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Farmer's profitability of potato cultivation at Rangpur district: the socio-economic context of Bangladesh

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Abstract: Bangladesh is predominantly an agricultural country. Agriculture is the indispensable culture of Bangladesh. Agriculture has an enceinte contribution to the Gross Domestic Product (GDP) of the country. Earlier more than 50% of GDP came from this sector. Various types of crops are produced in this country. These crops might have been categorized into two-food crops and cash crops. Potato is one of the food-stuff of the most people of the world as well as Bangladesh. Potato crop is being treated as foremost crop. This study was conducted to approximation the cost of production and profitability of potato producers at Rangpur district. Data collected from 30 farmers using simple random sampling technique. The potato farmers showed individual differences in their socio-economic characteristics and absolute majority of them belonged to young age category (20-35 years) having medium family size, illiterate, medium farm size (0.34- 1.0 acre) , (1- 10 years) farming experience. Most of the respondents used cardinal variety of potato seed and sell their output at home. Farmers who sell potato in the market were more profitable than others. The study also designates that the large farmers were most profitable compared to others. Major problem faced by the potato farmers were lower price of potato during harvesting period, price fluctuation , shortage of capital, high charge of cold storage, lack of good quality seed, perish ability of potato, poor storage facility, higher price of inputs and lack of marketing facility etc. Proper steps should be postulated by Government to puzzle out this problem. The determinations of the study will generate basic economic data on the production practices of potato. At long last it will be helpful to the planners and policy makers in contriving micro or macro level policy for the enlargement of potato production in the country.

Keywords: Seed Variety, Cost of production, Farming Experience, Place of sale, Net profit

1. Introduction

Bangladesh is mainly an agricultural based country dominated by crop production. Agriculture is the main stay of the economy of Bangladesh. Bangladesh enjoys generally a sub-tropical monsoon climate. Bangladesh has been famous for growing large variety of tropical crops particularly rice, wheat, potato, jute, pulses, oilseeds, sugarcane etc.

Potato is one of the most important food crops grown in more than 100 countries in the world .Over one billion people consume potato worldwide and it is the staple diet of half a billion people in developing countries. Potato ranks fourth in the world (325.30 million tons) and third in Bangladesh (8.0 million tons) with respect to food production. Because of the dry matter, edible energy and edible protein content, potato is considered nutritionally a superior vegetable as well as a versatile food item not only in our country but also throughout the world.

Potato was introduced in this subcontinent in the sixteenth century. It was grown then in small plots as a vegetable. Potatoes have been grown in Bangladesh since at least the 19th century. By the 1920s, the first commercial production of the crop was established in the country (Islam, 1983).

Potato has become one of the major food and cash crops in Bangladesh. In 2010-11 season the area coverage (4.6 lakh hectare), production (83.5 lakh MT) and yield (18.1 t/ha) of potato were comparatively higher. Simultaneously export also increased sharply during this time. Considering the area coverage in the country, potato is the third major crop after paddy and wheat. It has become a highly successful October-March winter crop in Bangladesh. Bangladesh is now 14th among the world's potato

producers and 4th largest in Asia. Potato is mostly consumed as vegetable in the households in Bangladesh.

Though Bangladesh has become a major potato producer in the SAARC countries, the status of this crop has remained vegetable in

the country. The time has come now for all of us to understand and appreciate the role of potato that can play an important role in the present food situation of Bangladesh

Potato is one of the main commercial crops grown all over the country. In Bangladesh, potato is mainly consumed as vegetable. Various other food items (*Singara, Samucha,Chop*, chips etc.) are also made from potato. Adequate supply of potato stabilizes the vegetable market all round the year (Moazzem and Fujita, 2004). Recently, the government has been trying to diversify food habits and encourage potato consumption to reduce pressure on rice. So, potato is becoming an important food for food security in Bangladesh.

2. Literature Review

A number of studies to agronomic, economic and physiological aspects of potato cultivation have so far been conducted in Bangladesh.

Elias *et al*,. (1980) conducted an economic study on potatoes production in some selected areas of Bangladesh. They estimated the average per acre production cost of potato at Tk. 7376 and the average gross return at TK. 9931. They obtained average potato yield of 242 mounds per acre.

Elias *et al*,. (1982) studied improved technology of potato in two district of Bangladesh, Bogra and Munshigonj. They found that the yield per acre hectre was much higher Munshigonj (25009 kg) than that of Bogra (13278 kg).they estimated average net return per hectre was TK. 7211 which was higher in Munshigonj (TK. 8751) than in Bogra (TK. 4953) .

Sabur (1988) conducted a study on marketed surplus of potatoes in two districts of Bangladesh, he found that production and marketed surplus of potatoes moved in some positive direction. He observed that the average production cost per hectare was TK. 29635.57 and net return was TK. 30947.82.

Das (1992) conducted a study on the profitability of potato cultivation and found that the average yield of potato was 4720 kg per hectare and the average gross return amounted to TK. 33040 per hectare. He calculated the per hectare net return above full-costs at TK. 11085.89.

Hakim (1993) conducted a comparative economic study on Cardinal and multi varieties of potatoes in Bogra district. He found that per hectare total costs were TK. 32097.25 and TK. 30818.50 for Cardinal and multi varieties respectively. The costs were estimated at TK. 15896.15 and 12701.60. Net returns per hectare on full costs basis were TK. 45196.65 and 451.65.

Rashid (1994) conducted a study on the profitability of different cropping patterns with and without potatoes in two villages in Dinajpur district. The average yields per hectare were 15550 and 4720.54 kg for HYVs and LVs of potatoes, respectively and their respective values were TK. 46084.03 and 24574.82.He also observed that the HYVs of potatoes were more profitable than other crops.

Arif (1998) conducted a study on potato product on selected areas of Comilla district. He showed that the per hectare gross returns were TK. 101858.56 , 102358.56 and 101358.56 ; gross costs were TK. 64251.10, 65179.58 and 64741.42; net returns were Tk. 37607.46, 37178.98 and 366617.14 for small, medium and large categories of farmers respectively

Akhter *et, al*. (2001) conducted a survey on potato production in some selected areas of Bangladesh. This study showed that potato production is highly profitable and it could be provide cash money to farmers. In terms of profitability, potato production was more attractive than any other winter vegetables. Per unit yield and gross return of potato were found higher than other competitive crops.

3. Objectives

- To describe the socio-economic characteristics of potato producers in the study area across farm size.
- To describe the profitability of potato production across farm size.
- To determine the problems of potato cultivation across farm size.
- To suggest policy implications for improvement of potato production in Bangladesh.

4. Statement of the Problem

Potato remains a key component in livelihood system of the farmers, contributing to food security as a direct food source and as cash crop. Potato is a valuable cash crop for millions of farmers. Potato prices are determined usually by local production costs. District Rangpur occupies a prominent place in potato production. Rangpur Agriculture Zone (RAZ) will produce 83.26 lakh tones of potato from 4.60 lakh hectares of land during 2012-2013 (The daily new nation o9 may, 2013) Agricultural production policy decisions in Bangladesh are constrained by lack of information on the related profitability of different agricultural crops. In this regard, the present study is an attempt to analysis and compares the relative profitability of HYV potatoes according to farm size, the effect of various inputs used in potato production and the cultural practices that are followed by the farmer.

*1 Lakh= 100 thousand.

5. Methodology of the Study

The survey method is probably the most widely used formal method obtaining farm management data. This chapter discusses about the selection of the study area, period of the study, sampling technique and sample size, data processing and analysis.

Selection of the area: Rangpur district was selected purposively as a study area because this district is one of the leading potatoes producing area of Bangladesh. Rangpur sadar Sub-district was selected randomly from the 7 Sub-district of Rangpur districts as the study area. A preliminary survey was conducted in some villages of Rangpur sadar Sub-district to gather primary knowledge about the potato production, productivity and efficiency of the potato growers. After preliminary visit three village's namely Utttor Tumpat, Dhakin Tumpat and Hajirhat were selected randomly as the study area. Most of the farmers in these villages used to produce high yielding varieties of potato and sell their product to different middlemen. The main criteria behind the selection of the Sub-district were as follows:

- The selected Sub-district was a good vegetable producing area.
- The researcher is familiar with the language, living, beliefs, and other socio-economic characteristics of the villages of this Sub-district.
- Previously such type of study was not conducted in this area.

Period of the study: Data for the study were collected from winter and summer season of 2012-2013.

Selection of the sample and sampling techniques: A random sampling technique was applied for selecting sample. Through random sampling 30 farmers were selected for the study. Among the 30 farmers, 6 were small,17 were medium and 7 were large. Farm size was arbitrarily classified on the basis of their land where they produce potato and other crops. Farmers having 0.01-0.33 acre considered as small, 0.34-1.00 acre as medium farmers while those having above 1.00 acre as large farmers.

Sources of Data: The study is involved in collection of data both from the primary and secondary sources. Different types of data and their sources are discussed under the following heads:

Primary Data: Primary data were collected by the researcher themselves through personal interview with the respondents. To attain accuracy and reliability of data, care and caution were taken in data collection. The researcher's took all possible effort to establish a congenial relationship with the respondents do not feel hesitation or hostile to furnish correct data. Before interviewing, the aims and objectives of the study were explained to each and every owner of the potato growers. As a result, they were convinced that the study was purely an academic one and was not likely to have an adverse effect on their business. During data collection an attention was also paid to the mood of the owners of the potato growers.

Secondary Data: The secondary sources include govt. publications; annual reports on groundnut cultivation, seminar papers, journals, published and unpublished thesis, and topic reelected various books, BBS, web site etc.

Processing and analysis of data: Collected data were scrutinized and summarized for the purpose of tabulation. Two techniques of analysis were used in this study, tabular and statistical. Analysis by tabular technique included socio- economic characteristics of potato farmers, classification of size of potato land, production practices, inputs used and returns of potato farmers. Statistical analysis was used to show the effect of inputs used and other related factors of potato cultivation. Enterprise costing and gross margin analysis technique was used for calculating costs and returns for potato cultivation.

Results and Discussion:

Socio-economic Characteristics of Potato Farmers: The socio-economic background and characteristics of the farmer's influences the productions to a great extend. So, a description of the characteristics of farmer is necessary for analyzing the main objective of the present study. Socio-economic characteristics of the farmer's included their age, family size, educational status, farm size, farming experience, use of seed variety, place of sale, land ownership pattern of the respondent. These are described below:

Table 1. *Distribution of the potato farmers according to their age*

Age Categories	Potato Farmers		Mean	SD
	Number	%		
Young (20-35 Years)	16	53.3	1.7	.83666
Middle (35-50 Years)	7	23.3		
Old (Above 50 Years)	7	23.3		
Total	30	100		

Source: Field survey.

Table 1: Shows that age of the potato farmers ranged from 20 to above 50 years, with the mean of 1.7 years and the standard deviation .83666. Potato farmers were classified into three categories on the basis of their age. Young farmers are mostly engaged in potato cultivation.

Table 2. *Distribution of the potato farmers according to their education*

Education Categories	Potato Farmers		Mean	SD
	Number	%		
Illiterate	16	53.3		
Primary	5	16.7		
Secondary	4	13.3		
Higher Secondary	5	16.7		
Total	30	100	1.9333	1.17248

Source: Field survey.

Table 2: Shows that maximum farmers (53.3 %) are illiterate while primary & higher secondary have same (16.7 %.).Farmers having secondary education are (13.3%). potato farmers were classified into four categories on the basis of their education mean of 1.9333 and the standard deviation 1.17248. Illiterate farmers are mostly engaged in potato cultivation.

Table 3. *Distribution of the potato farmers according to their Family size*

Family Size	Potato Farmers		Mean	SD
	Number	%		
Small (1-4)	8	26.7		
Medium (5-6)	13	43.3		
Large (Above 7)	9	30		
Total	30	100	2.0333	.76489

Source: Field survey.

Table 3: Shows that Family size of the potato farmers of the study ranged from 1 to above 7 persons, with an average of 2.0333 persons and standard deviation .76489. Potato farmers were classified into three categories on the basis of their family size. Potato farmers having medium family size (43.3%) are interest in potato cultivation.

Table 4. *Distribution of the potato farmers according to their Farm size*

Family Size	Potato Farmers	
	Number	%
Small(0.01-0.33 Acre)	6	20
Medium(0.34-1.0 Acre)	17	56.7
Large (Above 7 Acre)	7	23.3
Total	30	100

Source: Field survey.

Table 4: Shows that Potato farmer were classified into three categories on the basis of their farm size. Maximum Potato farmers are belonging to medium farm (56.7 %).

Table 5. *Distribution of the potato farmers according to their Farming experience*

Faming Experience	Potato Farmers		Mean	SD
	Number	%		
1 – 10 Years	16	53.3		
10 - 20 Years	12	40		
Above 20 Years	2	6.7		
Total	30	100	1.5333	.62881

Source: Field survey.

In Table 5: Farming experience of a respondent was determined on the basis of involvement in the farming activities related to agriculture. Potato farmers ranged from 2 to above 20 years, with the mean of 1.533 years and the standard deviation .62881. Potato farmers were classified into three categories on the basis of their Farming experience.. Highest portion of the potato farmers (53.3 %) had low farming experience (1 - 10 years)

Table 6. *Distribution of the potato farmers according to the use of seed variety*

Faming Experience	Potato farmers		Mean	SD
	Number	%		
Cardinal	18	60		
Granula	4	13.3		
Local Variety	8	26.7		
Total	30	100	1.6667	.88409

Source: Field survey.

Table 6: shows that Potato farmers were classified into three categories on the basis of their use of seed variety. Most of the farmers use cardinal seed of potato (60%). Farmer use Granula variety relatively low (13.3 %). Because cardinal variety gives more output and its price is relatively high.

Table 7. *Distribution of the potato farmers according to the place of sale*

Place of sale	Potato Farmers		Mean	SD
	Number	%		
Home	21	70		
Market	9	30		
Total	30	100	1.6667	.88409

Source: Field survey.

Table 7: Shows that most of the Potato farmers sold potato at home (70%).selling percentage in market is consistently poor (30%).

Table 8. *Distribution of the type of farmers according to the place of sale*

Place Of Sale	Type Of Farmer			Total
	Small (0.01-0.33acre)	Medium (0.34-1.0 acre)	Large (above 1.0 acre)	
Home	3	17	1	21
Market	3	0	6	9
Total	6	17	7	30

Source: Field survey.

Table 8: Indicates that most of the Medium Farmers sell their potato at Home. But Maximum Large Farmers sell at Market. Small farmer sell both Home and Market.

Table 9. *Per acre cost of potato cultivation in the study areas*

Cost Head	Small Farmer	Medium Farmer	Large Farmer	Total
Land Preparation	4200	26700	26542	57442
Seed	22900	174340	128850	326090
Fertilizer	14800	113950	82950	211700
Insecticides	3580	29225	24875	57680
Irrigation	1710	9820	9950	21480
Weeding & Earthing Up	7350	52350	47400	107100
Harvesting	5550	39500	37150	82200
Transportation	2350	16590	14750	33690

Marketing	4900	42500	46083	93483
Others	1050	8585	2100	11735
Total Variable Cost	68390	513560	420650	1002600
Land Value	25000	165700	157000	347700
Total Fixed Cost	25000	165700	157000	347700
Total Cost=(Variable+ Fixed)Cost	93390	679260	577650	1350300

Source: Field survey.
*The above table is Figured in Units BDT Taka (Currency of Bangladesh with 1USD = 78.02 BDT)

In the table 9: Per acre Cost of potato cultivation of Small, Medium and large farmers are shown. Total variable cost include land preparation, seed cost, fertilizer, insecticides, irrigation, weeding & earthing up, harvesting, transportation, Marketing, others cost. Fixed cost includes land value. Total cost was the summation of total variable cost and total fixed cost. Total cost was highest for medium farmers (TK. 679260.).Followed by large farmers (TK.577650) and small farmers (TK. 93390).

Table 10. *Per acre Profitability of potato cultivation in the study areas*

Item	Small Farmer	Medium Farmer	Large Farmer	TOTAL
Total Land Use (Acre)	1.8	12.24	11.27	25.31
Potato Output (Mon)	325	2324	2071	4720
TK Per 40 Kg	351.08	350.38	359.32	1060.78
Total Revenue	114102	814280	744143	1672525
Total Cost	93390	679260	577650	1312860
Net Profit	20712	135021	166493	322226

Source: Field survey
*The above Table is Figured in mon (1 mon = 40 kg)

Table10: Shows that Productivity is highest for Medium farmer (2324 mon) followed by large farmer (2071 mon) and small farmer (325 mon) .But profitability is highest for large farmers (TK. 166493) followed by medium farmer (TK. 135021) and small farmer (TK. 20712). Because Medium farmer sell their potato at home but most of the large farmer sell in the market (Table 8). Therefore, large farmer earn highest 359.32 TK per 40 kg.

Figure 1: Shows that Net Profit is highest for Large Farmer followed by Medium and Small farmer.

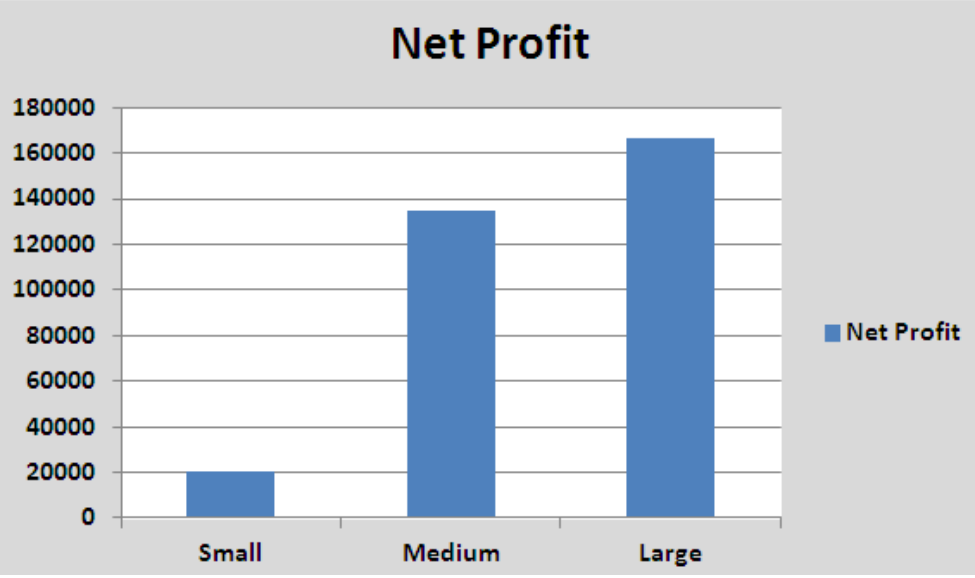

Figure 1. *Per acre net profit of potato cultivation in the study areas*

Source: Field survey.

6. Correlations

		Land Value	Seed	Fertilizer	Insecticides	Harvesting	Marketing	Total Cost	Net Revenue
Land value	Pearson Correlation	1	.729(**)	.778(**)	.539(**)	.946(**)	.830(**)	.953(**)	.850(**)
Seed	Pearson Correlation	.729(**)	1	.882(**)	.766(**)	.745(**)	.765(**)	.829(**)	.852(**)
	Sig. (2-tailed)	.000	.	.000	.000	.000	.010	.000	.000
Fertilizer	Pearson Correlation	.778(**)	.882(**)	1	.570(**)	.744(**)	.687(*)	.788(**)	.762(**)
Insecticides	Pearson Correlation	.539(**)	.766(**)	.570(**)	1	.559(**)	.878(**)	.759(**)	.830(**)
		Land Value	Seed	Fertilizer	Insecticides	Harvesting	Marketing	Total Cost	Net Revenue
Harvesting	Pearson Correlation	.946(**)	.745(**)	.744(**)	.559(**)	1	.816(**)	.940(**)	.890(**)
Marketing	Pearson Correlation	.830(**)	.765(**)	.687(*)	.878(**)	.816(**)	1	.968(**)	.964(**)
Total cost	Pearson Correlation	.953(**)	.829(**)	.788(**)	.759(**)	.940(**)	.968(**)	1	.946(**)
Net Revenue	Pearson Correlation	.850(**)	.852(**)	.762(**)	.830(**)	.890(**)	.964(**)	.946(**)	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

1. There is a significant positive correlation between Total cost and Marketing cost .Because when Farmers sell potato in the market, then Total cost increases.
2. There is significant positive correlation between land value and harvesting cost. Because higher land value means more fertile of land that provides more output. As a result harvesting cost increases.
3. There is significant positive correlation between seed cost and fertilizer cost. Since the seed cost increase, farmers want to produce more output desire amount of output, therefore they provide more fertilizer. As a result, Fertilizer cost increase.
4. There is a significant positive correlation between Net revenue and Marketing cost. When Farmers sell potato in the market, then Farmers Net revenue also increases.

7. Problems

[1] Unavailability of good quality seed
[2] High cost of inputs
[3] Lack of adequate funds
[4] Unavailability of quality fertilizers in time
[5] Disease infestation
[6] neffective pesticides
[7] Labor crisis
[8] Lack of adequate cold storage facilities and frequent electricity interruption
[9] Low prices at peak harvest period
[10] Lack of adequate transport facilities during peak harvest period
[11] Lack of cold storage facilities
[12] High cold storage charge
[13] No purchase by the government
[14] Syndicate of businessmen
[15] Presence of few traders in the market
[16] Need for immediate sale
[17] Delay in payment by traders
[18] Farmers did not get proper price due to improper marketing channel/system
[19] Production cost increases due to inappropriate pesticide and fungicide use
[20] Lack of farmers' knowledge on good quality seed and access to the seed.
[21] Lack of linkage between farmers and exporter
[22] Lack of coordination among research organizations like BARI, DAE and farmers and Agro/ potato processing companies.

8. Recommendations

Some recommendations are given below:

[1] For increasing production of potato necessary inputs particularly HYV seeds, Fertilizers, insecticides and pesticides etc. Should be made available to the farmers just before the growing period.
[2] To reduce the cost of seed, it will be necessary to produce sufficient quality seeds locally and make them available to the farmers in time at a reasonable price.
[3] Cardinal variety of potato was more efficient than other variety. So, farmers may be encouraged to use said variety.
[4] Development of market infrastructure like road communication and transport should be increased. Because Farmer get higher price at market than home.
[5] Government should reduce the pesticide and insecticide price.

[6] The awareness of the farmers needs to be increased. They may be provided adequate training so that they can produce potatoes properly.
[7] Modern technology should be undertaken for better labor cost control.
[8] Government should take necessary steps so that market price of potato remains uniform all round the year and all over the country. This may be possible through price control mechanism of the government.
[9] Agricultural credit facilities to be ensured easily.

9. Limitation of the Study

[1] The study was restricted to one Sub-district where potato production was concentrated. Two unions under that Sub-district were selected purposively. The study might be meaningful results if it covered a number of Sub-district producing potatoes.
[2] Due to shortage of time the study could not cover wide side areas for collecting necessary information.
[3] Some written records were maintained by the literate respondents, but maximum respondents had no written document. Therefore, the researcher had to depend solely on the memory of the respondents.
[4] Respondents were very busy. A study that encloses interview of 30 farmers cannot conclude anything accurately and as such, it was based on miss information.
[5] Most of the farmers in the study area thought that the investigator was a government officer. So, they initially hesitated to answer the questions relating to their income and expenditure. Some were afraid of imposition of new taxes

10. Conclusions

Bangladesh is the fourth largest potato producer in Asia and is among the top 15 of the potato producing countries of the world. It ranks third in area acreage after rice and wheat and is cultivated in almost all agro ecological regions of Bangladesh. In addition, potato ranks second after rice in production in Bangladesh. In the last five years, Bangladesh produced, on an average 7 million MT of potato each year. The findings of the study that net profit per acre (TK. 12731). this research shows medium farmers cultivate more land but net profit is highest for large farmers. Because most of the large farmer sell potato in the market. Therefore, it can be said that net profit largely depends on marketing. Farmers get higher price at market than selling potato at Home. Transportation facilities should be improved to facilitate the marketing process. Priority should be given to the development of such roads which link villages to the main roads and markets. Most of the farmers are illiterate. Dissemination of market information should be increased so that farmers can get fair price of the potato. Potato farming is assuming a greater dimension, however bringing pressure on the government to expand its use as alternative food in the domestic sector while looking for greater export markets in overseas trade.

References

[1] Antezana, L., A. Fabian, S. Freund, and G. Glimmann. 2005. *Poverty in potato producing Communities in the Central Highlands of peru*. Berlin: SLE- Centre for Advanced Training in Rural Development; Humboldt, University, Berlin.

[2] Arif, a (1998). *An Economic study of potato production in selected areas of Comilla Districts*. M.S. Ag. Econ. Thesis Submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensing.

[3] Akhter, S .M.M Anwar and Md. Asaduzzaman (2001). *Potato production in some selected areas of Bangladesh* .TCRC, BARRI, Joydebpur, Gazipur, Bangladesh.

[4] Bangladesh Bureau of Statistics (BBS), 2009**:** *Report on the Cost of Production of Potato 2009***.** Statistics Division Ministry of Planning. Dhaka-1207.Government Of The People's Republic Of Bangladesh

[5] Bangladesh Bureau of Statistics (BBS), 2011-12**:** *Estimates Of Potato, 2001-2012*.Agriculture Wing .Dhak-1207. Government Of The People's Republic Of Bangladesh

[6] Business Report (2013, 09 May). Potato Farming In Rangpur Multiplies. *The New Nation* .Retrieved from http: //Www.Thenewnationbd.Com.

[7] Das, S. C. (1992). *An Economic Analysis of potato growing Farmers with respect to production and resource use efficiency*. M.S. Ag. Econ. Thesis Submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensing.

[8] Elias, S. M. A. Jubber and N. I. Mondol (1980). *An Economic profile of potato cultivation in Bangladesh*. Agricultural Economics Research Report No. 2 Joydebpur, Agricultural Economics Division, BARRI.

[9] Elias, S. M. and M. I. Nazrul (1982) .*Socio- economic Assessment of improved Technology of potato and Identification and Constraints to its higher production.* Agricultural Economics Research Report No. 4. Joydebpur, Agricultural Economics Division, BARRI.

[10] Hakim M. A. (1993). *A Comparative Economic Analysis of Cardinal and Malta varieties of potato in kotwali Thana of Bogra District*. M.SC. Ag. Econ. Thesis Submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensing.

[11] Islam, M. A. 1983. *Report on Potato Production in Bangladesh. International Potato Course: Production, Storage and Seed Technology*. Report of Participants. International Agricultural Center, Wageningen, The Netherlands.

[12] Moazzem, K. G. and Fujita, K. 2004. *Potato marketing system and its changes inBangladesh: From the perspective of village study in Comilla district.* The Developing Economics. XLII-1 (March): 63-94.

[13] Rasid, M. H. (1994). *An Economic study of Farmers growing crops with potato in a selected area of Rangpur District*. M.SC. Ag. Econ. Thesis Submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensing.

[14] Sabur, S. A. (1988). *A study on factors Influences the Market Surplus of potatoes in the selected areas of Bangladesh*. An unpublished Research Report. Submitted to Bangladesh Research Council, Dhaka.