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*RELATIVE PROFITABILITY OF COTTON AND ITS COMPETING CROPS IN BANGLADESH**

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ABSTRACT

This study is based on a sample of 242 cotton growers located in eight upazilas of four old districts. Cotton was found more profitable that, its competing crops except tobacco. Tobacco is not liked by many farmers because it is associated with more problems. Despite sincere effort of the cotton development board, the target of production and acreage were not achieved because of lower price of cotton, paucity of fund, technical know how and irrigation facility. Production target can be achieved by ensuring reasonable price to cotton growers.

1. INTRODUCTION

The annual requirement of raw cotton for running more than 50 textile mills in Bangladesh is about 0.4 million bales, almost all of which is imported. The existing mills are inadequate to meet the cloth requirement of about 1200 million yards for 98 million people of the country. An additional 0.265 million bales of cotton will be required to meet the requirement. Considering the scarcity of our foreign exchange the Government has given priority to produce medium staple American cotton in selected areas in this country to meet the requirement of the local textile mills.

From the point of view of import substitution production of cotton is considered to be far more desirable than wheat or oil-seeds. It has been estimated that at 1978 prices

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growing of cotton in an acre of land would save taka 7,200 as against Taka 4,900 in case of wheat, Taka 1,135 in case of mustard and Taka 2,635 in case of ground nut(CDB 1979).

An estimated 0.6 million acres of land can be economically used for cotton cultivation in Bangladesh of whichs about 400,000 acres would come from replacement of other crops while the rest 136,000 acres would be obtained from current fallow (Aurangazeb 1979).

Cotton grows best in well drained sandy loam to clay loam soil with P.H. value of 5.2 to 7.0. Based on ecological and agronomical factors the former districts of Dinajpur, Rangpur, Bogra, Pabna, Rajshahi, Kushtia, Jessore, Khulna, Dhaka, Tangail and Mymensingh are considered suitable for cotton cultivation. The estimated land area available from fallow and replacement of other crops in different districts is shown in Table 1. American cotton can be grown between two Aus crops by sowing in August in Northern districts and in September in Central and Western districts. Average yield of 0.33 ton of seed cotton per acre in northern districts and 0.44 ton in the central and western districts could be expected provided sowing is done timely and supplementary irrigation water is available (CDB 1979).

TABLE 1. AVAILABILITY OF LAND FOR COTTON CULTIVATION BY SOURCE IN DIFFERENT DISTRICTS (000 acres)

Name of district	Replacement of Crops				Fallow land	Total area under cotton
	Wheat/ minor cereal	Oil seeds	Pulses	Sugarcane		
Jessore	6	25	25	7	20	83
Kushtia	14	8	35	15	30	102
Khulna (part)	9	5	—	—	1	15
Dinajpur	5	20	10	15	15	65
Rangpur	5	20	20	10	20	75
Bogra (part)	—	5	5	5	7	22
Pabna (part)	5	10	10	5	3	33
Rajshahi	10	25	30	30	10	105
Dhaka	—	15	10	6	15	46
Tangail	—	—	8	—	7	15
Mymensingh	—	8	16	7	8	39
Total	54	141	169	100	136	600

Source : CDB 1979

Achievement of the targeted cotton production will depend not only on its price but also on price of other competing crops. Therefore, empirical investigation relating to economics of cotton production along with other competing crops will be helpful for adopting appropriate policy measures for cotton cultivation in Bangladesh. The present study was undertaken with the broad objective of determining the relative economics of cotton cultivation and ascertaining the overall potential of and constraints to cotton cultivation in Bangladesh.

Methodology of the study and sample characteristics are discussed in section II. Comparative study of cotton and other competing crops are made in section III. In section IV, constraints to cotton cultivation are discussed while conclusion is given in the final section.

II. SOURCE AND CHARACTERISTICS OF DATA

Data were collected from 8 upazilas of 4 districts namely Tangail, Rangpur, Dinajpur and Jessore. Modhupur upazila of Tangail ; Palashbari, Peergonj and Mithapukur upazilas of Rangpur ; Kotwali and Jhikargacha upazilas of Jessore ; Birganj and Kaharul upazilas of Dinajpur district were selected for the study. A total of 242 cotton growers were surveyed of which 62 were from Tangail, 90 from Jessore, 50 from Rangpur and 40 from Dinajpur. Data were collected by survey method with the help of a pretested questionnaire through repeated visits during the months of July 1983 to January 1984.

Only 7% of sample farmers started cotton cultivation before 1980 and about 46% farmers started in 1982 (Table 2). The reasons for lower number of cotton growers in Rangpur in 1982 are unclear from the data available. Farmers in Tangail and Rangpur adopted cotton earlier than those in Dinajpur and Jessore probably because of earlier introduction of cotton extension programme in the former districts. About 86% respondents were influenced by the agricultural extension agents to undertake cotton cultivation and 13.6% were influenced by their neighbouring farms while only 0.9% farmers learnt from pamphlets/booklets.

Average cultivated area of the sample farmers was 4.04 acres of which cotton was cultivated in 0.71 acre, i.e. 17.57% (Table 3). Dinajpur farmers had the highest average holding but lowest area devoted to cotton.

Only 47.93% respondents borrowed loan both in cash and kind for cotton cultivation. In Tangail, about 52% farmers got credit and the amount was Tk. 586 per borrower. The amount of loan (Tk. 712) and the number of loanees (75%) was the highest in Rangpur district and lowest in Dinajpur where the corresponding figures were only Tk. 161 and 25%. In Jessore district 40% farmers got credit and the amount was Tk. 594 per loanee.

TABLE 2. ADOPTION OF COTTON CULTIVATION CLASSIFIED BY YEAR OF ADOPTION

Year of adoption	% farms adopting cotton cultivation by district				
	Tangail	Rangpur	Dinajpur	Jessore	All areas
1979 or before	17.7	12.0	—	—	7.0
1980	8.1	32.0	—	6.7	11.2
1981	30.6	46.0	37.5	33.3	35.9
1982	43.6	10.0	65.5	60.6	45.9
All years	100.0	100.0	100.0	100.0	100.0

—none

TABLE 3. AVERAGE CULTIVATED LAND AND COTTON LAND OF SAMPLE GROWERS

Areas	Cultivated land per farm, acres	Cotton land per farm, acres	Cotton land as % of cultivated land
Tangail	4.27	0.70	16.39
Rangpur	3.42	0.65	19.00
Dinajpur	4.56	0.45	9.87
Jessore	4.01	0.89	22.19
All areas	4.04	0.71	17.57

III. RELATIVE PROFITABILITY OF COTTON AND ITS COMPETING CROPS

Cotton growers cultivated various crops but cotton competes directly with rabi crops such as HYV wheat, mustard, tobacco and pulses. In this section an attempt is made to study the relative profitability of cotton and other crops grown in the same season.

In estimating costs, labour costs were determined on the basis of actual wages paid and money value of privilages. The value of family labour was based on average wage rate prevailing in the respective locality for specific operation. Costs of material inputs were calculated considering the actual prices paid by the farmers in different areas. Material inputs were not used at uniform rate in all the areas covered in his study and the actual amount of inputs were not consistent with the recommended rates.

Table 4 shows the relative profitability of cotton and other competing crops grown in different study areas. The highest net return from cotton was obtained in Tangail where per acre yield was the third among the 4 areas. This was due to use of lowest number of mandays (92.2) of labour and receipt of highest price for cotton (Tk. 525 per maund) by the farmers. Per acre yield of cotton was the highest in Rangpur but it occupied third position in terms of net return. Here cost of production was the highest due to heavy expenses on labour, material inputs but price of cotton was the second highest, i.e. Tk. 519 per maund.

The lowest net return per acre was obtained in Dinajpur mainly due to the lowest per acre yield. They received the second highest price of cotton (Tk. 488) but that could not cover up the yield gap.

Per acre net return from wheat was the highest in Tangail and the lowest in Rangpur. The variation in net return was caused by the differences in yield, number of labour used and material cost of production. The highest price (Tk. 127.5) per maund was received in Jessore where per acre yield was the lowest (14.8 maund). Price received in other areas are : Dinajpur (Tk. 124), Rangpur (Tk.122.5) and Tangail (Tk. 121.49).

Mustard was cultivated in all the areas except Rangpur. Net return from mustard was the highest in Dinajpur followed by Jessore and Tangail. Per acre yield was almost the same in all the areas but variation in net return resulted from variation in cost of labour, material inputs and also the charge for land use. However, price variation of mustard was also important. Net return was the lowest in Tangail where price per maund was the highest (Tk. 385) followed by Dinajpur (Tk. 365) and Jessore (Tk. 350). Tobacco is mainly grown in Rangpur and Jessore areas. Per acre yield and net return were higher in Rangpur than those in Jessore. But per acre production cost was higher in Jessore due to involvement of processing cost. However, due to varietal differences, prices of tobacco in Rangpur and Jessore was Tk. 520 and Tk. 791 per maund respectively.

TABLE 4. RELATIVE PROFITABILITY PER ACRE OF COTTON AND COMPETING CROPS IN SELECTED AREAS

Crop and area	Yield (mds)	Gross return (Tk.)	Total cost (Tk.)	Net return (Tk.)
Cotton				
Tangail	9.5	5176	2986	2190
Rangpur	10.4	5628	3785	1843
Dinajpur	7.2	3677	2823	854
Jessore	10.3	5291	3291	2000
All areas	9.7	5064	3238	1827
Wheat :				
Tangail	22.7	2957	1797	1160
Rangpur	18.0	2430	1816	614
Dinajpur	20.7	2721	1827	894
Jessore	14.8	2532	1774	758
All areas	19.0	2660	1804	857
Mustard				
Tangail	4.0	1690	1163	527
Rangpur	—	—	—	—
Dinajpur	4.2	1640	947	693
Jessore	3.9	1533	970	563
All areas	4.0	1621	1033	588
Tobacco				
Tangail	—	—	—	—
Rangpur	16.2	8430	4052	4378
Dinajpur	—	—	—	—
Jessore	13.4	10701	7214	3487
All areas	14.8	9566	5633	3933

— Not produced

Cotton is more profitable than mustard and wheat in all areas except Dinajpur where per acre net return from wheat was 4.68% higher than cotton. The cost of cotton cultivation in Tangail was 2.53 times higher than that for mustard but wheat required only about 60% of the cost of cotton.

In Rangpur, cost of cotton cultivation was more than double compared to wheat but less compared to tobacco. Cost of cotton was 198% higher than that of mustard while wheat required only 63% of the cost of cotton cultivation in Dinajpur.

In addition to wheat and mustard cotton was more profitable than pulses, gram etc. in Jessore (see, Talukder *et. al.* 1985). But tobacco is more profitable than cotton though its cost of production is more than double compared to cotton.

It is revealed from the above discussion that net return of tobacco in Jessore and Rangpur was much higher than that of cotton. Yet, the farmers in those areas became inclined to cotton cultivation due to some advantages of cotton over tobacco. The growers have been provided with credit both in cash and kind by the cotton development board. The board provided extension services to the growers and also purchased a small portion of total production for seed at a government declared price. Cotton cultivation involves less cash expenses compared to tobacco. Processing of tobacco need large amount of cash. Flue cure method is used in Jessore area but the source of wood is almost exhausted due to constant use of wood in brickfields by the government and private agencies. It caused a problem to the tobacco producers. The small farmers became reluctant to cultivate tobacco due to its high cost of cultivation and processing. Tobacco is not liked by all categories of farmers. Moreover, marketing system of tobacco is more complex and uncertain than that for cotton at least for the time being. All these factors encouraged the farmers to switch over from tobacco to cotton cultivation.

IV. CONSTRAINTS TO COTTON CULTIVATION

Bangladesh has to import lion's share of the total requirement of cotton for the country's textile mills though it possesses suitable land for cotton cultivation and also have economic advantage over its competing crops. The total acreage of cotton production has increased from 19,000 acres in 1980-81 to 49,000 acres in 1982-83 while per acre yield increased from 0.19 ton in 1980-81 to .20 ton in 1982-83 (BBS 1984). It is also notable that total acreage increased from 41,000 in 1981-82 to 49,000 in 1982-83 but total production remained 10000 tons in these two years.

It is encouraging that farmers responded positively to cotton though it was a new cash crop. The problems which stand on the way of expansion of cotton acreage and production as perceived by the farmers were lower price of cotton, shortage of money, technological know-how, lack of irrigation facility and suitable land, shortage of labour, non-availability of inputs such as insecticide, seed and fertilizer.

The most important barrier to expansion of cotton acreage was lower price of cotton as mentioned by about 81% farmers. More than 94% farmers in Jessore and 70% farmers in Dinajpur and Rangpur faced this problem (Table 5). Shortage of cash

TABLE 5. BARRIERS TO EXPANSION OF COTTON ACREAGE

Nature of Causes	% farms reporting the Causes by area				
	Tangail	Rangpur	Dinajpur	Jessore	All areas
Lack of suitable land	42	10	3	40	28
Lack of irrigation facility	3	70	95	38	45
Shortage of labour	53	2	3	22	23
Shortage of cash money	63	46	23	63	53
Lack of technical knowledge	65	2	8	76	46
Lower price of cotton	8	70	70	94	81
Non-availability of—seed	—	—	8	1	2
—Insecticide	10	6	5	2	5
—Fertilizer	2	10	13	—	5

was the second important problem which was mentioned by about 53% farmers with a variation from 23% to 63% in the study areas. Lack of technical know-how acted as a barrier to about 46% farmers. It was acute in Jessore and Tangail where 75% farmers mentioned this problem. On an average 45% farmers in the study areas faced the problem of irrigation facility but it was the most important problem faced by 95% farmers in Dinajpur.

Lack of suitable land for the expansion of cotton acreage was raised by about 42% farmers in Tangail and 40% farmers in Jessore but this problem was faced by only 10% and 3% farmers in Rangpur and Dinajpur respectively. In addition to these, shortage of labour supply, lack of seed, fertilizer, insecticide etc. were also reported by the respon dents as problems.

However, it is generally believed that the major constraint to expansion of cotton acreage is the prevailing marketing system. There are two ultimate purchasers of cotton in Bangladesh namely the Bangladesh Cotton Development Board and the Bangladesh

Textile Mills Corporation. In the market, there are official prices for three grades of cotton. But none of the farmers in the sample received that price (Table 6).

Table 6 shows that more than 50% farmers sold cotton at less than the minimum price of grade C. Only 1% sold cotton in Dinajpur as grade A but did not receive the government declared price. They were cheated in quality and weight by the traders. This is also supported by a study in Kushtia where 80% farmers mentioned the problem of getting fair weight and price according to grade of their produce (Zaman 1985).

TABLE 6. DISTIBUTION OF FARMS ACCORDING TO PICE RECEIVED PER MAUND

Price Received Per Maund of Cotton (Tk.)	% of farms selling cotton by district				
	Tangail	Rangpur	Dinajpur	Jessore	All areas
Less than 500	—	—	97	95	51
500 - 520	—	100	—	4	22
521 - 540	100	—	—	1	26
541 - 560	—	—	3	—	1
Total	100	100	100	100	100

—none

V. CONCLUSIONS

Cotton development board has been established with a view to achieve self-sufficiency in supplying cotton to our textile mills. The board has been trying to increase cotton acreage and per acre yield through training, motivational drive and by providing credit in a limited scale. Despite its sincere effort the target of acreage and yield are not yet achieved.

Production and acreage is not merely the function of inputs and technical know how. Price of cotton is a very important determinant of cotton acreage. Unfortunately the marketing aspect of cotton is not seriously considered by the cotton development board. It purchases only a negligible portion of total production as seed cotton. The price of

cotton is left to be determined in free market where individual producers supply very small amount of total market supply and therefore have no bargaining power.

Steps should be taken so that reasonable price can be ensured to growers, otherwise, the intermediaries would be benefited at the cost of growers and on the other hand farmers would be discouraged to cultivate cotton

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