



ENDLINE EVALUATION REPORT

Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project

Submitted To:

Society Development Committee (SDC)

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Acronyms

DANIDA	Danish International Development Agency
FGD	Focus Group Discussion
HSC	Higher Secondary Certificate
IFS	Integrated Farming System
IFAD	International Fund for Agricultural Development
KII	Key Informants Interview
MFI	Micro Finance Institute
NGO	Non-Government Organization
PKSF	Palli Karma-Sahayak Foundation
RMTP	Rural Micro-enterprise Transformation Project
ToR	Terms of Reference
VC	Value Chain
VMFH	Vulnerable, Marginal Farming Households

Glossary

Term	Definition
Agroecology	The application of ecological principles to agricultural systems. It integrates environmental and social concepts to create sustainable and resilient food production systems that rely on natural processes.
Biodiversity	The variety of life in a specific habitat or ecosystem includes the diversity of genes, species, and ecosystems.
Cover Cropping	Planting crops (e.g., legumes or grasses) primarily to manage Soil test fertility, water retention, weed growth, and erosion, rather than for harvest.
Ecological Farming	A farming system that seeks to minimize the use of non-renewable resources, chemical inputs (like synthetic pesticides and fertilizers), and negative environmental impact. It focuses on using natural ecological processes.
Ecology	The branch of science that studies the relationships between living organisms, including humans, and their physical environment; it seeks to understand the vital connections between plants, animals, and the world around them.
GAP (Good Agricultural Practices)	A set of principles, regulations, and technical guidelines applied to agricultural production processes, resulting in safe, healthy food that respects the environment and worker welfare.
IPM (Integrated Pest Management)	An ecosystem-based strategy focused on long-term prevention of pests through a combination of techniques, such as biological control, habitat manipulation, and the use of resistant varieties, minimizing the use of chemical pesticides.
Mixed Cropping	The practice of growing two or more crops simultaneously in the same field.
Mulching	The practice of covering the Soil test surface with a layer of material, such as straw, wood chips, or, as used by Mr. Darani, plastic mulch paper.
Organic Matter	The portion of the Soil test that consists of living or dead plant and animal materials in various stages of decomposition (e.g., leaves, compost, manure).
Safe Agriculture	The practice of producing food using methods that minimize the risk of environmental harm and ensure the final product is free from harmful chemical residues, making it safe for human consumption.
Trichoderma	A genus of fungi that is commonly used as a bio-fungicide to control plant diseases and promote plant growth.
Vermicompost	A nutrient-rich, dark, earth-like product of composting using various species of worms, usually red wigglers, to create a mixture of decomposing vegetable or food waste, bedding materials, and castings (worm manure).

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1. EXECUTIVE SUMMARY

The Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project, implemented by the Society Development Committee (SDC) under the Rural Microenterprise Transformation Project (RMTP) with financial assistance from Palli Karma-Sahayak Foundation (PKSF), International Fund for Agricultural Development (IFAD), and Danish International Development Agency (DANIDA), aimed to promote sustainable, safe, and climate-resilient vegetable production practices among smallholder farmers in Bangladesh. The project covered two upazilas in Faridpur District and two upazilas in Rajbari District, engaging around 11,500 farmers across 34 unions. These farmers, organized into producer groups, were supported to adopt ecological farming practices, enhance productivity and profitability, and strengthen market linkages for safe vegetables.

The project was designed to increase vegetable production, profitability, and dietary diversity among smallholder farmers while reducing the use of chemical fertilizers and pesticides.

An endline evaluation was conducted to assess the outcomes, impacts, and overall effectiveness of the sub-project post-implementation. The evaluation aimed to measure changes in production, income, marketing, food security, and women's empowerment, comparing results with the baseline and a control group. A mixed-method approach was used, combining quantitative household surveys with qualitative methods like Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), and case studies. Data were collected from 464 respondents, including 384 project farmers and 80 control group members, providing a comprehensive understanding of project outcomes based on evidence. According to the sampling formula the sample size was calculated 372 but to address any error more 12 HH i.e 3.22% additional HH were surveyed in the project areas. Similarly, the calculated HH number for control were 74 but surveyed 80 which is 1.46% more considering the same reason.

The evaluation findings revealed significant progress in promoting ecological farming and improving the livelihoods of smallholder farmers. Household income increased from Tk. 80,000 to Tk. 82,000 per year, representing a growth of about 25 percent. This increase was driven by higher production, better market prices, and reduced input costs. Farmers produced an average of 1968 kilograms of vegetables per year, a 43 % increase from the baseline. Profit levels rose by approximately 20%, while production costs decreased by around 20% due to the adoption of organic fertilizers and reduced chemical inputs. The Sales of safe vegetables increased by 50%, while 25% more land was brought under ecological farming.

In contrast, the control group experienced minimal changes in income and production, underscoring the impact of project interventions.

A key achievement of the project was the widespread adoption of ecological and safe farming practices. Before the project, very few farmers practiced ecological cultivation. By the endline, 97 percent of participating farmers had embraced ecological methods such as vermicomposting, tricho-composting, mulching, and integrated pest management (IPM). Many farmers also started using bio-pesticides, pheromone traps, and organic manure, leading to improved soil fertility, enhanced water retention, and reduced environmental harm. Approximately 10 percent of farmers conducted soil tests to identify nutrient deficiencies, indicating a significant shift towards scientific farming practices. As a result, farmers reduced their reliance on harmful chemicals and produced healthier and safer vegetables for consumers.

The project also enhanced market linkages and the value chain structure for safe vegetables. About 74% of project farmers established connections with traders, wholesalers, and private sector entities, enabling them to negotiate better prices and secure stable markets. The setup of two aggregation centers in the project area facilitated collective marketing of produce, reducing transportation costs and ensuring consistent sales. Consequently, the sale of safe vegetables increased by approximately 50%, further boosting farmers' income and market presence.

Capacity building played a crucial role in achieving these outcomes. Nearly 95% of farmers received training on ecological farming techniques, soil fertility management, post-harvest handling, and safe input use. The project provided input support to 75 % of participants, including quality seeds, bio-fertilizers, and pest management tools. Technical assistance from the Department of Agricultural Extension (DAE) and project staff enhanced farmers' ability to apply new knowledge effectively.

The project made significant contributions to nutrition and food security. The proportion of households maintaining a balanced diet rose from 44% to 72%, and 89% of households reported year-round food security. Women and children now consume more diversified diets, including vegetables, eggs, milk, and fruits. Awareness of nutrition behavior, food safety, and hygiene practices increased notably among project households.

While women's participation showed positive changes, there is room for improvement in expanding their leadership in producer groups, enhancing access to soil testing services, and strengthening farmers' linkages with national markets and institutional buyers. Although cultural and time constraints limited leadership roles, women increasingly influence household food decisions and are engaged in ecological farming. Entrepreneurial activities created employment for women and youth, especially in land preparation, harvesting, and post-harvest operations, supporting income diversification and local economic growth.

Despite strong loan demand, only about 20% of farmers accessed credit through SDC or other institutions. Loans were mainly taken under the Jagoron, Buniad, Agrosor, and Sufalon categories to finance input purchase, mechanization, and entrepreneurship. Enhanced access to microfinance remains critical for scaling safe vegetable enterprises.

The study recommends ongoing support for gender-inclusive capacity building, soil testing and nutrient management, market infrastructure development, and value chain financing. Future interventions should focus on youth engagement, innovation, and climate-smart agricultural technologies to sustain the project's achievements.

In conclusion, the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project has demonstrated that ecological agriculture can be both environmentally sustainable and economically rewarding. The project's integrated approach to production, marketing, and capacity development offers a replicable model for promoting safe food, healthy soil, and resilient rural livelihoods in Bangladesh. Around 85% of farmers developed market linkages with traders and buyers, enabling fairer prices and reduced dependency on intermediaries. To strengthen collective marketing and improve bargaining power, four (04) Vegetable aggregation points were established, 3 Safe vegetable sales centers, 3 Mobile Safe vegetable sales vans are used to carry the vegetables from the farm gate to the aggregation center. Overall, the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project achieved its objectives of improving farmers' livelihoods, promoting safe and sustainable agricultural practices, and enhancing nutrition security.

2. Indicator Table with Value

Endline Vs Baseline and control group status of the project log-frame

SL #	Performance Indicator	Measurement Unit	Baseline	End-line		Remarks
				Treatment	Control	
1.	The income of 70% entrepreneurs will be increased to a minimum 30%	BDT/Year	137,298	178500-180,000	Minimum	+29.86% from baseline and control
2.	The safe vegetable production of an entrepreneur will be increased 34%.	Kg/ year	6559.9	8526	7347	+ 29.97% from baseline and +13.82% from control
3	The profit of the entrepreneur will be increased	BDT/Year	67,538	82,000	68213	+21.41% from baseline and +16.81% from control
4	30% project participant farmers will add nutritious foods to their daily diet	5+ Food Consumption last 24 hours	44%	72%	68%	40%+ from Baseline and %+ from control
5	The sale of safe vegetables by entrepreneurs will be increased 30%.	Kg/ Farmer	6559.9	9840	7215	+50% from baseline and +36.38 from control
6	The vegetable production cost will be decreased 10%.	Per Decimal	350-450	280-320	0	+20% from baseline and 100% from control
7	Ecological farming for vegetable production will be followed by 70% entrepreneurs	Farmer	0	11155	0	+97% from base line and +100 % from control
8	The farmers will test soil to know the nutrient deficiencies in the soil.	Farmer	0	1,150	0	+10% from baseline and +100% from control.
9	Project farmers will receive inputs for safe vegetable production.	Farmer	0	9,430	0	+ 82 % from baseline and +100% from control
10	Vegetable farmers will develop linkage with market actors.	Farmers	0	14,744	16%	+78% from baseline and +62% from control

11	Farmers will establish linkage with government /Nongovernment organizations or businesses and will exchanges commercial services.	Farmers	0	9,775	18%	+85% from baseline and 67% from control
12	Farmers will receive training on ecological farming	Farmer	0	10,925	0	+95% baseline from and +100% from control
13	Farmers will establish the demonstration plots on high-yielding varieties of vegetables.	Farmers	0	8,855	0	+77% baseline from and 100% from control
14	Farmers will establish 6 safe vegetable outlets	Outlet	0	6	0	+100% from both baseline and control
15	Project staff will receive training	staff	0	10	0	+ 100% from both baseline and 100% control

3. Introduction/Background

Bangladesh has favorable soils and climate for a variety of horticultural crops, including over 100 vegetables, 70 fruits, and 60 spices ^[1]. The country produces approximately 2.9 million MT of vegetables and 4.2 million MT of fruits annually, contributing 19.06% to the crop sector. ^[2] It exports nearly 50,000 MT of fresh horticultural produce to over 20 countries, with the Middle East being the primary destination. ^[3]

The Faridpur and Rajbari districts in central-southwestern Bangladesh have fertile alluvial soils, abundant groundwater, and high biodiversity, supporting intensive cropping. Seasonal flooding enriches the land, making vegetable farming profitable, especially in char areas where winter crops like cabbage, cauliflower, pumpkin, radish, and spinach have benefit-cost ratios above 2.0. With improved access to quality seeds, irrigation, pest management, and market connections, both districts have the potential to expand vegetable cultivation, enhancing food security, incomes, and climate resilience.

Challenges such as waterlogging, poor drainage, limited surface water, lack of stress-tolerant varieties, inadequate credit and inputs, and weak market connections constrain production. While vegetable farming was historically limited to homesteads, it is now expanding due to increasing demand driven by population growth, urbanization, and a growing middle class. To address these issues, the Society Development Committee (SDC) has implemented the Ecology-Friendly Safe Vegetables Production and Marketing Value Chain Sub-Project under the Rural Microenterprise Transformation Project (RMTP), funded by PKSF, IFAD, and DANIDA.

1. Crops and Horticulture (https://rmtp.pksf.org.bd/crops-and-horticulture/?utm_source=chatgpt.com)

2. https://www.adb.org/sites/default/files/publication/534701/dysfunctional-horticulture-value-chains-bangladesh.pdf?utm_source=chatgpt.com

3. https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/1b1eb817_9325_4354_a756_3d18412203e2/2024-06-13-05-41-8d348db80ecf814b6f1876432643639e.pdf?utm_source=chatgpt.com

Agriculture remains a key sector in Bangladesh's economy, contributing 15% of GDP, employing 40.6% of the labor force, and supplying raw materials for agro-industries. Vegetables occupy only 2.56% of the total cropped area, with low yields due to poor seed quality, limited input use, and inadequate

marketing.^[4] Promoting ecological farming (agroecology) can address these challenges sustainably by improving soil health, biodiversity, and water conservation while reducing chemical dependence. This shift can significantly increase productivity, enhance nutrition, and support climate-resilient livelihoods throughout Bangladesh.

4. Rationale of the End Line Evaluation

Agriculture continues to play a central role in ensuring food security, supporting livelihoods, and driving the rural economy in Bangladesh. However, the sector faces challenges such as soil degradation, salinity intrusion, unpredictable rainfall, and excessive reliance on chemical inputs like fertilizers and pesticides. Currently, around 85% of arable land in the country lacks essential nutrients, and the overuse of chemicals is leading to soil fertility depletion, increased production costs, and risks to human health and the environment.

To tackle these issues, the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project, part of the RMTP, has been implemented in Faridpur and Rajbari districts, involving 11,500 farmers in 34 unions. This project promotes sustainable farming practices, including the use of organic inputs, crop rotation, mulching, and integrated pest management, while also strengthening market connections to improve profitability and food safety.

An endline study has been planned to evaluate the project's performance, outcomes, and long-term viability. The study will assess changes in farmers' knowledge, productivity, input usage, income levels, market engagement, and environmental benefits compared to the baseline data. Additionally, the study will capture key learnings and best practices to guide policy discussions and future initiatives focused on expanding ecological and safe vegetable farming practices in Bangladesh through value chain approaches.

5. Objectives of the End Line Evaluation

The endline evaluation is designed to:

- Assess changes in production, sales, profit, and income of participants.
- Explore the specific engagement of women in the project and evaluate the role of women in the decision-making process, including their nutritional intake status.
- Assess the access to microfinance of the backward and forward entrepreneurs
- Assess the employment opportunity created by the entrepreneurs for the small holders
- Evaluate the effectiveness, efficiency, relevance, and timeliness of project interventions.
- Determine the status of project indicators and participant knowledge, attitudes, and practices.
- Map and analyze the vegetable value chain, noting any changes.
- Investigate changes in coordination and collaboration among value chain actors.
- Capture the Project's achievements, challenges, best practices, and key lessons
- Recommendations to improve future project implementation.

4. https://www.sciencedirect.com/science/article/pii/S2772655X24000399?utm_source=chatgpt.com

6. Scope of the End Line Evaluation

The endline evaluation was conducted to comprehensively assess the outcomes, impacts, and effectiveness of the *Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project*

after its implementation period. The primary purpose of the evaluation was to measure changes that occurred as a result of project interventions and to generate evidence that will guide future programming, strategic planning, and policy formulation in value chain development initiatives.

The evaluation was based on the indicators defined in the project's logical framework to assess the nature and extent of changes and impacts that occurred during the project lifecycle. A combination of quantitative and qualitative methods was employed to ensure a comprehensive understanding of the results and outcomes.

The study explored several critical dimensions, including:

- Safe vegetable production change.
- Safe vegetable sale changes.
- Production cost changes.
- Income changes among participating farmers and entrepreneurs.
- Linkages development with service providers
- Soil test coverage for nutrient deficiency identification
- The engagement and empowerment of women within the project.
- The role of women in household decision-making processes, particularly related to food and nutrition.
- Food security status of project farmers.

The evaluation was carried out across project locations in:

- Two upazilas of Faridpur District, covering 18 unions, and
- Two upazilas of Rajbari District, covering 16 unions.

7. Evaluation Methodology

The endline study adopted a comprehensive mixed-methods approach that integrated both quantitative and qualitative research techniques to ensure depth, reliability, and inclusiveness of findings. Active participation of key stakeholders was ensured throughout the evaluation process. Data were collected from both primary and secondary sources to generate a holistic understanding of project outcomes and impacts.

7.1 Secondary Data Collection/Literature Review

Literatures from different secondary sources, like value chain reports, journals, government publications, and newsletters on vegetables, were studied to gain a preliminary understanding of the end market, market segments, and market potential of the value chains. Besides, the key informants for the value chains, different market actors, regulatory, and development stakeholders were also identified through the literature review. The key informants included stakeholders at different levels of the value chains, like government officers, private sector representatives, NGO personnel, and project personnel who are working directly with the project.

7.2 Primary Data Collection

Primary data were collected directly from beneficiaries and stakeholders using a range of tools and participatory methods:

- **Structured Household Surveys:** A total of 464 respondents (384 treatment and 80 control) were surveyed using a digitized questionnaire (developed in English and translated into Bangla) on the KoBo Toolbox platform. The survey ensured accurate, gender-sensitive, and structured data collection.
- **Focus Group Discussions (FGDs):** 34 FGDs were conducted with various participant groups (ultra-poor, poor, non-poor, male, female, and mixed) to capture community-level insights and collective perspectives.
- **Key Informant Interviews (KIIs):** 24 KIIs were carried out with officials from government agencies (e.g., DAE, BARI, SRDI, BINA), private sector actors (input suppliers, traders), progressive farmers, and partner organizations to gather expert knowledge and policy-level insights.
- **Case Studies (Most Significant Change):** 5–7 case studies were documented to showcase transformative changes and highlight qualitative impacts.

7.3 Data Processing and Analysis

Quantitative data were analysed using descriptive statistical techniques through the Kobo Toolbox, while qualitative data were coded and thematically analysed to capture patterns, narratives, and deeper insights. Findings from both approaches were integrated to present a comprehensive picture of the project's performance and impacts.

7.4 Quality Control

Robust quality assurance measures were applied at all stages of the study:

- Use of electronic data collection tools (KoBo Toolbox) to minimize errors and ensure real-time monitoring.
- Regular supervision and remote monitoring by field supervisors and the data analyst to maintain data integrity.
- Enumerator training on study objectives, data collection tools, and ethical considerations.
- Random checks and re-interviews to correct inconsistencies.
- Strict adherence to ethical standards as outlined in the Terms of Reference.

7.5 Quantitative Survey

The total number of project beneficiaries is 11,500

The below-mentioned Cochran standard method has been used for survey size determination:

$$n_0 = \frac{Z^2 p (1-p)}{e^2} = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384.16$$

Parameters:

- Population N=11,500 households
- Confidence level 95% → Z=1.96
- Proportion p=0.5 (max variability)
- Margin of error e=0.05

Finite population correction (adjust for N):

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = \frac{384.16}{1 + \frac{383.16}{11,500}} = 371.8 = 372$$

Result: 372 households (get response from everyone)

In total, data were collected from 364 respondents, including 384 participants from the program group and 80 from the control group.

According to the sampling formula, the sample size was calculated to be 372, but to address any error more 12 HH i.e, 3.22% additional HH were surveyed in the project areas. Similarly, the calculated HH number for control were 74 but surveyed 80 which is 1.46% more, considering the same reason.

7.6 Household Selection Process for Endline Survey

The endline survey was conducted using Stratified Random Sampling for household selection. The goal was to ensure that the collected data accurately reflected the impact of the implemented project across the target population.

A structured questionnaire (designed in English and translated into Bangla administered using KoBo Toolbox to 464 respondents (384 treatment, 80 control). Five trained enumerators completed data collection within 05 days under close monitoring by a data analyst.

7.7 Quantitative Methods

Proportion distribution of Male, Female, and Youth

Name of District	Name of Upazila	Project Population			Sample Size		
		Male	Female	Youth	Male	Female	Youth
Faridpur	Sadar	2300	200	375	77	7	13
	Boalmari	2390	110	375	80	4	13
	Modhukhali	Non-Project Area			61	19	80
Rajbari	Sadar	2100	400	375	71	13	13
	Baliakandi	2250	250	375	76	8	13
Total		9040	960	1500	304	32	50

7.8 Focus Group Discussions (FGDs):

A Total of 35 FGDs with male, female, and mixed groups capture community-level perspectives. One FGD has been collected and conducted in each Union.

Sl. #	District	Upazila	Number of FGD	Remarks
01.	Faridpur	Faridpur Sadar	11	One FGD was conducted in 01 working Union.
		Boalmari	08	
02.	Rajbari	Rajbari Sadar	08	
		Baliakandi	08	

7.9 Key Informant Interviews (KIIs):s

A Total of 28 Key Informant Interviews (KIIs) with district and Upazila level public sectors, private sector, and NGO stakeholders to gather expert insights was conducted.

7.10 Data Analysis & Reporting:

Quantitative data have been analysed statistically using the Kobo Toolbox, while qualitative responses have been thematically coded with proper data cleaning. A draft report will be prepared, shared for feedback, and finalized in accordance with the TOR requirements.

7.11 Tools for Quantitative and Qualitative Data Collection

Quantitative Tools:

- Semi-structured household survey questionnaire (in English and Bangla).
- Mobile-based data collection app (Kobo Toolbox) with skip logic and validation checks.

Qualitative Tools:

- FGD checklist: Tailored for men, women, youth, and mixed groups.
- KII checklist: Designed for government officials, the private sector, and implementing agencies.
- IDI guide: To capture personal experiences of selected entrepreneurs.
- Case study and observation templates: To highlight the most significant changes and contextual insights.

Analytical Methods

Quantitative Analysis: Descriptive and inferential statistics to compare endline results against baseline and control groups. (e.g., mean, frequency, cross-tabulations)

7.12 Consent and ethical consideration:

Before data collection, the consultant secured voluntary consent from participants by clearly explaining the study's purpose, procedures, risks, and benefits in simple terms. Participant confidentiality was strictly maintained, and personal information was not shared without consent. Measures were taken to prevent any physical, emotional, psychological, or social harm, and cultural sensitivities were respected to avoid offense. Participation was entirely voluntary, free from coercion, and conducted with neutrality and objectivity to minimize bias. Ethical approval from participants was obtained before initiating the study.

8. Quantitative Study: Household Data Collection

8.1 Demographic Information

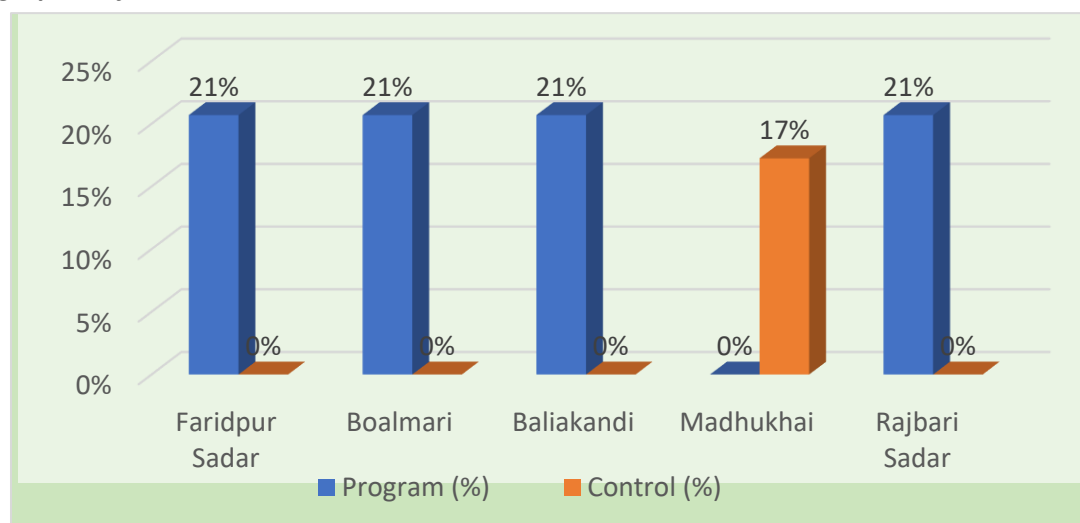


Figure-01: Upazila-wise Data Collection Information from both the Program and Control Groups.

The chart shows the percentage distribution of farmers in program and control groups across five Upazilas. In Faridpur Sadar, Boalmari, Baliakandi, and Rajbari Sadar, 21% of farmers are in the program group, with no project farmers in the control group. In Madhukhai, 17% of farmers are in the control group, while none are in the program group.

8.2 Occupation of Farmers

Table01: Occupation of Farmers in both Program and Control Groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Agriculture farming	351	91%	72	90%
Housewife	30	8%	6	8%
Job	0	0%	1	1%
Business	0	0%	1	1%
Fisherman	1	0%	0	0%
Shopkeeper	1	0%	0	0%
Driver	1	0%	0	0%
Total	384	100%	80	100%

Table 01 illustrates that the majority of farmers in both the program (91%) and control (90%) groups are engaged in agriculture. A small proportion are housewives, while very few are involved in jobs, business, or other occupations.

8.3 Gender Ratio of Farmers

Table 02: Gender Ratio of Farmers in both Program and Control Groups

Gender	Program, Group		Control Group	
	Number	Percentage	Number	Percentage
Male	283	74%	60	75%
Female	101	26%	20	25%
Total	384	100%	80	100%

In Table 02, both groups, the majority of farmers are male (74% in program, 75% in control), while females represent about one-fourth (26% and 25%).

8.4 Pregnant and Lactating Mother

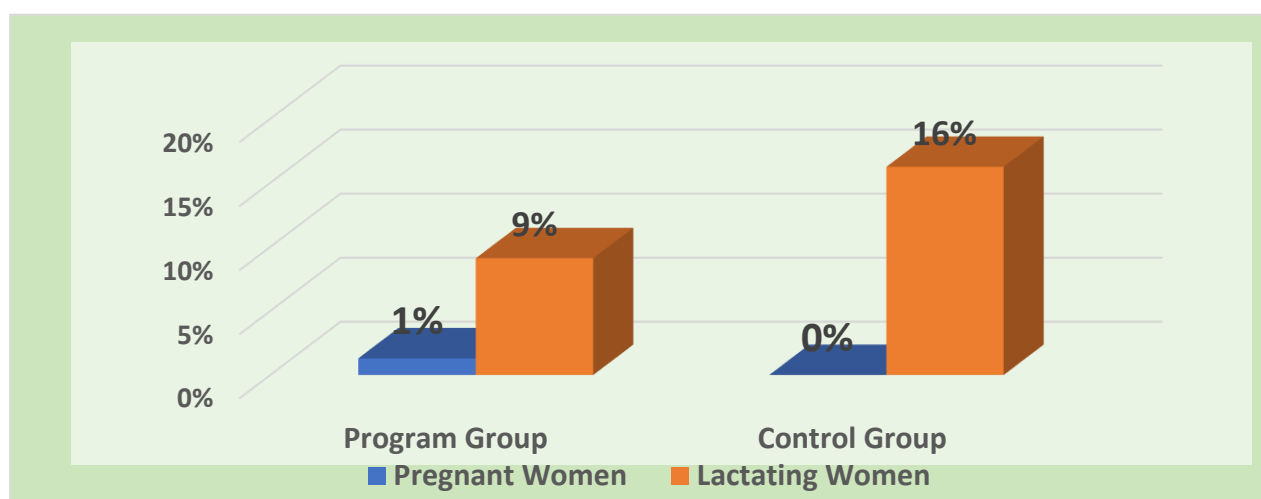


Figure 02: PLW in both Program and Control Farmers' Households

Figure 02 shows that, in the program group, 1% of women are pregnant and 9% are lactating, while in the control group, no pregnant women were reported, but 16% are lactating.

8.5 Households with More than Five (>5) Children

Table03: Status of Households with More than Five (>5) Children among Farmers in both Program and Control Groups.

>5 Child at home	Program Group		Control Group	
	Number	Percentage	Number	Table 10
0	0	0%	10	13%
1	70	18%	15	19%
2	249	65%	33	41%
3	50	13%	16	20%
4	10	3%	5	6%
5	5	1%	1	1%
Total	384	100%	80	100%

Table-03 shows that most households have 2–3 children in both groups (65% in program, 41% in control for 2 children; 13% and 20% for 3 children). A small share has 4 or more children, while 13% of control households reported no children.

8.6 Under-Five (<5) Child Status

Table04: Under-Five (<5) Child Status of Farmers' Households in both Program and Control Groups.

No Child at home	Program Group		Control Group	
	Number	Percentage	Number	Percentage
0	261	68%	49	61%
1	104	27%	27	34%
2	16	4%	3	4%
3	3	1%	1	1%
Total	384	100%	80	100%

Table-04 shows, most households reported no under-five children (68% in program, 61% in control). Around one-fourth had one child, while very few had two or more.

8.7 Disabled Members in Farmers' Households

Table05: Number of Disabled Members in Farmers' Households in both Program and Control Groups

Disabled at Home	Program Group		Control Group	
	Number	Table 12	Number	Percentage
0	373	97%	80	100%
1	8	2%	0	0%
2	1	0%	0	0%
5	1	0%	0	0%
6	1	0%	0	0%
Total	384	100%	80	100%

Table-05 shows that nearly all households reported no disabled members (97% in program, 100% in control), with only a few program households having one or more

8.8 Involvement in the Project:

Table 06: Form of farmers' involvement in RMTP project

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Farmers	370	96%		
Small and Medium Entrepreneur	1	0%		
Local Service Provider	5	1%		
Others	8	2%		
Total	384	100%		

Tables-06 shows, the majority of participants in the program group (96%) were directly engaged as farmers under the RMTP project. A very small proportion were involved as small and medium entrepreneurs (0%), local service providers (1%), or in other roles (2%). In the control group, no respondents reported involvement in any of these categories.

8.9 Safe Vegetables Production and Farm Management:

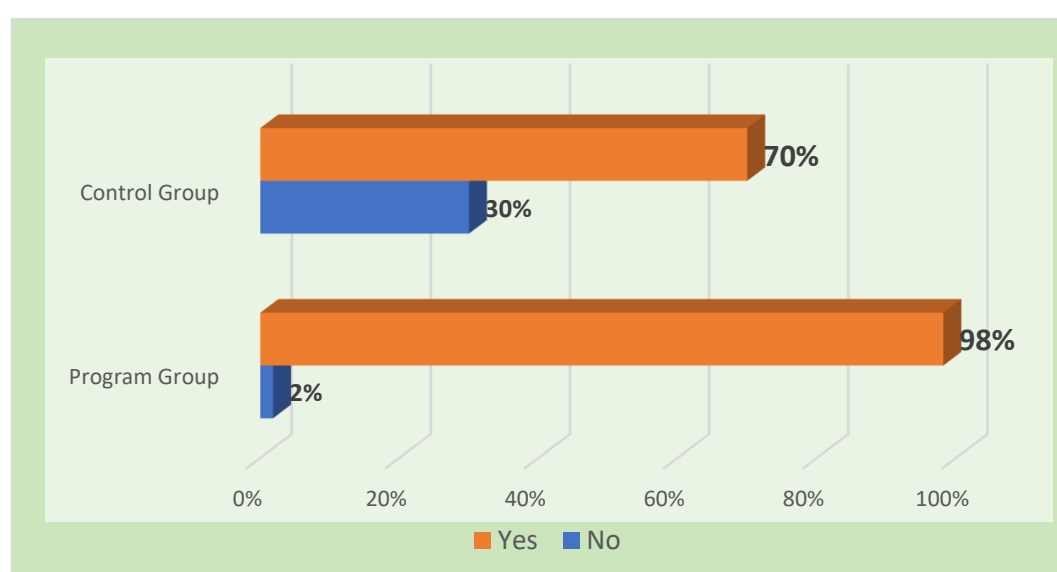


Figure-03: Knowledge of farmers on safe vegetable production in both program and control groups

Figure-03 Shows, most program group farmers reported knowledge of safe vegetable production, while awareness was much lower in the control group.

8.10 Safe farming practices and production increase status

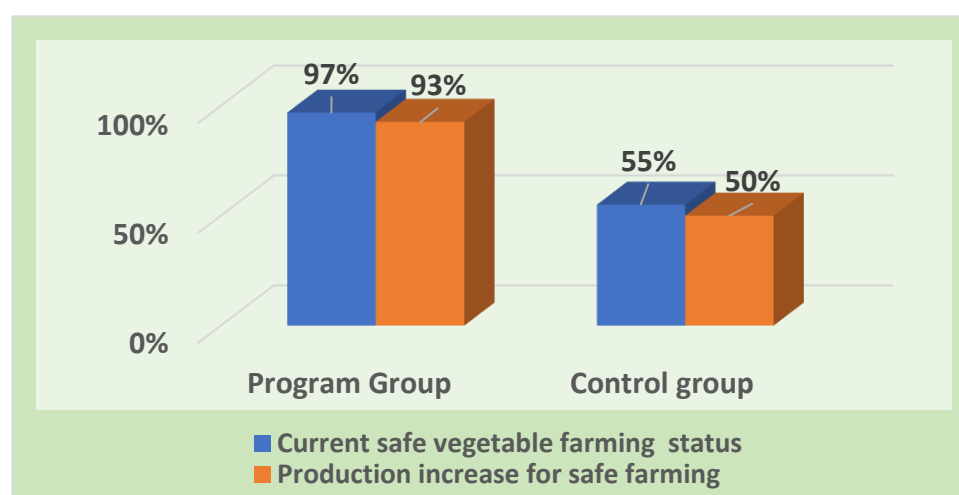


Figure-04: Safe farming practices and production increase status for safe vegetables

Figure-04 illustrates the adoption of safe farming practices and the resulting increase in vegetable production among farmers in both the program and control groups. The figure highlights that farmers in the program group demonstrated higher implementation of safe farming techniques (97%) and experienced greater production increases (55%) compared to those in the control group.

8.11 Percentage increase in safe vegetable production

Table07: Percentage increase in safe vegetable production among farmers in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
>50%	2	1%	0	0%
50%	192	50%	11	14%
30	33	9%	9	11%
20	142	37%	48	60%
Others	15	4%	12	15%
Total	384	100%	80	100%

Table-07 shows the percentage increase in safe vegetable production among farmers. In the program group, most farmers (50%) reported a 50% increase, with 37% achieving 20% or more, whereas the control group mostly reported a 20% increase (60%) and had fewer farmers achieving higher gains.

8.12 Percentage of income increase for farmers

Table 8: Percentage of income increase for farmers due to cost reduction from implementing the RMTP project in the program group

Particulars	Program Group	
	Number	Percentage
0-10%	224	58%
11-25%	95	25%
26-50%	22	6%
Did not increase income	43	11%
Total	384	100%

Table 08 presents the percentage of income increase for farmers in the program group due to cost reduction from implementing the RMTP project. The majority of farmers (58%) reported a modest income increase of 0–10%, 25% experienced an 11–25% increase, and 6% achieved a 26–50% rise in income. Meanwhile, 11% of farmers reported no income increase. Overall, the table indicates that the RMTP project contributed to income growth for most farmers, with the majority seeing small to moderate gains.

8.13 Status of profit increase from safe production

Table 09: Status of profit increase from safe production among farmers in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	33	9%	28	35%
Yes	351	91%	52	65%
Total	384	100%	80	100%

Table 09 shows that a large majority of farmers in the program group (91%) reported increased profits from safe vegetable production, compared to 65% in the control group.

8.14 Percentage (%) of profit increase

Table 10: Percentage (%) of profit increase from safe production among farmers in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
10%	202	53%	62	78%
20%	72	19%	1	1%
30%	95	25%	0	0%
>30%		0%	0	0%
Others	16	4%	6	8%
Don't Know	0	0%	11	14%
Total	385	100%	80	100%

Table 10 presents the percentage of profit increase from safe vegetable production among farmers in both the program and control groups. In the program group, the majority of farmers (53%) reported a small profit increase of 0–10%, while 19% achieved a 10–20% increase, 25% reported 20% growth, and 25% reported 30% growth. Only 1 farmer (0%) experienced more than a 30% increase. In contrast, most farmers in the control group (78%) reported a 0–10% increase, with very few achieving higher profit gains. Additionally, 14% of control group farmers were uncertain about their profit increase, compared to none in the program group. Overall, the table indicates that while both groups mostly saw modest profit increases, the program group had a higher proportion of farmers achieving substantial gains.

8.15 Number of farmers benefiting from entrepreneurs (Both Backward and Forward, input sellers and safe vegetable buyers)

Table 11: Number of farmers benefiting from entrepreneurs in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	81	21%	63	79%
Yes, part-time	299	78%	17	21%
Yes, Full Time	4	1%	0	0%
Total	384	100%	80	100%

Table 11 shows that most farmers in the program group (78%) benefited part-time from entrepreneurs, with a few full-time (1%), whereas the majority in the control group (79%) did not benefit.

8.16 Number of farmers from government and private institutions

Table 12: Number of farmers benefiting from government and private institutions in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Partially	284	74%	25	31%
yes, any time	60	16%	0	0%
No	40	10%	55	69%
Totals	384	100%	80	100%

Table 12 shows that most farmers in the program group (74%) partially benefited from government and private institutions, with 16% benefiting fully, while the majority of control group farmers (69%) did not benefit.

8.17 Status of farmers on safe vegetable processing

Table 13: Status of farmers on safe vegetable processing in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	20	5%	15	19%
Yes	364	95%	65	81%
Total	384	100%	80	100%

Table 13 shows that most farmers in the program group (95%) practiced safe vegetable processing, compared to 81% in the control group.

8.18 Status of farmers' knowledge and factors affecting food processing

Table 14: Status of farmers' knowledge and factors affecting food processing in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Technology, materials, and nutrition-rich production	85	22%	9	11%
Nutrition-rich processing	29	8%	4	5%
Highest use of technology and nutrition	60	16%	13	16%
all above	210	55%	41	51%
Total	384	100%	67	84%

Especially the Tomato growers, and also the women farmers collect tomatoes, produce tomato sauces, and tomato ketchup. Women farmers also make 'Kumro Bori' with floor and pumpkin to sell in the local market, and also for their own consumption.

Table 14 presents the status of farmers' knowledge and the factors affecting food processing in both program and control groups. In the program group, 22% of farmers were aware of technology, materials, and nutrition-rich production, 8% focused on nutrition-rich processing, and 16% emphasized the highest use of technology and nutrition. More than half (55%) had knowledge encompassing all these factors. In the control group, 11% of farmers were aware of technology, materials, and nutrition-rich production, 5% focused on nutrition-rich processing, and 16% emphasized the highest use of technology and nutrition. Around 51% of control group farmers had knowledge of all these factors. Overall, the table indicates that farmers in the program group generally had a higher level of comprehensive knowledge related to food processing compared to the control group.

8.19 farmers on sourcing seeds and technology

Table 15: Status of farmers on sourcing seeds and technology in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Entrepreneurs and Company representatives	7	2%	1	1%
Entrepreneur and hat bazar	90	23%	0	0%
Company representative	37	10%	0	0%
Hat bazar	250	65%	79	99%
Total	384	100%	80	100%

Table 15 shows the status of farmers on sourcing seeds and technology in both program and control groups. In the program group, 65% of farmers sourced seeds and technology from local hat bazars, 23% from a combination of entrepreneurs and hat bazars, 10% from company representatives, and 2% from entrepreneurs and company representatives. In contrast, nearly all control group farmers (99%) relied on hat bazars, with only 1% sourcing from entrepreneurs and company representatives. This indicates that program group farmers had more diverse sources for seeds and technology, while control group farmers primarily depended on traditional local markets.

8.20 Farmers having access to nurseries

Table 16: Status of farmers having nurseries for quality sapling production in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	206	54%	63	79%
Yes	178	46%	17	21%
Total	384	100%	80	100%

Table 16 shows that 46% of farmers in the program group had access to nurseries to buy quality saplings, compared to only 21% in the control group.

9. Composting/Organic farming:

9.1 Number of farmers using different types of organic compost

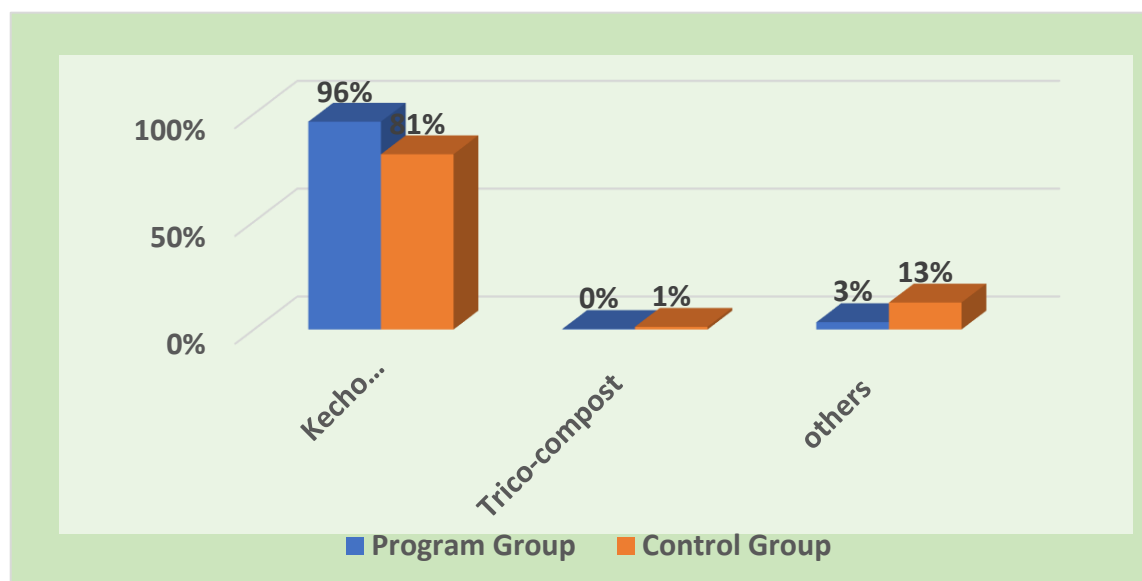


Figure-05: Number of farmers using different types of organic compost in both program and control groups

Figure-05 illustrates the number of farmers using different types of organic compost in both program and control groups. The figure highlights the variety and adoption levels of organic compost among farmers. In the program group, a larger proportion of farmers used self-produced compost, market-bought compost, or compost provided by entrepreneurs, indicating active adoption of diverse organic fertilization practices. In contrast, the control group relied mostly on market-bought compost, with fewer farmers producing their own or accessing compost through entrepreneurs.

9.2 Source of Organic Fertilizer

Table 17: Source of Organic Fertilizer in both Program and Control Groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Collect from Entrepreneurs	13	8%	5	4%
Self-production	283	74%	44	55%
Buying from the market	88	23%	22	28%
Total	384	100%	71	89%

Table 17 presents the sources of organic fertilizer among farmers in both program and control groups. In the program group, the majority of farmers (74%) produced organic fertilizer themselves, 23% purchased it from the market, and a small portion (3%) collected it from entrepreneurs. In the control group, 55% of farmers self-produced organic fertilizer, 28% bought it from the market, and 6% collected it from entrepreneurs. Overall, the data indicate that program group farmers relied more on self-production of organic fertilizer compared to the control group, highlighting greater initiative and adoption of sustainable practices among program participants

9.3 Number of farmers receiving modern and high-value technology from the project

Table 18: Number of farmers receiving modern and high-value technology for production in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Partially	299	78%	16	20%
No	24	6%	60	75%
Yes, fully	61	16%	4	5%
Total	384	100%	80	100%

Table 18 shows that most farmers in the program group (78%) partially received modern and high-value technology, with 16% fully receiving it, while the majority of control group farmers (75%) did not receive such technology.

Benefit from the project:

9.4 Status of farmers on improved agricultural practices

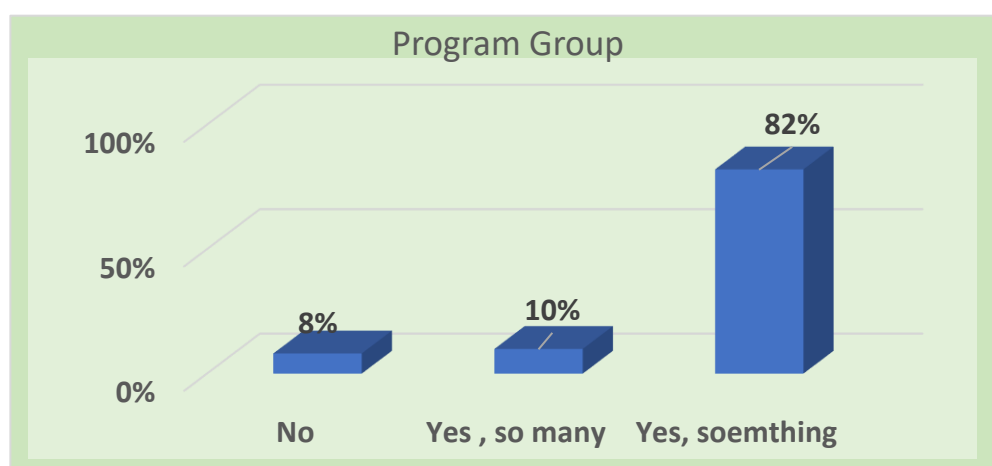


Figure-06: Status of farmers on improved agricultural practices for implementing the RMTP project

Figure-06 shows that farmers in the program group largely adopted improved agricultural practices (82%) promoted by the RMTP project

9.5 Percentage of Cost Reduction for Farmers Due to Implementation of the RMTP Project

Table 19: Percentage of Cost Reduction for Farmers Due to Implementation of the RMTP Project in the Program Group

Particulars	Program Group	
	Number	Percentage
0-10%	196	51%
11-25%	133	35%
26-50%	13	3%
Did not reduce	42	11%
Total	384	100%

Table 19 presents the percentage of cost reduction for farmers in the program group due to the implementation of the RMTP project. A majority of farmers (51%) experienced a modest cost reduction of 0–10%, while 35% achieved a reduction of 11–25%, and 3% benefited from a larger reduction of 26–50%. Meanwhile, 11% of farmers reported no cost reduction. Overall, the data indicate that the RMTP project helped most farmers reduce production costs, with the largest proportion experiencing small to moderate savings.

9.7: Percentage of sales increase

Table 20: Percentage of sales increase for farmers due to the implementation of the RMTP project in the program group

Particulars	Program Group	
	Number	Percentage
Yes, so many	32	8%
No	13	3%
Yes, something	339	88%
Total	384	100%

Table 20 shows that most farmers in the program group (88%) reported some increase in sales due to the RMTP project, 8% experienced a significant increase, and 3% saw no increase.

9.8: Percentage of labor cost reduction

Table 21: Percentage of labor cost reduction for farmers due to implementation of the RMTP project in the program group

Particulars	Program Group	
	Number	Percentage
0-10%	273	71%
11-25%	54	14%
>25%	1	0%
Did not change	56	15%
Total	384	100%

Table 21 presents the percentage of labor cost reduction for farmers in the program group due to the implementation of the RMTP project. A majority of farmers (71%) experienced a modest reduction of 0–10% in labor costs, 14% achieved a 11–25% reduction, and only 1 farmer (>0%) experienced more than a 25% reduction. Meanwhile, 15% of farmers reported no change in labor costs. Overall, the table indicates that the RMTP project helped most farmers reduce labor expenses, primarily resulting in small cost savings.

9.9 Status of the economic challenges of farmers

Table 22: Status of economic challenges of farmers in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Production cost	85	22%	5	6%
Marketing cost	169	44%	65	81%
Labor cost	21	5%	2	3%
Timely allocation of money	109	28%	8	10%
Total	384	100%	80	100%

Table 22 shows the economic challenges faced by farmers. In the program group, marketing cost (44%) and timely allocation of money (28%) were the main challenges, while in the control group, marketing cost was the dominant challenge (81%).

9.10 Percentage of farmers addressing the environment

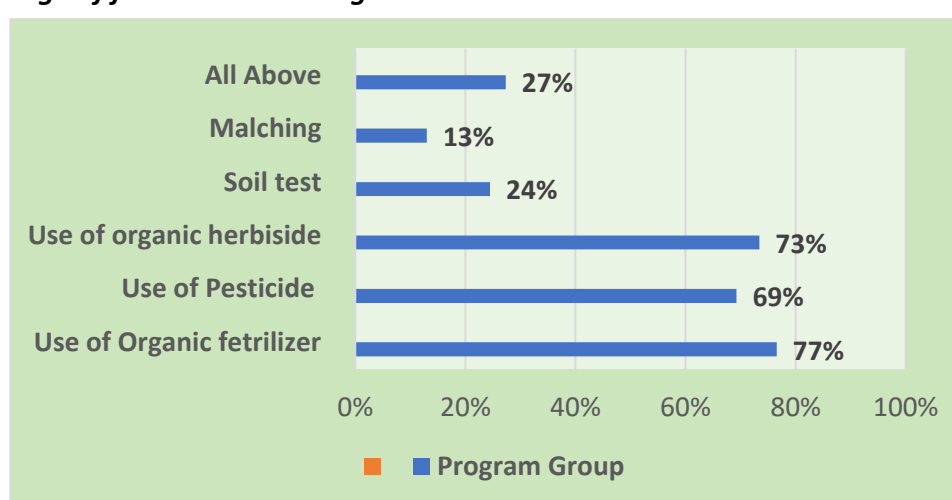


Figure-07: Percentage of farmers addressing environment-friendly issues through the project

Figure-07 presents the percentage of farmers addressing environment-friendly issues through the RMTP project. In the **program group**, a high proportion of farmers actively engaged in environment-friendly practices such as proper organic fertilizer (77%), herbicides (73%), pesticides (69%), Soil test (24%), and mulching (13%).

9.11 Percentage of farmers receiving services

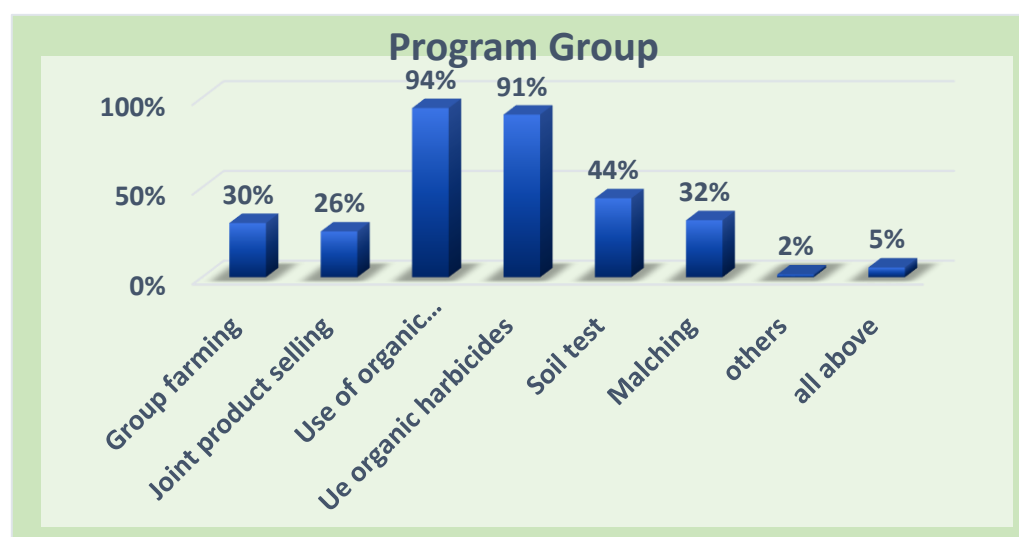


Figure-08: Percentage of farmers receiving services from the project

Figure-08 illustrates the adoption of various agricultural practices among farmers. The most widely adopted practices are the use of sticky board, pheromone trap (94%), and the use of organic fertilizer (vermicomposting 91%), indicating a strong preference for eco-friendly inputs. Soil test testing is practiced by 44% of farmers, reflecting moderate engagement in Soil test health monitoring. Activities such as group farming (30%), mechanization (32%), and joint product selling (26%) show moderate participation, suggesting partial adoption of collective and advanced production strategies. The least adopted practices are “all above” (5%) and “others” (2%), indicating minimal involvement in combined or alternative practices.

9.12 Percentage of farmers receiving services

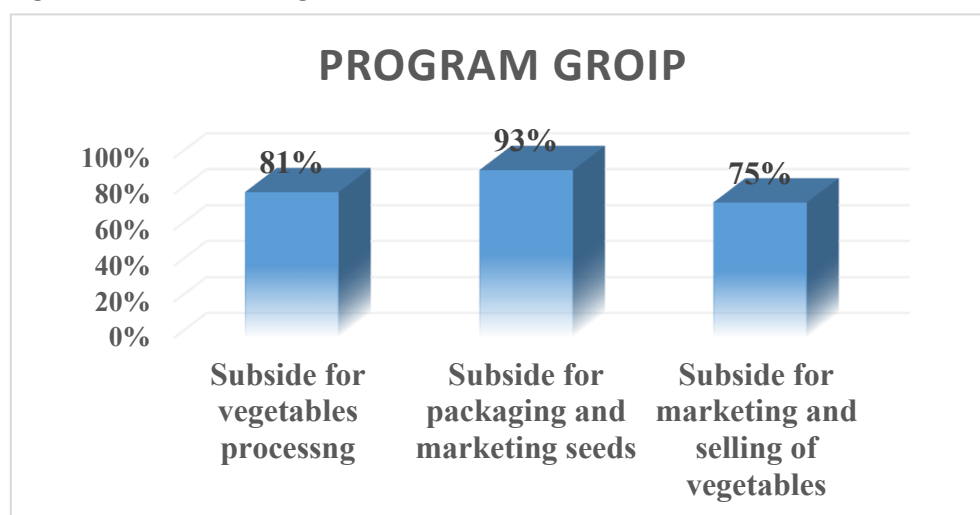


Figure-09: Number of farmers receiving subsidies for processing, packaging, and marketing of seeds and vegetables

Figure-09 illustrates the percentage of farmers receiving subsidies under different categories related to vegetables and seeds. Among the categories, the highest proportion of farmers (93%) received subsidies for packaging and marketing of seeds, highlighting strong support in this area. Next, 81% of farmers benefited from subsidies for vegetables processing, while only 75% received subsidies for selling and marketing vegetables. Overall, the figure indicates that subsidies are primarily targeted toward packaging activities, with relatively lower support for marketing and selling. This suggests that while production-related support is strong, there is room to enhance assistance in market-oriented activities to further improve farmers' income and outreach.

9.13 Percentage of farmers receiving services

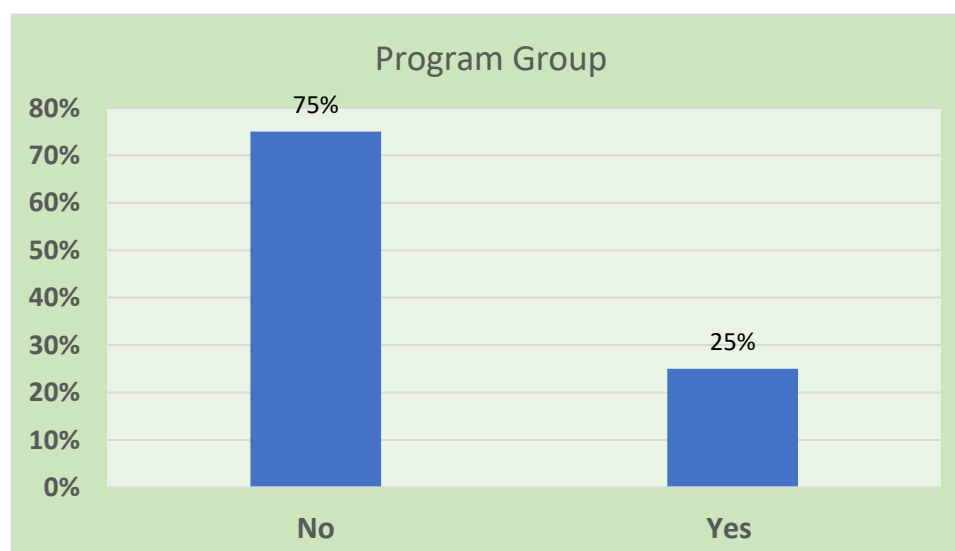


Figure 10: Farmers reporting the presence of collection points in the project area

Figure 10 illustrates the availability of collection points for vegetable selling among farmers in the program group. Only **25%** of farmers reported having a collection point in their area, indicating limited infrastructure for aggregating and selling vegetables. The remaining 75% of farmers either did not have access to a collection point or were unaware of one.

9.14 Percentage of farmers receiving services

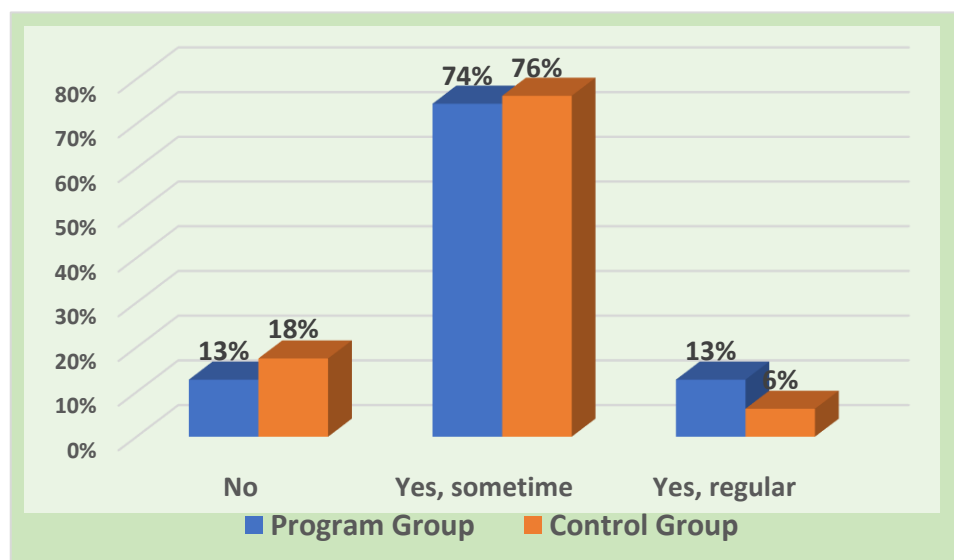


Figure 12: Use of IT-based agriculture solutions by project and other farmers due to the RMTP project in both program and control groups

Figure 12 illustrates the adoption of IT-based agriculture solutions among farmers in both the program and control groups. A total of average 75% farmers across both groups received IT-based agricultural support. However, regular usage of these solutions was limited, with only 13% of program group farmers and 6% of control group farmers using them consistently. While the project successfully provided IT-based agricultural solutions to a large number of farmers, actual regular utilization remains low, particularly in the control group. This indicates a need for enhanced training, support, and awareness to improve consistent use of IT tools for agriculture.

9.15 Access to Finance:

Table 23: Status of farmers on sources of loans for farming in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Bank	14	4%	2	3%
NGOs	369	96%	68	85%
Project	1	0%	1	1%
Total	384	100%	71	89%

Table 23 shows that most farmers in both groups relied on NGOs for farming loans, with 96% in the program group and 85% in the control group, while a few used banks or project sources.

9.16 Farmers received loans for SDC

Table 24: Farmers received loans for SDC in both the program group and the control group

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	173	45%	8	10%
Yes	211	55%	72	90%
Total	384	100%	80	100%

Table 24 shows that most farmers in the control group (90%) received loans for SDC, while only 55% of program group farmers did.

9.17 Farmers' SDC loan amounts

Table 25: Farmers' SDC loan amounts in the program and control group

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
<20000	97	25%	0	0%
20000-30000	23	6%	0	0%
30000-40000	56	15%	0	0%
>40000	40	10%	3	4%
Not Applicable	168	44%	77	96%
Total	384	100%	80	100%

Table 25 presents the distribution of SDC loan amounts received by farmers in both the program and control groups. In the program group, 25% of farmers received less than 20,000, 6% received between 20,000–30,000, 15% received between 30,000–40,000, and 10% received more than 40,000, while 79% did not receive any loan (not applicable). In the control group, 4% of farmers received loans in the 30,000–40,000 range, and the majority (96%) did not receive any loan. Overall, the table indicates that only a small proportion of farmers in both groups received SDC loans, with the program group having a slightly wider distribution of loan amounts.

9.18 Food Security and Dietary Diversity for Women and Their Household

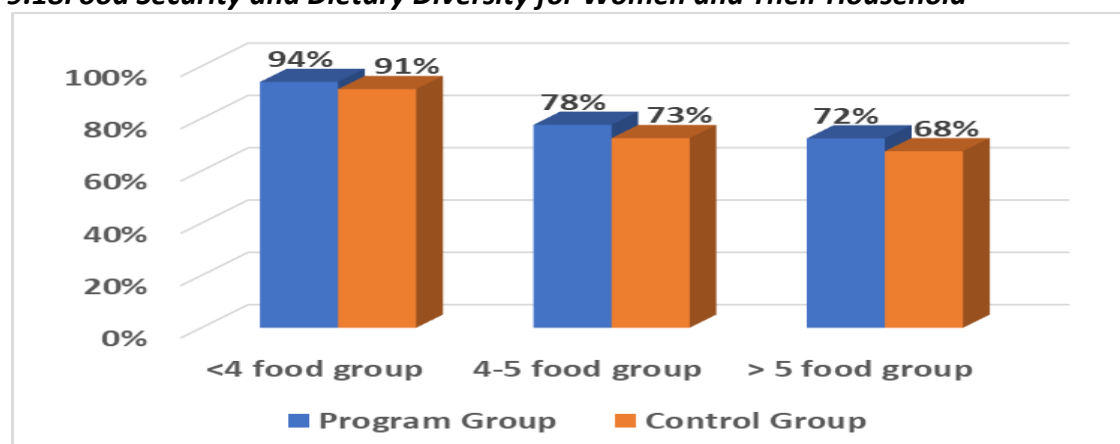


Figure 13 compares the dietary diversity among women in two groups: the program group and the control group, based on the number of food groups consumed. A total of 101 women from the program group and 20 women from the control group directly participated in the study. In addition to these direct participants, data were also collected from female household members such as wives, sisters, mothers, and adult daughters belonging to male farmers' households. This included 284 respondents from program households and 60 from control households. The age of women in the program group ranged from 19 to 60 years, while in the control group, it ranged from 19 to 52 years. This composition ensured that the study captured perspectives from a diverse range of women across different age groups and households, providing a more comprehensive understanding of food diversity dynamics in households within the project areas.

Figure 13: Percentage of minimum dietary diversity for women in farm households

Figure 13 compares the dietary diversity among women in two groups: the Program Group and the Control Group, based on the number of food groups consumed. The results reflect the proportion of women achieving different levels of dietary diversity, as measured by the Minimum Dietary Diversity for Women (MDD-W) indicator. Women consuming fewer than 4 food groups; 94% of women in the Program Group and 91% in the Control Group consumed fewer than four food groups within the recall period. This indicates that a majority of women in both groups have limited diet diversity, though the Program Group shows a slightly higher proportion. Women consuming 4–5 food groups; 78% of the Program Group and 73% of the Control Group consumed between four and five food groups. This suggests a moderate improvement in dietary diversity among participants exposed to the program compared to the control population.

Women consuming more than 5 food groups; 72% of women in the Program Group consumed more than five food groups, compared to 68% in the Control Group. The difference implies that the intervention may have contributed to a broader range of food consumption among participants. Women consuming up to 10 food groups; At the highest level of diversity, 66% of the Program Group and 61% of the Control Group consumed all ten food groups. This pattern indicates that the Program Group had a consistently better dietary diversity outcome across all categories.

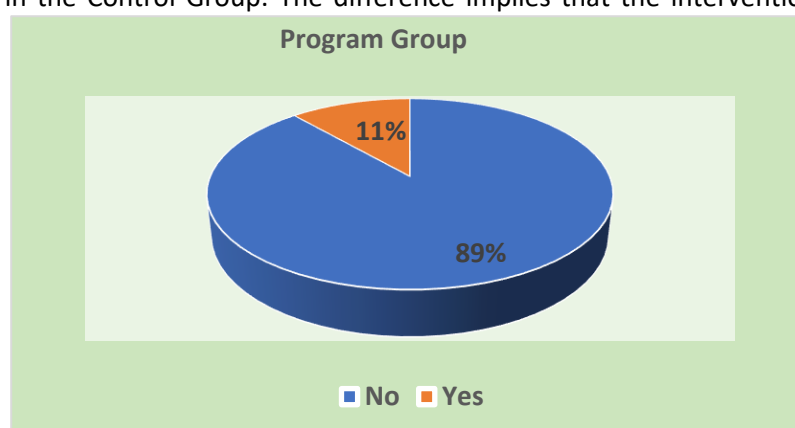


Figure 14: Percentage of farm households facing food scarcity during project implementation

Figure 14 illustrates the percentage of farm households that experienced food scarcity during the implementation of the project. In the project area, 89% of households reported experiencing food scarcity at some point, reflecting the prevalence of food insecurity despite project interventions. This data provides insights into the food security status of participating households and highlights the ongoing challenges in meeting basic nutritional and livelihood needs.

9.19: Percentage of farm households with improved nutritious food

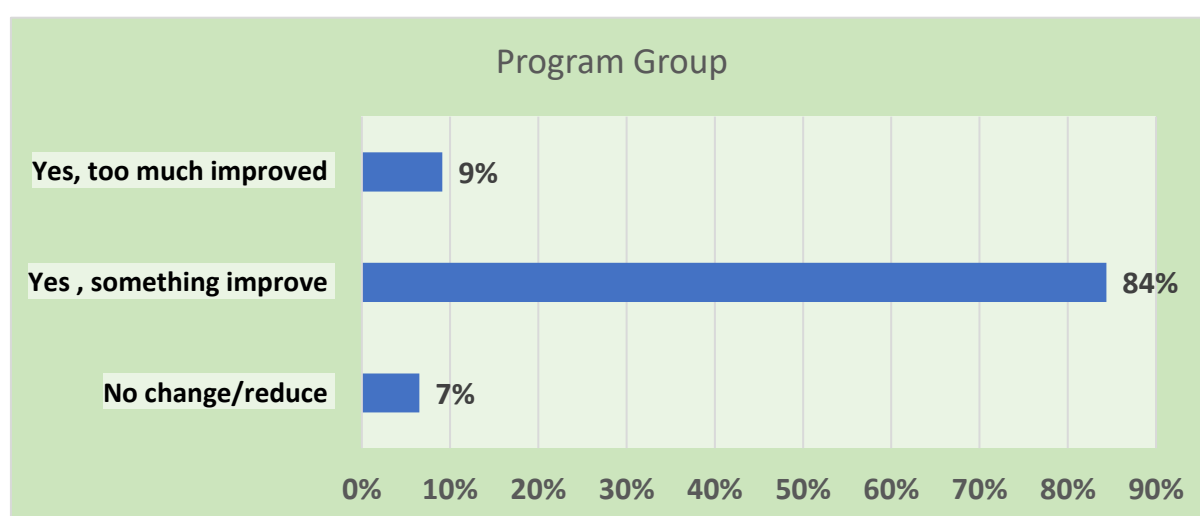


Figure 15: Percentage of farm households with improved nutritious food intake after joining the project

Figure 15 illustrates the perception of farm households regarding improvements in nutritious food intake after joining the project. A majority of households (84%) reported that their nutritious food intake improved to some extent, while 9% of households felt that their intake improved significantly.

9.20: Status of women in farmers' households

Table 27: Status of women in farmers' households regarding improved diversified food intake.

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
No	1	0%	3	4%
Yes	383	100%	77	96%
Total	384	100%	80	100%

Table 27 shows that nearly all women in farmers' households experienced improved diversified food intake, with 100% in the program group and 96% in the control group.

9.21: Status of women in farmers' households

Table 28: Status of women in farmers' households: diversified food intake in the last 24 hours (program vs. control group)

Time	Particulars/Items	Program Group		Control Group	
		Number	Percentage	Number	Percentage
Morning Breakfast (7:00-9:00 AM)	Rice, Fish, Vegetables	120	31%	5	6%
	Rice, Vegetables, Pulse,	67	17%	12	15%
	Ruti, Vegetables, Egg	21	5%	3	4%
	Puffed rice, tea	30	8%	10	13%
	Biscuits/flattened rice-chira /ruti, tea	51	13%	21	26%
	Rice, potato Mash,	95	25%	29	36%
	Totals	384	100%	80	100%
Snack (10:00-11:30AM)	Biscuits, Puffed rice, tea	26	7%	1	1%
	Rice, Egg	33	9%	5	6%
	Banana, Guava , Tea	72	19%	2	3%
	Banana, ruti	19	5%	16	20%
	Milk, Sweet Potato, Gur	51	13%	2	3%
	Nothing	183	48%	54	68%
	Total	384	100%	80	100%
Lunch (12:00-2:30 PM)	Rice, Fish, Vegetables, Egg,	221	58%	15	19%
	Khichuri, potato mash, egg	9	2%	2	3%
	Small fish and rice	51	13%	13	16%
	Pulse, vegetables, rice	103	27%	50	63%
	Total	384	100%	80	100%
Snack (3:30-5:30 PM)	Biscuits, tea	102	27%	11	14%
	Biscuit, fried gram-chanchur	21	5%	17	21%
	Banana, puffed rice	61	16%	9	11%
	Banana, guava, papaya	188	49%	5	6%
	Banana, Tea	10	3%	3	4%
	Nothing	2	1%	35	44%
	Total	384	100%	80	100%
Lunch (8:30-10:30 PM)	Rice, Fish, Meat, Vegetables	159	41%	5	6%
	Kichuri, potato mash, egg, eggplant, pickle	56	15%	9	11%
	Pulse, vegetables, rice	79	21%	36	and 45%
	Rice, egg, and vegetables	90	23%	30	38%
	Total	384	100%	80	11:30 PM
Snack (10:30-11:30 PM)	Milk	34	9%	2	3%
	and Puffed rice, Chira, and vegetables	3	1%	2	3%
	Tea, Biscuits	2	1%	2	3%
	Nothing	345	90%	74	93%
	Total	384	100%	80	100%

Table 28 presents the status of women in farmers' households regarding diversified food intake across different times of the day in both program and control groups.

Morning Breakfast (7:00–9:00 AM): In the program group, the most common breakfast was rice, fish, and vegetables (31%), followed by rice, potato mash (25%), and rice with vegetables and pulses (17%). In the control group, simpler meals predominated, with rice, potato mash (36%) and biscuits or flattened rice with tea (26%) being most common.

Morning Snack (10:00–11:30 AM): Women in the program group often consumed banana, guava, or tea (19%), milk with sweet potato and gur (13%), or biscuits/puffed rice (7%), while 48% had nothing. In the control group, most women (68%) had nothing, with only small proportions consuming fruits, snacks, or milk.

Lunch (12:00–2:30 PM): The program group predominantly consumed rice with fish, vegetables, and egg (58%), followed by pulses with vegetables and rice (27%) and small fish with rice (13%). In the control group, pulses with vegetables and rice (63%) and small fish with rice (16%) were common, with only 19% consuming rice, fish, vegetables, and egg.

Afternoon Snack (3:30–5:30 PM): In the program group, 49% of women consumed banana, guava, or papaya, 27% had biscuits with tea, and 16% had banana with puffed rice. Only 1% had nothing. In the control group, 44% had nothing, while smaller proportions consumed biscuits, fried gram, or fruits.

Evening Meal (8:30–10:30 PM): In the program group, the majority ate rice with fish, meat, and vegetables (41%) or rice with egg and vegetables (23%), while 21% had pulses, vegetables, and rice. In the control group, simpler meals were common: rice, egg, and vegetables (38%) or pulses with vegetables and rice (45%).

Late-Night Snack (10:30–11:30 PM): Most women in both groups did not consume anything at this time (90% in the program group, 93% in the control group). Small proportions consumed milk, puffed rice, or tea with biscuits.

Overall Insights: The table indicates that women in program group households consistently consumed more diversified and nutritious foods throughout the day compared to the control group, who had simpler meals and a higher frequency of skipping snacks or late-night meals. The program appears to have positively influenced dietary diversity and nutrition among women in farmers' households.

9.22 Dietary diversity score for women in households

Using a 24-hour recall, women in program households showed stronger dietary diversity than those in control households, driven by higher intake of nutrient-dense foods. In the program group, all women (100%) consumed grains, white roots, and tubers; most ate dark green leafy vegetables (94%) and pulses (88%); and sizable shares consumed vitamin A-rich fruits and vegetables (78%), milk and milk products (56%), flesh foods (51%), and eggs (70%). In the control group, staple consumption was slightly lower for grains, roots, and tubers (93%) but similar for pulses (88%) and leafy greens (95%); however, intakes of key nutrient-rich items were generally lower, including milk and milk products (38%), flesh foods (48%), and vitamin A-rich fruits and vegetables (73%). A few categories were comparable or favoured the control group, such as eggs (73% vs. 70%), other vegetables (65% vs. 60%), other fruits (38% vs. 39% in program), and nuts and seeds (26% vs. 27%). Overall, the program group's higher consumption of dairy, animal-source foods, and vitamin A-rich produce indicates a more diverse and potentially more nutritious diet, while grains, pulses, and leafy vegetables were common across both groups.

9.23 Barriers to improving nutrition

Table 30: Barriers to improving nutrition in farmer households (program vs. control group)

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Awareness on Nutrition Behavior Change	356	93%	77	96%
Poverty	293	76%	75	94%
Economic Crisis	214	56%	64	80%
The Male Head Makes the Decision on Food Cooking in the Household	38	10%	1	1%
Knowledge on Cooking Methodology	221	58%	48	60%
Male Buying Food From the Market	52	14%	7	9%
Lack of Available Diversified Food in the Household	114	30%	21	26%
Lack of Nutritious Food in the Household	93	24%	13	16%
Women can't choose food from the market	20	5%	2	3%
All Above	2	1%	0	0%
Others	1	0%	1	1%

Table 30 presents the barriers to improving nutrition in farmer households in both program and control groups.

In the program group, the most commonly reported barriers were awareness on nutrition behaviour change (93%) and poverty (76%), followed by knowledge on cooking methodology (58%), economic crisis (56%), lack of available diversified food in the household (30%), and lack of nutritious food in the household (24%). Male household members' influence also contributed, with 10% reporting that the male head decides on food cooking and 14% reporting that men buy food from the market. Smaller proportions reported women not being able to choose food from the market (5%) and all barriers combined (1%).

In the control group, poverty (94%) and awareness of nutrition behaviour change (96%) were the dominant barriers. The economic crisis affected 80%, knowledge on cooking methodology 60%, and the male household influence was minimal (1–9%). Lack of diversified food (26%) and lack of nutritious food (16%) were also noted. Other minor barriers were reported by 1% of respondents.

Overall, both groups identified awareness and poverty as major barriers to improved nutrition. Male household influence and limited access to nutritious food were more prominent in the program group, while economic challenges were higher in the control group. The data suggest that nutrition interventions need to address both economic and behavioral factors to be effective.

9.24: Women's Empowerment and Decision-Making Capacity

Table -31: Status of household decision-making in both program and control groups

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Male members (father/Husband/Brother)	60	16%	17	21%
Female member (Mother/Wife/Sister)	3	1%		0%
Combine (father and Mother)	4	1%	21	26%
Combined with all family members	69	18%		0%
Combined (husband and wife)	245	64%	42	53%
All together	3	1%	0	0%
Total	384	100%	80	100%

Table 31 presents the status of household decision-making in both program and control groups. In the program group, decision-making was predominantly joint between husband and wife, reported by 64% of households. Other patterns included combined decisions with all family members (18%), male members alone (16%), combined father and mother (1%), and all family members together (1%). Female-only decision-making was minimal (1%).

In the control group, 53% of households reported joint decision-making between husband and wife, 26% combined father and mother, and 21% male members alone. No households reported female-only or all-family decision-making

9.25: Women's access to business activities

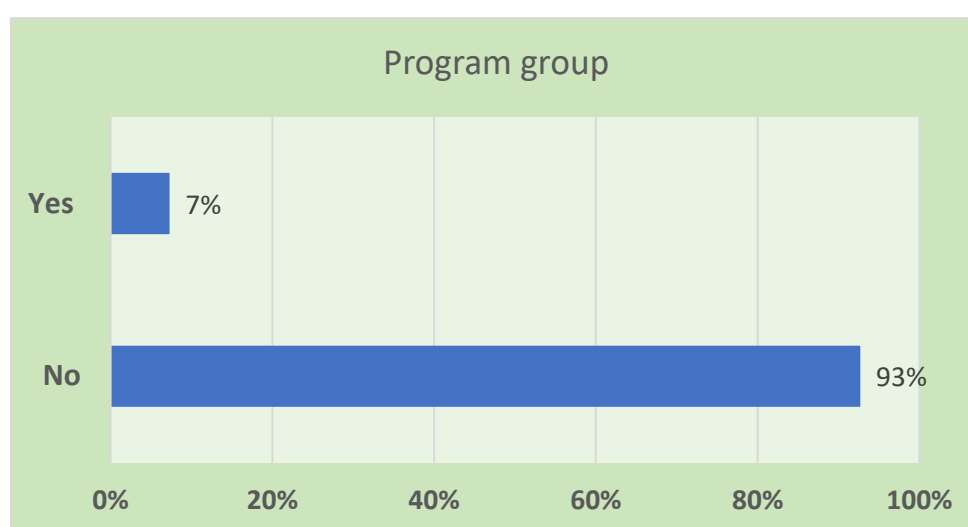


Figure 16: Women's access to business activities before joining the project (program group)

Figure 16 illustrates women's access to business activities before joining the program. Only 7% of women in the program group had any involvement in business activities before the intervention, indicating very limited participation in economic or entrepreneurial activities.

9.26: Women's post-project business access (marketing, promotion)

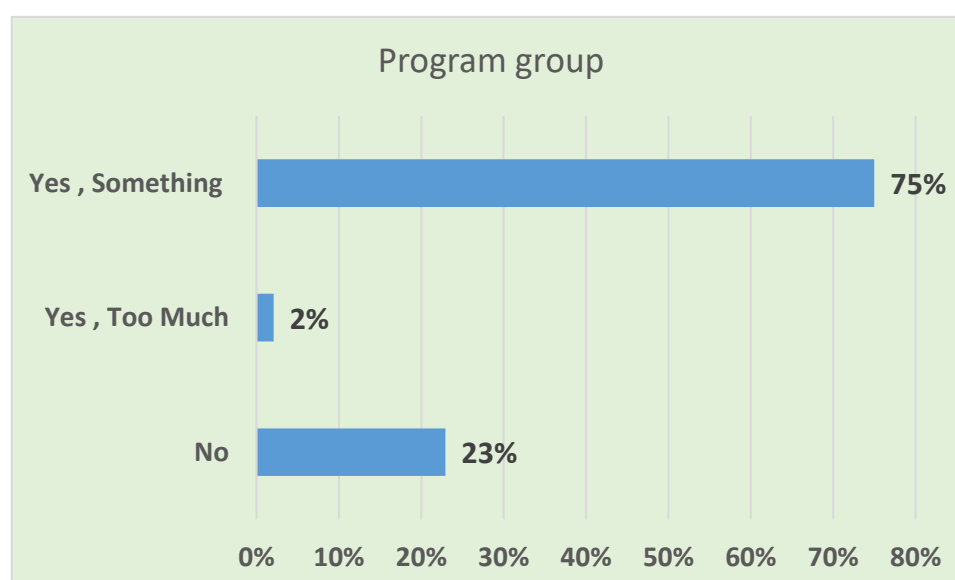


Figure 17: Women's post-project business access (marketing, promotion) in the program group

Figure-17 illustrates women's access to business activities, including marketing and promotion, after the project in the program group. Following the intervention, 75% of women reported some access to business activities, while 2% indicated a substantial level of access ("too much").

10.27 Women's access to decision-making capacities

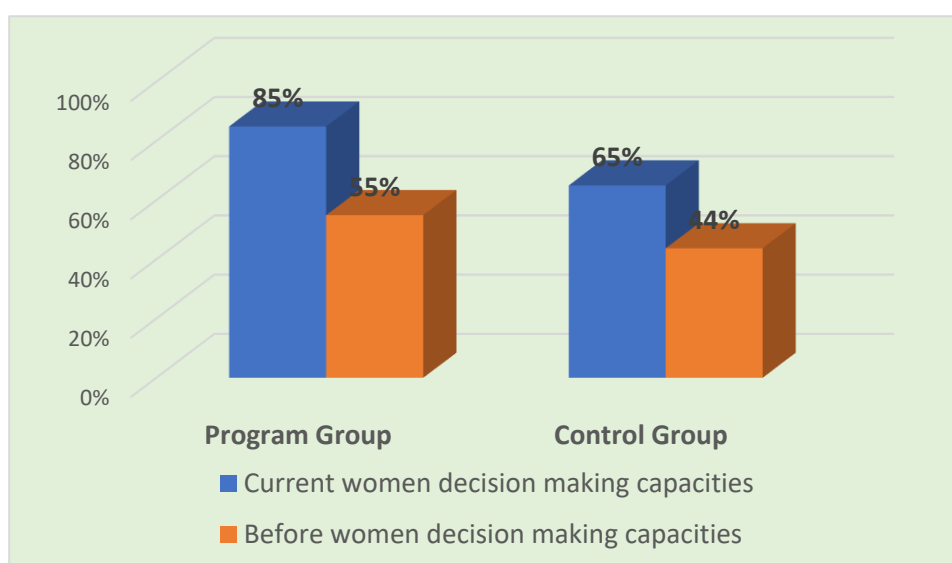


Figure 18: Women's access to decision-making capacities in households (program vs. control group)

Figure 18 illustrates women's access to decision-making capacities in households for both program and control groups. In the program group, 85% of women reported having decision-making capacities after the project, compared to 65% in the control group. Before the project, these figures were 55% for the program group and 44% for the control group, indicating significant improvement in household decision-making roles among women in the program group.

9.28: Women in different types of decision-making

Table 32: Women in different types of decision-making (program vs. control group)

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Agriculture planning	238	62%	41	51%
products marketing	162	42%	32	40%
Nutrition planning	283	74%	45	56%
No one	12	3%	10	13%
All above	72	19%	3	4%

Table 32 shows that women in program households were more involved in decision-making than in control households, with 74% participating in nutrition planning, 62% in agriculture planning, and 42% in product marketing. Only a small proportion had no decision-making role.

10. MARKETING, BUSINESS PROMOTION, AND BRANDING

10.1 Farmers' access to marketing needs

Table 33: Farmers' access to marketing needs created by the project (program vs. control)

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Improved the quality of production	17	4%	1	1%
Linkage with agricultural materials and input sellers	67	17%	12	15%
Linkage with buyers	8	2%	15	19%
Linkage with the service provider	38	10%	3	4%
All above	254	66%	14	18%
Total	384	100%	45	56%

Table 33 presents farmers' access to marketing needs created by the project in both program and control groups. In the program group, the majority of farmers (66%) reported access to all marketing support services provided by the project, including improved production quality, linkages with input sellers, buyers, and service providers. Individually, 17% had linkages with agricultural input sellers, 10% with service providers, 4% improved production quality, and 2% with buyers. In the control group, only 18% of farmers accessed all services. Individually, 19% reported linkages with buyers, 15% with input sellers, 4% with service providers, and 1% improved production quality. Overall, Farmers in the program group had substantially better access to integrated marketing support, demonstrating the project's positive impact on facilitating market linkages and improving production quality, whereas control group farmers had limited access to these services.

10.2 Farmers' market linkages

Table 34: Farmers' market linkages for buying and selling (program vs. control).

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Yes, a personal, informal buyer	334	87%	48	60%
No	25	7%	29	36%
Yes, a formal buyer	25	7%	3	4%
Total	384	100%	80	100%

Table 34 presents farmers' market linkages for buying and selling in both program and control groups. In the program group, the majority of farmers (87%) had a personal informal buyer, while 7% had a formal buyer, and another 7% had no buyer. In the control group, 60% had a personal informal buyer, 4% had a formal buyer, and 36% had no buyer. Farmers in the program group had stronger market linkages, particularly with informal buyers, compared to the control group, indicating better access to marketing channels and potential for stable sales.

10.3 Types of support services

Table 35: Types of support services received and access to markets and product demand (program group)

Particulars	Program Group	
	Number	Percentage
Linkage with agricultural materials and input sellers	69	18%
Linkage with buyers	16	4%
Linkage with the service provider	43	11%
All above	256	67%
Total	384	100%

Table 35 presents the types of support services received by farmers in the program group and their access to markets and product demand. The majority of farmers (67%) reported receiving all types of support, including linkages with agricultural input sellers, buyers, and service providers. Individually, 18% had linkage with agricultural input sellers, 11% with service providers, and 4% with buyers. The table indicates that the project effectively provided integrated support services, enabling most farmers to access multiple market linkages and resources, thereby enhancing production and marketing opportunities.

11. INCOME-RELATED INFORMATION

11.1 Improved or changed income status

Table 36: Number of beneficiary households with improved or changed income status through the project

Particulars	Program Group	
	Number	Percentage
Reduced income	4	1%
No Change of Income	19	5%
Yes, Too Much Increase in Income	16	4%
Yes, Something Changes	338	88%
Yes, Minimum Income change	7	2%
Total	384	100%

Table 36 presents the number of beneficiary households in the program group with improved or changed income status due to the project. A large majority of households (88%) reported some positive change in income, while 4% experienced a significant increase. A small proportion of households reported minimal income change (2%), no change (5%), or reduced income (1%).

11.2 Percentage increase in income of beneficiary households

Table 37: Percentage increase in income of beneficiary households through the project.

Particulars	Program Group	
	Number	Percentage
10%	222	58%
20%	113	29%
30%	33	9%
>30%	4	1%
Others amount	12	3%
Total	384	100%

Table 37 presents the percentage increase in income for beneficiary households in the program group over the project period. The majority of households (58%) experienced a 10% increase in income, while 29% reported a 20% increase, 9% had a 30% increase, and 1% achieved more than a 30% increase. A small proportion (3%) reported other amounts of income increase.

12. CAPACITY BUILDING

12.1: Number of farmers receiving training from the RMTP project

Table 38: Number of farmers receiving training on modern technology and safe vegetable cultivation through the project.

Particulars	Program Group	
	Number	Percentage
No	20	5%
Yes	364	95%
Total	384	100%

Table 38 shows that most farmers in the program group (95%) received training on modern technology and safe vegetable cultivation through the project

12.2 Benefits of training received from the RMTP project

Table 39: Benefits of training received from the RMTP project in the program area

Particulars	Program Group	
	Number	Percentage
Change the knowledge about climate change, nutrition,	6	2%
Increase knowledge on the environment, nutrition	123	32%
Increase knowledge of the environment	3	1%
Increase knowledge about nutrition	19	5%
Increase linkage with the market and nutrition	1	0%
All above	232	60%
Total	384	100%

Table 39 presents the benefits of training received by farmers in the program area through the RMTP project. A majority of farmers (60%) reported that the training provided benefits in all areas, including knowledge about climate change, nutrition, the environment, and market linkages. Individually, 32% reported increased knowledge on the environment and nutrition, 5% reported increased knowledge about nutrition only, 2% reported changes in knowledge about climate change and nutrition, 1% reported increased knowledge of the environment only, and 0% noted benefits in market linkage and nutrition alone.

12.3 Sources of training on production and technology organized by the project

Table 40: Sources of training on production and technology in both program and control areas

Particulars	Program Group		Control Group	
	Number	Percentage	Number	Percentage
Entrepreneurs	23	6%	0	0%
company representative	45	12%	6	8%
Local agriculture officer	316	82%	69	86%
Total	384	100%	75	94%

Table 40 presents the sources of training on production and technology for farmers in both program and control areas. In the program group, the majority of farmers (82%) received training from local agriculture officers, 12% from company representatives, and 6% from entrepreneurs. In the control group, most farmers (86%) were trained by local agriculture officers, 8% by company representatives, and none by entrepreneurs.

12.4 Sources of training on production and technology

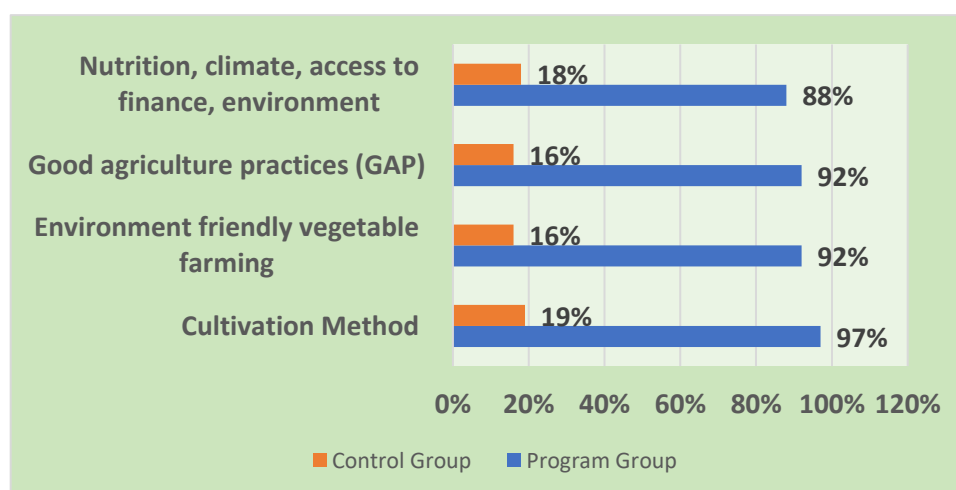


Figure 19: Percentage of farmers receiving different types of training in both program and control areas

Figure 19 compares the percentage of farmers receiving different types of training in both program and control areas. The training categories include: Nutrition, climate, access to finance, and environment.

About 87–88% of farmers in the program group received training, compared to roughly 15% in the control group. Good Agriculture Practices (GAP); approximately 92% of program group farmers received training, while around 14% of control group farmers did. Environment-friendly vegetable farming; around 92% of program group farmers received training, versus about 15% in the control group. Cultivation Method: Early 98% of program group farmers received training, compared to roughly 18% of control group farmers.

Trainings are provided by the project staff under the RMTP project.

12.5: Farmers' suggestions for future program planning

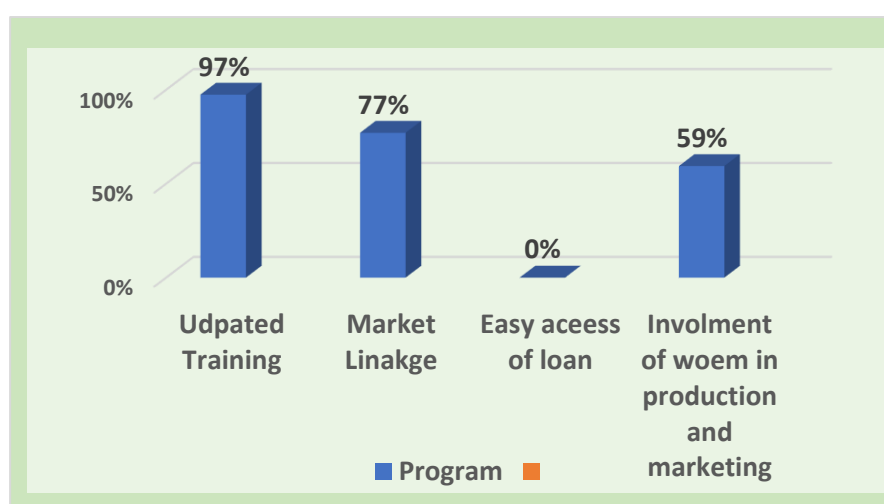


Figure 20: Farmers' suggestions for future program planning (program area)

Figure 20 shows the details of various program components, highlighting the high percentage of updated training (97%) and market linkage (77%). However, it also reflects a significant gap in easy access to loans (0%) and moderate involvement of women in production and marketing (59%).

13. QUALITATIVE STUDY: FOCUS GROUP DISCUSSION

Faridpur District: Faridpur Sadar and Boalmari Upazila

Conducted 20 Focus Group Discussions (FGD) with the members of the Vegetable Farmers groups located at different villages of Faridpur sadar and Kanaipur of Faridpur sadar upazila; Boalmarisadar and Kadirdi of Boalmari upazila.

13.1 Safe Vegetable Cultivation (Land, Production, and Technologies)

The farmers who participated in the FGD reported that their vegetable production land and vegetable production both increased by 25% and 30%, respectively, compared with the baseline survey in 2022. Most of the farmers in the FGD acknowledged the importance of quality inputs for safe vegetable production. Previously, they would individually collect their required inputs, such as seeds, from local markets, hat bazars, and seed stores. However, since joining the project, they now procure quality seeds directly from seed company representatives. Additionally, they receive seed support from the SDC and Upazila Agriculture Office.

During the FGD, 90% of project farmers mentioned that they received training on ecological farming, organic manure preparation, vermicompost preparation, and value chain development. They have transitioned to cultivating safe vegetables using organic manure like vermicompost, cow dung, and compost, reducing their reliance on chemical fertilizers. Farmers have also adopted biopesticides like pheromone traps and sticky boards for pest control in their vegetable fields, with initial support from the SDC.

A small percentage (20%) of farmers received training on Good Agriculture Practice (GAP), which they have shared with other farmers. Some farmers (1-2 out of 10 in each FGD batch) admitted to still using chemical pesticides in severe insect infestations and chemical fertilizers in cases of nutrient deficiencies, seeking advice from the Sub Assistant Agriculture Officer for proper chemical use.

Each batch of 1-2 participants in the FGD mentioned conducting soil tests to assess the health and nutrient status of their soils, and receiving crop-specific fertilizer recommendations for their vegetable cultivation. While most participants are interested in soil testing, limited coverage hinders widespread adoption. The Soil Test Research Development Institute recommends that neighboring farmers with similar land conditions follow the same soil testing practices.

13.2 Vegetable Marketing (Volume, Value Addition, and Price)

During the FGD sessions, it was noted that most participants acquire their necessary inputs individually from local hat-bazars, seed stores, and dealers. Some farmers opt to purchase quality seeds from representatives of seed companies such as Lal Teer, ACI, and Metal. The consensus among the farmers was that buying inputs individually often results in higher prices and lower quality. They expressed a collective interest in developing entrepreneurship, where an entrepreneur would procure all required inputs for the farmers to purchase collectively.

Approximately 30-40% of project farmers in each FGD reported improved market linkages, enabling them to sell their produce in Arots. This access to market information has allowed them to adjust their production and pricing strategies for better returns. With increased production, sales volumes have also risen, leading to a 43% increase in vegetable production compared to baseline data. While most sales are made in local and Upazila markets, farmers expressed a desire to tap into regional and national markets, as well as explore opportunities for exporting their safe vegetables.

Farmers are getting benefits from the vegetable collection centers. Four vegetable aggregation centers are currently operational. They acknowledged the need to scale up production to attract regional and national buyers, emphasizing the importance of establishing collection centers or aggregation points to consolidate products from all vegetable farmers. This strategic approach aims to appeal to larger buyers and facilitate connections with broader markets.

13.3 Income and profit of Safe Vegetable Farmers

Findings from the Focus Group Discussions (FGDs) almost all participants reported that their income from vegetable cultivation has increased compared to before joining the project.

Farmers attributed this income growth to several key factors:

- A 25-30% increase in income driven by expansion of cultivation area, adoption of ecological farming practices, and enhanced partnerships with public and private sector stakeholders.
- Continuous technical support from SDC, the Department of Agricultural Extension (DAE), and private companies has improved productivity and farm management practices.
- A 25% reduction in production costs due to reduced reliance on expensive chemical fertilizers and pesticides, replaced by low-cost organic inputs and ecological pest control methods.
- Improved soil fertility and productivity resulting from the regular use of organic manure and vermicompost, leading to higher yields and greater overall production.

As a result, vegetable production and marketing have become significantly more profitable. Farmers reported that their profit margins have increased by 25–30% compared to the period before joining the project. The shift to non-chemical, ecological farming has lowered production costs while simultaneously increasing yields, thereby widening profit margins.

13.4 Food and Nutrition Security

During the FGD, farmers mentioned that they prioritize cultivating high-value, nutritious vegetables. Following the project, family members of the farmers consume approximately 200-300 grams of vegetables daily. In each FGD, 90% of participants reported that they do not experience food shortages and have a surplus throughout the year. The farmers have incorporated nutritious foods into their daily diets, and women in the family are actively involved in making nutritious food choices. With increased income from selling safe vegetables, farmers can now afford to purchase nutritious foods such as eggs, milk, meat, and fruits.

13.5 Loan Issues of Vegetable Farmers

The Focus Group Discussions (FGDs) revealed that farmers who participated in the training benefited greatly from comprehensive training and ongoing technical support to enhance their knowledge, skills, and practices in ecological and safe vegetable cultivation. These interventions have significantly improved productivity, reduced production costs, and promoted sustainability.

Around 20% of project farmers underwent formal training on Good Agricultural Practices (GAP), which covered essential techniques like seed treatment, proper plant spacing, crop rotation, and Integrated Pest Management (IPM) to minimize pest and disease issues. Farmers also received training in ecological farming methods, including the use of organic fertilizers like vermicompost and cow dung compost, Trichoderma for disease control, and mulching for soil moisture retention and soil health improvement. Moreover, they were educated on safe vegetable production practices to reduce chemical inputs and maintain hygiene during harvesting and post-harvest activities.

Apart from formal training, farmers continue to receive continuous technical support from the project's Value Chain Officers and Sub-Assistant Agriculture Officers (SAOs) from the Department of Agricultural Extension (DAE). This ongoing field-level assistance helps them effectively implement improved practices, address emerging challenges, and adapt to changing climate and market conditions.

In addition to capacity-building assistance, the project has supplied farmers with essential inputs and resources to enhance their production systems. These include hybrid and high-yielding seeds, organic fertilizers, and bio-pesticides, which have led to increased crop yields, reduced production costs, and a transition towards more sustainable and safe vegetable production.

13.6 Employment opportunity

Entrepreneurs have generated employment opportunities for landless women and youth by involving them in all stages of agricultural production, including land preparation, intercultural operations, irrigation, harvesting, post-harvest handling, cleaning, storage, and sorting. Through this engagement, landless women and youth are acquiring valuable skills in ecological farming, enhancing both their technical expertise and livelihood prospects.

13.7 Access to Knowledge, Capacity Building, and Input/Technical Support

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Photo 1 Vermicompost production and demonstration

Trichoderma for disease control, and mulching for soil moisture retention and health improvement. Moreover, they were educated on safe vegetable production practices to reduce chemical usage and maintain hygiene during harvesting and post-harvest activities.

In addition to formal training, farmers continue to receive continuous technical support from the project's Value Chain Officers and Sub-Assistant Agriculture Officers (SAAOs) from the Department of Agricultural Extension (DAE). This ongoing on-field assistance helps farmers effectively implement improved practices, address emerging challenges, and adapt to changing climate and market conditions.

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13.8 Women's Participation, Empowerment, and Decision-Making

All producer group members who participated in the FGD mentioned that household decisions are generally made jointly between men and women, covering a wide range of issues such as children's education, food selection, cooking and distribution, healthcare, child feeding practices, women's mobility to local markets, utilization of financial benefits, and the purchase of land or other household assets.

However, women's influence in decision-making tends to be stronger in areas traditionally considered their responsibility—particularly cooking, food preparation, and distribution within the household. In contrast, their involvement in financial and agricultural decisions remains limited. Women had less access to loans, control over income, and participation in discussions related to project benefits, marketing, or investment planning.

Although the project encouraged women's inclusion in producer groups, their active participation in group meetings, training sessions, and market-related activities was relatively low. This was mainly due to time constraints from household duties, social norms restricting their mobility, and the labor-intensive nature of agricultural work. In some cases, women attended meetings on behalf of male family members but were not directly involved in decision-making processes.

Overall, while there were signs of shared decision-making within households, women's participation in financial and group-level leadership roles remained limited. Greater emphasis on capacity building, leadership training, and gender-responsive facilitation would be necessary to ensure more meaningful participation of women in future interventions.

13.9 Project Impact, Sustainability, and Community Resilience

The Focus Group Discussions (FGDs) revealed significant improvements in income, productivity, market access, and resilience following the project's implementation. A key impact has been the rise in household income through vegetable cultivation, driven by higher yields, enhanced productivity, and premium market prices for safe and ecologically produced vegetables. The adoption of Good Agricultural Practices (GAP), hybrid and high-yielding seed varieties, and ecological farming methods has boosted production efficiency. Reduced input costs and improved pest and disease management practices have also contributed to increased profitability. Farmers reported an average income growth of 25-30%, with variations based on farm size and adoption of project-recommended practices.

In addition to financial benefits, the project has bolstered community resilience by promoting climate-smart practices, ecological sustainability awareness, and food and nutrition security. These efforts have equipped farmers to better withstand climate variations, market changes, and external shocks.

Farmers have forged strong partnerships with the Department of Agricultural Extension (DAE), receiving technical guidance, field monitoring, and advisory support. Local government bodies and Union Parishads have supported ecological farming practices through awareness campaigns and limited financial aid. NGOs have played a crucial role in providing training, inputs, and market access, ensuring the project's progress is sustained.

14. Qualitative Study: Key Informant Interview (KII)

Faridpur District: Faridpur Sadar and Boalmari Upazila

A total of 10 Key Informant Interviews (KIIs) were conducted with key stakeholders, including the Deputy Director (Agriculture) of Faridpur District, Senior Scientific Officer & In Charge (SRDI), Deputy Assistant Agriculture Officers from Machchar and Kanaipur in Faridpur Sadar, and the Upazila Agriculture Officer from Boalmari, Faridpur.

Key informants unanimously confirmed that the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project was highly relevant to the needs and priorities of farmers in the project areas. According to Mr. Md. Shahaduzzaman, Deputy Director, DAE, Faridpur, approximately 60–70% of farmers in the district are engaged in vegetable cultivation, either as a primary or secondary livelihood activity. Small and marginal farmers typically cultivate vegetables on 10–30 decimals of land, while medium and large farmers utilize 50 decimals to 1 acre or more. Vegetable farming has become increasingly popular due to strong market demand and quick returns, and the project's interventions directly addressed the key challenges faced by farmers in this sector.

Key informants agreed that the project was implemented largely as per the planned schedule and activities. Training programs, field demonstrations, and farmer meetings were conducted on time, and coordination among DAE field staff, local government institutions, and project partners ensured smooth and effective implementation.

Mr. Anowar Hossain, Upazila Agriculture Officer, Faridpur Sadar, stated that most activities were implemented within budget and on time, delivering planned outputs as per the project design. He emphasized that the project achieved significant outputs relative to inputs, demonstrated by reduced production costs and increased farmer income.

Kbd. Md. Kibria, Senior Scientific Officer & In Charge (SRDI), Faridpur District, expressed that project interventions were well-coordinated, with effective collaboration among SDC, DAE, private sector partners, and producer groups. This coordination improved knowledge-sharing, capacity-building, and adaptive learning among stakeholders and value chain actors.

KII participants highlighted the widespread adoption of improved cultivation practices among farmers. Techniques such as mulching, Integrated Pest Management (IPM), use of vermicompost, and the application of pheromone traps and sticky boards have been embraced by a significant proportion of project beneficiaries. Farmers reported higher yields and improved crop quality, demonstrating the positive outcomes of these interventions.

Safe production technologies - including the use of organic manure, botanical pesticides, and adherence to pre-harvest intervals- have gained significant acceptance. Training sessions and awareness campaigns have increased farmers' understanding of the importance of chemical-residue-free vegetables, resulting in enhanced market access and consumer confidence.

Key informants reported that the project successfully reached a large proportion of its targeted farmers, including marginalized groups. Agriculture Officer, Mr. Md. Imran Hossain, Sub Assistant Agriculture Officer, Ghospur, Boalmari, commended the project's strong emphasis on women's participation in production, marketing, and household decision-making. Women participants are now more actively involved in dietary decision-making and have increased their participation in market-related activities despite cultural and social barriers. The project also created new employment opportunities for women and landless youth, particularly in production, value addition, and marketing activities, contributing to broader socio-economic inclusion.

All KII participants agreed that the project has had a substantial impact on productivity, income, and livelihoods. According to Mr. Md. Shahaduzzaman, DD, Faridpur, the project has significantly encouraged farmers to practice safe vegetable cultivation, leading to increased production and improved household income. Women and landless groups have particularly benefited from these interventions.

Lotika Khatun, Sub Assistant Agriculture Officer, Kanaipur, Faridpur Sadar, reported that farmers now cultivate a wider range of vegetables, including brinjal, tomato, bottle gourd, bitter gourd, pumpkin, chili, red amaranth, and spinach. Farmers are increasingly shifting toward hybrid and improved seed varieties, although access to certified high-quality seeds remains limited in remote areas- highlighting an area for future improvement.

Mr. Sheikh Sajal, SAAO, Boalmari, noted that many project households have experienced significant improvements in living standards, food security, and dietary diversity. Higher incomes have enabled some farmers to diversify into value-added products such as dried vegetables and pickles. He also highlighted that some farmers accessed small loans from microfinance institutions and project-linked sources to purchase inputs, expand cultivation, and invest in irrigation. However, he stressed the need for increased access to credit facilities to further support farmers' growth.

Key informants expressed strong confidence in the sustainability of project outcomes. They noted that farmers have gained practical skills and knowledge that will enable them to continue safe and ecological production beyond the project's lifespan. The formation of producer groups and cooperatives has strengthened local institutional capacity, while partnerships with government agencies, NGOs, and private sector actors have enhanced market access and service delivery.

The adoption of ecological and low-cost farming practices is likely to continue due to their economic viability and environmental benefits. Furthermore, increased coordination and collaboration among stakeholders-including PKSF, DAE, producer groups, and private companies - provides a strong foundation for scaling up the project model in other areas.

KII respondents confirmed that the project effectively addressed the needs and priorities of women, youth, and vulnerable groups. Training programs and targeted interventions were designed to enhance their participation and reduce vulnerability. Moreover, women and marginalized groups were actively involved in project design, implementation, and evaluation, ensuring that interventions were inclusive and responsive to community needs.

15. Qualitative Study: Focus Group Discussion

Rajbari District: Rajbari Sadar and Baliakandi Upazila

Conducted 15 Focus Group Discussions (FGD) with the members of the Vegetable Farmers groups located at different villages of Rajbari Sadar, Khalilpur of Rajbari Sadar, and Baliakandi Upazilas.

15.1 Safe Vegetable Cultivation (Land, Production, and Technologies)

The participants in the FGD mentioned that the vegetable cultivation land of group members had increased by 20-30% following the implementation of the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project. They use vermicompost and cow dung for vegetable production, resulting in good production with reduced costs. Additionally, they noted an increase in soil fertility through soil testing, with organic matter levels exceeding 2%. The farmers emphasized the safety of their vegetables.

They stated that they cultivate more vegetables in the winter season and fewer in the summer, with a production increase of 30-40% compared to before practicing ecological farming. This increase is attributed to using quality seeds, adopting technology, and implementing best practices.

The main crops grown on their farmland include spinach, bottle gourd, beans, cucumber, chilli, broccoli, cauliflower, red cabbage, okra, bitter gourd, sponge gourd, pumpkin, red amaranth, tomato, garlic, onion, eggplant, and cumin. Participants reported cultivating between 10 and 120 decimals of land for vegetable production, with an average of 30-40 decimals used annually for vegetables. The remaining land is allocated to other agricultural products.

The project beneficiaries mentioned that production had increased by 25-35% due to support from training, technology, and networking with relevant government and private stakeholders under the SDC RMTP project. They received training on modern cultivation techniques, leading to reduced costs and increased profits. All farmers now have knowledge of safe and environmentally friendly vegetable production practices and technology use. They also understand the health benefits of these practices. 80 farmers confirmed their knowledge of Good Agricultural Practices (GAP) and their application in vegetable production, including during harvesting.

Approximately 50% of farmers reported knowledge of climate-adaptive production methods, such as mulching, sapling, yellow sticky boards, and reduced chemical pesticide use, which improve yields, ensure fair market prices, and reduce health risks.

Few farmers mentioned receiving fair prices for their safe produce, as middlemen prefer fresh-looking products priced higher than safe vegetables.

During the FGD, participants expressed a need for soil testing support, as only 30-35% of farmers currently test their soil to assess health and determine fertilizer use.

15.2 Vegetable Marketing (Volume, Value Addition, and Price)

The farmers sell their produce to the wholesalers of Rajbari. The vegetable farmers sell their produce collectible. The vegetable farmers bring their vegetables to an aggregation point, and then they select one farmer to bring the vegetables to the wholesale market to sell them. Then the responsible farmers give the money to the other farmers against the quantity they have given to sell.

The farmers buy their required inputs, including seeds, from the local hat-bazar; sometimes they get seed support with technology from the project. They didn't find any company representative in their areas.

15.3 Income and profit of Safe Vegetable Farmers

Since the inception of the project, farmers have seen a significant rise in their income. By adopting improved production methods and growing high-value vegetables, they have increased their yields and enhanced the quality of their products, resulting in better prices in the market. Farmers now report earning 20%–30% more income than before the project, and many have diversified their production to meet the year-round demand in the market.

According to the FGD participants, the transition to safe production practices and improved market access has enabled them to sell their produce at premium prices. Small-scale farmers and female producers, who previously had low earnings, are now generating stable incomes, which has led to improved household livelihoods and increased investments in farm inputs, education, and nutrition.

Farmers engaged in the SDC project have boosted their agricultural production and increased their income from agricultural goods by approximately 20–30%, resulting in a lasting impact on household food consumption and food security.

During the FGD, it was noted that all farmers (100%) ensured their food security by selling vegetables in the market and purchasing necessary items. Nearly all farm households (100%) have enhanced their knowledge, attitudes, and practices related to food processing, including cutting, washing, cooking, and storage methods at the household level. Approximately 90% of mothers are knowledgeable about and practice the timely initiation of exclusive breastfeeding and complementary feeding.

Around 85% of women are consuming a diverse diet that includes cereals, legumes, pulses, milk, fish, meat, vegetables, and fruits to meet their daily nutritional needs.

The majority of farmers, as well as women and adolescents in their households, have been trained in food and nutrition behaviours.

15.4 Food and Nutrition Security

The farmers take nutritious food in their daily diet; they take enough vegetables, sometimes more than 250 g. Per day, which is more than recommended. Besides vegetables, the farmers also take eggs, milk, meat, and fruits in their diet. It was said by the farmers that women are now deciding food issues as they are now financially empowered. Because the women farmers are also engaged in vegetable production, they get support from the project and DAE.

15.5 Loan Issues of Vegetable Farmers

The Focus Group Discussions (FGDs) revealed that limited access to financial services is a significant challenge for vegetable farmers in the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project. Despite the clear need for credit to purchase quality inputs, invest in irrigation, and support timely agricultural operations, only a small proportion of farmers can secure formal financial support.

Around 42% of project farmers reported receiving loans from microfinance institutions, while access to loans directly from SDC was limited to about 20% of farmers benefiting from SDC-supported credit under specific categories. Farmers who accessed formal credit received loans of various sizes from SDC, including:

- 3% received Tk. 20K loans under the Jagoron category for family-based income-generating activities
- 2% took loans of Tk. 20-30K under the Buniad category for sustainable income generation
- 5% took loans of Tk. 30-40K under the Agrosor category for entrepreneurship development
- 10% received more than Tk. 40K under the Sufalon category for mechanized and technology-based farming, vocational education, and skilled human resource development to increase productivity.

Only about 20% of the vegetable producer group members were able to access funds under the SDC microcredit program. Among loan recipients, 3% of farmers reported receiving financial support from other NGOs or government financial institutions. Some participants mentioned that the loan application and approval processes of certain NGOs are complex and time-consuming, leading them to seek alternative sources like BRAC or informal lenders when in urgent need of capital.

15.6 Employment Opportunities

Local entrepreneurs involved in the vegetable value chain have generated work across various stages of production and post-harvest handling. These include land preparation, intercultural operations, irrigation, harvesting, cleaning, grading, sorting, and other post-harvest activities.

Through these activities, landless women and young people are gaining opportunities to develop practical skills in ecological farming, enhancing their future employability and contributing to household incomes. The engagement of these groups not only supports livelihood diversification but also strengthens the overall sustainability of the ecological vegetable production system in the project areas

15.7 Access to Knowledge, Capacity Building, and Input/Technical Support

A total of 86 farmers received capacity-strengthening training from the project. The training primarily focused on safe vegetable production and promotion, the use of yellow sticky boards, pheromone traps, mulching, sapling, organic farming, vermicomposting, and nutrition.

In most cases, piloting activities, major inputs, or demonstration support were provided mainly to lead farmers.

The majority of project farmers participated in cross-visits to other areas to improve their knowledge, practices, and adoption of new technologies. About 90% of farmers reported strong knowledge of new technologies such as yellow sticky boards, pheromone traps, organic farming, and vermicomposting. However, actual adoption on their farmland remained minimal due to limited follow-up from the project.

The project also introduced new crops in the working areas, including broccoli, dragon fruit, and summer tomato.

15.8 Women's Participation, Empowerment, and Decision-Making

All producer group members (100%) reported that household decisions are made jointly, including matters such as children's schooling, food choices, cooking and distribution, healthcare, child feeding, women's access to local markets, financial benefits, and the purchase of land or other property. Most of the time, women made decisions related to cooking and food distribution within the household.

Across 10 FGDs, only one woman was identified as a lead farmer. While women-led farmers could participate in group decision-making, the majority of women showed lower levels of participation in group or project activities.

Women had limited access to financial matters, including loans, project benefits, and decision-making capacities both within producer groups and beyond the program.

Overall, women's participation remained low due to the demands of agricultural farming.

15.9 Project Impact, Sustainability, and Community Resilience

Dissemination of climate-resilient technologies and the continued use of existing practices by farmers in the working areas are expected to continue after the project ends, indicating long-term impact. Awareness of food safety among farmers was strong, which is likely to have lasting benefits for the community.

Organic farming practices are increasing in the program area and are expected to provide a sustainable solution for community resilience and environmentally friendly, safe vegetable production beyond the project's duration.

Women's dietary diversity has improved, with greater consumption from different food groups, positively impacting the health and nutrition of women, children, and other family members.

Women are increasingly contributing to household food choices, cooking, and food distribution, which further enhances household nutrition outcomes.

The project has promoted best practices such as vermicomposting, yellow sticky boards, and pheromone traps even in control areas, which will demonstrate long-term contributions beyond the project period.

15.10 Qualitative Study: Key Informant Interview (KII)

A total of eight (8) Key Informant Interviews (KIIs) were conducted with the Deputy Director (Agriculture), Rajbari District, Upazila Agriculture Officer, Baliakandi, Rajbari, Deputy Assistant Agriculture Officer, Islampur, Baliakandi, Deputy Assistant Agriculture Officer, Islampur, Baliakandi, Upazila Agriculture Officer, Rajbari Sadar, Deputy Assistant Agriculture Officer, Alipur, Rajbari Sadar, Deputy Assistant Agriculture Officer, Banibah, Rajbari Sadar, Deputy Assistant Agriculture Officer, Sultanpur, Rajbari Sadar. The list of KII participants is provided in the Annex. These interviews explored all major evaluation dimensions: Relevance and Appropriateness, Efficiency, Effectiveness, Coverage, Impact, Sustainability, connectedness, and Quality Standards.

15.11. KII With Government Official at Rajbari District

Dr. Shohidul Islam, Deputy Director (Agriculture) in Rajbari District, emphasized that the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project was highly relevant and well-aligned with the needs of smallholder farmers, women, and youth in the Rajbari region. According to Dr. Shahidul Islam, Deputy Director in Rajbari Sadar, the project effectively addressed key challenges such as low productivity, high input costs, unsafe production practices, limited market access, and weak value chain linkages.

Mr. Rafiqul Islam, Upazila Agriculture Officer in Baliakandi, Rajbari, noted significant achievements of the project, including increased cultivation area, higher vegetable production, and rising profit margins. These improvements directly contributed to enhanced income, better household food security, and improved nutrition. All major interventions, including training on Good Agricultural Practices (GAP), promotion of ecological farming, provision of quality inputs, strengthening of market linkages, and formation of producer groups, were reported to be consistent with the project's overall goal of improving livelihoods through safe and sustainable vegetable production and marketing.

The project was implemented efficiently and largely according to the planned schedule. Planning, implementation, monitoring, and reporting processes were described as well-structured and timely. Farmers received continuous technical support and improved access to quality inputs, which facilitated the adoption of ecological farming practices.

Mr. Jony Khan, Upazila Agriculture Officer in Rajbari Sadar, emphasized that most planned objectives were achieved on time, and both qualitative and quantitative outcomes were significant. Project outputs such as increased production, improved soil fertility, reduced input costs, adoption of ecological methods, and enhanced market linkages were either achieved or exceeded. He further noted that the promoted practices-ecological farming, organic inputs, and collective marketing-are cost-effective and environmentally sustainable, encouraging farmers to continue these practices beyond the project's duration.

However, one SAAO mentioned some operational challenges, including occasional delays in distributing inputs (particularly seeds and organic fertilizers), which affected the ideal planting schedule. Extreme weather events, such as heavy rainfall and drought, also disrupted field demonstration activities at times. Ms. Masuma Akter, Sub Assistant Agriculture Officer in Islampur, Baliakandi, confirmed that the project effectively reached a large proportion of its targeted beneficiaries and achieved its planned objectives. A majority of farmers have actively adopted improved vegetable production techniques, such as modern cultivation technologies, proper spacing, mulching, Integrated Pest Management (IPM), balanced fertilizer use, and improved irrigation methods. These techniques have resulted in higher yields, better-quality produce, and reduced production costs.

Safe vegetable production technologies have also been successfully introduced and widely accepted. Farmers are now using organic fertilizers, compost, vermicompost, pheromone traps, botanical pesticides, and maintaining proper pre-harvest intervals when applying chemical inputs. These practices have reduced harmful chemical residues, improved soil health, and increased consumer confidence in safe vegetables. Farmers also demonstrated a strong commitment to continuing these practices beyond the project period.

Md. Monjur Morshed, Sub Assistant Agriculture Officer in Sultanpur, Rajbari Sadar reported significant positive impacts of the project on production, income, and market access. The expansion of cultivation areas, adoption of GAP and ecological practices, and improvements in soil fertility have contributed to substantial production and income gains. Collaboration has also increased among farmers, producer groups, private sector actors, and government agencies, strengthening the overall vegetable value chain. The project has built substantial capacity among farmers, producer organizations, local government institutions, and PKSf, laying a strong foundation for continued value chain development and scaling up of safe vegetable production. Farmers have enhanced their skills in safe production techniques, post-harvest handling, value addition, and marketing, enabling them to operate their enterprises more effectively and sustainably.

Dr. Shohidul Islam, Deputy Director (Agriculture) in Rajbari District, emphasized that many farmers are now more confident in managing pests and diseases through eco-friendly approaches, rather than relying solely on chemical pesticides. Moreover, safe vegetable cultivation is increasingly viewed as financially viable and attractive, particularly for youth and small-scale farmers, due to lower production costs, higher market prices for organic produce, and short production cycles that provide quick returns on investment.

KII participants strongly believe that the project's outcomes are sustainable beyond its implementation period. Farmers have gained practical skills and knowledge, and the project's interventions - particularly ecological and low-cost farming methods - are both economically viable and environmentally sustainable, ensuring continued adoption. Sustained improvements in family income, nutrition, and environmental health are expected due to improved production practices and reduced chemical use.

Women's roles in household decision-making are likely to expand further as economic empowerment increases. The strengthened collaboration between farmers, producer groups, DAE, PKSF, and private sector partners has created a robust support system for ongoing production, marketing, and capacity-building efforts.

Key informants highlighted that the project effectively addressed the specific needs and priorities of women, youth, and marginalized groups. Women's participation in vegetable production, marketing, and decision-making has increased significantly, and youth engagement in cultivation and value addition activities is on the rise. Targeted training and support have enhanced the skills and confidence of these groups, ensuring their meaningful involvement in the project's implementation and outcomes.

16. QUALITATIVE STUDY -CONTROL GROUP: FOCUS GROUP DISCUSSION (FGD)

Faridpur District: Modhukhali Upazila

A total of 7 Focus Group Discussions (FGDs) were conducted with control group farmers from Char Chandana, Mohisapur, and Asapur villages under Gajna Union, Modhukhali Upazila, Faridpur District. Participants included 12 women and 60 men. These discussions aimed to capture the current status of vegetable cultivation practices, knowledge, and outcomes among farmers who did not participate in the *Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project*.

16.1 Land Use, Cultivation, and Production Practices

Farmers in the control group reported cultivating a range of vegetables, including spinach, bottle gourd, beans, cucumber, chili, cauliflower, okra, bitter gourd, sponge gourd, pumpkin, red amaranth, tomato, garlic, onion, eggplant, and cumin. On average, they cultivate vegetables on 5 to 40 decimals of land per year.

While production has increased slightly over time, farmers attributed this mainly to the increased use of chemical fertilizers rather than improved cultivation techniques or ecological practices. Most farmers continue to rely on traditional methods, and there has been limited innovation or diversification in production approaches.

16.2 Knowledge and Practice of Safe and Environment-Friendly Vegetable Production

Only a small proportion (about 10%) of control group farmers reported having any knowledge of safe or environmentally friendly vegetable production practices. Among them, around 15 farmers stated that they were aware of some components of Good Agricultural Practices (GAP) and had partially applied them in vegetable farming and harvesting. However, these practices are not widespread and are often inconsistently implemented due to limited technical support and training.

Most farmers remain unaware of ecological farming techniques, such as the use of organic fertilizers, biological pest management, or integrated pest management (IPM). Chemical fertilizers and pesticides remain the dominant inputs, often used without proper guidance on dosage or environmental safety.

16.3 Awareness of Climate Change and Adaptation

The FGDs revealed a significant gap in awareness regarding climate change and its impacts on agriculture. None of the participating farmers reported having received training or guidance on climate-smart practices such as adjusting planting schedules, using stress-tolerant varieties, or adopting soil and water conservation techniques. As a result, they continue to face challenges related to unpredictable rainfall, temperature fluctuations, and pest infestations without adequate adaptation measures.

16.4 Soil Health Management

Only about 10% of farmers in the control group reported conducting soil tests to assess soil fertility and nutrient status. Most farmers are unaware of the importance of soil testing or how to use the results to optimize fertilizer application. As a result, fertilizer use tends to be imbalanced and based on guesswork rather than scientific recommendations, which may affect long-term soil health and productivity.

16.5 Post-Harvest Management and Value Addition

None of the control group farmers reported having knowledge or practice of post-harvest management techniques, such as cleaning, sorting, grading, or value addition. Vegetables are typically harvested and sold directly in local markets without proper handling, resulting in quality deterioration and post-harvest losses. Similarly, food processing and packaging activities are virtually absent, limiting opportunities for income diversification and higher-value market access.

16.6 Income Generation, Food Security, and Nutrition Status of Farmers

The findings from the FGDs with control group farmers show that there has been no significant change in household income levels or daily food consumption patterns during the project period. Most farmers still use traditional cultivation methods and have limited access to land and inputs, which hinders their ability to increase income and improve their livelihoods.

All participating farmers mentioned that they can fulfil their basic household food requirements by consuming some of the vegetables they grow and selling the rest in local markets. However, the income generated from vegetable cultivation is modest, which limits their capacity to invest in better farming techniques, diversify production, or expand their farming areas.

There is minimal knowledge of food processing and preservation techniques among the control group farmers, with most practices limited to basic household tasks like cutting, washing, cooking, and simple storage. More advanced value addition methods, such as drying, pickling, or packaging, are not commonly used, which restricts opportunities for income diversification.

Regarding nutrition, only around 30% of households reported having sufficient dietary diversity by regularly including various vegetables and other nutrient-rich foods in their meals. The rest of the households have limited diet diversity, often due to financial constraints and a lack of awareness about balanced nutrition. Consequently, improvements in nutrition outcomes among control group farmers are limited compared to those observed in project-supported households.

16.7 Market System Development and Income

The findings from the FGD indicate that control group farmers have limited market access and participation in value chains. Most farmers sell their produce directly in local village markets or weekly haats (local village markets), where prices are low and fluctuate based on supply and demand. Farmers typically sell individually and lack collective marketing strategies, which reduces their bargaining power and profit margins.

None of the households interviewed were aware of collection points or how they could help with bulk sales and attracting larger buyers. Additionally, there are no connections to regional or national markets, and farmers do not have access to structured value chain networks that could help them increase production or access higher-value markets.

The lack of organized marketing channels and integration into value chains significantly hinders income growth and market opportunities for control group farmers. It is essential to improve market linkages, raise awareness about collective marketing, and connect farmers to regional and national value chains for future interventions.

16.8 Financial Access

Access to formal financial services among control group farmers is still very limited. According to the findings from the FGDs, less than 10% of vegetable farmers have received funding from the SDC microcredit program, and most beneficiaries have little to no knowledge about the various loan categories or eligibility criteria.

None of the participating farmers mentioned receiving financial assistance from other NGOs or government financial institutions, which further hinders their ability to invest in better inputs, irrigation systems, or expanding their cultivation. Farmers pointed out that the loan application and approval processes of NGOs are often complex and time-consuming, which discourages them from seeking credit when needed. As a result, most control group farmers rely on their own limited resources or informal borrowing arrangements, often at higher interest rates. This lack of access to affordable credit continues to be a major obstacle to adopting improved farming practices, expanding production, and increasing profitability.

16.9 Access to Knowledge, Capacity Building, and Input/Technical Support

FGD findings indicate that control group farmers have not received any structured training or capacity-building support on modern agricultural technologies or improved crop production practices.

16.10 Access to Knowledge, Capacity Building, and Input/Technical Support

FGD findings indicate that control group farmers have not received any structured training or capacity-building support on modern agricultural technologies or improved crop production practices. They reported a complete absence of exposure to new or high-value crops such as broccoli, dragon fruit, and summer tomato, which limits their ability to diversify production and respond to emerging market opportunities.

Additionally, farmers did not receive agricultural inputs or technical assistance from government agencies or private sector actors. They also lacked opportunities for cross-learning or exposure visits to other project areas, which could have helped them adopt improved practices and technologies. The absence of institutional support, training, and input supply continues to constrain productivity, innovation, and competitiveness in vegetable cultivation among control group farmers.

16.11 Women's Participation, Empowerment, and Decision-Making

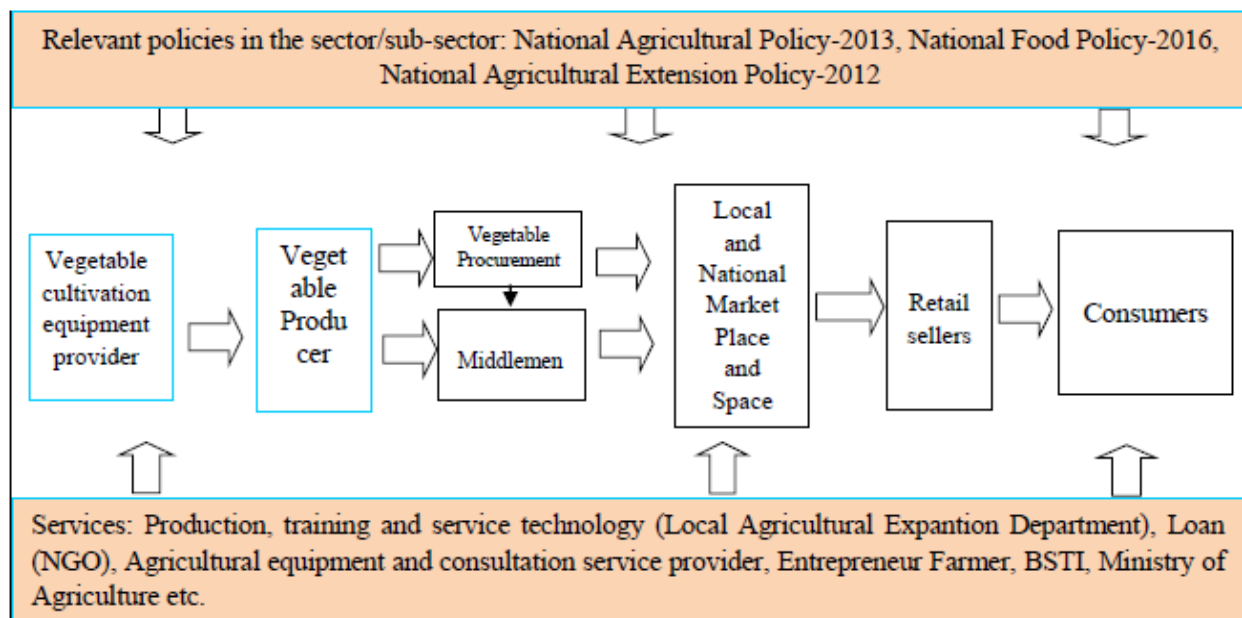
Women's involvement in agricultural decision-making and household matters is still limited in the control group. Only around 20% of women reported participating alongside men in household decisions concerning children's education, food choices, cooking, healthcare, market access, financial matters, and property purchases.

However, the majority of key decisions, such as those related to food preparation, distribution, and financial management, are primarily made by men. Women also face challenges in accessing financial resources, project benefits, and external decision-making platforms, which hinder their empowerment and ability to influence outcomes both within and outside the household. The heavy agricultural workload further restricts women's participation, limiting their time and opportunities for training, community engagement, and leadership roles. Targeted interventions are needed to enhance women's access to resources, knowledge, and decision-making opportunities in future initiatives.

16.12 Value Chain Mapping

Figure 1: The value chain map of ecologically friendly, safe vegetable farming sub-sector

17. RECOMMENDATIONS



- **Strengthen Farmers' Capacity through Continuous Training:** Organize regular and refresher training on Good Agricultural Practices (GAP), ecological farming, Soil test fertility management, and Integrated Pest Management (IPM), post-harvest handling, and financial literacy to improve productivity and sustainability.
- **Promote Climate-Resilient and Climate-Smart Practices:** Encourage raised-bed cultivation, saline/drought-tolerant seeds, water-efficient irrigation, mulching, water harvesting, and other adaptive techniques to enhance resilience to climate change.
- **Encourage Ecological and Sustainable Input Use:** Promote compost, vermicompost, green manure, botanical pesticides, crop rotation, and intercropping to maintain Soil test health, reduce chemical dependency, and protect biodiversity.
- **Strengthen Input Supply Systems and Quality Control:** Enhance the capacity of local agro-input dealers, establish community seed banks, and ensure quality control to prevent counterfeit inputs, supported by public–private partnerships.
- **Facilitate Access to Credit and Financial Services:** Improve farmers' access to affordable finance and microcredit to support farm operations, value addition, and agribusiness start-ups.
- **Foster Entrepreneurship and Inclusive Agribusiness:** Support youth- and women-led agribusinesses through incubators, mentorship, start-up grants, and technical assistance to encourage innovation and employment.
- **Promote Group-Based Enterprises and Collective Action:** Encourage cooperatives and group-based enterprises for collective investment, risk reduction, shared resources, and stronger bargaining power.
- **Improve Market Access and Strengthen Value Chains:** Enhance linkages with wholesalers, retailers, supermarkets, and online platforms; organize fairs and exhibitions; and establish direct marketing channels like farmers' markets and CSA models.

- **Develop Collection and Distribution Infrastructure:** Set up collection points for bulk produce, Safe Vegetable Sales Corners, and branded sales points with proper labeling and promotion to attract institutional buyers and build consumer trust.
- **Support Value Addition and Business Development:** Provide targeted training on processing, packaging, branding, and business management to increase farmers' income and competitiveness.
- **Enhance Certification Support and Incentives:** Introduce subsidies or cost-sharing schemes for certification fees, establish local support units, provide technical assistance, and recognize certified producers through premium pricing and public procurement.
- **Strengthen Institutional Support and Field Supervision:** Ensure regular field visits by senior DAE officials and Union-level SAAOs to provide on-site guidance, technical support, and confidence-building among farmers.
- **Promote Nutrition-Sensitive Agriculture:** Encourage households to consume their own safe vegetable produce to improve dietary diversity and household nutrition.
- **Raise Awareness and Showcase Role Models:** Promote success stories of women and youth entrepreneurs to change social norms and inspire wider adoption of safe and ecological farming.
- **Encourage Community-Based Decision-Making and Collective Resilience:** Foster community-level collaboration and decision-making to address local challenges, enhance social cohesion, and strengthen resilience to shocks.

18. CONCLUSION AND LESSONS LEARNED

18.1 Conclusion

The final evaluation of the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project shows that the initiative has made a significant impact on improving the livelihoods, income, and resilience of smallholder farmers in Faridpur and Rajbari districts. By promoting ecological farming practices, enhancing market connections, and building farmers' technical skills, the project successfully transitioned traditional, chemical-intensive agriculture to a more sustainable, climate-resilient, and profitable production system.

The project enabled farmers to expand their vegetable cultivation land and production, adopt Good Agricultural Practices (GAP), and reduce production costs by using organic fertilizers, bio-pesticides, and integrated pest management (IPM). These changes led to increased yields, improved quality, and higher profitability. Household food security and nutritional diversity also improved, with women taking a more active role in dietary decision-making. Additionally, the project created new job opportunities for landless women and youth, promoting inclusive growth and community resilience.

Market connections were significantly strengthened, allowing farmers to interact directly with buyers and institutional markets, enhancing their bargaining power and market reach. Collective action through producer groups further facilitated bulk procurement and joint marketing. Despite these achievements, challenges such as limited access to affordable credit, inadequate post-harvest and value addition infrastructure, gaps in soil testing services, and the need for broader market integration beyond local markets persist.

Overall, the project has been effective and relevant in addressing key constraints in vegetable production and marketing. Its interventions are likely to continue beyond the project duration due to strong farmer capacity, institutional connections, and the economic and environmental viability of ecological farming practices. The project serves as a scalable model for future initiatives seeking to promote safe food systems, boost rural incomes, and enhance agricultural value chains in Bangladesh.

18.2 Lessons Learned

1. **Farmer Training and Continuous Support Are Crucial:** Regular training on ecological practices, GAP, and post-harvest management, combined with continuous technical support from extension services, significantly improves the adoption and sustainability of improved practices.
2. **Peer-to-Peer Learning Enhances Adoption:** Even farmers who did not receive formal training adopted GAP and ecological methods by observing trained peers, highlighting the value of farmer-to-farmer knowledge exchange.
3. **Market Linkages Drive Sustainability:** Strengthening linkages with institutional buyers, traders, and input suppliers improves farmers' access to quality inputs, market information, and fair prices, which enhances profitability and project sustainability.
4. **Group-Based Approaches Increase Bargaining Power:** Formation of producer groups facilitates bulk input procurement, reduces costs, and strengthens farmers' bargaining position in the market.
5. **Access to Affordable Finance Is a Key Constraint:** Limited access to loans and credit facilities restricts farmers' ability to invest in quality inputs, expand production, and adopt improved technologies. Tailored financial products are essential for scaling ecological farming.
6. **Post-Harvest Management Remains a Gap:** Despite progress, post-harvest losses remain significant due to inadequate infrastructure, limited skills in sorting, grading, and storage, and a lack of value addition activities.
7. **Women's Participation Needs Strengthening:** While women's engagement in decision-making and nutrition has improved, their participation in production, marketing, and financial activities remains limited and requires targeted interventions.
8. **Soil test Testing Services Are Underutilized:** Farmers recognize the importance of Soil testing, but face limited access to services. Expanding Soil testing facilities and advisory services is essential for optimizing fertilizer use and improving Soil test health.
9. **Climate-Resilient Practices Enhance Productivity:** Adoption of climate-smart practices such as mulching, drought-tolerant varieties, and adjusted planting schedules improves resilience and productivity in the face of climate variability.
10. **Value Addition Offers Untapped Potential:** Small-scale processing and value-added products such as pickles, sauces, and dried vegetables offer opportunities for income diversification and increased profitability.
11. **Institutional Collaboration Strengthens Outcomes:** Partnerships with DAE, NGOs, and private actors enhance technical support, input supply, and market access, contributing to the long-term sustainability of project outcomes.
12. **Community Awareness on Safe Vegetables Is Growing:** Increased consumer demand for chemical-free produce is creating new market opportunities, reinforcing the business case for safe vegetable production.

19. ANNEXURES-1

Annex 1.1. Case studies / Success Stories

Case Study 1: Arifa Begum-Transforming Her Livelihood through Safe Vegetable Farming

Arifa Begum, a dedicated member of the farmers' group under the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project, has successfully transformed her life through ecological vegetable farming. Since joining the group in 2022, she has received various trainings on safe vegetable production, Integrated Pest Management (IPM), and ecological farming practices, which have significantly enhanced her knowledge and confidence.



Inspired by the training, Arifa began cultivating vegetables on her homestead land. She initially started small, cultivating vegetables on five decimals (0.05 acre) of land to gain hands-on experience. Encouraged by her initial success, she expanded her farming to include two decimals for seedbed preparation and five decimals for field production. With continuous practice and support, she developed skills in both nursery management and field-level cultivation. The project and SDC provided her with training and materials, which allowed her to prepare three seedbeds and cultivate 50 seedlings of three different varieties, boosting her confidence to expand further.

Committed to sustainability, Arifa now prepares and applies her own organic compost fertilizer to her fields. The results have been remarkable: she not only ensures nutritious food for her family but also earns a steady income by selling surplus produce locally. On average, she earns about BDT 30,000 to 35,000 per month from vegetable cultivation.

Arifa's success has inspired many other women in her village to start their own vegetable gardens, fostering self-reliance and sustainable farming in the community. She attributes her economic and social empowerment to the opportunity provided by SDC and the Sub-Project 12. Her journey serves as a powerful testament to how ecological and safe farming practices can empower women, transform rural livelihoods, and promote sustainable agricultural development in Bangladesh.

Case study-1.2: A Story of Transformation – Kolom Chokder's Journey through Ecology-Friendly Vegetable Farming

Before joining the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project (RMTP), 47-year-old Kolom Chokder, who lived with his wife and four children, worked as a day laborer, earning an income insufficient to support his family's basic needs. They often managed only one or two meals a day, and their diet lacked essential nutrients like vegetables, milk, or meat (15). Although he owned a small piece of land, he was unaware of modern cultivation methods and relied heavily on chemical fertilizers and pesticides, which increased costs and damaged the soil, resulting in minimal farming income.

Kolom learned about the project, implemented by SDC with support from PKSF, IFAD, and DANIDA, in 2022. He became a member of a farmers' group and received training on safe and ecological vegetable cultivation¹⁸. The training covered preparing and using organic fertilizer and vermicompost, applying *Trichoderma* for soil treatment, and natural pest control using pheromone traps and sticky boards. He also learned about Good Agricultural Practices (GAP), Integrated Pest Management (IPM), and post-harvest management.



With increased knowledge and confidence, and regular hands-on support from project staff and SAAOs, Kolom first cultivated vegetables on one decimal of land to test the methods. The encouraging results prompted him to gradually expand his cultivation area to twelve decimals. By using compost and organic fertilizers, his soil became more fertile, and the vegetables grew well and looked fresher. Production costs were reduced as he no longer needed to spend much on chemical fertilizers and pesticides. In 2024 (Bengali year 1427), he sold vegetables worth about BDT 40,400 from 14 decimals of land, making a net profit of around BDT 28,900. He also established better market connections through the project and sells his chemical-free produce to local traders for premium prices.

Kolom now earns a good income, and his family eats a more nutritious diet, including 250–300 grams of vegetables per person daily, fish, milk, and fruits, leading to improved health. His wife participates in planning, and their children attend school regularly. His success in ecological farming has made him a source of inspiration, with many farmers visiting his field to learn his methods. He plans to expand his cultivation, start producing value-added products, and form a farmers' group for collective marketing and input purchasing³⁰. He is deeply grateful to SDC, PKSF, IFAD, and DANIDA, recognizing that ecological farming ensures higher income and better health while protecting the environment.

Case Study 1.3: Md. Jakir Darani, Pioneer of Climate-Smart Agriculture

Md. Jakir Darani, a 38-year-old farmer from Faridpur, transformed his livelihood by adopting Climate-Smart Agriculture (CSA) under the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project (RMTP), implemented by SDC with support from PKSF, IFAD, and DANIDA. Before joining the project in 2022, Jakir depended heavily on chemical fertilizers and pesticides, which led to high farming costs, declining soil fertility, a drop in crop productivity, and subsequent economic hardship and environmental degradation.



Determined to change, Jakir joined the SDC-RMTP project and received extensive training on ecological and climate-smart farming techniques. The training included the use of bio-pesticides, pheromone traps, mulching, composting, and intercropping. Applying these techniques on 130 decimals (1.3 acres) of land, he replaced harmful chemicals with organic inputs and efficient irrigation and soil management systems. The results were remarkable: his production costs fell sharply, and his yields improved significantly³⁷. By cultivating crops like cucumber, bitter gourd, ridge gourd, and sponge gourd, he earned around BDT 260,000 in a single summer season. His chemical-free vegetables now command premium prices in local markets³⁹. Beyond the financial benefits, Jakir's new practices have improved soil health, reduced pest infestation, and ensured year-round nutritional security for his family.

Jakir has become a respected model farmer in his community, inspiring others to adopt climate-smart and eco-friendly methods. Looking ahead, he plans to expand his cultivation area, diversify into high-value crops, and form a producer group to strengthen market access. His success demonstrates how training, knowledge, and innovation can help smallholder farmers achieve both economic resilience and environmental sustainability.

Case study 1.4: The Seed of Success: A Nursery Entrepreneur's Journey

Sohel Mollah, a 35-year-old farmer who had a deep-rooted passion for agriculture, faced a period of frustration and uncertainty despite assisting his father in farming since childhood. With a family of five, he felt directionless and even began preparing to migrate for a better financial future. His turning point came when he learned about SDC and its RMTP sub-project, focused on "Environment-friendly and Safe Vegetable Production and Marketing.

In 2022, Soheli enrolled as a member of the safe vegetable farmer group. The advanced training he received was transformative, teaching him not only *how* to farm safe vegetables but also the crucial role of the seed and seedling in ensuring safety. This realization sparked a powerful entrepreneurial idea: he resolved to open his own nursery dedicated to producing safe, healthy seedlings. He took the initiative to prepare organic fertilizer and produce his own cocopeat. Recognizing his zeal, SDC provided a grant of 40,000 BDT in June 2023.

With the SDC grant, Sohel launched his venture on 3.5 dm of land, starting modestly with 100 seedling trays⁵². Local farmers who bought his high-quality, safe seedlings saw excellent results in their first-year harvests, leading to rapid word-of-mouth promotion. Today, Sohel Mollah's nursery, which produces varieties like cauliflower, cabbage, chili, and tomato, has expanded to 7 dm. He has scaled his operation from 100 to 800 seedling trays, producing upwards of 80,000 to 90,000 seedlings annually, which he sells both online and offline.



The financial and social impact has been profound. Sohel now enjoys an annual income of 2,00,000–2,50,000 BDT, translating to a monthly earning of 25,000-30,000 BDT. He is now both socially and economically stable and proud to have achieved a significant part of his ambition without having to leave his family or country. He plans to further expand his nursery business and scale its reach, helping more people adopt a healthier lifestyle through safe vegetable cultivation. He is deeply grateful to the SDC-RMTP project for transforming his uncertainty into a definitive success story.

Case study 1.5: Md. Moshir Rahman – Turning a Dream of Healthy Soil into a Growing Enterprise

Md. Moshir Rahman, a member of the Ecological Farming Group under the *Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project*, has emerged as an inspiring example of how small-scale innovation can contribute to sustainable agriculture and national food security. The sub-project, implemented under the Rural Microenterprise Transformation Project (RMTP) by SDC with financial assistance from IFAD and DANIDA, and in cooperation with Palli Karma-Sahayak Foundation (PKSF), aims to promote environmentally sound and economically viable agricultural practices across rural Bangladesh.



Moshir Rahman, son of Mojahedur Rahman, lives with his wife, mother, and two young sons (aged five and two) at Village No. 1, Molla Bari Road, Faridpur Sadar. Coming from a family deeply rooted in agriculture, he has always been passionate about improving soil health and reducing dependence on chemical fertilizers that degrade soil fertility over time. Motivated by his learnings and exposure through the project's ecological farming initiatives, Moshir decided to take a bold step toward his vision.

On 25 October 2024, he established an organic fertilizer production plant named “Safwan Agro and Organic Plant” at Rashik Nagar, Dakkhin Para, Faridpur Sadar. His enterprise specializes in the production of vermicompost and trichocompost—two highly effective organic soil amendments.

Vermicompost enhances soil fertility by introducing beneficial microbes, improving soil structure, increasing water retention, and boosting nutrient availability. Trichocompost, enriched with *Trichoderma*, promotes plant growth and acts as a natural defense against fungal diseases, reducing the need for chemical pesticides. Together, these organic fertilizers not only improve soil productivity but also contribute to long-term agricultural sustainability.

Moshiur currently produces around 2,500 kilograms of organic fertilizer per month, with a production cost of approximately Tk. 20,000, and sales revenue reaching about Tk. 50,000. His products are gaining popularity among local farmers who are increasingly aware of the benefits of ecological farming practices.

Looking ahead, Moshiur dreams of expanding Safwan Agro and Organic Plant into a large-scale organic manure industry with an integrated supply chain network across Bangladesh. His ultimate goal is to promote soil health, enhance crop productivity, and ensure food security for future generations.

Through determination, innovation, and ecological awareness, Md. Moshiur Rahman is transforming his dream into reality-proving that sustainable farming practices can be both environmentally beneficial and economically rewarding.

Annex. 2: Study on Brinjal Cultivation with Drip Irrigation

The Society Development Committee (SDC) is providing all necessary technical, capacity-building, and market linkage development supports to the farmers through the *Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project*. This initiative champions the integration of modern irrigation technologies to boost both the yield and quality of local produce, establishing a sustainable blueprint for farming communities. The project's impact is best seen in the fields of Rajbari Sadar Upazila, where farmers are already reaping significant rewards.



In the village of Barabakpur, farmer Md. Asiruddin Sarder is demonstrating the future of cultivation on his 33-acre plot of eggplant. By adopting modern drip irrigation, he has fundamentally changed his resource management. This precision system delivers specific water amounts directly to the plant base, resulting in substantial water savings, optimal root moisture, and reduced weed proliferation. When paired with bed and mulching techniques, the drip system ensures the uniform

application of nutrients, leading directly to a marked increase in yield and the production of visibly higher-quality eggplants. This technology-based approach serves as a compelling, environmentally friendly model that others in the community are now eagerly replicating.

Further solidifying the success of the project, Md. Nazrul Islam in Ramnagar is utilizing sprinkler irrigation for his early onion crop. This fountain-like technology ensures efficient coverage across his field while achieving remarkable water savings of 40-50%. Crucially, the sprinkler method prevents waterlogging, which minimizes the incidence of pests and diseases, allowing the onion plants to grow stronger with larger, more uniform bulbs. The strategic choice to cultivate an early crop, supported by this efficient technology, enables Mr. Islam to enter the market at the beginning of the season when prices are at their peak. This access advantage is projected to deliver a significant 20–30% increase in profit compared to traditional methods. Together, these farmers exemplify how targeted technological intervention provides a clear pathway to higher profitability and agricultural resilience.

Annex 3. Scope of the study/evaluation

The project was implemented across two upazilas of Faridpur District, covering 18 unions, and two upazilas of Rajbari District, encompassing 16 unions.

The final evaluation was conducted to thoroughly review the outcomes, impacts, and overall effectiveness of the Ecology-Friendly Safe Vegetable Production and Marketing Value Chain Sub-Project after its implementation. The main goal of this evaluation was to assess the changes brought about by project activities and to provide evidence-based insights that will guide future programs, strategic planning, and policy development in value chain initiatives.

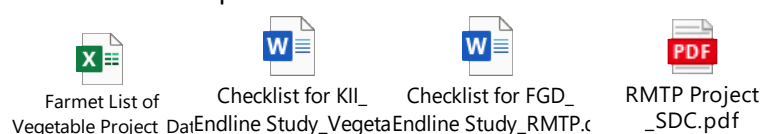
The evaluation was guided by the indicators outlined in the project's logical framework, enabling the assessment of both the nature and extent of changes and impacts observed throughout the project lifecycle. To ensure a robust and holistic understanding of the results, a mixed-method approach—combining quantitative and qualitative tools—was employed.

Specifically, the study explored the following key dimensions:

- Changes in safe vegetable production practices.
- Changes in the volume and value of safe vegetable sales.
- Variations in production costs among farmers.
- Income changes among participating farmers and entrepreneurs.
- Development of linkages with relevant service providers.
- Coverage of soil testing activities for nutrient deficiency identification.
- The engagement, participation, and empowerment of women within the project framework.
- The role of women in household decision-making, particularly concerning food and nutrition.
- The overall food security status of project-supported farming households.

Annex 4. Data collection tools

The study employed online data collection using KoboToolbox, which ensured efficient, accurate, and real-time recording of responses from participants. This digital approach enhanced data quality and streamlined the overall data management process for the study. In total, data were collected from 364 respondents, including 384 participants from the program group and 80 from the control group. A total of 10 enumerators were engaged in the data collection process, ensuring comprehensive coverage and accuracy during field data gathering through the KoboToolbox platform. This approach allowed for systematic and reliable data gathering, facilitating a thorough assessment of the project's outcomes and impacts.



Kobo Questionnaires for HH data collection:

<https://ee.kobotoolbox.org/x/Q4KPTqUt>
<https://ee.kobotoolbox.org/x/Q4KPTqUt>

Annex 5. Key data sets, including interview transcripts

This annex presents the key data sets collected during the study, including interview transcripts, focus group discussions, and survey data. The transcripts were prepared in both Bangla and English and later translated into the local language to ensure accuracy, clarity, and contextual relevance. These data sets capture the perceptions, experiences, and feedback of participants from both program and control groups, serving as the primary qualitative evidence supporting the study's findings and analysis. This approach helped enumerators and respondents communicate effectively, improving the reliability of the collected information.

Annex 6. List of key informants

Serial No.	Name	Designation	Location/Area	Mobile No.
01	Md. Shahaduzzaman	Deputy Director (Agriculture)	Faridpur District	01718443434
02	Kbd. Md. Kibria	Senior Scientific Officer & In Charge (SRDI)	Faridpur District	01716642575
03	Anowar Hossain	Upazila Agriculture Officer	Faridpur Sadar	01717985229
04	Suraiya Hossain	Sub Assistant Agriculture Officer	Machchar, Faridpur Sadar	01712435335
05	Dolly Rani	Sub Assistant Agriculture Officer	Machchar, Faridpur Sadar	01739224299
06	Lotika Khatun	Sub Assistant Agriculture Officer	Kanaipur, Faridpur Sadar	01755798394
07	Sanjay Biswas	Sub Assistant Agriculture Officer	Kanaipur, Faridpur Sadar	01728558967
08	Alfier Rahman	Upazila Agriculture Officer	Boalmari, Faridpur	01719162103
09	Abu Bokor Siddique	Sub Assistant Agriculture Officer	Saltha, Boalmari	01724908838
10	Md. Imran Hossain	Sub Assistant Agriculture Officer	Ghospur, Boalmari	01711363103
11	Dr. Shohidul Islam	Deputy Director (Agriculture)	Rajbari District	01716542638
12	Rafiqul Islam	Upazila Agriculture Officer	Baliakandi, Rajbari	01773152226
13	Masuma Akter	Sub Assistant Agriculture Officer	Islampur, Baliakandi	01305173666
14	Sujit Kumar Das	Sub Assistant Agriculture Officer	Islampur, Baliakandi	01624446687
15	Md. Jani Khan	Upazila Agriculture Officer	Rajbari Sadar	01700715822
16	Md. Mansur Alam	Sub Assistant Agriculture Officer	Alipur, Rajbari Sadar	01718234723
17	Nilima Rani Biswas	Sub Assistant Agriculture Officer	Banibah, Rajbari Sadar	01725368219
18	Md. Monjur Morshed	Sub Assistant Agriculture Officer	Sultanpur, Rajbari Sadar	01735976020



Annex 1. ToR of the
EnLine Study.docx

Annex 7. A copy ToR

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Annex 9. PHOTOS OF THE STUDY

KEY INFORMANT INTERVIEW



Figure 3 KII with Rajbari



Figure 3 KII with DD, Faridpur



Figure 6 KII with Sub Assistant Ag Officer



Figure 5 KII with Sub Assistant Ag Officer



Figure 4 Kii with an Advanced Farmer

FOCUS GROUP DISCUSSION



Figure 12 FGD with control group



Figure 9 FGD with Mixed group



Figure 7 FGD with control group



Figure 50 group members