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Marketing and post harvest practices of onion in some selected areas of Bangladesh

M.K. Hasan and M.Z. Uddin[1]
Spices Research Centre, BARI, Shibgonj, Bogra, [1]Regional Horticulture Research Station, BARI, Chapai Nawabgonj

Abstract: The study was undertaken to analyze the marketing system and post harvest practices of onion both at farmers and traders level. Four marketing channels were identified in onion marketing. The study indicated that longer marketing channel gave lesser share to farmer than shorter channel. The study indicated that shorter channel showed less marketing loss and longer channel it was high. High price gap was found between farmers and consumers level. Most of the intermediaries sorted decayed and removed the outer loose shell of onion before marketing. Low price at harvesting period, lack of marketing information, instability of price, sale in credit, lack of capital, inadequate storage facilities and transportation problem were the major marketing problems encountered by both farmers and intermediaries.
Key words: Onion, marketing, post harvest, Bangladesh

Introduction

Bangladesh is a densely populated agrarian country where agriculture contributes 15.65 percent to the Gross Domestic Product (GDP) and providing employment for 48.4 per cent of the population. Approximately 11 percent of the GDP is derived from crops (GoB 2010). The Government of Bangladesh has taken programme towards diversifying agriculture and has placed special emphasis on the development of minor crops under crop diversification Programme.

Onion is one of the most important crops among the vegetables and spices in Bangladesh both in acreage and production and rank first among the spices grown in the country (Badaruddin and Haque, 1977). It is consumed either as spice or as condiment. The crop is grown in 1.25 lakh hectares of land with an annual production of 8.89 lakh metric tons (BBS 2009). Onion is semi perishable crop and subject to deterioration during storage, transportation and marketing. However, with an increasing population of the country, the demand of onion is also increasing day by day which triggered the scientists to improve cultivation method for higher productivity, modern storage technique and marketing system.

Hossain et al. (2006) found that farmers sold over two-third of onion just after harvest to the local traders in village market. Raha (1975) showed the significant seasonal price fluctuation of onion in Bangladesh.

Onion is popular crop to the farmer for its higher demand and price, diversified use, favourable potentiality to grow the soils and agro-climatic condition in Bangladesh. Not only this but also in net return of onion occupies good position among all other crops. But there is a wide variation in price between producer and consumers level at harvesting period. It occurs due to marketing systems. A good marketing system is very important to ensure supply from farmers to consumers in time. It is however, necessary to quantify post harvest practices at different intermediaries' level, marketing channel and identify constraints existed in the onion marketing system in Bangladesh. With this end in view, the present study was undertaken to find out the different channels of onion marketing from grower to consumers and to identify the post harvest practices of different intermediaries and losses in different channels.

Materials and Methods

Onion obtained from two sources was marketed in our country; one is indigenous production and the other was imported. The study was conducted in respect of only indigenous production of onion. Two important onion growing districts namely Rajshahi and Faridpur were purposively selected for the study. A total of fourty farmers taking twenty from each area were selected randomly. Four onion markets were selected purposively taking one primary and one secondary market from each district for the study. Thirty intermediaries were chosen randomly from two primary markets taking fifteen intermediaries (5 *pharies*, 5 wholesalers and 5 rural retailers) from each market. On the other hand, thirty intermediaries were randomly select from four secondary /terminal markets taking fifteen intermediaries (5 wholesaler 5 *aratders* and 5 urban retailers) from each market. Two sets of pre tested interview schedules; one for farmers and the other for intermediaries were used for the collection of data/ information using survey method. Marketing margin was calculated by deducting purchase price from sale price, while the profit was difference between marketing margin and marketing cost. *Aratdar* was not taken into consideration in calculating margin and profit because they act as a commission agent. Tabular method using average, percentage, ratios etc. was followed in analyzing the results of the study.

Marketing efficiency was measured with the following method. The three-performance indicators of four marketing channels of onion were reflected economic efficiency can be stated as follows:

i) Marketing Cost, ii) Middleman Margin, iii) Producers Shares.

The produces share will calculate the following formula:

$$P_s = \frac{Pp}{Pc} \times 100$$

Where, P_s = Producers share, P_p = Producers price, P_c = Price of consumer.

Results and Discussion

Profitability of onion production: The cost of production per ton of onion was Tk.4231. The total cost up to marketing was Tk. 4718 per ton of onion. On an average farmer received Tk. 14485 as gross return for producing per ton of onion. The net return of onion was Tk. 31659 per ton (Table 1).

Post harvest practices of onion at different intermediaries' level: Onion is semi perishable in nature. Post harvest technique reduces short term losses of onion. After harvesting, farmers cut the onion tops within 1.0 to

1.5 cm neck length. Top cutting bulbs significantly improve the storage quality of onion (Rasel *et. al.*, 1990). Hundred percent of farmer in the survey areas followed this technique due to reduce decayed of onion. Most of the farmers (80 percent) cured onion bulbs in the shade for 2-3 days before storing or marketing. The farmer and other different intermediaries (i.e. *pharia*, wholesaler and retailer) sorted decayed bulb when the onion is started to decay. Hundred percent farmers and intermediaries were sorted decayed bulb before marketing. For the attraction of buyer some farmers and intermediaries removed the outer loose shell of onion before selling. Eighty, 82, 90 and 100 percent of farmer, *pharia*, wholesaler and retailer respectively removed the outer loose shell of their onion before selling. The farmer used normal gunny bag for onion marketing but *pharia*, wholesaler and retailer used perforated gunny bag due to proper aeration. To reduce decaying of onion, the middlemen used fan in storage place. Forty percent of wholesaler and 30 percent of retailer in secondary /terminal market blown air in onion lot by using table fan (Table 2).

Table 1. Farm level profitability of onion production

Items	Rajshahi	Faridpur	All average
Gross return (Tk./ ton)	14220	14720	14485
Production cost (Tk./ ton)	4415	4074	4231
Marketing cost (Tk./ ton)	470	504	487
Total cost (Tk./ ton)	4885	4578	4718
Net return (Tk./ ton)	9335	10142	9767

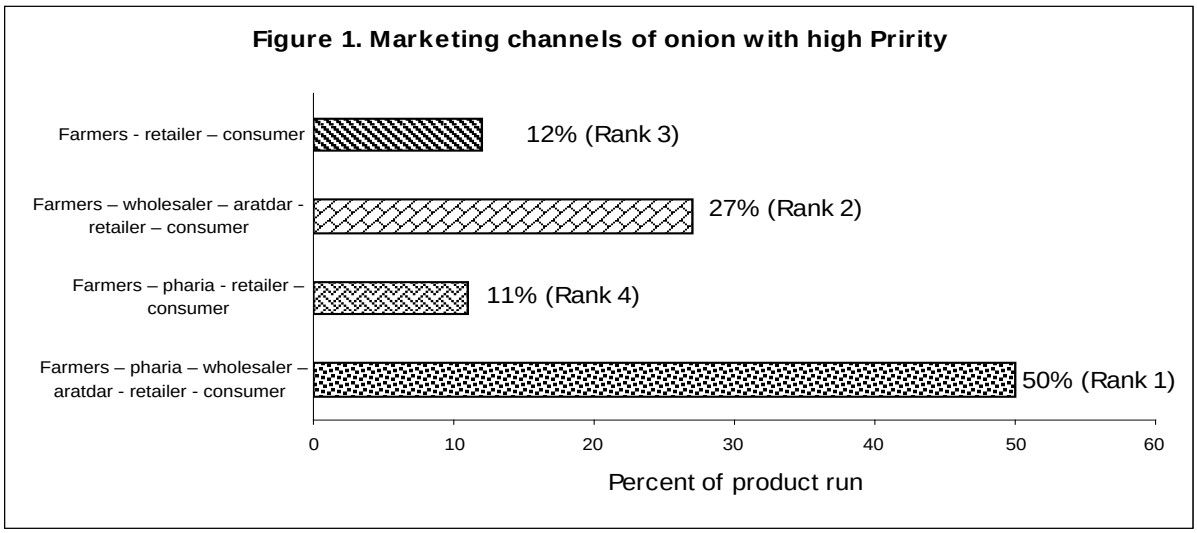
Table 2. Post- harvest practices of onion at different intermediaries' level

Sl.	Particulars	Farmer	Pharia	Wholesaler	Retailer
1.	Neck cutting	100%	-	-	-
2.	Curing in shade	80%	-	-	-
3.	Sorting of decayed bulb	100%	100%	100%	100%
4.	Remove outer loose shell	80%	82%	90%	100%
5.	Bagging	Gunny bag	Perforated gunny bag	Perforated gunny bag	Perforated gunny bag
6.	Aeration	-	-	40%	30%

Marketing channels of onion: Marketing channel refers to the sequential arrangements of various marketing intermediaries involved in the movement of products from producers to consumers. Onion moves from farmers to ultimate consumers through a number of marketing channels. A number of intermediaries like *pharia*, wholesaler, *aratdar* and retailer were involved in onion marketing. Four major channels of onion were identified in the study areas.

The channels are as follows –

Channel -1 Farmers – *pharia* – wholesaler – *aratdar* - retailer - consumer
Channel -2 Farmers – *pharia* - retailer – consumer
Channel -3 Farmers – wholesaler – *aratdar* - retailer – consumer
Channel -4 Farmers - retailer – consumer



It was revealed from the study, fifty percent of produced onions were moved from farmers to consumer through the Channel- 1 and 27 percent through Channel-3, respectively. One the other hand, 12 and 11 percent onion moved respectively through Channel-2 and Channel-4 (Fig. 1). Onion passes different routes to reach consumer. Producers sold 61, 27 and 12 percent of their product to *Pharias*, wholesaler and retailers, respectively (Fig. 2).

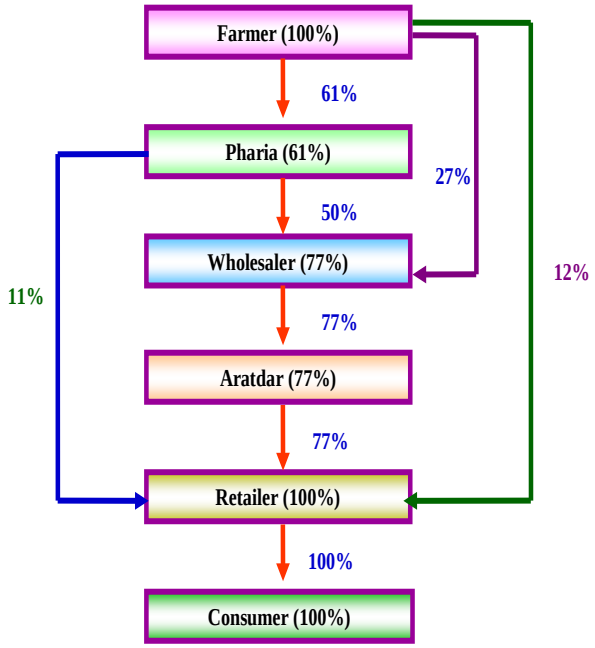


Fig. 2. Flow chart of onion marketing

Pharias sold respectively 50 percent and 11 percent of onion to wholesaler and retailer. Wholesaler sent total amount of onion to *Aratdar* for sale. Retailer purchased respectively from farmers (12 percent), *Pharias*, (11 percent) and wholesalers (77 percent) in secondary market. In terminal market, retailer purchased total amount of onion from *Aratdar*. Retailer sold their entire quantities to the consumer both in secondary and terminal markets.

Quantities purchased by intermediaries: Onion is marketed whole of the year. On an average *pharies* purchases 2.18 tons of onion per month in primary market (Table 5). It was found highest in April (4.01 tons) and lowest in December (1.21 tons) due to availability in the market.On the average, wholesaler purchased 5.43 tons of onion per months from the primary markets. Highest quantities of their purchase were found in April and lowest in December due to availability of supply in market.

Retailer purchased 1.20 and 2.50 tons per months from secondary and terminal markets respectively. In both markets, highest collection was observed in April. On the other hand lowest collection was October in secondary market and September in terminal market. It indicated that September to January were peak month of onion marketing. The trend of onion production was found increasing January to May and it reached highest position in April and then decreasing trend up to the end of December (Table 3).

Quantities sold by intermediaries: The intermediaries sold their product in different markets. On the average *pharias* sold 2.12 ton of onion per month in primary market. Wholesaler sold 5.23 tons in secondary and 30.62 tons in terminal market respectively. Retailer sold 1.18 and 2.46 tons per months in secondary and terminal markets respectively (Table 4).

Table 3. Quantity purchase of onion by different intermediaries

Months	Amount of onion (Tons)				
	Pharia	Wholesaler	*Aratdar*	Retailer	
	Primery market	Primery market	Terminal market	Secondary market	Terminal market
March	3.05	6.12	40.50	1.50	3.11
April	4.01	10.01	72.01	1.66	3.24
May	3.23	9.23	60.12	1.24	2.75
June	2.02	7.31	40.35	1.20	2.56
July	1.94	5.70	28.12	1.15	2.05
August	1.80	4.12	24.10	1.05	2.12
September	1.70	3.03	20.15	1.02	2.03
October	1.70	3.05	18.13	1.00	2.15
November	1.40	3.10	15.58	1.01	2.20
December	1.21	3.02	18.01	1.10	2.45
January	1.98	4.50	22.50	1.25	2.69
February	2.22	5.98	23.20	1.33	2.76
All average	2.18	5.43	31.89	1.20	2.50

Table 4. Quantity sale of onion by different intermediaries

Months	Amount of onion (Tons)				
	Pharia	Wholesaler		Retailer	
	Primery market	Secondary market	Terminal market	Secondary market	Terminal market
March	2.96	5.88	38.88	1.47	3.05
April	3.89	9.61	69.13	1.63	3.18
May	3.14	8.87	57.72	1.22	2.70
June	1.96	7.02	38.74	1.18	2.51
July	1.89	5.48	27.00	1.13	2.01
August	1.75	3.96	23.14	1.03	2.08
September	1.65	2.91	19.35	1.00	1.99
October	1.65	2.93	17.41	0.98	2.11
November	1.36	2.89	14.96	0.99	2.16
December	1.18	2.90	17.29	1.08	2.41
January	1.93	4.67	21.60	1.23	2.64
February	2.16	5.75	22.28	1.31	2.71
All average	2.12	5.23	30.62	1.18	2.46

Purchase and sale price of onion: The prices of onion were found to fluctuate from month to month. It depends on the demand and supply of onion. On the average the purchase and sale price of *pharia* were found Tk.16107 and Tk. 18270 per tons respectively (Table 5 & 6). The purchase price of wholesaler was Tk. 18219 per tons in primary markets and sale prices were 21423 and 22056 per ton in secondary and terminal market respectively. In retailers level, the purchase price were Tk. 20810, 21345 and 22023 per ton in primary, secondary and terminal markets respectively, while the selling prices were Tk. 25490 and 26816 per ton in secondary and terminal market respectively (Table 5 & 6).

Table 5. Purchase price of onion by different intermediaries

Months	Price (Tk/ton)				
	Pharia	Wholesaler	Retailer		
	Primry market	Primery market	Primery market	Secondary market	Terminal market
March	6505	8550	11250	11560	12100
April	6210	8220	11210	11650	12250
May	13100	15330	17020	17550	18230
June	15300	17300	19100	19880	20500
July	18560	20520	22205	22580	23230
August	20105	22300	25110	25600	26540
September	22108	24100	27015	27480	28600
October	22450	24750	27550	28000	28560
November	21150	23400	26130	26930	27300
December	18260	20350	23380	23880	24560
January	15110	17260	20250	20950	21530
February	14430	16550	19500	20080	20880
All average	16107	18219	20810	21345	22023

Table 6. Sale price of onion by different intermediaries

Months	Amount of onion (Tons)				
	Pharia	Wholesaler		Retailer	
	Primery market	Secondary market	Terminal market	Secondary market	Terminal market
March	8650	11640	12206	15500	16600
April	8262	11690	12280	15700	20200
May	15340	17650	18330	21360	22730
June	17300	19890	20600	23820	25000
July	20520	22680	23130	26720	27730
August	22340	25706	26490	29860	31040
September	24200	27580	28650	31800	33110
October	24850	28109	28580	32890	33150
November	23450	26990	27400	30930	31800
December	20380	23980	24585	27810	29060
January	17360	20980	21560	24980	26030
February	16590	20180	20860	24510	25880
All average	18270	21423	22056	25490	26861

Marketing cost of onion: Marketing cost represents the cost of performing various marketing functions, which are required to transfer a commodity from the place of production to the ultimate consumers (Mannan, 1975). The marketing cost of onion included the cost of transport, loading and unloading, gunny bag, commission, market tolls, bribery/subscription, storage, house fair, cleaning and grading, and others. The other cost were personal cost of traders, electricity cost etc. The marketing cost of farmers was Tk. 487/ton (Table-9). The marketing cost of *pharia* was Tk. 428/ton. On the other hand marketing cost of wholesaler was Tk. 1270 and 1840 per ton of onion in secondary and terminal market respectively. While in retail market, it was Tk. 879 and 1139 per ton in secondary and terminal markets receptively (Table 7).

Table 7. Cost of marketing of onion by different intermediaries

Intermediaries	Cost (Tk/ton)										
	Transport	Loading and unloading	Gunny bag	Commission	Market tolls	Bribery/ Subscription	Storage cost	House fair	Cleaning and grading	Others	Total
Farmer	80	-	27	-	50	-	250	-	50	30	487
Pharia	110	54	54	-	50	-	-	50	60	50	428
Wholesaler											
Secondary Market	270	100	280	400	-	50	-	-	90	80	1270
Terminal market	550	150	280	600	-	50	-	-	110	100	1840
Retailer											
Secondary Market	80	70	54	400	60	50	-	40	40	85	879
Terminal market	110	75	54	600	70	50	-	40	50	90	1139

Marketing margins and profits of onion: According to Kohls and Uhl (2005) marketing margin is define as the difference between what is paid by the consumers and what is received by the producers. Marketing margin of each intermediary was estimated by deducting the purchase price of onion from its sale price while the net profit was estimated by deducting marketing cost from the marketing margin. Marketing margins of *pharia* was Tk. 2163 per ton, while it was Tk 3209 and 3837 per ton in secondary and terminal markets for wholesaler (Table 8). The marketing margins Tk.4145 and 4838 were in secondary and terminal market for retailer. The margins were the highest for retailer compared to other intermediaries in both secondary and terminal markets. The profits were also found the highest for retailer both secondary and terminal market. Consequently, profit as percent of investment was highest also for retailer. The reasons the highest profit and margins were due to higher selling price of the onion.

Price spread of onion marketing: Price spread refers to the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm product (Goswami 1991).

Channel-1(longest channel) and Channel -4 (shortest channel) were taken to consideration for measuring price spread. A comparative analysis was done between the two channels: Channel-1 Farmers – *pharia* – wholesaler – *aratdar* - retailer - consumer and Channel- 4. Farmer-Retailer-Consumer to measure the farmer's share to retail prices. The total price spread for Channel-1 and Channel -4 were Tk. 12376 and 11005 per ton of onion respectively. Farmer's share and farmer's net share for channel-1 was 53.93 and 36.36 percent respectively, while the share and net share of farmer's were 56.83 and 38.32 for Channel-4 respectively (Table 9). The result indicated that longer marketing channel, the lesser farmers' share. It also indicated that in Channel-4, consumer get more benefits by getting onion with lower price than Channel-1. So, Channel-4 was more efficient than Channel-4 in terms of farmers share to retail price and consumers welfare.

Table 8. Marketing margin and profit of onion by different intermediaries level

Intermediaries	Tk/ton					Net profit as % of investment
	Purchase price	Sale price	Cost of marketing	Marketing margin	Net profit	
Farmer	-	14485	-	-	-	-
Pharia	16107	18270	428	2163	1735	10.77
Wholesaler						
Secondary Market	18219	21423	1270	3204	1934	10.61
Terminal market	18219	22056	1840	3837	1997	10.96
Retailer						
Secondary Market	21345	25490	879	4145	3266	15.30
Terminal market	22023	26861	1139	4838	3699	16.80

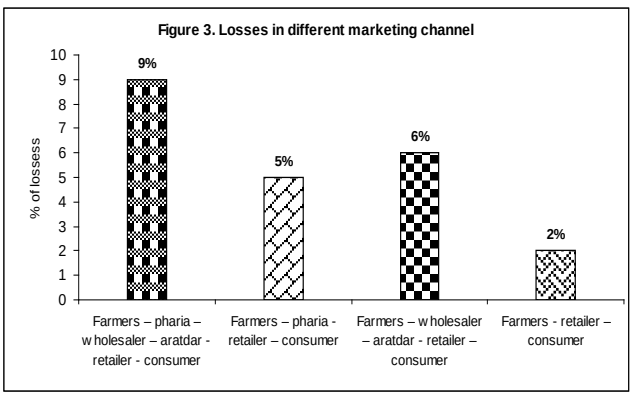
Table 9. Price spread and farmers share under different marketing channel

Marketing channel	Tk/ton				Farmers' share(% of retail price)	Farmers' net share (% of retail price)
	Consumers /Retail price	Farmers' price	Farmers' net price	Price spread		
1	2	3	4	5	6	7
A (Channel-1)	26861	14485	9767	12376	53.93	36.36
B (Channel- 4)	25490	14485	9767	11005	56.83	38.32

Col. 5 = Col.2- Col.-3, Col.6 = Col. 3/ Col.2 x 100, Col. 7 = Col. 4/ Col. 2 x 100, Note: A = Farmer – pharia – wholesaler – aratdar - retailer – consumer (Largest channel), B = Farmer – retailer – consumer (Smallest channel)

Losses of different marketing channel

Post harvest loss was also calculated on the basis of different marketing channels. It was found that the loss under each of Channel-1, Channel-2, Channel-3, and Channel-4 were 9, 5, 6 and 2 percent respectively. It indicated that shorter channel had less and larger channels had more loss (Fig. 3).



Marketing problems: The farmers and traders in the study areas encountered various problems during marketing of onion and problems are presented in Table 10 and 11. The farmer opine that the problem of onion marketing getting lack of marketing information was rank first and low price ranked second. Most of the farmer more or less faced the problem of transportation, lack of modern storage technology and inadequate storage facility.

Table 10. Problem of onion marketing in farm level

Sl. No.	Problems	Rank value
1.	Low price at harvesting period	2
2.	Transportation problem	4
3.	Lack of modern storage technology	3
4.	Lack of adequate storage space	5
5.	Lack of marketing information	1

Different intermediaries in onion marketing mentioned different problems. Price instability was identified as the most important problem of *pharia*, wholesaler and retailer

respectively. The 2nd main problem in *pharia* and wholesaler was sale in credit and retailer non-availability of onion in time. The other problems in onion marketing system were lack of capital, transportation problem, non availability of onion in time, inadequate storage facility and lack of marketing information.

It may be concluded from the foregoing discussion that the production and marketing of selected onion were profitable to the farmers and intermediaries level. High price gap was found between the producers' and consumers level. It discouraged the producers to produce more in future. Nevertheless, both the farmers and traders encountered various problems during marketing of onion. Therefore, the efficiency of existing marketing systems of onion should be improved and this can be possible through the following measures:

Table 11. Problem of onion marketing in intermediaries level

Sl. No.	Problems	Rank value		
		Pharia	Wholesaler	Retailer
1.	Sale in credit	2	2	-
2.	Lack of capital	3	4	4
3.	Instability of price	1	1	1
4.	Transportation problem	4	3	5
5.	Non availability of onion in time	5	6	2
6.	Inadequate storage facility	-	7	3
7.	Lack of marketing information	6	5	6

Co-operative marketing system in this sector should be developed to ensure better price of onion for the farmers.

Storage facility should be developed in different onion growing areas and in different wholesale and retail markets to preserve the onion that will help availability of supply in the market.

For timely supply of onion, transport facility should be developed from farm gate to consuming centers.

Market taxes/tolls and other charges should be within the limits of the farmers and intermediaries.

Proper scientific methods should be developed in harvesting and post-harvest handling operating of the onion to prevent the huge losses and to maintain the quality.

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