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

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**ABSTRACT**

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Laboratory experiments were carried out at the Bangabandhu Sheikh Mujibur Rahman Agricultural University during February to September 2005 to assess the quality of jute seeds collected from two different sources. One of the sources was the Bangladesh Jute Research Institute (BJRI) while the other was farmer's seed. Each source consisted of species *Corchorus capsularis* L. Varieties of *capsularis* viz. CVL-1 and CVE-3 were included in the experiments. Jute seeds of BJRI were collected from BJRI regional station, Rangpur. Farmer's jute seeds were collected from forty farmers of different locations representing C. *capsularis* jute growing regions of the country. Quality of jute seed was better in BJRI source than farmers` source. Quality of farmers` seed deteriorated mostly during processing and storing period. Poor quality of farmers` seed was associated with higher content of inert matter and higher initial moisture content.

**Key words**: Socio-economic, quality of deshi jute seed, farmer

## INTRODUCTION

Jute is (*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 yield although there is an 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 qualities of these farmers` seed are 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. The present study therefore, was undertaken to assess the quality of jute seeds collected from different sources.

## MATERIALS AND METHODS

Quality of jute seeds was evaluated at the Bangabandhu Sheikh Mujibur Rahman Agricultural University during February to September 2005. There were two sources of jute seeds. One source was the Bangladesh Jute Research Institute (BJRI) and another source was farmers themselves. Each source comprised of one species namely *Corchorus capsularis* L with two varieties. The varieties were CVL-1 and CVE-3.

The source of jute seed of BJRI was the regional station, Rangpur. Farmers` seed was collected from Belkuchi and Shahazadpur region under Sirajganj district representing *capsularis* growing areas of Bangladesh. The seeds were collected immediately after the harvest of jute crop. Before collection of jute seeds, twenty farmers from each

location were interviewed on a prescribed questionnaire regarding growing of jute and jute seed. After interview, the jute seeds of BJRI and farmers were taken for quality determination.

## 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 labor and the rest was hired casual labor. Major part of the labor 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 5.65 mechanical power per hectare were required for jute cultivation. Farmers of Belkuchi area used animal power for both land preparation and carrying jute. So, they required higher animal power in this area (20 days/ha). In Shahazadpur, 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 6.75 kg per hectare with 6.50 kg per hectare in Belkuchi and 7.0 kg per hectare in Shahazadpur. Farmers used recommended seed rate (6-7.kg/ha) in both the areas. The farmers in both areas purchased jute seed from BADC and local market. The farmers in Belkuchi area used cow dung 2200 kg/ha in their jute plots in addition to fertilizer which were 80-50-30 kg/ha for Urea, TSP and MP, respectively. On the other hand, the farmers in Shahazadpur area used cowdung 2000 kg/ha in addition to 75-40-20 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.

The source of jute seed was mostly self grown by the farmers or purchased from the local market (Table 2). The use of self grown jute seed at Belkuchi and Shahazadpur area was 47.5% which was higher than market and Government seed. The quality of Government seed was better than self-grown or market purchased jute seeds.

Sowing time of seed crop varied widely depending on the agro climatic condition of the area (Table 3). In low lying areas of Belkuchi and Shahazadpur, capsularis jute seed was sown from 15 March - 3 April. 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 (30 %) of Belkuchi were more aware of rouging than those of Shahazadpur. Number of weeding ranged from 1 to 2 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 (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.

Drying of seed crop before threshing persuade 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 50% farmers of Belkuchi and 40% of Shahazadpur, threshed their seed crops by beating with sticks. This practice seems to be ideal for threshing of jute seeds. However, 50% farmers of Belkuchi and 60% of Shahazadpur threshed their seeds by cattle which are generally discouraged because enormous seeds are damaged due to heavy pressure of cattle feet.

Cent percent sampled farmers of Shahazadpur and 90% farmers of Belkuchi threshed their seeds in earthen floor. However, few farmers of Belkuchi threshed their jute seed in cemented 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 is 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 storage.

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).

Seed viability and vigor highly depend on the type of storage container. Closed metal containers like tin, cans and polyethylene bags were found to be better for storing jute seeds at farmer level (Ali, 1963). Table 5 indicates that 50 % farmers each Belkuchi and Shahazadpur site used gunny bag for storage jute seeds. Other farmers of these areas stored their seeds in metal container, in earthen pot or in polyethylene bags. 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 such fluctuation of temperature certainly affects viability of seed in the storage. Table 5 indicates that 10% farmers of Shahazadpur area stored their seeds in semi building. Whereas, almost all the farmers of Belkuchi and Shahazadpur area kept their seeds in tin shed houses.

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. 20267and Tk. 9037 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 Shahazadpur (Tk.21124/ha) than that in Belkuchi (Tk. 19410/ha) mainly due to higher cost in human labour, animal & mechanical power & chemical fertilizers. In the study areas, the major cost item was human labour (62%) followed by animal & mechanical power (24%), manure (5%) and chemical fertilizers (6%). 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.

The average yield of jute fibre, stick and seed was 2100 kg, 4180 kg and 525 kg/ha, respectively. The sample farmers of Belkuchi received higher yield than farmers of Shahazadpur (Table 7). The higher yields at Belkuchi might be due to the use of fertilizers, incentive land preparation and better intercultural practices.

. The higher yield at Belkuchi 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 Belkuchi mainly due to lower per unit cost of production. Another efficiency criterion was return to labour per day. It was also found higher at Belkuchi (Tk. 249/days) than in Shahazadpur (Tk 202/day) against the wage rate of Tk. 70/days at Belkuchi nd Tk. 70/days at Shahazadpur areas.

Farmers in the study areas reported different problems of jute cultivation. At Belkuchi, the first ranked was low prize of jute followed by the selling problem of produced excess jute seed, problem of seed germination and lack of quality seeds. At Shahazadpur, the farmers faced problems of labour availability, problem of seed germination, lack of quality seeds, low prize of jute, selling problem of produced excess jute seed, and timely availability of suitable land also the major constraints to jute cultivation at Shahazadpur (Table 8). Good quality seeds of jute should be made locally available to the farmers at a reasonable price. This will encourage them to bring more area under jute cultivation. Extension people can help greatly in this matter. More high yielding varieties of jute should be released for higher production of the crop. More research work is needed for this purpose.

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.

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

| Parameter | Belkuchi (Deshi jute growing area) | Shahazadpur (Deshi jute growing area) | Average |
|---|---|---|---|
| Land holding (ha/farm) | | | |
| Total area | 5.00 | 3.50 | 5.0 |
| Cultivated area | 4.70 | 4.70 | 4.70 |
| Jute area | 0.20 | 0.20 | 0.20 |
| Human labour (days/ha) | | | |
| Family | 128 | 149 | 117 |
| Hired | 50 | 78 | 64 |
| Total | 165 | 197 | 181 |
| 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) | 6.50 | 7.00 | 6.75 |
| Manure (kg/ha) Cowdung | 2200 | 2000 | 2100 |
| Fertilizer (kg/ha) | | | |
| Urea | 80 | 75 | 78 |
| TSP | 50 | 40 | 45 |
| MP | 30 | 20 | 25 |

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 |
| Belkuchi | 0.400 | 0.163 | CVL-1 | - | 50 | 40 | 10 |
| Shahazadpur | 0.314 | 0.192 | CVL-3 | - | 45 | 35 | 20 |
| Average | 0.357 | 0.178 | - | - | 47.5 | 37.5 | 15 |

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% |
| Belkuchi | 15March-3April. | 100 | 30 | 28 | 72 | - | - | 80 | 20 |
| Shahazadpur | 15March-1April | 100 | 20 | 31 | 69 | - | - | 100 | - |
| Average | - | 100 | 25 | 29.5 | 70.5 | - | - | 90 | 10 |

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 | |
| Belkuchi | 60 | 50 | 50 | 90 | 10 | 100 |
| Shahazadpur | 6.1 | 40 | 60 | 100 | - | 100 |
| Average | 6.05 | 45 | 55 | 95 | 5 | 100 |

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 |
| Belkuchi | 10 | 20 | 20 | 50 | - | - | 100 | - |
| Shahazadpur | 10 | 30 | 10 | 50 | - | 10 | 90 | - |
| Average | 10 | 25 | 15 | 50 | - | 5 | 95 | - |

Table 6. Cost of production of jute seed

| Parameter | Cost (Tk/ha) | | |
|---|---|---|---|
| | Belkuchi (Deshi jute growing area) | Shahazadpur (Deshi jute growing area) | Average |
| Human labour | | | |
| Family | 8050 | 8330 | 8190 |
| Hired | 3500 | 5460 | 4480 |
| Total | 11550 | 13790 | 12670 (62) |
| Own draft animal power | 2000 | 1400 | 1700 |
| Hired draft animal power | 1500 | 1600 | 1550 |
| Hired tractor/power tiller | 1496 | 1584 | 1540 |
| Total | 4996 | 4584 | 4790(24) |
| Seed (purchased) | 196 | 210 | 203 (1) |
| Manure Cowdung (Own) | 988 | 1030 | 1009 (5) |
| Fertilizer (kg/ha) | | | |
| Urea | 450 | 418 | 434 |
| TSP | 550 | 462 | 506 |
| MP | 384 | 264 | 324 |
| Total | 1384 | 1144 | 1264 (6) |
| Interest on cash cost* | 296 | 366 | 331(2) |
| Total cost | | | |
| Full cost basis | 19410 | 21124 | 20267(100) |
| Cash cost basis | 8076 | 9998 | 9037 |

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

Table 7. Returns from jute seed cultivation

| Parameter | Belkuchi | Shahazadpur | Average |
|---|---|---|---|
| Total cost (Tk/ha) | | | |
| Full cost basis | 19410 | 21124 | 20267 |
| Cash cost basis | 8076 | 9998 | 4037 |
| Yield (kg/ha) | | | |
| Fibre yield | 2400 | 1800 | 2100 |
| Stick yield | 4720 | 3640 | 4180 |
| Seed yield | 494 | 556 | 525 |
| Gross return (Tk/ha) | 49020 | 47065 | 48043 |
| Gross margin (Tk/ha) | | | |
| Full cost basis | 26610 | 25941 | 27776 |
| Cash cost basis | 40944 | 37067 | 39006 |
| Benefit-cost ratio | | | |
| Full cost basis | 2.52 | 2.23 | 2.37 |
| Cash cost basis | 6.07 | 4.71 | 5.39 |
| Return to labour (Tk/day) | 249 | 202 | 226 |

Table 8. Problems in jute seed cultivation

| Problems | Location | | |
|---|---|---|---|
| | Belkuchi | Shahazadpur | Average |
| Problem of seed germination | 3 | 2 | 2.5 |
| Lack of quality seed | 4 | 3 | 3.5 |
| High price of fertilizer | 10 | 10 | 10.0 |
| High price of insecticide | 11 | 12 | 11.5 |
| Labour availability | 05 | 1 | 3 |
| Low price of jute | 01 | 4 | 2.5 |
| Lack of credit facility | 12 | 10 | 11 |
| Timely Availability of suitable land | 7 | 6 | 6.5 |
| Timely availability of quality seed | 9 | 8 | 8.5 |
| Selling problem of produced excess jute seed | 2 | 5 | 3.5 |
| Lack of training facilities | 6 | 9 | 7.5 |
| Knowledge gap of quality seed production & preservation | 8 | 7 | 7.5 |

**REFERENCES**

BBS. 2004. Statistical yearbook of Bangladesh. Bangladesh Bureau of Statistics. Ministry of planning, Govt. of the People's Republic of Bangladesh.

Ali, M K. 1963. Effect of Storage containers on the moisture Content Viability and other Qualities of jute Seed. Pak. J. Sci. Res. 15: 3-5

Hossain, M. A., S. A. Mamas and M. K. Sultana and A. L. Ichandalc. 1994. Survey on the constraints of quality Jute Seed at bam level. Ministry of Agriculture, Support Service project, GOB/World Bank/ODA Seed technological research team, BJRI, Dhaka. P. 25

Hossain, M. A., M. N. Hoque and M. A. Wahab. 1982. Performance of BJRI'5 improved Cultivars under Farmers management. Jute and Jute Fabric. Bangladesh. 6: 6-11

Wahab, M. A. and F A. H. Talukdar. 1978. Effect of stays of maternity on germination Capacity of jute Seeds, Annual Report for 1978, Agril. Res. on jute. BJRI. P. 231

Khandakar, A. L. 1985. Determination of field physiological maturity of jute seeds. Annual Reports for 1985, Agril, Res. on jute, BJRI, Dhaka, P.132

Salim, M., M. A. Manners, M. A. R. Sarkar and M. Ali. 1998. Seed quality in jute Seed crop as affected by late sowing. B.J. Seed Sci. Tech. 2: 11-17