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Agro-economic Performance of Tossa Jute at Growers Level in Bangladesh

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Abstract: The study was undertaken to determine the economic performance of tossa (*Corchorus olitorius*) jute at growers level. The results revealed that per hectare average cost of production of Tossa Jute were Tk.16538.91 and Tk.8106.09 on variable cost and cash cost basis, respectively while per hectare gross return was estimated to Tk.28375.85. The average yield of Tossa jute was 1720.16 kg ha⁻¹. The yield was higher in Faridpur (1826.40 kg ha⁻¹) compared to Rangpur (1669.07 kg ha⁻¹) and Dhaka (1665 kg ha⁻¹). The gross margins were Tk.11836.94 ha⁻¹ and Tk.20269.75 ha⁻¹ on total variable cost and cash cost basis respectively. The average benefit-cost ratios were 1.72 and 3.50 respectively on total variable cost and cash cost basis. Lower price of fibre, non-availability of HYV seeds at proper time, shortage of buyers, high input cost, absence of fair price in terms of fibre quality etc. were addressed as problems by the farmers.

Key words: Cost of production, gross returns, gross margin, major problems, Jute.

Introduction

Jute is being cultivated in this part of the world since time immemorial. It is of immense importance in the economy of Bangladesh. It is the principal cash crop of the country. Jute industry and trade jointly provide employment to millions of people of Bangladesh. More than five million of families comprising about 35% of the total population are involved in raising the crop in the country (Sikder,1981). As a principal cash crop of Bangladesh, jute covers about 0.45-0.55 million hectares of land and accounts for about 10.80% of export earnings of the country (BBS,1996). Agriculture accounts for 32% of the GDP of Bangladesh of which jute alone contributes about 12% i.e. about half of the crop sector (GOB,1995). Moreover, beyond the farm land and factory Jute and Jute products keep alive transport sector, servicing sectors like banks and insurance and agro-industrial job market. Again Jute and Jute goods have recognized being friendly to the environment. However, under present situation of the world and domestic jute trade, jute growers are preferring for expanding tossa jute (*C. olitorius*) cultivation replacing white jute (*C. capsularis*) to get finer quality of fibre and higher price (BARC,1993). As a result, cultivation of tossa jute are increased day by day. In sixties 30% of the total jute acreage was under tossa jute. In 1995-1996, this rose to 57% (BJRI,1996). This changing circumstances of jute cultivation necessitates to undertake a farm level agro-economic study on tossa jute production. On the other hand, while farmers making production decision, they consider cost of production against yield of the relevant crop since the farmers in such rural setting are the victims of risk and uncertainty. Thus the cost of production of individual crops do vary from farmer to farmer and location to location. The reason is that farmers generally practice different technologies/input depending upon their economic abilities. Therefore, a study on agro-economic performance of tossa jute to be undertaken. The following specific objectives were stipulated for the present study:

- i) To assess the existing agronomic management practices at farmers' level.
- ii) To determine per hectare costs and benefit of tossa Jute.
- iii) To identify the problems faced by the farmers.

Materials and Methods

Three locations, namely, Dhaka, Faridpur and Rangpur sadar thanas were selected purposively for the study. Three villages

from each location were selected by adopting probability proportional to area sampling method. A total sample of 90 (Ninety) farmers were selected taking ten farmers from each village by adopting simple random sampling method. The unit of data collection was a single plot & analysis was done on per hectare basis. Data was collected during the jute seasons in the year 1996 to 1998. Tabular method of analysis using descriptive statistics such as number, percentage, range, mean, ratio etc. were calculated to interpret the data.

Results and Discussion

Levels of input management practices followed in tossa jute cultivation by the farmers at study area are presented in Table 1. On an average four ploughing and five laddering were done by the farmers for land preparation. The average time of sowing was late over the years and areas. It ranges from 1st April to 3rd May. The late sowing was due to country wide late shower and lack of moisture at proper sowing time. All the farmers followed broadcast method of sowing and average seed rate per hectare was 9.26 kg. Non availability of seed drill as well as the cumbersome process needed for line sowing were reported by the farmers as major reason for not following line sowing method of cultivation. The farmers applied both organic (manure) and inorganic (Urea, TSP& MP) fertilizers but the recommended dose was not followed. Application of inorganic fertilizer was found highest in Faridpur as compared to other locations (Table 1).

The sampled farmers were not found to apply insecticides and pesticides. Three times weeding & thinning were done by the farmers irrespective of locations and years. The harvesting was started from 2nd week of July and continued up to 3rd week of September. The earliest harvest was done in Rangpur and in the year 1997 compared to other two years.

On an average 249.51 human days per hectare were required for tossa jute cultivation of which 51% came from family source and the rest was hired (Table 2). Per hectare use of animal labour was 30.47. The highest percentage of total human labour days (32.06%) was required for weeding and thinning followed by 30.23% for binding, retting, stripping and washing. A little variation was observed in human labour use among the locations and years. The average total variable cost (TVC or Full cost) per hectare was amounted to Tk.16538.91 and the average cash cost per hectare was 49.01% of total variable cost amounting to Tk.8106.09 (Table 3). The total

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Table 1: Level of input use and management practices followed in Tossa jute cultivation per hectare according to location

Parameters	Area			Year			Mean
	Faridpur	Rangpur	Dhaka	1996	1997	1998	
Average No. of ploughing	4	4.33	4	4.33	4.00	4.00	4.11
Average No. of laddering	6.33	5	5	5.67	5.33	5.33	5.44
Seed rate(kg ha ⁻¹)	8.97	9.68	9.31	9.17	9.11	9.51	9.26
Sowing time (range)	April, 7 to 30th April	April, 1 to May, 3	April, 9 to April, 30	April, 7 to May 3	March 15 to April 30	April 1 to 29	April 1 to May 3
Fertilizer(kg ha ⁻¹)							
Urea	79.75	49.89	54	54.97	78.33	50.33	61.21
TSP	32.74	7.21	12.33	14.95	24.60	12.73	17.43
MP	17.22	6.67	6.33	11.65	15.30	3.25	10.07
Manure (ton ha ⁻¹)	0.38	0.22	0.50	0.58	0.22	0.30	0.37
No. of weeding & thinning	3	3	3	3	3	3	3
Human labour (days ha ⁻¹)	249.57	249.55	249.40	248.96	249.83	249.73	249.51
Family	128.88	128.83	122.57	129.45	126.42	124.41	126.76
Hired	120.69	120.72	126.83	119.51	123.41	125.32	122.75
Animal labour (days ha ⁻¹)	31.78	29.87	29.75	30.85	30.93	29.63	30.47
Family	16.10	13.91	14.05	14.61	15.33	14.12	14.69
Hired	15.68	15.97	15.70	16.24	15.60	15.51	15.78
Harvest time (range)	Aug. 1- 15th Sept.	15th July to 16th Sept	25th July to 18th Aug	July 27 to Sept. 16	July 15 to Aug. 20	July 20 to Aug. 15 July	15 to Sept. 16

Source: Field Survey, 1996-1998.

Table 2: Operation wise human & total animal labour utilization per hectare in Tossa jute cultivation according to locations

Operations	Area			Year			Mean
	Faridpur	Rangpur	Dhaka	1996	1997	1998	
Human labour (days ha ⁻¹)							
Land preparation	32.27	31.08	31.00	31.5	31.28	31.57	31.45 (12.60)
Seed sowing	2.23	2.22	2.23	2.20	2.25	2.23	2.23 (0.89)
Fertilizers & Manuring	2.60	2.50	2.55	2.50	2.60	2.55	2.55 (1.02)
Weeding & thinning	81.33	79.40	79.23	79.67	80.17	80.13	79.99 (32.06)
Harvest & Carrying	37.23	38.40	38.07	38.08	37.82	37.8	37.90 (15.23)
Binding, Retting, Stripping & Washing	73.24	76.27	76.72	75.49	75.12	75.62	75.41 (30.23)
Drying & Storing	20.33	19.52	19.60	19.52	20.10	19.83	19.82 (7.95)
Total human labour days (100)	249.57	249.55	249.40	248.96	249.83	249.73	249.51 (100)
Family	128.88	128.83	122.57	129.45	126.42	124.41	126.76 (50.80)
Hired	120.71	120.72	126.83	119.51	123.41	125.32	122.75 (49.20)
Total Animal labour days	31.78	29.87	29.75	30.85	30.93	29.63	30.47

Source: Field Survey, 1996-1998.

Table 3: Itemwise breakup of cost of cultivation per hectare of olitorius jute according to locations

Cost items	Area			Year			Mean
	Faridpur	Rangpur	Dhaka	1996	1997	1998	
Human labours	13312.17	12890.67	14556.47	12694.83	13738.33	14326.13	13586.43
Family	7216.27	6702.94	8007.42	6732.01	7448.12	7746.49	7308.88
Hired	6095.90	6187.72	6549.05	5962.81	6290.21	6579.64	6277.55
Animal labour	1696.08	1541.17	1557.22	1508.67	1656.88	1629.47	1598.34
Family	884.71	724.37	809.55	753.08	841.29	824.08	806.15
Hired	811.37	816.80	748.22	755.59	815.59	805.39	792.19
Seed	554.27	565.83	555.87	528.70	546.40	602.03	559.04
Family	85	166.38	169.42	127.98	141.71	151.12	140.27
Purchased	469.27	399.45	387.59	400.72	404.69	450.91	418.77
Fertilizer (Purchased)	958.70	425.36	468.83	484.57	873.033	495.30	617.63
Urea	441.77	293.36	292.83	295.13	430.83	302.00	342.65
TSP	388.53	80.38	129.17	112.74	319.80	165.53	199.36
MP	128.41	51.62	46.83	76.74	122.40	27.77	75.62
Manure (Owned)	182.70	111.33	238.33	250.70	108.33	173.33	177.45
Total Variable cost	16703.92	15534.36	17378.43	15467.47	16922.98	17226.27	16538.91
Total Cash Cost	8335.25	7829.34	8153.71	7603.52	8383.53	8331.24	8106.09

Source: Field Survey, 1996-1998.

variable cost was found the highest in Dhaka (Tk.17378.43 ha⁻¹) compared to Faridpur (Tk.16703.92 ha⁻¹) and Rangpur (Tk.15534.36 ha⁻¹). The difference was due to variation in the use of input, labour cost and management practices. However, among the cost items, the highest

percentage of the average of total variable cost (82%) incurred by human labour followed by 10% cost by animal labour. In the case of cash cost, hired human labour incurred highest percentage (77%) of total cash cost per hectare.

Table 4: Return from per hectare of *allotters* jute cultivation according to locations

Parameters	Area			Year			Mean
	Faridpur	Rangpur	Dhaka	1996	1997	1998	
Main product yield (kg ha ⁻¹)	1826.40	1669.07	1665	1669.3	1737.50	1753.67	1720.16
By-product yield (kg ha ⁻¹)	4188.90	3602.81	3562.33	3689.87	3667.17	3997.00	3784.68
Main product price (Tk/kg)	12.46	11.51	12.72	12.42	12.93	11.74	12.36
By-product price (Tk/kg)	1.87	2	1.93	1.80	2.00	2.00	1.93
Gross Return (Tk ha ⁻¹)	30576.58	26404.92	28146.05	27363.73	29180.85	28582.97	28375.85
Value of main product	22742.41	19199.29	21227.92	20734.14	21846.51	20588.97	21056.04
Value of by-product	7834.16	7205.63	6918.13	6629.59	7334.34	7994.00	7319.30
Gross margin(Tk ha ⁻¹)							
Variable cost basis	13872.66	10870.56	10767.62	11896.26	12257.86	11356.70	11836.94
Cash cost basis	22241.33	18575.58	19992.34	19760.21	20797.31	20251.73	20269.75
Cost of main product (Tk/kg)							
Variable Cost Basis	9.14	9.31	10.45	9.28	9.74	9.89	9.64
Cash Cost Basis	4.56	4.69	4.90	4.56	4.82	4.77	4.72
Gross margin of main product (Tk/kg)							
Variable Cost Basis	3.32	2.20	2.27	3.13	2.81	1.85	2.59
Cash Cost Basis	7.90	6.82	7.28	7.86	7.72	6.96	7.51
Benefit Cost Ratio (Ratio of GR to Cost)							
Variable Cost Basis	1.83	1.70	1.62	1.77	1.72	1.67	1.72
Cash Cost Basis	3.68	3.37	3.45	3.60	3.48	3.43	3.50

Source: Field Survey, 1996-1998.

Table 5: Problems faced by the farmers in producing Tossa jute.

Nature of problems	Faridpur	Rangpur	Dhaka	Mean
1. Lower Price of fibre	70.00	75.00	70.00	71.67
2. Non-availability of HYV Seeds at proper time	50.00	40.00	65.00	51.67
3. Shortage of buyers	50.00	50.00	50.00	50.00
4. Higher input cost & non-availability in due time	35.00	60.00	50.00	48.33
5. Absence of fair price in terms of fibre quality	30.00	50.00	30.00	36.67

Source: Field Survey, 1996-1998.

The average yield of main product (fibre) was 1720.16 kg per hectare (Table 4). A variation in yield among the locations was observed. The yield was found highest in Faridpur (1826.40 kg ha⁻¹) as compared to Rangpur (1669.07 kg ha⁻¹) and Dhaka (1665 kg ha⁻¹). The observed variation in yield among the locations might be due to location effect, variation in cultural practices and variation in the use of inorganic fertilizers. The price per Kg of main product was the highest in Dhaka (12.72 Tk/Kg) than Faridpur (12.46 Tk/kg) and Rangpur (11.51 Tk/Kg) (Table 4), mainly due to quality difference of fibre. In the study area, average gross return (GR) was observed Tk 28375.85 ha⁻¹ and was found highest in Faridpur (Tk30576.58 ha⁻¹) and the lowest in Rangpur (Tk26404.92 ha⁻¹). The average gross margin per hectare was estimated to be Tk.11836.94 and Tk.20269.75 on the basis of total variable cost (Full cost) and cash cost respectively. On both full and cash cost basis, gross margin per hectare was observed higher in Faridpur (Tk.13872.66 ha⁻¹ and Tk.22241.33 ha⁻¹ respectively) as compared to other two locations. The variation in gross margin was mainly because of higher yield per hectare and higher fibre price obtained in Faridpur than the other locations. The highest gross margin was observed in the year 1997 due to higher price advantage (Tk12.93/kg) (Table 3). The benefit cost analysis revealed that for every Taka invested, profit as high as Tk.1.72 and 3.50 could be obtained considering total variable cost and cash cost respectively. On the basis of cash cost, the highest profit earned in the year, 1996 (Tk 3.60) in comparison with the year 1997 (Tk 3.48) and the year 1998 (Tk 3.43).

However, there were many problems in the cultivation of Tossa jute as reported by the farmers in the study areas

Lower price of fibre reported by the highest percentage (71.67%) of sampled farmers followed by non-availability of HYV seeds at proper time by 51.67% farmers (Table 5). Other important problems were shortage of buyers, high input cost, absence of fair price in terms of fibre quality.

In the light of results obtained it may be concluded that the cultivation of Tossa jute is profitable at farmers level under existing production practices followed by the farmers. It was also observed that farmers did not follow recommended agronomic practices in cultivating Tossa jute. Adoption of improved technologies as recommended may further increase the fibre yield and quality which could eventually lead to more income for the farmers as well as higher export earnings for the country.

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