

## JUTE FIBRE YIELD AND ECONOMICS IN CHARLAND AREAS OF BANGLADESH

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**Abstract.** The area of charland due to alluvium is more than two thousand square kilometers in Bangladesh. About 70 to 75 lakh people dwell on different chars. The aim of jute cultivation in charlands was to disseminate of improved jute cultivation and retting technologies on chars for facilitating market systems that enhance opportunities for employment, income generation and improvement of livelihood of vulnerable charland households. The jute production programmes were conducted with plots size of 20 decimal per farms in charlands of Jamuna river located in Kazipur and Sirajgonj Sadar of Sirajgonj, Sariakandi of Bogra, Fulchori and Shaghata of Gaibandha and Sorisabari and Islampur of Jamalpur districts of Bangladesh during 2013-14. Results revealed that the highest fibre yield 305 kg was recorded at demo plots of Jamalpur charland area and however the lowest 276 kg was at charland of Bogra. In case of non-demo farmers, the highest fibre yield was recorded 243 kg from Gaibandha charland and the lowest 213 kg was recorded at Bogra. The average production cost was Tk. 6451 and Tk. 5544 per 20 decimal for demo and non-demo plots, respectively. The gross return, gross margin and benefit cost ratio were Tk. 10,358, Tk. 3907 and 1.61, respectively for demo farmer. In case of non-demo farmers, the gross return, gross margin and benefit cost ratio were Tk. 7379, Tk. 1832 and 1.33, respectively per 20 decimal. The benefit cost ratio (BCR) was the higher (1.61) in demo plot than that of non-demo plot (1.33).

**Keywords:** Charland, jute, gross return, gross margin, benefit cost ratio.

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**Manuscript received:** 6 February 2018

### 1. Introduction

Jute is a cash crop of Bangladesh. It is grown in the summer season (Kharif-I). In 2010-2011, 0.803 million ha land cultivated for jute. Production of raw jute was 1.5 million MT by volume in 2010-2011. Jute cultivation area was 6% of total land area of 13 million ha, of which 8.44 million ha belongs to agricultural land. Jute cultivation area was 10% of agricultural land area. Jute production was 26% as of all agricultural crops (IJSJ, 2012). Among the jute growing countries of the world, Bangladesh ranked second in respect of fibre production. Jute alone contributes about 1.58% to GDP without involving any foreign investment. In 2011-2012, 1523 thousand tones of jute fibre were produced from 7 lakh hectares of land (BBS, 2010). Charland in Bangladesh are landmasses formed through the sedimentation of huge amount of sand, silt and clay over time carried by the Padma, the Meghna, the Jamuna and the Brahmaputra with their numerous tributaries. Bangladesh has about 0.83 million hectares charland of

which about 0.52 - 0.79 million hectares are cultivable. Generally charland farmers cultivate local variety of different crops following indigenous crop production practices. As a result crop yield in charland areas is low. Increase in crop yield as well as production in mainland is somewhat difficult due to higher cost of inputs and shrinkage of land resource. The diversified ecosystems of Bangladesh are prone to various environmental hazards. Climate change is added threat to the Bangladesh agriculture and vulnerable to ecosystem. Moreover, cultivable land of Bangladesh is decreasing by 1% in every year but population is increasing at an alarming rate. So, to feed the ever increasing population, crop production measures in unfavourable eco-systems like charland areas under the context of changing climate should be strengthened for ensuring food security. Cultivated soils of chars are mostly sandy loam to silty loam with slightly acidic to slightly alkaline in reaction and deficient in plant nutrients as well as organic matter content. Generally farmers in char lands cultivate local variety of different crops. Moreover, they follow their own crop production techniques which are the main causes of low yield in char areas (Aziz *et al.*, 2016).

The lands in the rivers left behind after floods are called charlands. These charlands are formed through the sedimentation, over time, of huge amounts of sand, silt, and clay carried by different rivers. The people who build temporary houses in charland are known as charland dwellers. Charlands in Bangladesh is a unique asset. This extensive stretch of resource can play an extraordinary role in reducing poverty as well as increasing income generation of a huge number landless people of the country. According to different sources, the area of charland due to alluvium is more than two thousand square kilometers in the country. At present about 70 to 75 lakh people dwell on different chars in Bangladesh. Sixty percent of these people are absolutely landless having neither agricultural nor homestead land.

The charland was a medium low to low land with sandy to silty alluvium soils and it belongs to non-calcareous alluvium predominate and organic matter is very low [8]. The alluvial charlands are most suitable for crop cultivation. A huge quantity of paddy, jute, groundnut, maize, rabi and different vegetables grow well in the charland. Jute grows in *Kharif* season (April to September). A jute cultivation programme was done in the charlands areas of Jamuna, Padma and Teesta rivers which cover four districts viz. Jamalpur, Sirajganj, Bogra and Gaibandha of northern Bangladesh to disseminate the improved jute cultivation and retting technologies on chars for facilitating market systems that enhance opportunities for employment, income generation and improvement of livelihood of vulnerable charland households.

## **2. Materials and methods**

The aim of jute cultivation in charlands was to disseminate of improved jute cultivation and retting techniques on the char for facilitating market systems that enhance opportunities for employment, income generation and improvement of livelihood of poor and vulnerable charland households. The jute production programmes were conducted in the charlands of Jamuna river located in Kazipur and Sirajgonj Sadar of Sirajgonj, Sariakandi of Bogra, Fulchori and Shaghata of Gaibandha and Sorisabari and Islampur of Jamalpur districts during the period from April to September in 2013-14. At the beginning of the programme, high officials of BJRI visited the charlands of the said four districts for the possibility of jute cultivation. On the basis of their visit and discussion with the farmers of charlands, 20 farmers of each

site were selected through random selected method. Demo farmers' plots were selected with considering fertile land, easily visible, road side etc. for developing awareness to the different group farmers with the help of local NGOs personnel. The farmers prepared their land finely with 3-4 ploughing and cross ploughing and laddering by power tiller. They cleaned the residues of the previous crop properly. Farmers' sown jute seeds after application of recommended doses of different fertilizers. Finally drainage channels were made around the plot to remove the excess rain water.

A total of 100 jute farmers were trained up on jute cultivation following the title "Improved jute production technology and retting practices in the charland" discussing on different lessons like land selection and preparation, fertilizer management, seed treatment, seed germination test, seed sowing, intercultural operations, pest management, location specific improved jute retting practices etc. Forty jute demonstration plots in four districts (10 plots per district) was set-up and sixty farmers' field days were conducted in those locations participating nearly 1,500 farmers. Sampling of 10 grouped and 10 non-demo farmers were selected by adopting simple random sampling method. Tabular method was used for analyzing the data.



Way to char land by local boat

Farmer's home area of char land

### 3. Results and discussion

Results revealed that the highest fibre yield 305 kg per 20 decimal was recorded at demo farmers plots of Jamalpur charland area and the 2<sup>nd</sup> highest was 300 kg per 20 decimal was observed at Gaibandha, however the lowest 276 kg per 20 decimal was at the charland of Bogra. On the other hand, in case of non-demo farmers, the highest fibre yield was found 243 kg per 20 decimal at Gaibandha charland and the lowest 213 kg per 20 decimal was recorded at Bogra. Total production cost for both demo and non-demo farmers were Tk. 6646 and Tk. 5832 per 20 decimal, respectively were the highest at Gaibandha and both the costs were lowest at Bogra. The highest gross return Tk. 11227 was found at Jamalpur and the lowest was Tk. 9333 at Sirajgonj for the demo farmer. Gross Return Tk. 8290 was found at Gaibandha and the lowest was Tk. 7020 at Bogra for non-demo farmers. The highest gross margin for demo was found Tk. 4631 at Jamalpur and non-demo was Tk. 2458 at the charland of Gaibandha but the lowest Tk. 2937 for demo and non demo Tk. 1396 were calculated at Sirajgonj. The highest

Benefit Cost Ratio 1.70 for demo was found at the charland of Jamalpur due to the higher market price of both fibre and stick. However, BCR was the lowest 1.53 for demo at Sirajgonj. In case of non-demo plots, the highest BCR (1.42) for demo was found at Gaibandha and the lowest 1.24 was at Sirajgonj for the lower market price of both fibre and stick (Table 1). It was observed that demo and non-demo farmer, the average production costs were Tk. 6451 and Tk. 5544 per 20 decimal, respectively (Table 2).

In case of demo farmers, the average fibre yield was 291 kg per 20 decimal. The average fibre and stick price was Tk. 31.85 per kg and Tk.1.88 per kg, respectively. In case of non-demo farmers, the average fibre yield was 222 kg per 20 decimal based on the survey results. The average fibre and stick price was Tk. 30.47 per kg and Tk.1.50 per kg, respectively (Table 3). The variation in yield between demo and non-demo farmers might be the lack of quality seed, different types of management practices, lack of balanced fertilizer uses, irrigation facility, lack of knowledge about jute cultivation procedure and uncertain market price. In case of demo farmer, it was also found that, the gross return, gross margin and benefit cost ratio were Tk. 10,358, Tk. 3907 and 1.61, respectively per 20 decimal. In case of non-demo farmers, the gross return, gross margin and benefit cost ratio were Tk. 7379, Tk. 1832 and 1.33, respectively per 20 decimal. The benefit cost ratio (BCR) was the higher (1.61) in demo plot than that of non-demo plot (1.33) (Table-3). It might be due to the advantages of timely ensuring inputs and improved technologies for demo plot compared to non-demo plots in the charlands of four districts.

**Table 1.** Comparison between demo and non demo farmers of charlands under 4 districts on fibre yield, Total Production Cost (TPC), Gross Return (GR), Gross Margin (GM) and Benefit Cost Ratio (BCR)

Name of charland	Fibre Yield (Kg per 20 decimal)		TPC (Tk. per 20 decimal)		GR (Tk. per 20 decimal) (Include stick price)		GM (Tk. per 20 decimal)		BCR	
	Demo farmer	Non demo farmer	Demo farmer	Non demo farmer	Demo farmer	Non demo farmer	Demo farmer	Non demo farmer	Demo farmer	Non demo farmer
Sirajgonj	281	217	6396	5727	9333	7123	2937	1396	1.53	1.24
Bogra	276	213	6161	5364	9654	7020	3493	1706	1.60	1.32
Gaibandha	300	243	6646	5832	10359	8290	3713	2458	1.58	1.42
Jamalpur	305	215	6596	5252	11227	7146	4631	1894	1.70	1.36



Jute plants are harvesting



Jute plants are staked

**Table 2.** Cost of jute cultivation in average of Demo farmer and Non demo farmer at charland of Sirajgonj, Bogra, Gaibandha and Jamalpur districts

Items	Cost (Tk. per 20 decimal)	
	Demo farmer	Non demo farmer
Human labour: Family	1344	1460
Hired	3048	2833
Land preparation:		
Own Draft animal/tractor/tiller	149	153
Draft animal/tractor/tiller	269	260
Seed: Owned	-	-
Purchased	72	90
Fertilizer:		
Urea	307	470
TSP/DAP	84	-
MoP	72	-
Gypsum	77	-
Furadan	79	-
Pesticides:	197	40
Irrigation:	265	238
Jak covering materials (Hessian)	488	-
Total Production Cost (Tk.)	6451	5544

**Table 3.** Return of jute cultivation in the char land of Sirajgonj, Bogra, Gaibandha and Jamalpur districts

Item	Return ( For 20 decimal)	
	Demo farmer	Non demo farmer
Production (Kg/20 decimal): Fibre and Stick	291	222
Price of Fibre (Tk/kg)	580	410
Price of Stick (Tk/kg)	31.85	30.47
Gross Return :(Tk/20 decimal)	1.88	1.50
Value of fibre	9268	6764
Value of stick	1090	615
Total:	10,358	7,379
Total cost (TC)/TVC:	6451	5547
Gross Margin (Tk):	3907	1832
Benefit Cost Ratio:	1.61	1.33



Jute plants are staked before retting



Preparing of jute retted fibre extraction

The average production cost was Tk. 6451 and Tk. 5544 per 20 decimal for demo and non-demo farmers, respectively. The gross return, gross margin and benefit cost ratio were Tk. 10,358, Tk. 3907 and 1.61, respectively per 20 decimal for demo farmer. In case of non-demo farmers, the gross return, gross margin and benefit cost ratio were Tk. 7379, Tk. 1832 and 1.33, respectively per 20 decimal. The benefit cost ratio (BCR) was the higher (1.61) in demo plot than that of non-demo plot (1.33).



Jute fibre drying

Processed jute fibre

Local jute market near char  
land

#### 4. Conclusion

From the above results it could be concluded that specially ensuring the timely seed sowing, proper management, irrigation at drought condition and harvesting made at 110 to 120 days of jute crop age, the charland jute farmers of Bangladesh could get higher yield of good quality fibre with high BCR. Presently, it already proved that charland farmers cultivating jute at a lower cost and getting benefit by selling their produced quality fibre at higher price.

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