

## PROFITABILITY, PROBLEMS AND POSSIBLE SOLUTION OF BEAN CONTRACT FARMING IN BANGLADESH

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### ABSTRACT

Contract farming may be solving production and marketing problems of many developing countries which gain importance. To investigate the profitability and problems of contract farming, 120 contract farmers and 180 non-contract farmers were randomly selected from Narsingdi district of Bangladesh. Descriptive statistics were used to analyze the data and conventional cost and revenue analysis were used to investigate the profitability of bean production. Result showed that bean contract farmers had 7.31 years of schooling whereas non-contract farmers had 2.75 years of schooling. Contract farmers got higher prices (Tk. 41.32) for their bean than for the non-contract farmers (Tk. 31.22). Net farm income of contract farmers was Tk. 789677.22/ha, whereas Tk. 457589.30/ha for non-contract farmers. Total 96.67% of contract farmers had verbal commitments with companies for the contract and only 3.33% of contract farmers had written document. Most of the farmers (82.5%) had marketing contract with different companies. 51.67% of contract farmers got cash support from the contract companies and 17.5% of contract farmers got training from different companies. 86.67% of the contract farmers were satisfied for their contract with different companies. Both contract and non-contract bean producing farmers mentioned their problems and they also suggested some solutions to solve their problems. Government monitoring and supervision are necessary to expand contract farming and to solve existing problems of contract farming in Bangladesh.

**Keywords:** contract farming, bean, profitability, price, problems

### INTRODUCTION

Bangladesh is highly densely populated country and total population of Bangladesh is 168.22 million. The growth rate of population of Bangladesh is 1.30 and population density is 1140 person per sq. km (BBS, 2021a). Bangladesh is predominantly an agrarian economy where most of the poor people live in rural areas and reliant on agriculture for their livelihood and food security (Alam *et al.*, 2018). The share of agriculture to GDP is decreasing but still agriculture is important sector in Bangladesh. According to the provisional calculation of BBS, the contribution of agriculture to the GDP in the fiscal year 2021-22 is about 11.50 percent (BER, 2022). Vegetables contain vitamins and minerals and vegetables is common for Bangladeshi meals. Bangladesh is suitable for producing various vegetables (more than 142 types of home-grown and exotic vegetables produced in the country) due to fertile land and environment (BARI, 2017-18). Bangladesh retained 3<sup>rd</sup> position in global vegetables production (FAO, 2017). Total area of vegetable production was 1121618.24 acres and total production was 4729441.73 metric tons (BBS, 2021b).

Contract farming gained importance in many developing countries, facilitating the coordination in modern agricultural supply chains (Mishra *et al.*, 2018). Contract farming is perceived as a strategy for agricultural transformation in developing countries because of its potential to address agricultural marketing and production challenges (Bidzakin *et al.*, 2020). Contract farming will necessarily to emerge when market failure may appears while uncertainty and commodity specificity are high, the trade products that are perishable and difficult to store and transport the products (Soullier and Moustier, 2018; Minot and Sawyer, 2016). Contract farming is an intermediary form of vertical coordination in agricultural production (Hoang, 2021). Contract farming is as an efficient mechanism to link smallholder farmers to high-value supply chains (Nguyen *et al.*, 2015). Allen and Lueck (1995) note that contract farming can be used to manage production and marketing risk and these risks are the

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major risks that smallholder households face in developing and emerging economies. Contract farming is an agreement between farmers and firms in producing and providing agricultural products with a certain price (Eaton and Shepherd, 2001). Contract farming may be either oral or written agreement between growers and buyers or processors (Mulatu *et al.*, 2017). According to Freguin-Gresh *et al.*, (2012), the buyer can be a local or a transnational agribusiness (processor, exporter, retail outlet or shipper), a private plantation, or the local merchants (greengrocers, wholesalers, hawkers, brokers, etc.).

Contract farming has been criticized for agribusiness companies to exploit an unequal power relationship with farmers (Porter and Philips-Howard, 1995; Key and Runsten, 1999 and Singh, 2002). Criticism of contract farming is that the provision of input and a fixed price may be perceived as a disadvantage of contract farming that restricts farmers to accessing better sources of seed, fertilizer, credit, and technical assistance as well as selling in spot markets to obtain a higher price and income (Hoang, 2021). Market failures of contract farming due to the lack of legal enforcement of contracts observed in developing countries (McMillan and Woodruff, 1999; Fafchamps, 1996; Fafchamps and Minten, 2001). Bean is producing all over Bangladesh and it is a common vegetable for all consumers. Total area of bean production was 55076.58 acres and total production was 169655.90 metric tons in Bangladesh (BBS, 2021b).

Previous studies (Hasan *et al.*, 2014; Chowdhuri *et al.*, 2014) found that bean production was profitable in Bangladesh. However, no study investigated bean contract farming and find out contract farmers problems. The present study not only analyzes profitability of bean contract farming but also compare profitability of bean contract farming with non-contract farming. Bean contract farming is an emerging concept in Bangladesh and it is challenging to collect data. It is assume that contract farming assist farmers to market their product as well as ensure quality bean production. Comparing profitability, production problems and find out possible suggestions of contract and non-contract bean producing farmers are the new aspect of this research.

In this context, the study was conducted to investigate the socio-economic characteristics of bean producing contract and non-contract farmers. The research compares the profitability of bean producing contract and non-contract growers. Finally the study highlights major problems and find out possible solution both for contract and non-contract farmers.

## METHODOLOGY

### **Study area and sample**

Narsingdi district is the major vegetable producing area in Bangladesh with available country bean growers. Two Upazila namely Shibpur and Belabo Upazila of Narsingdi district were purposively selected for the present study. These two Upazila were famous for vegetable production and vegetable contract farming. Twelve villages were randomly selected from two Upazila and six villages were randomly selected from one Upazila. A full list of country bean producing farmers was collected from the Upazila agriculture office. Total 1181 bean producing farmers from 12 villages were listed, which served as a sampling framework for the study. First, divide two farmers group as contract and non-contract farmers. Then farmers were randomly selected by using random sampling. Total 120 contract farmers and 180 non-contract farmers were selected from the farmer's list. Finally, 300 country bean producing farmers were selected for the present study. Two pre-tested interview schedules were used for face-to-face data collection. One interview was for contract farmers and another for non-contract farmers. Different questions were asked to the farmers in a systematic and simple way. Data were collected from February to April, 2022 to achieve the objectives.

### **Cost and revenue analysis**

Descriptive statistics were mainly used to analyze the data. The revenues and costs of bean production were calculated for four months. The study used total variable cost, total fixed cost, total cost, total revenues, gross farm income, net farm income, revenues over variable cost and revenues over total cost to calculate profitability. This conventional farm income calculation was used by Hasan and Bai, (2016). Total variable cost was the sum of seed, power tiller, labor, fertilizer, cow dung, organic

fertilizer, pesticides, irrigation and cost for structure including bamboo. Fixed cost constituted by family labor cost, interest on operating capital and land rent. Total cost was the sum of total variable and fixed cost. Gross farm income was the outcome from total variable cost deducted from total revenue. Net farm income was the result from total revenue minus total cost. Revenue over variable cost was the ratio of total revenue and total variable cost and revenue over total cost was the ratio of total revenue and total cost. The interest on operating capital was calculated for four months considering 6.0% interest rate.

### Description of variables

Table 1 describes the variables used for farmer's characteristics and their measurement. Table 2 describes the variables used for production, inputs costs, revenue and their measurement.

**Table 1. Description of variables related with farmers characteristics**

Variables	Measurement
Age	Years
Schooling	Years
Farming experience	Years
Adult household member	Numbers
Household size	Numbers
Total operating land	Decimals
Bean cultivation land	Decimals
Credit amount	Taka
Extension contact	Numbers/Year
Training	Numbers

**Table 2. Description of variables related with production, inputs costs and revenue**

Variables	Measurement
Bean cultivation area	ha
Total production	Kg
Market price	Tk./kg
Seed	kg
Power tiller	Number of operation
Labor	Number
Fertilizer	Kg
Cow dung	Kg
Organic fertilizer	Kg
Pesticide	Liter
Irrigation	Number of operation
Interest on operating capital	four months
Land rent	Tk./ha/season
Average duration of the contract	Year

Note: Tk. means Taka which is the national currency of Bangladesh

## RESULTS AND DISCUSSION

### Personal characteristics of contract farmers and non-contract farmers

Significant t test indicated that there were significant differences between contract and non-contract farmer schooling, bean cultivation land and credit amount. The years of schooling were much higher for the contract farmers (7.31 years) than for non-contract farmers (2.75 years) indicating that educated farmers adopted more contract farming.

**Table 3. Personal characteristics of contract and non-contract farmers**

Items	Contract farmer		Non contract farmer		Mean difference
	Mean	S.D.	Mean	S.D.	T test
Age	45.55	11.97	45.28	12.95	-0.18
Schooling	7.31	2.51	2.75	1.92	-17.78***
Farming experience	20.47	11.71	21.73	12.42	0.88
Adult household member	3.70	1.44	3.72	1.42	0.082
Household size	6.0	1.73	5.86	1.91	-0.67
Total operating land	124.25	69.67	114.02	61.89	-1.33
Bean cultivation land	40.15	34.57	27.94	15.13	-4.17***
Credit amount	24541.67	41262.41	17477.78	26239.43	-1.81*
Number of extension contact	4.95	3.27	4.6	3.20	-0.94
Number of training	0.65	0.47	0.62	0.48	-0.39

Source: Farmer's household survey, 2022

Note: \*\*\*, \*\* and \* indicates significance at the 1%, 5% and 10% levels respectively

The bean cultivation land was higher for the contract farmers (40.15 decimals) than for non-contract farmers (27.94 decimals) imply that contract farmers cultivated more land for bean production. The credit amount was higher for contract farmers (Tk. 24541.67) than for non-contract farmers (Tk. 17477.78) indicating that contract farmers took more loan than non-contract farmers. Contract farmers had 20.47 years of farming experience whereas non-contract farmers had 21.73 years of farming experience. Contract farmers contacted with extension workers 4.95 times/year however contract farmers contacted with extension workers 4.6 times/year indicating that contact farmers more contacted with extension worker.

#### **Cost of bean production for contract farmers in the study area**

Contract farmers used 8.44 kg seed in a hectare of land and average seed price was Tk. 476.83 (Table 4). On average, farmer spent Tk. 11533.68 for power tiller, which was 2.88% of total cost. Farmers

**Table 4. Cost of per hectare bean production for contract farmers in the study area**

Cost items	Price	Total quantity	Total cost (Tk.)	%
Seed	476.83	8.44	4024.44	1.0
Power tiller	467.19	24.68	11533.68	2.88
Labor	-	-	157578.55	39.28
Family labor	506.75	164.17	83193.14	20.74
Hired labor	506.75	146.78	74385.41	18.54
Fertilizers	-	-	23014.81	5.73
Urea	20.13	157.17	3163.83	0.79
Triple Super Phosphate	25.0	310.98	7774.5	1.94
Diammonium Phosphate	34.16	83.77	2861.58	0.71
Muriate of Potash	19.81	104.39	2067.96	0.52
Zinc Sulfate	198.08	16.05	3179.18	0.79
Gypsum	10.30	79.16	815.34	0.20
Boric Acid	203.12	15.52	3152.42	0.79
Cow dung	1.61	6701.67	10789.68	2.69
Organic fertilizer	401.43	80.57	32343.21	8.06
Pesticides	438.10	68.25	29903.88	7.45
Irrigation	394.93	23.65	9343.56	2.33

Cost items	Price	Total quantity	Total cost (Tk.)	%
Cost for structure including Bamboo	-	-	44113.64	10.99
Total variable cost	-	-	322645.45	80.43
Interest	-	-	3226.45	0.80
Land rent	-	-	75265.27	18.76
Total fixed cost	-	-	78491.72	19.57
Total cost	-	-	401137.17	100.0

Source: Farmer's household survey, 2022

used 164.17 man-day family labor and 146.78 man-day hired labor in a hectare of land for bean production. They spent Tk. 83193.14 for family labor and Tk. 74385.41 for hired labor, which was 39.28% of total cost. Farmers used urea, triple super phosphate, diammonium phosphate, muriate of potas, zinc sulfate, gypsum and boric acid in their land. They spent Tk. 23014.81 for different fertilizers, which was 5.73% of total cost. Moreover, they spent Tk. 10789.68 for cow dung, which was 2.69 % of total cost. They used 80.57 kg organic fertilizers and average fertilizers price was Tk. 401.43/kg. They spent Tk. 32343.21 for organic fertilizers which were 8.06 % of total cost. They used 68.25 liters of pesticides and average price of pesticides was Tk. 438.10. They spent Tk. 29903.88 for different pesticides, which was 7.45% of total cost. Irrigation cost was Tk. 9343.56, which was 2.33% of total cost. Cost for structure including bamboo was Tk. 44113.64, which was 10.99% of total cost. Interest on operating capital (four months) was Tk. 3226.45 and land rent cost was Tk. 75265.27. Total variable cost was Tk. 322645.45, which was 80.43% of total cost. On the other hand, total fixed cost was Tk. 78491.72, which was 19.57% of total cost. Total cost of bean production was Tk. 401137.17/ha.

#### Cost of bean production for non-contract farmers in the study area

Non-contract farmers used 8.94 kg seed and they spent Tk. 3873.43 in a hectare of land (Table 5). On average, farmer spent Tk. 12012.04 for power tiller. They spent Tk. 84444.85 for family labor and Tk. 75436.99 for hired labor, which was 38.35% of total cost. They spent Tk. 24247.03 for different fertilizers, which was 5.82% of total cost. Moreover, they spent Tk. 12658.57 for cow dung, which was 3.04% of total cost. They used organic fertilizers and average fertilizers price was Tk. 417.55/kg . Farmers spent Tk. 37663.01 for organic fertilizers which were 9.04% of total cost. They used 74.05 liter of pesticides and average price of pesticides was Tk. 403.46. They spent Tk. 29880 for different pesticides, which was 7.16% of total cost. Irrigation cost was Tk. 10942.29, which was 2.63% of total cost. Cost for structure including bamboo was Tk. 46249.94, which was 11.09% of total cost. Interest on operating capital (four months) was Tk. 3374.08 and land rent cost was Tk. 76024.1. Total variable cost was Tk. 337408.15, which was 80.95% of total cost. On the other hand, total fixed cost was Tk. 79398.18, which was 19.05% of total cost. Total cost of bean production was Tk. 416806.33/ha.

**Table 5. Cost of per hectare bean production for non-contract farmers in the study area**

Cost items	Price	Total quantity	Total cost (Tk.)	%
Seed	433.27	8.94	3873.43	0.93
Power tiller	365.11	32.89	12012.04	2.88
Labor				
Family labor	502.11	168.18	84444.85	20.26
Hired labor	502.11	150.23	75436.99	18.09
Fertilizers	-	-	24247.03	5.82
Urea	20.08	162.56	3264.20	0.78
Triple Super Phosphate	25.08	341.29	8559.55	2.05
Diammonium Phosphate	34.81	88.60	3084.16	0.74
Muriate of Potash	19.92	111.68	2224.66	0.53

Cost items	Price	Total quantity	Total cost (Tk.)	%
Zinc Sulfate	200.11	16.24	3249.78	0.78
Gypsum	10.02	77.01	771.64	0.19
Boric Acid	202.16	15.30	3093.04	0.74
Cow dung	1.61	7862.47	12658.57	3.04
Organic fertilizer	417.55	90.20	37663.01	9.04
Pesticides	403.46	74.05	29880	7.16
Irrigation	313.90	34.85	10942.29	2.63
Cost for structure including Bamboo	-	-	46249.94	11.09
Total variable cost	-	-	337408.15	80.95
Interest on operating capital	-	-	3374.08	0.81
Land rent	-	-	76024.1	18.24
Total fixed cost	-	-	79398.18	19.05
Total cost	-	-	416806.33	100.0

Source: Farmer's household survey, 2022

### Profitability of bean production for contract and non-contract farmers

Significant t test indicated that there was significant difference between contract and non-contract farmer's cultivation area, total production, market price of bean, revenues from selling bean, total revenues, total variable costs, total cost, gross farm incomes, net farm incomes, BCR based on variable cost and BCR based on total cost. Contract farmers cultivated more land (0.162 ha) than the non-contract farmers (0.113 ha) and the difference was significant at 1% level. This indicated that contract farmer used more land than the non-contract farmer for bean production (Table 6). Contract farmers (28574.92 kg/ha) produce more bean than the non-contract farmers (27683.22 kg/ha) and the difference was statistically significant at 1% level. Contract farmers got higher prices (Tk. 41.32) for their bean than for the non-contract farmers (Tk. 31.22) and difference was statistically significant at 1% level. Revenues from selling bean was much higher for contract farmers (Tk. 1180715.69/ha) than the non-contract farmers (Tk. 864270.12/ha) and the difference was statistically significant at 1% level. Non-contract farmers (Tk. 10125.51) got more income from selling used bamboo than the contract farmers (Tk. 10098.7). The total revenue was much higher for the contract farmers (Tk. 1190814.39) than for non-contract farmers (874395.63) and the difference was statistically significant at 1% level. This result indicating that contract farmers got more revenue from selling bean than the non-contract farmers. Total variable cost of non-contract farmers (Tk. 337408.15) was higher than the contract farmers (Tk. 322645.45) and the difference was statistically significant at 5% level. Total cost of non-contract farmers (Tk. 416806.33) was higher than the contract farmers (Tk. 401137.17) and the difference was statistically significant at 5% level. This result indicating that non-contract farmers cost for producing bean was higher than the contract farmers. Gross farm income of contract farmers (Tk. 868168.94) was much higher than the contract farmers (Tk. 536987.48) and the difference was statistically significant at 1% level. Similarly, net farm income of contract farmers (Tk. 789677.22/ha) was much higher than the non-contract farmers (Tk. 457589.3/ha) and the difference was statistically significant at 1% level. This result indicated that contract farmers earn more profit than the non-contract farmers by producing bean in the study area. BCR considering variable cost of contract farmers (3.6) was higher than the non-contract farmers (2.59) and the difference was statistically significant at 1% level. BCR considering total cost of contract farmers (2.96) was higher than the non-contract farmers (2.09) and the difference was statistically significant at 1% level. BCR considering both variable and total cost indicated that bean production was profitable both for contract and non-contract farmers. However, contract farmers earn more profit from their investment for bean production than the non-contract farmers in the study area.



**Table 6. Profitability of bean production per hectare for contract and non-contract farmers**

Particulars	Contract farmers (n = 120)	Non-contract farmers (n = 180)	Mean difference (T-test)
Cultivation area	0.162	0.113	-4.19***
Total production	28574.92	27683.22	-3.15***
Market price	41.32	31.22	-21.86***
Revenues from selling bean	1180715.69	864270.12	-21.99***
Income from selling used bamboo	10098.7	10125.51	0.035
Total Revenues	1190814.39	874395.63	-21.88***
Total variable costs	322645.45	337408.15	2.52**
Total cost	401137.17	416806.33	2.02**
Gross farm incomes	868168.94	536987.48	-22.20***
Net farm incomes	789677.22	457589.3	-22.68***
BCR (Variable cost basis)	3.6	2.59	-17.23***
BCR (Total cost basis)	2.96	2.09	-18.11***

Source: Farmer's household survey, 2022

Note: \*\*\*, \*\* and \* indicates significance at the 1%, 5% and 10% levels respectively

#### Document and pricing method of contract farmers

Majority of the contract farmers (96.67%) had only verbal commitments about the contract and only 3.33% of the farmers had written document about the contract (Table 7). This result showed that contract farmers did not have strong document with different company about the contract. Farmers and company follows different pricing method for fix the bean price. Near about 80% of the farmers agreed to follows spot price and only 6.67% farmers agreed to follow forward price for their produced bean. Sometimes contract farmers (14.16%) agreed to follow fixed price determined by the company. Average duration of the contract between farmers and the company was 1.22 years, indicating that company do not contract with the contract farmers for long duration and they liked to contract for short duration.

**Table 7. Contract farmers document with the companies for the contract and pricing method**

Items	% of farmers
Document	
Only verbal	96.67 (116)
Written	3.33 (4)
Pricing method	
Spot price	79.17 (95)
Forward price	6.67 (8)
Fixed price determined by the company	14.16 (17)
Average duration of the contract	1.22

Source: Farmer's household survey, 2022

Note: Figure in the parentheses indicate number of farmers

#### Contract farmer's types of contract and support got from the companies

Contract farmers followed different types of contract viz. production, marketing and total contract (Table 8). About 17% of the contract farmers followed production contract and 82.5% of the contract farmers followed marketing contract. This result showed that most of the farmers liked marketing contract in the study area. Only 0.83% of farmers followed total contract. Contract farmers got

different types of support from the company. Only 1.67% of the contract farmers got inputs from the company and 51.67% of the contract farmers got cash support from the company. Some contract farmers (38.33%) got advice from the company and 17.5% of the contract farmers got training from the company. Companies marketed the bean with standard packaging and 4.17% of the companies gave packaging support to the contract farmers.

**Table 8. Different types of contract and support got from the companies**

Items	% of farmers
Types of contracts	
Production contract	16.67 (20)
Marketing contract	82.5 (99)
Total contract	0.83 (1)
Different support	
Inputs	1.67 (2)
Cash	51.67 (62)
Advice	38.33 (46)
Training	17.5 (21)
Packaging	4.17 (5)

Source: Farmer’s household survey, 2022

Note: Figure in the parentheses indicate number of farmers

**Satisfaction of contract farmers for their contract**

Most of the contract farmers (86.67%) were satisfied about their contract, indicating that contract farming improving production and marketing problems of the farmers (Table 9).

**Table 9. Satisfaction of contract farmers for their contract**

Items	% of farmers
Satisfied	86.67 (104)
Not satisfied	8.33 (10)
Neutral	5 (6)

Source: Farmer’s household survey, 2022

Note: Figure in the parentheses indicate number of farmers

Only 8.33% of the contract farmers were not satisfied with their contract, indicating that those farmers still faced problem with contract farming. Five percent of the contract farmers gave neutral opinion about the contract in the study area.

**Problems of bean producing contract farmers**

Contract farmers mentioned different types of problems and 64.17% of the contract farmers mentioned that some company did not strictly follow the contract (Table 10). Contract farmers desire training and 56.67 % of the contract farmers did not get training from the company. Contract farmers (76.67%) mentioned that company did not share risk with the farmers. Furthermore, contract farmers (64.17%) mentioned that some company did not give predetermined set price to them. Companies did not give inputs mentioned by 64.17 % of farmers. More than fifty percent contract farmers (53.33%) mentioned that contract farming was not benefited to them. Sometime companies did not take bean from contract farmers (67.5%). Contract farmers also mentioned that weak law enforcement to follow contract by the company. It was difficult to follow contract mentioned by 64.16% of the contract farmers.



**Table 10. Problems of bean producing contract farmers**

<b>Problems</b>	<b>% of farmers</b>
Companies do not follow contract	64.17 (77)
Companies do not give support	68.34 (82)
Companies do not advance cash	85.83 (103)
Companies do not give training	56.67 (68)
Companies do not share risk	76.67 (92)
Companies do not give set price	64.17 (77)
Companies do not give inputs	64.17 (77)
No benefit from contract farming	53.33 (64)
Sometime company do not take bean	67.5 (81)
Weak law enforcement to follow contract	72.5 (87)
Difficult to follow contract	64.16 (77)

Source: Farmer's household survey, 2022

Note: Figure in the parentheses indicate number of farmers

### **Contract farmer's suggestion to solve their existing problems**

Contract farmers gave some suggestions to solve their problems (Table 11). Almost 87% of the contract farmers suggested that the company need to follow the contract. Most of the contract farmers (89.16%) mentioned that they need cash in advance from the company they contracted. Contract farmers (80.83%) need training from the company. Seventy percent of the farmers mentioned that company need to give higher bean price to the farmers in compare to market price, indicating that the higher bean price will give incentive to them. Many contract farmers (71.67%) mentioned that they need inputs supply from the company, which solve farmers input crisis problem. Most of the farmers (92.5%) desired government monitoring for the contract, which compelled to the company to follow the contract properly.

**Table 11. Contract farmer's suggestion to improve existing problems**

<b>Suggestions</b>	<b>% of farmers</b>
Company need to follow the contract	86.67 (104)
Company need to give cash in advance	89.16 (107)
Farmers need training from company	80.83 (97)
Company need to give higher bean price in compare to market price	70.0 (84)
Company need to give inputs to the contract farmers	71.67 (86)
Farmers desire government monitoring for the contract	92.5 (111)

Source: Farmer's household survey, 2022

Note: Figure in the parentheses indicate number of farmers

### **Problems of bean producing non-contract farmers**

Low price of bean (83.89%) was the crucial problem of farmers for non-contract farmers in the study area (Table 12). Most of the non-contract farmers (97.78%) mentioned that price fluctuation of bean was their major problem. High price and unavailability of inputs was the problem of 86.11 % of the farmer. Lack of storage facilities was another problem of the non-contract farmers (77.22%). Almost similar percentage of farmers mentioned that insect and disease damage were their problem. About 63% of the non-contract farmers mentioned that lack of irrigation facility was their problem. High transportation cost was the problem of 72.78% of the farmers. Non-contract farmers (84.45%) also mentioned that lack of marketing facility was their problem, indicating that farmers faced problem to sell their bean in the study area. Lack of capital with low interest rate was the problem of 96.67% of the farmers, indicating that non-contract farmers needed capital for the production of bean in the study area.

**Table 12. Problems of bean producing non-contract farmers**

Problems	% of farmers
Low price of bean	83.89 (151)
Price fluctuation of bean	97.78 (176)
High price and unavailability of inputs	86.11 (155)
Lack of storage facilities	77.22 (139)
Insect damage	87.22 (157)
Disease damage	88.33 (159)
Lack of irrigation facility	62.78 (113)
High transportation cost	72.78 (131)
Lack of marketing facility	84.45 (152)
Lack of capital with low interest rate	96.67 (174)

Source: Farmer's household survey, 2022

Note: Figure in the parentheses indicate number of farmers

### Non-contract farmer's suggestion to solve their existing problems

Non-contract farmers (72.77%) had desire to engage with contract farming (Table 13). Most of the farmers (95.56%) needed capital with low interest rate from different sources, which will solve their capital problem. High price and unavailability of inputs was the problem of non-contract farmers and 85.56 % of the non-contract farmers needed reasonable price and availability of inputs. Farmers needed available market to sell their bean and 74.44 % of the non-contract farmers mentioned that they needed market in the district headquarter. Transportation facility was the problem of contract farmers and 74.44 % of the non-contract farmers needed railway service to transport bean in the study area. Irrigation was important for bean production and 86.11 % of the non-contract farmers need subsidy for electricity and diesel price. Most of the non-contract farmers (90.0%) were needed more facility in the market.

**Table 13. Non-contract farmer's suggestion to improve existing problems**

Suggestions	% of farmers
Farmers want to engage with contract farming	72.77 (131)
Need capital with low interest rate	95.56 (172)
Need reasonable price and availability of inputs	85.56 (154)
Need farmers market in the district headquarter	74.44 (134)
Need railway service to transport bean	74.44 (134)
Need subsidy for electricity and diesel price for irrigation	86.11 (155)
Need more facilities in the market	90.0 (162)

Source: Farmer's household survey, 2022

Note: Figure in the parentheses indicate number of farmers

## CONCLUSION AND RECOMMENDATION

Many farmers are producing bean in Narsingdi district and contract farming is becoming popular. Both contract and non-contract farmers are interviewed to achieve the objectives. The major objective of the study is to investigate the profitability of bean production. This research also identifies farmer's major problems and their suggestions are also documented. The study found that, country bean production is profitable both for contract and non-contract farmers. But country bean production is more profitable for the contract farmers. The research found that most of the farmers have verbal commitment with the companies for the contract. Most of the contract farmers had marketing contract and 51.67% of contract farmers get cash support from the companies. The study found that most of the contract

farmers are satisfied about their contract. Contract farmers faced different problems in the research area. Most crucial problems of contract farmers are contract companies do not advance cash to the farmers and company do not share risk. Contract farmers desire government monitoring for the contract. Contract farmers suggested that contract companies need to follow the contract. Most of the contract farmers suggested that company need to give cash in advance and training to the farmers. On the other hand, price fluctuation of bean and lack of capital with low interest rate are the crucial problem of non-contract farmers. Non-contract farmers suggest different solution to solve their problems. They need capital with low interest rate and they need more facilities in the market.

Based on the existing findings of the study, the following recommendation may be made to increase production and marketing of bean in the study area.

- In case of contract farming, some companies do not follow the contract. It is necessary to have written document of the contract and farmers and companies need to strictly follow the contract.
- Contract farmer's desire cash in advance from the company and company need to distribute cash in advance to the farmers during the bean production.
- Both contract and non-contract farmers need available inputs with reasonable price. They also need training about production and marketing of bean.
- Contract and non-contract farmers need capital with low interest rate and proper initiative must be taken for the institutional credit to the farmers.
- Finally, local agricultural office must monitor farmer's different agricultural contract which will solve different problems of farmers.

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