	5.5
Low price of jute	06	09	7.5
Lack of credit facility	08	11	9.5
Timely Availability of suitable land	01	03	2.0
Timely availability of quality seed	04	10	7.0
Selling problem of produced excess jute seed	02	01	1.5
Lack of training facilities	12	05	8.5
Knowledge gap of quality seed production & preservation	03	02	2.5

Farmers are mostly practicing traditional ways of using inputs in these areas. The farmers should be given knowledge about the use of balanced doses of inputs like seed, fertilizer and management of the crop. There should be strong extension services with the available technology. Many farmers still are not aware of the jute seed production and storage. So, there should be regular field days and demonstrations in the farmers' field encourage them for quality jute seed production. The farmers should be given credit facilities at the time of need to meet the cost of production. This will encourage them to bring more areas under jute seed production. There was variation of inputs use and other practices in the study areas. The specific reasons should be worked out from farm-to farm and area-to-area basis and the result should be communicated to the farmers.

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