Constraint and opportunity of raw jute production : A case study of eastern Terai, Nepal

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Abstract

Area and production of raw jute has decreased, though there is a high demand of raw jute in the country. In order to assess production constraints, a survey was carried out in 2005/06 in Jhapa, Morang and Sunsari districts. The study revealed that unstable or low price of raw jute, unavailability of quality jute seed, limited irrigation water at sowing period, diseases complex (wilt), labor shortage during peak season, weed problem, lack of retting water/retting pond were the main constraints in jute production and processing. The study indicates that the maximum production cost has involved in fiber extraction (16.9%) and weeding (16.33%). Jute productivity ranged from 1788 to 2260 kg per hectare. JRO-524 variety of jute has been widely grown across the region due to its wider adaptability, high yield potential and quality fiber. Jute area has been replaced by sugarcane due to its high yield potential and high profit margin. It is observed that the cost of production of jute is high as compared to other crops in the season. Average cost of production of fiber was estimated to be Rs.1563/quintal. For the promotion of jute cultivation in the eastern Terai, it would be better to provide subsidies on seeds and fertilizer to jute growers as practiced in neighboring countries 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. Popular genotypes JRO-524 which was widely adopted needs to be recommended officially for the general cultivation in this region. Being an eco-friendly crop, promotion is required to adapt climate change effect and maintaining the soil properties in jute growing areas.

Key words : cost of production; low price; production constraints; quality seed; raw jute

Introduction

Jute (*Corchorus spp.*) is a cash crop in eastern Teraibelt of Nepal and mainly concentrated in Jhapa, Morang, Sunsari, Siraha, Saptari and Udaypur districts (JRP, 2007). 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 and jute stick for cooking fuel (Chaudhary and Shrestha, 1998). Since many years, jute has been passing through a crises due to low and unstable price at the growers' level (Dass, 1999). The area and production trend of jute have declined for the last 42 years (Fig.1). The current area, production and productivity of jute is 10540 hectare, 14424 metric ton and 1369 kg/ha, respectively (MoAD, 2011/12). However, the demand of raw jute within the country has increasing trend over the years and has reached upto 99,600 ton per year. At present, 9 jute industries are running in the Morang and Sunsari districts. Domestic supply of raw jute was only 35% of the total demand (NJMA, 2063 BS). Rest of the demand is fulfilled by importing from India and Bangladesh. There are several biophysical and socio-economical constraints in declining

the area and production of raw jute in Nepal. In order to assess the production constraints and find out possible measures to revive the raw jute production in this region, Jute Research Program (JRP), Itaharihad carried out a study in Jhapa, Morang and Sunsari districts in 2005/06.

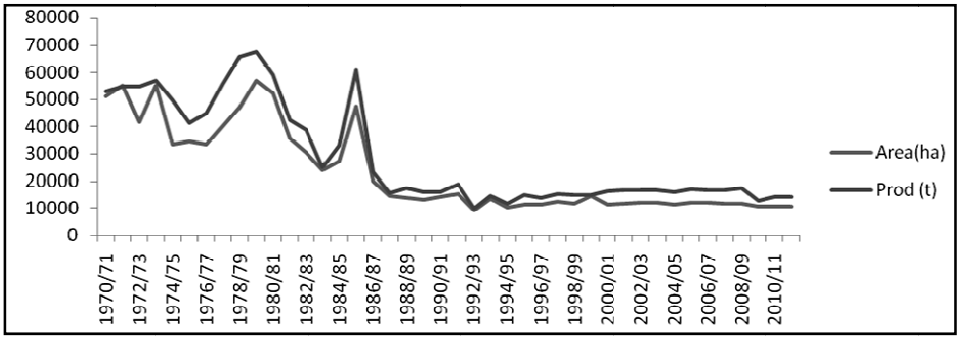

Fig 1. Area and production of raw jute in Nepal over the years

Materials and methods

A survey was conducted in the month of January and February 2005 in Jhapa (Gaurigung, VDC), Morang (Kadmaha and Nocha VDCs) and Sunsari (Vokraha and Narsing, VDCCs) purposefully for collecting information regarding jute cultivation, processing, marketing and problems faced by jute growers. A semi-structured questionnaire was prepared and pre-tested. About 30 farmers were selected randomly from main jute pocket areas in the selected each district. Altogether 90 farmers from Jhapa, Morang and Sunsari were interviewed in household level for collecting information. PRA tools were also adopted to collect information regarding jute production constraints with jute growers' farmers. The information obtained through the household level was based on the memory recall. Data sets obtained through the household's survey were analyzed using SPSS software.

Results and discussion

The study revealed that *JRO-524* variety of jute was widely grown throughout the region due to its wider adaptability, high yield potential and quality fibre. About 60% of farmers have grown *JRO-524* variety of jute across the region and maximum in Sunsari (80%)(Table 1).*JRC 321* is quite suitable in low land conditions of Jhapaand its' fibre quality is good for making local jute products like *Jhalla* (mat) in leisure period. The study showed the productivity of jute was higher in Sunsari (2.26 ton/ha) and least in Morang (1.78 ton/ha). However, economic return from jute was found higher in Jhapa districts due to its higher fibre price because of its quality fibre (Table 2). Quality of retting water is better in Jhapa and Morang compared to Sunsari. "Morang Pata" is the best quality fibre fetch higher price in the market. "Desal" poor quality fibre mainly grown in Sunsari fetch low market price in spite of higher yield. Farmers used higher dose of chemical fertilizer for jute cultivation in Sunsari and only farm yard manure used in JhapaGaurigunj areas. Farmers of Morang have shifted towards sugarcane cultivation and pushed jute cultivation in marginal land with minimum input level and resulted low yield and return per unit area.

Table 1. Household used different jute varieties in the study areas

District	Farmers used jute variety (%)				
	JRO 632	**JRO 524**	**JRO 7835**	**JRO 878**	**JRC 321**
Jhapa (n=30)	7	34	3	13	43
Morang (n=30)	33	64	-	3	-
Sunsari(n=30)	20	80	-	-	-
Total (n=90)	20	59	1	6	14

Source. Household survey, 2005/06

During the survey period, farmers reported that jute enterprise was not profitable and jute area is being replaced by sugarcane due to its high profit margin and easy cultivation practices as compared to jute (Table 2). Weeding and fibre extraction operations require huge amount of human labor. About 77% cost is incurred in human labor only in jute cultivation (Pandit*et al.,* 2004). Due to increase in labor wages in peak season, its cultivation becomes some time non-profitable. Human labors are scarce in peak season especially at harvesting and fibre extraction period. In the past, migratory labor used to come from India and performed the field operations with genuine cost. Moreover, jute cultivation has survived only for meeting fuel demand (stick) in the rural areas of eastern Terai. Jute price is also low compared to its cost of cultivation and even non-stable. Producer are getting lower price and middle man get more benefit from the jute produce.

Table 2. Average income from different crops in the survey sites

District	Gross income from different crops (Rs/ha)					
	Sugarcane	**Rice**	**Jute**	**Wheat**	**Rice-Jute**	**Fallow-wheat-jute**
Jhapa	-	24123	44636	15863	68759	-
Morang	76325	26715	41635	17198	68350	-
Sunsari	100800	28633	43118	18160	71751	61278

Source. Household survey, 2005/06

The study revealed that unavailability of quality jute seed, lack of irrigation water at sowing, diseases complex (wilt), labor shortage at peak season, weed problem, lack of retting pond/retting water and unstable or low raw jute price were the main constraints in jute production and processing (Table 3 and 4). Price is the one of the main factor which determines the economic scale of production in jute. Price of raw jute is fluctuated year after year and not stagnates. Jute price in Nepal has always depended on Kolkotta market.

On management factor, crop establishment and growth are greatly affected due to scarcity of moisture especially at early crop growth stage. Jute crop solely depends on monsoon rain and yield is fluctuating year after year. Wilting of plant at later stages is another biological constraint reduces the fibre yield and quality to some extent. 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 for the search for better job in gulf countries. In the past, Indian labor used to come in the main jute growing season and performed all field operations. They were more efficient and skillful than local labor for fibre extraction and other field operations. It was observed during the survey that maximum production cost was incurred in fibre extraction process (16.9%) and weeding operation (16.33%). 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 continues rains at weeding stage create problem and removal of dense weed population incurred unexpected high cost in weeding operation. Another great problem face by the jute grower is lack of retting pond. Retting facilities are not available nearby jute fields and jute bundles have to transport in road side ditches. Sometime retting water is also great problem in the sites. Drought in the season may hamper retting process and thus quality of jute fibre.

Regarding the cost of cultivation of jute, the maximum cost is involved in human labor especially in land preparation, weeding, harvesting and fiber extraction. Maximum input cost is involved on chemical fertilizers. The total cost of cultivation of jute was estimated to be Rs. 31876.81/ha. The average productivity of raw jute was about 2 MT/ha with similar quantity of dry jute stick which is very much useful for fencing and fuel for cooking. The total gross income and net income were estimated to be Rs.48291.50/ha and Rs.16 414.69/ha, respectively. The cost of dry fiber production was estimated to be Rs. 1562.89 per quintal.

Table 3. Farmers respondents on different constraints on jute production in surveyed sites

Category	Problems	No. of respondent (n=90)	Per cent
Crop management	Unavailability of quality seed	82	91
	Unavailability of quality fertilizer	35	39
	Weed problems	49	54
	Germination problem (establishment)	25	28
	Lack of technical know how	29	32
Socio-economics	Labor problems	54	60
	High price of inputs	32	36
	Labor drudgery	22	24
	Small holding of land	31	34
	Low return	20	22
Market	Unstable jute price	39	43
	Low price of jute	37	41
	No involvement of govt. or mills in jute purchasing	35	39
	No grading system (grade wise price)	36	40
	Market management problem	23	26
Retting	Lack of retting pond	49	54
	Lack of retting water	40	44
	Lack of knowledge in improved retting	35	39
	Problem of jute pressing materials	30	33
	Transportation problem in retting	30	33
Others	Lack of irrigation facilities	70	78
	Wilt problem (Stem rot)	58	64
	Lack of soil testing facilities	56	62
	Lack of pest management technology	27	30

Source. Field survey, 2005/06

Table 4. Costs share in different activities in jute production and processing

Description	Total expense (Rs./ha)	Per cent
Land preparation	3410.72	10.70
Seed cost	1493.62	4.69
Seeding	93.05	0.29
Fertilizer cost	4732.56	14.85
Weeding	5204.33	16.33
Pesticide	85.66	0.27
Irrigation	762.57	2.39
Harvesting	3554.00	11.15
Leaf shading/Bundling	1983.83	6.22
Jack preparation/retting	1859.33	5.83
Extraction	5388.12	16.90
Drying	924.11	2.90
Marketing	514.67	1.61
Interest on working capital	1778.14	5.58
Land tax	69.53	0.22
Water tax	20.91	0.07
Repairs and maintenance	1.66	0.01
Total cultivation cost (Rs/ha)	**31,876.81**	**100**

Source. Household survey, 2005/06

Table 5. Return from Jute cultivation

Description	Total	Rate (Rs/ka)	Amount (Rs)
Fibre yield (Kg/ha)	2039.61	21.68	44218.74
Stick yield (Kg/ha)	2483.39	1.64	4072.76
Gross return (Rs/ha)			48291.50
Net return (Rs/ha)			16414.69
Cost/quintal fibre			1562.89

Jute crop add substantial amount of organic matter through leaf shedding and decaying of root in the soil which ultimately sequester huge amount of atmospheric carbon. Deep root systems break the hard pan of soil and improve the physical, biological and chemical properties of soil. Jute sticks meet the fuel demand of rural people and prevent the forest destruction. Jute products are biodegradable and prevent the environmental pollution and can be reused several times. Jute fibre is used for making handicraft and can generate employment opportunities in such enterprises. Jute production is solely depends on FYM in Gaurigunj, Jhapa and fibre thus produce may explore for organic jute fibre for textile industry.

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