DEMAND, SUPPLY AND REASONS FOR PRICE HIKE OF POTATO IN BANGLADESH

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ABSTRACT

The objective of the study is to find out the factors behind the supply, demand and thereby prices of potato and explore the existence of syndicate in the market. The study is mainly based on secondary data. Additionally, some qualitative data were collected through FGD and KII from Bogura, Rangpur and Munshiganj areas. The area, production and yield of potato grew by 4.58%, 6.61% and 1.95%, respectively per annum since independence. The production of HYV potato rose sharply, while local one rose at a slower pace. Potato production exhibits high fluctuation with roughly three years' cycle, which sharply decreased in the recent past. The nominal prices of potato witnessed upward trend, while real prices experienced downward trend since independence. There exists wide seasonal price variation of potato with the lowest price in March and the highest in December. Potato market seemingly integrated as prices at all levels move together. The rising trend of potato prices seems to be halted after re-fixing prices by DAM. Real prices displayed wide price variation as volatility index stands at 73.16%. The total surplus of potatoes in 2020 stands at 3.40 lakh MT which is much lower than the previous years. The profit earned by the potato growers was estimated at around Tk. 1.1 million /ha. The estimated DRC implies that Bangladesh had comparative advantage in potato production for export promotion. In 2020, 73% capacity of 392 cold storages in operation is utilized. It is concluded that main cause of the price hike was the artificial crisis created by some profit seeking traders rather than the low production and higher consumption of potato in the country. Fixation of price, regular market monitoring and taking legal action to the artificial crisis creators may be the way of avoiding unexpected price hike of potato in the country.

Keywords: Potato, price hike, demand and supply, market, Bangladesh

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I. INTRODUCTION

Potato is an important and leading food crop in Bangladesh. It is the seventh potato producing country in the world and ranks second after rice in terms of production and is the third most important food crop after rice and wheat in terms of human consumption in Bangladesh (FAOSTAT, 2020).

Bangladesh experienced much progress in area, production and yield of potato in the last decade, as its area, production and yield raised to 461 thousand ha, 9605 thousand MT and 20.8 MT/ha in 2019-20 from 435 thousand hectares, 7930 thousand MT and 18.25 MT/ha in 2009-10, with growth rates 6%, 21% and 14%, during the period, respectively. It has happened due to the suitable environment and using high yielding varieties in potato production. As currently production exceeds demand, Bangladesh started exporting fresh potato in the world market and exported 45000 MT of fresh potato in 2019-20 (Hortex Foundation, 2020). Annual potato consumption per capita also increased and reached 25.66 kg in 2016 from 23.65 kg in 2010, bringing the growth rate 8.5% during the only six-year period (HIES, 2016).

When potato prices doubled in 2020, year-on-year, traders mentioned the fall in production as well as higher prices of other vegetables arising from flood and pandemic situation fueled up the demand for potato causing surge in potato prices. However, the Department of Agricultural Extension (DAE) said there is no reason for raising potato prices as there is a surplus table potato in 2020. A common question arises how and by whom prices are fixed in the market because of the fact that every now and then the price of essential commodities goes up without any notice. The price is supposed to be fixed by the "invisible hand", as mentioned by the renowned 18th century economist Adam Smith, which is the unobservable market force that determines the price of a commodity in a free market. It is needed to identify the factors behind this invisible hand so that steps can be taken to encounter unnecessary price fluctuation in the market. It is also important to look into the short and long-run factors behind the abnormal fluctuations in market price.

According to the DAE statistics, about 9.61 million MT of potatoes have been produced in 2020 against the annual demand of about 6.82 million MT, bringing a surplus of 3.40 million MT despite some amounts are being exported. Consequently, there is no possibility of shortage. Besides, 3 million MT of table potatoes have been stored in 369 cold storages, of which 55% have been taken out of cold storages before fixing price (DAM, 2020). Thus, 1.3 million MT of potatoes were still in the cold storage for sale. According to these statistics, there is no reason for raising price of potato. Thus, the objective of the study is to find out the factors behind the supply, demand and thereby prices of potato and explore the existence of syndicate in the market. The specific objectives are to: analyze the long-term trend of production of potato in Bangladesh; assess demand and supply situation of potato; estimate the profitability of potato production; analyze price variation over time and reasons for price spiral in 2020; and recommend policy measures for price stability.

II. MATERIALS AND METHODS

Data and study areas

The study was mainly based on secondary data obtained from different sources such as BBS, DAE, DAM, BARI, BADC, Bangladesh cold storage association, Trade and Tariff commission, etc. For that purpose, a series of meeting was conducted with different personnel of aforesaid institutions/ organizations in order to get their opinion on recent price hike of some essential commodities including potato. Additionally, some qualitative data were collected from different stakeholders in the supply chain through focus group discussion (FGD) and Key Informant Interview (KII) using checklist. In total nine FGDs (three FGDs at each district) were conducted with different stakeholders in the potato supply chain in three districts. The stakeholders interviewed were: farmers, wholesalers, cold storage personnel, *Beparis*, consumers and other traders who used to keep potato in the cold storage. Based on higher potato production, the locations selected for the study are: Bogura, Rangpur, Munshiganj and Dhaka. Besides, some personnel of DAE and DAM were interviewed in the study areas.

Analytical techniques

Growth rate analysis

For simplicity and widely used even in the recent past (Das and Mishra 2020; Chaudhary *et al.*, 2016; Meena, 2016; Kumar and Singh, 2014; Rehman *et al.*, 2011), the compound growth rates of area, production, yield, and price of potato were worked out by fitting exponential function of the following type (equation 1):

$$Y = ae^{bt} \text{ or } LnY = Lna + bt \text{ --- (1)}$$

Where, Y is area/production/yield/price of potato, 't' is the time in year, and 'a' is the constant, e^{b}-1 be the compound growth rate which is expressed in percentage.

Seasonal price variation

For estimating seasonal price variation, a multiplicative model was considered. Trend was estimated by simple 12 months moving average method and seasonal indices were worked out by averaging the detrended series.

Domestic Resource Cost (DRC)

The domestic resources cost (DRC) is widely used in developing countries for measuring comparative advantage, efficiency and guiding for policy reforms. The DRC, defined as the shadow value of non-tradable inputs used in an activity per unit of tradable value added. In other way it is the ratio of the shadow value of domestic resources and non-traded inputs to the net foreign exchange earned or saved by producing the good domestically (Morris, 1989; Masters and Winter-Nelson, 1995; Sadoulet and de Janvry, 1995; Anwar, 2004). The following formula was used for calculating DRC (Islam and Kirschke, 2010).

$$DRC = \frac{\sum_{j=k+1}^{N} a_{ij} P_j^{dni}}{P_i^b - \sum_{j=1}^{K} a_{ij} P_j^b} \quad \text{------------------------------------- --------------------} \ (2)$$

If DRC<1, the economy can save foreign exchange by producing the ith crop domestically either for export or for imports substitution. In contrast, if DRC>1, domestic costs was in excess of foreign exchange or savings indicating that i crop should not be produced domestically and should be imported instead.

Volatility index

In this study, volatility is measured as the standard deviation of price returns, i.e., the standard deviation of changes in logarithmic real monthly prices of potato during 1999-2019. Monthly volatilities are annualized by multiplying **by** $\sqrt{12}$ (Gilbert and Morgan, 2010). That means, we measured volatilities by the standard deviations of the changes in the logarithms of monthly real price averages at an annualized rate.

III. RESULTS AND DISCUSSION

Area, production and yield of potato

Bangladesh witnessed remarkable progress in potato production since independence. Its production reached 9.61 million MT in 2019/20 from only 0.75 million MT in 1972/73 (Figure 1). The area, production and yield of potato grew by 4.58%, 6.61% and 1.95% respectively per annum during this period (Table 1). However, after 1997/98 their growth rates increased sharply with 4.01%, 7.19% and 3.07% for area, production and yield respectively, compared with 2.17%, 2.96% and 0.77% during the earlier period. Currently, the yield of potato is 20.8 MT/ha which is much lower than that of European countries (40 MT/ha) and USA (50 MT/ha) due to lack of quality seed, cultivation of indigenous potato and high price of quality seed. While the production and area of HYV potato rose sharply with growth rates 8.49% and 6.42% annually during1979/80-2019/20, respectively (Table 2). The yield also increased by around 2% during this period. On the other hand, local varieties' growth rates are much lower, which stand at 1.68%, 3.08% and 1.37% respectively for area, production and yield. Local potato saw negative growth during 1979/80-1997/98 period, while they are positive except area in the recent years (1998/99-2019/20). Besides, the share of HYV in total potato production rose sharply to 91% in 2019/20 from 46% in 1979/80.

Table 1: Compound growth rates (%) of potato in Bangladesh

Period	Area	Production	Yield
1972/73-2019/20	4.58***	6.61***	1.95***
1972/73-1997/98	2.17***	2.96***	0.77***
1998/99-2019/20	4.01***	7.19***	3.07***

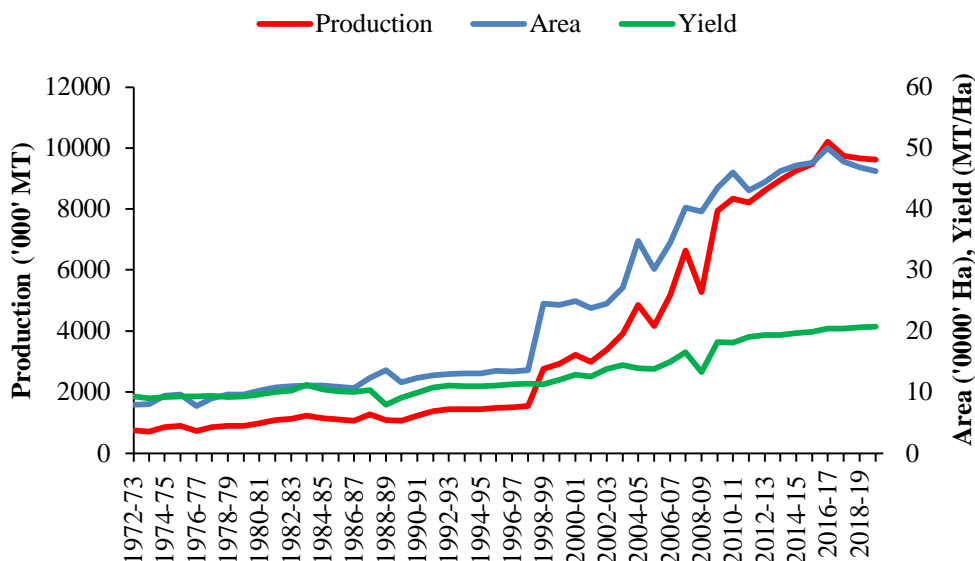Note: '****' represent significant at 1% level

Figure 1: Area, production and yield of potato, 1972/73 to 2019/20
Source: Various issues of BBS

Table 2: Compound growth rates (%) of local and HYV potatoes

Period	Local			HYV		
	Area	Prod.	Yield	Area	Prod.	Yield
1979/80-2019/20	1.68***	3.08***	1.37***	6.42***	8.49***	1.95***
1979/80-1997/98	-0.52	-1.75	-1.24	3.51***	4.59***	1.05***
1998/99-2019/20	-0.80***	2.41***	3.23***	5.50***	7.94***	2.32***

Note: '***' represent significant at 1% level
Source: Various issues of BBS

As potato is very much vulnerable to climate change and as its production is largely influenced by previous year's price, sharp fluctuation prevails in case of its production. Higher production in a year causes lower prices, which discourage the farmers to grow more in the next year resulting higher prices and so on. Year-to-year variation of potato production exhibits high fluctuation with roughly three years' cycle, which sharply decreased in the recent past starting from 2010/11 (Figure 2). The standard deviation of fluctuation estimated at 0.82 during 2010/11-2019/20 against 5.39 during the rest of years.
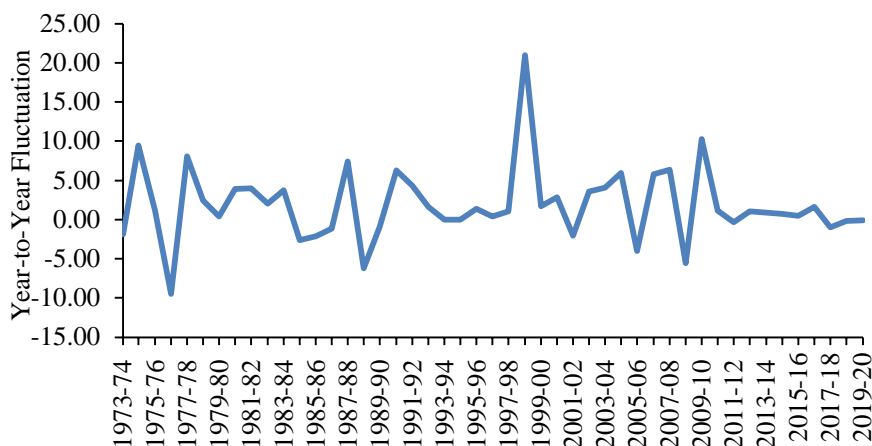
Figure 2: Fluctuation of potato production in Bangladesh
Source: Various issues of BBS

Price variation of potato

Annual price variation

The annual nominal and real prices of potato during 1999-2019 as shown in Figure 3 exhibit upward trend for nominal price and downward trend for real price, meaning that rise of inflation (measured by CPI) surpassed rise in potato prices. Nominal price rose by 4.5% per annum, while real price declined by 2.4% during this period. Price increased sharply in the year 2003, 2006, 2007, 2009 and 2012, whereas it declined in 2001, 2005, 2008, 2010, 2011, 2013 and 2017.

Seasonal price variation

Price reached the lowest level in March during harvesting season, afterward it rose continuously up to July when potato from cold storage started releasing, and then it became by and large stable till October (Figure 4). The price again started increasing after October, reached peak level in December and then declined due to arrival of new potato (early variety) in the market. It is worth mentioning that in 2020 (crisis year) the price follows the same pattern as in the earlier years but it starts rising sharply after August may be due to higher consumption arising from COVID-19 pandemic, less availability and higher prices of other vegetables, stop releasing potato from cold storage in expectation of higher price in the coming months and so on (FGD, 2020).
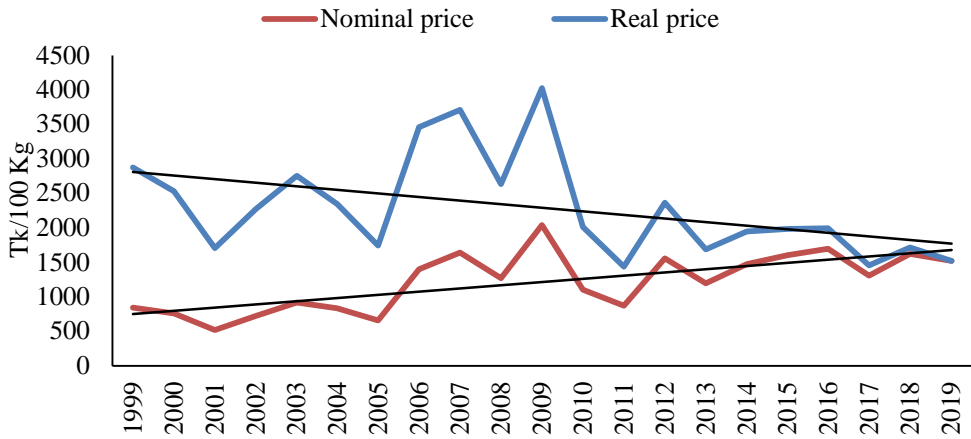
Figure 3: Annual nominal and real prices of potato with their trend
Source: DAM
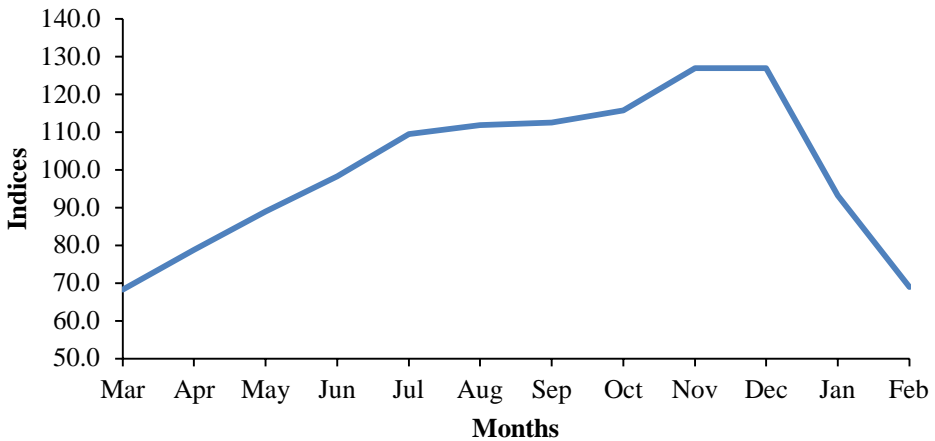
Figure 4: Seasonal price variation of potato during 1999-2019
Source: DAM

Prices at different levels

Monthly prices during 2016-2019 shows that farm, wholesale and retail prices move parallel one another with constant spread between farm and retail prices roughly Tk. 4.5/kg indicating high integration among the markets at different levels (Figure 5). This has happened due to the fact that all stakeholders including the farmers come to know the change in prices at different markets instantly through mobile phone and other devices.

Figure 5: Farm, wholesale, retail prices, and price spread of HYV potato
Source: DAM

Weekly prices in 2020

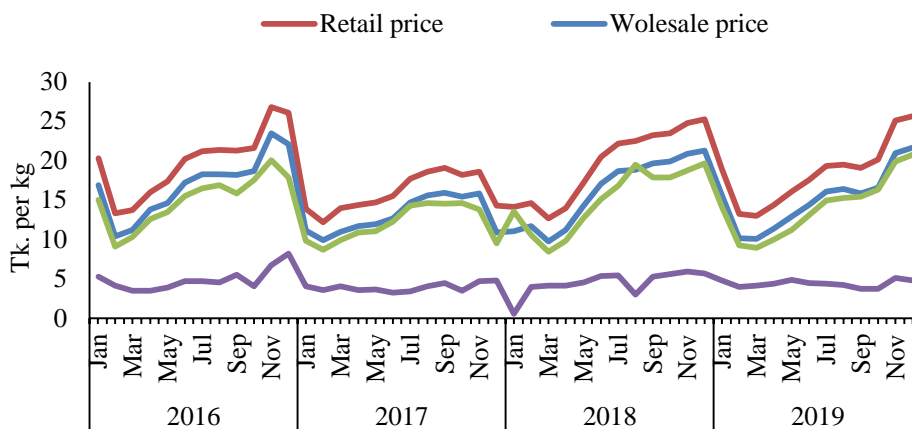The prices of potatoes started surging from the middle of September and reached Tk 50 a kg in retail market. DAM on October 7 fixed the price of a kg of retail potato at Tk 30 and wholesale at Tk 25. But the price rose to Tk 50 and beyond at retail markets. As the prices of potatoes kept on rising, the businessmen bought potato stocks in cold storages at higher rates hoping to make a hefty profit. In 2020, the ownership changed more frequently as a section of businessmen sensed that a crisis was coming (FGD, 2020).

As the prices continued to rise after fixation of prices (Figure 6), DAM on October 27 re-fixed the retail prices at Tk 35 and wholesale at Tk 30 a kg. These was, however, a positive impact on potato prices after the second intervention made by DAM and after that intervention prices remained more or less stable.

Volatility of potato prices

Agricultural prices vary because of variation in production and consumption. Economists distinguish between predictable and unpredictable variability; the latter is known as shocks. It is generally supposed that the most important source of price variability in agriculture is weather shocks to agricultural yields. Nevertheless, demand shocks, in particular income shocks (Gilbert, 2010) and policy shocks may also play an important role. The extent to which given production and consumption shocks translate into price volatility depends on supply and demand elasticities. It is generally agreed that these elasticities are low over the short term, in particular within the crop year. When stocks are low, relatively small production or consumption shocks can have large price impacts but when they are high, the reverse is the case. The price volatility as measured by volatility index rose from 63.61% in period I (Jan

1999-Dec2005) to 71.56% in period II (Jan2006-Dec2011) and 82.18% in period III (Jan2012-Dec2019) with average index 73.16% during the whole period (Table 3). However, equality test shows that although rise in volatility is significant between periods I and III, but it is insignificant in other cases. This rise in price volatility may be due to production shock arising from change in weather/climatic condition in different years.
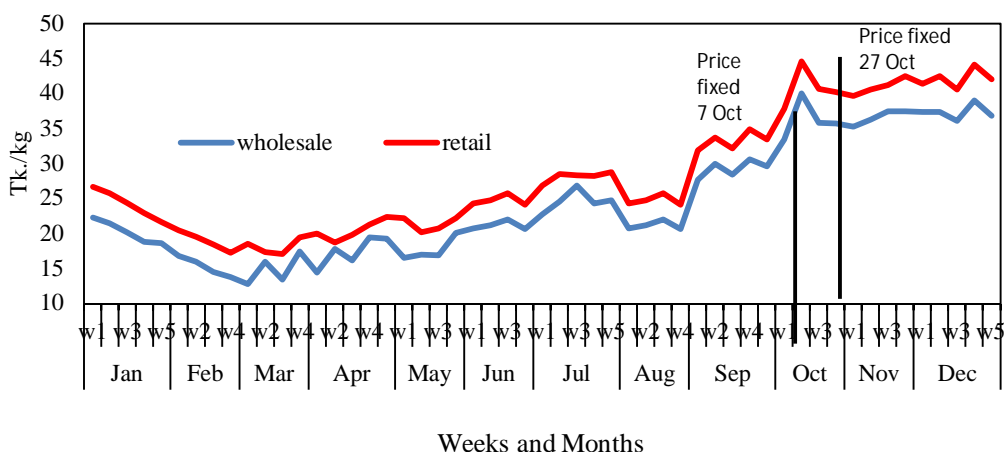

Figure 6: Weekly price of potato in 2020

Table 3: Price volatility (%) of potato during different periods in Bangladesh

Whole period (Jan1999 - Dec2019)	Period I (Jan 1999 - Dec 2005)	Period II (Jan 2006 – Dec 2011)	Period III (Jan 2012 – Dec 2019)
73.16	63.61	71.56	82.18
Equality test (F value)	Between periods I & II	Between periods II & III	Between periods III & I
	1.27	1.32	1.67***
	Insignificant rise	Insignificant rise	Significant rise

Note: '***' represent significant at 1% level

Demand and supply situation of potato

Annual supply of potato

The domestic production of potato in 2019-20 stands at 9605.62 thousand MT, which is 0.51%, 1.42% and 5.97% lower than the productions in 2018-19, 2017-18 and 2016-17 respectively (BBS, 2017 & 2019). This less production is strongly supported by farmers, traders and cold storage owners during FGD sessions. A study (Hossain and Miah, 2011) showed that about 26% of production was lost at different stages of supply chain. After deducting the loss, the quantity of usable potato stands at 7147.54

thousand MT in 2019-20 compared to 7184.35 MT in 2018-19. Another study (Hossain and Miah, 2009) revealed that growers sold 62% potato in the harvesting period. While, they stored 23% in cold storage as table potato and 13% as seed. Home storage accounted for only 3%. The results are mostly supported by the recent FGD conducted in 2020.

In 2019-20, Bangladesh has imported 2000 MT potato seeds from the Netherlands. Additionally, the country imported 10 thousand MT fresh or chilled potato seeds during 2019-20. The net availability of potato for human consumption is estimated at 7157.54 thousand MT in 2019-20, which rose from 7055.32 thousand MT in 2015-16. While the per capita availability of potato is calculated at 43.20 kg/year in 2019-20 (Table 4).

Table 4: Annual supply of potato in Bangladesh

Sl. No.	Source of supply	Amount of supply ('000' MT)				
		2015-16	2016-17	2017-18	2018-19	2019-20
1	Total domestic production[1]	9474.10	10215.96	9744.42	9655.08	9605.62
	HYV potato	*8675.86*	*9318.41*	*8870.81*	*8803.28*	*8777.25*
	Local potato	*798.24*	*897.55*	*873.61*	*851.80*	*828.37*
2	Post-harvest loss[2]	2424.42	2614.26	2493.60	2470.74	2458.08
3	Usable net production (1-2)	7049.68	7601.69	7250.82	7184.35	7147.54
4	Total imports (seed and others)[1]	5.64	54.12	11.87	8.12	10.00
5	Net availability (3+4)	7055.32	7655.81	7262.69	7192.47	7157.54
6	Net availability (kg/capita/year)	44.60	47.88	44.78	43.87	43.20

Note: [1]Various issues of BBS (2017 & 2019), [2]Hossain and Miah, 2011

Annual demand for potato

Potato is used mostly for human consumption, animal feed and seed. Also, a small quantity is exported to foreign countries and some are used for processing purpose (Table 5). About 69% of the total potatoes are used as table potatoes. The per capita daily potato consumption was 64.8 grams in 2016 (HIES, 2020). The daily potato intake has increased at the rate of 4.17% within the period from 2000 to 2016.

The total demand for potato for human consumption is estimated at 4614.4 thousand MT in 2019-20, which is 5% higher than in 2018-19 (Table 5). A large amount of potatoes is used as feed for domestic animals. Low quality and semi-damaged potatoes are usually used as feed. The truth is exposed on this issue during conducting FGDs with potato farmers (FGD, 2020). In 2019-20, about 17% potatoes are used as animal feed which is slightly lower than the previous year. A total of 1006.4 thousand MT of seed potatoes are used for planting 461317 hectares of land and the shares of

local and HYV seeds in the total seed potatoes are 12.4% and 87.6% respectively. The use of seed potatoes in 2019-20 is 1.83% less than the previous year due to the fact that less areas are devoted to potato cultivation.

In Bangladesh, a small quantity of potato is used in processing industry for preparing different processed food like crackers, chips, flakes and pellet every year. The current annual demand for processing industry is 2.53 thousand MT which is slightly lower than the previous years. Bangladesh has started exporting potatoes from a couple of years ago. In 2019-20, the country has exported about 45.0 thousand MT of potatoes which is nearly 23% higher than the previous year. The annual net demand for potato is estimated at 6817.40 thousand MT in 2019-20 which is 3.31% higher than that in previous year (Table 5).

National surplus of potato

Bangladesh produces a plenty of potatoes with a huge surplus annually. Both farmers and cold storage owners stated that a vast amount of potatoes remained unsold before the beginning of the current season because of low demand (FGD, 2020). Therefore, good harvest has sometimes turned out to be the cause of the farmer's misery. However, the total surplus of potatoes in 2019-20 stands at 3.40 lakh MT which is much lower than the previous years.

Table 5: Annual demand for potato in Bangladesh

Type of demand	Amount of demand ('000' MT)				
	2015-16	**2016-17**	**2017-18**	**2018-19**	**2019-20**
1. Human consumption	3741.51	3954.18	4163.53	4380.55	4614.37
Bangladeshi people[1]	3736.48	3934.25	4140.85	4356.27	4586.52
Rohinga people	5.04	19.93	22.68	24.29	27.85
2. Used as seed[2]	1042.97	1094.73	1044.05	1025.84	1006.36
Local seed	103.51	111.38	109.69	104.80	109.78
HYV seed	939.47	983.35	934.36	921.04	896.58
3. Used as feed[3]	1113.00	1164.00	1165.76	1155.07	1149.15
4. Used in processing industry[4]	2.70	2.47	2.55	2.54	2.53
5. Quantity exported[4]	40.23	55.65	53.49	34.80	45.00
Net demand for potato (1 to 5)	5940.42	6271.03	6429.37	6598.79	6817.40
Net demand (kg/capita/year)	37.55	39.22	39.64	40.25	41.15
National surplus (Lac MT)	11.15	13.85	8.33	5.94	3.40

Sources: [1]HIES, 2016 (64.8 g/capita/day); estimated for 2017 to 2020
[2]FGD, 2020 (HYV: 2.31 t/ha); Tuber Crop Research Centre, 2020 (Local: 1.5 t/ha)
[3]FAOStat, 2020 (from 2015/16-2016/17; Estimated for 2017-18 to 2019-20)
[4]Hortex Foundation, 2020

Financial profitability of potato cultivation

The average yield of potato was recorded 36.21 MT/ha in the study areas, which is the highest in Rangpur followed by Munshiganj and Bogura districts. The average gross return, gross margin and net return of potato were found to be Tk. 4,04,245/ha, Tk. 1,84,370/ha, and Tk. 1,05,6871/ha, respectively. Whereas the benefit cost ratio was found to be 1.35 on the basis of total cost meaning that farmers are getting Tk. 135 after investing Tk. 100 for potato production (Table 6).

Table 6: Per hectare returns from potato cultivation

Particular	Munshiganj	Bogura	Rangpur	All area
Yield (kg/ha)	36697	34875	37050	36207
Selling price (Tk/kg)	11.25	11.25	11.00	11.17
Gross return (Tk/ha)	412841	392344	407550	404245
Gross margin (Tk/ha)	190664	174087	188360	184370
Net return (Tk/ha)	110864	96737	109460	105687
Benefit cost ratio				
Over variable cost	1.86	1.80	1.86	1.84
Over total cost	1.37	1.33	1.37	1.35

Source: FGD, 2020

Economic profitability of potato production

The estimated DRCs for potato for the year 2019-20 as presented in Table 7 is found to be less than unity (0.23) implying that Bangladesh had comparative advantage in potato production for export promotion.

Table 7: Domestic resource cost (DRC) for potato

Particulars	Munshiganj	Bogura	Rangpur	All area
A. Traded input (Tk/MT)	1416	1469	1400	1427
Urea	495	511	485	497
TSP	621	641	615	625
MoP	301	316	300	305
B. Non-traded inputs (Tk/MT)	7407	7623	7232	7417
Human labour	3434	3484	3377	3430
Land preparation	265	258	242	255
Seed	2049	2143	1995	2061
Other fertilizers	176	175	176	176
Manure	530	584	501	537
Pesticides	95	92	94	94
Irrigation	55	52	54	53
Int. on operating capital	99	102	97	99
Land use	703	734	696	711
C. Output price (Tk/MT)	34150	34150	34150	34150
D. Value added (C-A)	32734	32681	32750	32723
DRC (B/D)	0.23	0.23	0.22	0.23

Storing of potato

Potatoes are stored by two methods, such as traditional method and cold storage. Under traditional method potatoes are generally stored on the bamboo or brick built made platform, or on *katcha* floor, and spread on jute sack at farmers' house. Farmers start storing of potato in February/March and complete selling by June. Storing of potatoes in the cold storage is mainly done by traders, farmers and in some cases by cold storage owners themselves.

Cold storage owners stored potato in their storage in order to fill up their storage capacity and in some cases for getting the benefit of higher prices. Hiring facility is made available both to the growers and the traders. Growers hire the cold storage spaces only to preserve seed potato. The rate of storage charge is fixed by the Bangladesh Cold Storage Association (BCSA) at Tk. 230 per 50 kg bag in 2020. But this rate was not followed at all rather it varied from Tk.180 to Tk. 220 per bag. Generally wholesale traders got the privileges of reduced rate from the cold storage owners. The rate of charge is usually declared before the beginning of storage period. Potato growers preserved 10-25% of the total stored potato in the cold storage. Usually, farmers sell 60-80% of their total potato during harvest time, 5% retain for family consumption and 5% store at home under traditional system (FGD, 2020). Traders and cold storage owners purchase potato through *Faria* from the farmers by paying fixed commission to them. The cold storage owners start selling potato in June and continued up to December. Table potatoes are sold every month while seed potatoes are sold during the period from September to Mid-November. Potato sold in October was the highest and the lowest in December (Table 8). The selling pattern is mostly supported by Hajong *et al.*, (2014).

Table 8: Disposal of stored potatoes in 2020

Month	Traditional storage	Cold storage	Selling	price
January	--	--	--	
February	--	--	--	
March	65%	--	470	
April	25%	--	580	
May	6%	--	825	
June	4%	8%	870	
July	--	10%	1200	
August	--	10%	1260	
September	--	20%	1400	
October	--	30%	1600	
November	--	20%	1650	
December	--	2%	950	

Source: FGD, 2020

According to the information provided by BCSA, 20 lakh MT potatoes have been stored in cold storage in 2020 compared to 30 lakh MT in the last year. In 2020, 73% capacity of 392 cold storages in operation is utilized (Table 9), which was the highest, 106%, in 2014 and the lowest, 60%, in 2010. This low-capacity utilization in 2020 may be due to low production in 2020. In 2020, the highest 65% of potato are released from traditional storage in March followed by 25% in April and the lowest 4% in June (Table 8). Under this method, potatoes start releasing from March and end in June. On the other hand, potatoes stored in cold storage begin releasing from June and completed by December when new potatoes start arriving in the market. The highest 30% are released in October and the lowest 2% in December. The selling price was the lowest Tk. 470/40kg in March followed by Tk. 580 in April, then started rising and reached the peak level at Tk. 1650 in November. It started declining in December.

Farmers mention that as table and seed potatoes are kept together and recommended/required temperatures are not maintained in the cold storage, a substantial portion of seed potato is affected by different diseases. It is worth mentioning that farmers do not disclose the quantity of seed potato kept for fear of theft and possibility of interchange with table potato (FGD, 2020).

Table 9: No. of cold storage in operation and their capacity utilized

Year	No. of cold storage in operation	Capacity utilized
2010	315	60%
2011	374	80%
2012	356	85%
2013	370	98%
2014	371	106%
2015	380	72%
2016	385	85%
2017	376	96%
2018	401	82%
2019	392	95%
2020	392	73%

Source: Cold Storage Association

IV. CONCLUSION AND RECOMMENDATIONS

The recent unusual price hike of potato not only embarrasses consumers but government also. The study has tried to explore the causes of the price hike. Satisfying all sorts of demand, a considerable amount of potato remains surplus in the market. The main causes of price hike during 2020 identified are: lower production, high consumption, low stock in cold storages, frequently change hand of cold storage ownership receipt, stoppage of releasing stocks by different stakeholders including farmers in expectation of higher price in the future, no or limited control in

the market by government, spread of rumor on price, demand and supply of potato based on false information. In fact, overall the main cause of this price hike was the artificial crisis created by some profit seeking traders rather than the low production and higher consumption of potato in the country. Announcement of maximum and minimum support prices after setting up agricultural price commission; removal of ambiguity on production, demand, supply and price data; monitoring prices and release of potato from cold storage by government; broadcasting the true picture with data by government to counter any rumor in the market; and expanding export and processing of potato are recommended for stabilizing price of potato in the country.

Acknowledgement

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