

## Economics of Selected Winter Vegetables i.e. Bean and Cauliflower: A Study in Rural Bangladesh

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**Abstract:** The study has been conducted to examine the cost and return of vegetables farmer and trader, their problems in farming and trading in the context of Bangladesh's winter vegetables. Bean and Cauliflower are being taken purposively to unearth the real picture as both are widely cultivated in winter season at rural Bangladesh. Mainly primary data, collected through a structured questionnaire, have used to carry out the research. According to the study, average per unit net margin of farmer from Bean and Cauliflower production was BDT. 17.76 and BDT. 2.93 respectively where per unit cost of Bean and Cauliflower was BDT. 10.76 and BDT. 5.66. The study found that timely availability of fertilizer and insecticide, reasonable price of both fertilizer and insecticides can increase vegetable production. On the other hand, maximum vegetable traders recommended that infrastructure development can mobilize vegetable trading. The study also suggested that improving transportation facilities, timely availability of fertilizer and insecticide with reasonable price and transforming traditional supply chain to commercial one would increase production so as to net margin of both farmers and traders.

**Keywords:** Winter Vegetables, Price Variation, Marketing Chain, Bean, Cauliflower.

### INTRODUCTION

Bangladesh is a land of agriculture and it is regarded as the backbone of the country. Vegetable sub-sector [1] is one of the important parts in agriculture sector of Bangladesh. Vegetable sub-sector plays an important role for rural development, export earning, contributing nutrient diets etc. In rural areas, majority people are engaged either in homestead or commercial vegetable production. About 5% (0.45million ha) of total 8.4 million hectares of cultivable land is occupied by homesteads where approximately 13 percent of the total homestead area was under vegetable production [2]. Vegetable sub-sector contributes 3.2% of the agricultural gross domestic product [3]. Vegetables can be identified as a significant one for the economy for its notable contribution in raising the foreign exchange earnings. Bangladesh earned US\$ 24.70 million from export of vegetables in 2003-04, which contributes 0.32% to the total foreign earnings and earned US\$ 43.33 million in 2004-05, that is 0.50% of total export [4], and in 2012-13 fiscal year, it earned US\$ 110.34 million [5]. Vegetable consumption has been increased from 2000 to 2010 which indicates the gradual increase of demand in domestic household [6].

It is calculated that, per capita intake of vegetable is 166.08 gram in 2010 where it was 140.47 gram in 2000 [7]. Since vegetables have notable value in rural development, export earning, diet contribution, the importance of vegetables is increasing day by day. At the production level, due to various constraints, farmers do not expected benefit from their investment; moreover constraints differ from farmer to farmer due to the influence of various factors [8]. This information is essential for future planning and execution of vegetable extension program. On the other side, vegetable traders also face problems which significantly hamper their trading. Hence, the present study is being undertaken with a view:

- To estimate the cost and return of selected winter vegetable farming and trading;
- To understand the risk factors and
- To explore the factors that affect trading the vegetables.

### METHODOLOGY

Data for this study was collected both from primary and secondary sources. Primary data were collected through a structured questionnaire by direct interview of the respondents. Primary data collection period was from February 2015 to March 2015.

### Study Area

Primary data were collected both from rural and urban centers. Firstly, considering the intensity of vegetable production, and the availability of vegetable growers, whole-sellers, collectors, and retailers at local level, the *Adiabab* Union of *Royapura* upazila in *Narsingdi* district was selected. Secondly, as the vegetable growers usually sell their products through different channels, two *bazaars* (*Kawran bazaar* and *Mirpur bazaar*) in Dhaka city were selected to cover the traders' perspective. In rural area, farmers generally produce vegetables like egg-plants, beans, cucurbits, okra, radish, cauliflower, cabbage, tomato, carrot, leafy vegetables etc [9]. Of these, Bean and Cauliflower are purposively selected for the study as they are grown all over Bangladesh during winter season. Vegetable producers or Farmers, Intermediate collectors, Retailers, Wholesalers (Pikers), Agents (*arotdars*), Street Vendors and Stale Vegetable collectors were considered as the population of the study. The sample would consist of individually engaged in all these function.

### Sampling Method and Sample Size

The study followed the non-probability sampling technique or method due to its research design (descriptive and explorative) as well as the core limitations including time, money and workforce. It was almost impossible to randomly sample the entire population. Basically, the two non-probability sampling techniques known as 'purposive sampling method' and 'snowball sampling method' –were used in the study. Keeping the objectives in mind, a total of sixty (60) farmers, who grow vegetables under consideration, were selected purposively from the study area (*Narshingdi* district). Of them, 30 were Bean producers and the rests produced Cauliflower. After selecting vegetable producers, 37 vegetables traders of different types were selected through snowball sampling method. In the study, Microsoft Excel and SPSS have been used for data processing.

### Analytical Technique

For Farmers

$$\text{Total Cost (TC)} = \text{Total Fixed Cost (TFC)} + \text{Total Variable Cost (TVC)}$$

$$\text{Gross Margin (GM)} = \text{TR} - \text{TVC}$$

$$\text{Net Margin} = \text{GM} - \text{TFC}$$

For Traders

$$\text{Margin} = \text{TR} - \text{TC}$$

## RESULTS AND DISCUSSION

### Demographic Characteristics of Vegetable Producers (Farmers)

Of the total respondents, 90 percent vegetable farmers were male and only 10 percent vegetable farmers were female. Average age of the farmers was 49.67 years with maximum age 70 years and minimum age 27 years. Table-1 shows that average family size of farmer is 5.77 where maximum member is 10 and minimum member is 3. With regards to educational status of vegetable farmers, 65 percent were literate and 35 percent were illiterate. More than ninety three

percent (93.30%) of vegetable farmers were married and 6.7 percent were unmarried.

### Demographic Characteristics of Vegetable Traders

The total sample size of vegetable traders was thirty seven (37). It was found that 100% vegetable traders under the study were male. The average age of vegetable traders is 40.49 years where maximum age is 60 years and minimum is 15 years. The average family size of the traders is 4.51 persons. With regards to educational status of vegetable traders, 97.3% were literate and only 2.7 % were illiterate. Ninety two percent (91.9%) of vegetable trades were married and 8.1% were unmarried.

**Table-1: Demographic and Socio-Economic Characteristics of Sampled Households**

Categorical Variables								
Variables	Items	Farmer (N= 60)			Trader (N = 37)			
		%			%			
Sex	Male	90			100.0			
	Female	10			0			
Education	Illiterate	35			2.7			
	Literate	65			97.3			
Marital Status	Married	93.30			91.9			
	Unmarried	6.7			8.1			
	Other	0			0			
Continuous Variables								
Variables	Farmer (N= 60)				Trader(N = 37)			
	Mean	SD	Max Value	Min Value	Mean	SD	Max Value	Min Value
Age	49.67	10.2	70	27	40.49	11.5	60	15
Family Size	5.77	1.5	10	3	4.51	1.07	7	3
SD is Standard Deviation. Max Value is Maximum Value and Min Value is Minimum Value.								
Source: Own Survey, 2015								

### Costs of Vegetable Production

This section deals with per hectare costs and return of growing Bean and Cauliflower. It is constituted with costs of vegetable production and return from vegetable production.

For calculating costs of Bean and Cauliflower, the cost items were classified into two groups; (i) Fixed cost (ii) Variable cost. The fixed cost includes costs for land use and interest on operating capital. The variable cost includes cost of all variable factors. These are costs for ploughing, hiring labor, purchasing seeds, planting seeds, irrigating lands, fencing, purchasing insecticides, purchasing fertilizers (organic and chemical), collecting vegetables, transporting those from home to market. All costs are summarized in Table-2.

### Costs for Land Use (Fixed Cost)

Most of the farmers produced Bean and cauliflower on their own land but some farmers hired land for producing bean and cauliflower. In the present study, to compute land use cost, average leased money of land per hectare for the particular year was considered on the basis of reports of the farmers. Land use cost was estimated for the cultivating period of three months for cauliflower and four months for bean production. The land use cost per hectare was BDT. 1064.43 for Bean and BDT. 336.93 for Cauliflower. It is noted that bean farmers used more hired land compared to cauliflower farmers that is why bean and cauliflower land use cost varied.

### Interest on Operating Capital (Fixed Cost)

The interest on operating capital was calculated by the operating capital incurred during the production period of bean and cauliflower. The interest on operating cost per hectare varied. It is BDT. 377.75 for bean and BDT. 131.40 for cauliflower.

**Table-2: Production Costs Per hectore of Study Vegetables for Producers**

	Items	Bean BDT/Ha	Cauliflower BDT/Ha
<b>A</b>	<b>Fixed Cost</b>		
	Costs for Land Use	1064.43	336.93
	Interest on Operating Capital	377.75	131.40
	<b>Total Fixed Cost (TFC)</b>	<b>1442.18</b>	<b>468.33</b>
<b>B</b>	<b>Variable Cost</b>		
	Ploughing	4801.76	4690.1
	Hiring Laborer	9212.55	7183.28
	Purchasing Seeds	448.78	5452.29
	Planting Seed	1167.40	1428.57
	Irrigating Lands	2486.78	2419.14
	Fencing	14350.22	0
	Applying Insecticides	4611.23	1830.86
	Applying Organic Fertilizer	2344.10	628.1
	Applying Chemical Fertilizer	9076.65	8417.12
	Collecting Vegetables	820.48	134.77
	Transporting Vegetables from- home to market	2092.73	3568.32
	<b>Total Variable Cost (TVC)</b>	<b>51412.66</b>	<b>35752.42</b>
<b>(A+B)</b>	<b>Gross Cost (Total Cost)</b>	<b>52854.84</b>	<b>36220.75</b>

Source: Own survey, 2015

It is considered that except the cost of land use and the interests on operating capital, all the components mentioned are variable costs. The variable costs for producing bean and cauliflower are discussed below.

### Ploughing

Farmers were hired power tiller or animal, sometimes both for land preparation for producing vegetables. Therefore farmers paid the charge for hired power tiller and animal at a fixed rate prevailing in the area. Farmers were paid for ploughing land at BDT. 4801.76 for bean and BDT. 4690.1 for cauliflower.

### Hiring Laborer

Labor was considered the most important input in the production process. Labor is classified in two categories; family labor and hired labor. Family labor consists of the farm operator and other family members and hired labors are those labors that are hired from outside of the family and farmers have to pay for these. In the study area, the average wage rate was BDT. 300 per man per day. For hiring laborers, the farmers usually pay BDT. 9212.55 per hectare for bean and BDT. 7183.28 per hectare for cauliflower

### Purchasing Seeds

In the study area, vegetable farmers use either home grown seeds or purchased seeds. Even there are some farmers who use both home grown and purchased seeds. In case of purchasing seeds, for a one hectare land, the farmers usually spend BDT. 448.78 for bean and BDT. 5452.29 for cauliflower

### Plantation

After land preparation, the farmers need to plant seeds systematically. In the study area, the farmers are usually planting seeds on their own. But sometimes they hire laborers for planting seeds. In that case, they pay BDT. 1167.40 per hectare for bean and BDT. 1428.57 per hectare for cauliflower.

### Irrigation

Irrigation water is an important input for bean and cauliflower cultivation. Per hectare land, the farmers have to incur a cost for irrigation of BDT. 2486.78 for bean cultivation and BDT. 2419.14 for cauliflower cultivation.

### Fencing

Fencing is a must for Bean cultivation, but it is not used in case of Cauliflower. It was found that for fencing the farmers pay BDT. 14350.22 per hectare for Bean cultivation.

### Insecticides

Farmers usually use insecticides to protect selected vegetables (including Bean and Cauliflower) from insect, for insecticides farmers spend BDT. 4611.23 per hectare for bean and BDT. 1830.86 per hectare for cauliflower.

### Organic Fertilizer

Organic fertilizers are used before planting seeds while the land is ploughing. In the study area, farmers generally use oilcake, cow dung and ash as organic fertilizer; oilcake is used in Bean production whereas cow dung and ash are used in both Bean and

Cauliflower production. Farmers spent money to buy oilcake; sometime they paid money for cow dung but they did not pay for ash. For organic fertilizers the farmers paid BDT. 2344.10 per hectare for bean cultivation and BDT. 628.10 per hectare for cauliflower cultivation.

### Chemical Fertilizer

Farmers use different kinds of chemical fertilizers in their vegetables cultivation (TSP, Urea, Muriate of potash, and Gypsum). Per hectare cost for purchasing chemical fertilizers is BDT. 9076.65 for Bean production and BDT. 8417.12 for Cauliflower production.

### Collecting Vegetables

Farmers were usually depended on family labor to pluck/ harvest vegetables from the field, but sometimes they hire laborers to collect the vegetables. It was calculated that for collecting vegetables was BDT. 820.48 for bean and BDT. 134.77 for cauliflower.

### Transportation

In the study area, the three wheelers (Rickshaw and van) are the core means of transportation from home to market; sometime they used van with diesel engine for transporting vegetables. For vegetables transportation purposes, they usually pay BDT. 2092.73 per hectare for bean and BDT. 3568.32 per hectare for cauliflower.

### Return from Vegetables Production

Returns from selected vegetables (i.e. Bean and Cauliflower) are summarized in Table 3. The total lands under bean and cauliflower cultivation were 9.08 hectare and 7.42 hectare, respectively. The total yield of bean and cauliflower were 44580 kgs and 47410 pieces, respectively. The yield of per hectare is 4910 kgs of bean and 6390 pieces of cauliflower. The price of bean at grower's level is BDT. 28.53 per kilogram and it is BDT. 8.6 per piece for cauliflower.

**Table-3: Per hectare Returns of Selected Vegetables**

	Bean	Cauliflower
Land Under Cultivation	9.08 Hectare	7.42 Hectare
Total Yield	44580 kg	47410 pieces
Yield (Per hectare)	4909.69 kg	6390 pieces
Price (BDT Per Unit )	28.53	8.6
C <b>Gross Return or TR</b> (BDT Per hectare)	140073.45	54954
D <b>Gross Cost or TC</b> (BDT per hectare)	52854.84	36220.75
E <b>Gross Margin [TR-TVC*]</b> (BDT per hectare)	88660.78	19201.57
F <b>Net Margin [E- TFC*]</b> (BDT per hectare)	87218.61	18733.24
G <b>Net Margin</b> (BDT per Unit)	17.76	2.93
H <b>Per Unit Cost</b>	10.76	5.66
I <b>Benefit Cost Ratio ** (BCR)</b>	2.65	1.52

\* Please see Table 5.2.1

\*\*Benefit cost ratio is calculated as a ratio of Gross Returns (Total revenue) and Gross Costs (Total cost).  
1. Gross return is known as Total Revenue (TR) and Gross Cost is known as Total Cost (TC)

Source: Own survey, 2015

### **Yield and Gross Return**

Per hectare yield of bean and cauliflower estimated at 4909.69 kgs and 6390 pieces respectively. The Gross return was calculated per hectare at BDT. 140073.45 and BDT. 54954 for bean and cauliflower respectively.

### **Gross Cost (Total Cost)**

In order to calculate the gross costs, the total fixed cost summed with total variable cost. The total fixed costs were per hectare at BDT. 1442.18 and BDT. 468.33 for bean and cauliflower cultivation and the total variable costs were per hectare at BDT. 51412.66 and BDT. 35752.42 for bean and cauliflower respectively. The total gross costs (i.e. Total cost) were per hectare at BDT. 52854.84 for bean production and per hectare at BDT. 36220.75 for cauliflower production.

### **Gross Margin**

Gross margin were found per hectare at BDT. 88660.78 and BDT. 19201.57 from bean and cauliflower production respectively.

### **Net Margin (Per hectare)**

Per unit net margin was calculated by per hectare net margins divided by per hectare yields. Per hectare net margins were found at BDT. 87218.61 and BDT. 18733.24 for bean and cauliflower respectively.

### **Net Margin (Per Unit) and Costs (Per unit)**

Per unit net margin was found at BDT. 17.76 and BDT. 2.93 from bean and cauliflower production respectively and per unit cost was found at BDT. 10.76 and BDT. 5.66 for bean and cauliflower cultivation respectively.

Now, we look on traders' perspective about their costs and return. All calculation of costs and returns of traders are summarized in the Table 4.

### **Costs and Return of Wholesaler (Paikar)**

#### ***Purchase price and Sale price***

The wholesalers purchased bean and cauliflower on average per kg at BDT. 28.53 and per piece at BDT. 8.6 respectively. The sales price was on average per kg at BDT. 34.83 for bean and per piece at BDT. 15.7 for cauliflower.

#### ***Costs and Margin of Wholesaler***

The costs were on average per kg BDT. 2.54 for bean and BDT. 2.35 for cauliflower. The wholesalers (Paiker) received margin on average per kg BDT. 3.75 from bean and per piece BDT. 4.76 from cauliflower.

### **Costs and Return of Intermediate Collector**

#### ***Purchase Price and Sales Price***

The intermediate collectors purchased bean and cauliflower on average per kg BDT. 28.53 and per piece BDT. 8.6 respectively. The sales price was on

average per kg at BDT. 33.9 for bean and per piece at BDT. 18.6 for cauliflower.

#### ***Costs and Margin***

The costs were on average per kg BDT. 2.82 for bean and per piece BDT. 3.52 for cauliflower. The intermediate collectors received margin on average per kg at BDT. 2.55 for bean and per piece BDT. 6.53 for cauliflower.

### **Costs and Return of Agent or Arottdar**

#### ***Purchase Price and Sales Price***

The Agents (Arottdars) purchased bean and cauliflower on average per kg bean BDT. 34.8 and per piece cauliflower BDT. 15.7. The sales price of bean was on average per kg at BDT. 53.83 and the sales price of cauliflower was on average per piece at BDT. 21.70.

#### ***Costs and Margin***

Agents (Arottdar) received margin by trading of bean and cauliflower on average per kg at BDT. 14.93 and per piece at BDT. 3.95 respectively, where costs were on average per kg at BDT. 4.1 for bean and per piece at BDT. 2.1 for cauliflower.

### **Costs and Return of Different Retailers**

#### ***Purchase Price and Sales Price***

The purchase price of retailers in Dhaka city, Tongi Bazar and Narsingdi's Panchsdona Bazaar was on average per kg at BDT. 53.83, BDT. 33.9, and BDT. 28.5 for bean and per piece at BDT. 21.7, BDT. 18.65 and BDT. 8.6 for cauliflower respectively. The sales price of bean was on average per kg at BDT. 81.37, BDT. 72.5 and BDT. 38.25 and per piece of cauliflower was on average at BDT. 32, BDT. 27.5 and BDT. 23.7 respectively.

#### ***Costs and Margin***

The costs of retailers in Dhaka city, Tongi Bazaar and Narsingdi's Panchdona Bazaar were on average per kg at BDT. 2.63, BDT. 2.2 and BDT. 1.25 for Bean and per piece at BDT. 2.60, BDT. 2.25 and BDT. 2.25 for cauliflower respectively. The margin of bean on average per kg at BDT. 24.92, BDT. 36.4 and BDT. 8.47 and the margin of cauliflower was on average per piece at BDT. 7.58, BDT. 6.6 and BDT. 12.9 respectively.

### **Costs and Return of Street Vendor**

The information of cost and returns of street vendor collected from Dhaka city.

#### ***Purchase Price and Sales Price***

The purchase price of street vendor was on average per kg BDT. 53.8 and per piece BDT. 21.7 for bean and cauliflower respectively and the sale price was on average per kg BDT. 64.75 for bean and per piece BDT. 27.13 for cauliflower.

**Costs and Margin (profit)**

The costs of street vendor were on average per kg at BDT. 0.95 for bean and per piece at BDT. 0.70 for cauliflower, and the margin (profit) was on average per BDT. 9.97 and per piece BDT. 4.67 for bean and cauliflower respectively.

The stale vegetable collector purchased cauliflower on average per piece at BDT. 15.5 and the sales price was on average per piece at BDT. 25.50.

**Costs and Return of Stale Vegetable Collector  
Purchase Price and Sales Price**

**Costs and Margin**

The stale vegetable collector spent on average at BDT. 1.25 to buy each unit of cauliflower and received margin on average BDT. 8.7 from each piece cauliflower.

**Table-4: Costs and Return of Different Actors or Players**

Traders	Intermediate Collector		Wholesaler/ Piker		Agent/ Arottdar		Retailers						Street Vendor		Stale Vegetable collector	
	Bean	CF*	Bean	C F	Bean	C F	Dhaka		Tongi Bazar		Narsingdi		Bean	CF	Bean	C F
Study Vegetables	28.53	8.6	28.53	8.6	34.8	15.7	53.83	21.7	33.9	18.65	28.5	8.6	53.8	21.7		15.5
Purchase price (Per unit)	2.82	3.52	2.54	2.35	4.1	2.1	2.63	2.6	2.2	2.2	1.25	2.25	0.95	0.7		1.25
Cost ( Average) (Per Unit)	33.9	18.6	34.83	15.7	53.83	21.7	81.37	32	72.5	27.5	38.25	23.7	64.75	27.13		25.5
Sales price (Average) (Per Unit)	2.55	6.53	3.754	4.76	14.93	3.95	24.92	7.58	36.4	6.6	8.47	12.9	9.97	4.67		8.7
Margin (Per Unit)	1.08	1.53	1.12	1.50	1.38	1.23	1.44	1.30	2.00	1.31	1.28	2.18	1.18	1.21		1.52
BCR** (Benefit Cost Ratio)	*CF indicates Cauliflower															
	**Benefit Cost Ratio is calculated as a ratio of Total Revenue ( Sell price) and Total Cost (Purchase price + Cost)															
	Source: Own survey,2015															

**PROBLEMS AND REMEDIES**

**Problems Faced by Vegetable Farmers**

Through survey of the respondents, it is noticed that the farmers have some factors that are responsible for less production of bean and cauliflower productions.

**Factors behind Decreasing Bean Production**

Vegetable farmers traced some factors that are usually responsible for decreasing bean production during bean cultivation and those factors represented in

Table 5. Majority farmers remarked that their bean production decreased due to fog and cold wave infection in bean plant flowers (about 27 %), 20 % framers remarked that bean production decreased due to bacterial infection on bean flower and leaves, 14 % farmers said that bean leaves became yellowish because of virus infection therefore production decreased, 10 % farmers said that bean production decreased due to low quality seeds and 4% percent farmers said that production decreased due to delayed farming.

**Table-5: Factors of Decreasing Bean Production**

Factors	Percent
1 Fog and cold wave infection on bean flowers	26.7
2 Bacterial infection on bean flowers and leaves	20
3 Delayed farming	3.3
4 Bean leaves yellowish because of virus infection	13.3
5 Low quality seeds	10.0
Total	100.0
Source: Own survey, 2015	

**Factors behind Decreasing Cauliflower Production**

The responsible factors of decreasing cauliflower production are represented in Table 6. Of the total respondent farmers, 17 % of them do not

know about the causes of decreasing Cauliflower production. Forty eight (48) percent farmers said that rain water coagulated in plant root so that plant damaged which resulting less production of

cauliflower, about 40 % farmers said that the production decreased due to low quality seeds and 10

% farmers thought that unfavorable weather was responsible for declining cauliflower production.

**Table-6: Factors of Decreasing Cauliflower Production**

Factors	Percent
1 Unfavorable weather	12
2 Rain water coagulate in the plant root	48
3 Low quality seeds	40
4 Don't Know the cause	16.66
Total	100.0

Source: Own survey, 2015

**Suggestions of Farmers to Increase Vegetable Production**

Some suggestions recommended by farmers to increase bean production are represented in Table 7. About fifty (55) percent farmers recommended that, timely availability of fertilizer and insecticide with a low price can increase bean production, 15 % farmers recommended that provision of weather suit variety can increase the production, 14 % farmers remarked that bacteria blocking medicine can reduce flower drops and eliminates leaf rotten problem; therefore

production will increase, 7 % farmers recommended that availability of good seeds can increase the bean production, 5 % farmers recommended that availability of institutional credit with low interest as a measure of the problems of capital shortage in case of production inputs therefore bean production will increase, 4 % farmers remarked that availability of oil cakes with low price can increase the bean production and 2 % farmers recommended that by doing scientific cultivation training they can enrich their cultivation knowledge and able to increase bean production.

**Table-7: Suggestions of Farmers to Increase Bean Production**

Suggestion	Percent
1 Timely availability of fertilizer and insecticide with low price	55
2 Providing Bacteria blocking medicine	13.4
3 Weather suit variety	15
4 Availability of cheaper oil cakes	3.4
5 Availability of Good seeds	6.66
6 Availability of credit facilities and lower interest can increase the production	5
7 Availability of training about modern cultivation can increase the production	1.6
Total	100

Source: Own Survey, 2015

**Suggestions of Farmers to Increase Cauliflower Production**

Some suggestions remarked by the farmers to increase cauliflower production are represented in Table 8. It was found that, forty (40) percent farmers remarked about availability of fertilizer and insecticide on time with a low price that can contribute to increase cauliflower production, 30 % farmers recommended that if authority provides their weather suit variety then

they will able to increase the cauliflower production, 23 % farmers recommended that availability of institutional credit with low interest as a measure of the problems of capital shortage in case of production inputs therefore bean production will increase and 7 % farmers recommended that by doing scientific cultivation training they can enrich their cultivation process and able to increase bean production.

**Table-8: Suggestions of Farmers to Increase Cauliflower Production**

Suggestion	Percent
1 Timely availability of fertilizer and insecticide and with cheap price	40
2 Weather suit variety	30
3 Availability of credit facilities and lower interest	23.34
4 Availability of training about modern cultivation	6.66
Total	100

Source: Own Survey, 2015

**Problems Faced by Vegetable Traders**

Some problems that faced by vegetable traders while they were trading vegetables are represented in Table 9. About 28 % traders reported

that high transportation cost as a problem to run their trading smoothly, about 27 % traders reported that extortion (police subscription, street extortion and local market extortion i.e. Police demands subscription on

the road while vegetable traders are conveying vegetables one place to another place; Sometime prevalent person demands subscription on the street while traders are transporting vegetables, generally prevalent persons are local political leader and extortionist. Local market extortion means, some local powerful person demands subscription on the behalf of local political groups, it is noted that those powerful person protected by local political leader) arose as a critical problem of their trading , 25% traders reported

that infrastructure (i.e. road, market information, availability of vehicle etc) arose as a problem of their trading and 21% traders reported that political instability arose another critical problem of their trading; during political unrest time vehicle proprietor stopped their vehicles therefore the transportation system has collapsed, as a result vegetable trader could not transport vegetable properly so they had faced a worse and uncertain life.

**Table-9: Problems Faced by Vegetable Traders**

	Factor	Percent
1	High Transportation cost	27.9
2	Infrastructure	24.22
3	Extortion	26.98
4	Political instability	20.90
Total		100.0
Source: Own Survey, 2015		

**Suggestions of Traders to Increase Business**

Some suggestions recommended by vegetable traders to increase their vegetable trading are represented in Table 10. Approximately 41% traders recommended that by developing infrastructure vegetable business can expand, about 38% vegetable traders recommended that with low transportation cost they will able to transport more vegetables therefore their business will enrich (i.e. with low transportation

cost traders will able to transport more vegetable in the market as a result they will able to serve vegetable in low price then their profit will ), 11% of traders suggested that elimination of extortion can able to increase their trade, 11% traders recommended that by developing marketing system can expand the vegetable business (i.e. by transforming the traditional marketing system to commercialize marketing system), especially it was recommended by retailers.

**Table-10: Suggestions of Traders to Increase Business**

	Factor	Percent
1	Low transportation cost	37.84
2	Eliminate extortion	10.82
3	Infrastructure development	40.54
4	Development of marketing system	10.8
Total		100.0
Source: Own Survey, 2015		

**CONCLUSION AND RECOMMENDATION**

**Major Findings of the Study**

Necessary data were collected mainly from primary sources. The calculation under this study suggests that although per unit costs for bean and cauliflower is BDT. 10.76 and BDT. 5.66, respectively, but still the vegetable farmers gain a net margin of BDT. 17.76 per unit of bean and BDT. 2.93 per unit of cauliflower, respectively. On the other hand, intermediate collectors, wholesalers, agent , urban retailer (Dhaka city) and rural retailer (Narsingdi) received net margin from bean per unit BDT. 2.55, BDT. 3.754, BDT. 14.93, BDT. 24.92 and BDT. 8.47 respectively; and net margin from Cauliflower per piece BDT. 6.53, BDT. 4.76, BDT. 3.95, BDT. 7.58 and BDT. 12.90 respectively.

Both farmers and traders reported that they faced some problems while they were farming and trading vegetable. Approximately 27 percent Bean

farmers were remarked that their bean production decreased due to fog and cold wave infection in bean plant flowers and about 34 percent Cauliflower farmers said that their production decreased due to inferior seeds, 40 percent farmers said that rain water coagulated in the roots therefore plant damage as result cauliflower production decreased. Consequently both Bean and Cauliflower farmers recommended a common suggestion that is timely availability of fertilizer and insecticide with a low price can increase bean and cauliflower production. On the other hand, about 28 percent traders reported that high transportation cost was as a problem of their trading and 27 percent traders reported that extortion was as a problem of their trading, consequently they recommended some suggestions for increasing their trading, 38 percent vegetable traders recommended about low transportation cost and 40.54 percent traders recommended that developing infrastructure can helpful to expand their vegetable trading and 10.8

percent traders recommended that by developing marketing system can expand their vegetable business that was especially recommended by retailer.

### **RECOMMENDATIONS**

It is clear from this study, selected winter vegetables are profitable for the farmers as well as traders; it generates income earnings and employment opportunities for the rural people (i.e. farmer). On the basis of the finding of the study, vegetable farmers beard maximum cost but lion share of net margin received by vegetable traders. In addition, farmers get production loss due to some detrimental factors as a result their gross return declined, consequently their net margin more declined. Both farmers (bean & cauliflower) faced a common problem that is inferior seeds. On the other hand, traders faced some problems although it is not significant like farmer's problems, but it is more significant for our marketing system and social norms. A large portion of traders reported that they have faced extortion directly or indirectly. The recommendations or policy implications are constituted from this study on the basis of the findings. Some policy recommendations are given below:

- In order to benefit the farmers more, the concerned authority should ensure an environment, which helps to get good quality seeds with reasonable price at grower's level through government and private channels.
- Government should set up modern cold storage facilities in the vegetable farming areas so that the farmers can store their vegetables to sell those later on at a better price.
- Government should ensure the availability of fertilizer and insecticide at a reasonable price during season.
- Transportation facilities should be improved in the vegetable farming area; therefore the vegetable transportation cost would decrease as a result farmer's profit would increase.
- Government should more emphasize on agriculture research to invent weather-suit variety.
- Government should take actions to eliminate extortion. In addition, some extortion may eliminate by transforming traditional supply chain to commercial supply chain through the expansion of vegetable based agro-industry.
- Farmer's organization should be established that might promote the negotiation power of the farmers; in addition, it might help to face the middle-men and ensuring better return for their produce.
- Government should establish vegetable research lab in vegetable intensive area to support vegetable farmers. It helps to reduce existing problems like fog and cold wave infection, bacterial infection, leaves yellowish problem etc.

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