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Assessment of inputs use pattern and profit margin of organic and inorganic country bean production in Bangladesh

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ABSTRACT

Beans (*Phaseolus vulgaris* L.) are a key vegetable in Bangladesh, valued for their nutritional and economic importance. This study examines inputs use patterns and profitability of organic versus conventional bean farming in Narsingdi district. Data were collected from 100 organic and 100 conventional farmers via structured questionnaires and data were analyzed using descriptive statistics and conventional cost–benefit analysis. Organic farmers relied more on family labor (139.7 labor-days/ha) and manure (2,587 kg/ha), while conventional farmers used more hired labor (180.3 labor-days/ha), synthetic fertilizers, and pesticides. Conventional farming achieved higher yields (9.4 vs. 8.4 tons/ha) and net revenue (Tk. 89,493/ha vs. Tk. 66,598/ha), but organic farming showed greater efficiency in variable-cost utilization (BCR 1.99 vs. 1.86). Including fixed costs, conventional systems were slightly more profitable (BCR 1.30 vs. 1.23) than organic system. Both systems faced high labor costs, price volatility, limited storage, and constrained credit access, while organic farmers additionally struggled with market differentiation. To enhance bean farming sustainability, policy interventions should include affordable credit, improved storage and transport, stable pricing, organic certification, and dedicated markets. Extension support and disease-resistant varieties can further boost productivity. These measures can improve the competitiveness and profitability of organic bean production, supporting both economic and environmental sustainability in Bangladesh.

INTRODUCTION

Vegetables playing a vital role in the daily diet of Bangladeshi people, contributing to food and nutritional security for the country's growing population (Yeasmin, 2016). Additionally, the vegetable sector provides significant employment opportunities, particularly in rural areas. The agricultural sector employs almost 40.0% of the country's workforce while also supplying food for humans and livestock, raw materials for industries, bolstering the rural economy, and preserving ecological balance and it contributes about 12.5% to GDP of Bangladesh (Yunus *et al.*, 2023). Globally, vegetable production has expanded remarkably, reaching 296.17 million tons (FAOSTAT, 2020). As a leading vegetable producer in the developing world, Bangladesh has seen substantial growth in this sector. However, commercial vegetable farming exhibits noticeable production fluctuations (Gudeta and Hordofa, 2018). According to recent data, the total cultivation area and production of summer vegetables in 2023–24 were 477,358.13 acres and 1,585,695.21 metric tons, respectively. In contrast, winter vegetables covered 769,983.34 acres, yielding 3,953,697.24 metric tons (BBS, 2024).

The common bean (*Phaseolus vulgaris L.*), originating in America 8,000 years ago, is now cultivated worldwide as a

staple food, valued for both its seeds and pods (Gudeta and Hordofa, 2018). Recognized as one of the most nutritionally dense vegetables, green bean pods contain approximately 10.0% carbohydrates, 4.11% ash, 5.0% protein, 0.75% lipids, and 0.1% fat (Begum *et al.*, 2023). Additionally, they are rich in essential vitamins (riboflavin, thiamine, vitamin A, and vitamin C) and minerals (calcium, magnesium, sodium, potassium, phosphorus, iron, and sulfur) (Magalingam *et al.*, 2013). Beans also exhibit numerous pharmacological benefits, including antifungal, antidiabetic, anti-inflammatory, antioxidant, antimicrobial, and hepatoprotective properties, and can help combat iron deficiency and anemia (Singh and Sankar, 2012; Al-Snafi, 2017). Moreover, bean cultivation serves as a crucial income source for resource-constrained households (Tekkara *et al.*, 2017).

In Bangladesh, the bean (locally known as 'Sheem') is a popular vegetable, cultivated mainly in the winter (*Rabi*) season, with some additional production during the summer (*Kharif*) season (Biswas, 2015). Hayat *et al.*, (2015) emphasized that beans are a critically important crop for economies and diets in every part of the world. Beans account for a substantial share of the nation's fresh vegetable output and serve as an affordable, protein-rich food source, driving strong consumer demand (Rahman *et al.*, 2022). Furthermore, country beans have emerged as a key export vegetable, creating new opportunities in international markets (Sharmin *et al.*, 2018). However, despite their economic importance, bean yield has declined due to insect and disease damage (Khan *et al.*, 2018; Paul *et al.*, 2016; Mollah *et al.*, 2017). Hasan *et al.*, (2014) identified significant negative correlation between bean farmer's age, education level, training, extension contact, homestead area, and the severity of production problems they encountered.

Farmers in Bangladesh face multiple challenges in bean production, including scarcity of agricultural inputs (fertilizers, pesticides), financial constraints, lack of modern varieties, inadequate storage and extension services, labor shortages, irrigation issues, unfavorable climate, high transportation costs, and volatile market prices (Alam *et al.*, 2018). Despite these obstacles, rising profitability has encouraged many farmers to adopt commercial-scale bean cultivation (Taslim *et al.*, 2021). Weed infestation and pest attacks pose significant challenges to common bean cultivation, particularly in smallholder farming systems (Laizer *et al.*, 2019). Nevertheless, significant variations in productivity persist across farms, highlighting the need for improved cultivation practices (Sibiko and Waluse, 2012).

With rising health consciousness among consumers, demand for organic beans has increased in Bangladesh, prompting farmers to explore organic cultivation. Organic farming is a practice advocated to mitigate the adverse impacts of chemical farming, such as pollution, soil health decline, and ecosystem degradation (Ghosh *et al.*, 2019), and it encompasses social, economic, and environmental dimensions that contribute to improved food security (Morshedi *et al.*, 2017). Despite these benefits, organic farming practice is not prominent in Bangladesh, and a swift transition from conventional farming is unlikely due to greater profitability of conventional farming (Murshed and Uddin 2020). Farmers remain reluctant to transition due to uncertainty over profit margins and the underdeveloped state of the organic product market. Moreover, they are not familiar with organic production methods. According to Farouque and Sarker (2018), this lack of expertise has excluded Bangladeshi farmers from the global organic market, stifled domestic market development, and obstructed progress toward more sustainable systems. Nonetheless, a growing interest in organic food is emerging in Bangladesh, with increasing numbers of both producers and buyers, despite the producer base currently being small (Iqbal, 2015).

Previous studies have examined various aspects of bean production, including cost and profitability, pest and disease management, and production challenges. However, a critical research gap persists, as no study has systematically examined differences in input use patterns and profit margins between organic and conventional bean farming in Bangladesh. To address this gap, this study investigates the differences in inputs utilization (e.g., fertilizers, pesticides, labor) and economic returns between organic and inorganic bean production. Focusing on the Narsingdi district, the research provides insights into the viability and profitability of organic bean farming, offering valuable information for farmers, policymakers, and agribusinesses seeking sustainable agricultural practices.

MATERIALS AND METHOD

Selection of study area

Narsingdi, a prominent agricultural district with high vegetable output and increasing farmer interest in organic practices, was chosen as the study site. Four villages (Khidirpur, Montala, Nayapara, and Charmandalia) in Monohardi upazila were purposively selected for the research.

Selection of samples and sampling techniques

The sample was drawn from a comprehensive list of local farmers obtained from the Upazila Agriculture Office. A stratified random sampling technique was employed to ensure a balanced representation. The four villages served as the primary strata, and within each village, 25 organic and 25 conventional country bean growers were randomly selected. This yielded a final sample of 200 respondents, comprising 100 from organic farming practice and 100 conventional farming practice.

Data collection instrument and data collection period

Primary data were obtained via face-to-face interviews with farmers, employing a pre-tested questionnaire, between February and March 2021. The researcher personally conducted and cleaned the survey data, which were first entered into Excel and later analyzed using STATA 14.

Analytical technique

The study employed descriptive statistics to analyze the data, with profitability assessed using conventional cost and revenue analysis, following the methodology of Hasan *et al.*, (2014) and Hasan and Hu (2016). Key financial metrics included total variable cost, total fixed cost, total cost, total revenue, gross margin, net margin, and benefit-cost ratios (BCR) based on both variable and total costs. For inorganic bean production, variable costs encompassed expenses on seeds, power tiller use, hired labor, fertilizers, pesticides,

manure, irrigation, and bamboo. In contrast, organic production excluded synthetic inputs (fertilizers and pesticides) but included integrated pest management (IPM) costs. Total cost was calculated as the aggregate of variable costs and fixed costs, the latter of which included family labor, interest on operating capital, and land rent.

Interest on operating capital

The interest on operating capital was computed for both farming systems using an opportunity cost approach and incorporated into fixed costs. Given that country bean is a seasonal crop with a four-month production cycle, interest was calculated at an annual rate of 6.0% prorated for the growing period. The calculation followed this formula:

$$I = \frac{TVC \times r \times 4}{2 \times 12}$$

Here

TVC = Total variable cost

r = Interest rate

The analysis assessed production, revenue, and profitability metrics on a per-hectare basis for both organic and conventional country bean farming. Total revenue incorporated income from bean sales as well as proceeds from selling used materials. Profitability measures included gross margin (total revenue minus variable costs) and net margin (total revenue minus total costs). Additionally, two benefit-cost ratios were computed: one comparing total revenue to variable costs, and another comparing total revenue to total costs, providing distinct perspectives on profitability.

RESULTS AND DISCUSSION

Results

Table 1 presents the input use patterns of inorganic and organic bean producers in the study area. Seed usage was similar for both groups, with inorganic producers applying 10.89 kg/ha and organic producers using 10.98 kg/ha. However, labor allocation differed significantly: organic producers relied more on family labor (139.67 labor-days/ha) compared to inorganic producers (86.24 labor-days/ha), whereas inorganic producers utilized more hired labor (180.33 labor-days/ha) than their organic counterparts (125.69 labor-days/ha).

In terms of soil inputs, organic producers applied substantially more manure (2,587.10 kg/ha) than inorganic producers (2,444.79 kg/ha). Conversely, inorganic producers used synthetic fertilizers and pesticides, including 99.79 kg urea, 163.56 kg MoP, 99.79 kg TSP, and 50.07 liters of pesticides per hectare, inputs that were absent in organic bean production.

Table 1: Input use pattern of inorganic and organic bean producer.

Items	Inorganic bean producer		Organic bean producer		Mean difference
	Mean	S.D.	Mean	S.D.	(T test)
Seed (Kg/ha)	10.89	0.71	10.98	0.73	-0.96^{NS}
Tillage (Numbers/ha)	50.97	3.65	50.45	0.78	1.38^{NS}
Family labor (Day/ha)	86.24	36.38	139.67	47.39	-8.94***
Hired labor (Day/ha)	180.33	38.57	125.69	49.12	8.74***
Manure (Kg/ha)	2444.79	113.78	2587.10	215.26	-5.84***
Urea (Kg/ha)	99.79	3.42	-	-	291.69***
MoP (Kg/ha)	163.56	132.01	-	-	12.38***
TSP (Kg/ha)	99.79	3.42	-	-	291.69***
Pesticides (litre /ha)	50.07	0.52	-	-	73.41***
Irrigation per hectare (no.)	65.13	0.64	64.56	0.88	5.16***

Source: Farmer's household survey, 2021
Note: NS means not significant
****, ** and * indicates significance at the 1%, 5% and 10% levels of probability*

Production cost of inorganic and organic bean producer

Table 2 compares the production costs between inorganic and organic bean producers in the study area. Seed costs were almost similar at Tk. 16,147.60/ha for inorganic and Tk. 16,307.29/ha for organic bean production. Power tiller costs showed minimal difference (Tk. 12,977.13/ha inorganic vs Tk. 12,897.85/ha organic). However, significant variations emerged in other cost components: inorganic producers incurred substantially higher hired labor costs (Tk. 90,627.35/ha) compared to organic producers (Tk. 63,091.82/ha), while organic producers spent more on manure (Tk. 14,117.37/ha vs Tk. 12,056.52/ha).

Inorganic production required additional expenditures on synthetic inputs including urea (Tk. 1,953.39/ha), MoP (Tk. 3,282.30/ha), TSP (Tk. 2,673.56/ha) and pesticides (Tk. 7,258.60/ha), whereas organic producers spent Tk. 7,457.76/ha on IPM. Irrigation costs were nearly identical at Tk. 7,628.14/ha (inorganic) and Tk. 7,568.21/ha (organic), while bamboo costs were slightly higher for organic production (Tk. 53,983.39/ha vs Tk. 51,578.17/ha).

Total variable costs were significantly higher for inorganic bean production (Tk. 206,182.75/ha) compared to organic (Tk. 175,423.68/ha). Conversely, fixed costs showed the opposite pattern, with organic production having higher family labor (Tk. 69,767.48/ha vs Tk. 43,305.07/ha) and land use costs (Tk. 27,008.26/ha vs Tk. 25,985.03/ha), resulting in higher total fixed costs (Tk. 98,529.98/ha organic vs Tk. 71,351.93/ha inorganic). Ultimately, the total production costs were remarkably similar at Tk. 277,534.68/ha for inorganic and Tk. 273,953.66/ha for organic bean production.

Table 2: Production cost of inorganic and organic bean producer.

Cost items (Tk./ha)	Inorganic bean producer		Organic bean producer		Mean difference
	Mean	S.D.	Mean	S.D.	(T test)
Seed	16147.60	1471.29	16307.29	1527.74	-0.75^{NS}
Power tiller	12977.13	1104.77	12897.85	614.67	0.62^{NS}
Hired labor	90627.35	19476.73	63091.82	25206.69	8.64***
Manure	12056.52	632.50	14117.37	1368.49	13.66***
Urea	1953.39	139.84	-	-	139.68***
MoP	3282.30	2498.90	-	-	13.13***
TSP	2673.56	151.48	-	-	176.49***
Pesticides/Integrated Pest Management	7258.60	187.02	7457.76	396.63	4.54***
Irrigation	7628.14	124.41	7568.21	112.75	3.56***
Bamboo	51578.17	1615.34	53983.39	3008.45	-7.04***
Total variable cost	206182.75	19545.13	175423.68	25097.85	9.66***
Family labor cost	43305.07	18179.6	69767.48	23514.59	-8.90***
Operating cost interest (6% per season)	2061.83	56.07	1754.24	63.01	2.97***
Land use cost	25985.03	1197.82	27008.26	2852.51	-3.30***
Total fixed cost	71351.93	18076.11	98529.98	23512.78	-9.16***
Total production cost	277534.68	9084.61	273953.66	10586.09	2.56**

Source: Farmer's household survey, 2021
Note: NS means not significant
****, ** and * indicates significance at the 1%, 5% and 10% levels of probability*

Comparison of profit margins between inorganic and organic bean producers in the study area

Table 3 presents the comparative profitability analysis between inorganic and organic bean production in the study area. The total production cost was slightly higher for inorganic bean production (Tk. 277,534.68/ha) compared to organic bean production (Tk. 273,953.66/ha), with this difference being statistically significant. When considering marketing costs, inorganic producers incurred higher transportation cost (Tk. 5,471.03/ha vs Tk. 5,270.48/ha) and other marketing expenses (Tk. 13,206.34/ha vs Tk. 7,644.07/ha), resulting in total production and marketing costs of Tk. 296,212.05/ha for inorganic and Tk. 286,868.20/ha for organic method.

Yield differences were notable, with inorganic production achieving 9.4 tons/ha compared to organic's 8.4 tons/ha. Despite organic beans commanding a slightly higher price (Tk. 38.35/kg vs Tk. 38.03/kg), the inorganic bean production generated significantly higher total revenue (Tk. 359,350.42/ha vs Tk. 325,956.02/ha), with this difference being statistically significant. The gross margin favored inorganic production (Tk. 179,522.58/ha vs Tk. 178,042.45/ha), and this advantage was more pronounced in net margins (Tk. 89,493.29/ha for inorganic vs Tk. 66,597.93/ha for organic).

Benefit-cost ratio analysis revealed substantial difference: while organic production showed better efficiency when considering only variable costs (BCR of 2.01 vs 1.87), inorganic production demonstrated superior revenues when accounting for total costs (BCR of 1.30 vs 1.23). These results collectively indicate that while both production systems are profitable, inorganic bean production generates higher absolute net revenue, whereas organic production shows greater efficiency in variable cost utilization.

Table 3: Profit margin of inorganic and organic bean producer in the study area

Items	Inorganic bean producer		Organic bean producer		Mean difference
	Mean	S.D.	Mean	S.D.	(T test)
Total production cost (Tk/ha)	277534.68	9084.61	273953.66	10586.09	2.56**
Transportation cost (Tk/ha)	5471.03	406.76	5270.48	258.49	4.16***
Other marketing cost (Tk/ha)	13206.34	577.23	7644.07	182.47	91.87***
Total cost (Tk/ha)	296212.05	9329.0	286868.20	10638.13	6.60***
Yield (Kg/ha)	9450.22	909.14	8499.27	473.74	9.27***
Country bean price (Tk./ kg)	38.03	2.25	38.35	1.22	-1.20^{NS}
Revenue (Tk./ha)	359350.42	39029.4	325956.02	21232.81	7.51***
Sales revenue from used materials (Tk./ha)	26354.92	1694.98	27510.11	1085.39	-5.73***
Total Revenue (Tk./ha)	385705.34	39286.3	353466.13	21158.79	7.22***
Gross margin (Tk./ha)	179522.58	43785.31	178042.45	30580.16	0.27^{NS}
Net margin (Tk./ha)	89493.29	39528.73	66597.93	21912.71	5.06***
BCR (variable cost basis)	1.87	0.27	2.01	0.28	-4.13***
BCR (total cost basis)	1.30	0.13	1.23	0.07	4.41***

Source: Farmer's household survey, 2021
Note: NS means not significant
****, ** and * indicates significance at the 1%, 5% and 10% levels of probability*

Problems reported by both inorganic and organic bean producers in the study area

Table 4 presents the key challenges faced by inorganic and organic bean producers in the study area. High labor costs were a major concern, reported by 73.0% of inorganic farmers and 76.0% of organic producers. Low prices during peak harvest season affected 92.0% of inorganic growers and 76.0% of organic producers. Storage facility shortages were reported by 75.0% of inorganic

producers and 56.0% of organic producers, while lack of intermediaries for bean sales was mentioned by 56.0% of inorganic and 58.0% of organic farmers.

Transportation difficulties were more prevalent among inorganic producers (62.0%) than organic producers (39.0%). Similarly, inadequate marketing facilities were reported by 70.0% of inorganic and 61.0% of organic farmers. Limited access to credit affected 51.0% of inorganic and 53.0% of organic producers. Input costs also posed challenges: 82.0% of inorganic farmers noticed high fertilizer prices, while 58.0% of organic producers faced high organic fertilizer costs. Finally, disease-related crop damage was an important issue for 74.0% of inorganic and 78.0% of organic bean growers.

Table 4: Problems mentioned by the inorganic and organic bean producer in the research area.

Problems	Inorganic bean producer (% of total farmers)	Organic bean producer (% of total farmers)
High expenditure on labor	73.0	76.0
Low bean prices during peak harvest season	92.0	76.0
Lack of storage facility	75.0	56.0
Absence of intermediaries for bean sales	56.0	58.0
Lack of transportation facility	62.0	39.0
Lack of marketing facility	70.0	61.0
Lack of credit facility	51.0	53.0
High price of fertilizer/organic fertilizer	82.0	58.0
Heavy losses from disease	74.0	78.0

Source: Farmer's household survey, 2021

Potential solutions reported by inorganic and organic bean growers in the research area

Table 5 presents the potential solutions reported by inorganic and organic bean growers in the research area. A majority of inorganic bean producers (83.0%) emphasized the need for accessible credit with low interest rates, while 67.0% of organic growers shared this concern. Market availability was another key issue, reported by 50.0% of inorganic and 72.0% of organic producers. Additionally, 70.0% of inorganic farmers called for stable bean prices, compared to 50.0% of organic producers. Storage facilities were needed by 57.0% of inorganic growers, whereas 47.0% of organic farmers identified this as a priority. In terms of new technology, 45.0% of inorganic and 53.0% of organic producers expressed a demand for advancements. Transportation was another challenge, highlighted by 65.0% of inorganic and 39.0% of organic growers. Fertilizer pricing was a major concern, with 95.0% of inorganic producers seeking reasonable costs, while 53.0% of organic growers requested subsidies for organic fertilizers. Finally, 60.0% of inorganic farmers desired disease-resistant bean varieties, compared to 40.0% of organic producers.

Table 5: Potential solutions reported by inorganic and organic bean growers in the research area

Possible suggestions	Inorganic bean producer	Organic bean producer
Farmers need available market for their bean	50.0	72.0
Framers need new technology for farming	45.0	53.0
Farmers need storage facility	57.0	47.0
Farmers need availability of credit with low interest rate	83.0	67.0
Ensuring stable price of bean	70.0	50.0
Farmers need available transportation facility	65.0	39.0
Reasonable price of fertilizer /Subsidy for organic fertilizer	95.0	53.0
Farmers need disease resistance variety	60.0	40.0

Source: Farmer's household survey, 2021

DISCUSSION

This study compared input use patterns between organic and inorganic bean growers in the study area. The results showed significant differences in labor and input utilization. Organic bean producers relied more on family labor, whereas inorganic bean growers used significantly more hired labor. Additionally, organic bean growers applied significantly more manure compared to their inorganic counterparts. In contrast, inorganic producers used synthetic fertilizers and pesticides, while organic growers did not use any chemical fertilizers or pesticides.

This study also compared the profit margins of inorganic and organic bean producers in the study area. The results revealed significant differences in cost structures and profitability. Inorganic bean producers incurred significantly higher variable costs, while organic producers faced significantly higher fixed costs. Consequently, the total production cost per hectare was significantly greater for inorganic growers than for organic growers. Despite higher costs, inorganic bean growers generated significantly higher total revenue, leading to a significantly higher net profit margin compared to organic growers. However, the benefit-cost ratio (BCR) analysis, considering total costs, indicated that inorganic bean production was more profitable. These findings suggest that inorganic bean production was more profitable in absolute terms, though organic production demonstrated better economic efficiency relative to variable costs. Additionally, organic growers reported challenges in market differentiation, as their beans were not segregated from inorganic beans, limiting their ability to achieve desired profit margins.

Both organic and inorganic bean growers identified key challenges related to production and marketing, along with potential solutions to address these issues. A major concern shared by all farmers was the high cost of labor in the study area. Additionally, both groups highlighted the problem of low bean prices, which negatively impacts profitability. Access to affordable credit with low interest rates was another common need among growers. However, input costs varied by farming method: inorganic growers emphasized the need for reasonably priced synthetic fertilizers, while organic growers sought more affordable organic fertilizers. Finally, farmers from both groups stressed the importance of having reliable market access to sell their beans effectively.

CONCLUSION AND POLICY RECOMMENDATIONS

The study reveals notable differences in input use, cost structures, and profitability between organic and conventional country bean farming in Monohardi Upazila. While conventional systems currently yield higher net revenue, organic farming demonstrates greater efficiency in variable cost utilization but faces challenges such as lower yields, high labor dependence, and weak market differentiation. Both systems are further constrained by rising labor costs, price volatility, limited access to credit, and inadequate storage facilities.

To improve the viability of bean farming, policymakers should focus on affordable credit schemes, investments in storage and transport infrastructure, and mechanisms for stable pricing. Strengthening extension services to promote integrated pest management and cost-saving organic practices is crucial. Moreover, developing certification systems and dedicated organic markets can enable farmers to capture price premiums, while investments in disease-resistant varieties would help close yield gaps and enhance sustainability.

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Conflict of Interest

The authors declare that there is no conflict of interest to publish this article.

Ethical approval

For this type of research formal consent is not required.

Authorship

Akther H: Conceptualization, methodology, investigation, data collection, writing the original draft and review and editing.

Hasan MR: Supervision, conceptualization, methodology, investigation, writing the original draft and review and editing.

Anny SA: Supervision, review and editing.

Islam MA: Conceptualization, methodology, formal analysis, review and editing.

All Authors are agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

Alam M Z, Islam MS, Kabir MH 2018: Problems faced by the bean farmer in selected areas of Pabna district in Bangladesh. *Research in Agriculture, Livestock and Fisheries*, **5**(1):11–18.

Al-Snafi AE 2017: The pharmacology and medical importance of Dolichos lablab (Lablab purpureus) —a review. *IOSR Journal of Pharmacy*, **7**: 22–30.

Bangladesh Bureau of Statistics (BBS) 2024: *Yearbook of Agricultural Statistics*. Statistics and Informatics Division, Ministry of Planning, Bangladesh.

Begum R, Sharmin S, Mitra S, Akhi K, Deb L, Kamruzzaman M, Khan MA 2023: Production risk and technical inefficiency of bean (Phaseolus vulgaris) cultivation in Bangladesh: Do socio-economic factors matter? *Social Sciences & Humanities Open*, 7, 100418. https://doi.org/10.1016/j.ssaho.2023.100417

Biswas SC 2015: Summer country bean raises farm income in Bangladesh. *World Vegetable Centre* (pp. 3–4), Global Technology Division, Taiwan.

Farouque MG, Sarker MA 2018: Farmers' knowledge and practice of organic vegetable cultivation: A field level study of two villages from Bangladesh. Journal of Agricultural Extension and Rural Development, **10** (5): 99-107. DOI: 10.5897/JAERD2018.0948

Food and Agriculture Organization of the United Nations 2020: *FAOSTAT database*. http://www.fao.org/faostat/en/

Ghosh MK, Sohel MH, Ara N, Zahara FT, Nur SB, Hasan MM 2019: Farmers attitude towards organic farming: A case study in Chapainawabganj district. Asian Journal of Advances in Agricultural Research, AJAAR.49308, **10**(2): 1-7. DOI: 10.9734/AJAAR/2019/v10i230026

Gudeta D, Hordofa 2018: Effect of lime and compost application on the growth and yield of common bean (Phaseolus vulgaris L.). *International Journal of Nutrition Sciences and Food Technology*, 4(7): 54–62.

Hayat I, Ahmad A, Masud T, Ahmed A, Bashir S 2015: Nutritional and health perspectives of beans (Phaseolus vulgaris L.): An overview. *Critical Reviews in Food Science and Nutrition*, **54**(5): 580–592. https://doi.org/10.1080/10408398.2011.596639

Hasan MR, Mutatisse AA, Nakamoto E, Bai H 2014: Profitability of cauliflower and bean production in Bangladesh -A case study in three districts. *Bangladesh Journal of Extension Education*, **26**(1&2): 63–75.

Hasan MR, Bai H 2016: Profitability of tomato production in three districts of Bangladesh. *International Journal of BioResearch*, **21**(6): 1–8.

Iqbal M 2015: Consumer behaviour of organic food: A developing country perspective. International Journal of Marketing and Business Communication, 4(4): 59-68.

Khan AU, Choudhury MAR, Talucder MSA, Hossain MS, Ali S, Akter T, Ehsanullah M 2020: Constraints and solutions of country bean (Lablab purpureus L.) production: A review. *Acta Entomology and Zoology*, **1**(2): 37–45. https://doi.org/10.33545/27080013.2020.v1.i2a.17

Khan AU, Choudhury MAR, Islam MS, Maleque MA 2018: Abundance and fluctuation patterns of insect pests in country bean. *Journal of Sylhet Agricultural University*, **5**: 167–172.

Laizer HC, Chacha MN, Ndakidemi PA 2019: Farmers' knowledge, perceptions and practices in managing weeds and insect pests of common bean in Northern Tanzania. *Sustainability*, 4076, **11**(15): 1-11. https://doi.org/10.3390/su11154076

Magalingam V, Yassin M, Kumar R 2013: Genetic variability and character association in dolichos bean. *SAARC Journal of Agriculture*, **11**(2): 161–171.

Mollah MMI, Rahman MM, Khatun S, Mala M 2017: Insect pest complex of year round country bean (Lablab Perpureus L.) during summer season. *SCIREA Journal of Agriculture*, **1**(1): 186–196.

Morshedi L, Lashgarara F, Hosseini SJF, Najafabadi MO 2017: The role of organic farming for improving food security from the perspective of Fars farmers. Sustainability, 2086, **9**:1-13. doi:10.3390/su9112086

Murshed R, Uddi MR 2020: Organic farming in Bangladesh: To pursue or not to pursue? An exploratory study based on consumer perception. Organic Farming, **6**(1):1–12. DOI: 10.12924/of2020.06010001

Paul M, Hossain MS, Rahman MM, Khaliq QA, Rahman S 2016: Chemodynamics of cypermethrin insecticide in summer country bean ecosystem in Bangladesh. *Research Journal of Environmental Toxicology*, **10** (1): 50-59. DOI: 10.3923/rjet.2016.50.59

Rahman MM, Dash CK, Rahman MM, Hasan MM, Hannan A, Dev S, Mondal MF 2022: Farmers' perceptions and knowledge of country bean (Lablab purpureus L.) insect pests, and diseases, and their management practices, in Bangladesh. *Sustainability*, 13591, 14(20): 1-18. https://doi.org/10.3390/su142013591

Singh R, Sankar C 2012: Screening for anti-diabetic activity of the ethanolic extract of Dolichos lablab leaves. *Medicine*, **1**:177–180.

Sibiko KW, Waluse K 2012: *Determinants of common bean productivity and efficiency: A case of smallholder farmers in Eastern Uganda, Master's Theses 134500*, Collaborative Master's Program in Agricultural and Applied Economics, Egerton University, Kenya.

Sharmin S, Mitra S, Rashid M 2018: Production, yield and area growth of major winter vegetables of Bangladesh. *Journal of the Bangladesh Agricultural University*, **16**(2): 492–502.

Taslim A, Rahman M, Karim M, Sumon M 2021: Financial analysis of country bean in Narsingdi district of Bangladesh. *Asian Journal of Advances in Agricultural Research*, **17**(2): 42–50. https://doi.org/10.9734/ajaar/2021/v17i230194

Tekkara AO, Kumakech A, Otim G, Alexandrina A, Wamani S, Turyagyenda L 2017: Socio economic factors affecting bean production in northern Uganda. *Journal of Advances in Agriculture*, **7**(1): 1009–1014. https://doi.org/10.24297/jaa.v7i1.6027

Yeasmin M 2016: *Problem perceived by the farmers in vegetable cultivation.* Master's thesis, Bangladesh Agricultural University. http://archive.agriculture.bau.edu.bd:8080/handle/123456789/171

Yunus M, Rahman MS, Islam S, Saha M, Foisal MS, Islam MT 2023: Organic and conventional tomato (Solanum lycopersicum) production in Mymensingh district of Bangladesh: A comparative profitability analysis. *Journal of Agriculture, Food and Environment*, **4**(2):16–21. https://doi.org/10.47440/JAFE.2023.4203