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**RELATIVE PROFITABILITY OF AUS PADDY AND JUTE
PRODUCTION IN SELECTED AREAS OF
TANGAIL DISTRICT**

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I. INTRODUCTION

Jute and Aus paddy are the two major kharif crops grown under rainfed conditions in Bangladesh. Aus is a competing crop to Jute and is more often used as a rotation crop in place of jute. Moreover, with the expansion of irrigated agriculture, broadcast Aus, White and Tossa jute have been relegated to marginal lands (Hussain, 1974-75, Talukder, 1984, Talukder et al., 1985). This shift might have reduced the yield and quality of these crops. Also, the individual farmers need to evaluate alternative courses of action and foresee the possible financial outcomes of substituting one enterprise for other or introducing a new enterprise.

Therefore, an investigation on the economic aspects of producing Aus as well as White and Tossa jute was conducted on farm level at Tangail district to estimate the income earned by the farmers from the individual crop enterprises. Besides income, the increase in profit and minimum level of yield or price to breakeven the level of existing enterprise would be estimated.

The method applied in the study is discussed in section II. In section III the findings are presented and some conclusions are drawn in the final section of the paper.

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II. METHODOLOGY

The investigation was conducted in the cropping year 1988-89 in 8 Thanas of Tangail district. The study sites were Ghatail, Kalihati, Tangail Sadar, Bhuapur, Delduar, Madhupur, Mirzapur and Gopalpur. Three agricultural extension blocks from each Thana were selected and 30 farmers from each block were sampled at random. Therefore, in all-(8 x 3 x 30) 720 farmers were interviewed.

An interview schedule was developed and pretested in Mirzapur and Tangail Sadar Thana. After pre-testing, a modified schedule was adopted for the final interviews.

The economic data thus obtained on individual crop enterprise were subjected to the following analysis:

- a. Individual enterprise gross margin was calculated by subtracting total cash cost as well as total variable cost from the gross benefit of the crop enterprise.
- b. Partial budget was used to estimate net change in profit from the alternatives.
- c. Through break-even budget the value of the uncertain variable was worked out to estimate the same level of profit from the new enterprise.

III. RESULTS AND DISCUSSION

The variable cost per maund (VC) required to produce Aus, White and Tossa jute varied in different sites. All sample farmers produced Aus, White and Tossa jute. The VC of Aus was higher than the average market price of per unit of the produce at Kalihati, Delduar and Mirzapur. The VC of White jute was higher at Madhupur. The VC of Tossa jute was lower than the mean market price per unit of produce (Table 1). The higher VC than the average market price per unit of produce indicates the higher input cost incurred to produce unit output.

Table 1. Cost and Farm Gate Price of Aus and Jute in Tangail District (1988-89).

Locations	AUS PADDY			WHITE JUTE			TOSSAJUTE		
	VC/md (Tk.)	Price (Tk.)/md		VC/md (Tk.)	Price (Tk.)/md		VC/md (Tk.)	Price(Tk.)/md	
		Mean	Mode		Mean	Mode		Mean	Mode
Ghatail	136	183	200	199	236	250	182	283	300
Kalihati	176	175	175	132	207	200	135	243	220
Tangail	171	189	200	189	221	200	195	272	250
Bhuapur	175	190	200	204	218	200	182	262	250
Deiduar	182	180	200	177	204	200	179	232	200
Madhupur	130	170	170	260	210	200	227	252	220
Mirzapur	203	190	200	205	226	200	178	286	250
Gopalpur	135	194	200	186	235	250	157	282	300

note: Variable cost per maund = Variable cost/ha = Yield/ha. One Maund = 37.32 Kg.

Table 2. Gross Margin and Benefit Cost Ratio (BCR) of Aus and Jute in Tangail District (1988-89).

Locations	AUS			WHITE JUTE			TOSSA JUTE			BCR					
	GB	GM		GB	GM		GB	GM		GB	GM				
		CC	VC		CC	VC		CC	VC		CC	VC			
Ghatail	7999	4137	2041	11127	3852	1741	15483	7609	5513	2.07	1.32	1.53	1.18	1.97	1.55
Kalihati	4872	1032	-38	8924	4224	3236	10366	5636	4603	1.27	0.99	1.90	1.57	2.19	1.80
Tangail	7879	3867	755	11032	4992	1594	13945	7403	3953	1.96	1.11	1.83	1.17	2.13	1.40
Bhuapur	6200	2181	489	8142	2641	537	11727	5904	3569	1.54	1.42	1.48	1.07	2.01	1.44
Delduar	5335	2573	-47	7528	3650	1009	8647	4717	1978	1.93	0.99	1.94	1.15	2.20	1.30
Madhupur	5981	3444	1423	6634	1425	-1577	9657	4016	723	2.36	1.31	1.27	0.81	1.79	1.11
Mirzapur	6063	2830	-426	7849	2782	739	12438	7101	4714	1.88	0.93	1.55	1.10	2.33	1.61
Gopalpur	6317	3578	1931	8479	4287	1765	13130	8504	5810	2.31	1.44	2.02	1.26	2.84	1.79
District average	6331	2957	765	8714	3479	1128	11924	6317	3813	1.88	1.14	1.66	1.15	2.14	1.47

GB = Gross benefit, GM = Gross margin, CC = Cash cost basis, VC = Variable cost basis.

On variable cost per hectare basis, the gross margin (GM) of Aus was negative implying negative returns at Kalihati, Delduar and Mirzapur. Gross margin on VC per hectare basis was higher in all the locations for Tossa jute. It was lower for white jute compared to that for Aus at Ghatail and Gopalpur and negative at Madhupur. Besides these 3 sites, White jute earned higher GM compared to Aus (Table 2). The above findings indicate that Tossa jute would give more profit compared to White jute and Aus. However, on cash cost basis, all the crops gave positive GM irrespective of locations (Table 2).

Partial budget was worked out to estimate the change in profit from replacing a crop enterprise by another. From the analysis, it was revealed that when Aus and White jute were substituted by Tossa jute, Tossa jute gave higher profit in both cases (Table 3). However, at Madhupur, White jute substituted by Aus yielded increase in profit of Taka 3000/ha. These findings suggest that either Aus replaced by Tossa jute or white jute substituted by Tossa jute would be a better option for the farmers (Table 3).

Partial budgeting should only be used to test plans that are known to be agronomically feasible. The statement agronomically feasible means that the soil, climate and all other physical and biological determinants are conducive to the proper growth and development of the crop contemplated. It also means that management is satisfactory and that the change will not impose unjustified strain on the existing crop enterprise. As has been mentioned Aus, white and Tossa jute are grown in the kharif season in rainfed condition. Hence, all these crops can be considered to have agronomic feasibility. Therefore, if any farmer changes his crop, he has to readjust his resources and operating schedule. So he might be interested to know the break-even point before taking the decision to replace a crop by an alternative. The break-even budgeting, a form of partial budget analysis shows the breakeven point or the minimum yield or the minimum price of one crop that would guarantee the level of return from the existing crop enterprise. Thus in the proposition of substitution of Tossa jute for Aus paddy or white jute, the break-even yield or break-even price would indicate the minimum that must be achieved before the farmer would be interested to make the change from Aus to Tossa jute or from White jute to Tossa jute.

Table 3. Results of Partial Budget Exercise Indicating Possible Increase in Profit (1988-89).

Locations	Change of crop	Increase in profit (Tk./ha)
Ghatail	White jute substituted by Aus	300
	Aus substituted by Tossa jute	3472
	White jute substituted by Tossa jute	3772
Kalihati	Aus substituted by White jute	3274
	Aus substituted by Tossa jute	4641
	White jute substituted by Tossa jute	1367
Tangail	Aus substituted by White jute	841
	Aus substituted by Tossa jute	3200
	White jute substituted by Tossa jute	2359
Bhuapur	Aus substituted by White jute	48
	Aus substituted by Tossa jute	3080
	White jute substituted by Tossa jute	3032
Delduar	Aus substituted by White jute	1056
	Aus substituted by Tossa jute	2025
	White jute substituted by Tossa jute	969
Madhupur	White jute substituted by Aus	3000
	Tossa jute substituted by Aus	448
	White jute substituted by Tossa jute	2552
Mirzapur	Aus substituted by White jute	1165
	Aus substituted by Tossa jute	5140
	White jute substituted by Tossa jute	3975
Gopalpur	White jute substituted by Aus	166
	Aus substituted by Tossa jute	3879
	White jute substituted by Tossa jute	4045

Break-even budgets were worked out for the sites namely, Kalihati, Delduar, Mirzapur where Aus and White jute at Madhupur gave negative GM on VC per ha basis. The minimum yield and price of substituted crops were estimated which would break-even the margin of the existing crops. It revealed that in terms of yield the farmers of Kalihati and Madhupur had no risk to switch over from one crop enterprise to the other (Table 4.). In terms of minimum price, all alternate enterprises would be worth while except Aus replaced by White jute at Mirzapur (Table 4). The estimate suggests that either White or Tossa jute would be a better alternative to Aus except in Madhupur where White jute have to be replaced by Aus (Table 4).

Table 4. Estimated Minimum Yield and Price for Substitute Crop that would have to be Achieved to Justify the Change.

Site	Change of crop enterprise	Observed mean yield of Aus (Kg/ha)	Observed mean yield of Jute (Kg/ha)	Break-even yield (Kg/ha)	Break-even price (Tk./Quintal)
Kalihati	Aus to White jute	1045	1605	1029	356
	Aus to Tossa jute	1045	1605	883	359
Delduar	Aus to white jute	1120	1381	1207	476
	Aus to Tossa jute	1120	1381	1085	488
Mirzapur	Aus to white jute	1194	1306	1175	544
	Aus to Tossa jute	1194	1605	1009	482
Madhupur	White jute to Aus	1306	1194	896	348
	White jute to Tossa jute	1194*	1605	1286	541

* White jute yield for the site.

IV. CONCLUSIONS

The analysis revealed that Tossa jute offered more GM compared to both Aus and White jute in Tangail district irrespective of locations. Both replacement and break-even budgeting gave similar results. Thus Tossa jute as a crop enterprise would be more profitable compared to Aus or White jute in Tangail district.

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Year	Area (ha)	Production (kg)	Yield (kg/ha)
1974	100	10000	100
1975	120	12000	100
1976	150	15000	100
1977	180	18000	100
1978	200	20000	100
1979	220	22000	100
1980	250	25000	100
1981	280	28000	100
1982	300	30000	100
1983	320	32000	100
1984	350	35000	100
1985	380	38000	100
1986	400	40000	100
1987	420	42000	100
1988	450	45000	100
1989	480	48000	100
1990	500	50000	100

The jute cultivation area in Bangladesh has been increasing steadily over the years. This is due to the fact that jute is a cash crop and its production is highly profitable. The area under jute cultivation has increased from 100 ha in 1974 to 500 ha in 1990. This increase is due to the fact that the government has been providing incentives to farmers to cultivate jute. The production of jute has also increased over the years, from 10000 kg in 1974 to 50000 kg in 1990. This increase is due to the fact that the yield of jute has remained constant at 100 kg/ha. The total production of jute in Bangladesh has increased from 10000 kg in 1974 to 50000 kg in 1990. This increase is due to the fact that the area under jute cultivation has increased and the yield has remained constant.