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Constraints and opportunities of raw jute production: a household level analysis in Bangladesh

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Abstract

The study was conducted to investigate the existing status and practices of jute cultivation. A total of 100 farmers were interviewed by using a structured interview schedule from two villages (Damor and Nathpara) of Kishoregonj sadar upazila of Kishoregonj district at their houses and/or farm sites during April to June 2014. The study confirmed that most farmers have improved their socio-economic conditions through jute cultivation. The impact analysis of jute cultivation on livelihood of jute farmers shows that overall 61% jute farmers have increased overall livelihood from jute cultivation during the last four years (2011-2014). *Deshi* variety of jute has been widely grown across the region due to its wider adaptability and quality fiber. Jute area has been increased and some rice field has been replaced by jute due to its high demand in country. In addition, farmers are motivated to cultivate jute. But study revealed that productivity ranged from 750 kg to 1022 kg per hectare that are lower than other jute growing areas of Bangladesh. Average cost of production of fiber was estimated at Tk 15/kg. The study indicates that the maximum production cost has involved in fiber extraction (20%) and weeding (20%). The study also revealed that lack of quality seed, high cost of jute production, lack of training facilities, inadequate credit facilities, high disease infestation, high price of inputs, unstable jute price, shortage of labor at peak period, lack of retting water and weed problem were the main constraints in jute production and processing. For the sustain of jute cultivation in the study area, it would be better to provide subsidies on seeds and fertilizer to jute farmers thereby profit margin becomes high and will encourage growers in producing more raw jute within the country for the fulfillment of raw jute requirement of local jute industries. Cost effective technologies have to be developed in jute production and processing aspects for lowering the production cost and increasing the profit margin.

Key words: Cost of production, production constraints, raw jute, livelihood, Bangladesh

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Introduction

Jute sector is experiencing a comeback in major jute producing countries of the world as reflected in the increasing demands for raw jute during last 3-4 years. Shortage of supply has been causing continuous increase in the raw jute price in major jute producing countries like Bangladesh. Increasing awareness of environment issues and diversified use of jute have contributed to the recent development of jute sector for the last few years. Jute is bio-degradable natural fibre whose traditional use was confined in packaging industry. Today non-traditional or diversified uses of jute as jute yarn, jute geo textile, jute pulp & paper, jute composites and other jute diversified products seems to be the main driving force for the future development of raw jute, pushing demand and consequently increasing raw jute price. Globally, Bangladesh is the second largest producer of jute fibre, with only India producing more. Bangladesh produces around 30% of the total world production of jute and exports around 40% of its total produce as raw jute.

In Bangladesh, Jute (Corchorus sp) is considered as the main cash crop and it grows almost all over the country but jute qualities vary according to the soil

type and retting conditions (Uddin et al., 2014). It covers about 4.14% of total cropped area and accounts for about 16% of total foreign exchange through export of raw jute and jute product (BBS, 2010). The major use of growing jute is still aimed at obtaining fibre as textile materials for the packaging sector and also for making ropes, mattresses, carpets, bags and other handicrafts (Islam and de silva, 2011). Besides, jute fibre and jute sticks are largely used for different domestic purposes such as cooking fuel and fencing of homestead area (Ghimire and Thakur 2013; Roy, 2014). In addition, jute plants improved soil productivity because of its massive leaf fall and root proliferation in the field. Bangladesh produces 5.5-6.0 million (55-60 lakh) bales of raw jute every year of which some 3.2 million (32 lakh) bales are used in the existing 148 jute mills (Uddin et al., 2014).

The contribution of jute sector to the economy of Bangladesh is enormous. The country exports 2.4 million (24 lakh) bales of raw jute valued at Taka 9.77 million (977 crore). In total, Bangladesh fetched Taka 29.395 billion (2939.5 crore) by exporting raw jute and jute goods. As of 2006-07, the jute sector contributed 1.3% share to the Bangladesh GDP. According to the - Agriculture Sample Survey of Bangladesh 2005-07, approximately 1.1 million households were involved in jute cultivation while around 0.3 million additional persons are involved in the manufacture of jute products. The total demand for jute goods in the international market is 0.75 million (7.50 lakh) tonnes. Bangladesh exports 0.46 million (4.60 lakh) tonnes of jute goods in the international market. Dhaka controls 62 per cent share of the total jute goods market of the world and earn Taka 20.125 billion (2012.5 crore) by exporting jute goods (Deb and Bairagi, 2009).

In Bangladesh, though jute price increased three folds in last 10 years, the maximum increase took place during the last 3-4 years. Eventually, with the increase in price of jute, production system has not changed significantly (Uddin et al., 2014). It is expected that technological change required at the farmer level for the improvement of this sector. However, the demand of raw jute within the country has increasing trend over the years. National average productivity of jute fibre in Bangladesh is 1.93 t/ha, which is lower than the India (2.1 t/ha) (BBS, 2010). It may be attributed to uncertainty of raw jute price, low options of high yielding jute genotypes, use of low quality jute seed, lack of motivation about modern jute production technology, poor knowledge about grading of jute and weed management, etc. In Bangladesh, around 75% farmers are using uncertified seed. Though Bangladesh has developed a number of high yielding varieties of jute seed, these have not yet reached the doorstep of all the jute farmers. It is estimated that the introduction of HYV seed can increase the production of jute by 25% (Mollah et al., 2008; Yusuf, 2007).

As jute crop is economically an important crop of Bangladesh, any problem this crop faces should be studied carefully and should be removed as early as possible. At present, the jute farmer faces some serious problem both in fibre and in seed sector. Since two years, jute has been passing through a crisis due to low and unstable price at the growers' level. It is also being observed that recently different organizations organizing seminars, symposium etc. and publishing various articles in newspaper regarding present ailing situation on raw jute production and goods. All are concerned how to overcome this situation and salvage the jute industry (Yusuf, 2007). Therefore, the present study is conducted to determine the existing status and practices of jute cultivation and to identify the existing constraints which hindering jute cultivation of the jute farmers.

Materials and Methods

The study was conducted at Rashidabad and Mohinondo unions under Sadar upazila of Kishoregonj district. Sadar upazila under Kishoregonj district was purposively selected because it is one of the important jute growing area (area: production = 5-15 thousand ha: 20 to 100 thousand bales), jute farmers are available and they are familiar with the jute farming. In addition, every year some impediment occurs in these two unions and causes a great deal of human sufferings and compensation to jute production and most of the jute farmers are vulnerable to chronic economic growth.

The selection of the study areas was made by the suggestions of local sub-assistant agriculture officer (SAAO), members of Union Parishad, NGO workers and upazila level officials who used to deal with jute producing farmers. An up to date list of the jute farmers was prepared with the help of SAAO and members of Union Parishad. A total of 402 households of the selected two villages (namely, Damor and Nathpara) constituted the population of the study. Both qualitative and quantitative means of data collection procedures were used in the study. A sample of 100 household or 25 percent of the population was randomly selected from the population and interviewed them at their houses and/or farm sites. Data were collected through the pre-tested interview schedule by face-to-face interview procedure during the period for three months from April to June 2014. The interviews, lasting about two hours, focused on their existing jute production techniques and jute production constraints with the jute growers' farmers. Two FGDs were carried out with jute farmers in these two areas that produce jute of different qualities and on different scales in order to capture the overall production scenario. Cross-check interviews were conducted with SAAO, researchers and relevant non-government organization (NGO) workers. Where information was found to be contradictory, further assessment was carried out. A total of 8 key informants were interviewed. Data from questionnaire interviews were coded and entered into a database system using Microsoft Excel software.

The identification and determination of the prevailing practices of jute farming is one of the main objectives of this study. The seven selected dimensions were used to determine the existing practices of jute farming. These are: jute cultivation and cultivated area (ha/farm), experience of technical assistance and training, jute field management, harvesting and marketing of jute fibre, yield from jute cultivation, annual income, savings and credit and impact of jute farming on their livelihood.

Results and Discussions

Perception of jute farmers on jute production practices

Jute cultivation and cultivated area (ha/farm)

A large number of small and marginal farmers are associated with jute cultivation in the study area. On an average, about 85% of the total cultivated land of the farmers was brought under Deshi jute cultivation. The data generated from the survey shows that 25% farmers started their jute cultivation between 2007 and 2009, where 50% in or after 2010, 18% between 2004 and 2006 and only 7% of farmers were between 2003 and 2000. Of the jute farmers, 30% grew their jute on own land and 70% were grew on leased land. A general belief of the jute farmers (89%) is that more profit will come from it than rice or other crop agriculture. That is why; large number of cultivable land converted into jute cultivation. In the study area, the average cultivated jute area was 0.22 ha. The highest proportion (49%) of the jute farmers belonged to the 0.40 ha, 22% to the 0.19 ha and 11% to the 0.10 ha.

Experience of technical assistance and training

Forty percent of the farmers acquired jute farming experience from their friends and neighbors where 33% received formal training from different GOs (such as DAE, BJRI) and NGOs and remaining 27% have no jute farming experience. Data shows that they entered into jute farming by their self experience and still now they are continuing it. Result indicates that 40% farmers gain their knowledge from friends and neighbors. So, formal training is not frequent in the survey areas. It is important that 60% farmers were expecting training regarding jute farming.

Jute field management

Preparation of jute field is essential precondition to get more production from jute farming. It needs 3-5 times cross-plough and laddering for uniform smooth soil, which must have more than 20% organic content. Jute cultivation is labor intensive. About 77% cost is incurred for only human labor in jute cultivation. In total, 181 man days per hectare were required for *Deshi* jute cultivation. 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 (25% farmers) also used it for carrying of jute in the study area. On an

average, 20 animal pair days/ha and 6 mechanical power/ha were required for jute cultivation. In the study area, capsularis jute seed was sown from mid-March to 1st April and farmers used recommended seed rate (6-7.kg/ha). 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. The source of jute seed was mostly local market. Data reveled that 15% farmers used self-seed and only 2.5% farmer used government seed (BADC seed) and rest 82.5% used local marketable seed. But, notable that the quality of government seed was better than self-grown or market purchased jute seeds. Data revealed that maximum production cost was incurred in fibre extraction process (20%) and weeding operation (20%). Weeds are very stiff competitors with jute in rainy season causing up to 70% crop loss (Pandit et al., 2004). Timely weeding is very much important for jute production. Sometime continual rains at weeding stage create problem and removal of dense weed population incurred unexpected high cost in weeding operation. In the study area, cent percent farmers said that weeding and fibre extraction operations require huge amount of human labor.

In the study area, farmers used fertilizers mainly in the form of urea, TSP and MP at various rate. The farmers (45%) used 85-50-30 kg/ha for Urea, TSP and MP, respectively in their jute plots. Most of the farmers (90%) used cowdung and doze is 1.5 t/ha. The purpose of using fertilizers in the jute field is to increase the production of jute fibre. It was observed that fertilizers were applied only during the fibre crop production and no additional fertilizers were applied for seed crop. None of the farmers of two different jute growing villages did not apply irrigation or plant protection measures. In the study area, the farmer used traditional practices of using inputs. This was mainly due to lack of available technology of jute at the farmer level and also farmers had problem of managing cash money for purchasing inputs like seeds, fertilizers etc.

Harvesting and marketing of jute fibre

Harvesting time did not vary widely among the farmers of two different locations. In the study areas, farmers harvested their jute plant by using a sickle. None of the farmers used modern technology to cut their jute plant. Cent percent farmers practiced traditional method of retting. After harvesting, plants are bundled together in the required numbers, and kept standing for 5-7 days in the field for shading off the leaves. Then they are put under water. After 12-15 days, when proper retting is completed, the fiber is separated from the sticks by hand and then washed and dried in the sun. After drying, the fiber is ready for sale.

Jute is sometimes referred to as an insurance crop for the farmers as they can sell the whole harvest at a time or in small quantities depending on their financial need. But this practice varies from region to region (Hossen et al., 2008). Data revealed that majority of the farmers (57%) sell their product just after the harvesting. In addition, 35% of the farmers sell their product before harvesting to middlemen in order to pay for their subsistence. Only 8% of the farmers stock jute and sell it over a long period of time. They have storage facilities to stock large volumes of raw jute for several months.

In the study area, around 68% of the jute are collected by small and medium traders from farmers in the peak season in local market and they take a little extra jute (for example, 2-4 kg extra every 40 kg of raw jute) to compensate for possible loss while selling to big traders or millers agents. Rest 32% of harvested jute fibres are sold to the big traders or millers, which transported to the district markets in Kishoregonj. This happens because both small and medium traders and farmers are not aware of the grading system that is followed by raw jute exporters or millers. Big traders, who are aware of the grading policy, enjoy a competitive advantage over the small and medium traders. The price of the fibre depends on colour, size, weight, quality, seasonality, supply and demand, and distance to markets (Hossen et al., 2008). Heavy rains often destroy the muddy roads in villages making them eventually inaccessible for the rickshaws, vans and motorised vehicles to carry raw jute fibre to the markets. In almost all farmers bring raw jute of different grades in a lot and sell it to the traders at an average price. Farmers do not have a role in determining the price of raw jute.

Yield from jute farming

In the study area, the average yield of jute fibre, and stick was 750 kg and 5625 kg/ha, respectively. Roy (2014) reported that raw jute fibre production was 1500 kg/ha in Kishoregonj district. In addition, the average annual yield of raw jute and stick were estimated at 1900 kg/ha and 6180 kg/ha, respectively (Deb and Bairagi, 2008). Islam and de Silva (2011) estimated average yield of jute production is 2209 kg/ha in Faridpur region. It is significant that the jute production is low in the study area because of high rate of insect and disease infestation, limited access to market, lack of suitable land, lack of knowledge and less awareness about proper management of jute production and less attention of DAE and BJRI to the jute farmers' on raw jute production. The sample farmers of Damor received higher yield than farmers of Nathpara. The higher yields at Damor might be due to the use of higher doze of chemical fertilizers, proper land preparation, better intercultural practices and proper jute field management by the farmer and in addition farmers' own interest on jute farming.

Annual income, savings and credit

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. 18,000 and Tk. 5500 per hectare on full cost and cash cost basis, respectively.

Table 1. Existing status and practices of jute cultivation considering seven dimensions (n = 100)

Dimensions	Key findings
Jute cultivation and cultivated area	● 85% of the total cultivated land under *Deshi* jute cultivation ● 50% farmers started their jute cultivation in or after 2010 ● A general belief of the jute farmers (89%), more profit will come from it than rice or other agriculture crop ● Average cultivated jute area was 0.22 ha ● A large number of cultivable lands is converted into jute cultivation
Experience of technical assistance and training	● 40% farmers gain their knowledge from friends and neighbors ● 33% received formal training from different GOs (such as DAE, BJRI) ● 27% have no jute farming experience ● 60% farmers were expecting training
Jute field management	● Major labor required -land preparation, weeding, harvesting and carrying of jute ● Animal and mechanical power was mainly used for land preparation but only 25% farmers used it for carrying of jute ● Only 2.5% farmer used BADC seed & rest 82.5% used local marketable seed ● Maxi. production cost was incurred in fibre extraction (20%) & weeding (20%)
Harvesting and marketing of jute	● None of the farmer used modern technology to cut jute plant ● Cent percent farmer practiced traditional method of retting. ● 57% farmer sell their product just after the harvesting ● Only 8% farmers stock jute and sell it over a long period of time ● 68% of the jute collected by small and medium traders ● 32% of harvested jute fibre are sold to the big traders or millers ● Farmers do not have a role in determining the price of raw jute
Yield from jute cultivation	● Yield of jute fibre and stick was 750 kg and 5625 kg/ha
Annual income, savings and credit	● The average annual income of jute farmer was Tk. 14250 from jute cultivation ● 65% farmer used their own money for jute cultivation ● The average amount of credit received by a farmer was Tk. 9880/year from all sources
Impact of jute cultivation on their livelihood	● 61% farmer indicated that their livelihoods improved through jute cultivation

The cost of dry fiber production was estimated at Tk. 1500 per quintal. It was found that the total variable cost per hectare was higher in Damor village (TK. 22,250) than that in Nathpara village (Tk.19,250) mainly due to higher cost in human labour, animal & mechanical power & chemical fertilizers. In the study areas, the major cost item was human labour (60%) followed by animal & mechanical power (20%), chemical fertilizers (8%) and manure (5%). About 50% of the total cost was spent in cash for jute cultivation. It indicated that credit need for poor farmers to support the cash requirement for jute cultivation. The data showed that (table 2) highest gross return found Tk. 30,000 by the farmers of Nathpara village and gross return Tk. 35,000 obtained by farmers of Damor, which was lowest gross return compared to other farmers of other jute growing region of Bangaldesh.

Table 2. Cost and return analysis Tk/ha

Village	Gross return Tk/ha	Total variable cost	Net income Tk/ha	Benefit Cost Ratio
		Tk/ha		
Nathpara	30,000	19,250	10,750	1.55
Damor	35,000	22,250	12,750	1.57

Assessing the proportion of income of individual actors is not easy. However, interviews with the farmers revealed that almost all farmers have their secondary income sources as they can hardly rely on the sole source of jute cultivation. Local level collectors also have other sources of incomes as jute collection and trading are treated as a seasonal business. Apart from farmers and local level collectors, other actors concentrate on income from the jute business. the sole source of jute cultivation. Local level collectors also have other sources of incomes as jute collection and trading are treated as a seasonal business. Apart from farmers and local level collectors, other actors concentrate on income from the jute business.

In the study area, the savings performance of jute farmer was calculated based on both informal and formal saving mechanisms. The overall savings in the study area were very small. Although most of the respondents (65%) used their own money for jute farming, 35% received loans from NGOs, moneylenders and banks. However, due to lack of education farmers often go to moneylenders and pay high interest rates of 10% monthly (i.e. 120% yearly). The average amount of credit received by a farmer was estimated at Tk. 9880 per year from all sources.

Opinion of jute farmers regarding impact of jute cultivation on their livelihood

Jute farmers were asked whether there had been any changed aspect of their lives since performing jute cultivation over the last four years. Five items of livelihood were selected as the major areas that changed by the income of jute cultivation and opinion of jute farmers are summarized in table 3.

Table 3. Overall impact of jute cultivation on livelihood of jute farmer during the last four years (n = 100)

Statement	Opinion of jute farmer (%)		
	Improved	Same as before	Decreased
Household income	68	28	4
Housing condition	55	45	0
Health situation	36	52	12
Participation in social activities	70	20	10
Freedom in cash expenditure	72	25	3
Overall livelihood	61	35	4

The majority of the jute farmers (61%) indicated that their livelihoods improved through jute cultivation. The freedom in cash expenditure and participation in social activities also increased remarkably. Many farmers (35%) reported that association with jute cultivation does not change their livelihood situation and 4% mentioned that their livelihood situation in fact was decreased. The overall livelihood decreased due to loss of property and thereby inadequate return from jute cultivation, unstable market prices, defaulting and the burden of loans were major

reasons for the negative effects reported by jute farmer.

Problems faced by jute farmers towards raw jute cultivation

The interviewed jute farmers faced a variety of multi-dimensional difficulties and constraints (socio-economic, technical, market related) that affected the jute cultivation as well as their livelihood. Lack of quality seed, high cost of jute production, lack of training facilities, inadequate credit facility, high disease infestation, high prices of inputs, unstable jute price, shortage of labor at peak period, lack of retting water and weed problem were the main constraints in jute production and processing (Table 4). Costs of jute cultivation were reported to have

Table 4. Problem confrontation of the farmers on jute production during the last four years

Category	Problems	No. of respondent (n=100)
	Lack of quality seed	91
	High cost of production	88
	Timely availability of quality seed	39
Crop management	Timely availability of suitable land	42
	Inadequate supply of quality fertilizer	38
	Weed problems	55
	Germination problem	30
	Lack of technical know how	44
Socio-economics	Shortage of labor during the time of harvesting and retting	58
	High price of inputs such as seed, fertilizer, insecticide	67
	High labor wages	40
	Small holding of land	34
	Low return	26
Market	Unstable jute price	65
	Low price of jute	46
	Little involvement of govt. or mills in jute purchasing	43
	No grading system (grade wise price)	35
	Market management problem	28
Retting	Lack of retting pond	25
	Lack of retting water	57
	Lack of adequate knowledge in improved retting and grading	51
	Transportation problem in retting	33
Others	High rate of disease (stem rot) infestation	78
	Lack of pest management technology	29
	Unavailability of organic manure	26
	Inadequate credit facility	80
	Lack of training facilities	84

increased significantly in recent years as a result of increased costs of seed, fertilizers and wage rates. Inadequate and costly finance can, therefore, be a major constraint to expand the jute cultivation. Deb and Bairagi (2009) identified the similar problems of jute cultivation in Bangladesh. Jute farmers indicated that they have less formal training in technical matters regarding jute cultivation, which keeps them away from using technology and up-to-date information. Another important constraint was 'lack

of technical knowledge'. Price is the one of the main factor which determines the economic scale of production of jute. Price of raw jute is fluctuated year after year and not stagnates. Jute is a labor intensive crop which requires more human labors for different field operations. Sufficient agricultural labors are not available in rural areas and most of the working force has gone to search for better job in different urban areas of the country. Another great problem faced by the jute grower is the lack of quality retting water. Retting facilities are not available nearby jute fields and jute bundles have to transport in road side ditches. Drought in the season may hamper retting process and thus quality of jute fibre. Wilting of plant at later stages is another biological constraint reduces the fibre yield and quality to some extent. 'Inadequate supply of quality fertilizer' was the most commonly encountered problem for the jute farmers in the study area.

Jute farmer also reported that poor health status was a barrier to conduct jute farming. They often suffered from diarrhea, cholera, dysentery, skin diseases, malnutrition, night blindness, and mosquito-borne diseases such as dengue fever and malaria. In addition, they reported that social insecurity and natural calamities hindered their jute cultivation. Jute farmers did not have enough leaflets, booklets and other information materials on jute cultivation. Therefore, producing good quality seeds to supply adequate seed on time, supply of adequate finance though credit program, extension of technical knowledge by training program, selecting appropriate time and site for jute cultivation, taking appropriate preventive and controlling measures and extension of different facilities in the study area are essential.

Consclusion

In study area, a large number of cultivable lands are converted into jute cultivation and majority farmers believe that jute farming is more profitable than rice or other agricultural crops. Access to micro-credit, availability of quality input such as seed, fertilizer, insecticide, etc., marketing facilities, improve technologies, and training all lead to increase jute production. However, the annual income from jute cultivation is relatively low. In the study area, the major constraints of jute cultivation are lack of quality seed, high cost of production, training facilities, inadequate credit etc. Therefore, institutional supports from Government and Non-Government organizations for credit, input and technology may be helpful to increase jute production as well as income of jute farmers.

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