

## EXISTING VALUE CHAIN ASSESSMENT OF DATE PALM IN SELECTED AREAS OF GREATER JESSORE DISTRICT

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### Abstract

The study was conducted for the assessment of existing value chain assessment of date palm in Jessore district. Data were collected randomly from 30 selected date palm farmers and 60 traders from Jessore, Magura and Jhenaidah districts. Analysis was done on per quintal (100 liter) raw juice basis. Farmer, processor, bepari and retailer were involved in processing and marketing of date palm juice. Total processing cost of date palm molasses was Tk. 418.84 and for Patali sugar was Tk. 422.31 for 100 liter<sup>-1</sup> juice. Marketing cost of farmer cum processor, Bepari and Retailer were Tk. 29.00 quintal<sup>-1</sup>, Tk. 26.25 quintal<sup>-1</sup> and Tk. 21.34 quintal<sup>-1</sup>, respectively. From 100 liter of juice, it can get 16.67 kg of gur and for patali it was 15 kg. A farmer sells raw juice, molasses sugar, patali sugar and by-product were Tk. 20 liter<sup>-1</sup>, Tk. 140 kg<sup>-1</sup>, Tk. 160 kg<sup>-1</sup> and Tk. 30, respectively. Net margin or profit of the processor, bepari and retailer was Tk. 1552.16 quintal<sup>-1</sup>, Tk. 138.75 quintal<sup>-1</sup> and Tk. 148.66 quintal<sup>-1</sup> of juice respectively. There were six value chain exist in date palm marketing. Processor, bepari and retailer added the value Tk. 1552.16, Tk. 138.75 and Tk. 148.66, respectively to the value chain. Price gap between the consumers and producer was Tk. 335 for 100 liter<sup>-1</sup> juice. As producers and consumers' price had less gap the producers' share was 85.65 percent.

**Keywords:** Date palm, value chain, marketing, processing.

### Introduction

Date palm (*Phoenix dactylifera*) is an important plant species that constitutes the traditional agroforestry system in the greater Jessore region (Abedin *et al.*, 1997). Akter *et al.* (1988) conducted a survey in the farming system research site Bagharpara, Jessore to understand the existing agroforestry situation and mention it as a highly profitable farming practice. At the winter season, it gives the juices which are the important sources of sugar which locally called *khejur gur*. *Khejur gur* is the substitute of the sugarcane sugar. This gur is the most demanded product of all people. Farmer becomes benefit from this date palm by making *gur* and its other related products. Das *et al.* (2010) conducted research work on past and present scenario of date palm cultivation, its profitability and socio-economic characteristics of date palm's farmer in Jessore district. Date palm is an evergreen plant. It plays a vital role in environmental and ecological balance. It helps to mitigate natural disaster. It acts usually as a barrier against storm, cyclone and other natural calamities. It also withstands both waterlogged condition and drought. The leaves can be chopped and mix with straw to use as feed for the cattle during flood time. A significant amount of sugar uses can be reduced by the substitution of gur. It also an important sources of fuel for household. Recently, it is widely used in brick-kilns. There is a great use for mat making and building material and in other handicrafts manufacturing. It also acts as insurance to the farmers during the time of their economic hardship. Jessore is one of the districts where date palm cultivation is practiced in a large scale by the communities for a long time but now-a-days the date palm cultivation in the area has drastically been reduced. It is an important crop but no research have been carried out to find out the reasons of reduction of date palm trees, what was its past cultivation status, present cultivation status and what will be happen in future if attention is not given to it. From the date palm tree, the farmer acquires much profit which help to increase his income and livelihood of the farmer. Marketing is necessary for

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transferring the product from producer to consumer. In marketing system there involved different intermediaries and added value in different level. So that it effect on the prices of date palm. In that case it needs to assess the value chain as well as its marketing system, marketing channel, marketing cost and margin, prices spread in different level and marketing constraints and their solution of date palm at different level. With this view in mind, the present study has been designed with the following objectives:

- To analyze the existing value chain of date palm marketing.
- To assess the value addition at different levels of value chain.
- To assess the marketing cost and margin and prices spread in different levels.

## Materials and Methods

**Sample size and sampling technique:** The present study was conducted at three districts namely Jessore, Magura and Jhenaidah of Jessore region. From this three districts, three upazilas namely Jessore Sadar, Shalikhha from Magura and Kaligonj from Jhenaidah was randomly selected for data collection where date palm was cultivated. The study area was purposively selected considering the higher concentration of date palm cultivation. The study was carried out by using formal survey method. A total of 30 farmers and 60 traders at different level of different markets were selected for the present study. Necessary information regarding this study was collected based on processing costs, price, yields, etc.

**Method of data collection:** Data were collected through pre-designed interview schedule during the period of winter season of 2015. Field investigators under the direct supervision of the researcher collected field level data using pre-tested interview schedule. The unit of data collection was a single date palm tree of each selected farmers where detailed information regarding this crop cultivation were taken and analysis was done on per quintal (100 liter) raw juice basis. Although some of the selected farmers continued to harvest the crop up to March but the yield data and other information were taken up to last week of February considering winter season. Marketing data was collected from different markets where date palm sugar was sold. The collected data were compiled and analyzed using MS Excell. Descriptive and statistical method of analysis was also followed.

**Analytical technique:** Following equation was employed to assess the profitability of date palm production.

**Value chain analysis:** A value chain consists of all stages of a technical production process as well as of the interaction between these stages. The production process starts at the stage of input supply, than covers production, processing and marketing and ends with the consumption of a certain product. It can be seen as the hard skill of a value chain. According to Gereffi (1994), besides the technical structure, also the actors of a value chain as well as the input-output and the territorial structure define a value chain.

### **Value addition by traders**

$$\begin{aligned}\text{Value addition} &= \text{Gross margin} - \text{Marketing cost} \\ \text{Gross margin} &= \text{Sale price} - \text{Purchase price}\end{aligned}$$

**Marketing performance:** Marketing performance was evaluated using different measures of marketing efficiency as described by Shepherd (1972), and Acharya and Agarwal (2004). In the present study, the efficiency of marketing was investigated by examining price spread, producers share and marketing efficiency. The methods for studying these estimates are given in the following methods.

$$\begin{aligned}\text{Price spread} &= \text{Price paid by the consumers} - \text{Price received by the producers} \\ \text{Producers' share (\%)} &= (\text{Price received by the producer} / \text{Price paid by the consumers}) \times 100\end{aligned}$$

## Results and Discussion

In Bangladesh, three types of product such as raw juice, molasses *gur* and patali *gur* are involved from date palm's juice production and marketing system. Aiming the value chain objectives, the study covered production and marketing system analysis of all those three products. The study results are presented and discussed through production and marketing system analysis of molasses *gur* and patali *gur*.

**Value chain of date palm sugar:** A value chain consists of all stages of a technical production process as well as of the interaction between these stages. The production process starts at the stage of input supply, than covers production, processing and marketing and ends with the consumption of a certain product. It can be seen as the hard skill of a value chain (Schipmann, 2006). The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production and delivery to final consumers (Porter, 1980; Kapilinsky and Morris, 2000). Economic value chain analysis describes the range of activities required to bring a product to the final consumer and in the case of international products, the extent to which intermediaries gain from participating in the chain (Jacinto, 2004). There were six value chain exist in the date palm marketing.

Value chain-i	: Farmer	> Processor	> Bepari	> Retailer	> Consumer
Value chain-ii	: Farmer	> Processor	> Retailer	> Consumer	
Value chain-iii	: Processor	> Bepari	> Retailer	> Consumer	
Value chain-iv	: Processor	> Retailer	> Consumer		
Value chain-v	: Processor	> Consumer			
Value chain-vi	: Farmer	> Consumer			

**Characteristics of actors in value chain:**

**Processor:** Processor is a local trader who collects raw juice and processes it and sells it to the market. Processors collect juice from different farmers and process it for value additions.

**Farmer cum processor:** Farmer cum processor is a farmer who collects juice from different farmers and process the juice and sells it to the market. He himself collects from his own tree and lease tree and also from other farmers for the process of juice.

**Bepari:** Bepari is a professional wholesale trader who makes his purchase from producer at the local market bring their consignment to the urban wholesale market and sell them to the paiker and retailer.

**Retailer:** The retailer, the last link in the marketing channel, buys gur, patali from processor and/or bepari and sells these to the consumer.

**Processing cost of date palm juice:** Processing cost is the main cost of making sugar from raw juice of a farmer. After extracting and collecting raw juice from the tree; it is urgent need to process the juice for making sugar. If it did not do earlier then the juice will be rotten. So, it need to process properly. For collecting juice a farmer at first need to cutting hedge from the tree. Few days after cutting hedge he can collect juice. A farmer needs a rope for climbing up the tree and cutting with the chopper. He hangs up a mud pot at the top of tree where he cut the hedge. It is normally done at the evening, someone at morning. At early morning, a farmer collect the juice from the tree. After collect the juice from tree immediately; it goes for heating with the fire at the steel pan. Farmer normally uses date palm by-product like straw, wood for firing. For processing the juice Tk. 308.45 (100 liter<sup>-1</sup> juice) fuel was used where this was 73.64 % of total processing cost. It required enough time for making gur and Patali gur. So it required many laborers for heating. Total processing cost of date palm molasses was Tk. 418.84 and for Patali sugar was Tk. 422.31 for 100 liters juice. For making Patali sugar it requires more time as compared to make Molasses sugar (Table 1, 2).

**Table 1. Processing cost for making molasses (Gur) (100 liter juice = 16.67 kg gur).**

Processing cost	Unit cost	Percentage of cost
Labor wages	70.09	16.73
Fuel	308.45	73.64
Cutting hedge (labor)	21.23	5.07
Mud pot	8.49	2.03
Steel pan	5.63	1.34
Chopper	3.95	0.94
Rope	1.00	0.24
Total cost	418.84	100.00

**Marketing cost of different actors involved in the date palm sugar marketing:** The cost of marketing represents the cost of performing the various marketing functions and operations by various agencies involved in the marketing process (Kohls and Uhl, 2005). In other words, the cost items, which are needed to move the product from producers to consumers, are ordinarily known as marketing cost.

**Table 2. Processing cost for making sugar (patali) (100 liter juice = 15 kg patali).**

Processing cost	Unit cost	Percentage of cost
Labor wages	70.15	16.61
Fuel	311.86	73.85
Cutting hedge (labor)	21.23	5.03
Mud pot	8.49	2.01
Steel pan	5.63	1.33
Chopper	3.95	0.94
Rope	1.00	0.24
Total cost	422.31	100.00

**Marketing cost of Processor:** Marketing cost of processor was depicted in Table 3 for sugar marketing. Transportation, market toll, sweeper and personal expenses are the major cost items of the processor. Total marketing costs of processor were Tk. 29.00 quintal<sup>-1</sup> juice. Among the cost item personal expenses was the highest and it was 68.97 percent (Table 3).

**Table 3. Marketing cost of processor (Tk. 100 liter<sup>-1</sup> juice).**

Marketing cost	Unit price	Percentage of cost
Transportation	4.50	15.52
Market toll	2.25	7.76
Sweeper	2.25	7.76
Personal expenses	20.00	68.97
Total	29.00	100

**Marketing cost of Bepari:** Marketing cost of bepari was depicted in Table 6 for sugar marketing. Transportation, loading and unloading, market toll and personal expenses are the major cost item of the bepari. Total marketing cost of bepari was Tk. 26.25 quintal<sup>-1</sup> of juice (Table 4).

**Table 4. Marketing cost of bepari (Tk. 100 liter<sup>-1</sup> juice).**

Marketing cost	Cost (Tk. Unit <sup>-1</sup> )	Percentage of cost
Transportation	8.00	30.48
Loading and unloading	8.00	30.48
Market toll	2.25	8.57
Personal expenses	8.00	30.48
Total	26.25	100.00

**Marketing cost of local Retailer:** Marketing cost of retailer was depicted in Table 8 for sugar marketing. Shop rent, shopping bag, electricity and personal expenses are the major cost item of the retailer. Total marketing cost of retailer was Tk. 21.34 quintal<sup>-1</sup> of juice. Among the cost item, shop rent was the highest and it is 39.08 percent (Table 5).

**Table 5. Marketing cost of local retailer (Tk 100 liter<sup>-1</sup> juice).**

Marketing cost	Cost (Tk unit <sup>-1</sup> )	Percentage of cost
Shop rent	8.34	39.08
Shopping bag	4.00	18.74
Electricity	1.00	4.69

Personal expenses	8.00	37.49
Total	21.34	100.00

**Income from date palm:** The main income of a date palm farmer mainly was the juice extracted from date palm tree. A farmer extract the juice from the tree and then it was processed by heating and made sugar. From a tree a farmer get 5 - 6 liter of juice daily but it can be done three days in a week. It starts from November and continue upto March. So from a tree, a farmer gets the highest 250 liter of juice in a season. From this amount of juice a farmer gets 40 kg molasses sugar (gur) and in case of *patali* sugar it was 36 kg. From 100 liter of juice it can get 16.67 kg of *gur* and for *patali* it was 15 kg. A farmer sells almost Tk. 20 liter<sup>-1</sup> of raw juice. Kg<sup>-1</sup> molasses *gur* was Tk. 140 and *patali gur* was Tk. 160. A farmer sells Tk. 30 of by-product mainly straw in a season which used for the fire (Table 6).

**Table 6. Income from date palm.**

Particulars	Income from 100 liter juice (100 liter juice = 16.67 kg gur = 15 kg patali)		
	Main income	By product	Total
Raw juice (Tk. 20 liter <sup>-1</sup> )	2000.00	12.74	2012.74
Molasses <i>gur</i> (Tk. 150 kg <sup>-1</sup> )	2335.00	12.74	2347.74
<i>Patali</i> (Tk. 180 kg <sup>-1</sup> )	2400.00	12.74	2412.74

**Marketing margin of date palm sugar:** Marketing margin is the difference between the price paid by the consumer and price received by the producers. Marketing margin has two components- marketing cost and net margin or profit. In broad sense, marketing margin is the difference between what is paid by the consumer and what is received by the producer. It is the price of all utility adding activities and functions that are performed by the intermediaries (Kohls and Uhl, 2005).

It was shown in the Table 9 that net margin or profit of the processor, bepari and retailer was Tk. 1552.16 quintal<sup>-1</sup>, Tk. 138.75 quintal<sup>-1</sup> and Tk. 148.66 quintal<sup>-1</sup> of juice, respectively. Net margin was the highest for the processor (Table 7).

**Table 7. Marketing margin of molasses gur (Tk. 100 liter<sup>-1</sup> juice).**

Types of intermediaries	Sales price	Purchase price	Marketing margin	Marketing cost	Net margin value addition <sup>-1</sup>
Processor	2000.00	-	2000.00	447.84	1552.16
Bepari	2165.00	2000.00	165.00	26.25	138.75
Retailer	2335.00	2165.00	170.00	21.34	148.66

**Distribution of value addition:** Each of the value chain actors adds value to the product as the product passes from one actor to another. In a way the actors change the form of the product through processing and/or create space and time utility. The distribution of value addition among the date palm value chain actors is depicted in Table 8.

**Table 8. Distribution of value addition among major chains of date palm (Tk. 100 liter<sup>-1</sup> juice).**

Value chain	Processor	Bepari	Retailer	Consumer	Total value added
Sales price	2000.00	2165.00	2335.00	-	-
Purchase price	-	2000.00	2165.00	2335.00	-
Gross value added	1552.16	138.75	148.66	-	1839.57
% of total value added	84.38	7.54	8.08	-	100.00
Price spread (Tk.)	335.00				
Producers share (%)	85.65				

Value addition is the difference in sales price and purchase price at each stage of the value chain. Processor, bepari and retailer added the value Tk. 1552.16, Tk. 138.75 and Tk. 148.66, respectively to the value chain. Compared to all value chain actors; processor added mostly 84.38 percent of total value added. From the analysis, it was found that price gap between the consumers and producer was Tk. 335 for 100 liter<sup>-1</sup> juice whereas the producer's share was 85.65 percent.

The study was conducted for the assessment of existing value chain assessment of date palm in Jessore. Farmer, processor, bepari and retailer were involved in processing and marketing of date palm juice. There were six value chain exist in the date palm marketing. Total cost involved only for processing the juice. Processor, bepari and retailer were the main factors involved in the date palm sugar marketing. It was the highly profitable tree as it had less production cost even no cost for production to a farmer. It had only processing cost of a farmer and extracting cost. But its cultivation is decreasing day by day as the wood of the tree used at brick kilns as a fire wood. The producers and consumer price had less gap and the producer's share was high.

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