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BASELINE ASSESSMENT: SAFE BD PROJECT

Funded by STDF | Implemented by Swisscontact

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Study Conducted by Innovision Consulting Pvt. Ltd.

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ABBREVIATIONS

BFVAPEA	Bangladesh Fruits Vegetables and Allied Products Exporters Association
BARI	Bangladesh Agricultural Research Institute
BSTI	Bangladesh Standards and Testing Institution
DAE	Department of Agricultural Extension
GAP	Good Agricultural Practices
HACCP	Hazard Analysis and Critical Control Points
IPM	Integrated Pest Management
KII	Key Informant Interview
MRL	Maximum Residue Limit
MoC	Ministry of Commerce
NGO	Non-Governmental Organization
PC	Phytosanitary Certificate
PHI	Pre-Harvest Interval
PQW	Plant Quarantine Wing
SPS	Sanitary and Phytosanitary
SGS	Société Générale de Surveillance
STDF	Standards and Trade Development Facility
FGD	Focus Group Discussion
RMG	Ready Made Garments
SME	Small and Medium Enterprise

EXECUTIVE SUMMARY

This baseline assessment was conducted by Innovision Consulting Private Limited for SAFE BD project (STDF/PG/831), funded by the STDF and implemented by Swisscontact in partnership with Department of Agricultural Extension (DAE), Bangladesh Fruits, Vegetables & Allied Products Exporters' Association (BFVAPEA), SGS, and the Ministry of Commerce. It provides the first comprehensive study of Sanitary and Phytosanitary (SPS) compliance gaps across the gourd value chain in Bangladesh. Despite producing more than 17 million metric tons of vegetables annually, Bangladesh exports less than 0.3 percent of its output due to persistent weaknesses in production practices, pesticide management, traceability, testing capacity, and post-harvest systems.

The SAFE BD project aims to help address these constraints and enhance SPS compliance for export-oriented vegetables.

*The study covered **401 farmers** across Jashore and Narshingdi, conducted **13 key informant interviews and 4 focus group discussions**, and **engaged institutional stakeholders** such as DAE, PQW, SGS, and BFVAPEA.*

Findings reveal clear location-level differences, but also widespread systemic weaknesses that cut across all sub-districts.

Key Findings from the Study

At the farmer level, awareness of SPS concepts is relatively high (77 percent), yet actual compliance remains low. Farmers are rarely linked directly with exporters and therefore lack incentives to meet strict market requirements. Most rely on intermediaries and local markets, weakening traceability and discouraging investment in improved practices. Pesticide spraying is excessive in several sub-districts, with some farmers applying 50 or more sprays per season and showing weak adherence to pre-harvest intervals. Written recordkeeping is extremely rare (3–7 percent), creating major transparency gaps. Although inputs and advisory services are available, farmers lack practical guidance and market-linked motivation to follow SPS-compliant protocols. Gender participation is also limited. While women contribute to activities such as harvesting and sorting, their involvement in decision-making, production planning, and marketing remains minimal, highlighting an opportunity for targeted interventions that promote meaningful female participation.

At the post-harvest and supply chain level, systemic weaknesses persist. Most produce passes through several local aggregators and markets before reaching exporters, increasing contamination and mixing risks. Cold-chain infrastructure is nearly absent, washing and grading practices are inconsistent, and packaging often falls below ISO standards. With fewer than 10 percent of farmers washing produce post-harvest and 44 percent reusing fertilizer or pesticide sacks for packaging, SPS vulnerabilities remain high.

At the exporter level, constraints intensify. Although 99 percent of vegetables are shipped by air, cold storage is unavailable at packing houses and airports, and consignments must be delivered six hours before flight departure. The harvest-to-airport timeline averages 14–16 hours, further affecting quality. Exporters identify pesticide residue failures as the main barrier to accessing premium markets such as the EU. However, many prioritize Middle Eastern markets, where standards are lower and compliance checks fewer. Consequently, financial losses from EU rejections have not yet created strong incentives to consistently meet higher standards. Strengthening the link between EU compliance and economic returns could encourage exporters to upgrade practices and pursue higher-value markets.

At the regulatory and testing level, important gaps remain. Bangladesh hosts several government and public laboratories, including those under the Institute of Public Health (IPH), Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh Standards and Testing Institution (BSTI), and quality control laboratories under the Departments of Fisheries and Livestock Services. However, these facilities are largely Dhaka-centric, research-oriented, or focused on domestic food safety monitoring rather than rapid pesticide residue testing for export vegetables. Their accreditation scope, turnaround times, and limited integration with the phytosanitary certification process restrict practical use for exporters and farmers in production hubs such as Jashore and Narshingdi. As a result, exporters rely mainly on private testing providers such as SGS, which maintains laboratory facilities primarily in Dhaka. Other private firms, including Intratek, ALS, and EuroFin, operate from Bangladesh but conduct testing in overseas laboratories. Establishing local testing centres would therefore significantly improve accessibility and reduce compliance delays. HACCP certification in Bangladesh is issued by accredited private certification bodies, while public institutions focus on regulatory inspection functions.

Meanwhile, the Plant Quarantine Wing issued 1,679 phytosanitary certificates covering 6,842 metric tons of exports, of which 244.4 metric tons were exported to the EU in FY 2024–2025. EU shipments recorded 12 rejections, including a peak rejection rate of 8.8 percent for teasel gourd due to high pesticide residues and pest infestation. In response, PQW imposed a self-ban on teasel gourd exports to reassess production practices before potential EU regulatory action. PQW and DAE continue to rely on manual inspection records and lack rapid residue testing capacity or digital systems for tracking rejections, farm compliance, or chemical misuse.

Intervention Location Recommendations

Based on a structured SPS compliance and production scorecard, four sub-districts were identified as the most suitable locations for SAFE BD interventions, assessed according to SPS compliance, export potential, and number of trained farmers.

Manirampur and Jashore Sadar (Jashore District) demonstrate strong export potential, high yields, and comparatively stronger SPS compliance indicators. Belabo and Shibpur (Narshingdi District) show better pesticide management practices, stronger adoption of recommended techniques, and greater readiness for export-oriented interventions.

These locations combine strong production foundations, institutional support, and farmer willingness to adopt improved practices, making them strategic pilot sites for impactful interventions.

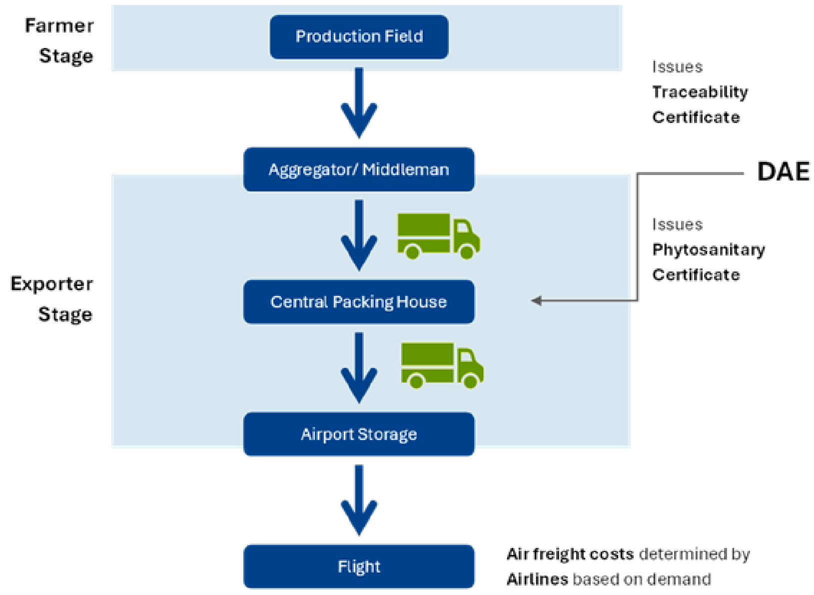
Recommendations

At the farmer level, structured training is required on recordkeeping, soil testing, pesticide frequency, safe chemical use, Pre-Harvest Interval (PHI) compliance, integrated biopesticide use, and improved packaging practices. Demonstration plots and Integrated Pest Management (IPM) Farmer Schools operated by DAE should be aligned with the project. Where such programs exist in the target sub-districts, they should incorporate these training topics; where they do not, DAE should establish them. Pilot testing with trained farmers should track improvements in yield, quality, and compliance. A monitoring system should also track pesticide use, packaging behaviour, PHI adherence, and recordkeeping progress. Awareness campaigns should strengthen farmer confidence in biopesticides, soil testing, cluster farming benefits, and the risks of excessive pesticide use. Strengthened market linkages are also needed to help export-oriented farmers access necessary inputs and services. This includes training exporters on Good Agricultural Practices (GAP) and SPS-compliant transport and handling practices, as well as strengthening their capacity to negotiate effectively with buyers.

At the regulatory level, the project should prioritize capacity building for DAE field officers through training on inspection consistency, residue management, and digital traceability. Policy advocacy should promote the establishment of regional packing houses near production hubs, stabilization of airfreight costs during peak seasons, and mandatory testing before issuing phytosanitary certificates. Testing capacity should be strengthened through technological upgrades, regional Maximum Residue Limit (MRL) testing through SGS, and expanded export-oriented government laboratory facilities. Cold-chain investments are also critical, including cooling vans, expanded storage at packing facilities, and improved transport systems. Finally, stronger monitoring systems for pesticides and agro-inputs will help reduce misuse and improve overall SPS compliance.

REPORT SNAPSHOT

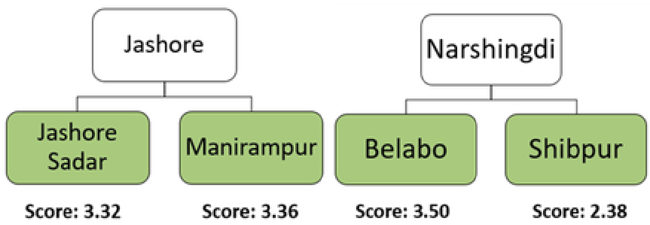
OVERVIEW: GOURD EXPORT VALUE CHAIN



MAJOR FINDINGS

- High and frequent amount of pesticide usage
- Soil testing and MRL testing practices absent
- Low PHI compliance
- Low Recording keeping among farmers
- Lack of cold facilities for transport and storage

RECOMMENDED INTERVENTION AREAS



OVERALL RECOMMENDATIONS

Targeted and monitored training for farmers

Policy changes making tests (like soil test, MRL test) mandatory

Create accessible market linkages for interested farmers

Enhance institutional capacity like testing facilities, regional packing house, cold chain fleet

01. INTRODUCTION

1.1 BACKGROUND AND CONTEXT

Bangladesh has emerged as one of the leading vegetable-producing countries in South Asia, producing more than 17.09 million metric tons annually[1]. Despite this scale, its participation in the global vegetable market remains limited, with exports accounting for less than 0.3 percent of total output[2]. This gap between production and export performance is largely due to recurring rejection of consignments in international markets, particularly in the European Union and the United Kingdom. In 2015, Bangladesh faced an estimated vegetable rejection rate of about 11.4 percent in the EU market, with 143 rejected consignments[3] out of roughly 1,250 shipments[4] sent between January and July of that year. These rejections are commonly linked to Sanitary and Phytosanitary (SPS) non-compliance, including quarantine pests, excessive pesticide residues, microbial contamination, and weak traceability and documentation systems along the value chain[5].

Persistent compliance failures have created a major bottleneck that undermines Bangladesh's competitiveness, discourages exporters, and restricts farmers' access to high-value markets. These challenges stem from weak pest and pesticide management, limited adoption of good agricultural practices, inadequate awareness and monitoring, and insufficient coordination among public and private institutions responsible for SPS compliance.

To address these challenges, the project "Improving the Implementation of SPS Best Practices for Export-Oriented Vegetables in Bangladesh" (SAFE BD) was developed. Implemented by Swisscontact in partnership with the Ministry of Commerce (MoC), the Department of Agricultural Extension (DAE), BFVAPEA, and SGS Limited, and funded by the Standards and Trade Development Facility (STDF), the initiative directly targets SPS constraints in the vegetable export sector. Building on investment priorities identified through the earlier STDF-supported P-IMA[6] assessment, SAFE BD adopts a collaborative public–private approach to strengthen coordination, enhance technical capacity, and institutionalize good SPS practices for export-oriented production.

By promoting safer pesticide use, improving traceability systems, strengthening field-level monitoring, and building the capacity of farmers and exporters, SAFE BD aims to reduce export rejections and position Bangladesh as a reliable supplier of safe, high-quality vegetables. In doing so, the project seeks to enhance trade competitiveness while increasing income opportunities and resilience for smallholder farmers engaged in export-oriented value chains.

17.09
million metric tons of vegetable production annually

0.3%
of vegetable produce exported

11.4%
vegetable rejections in 2015

SPS
non-compliance is the major reason for rejections

Through improved pesticide management, stronger traceability, enhanced monitoring, and targeted capacity building, SAFE BD aims to reduce export rejections, strengthen SPS systems, and position Bangladesh as a reliable source of safe, high-quality vegetables while improving smallholder income and resilience.

[1] Kabir, F. H. H. (2025, September 14). Veg production up 15pc in 5 yrs. The Financial Express.
[2] Swisscontact – Swiss Foundation for Technical Cooperation. (2023, November 30). Prioritising Sanitary and Phytosanitary (SPS) Investments for Market Access of Horticulture and Fisheries Products in Bangladesh.
[3] The Daily Star. (2015, August 17). Fruits, vegetables fail to enter EU markets.
[4] Export Promotion Bureau. (2015). Fresh vegetable export statistics (HS Code 07). Government of Bangladesh.
[5] Chowdhury, J. (2025, July 4). Vegetable exports quadruple amid stable local market. The Business Standard.
[6] The STDF Prioritizing SPS Investments for Market Access (P-IMA) framework is a diagnostic and decision-support tool developed by the Standards and Trade Development Facility to help countries identify, prioritize, and sequence investments in Sanitary and Phytosanitary (SPS) capacity that have the highest potential to improve market access. The P-IMA assessment combines qualitative stakeholder consultations with quantitative analysis to assess SPS risks, compliance gaps, and the expected trade, economic, and development impacts of alternative investment options, thereby informing evidence-based SPS project design and resource allocation.

1.2 LATEST GOURD EXPORT FIGURES

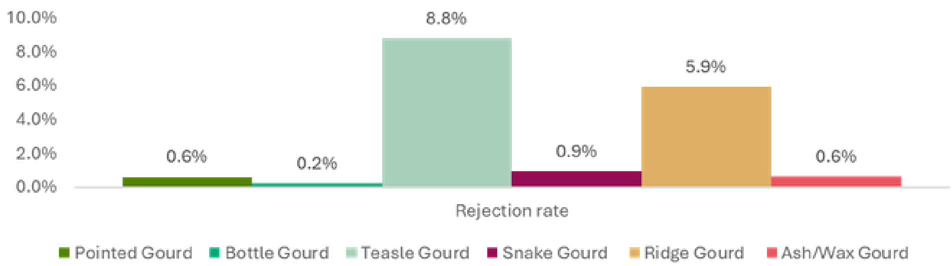
SAFE BD project interventions focus on gourd export and reducing rejections resulting from SPS non-compliance. According to the most recent data shared with the baseline team from the Department of Agricultural Extension (DAE), a total of 1,679 Phytosanitary Certificates (PCs) were issued for gourd export totalling 6,842 metric ton during Fiscal Year 2024-2025. Of this amount, 244 metric ton was exported to the European Union. It was observed that 12 PCs (for EU) were rejected totalling 1.3 metric ton due to non-compliance issues. However, historical data on export rejection trends remain unavailable, and even after direct consultation with DAE, only the latest annual figures could be obtained. This lack of consistent information highlights a significant gap in institutional data management and transparency, which poses challenges for developing targeted and evidence-based intervention strategies. The details of the rejections are in Annex 2.

Furthermore, the low rejection rate is due to the self-ban mechanism of DAE, not completely because of high compliance rate. Example of such was seen in case of ridge gourd, where due to consecutive rejection, DAE resulted in a self-ban in ridge gourds. So, until the designated SPS compliance is able to be reached, export of ridge gourd in the EU will remain banned. However, this self-ban is completely regulated by the DAE, which means lifting the ban is easier and up to the DAE as well.

TABLE 1: TOTAL GOURD EXPORT IN FY 2024-2025

Vegetable Category	Quantity Exported to EU (in metric tons)	Quantity Exported to Other Countries (in metric tons)
Pointed Gourd	83.545	2721.795
Bitter Gourd	0	351.31
Bottle Gourd	100.235	199.505
Teasel Gourd	0.57	1868.35
Pumpkin	0	698.62
Snake Gourd	39.312	463.048
Sponge Gourd	0	65.38
Ridge Gourd	1.179	66.781
Ash/Wax Gourd	19.57	47.86
Cucumber	0	115.89
Total	**244.41**	**6598.54**

FIGURE 1: REJECTION RATE OF EACH GOURD TYPE FY 24-25



***Key Observation:** Figure 1 shows a relatively lower overall rejection rate across all gourd varieties, except Teasel Gourd and Ridge Gourd. However, the baseline team has concerns about the validity of the data. This data was collected from DAE, upon much deliberation. DAE's data management system is a mix of digital and manual record keeping. Therefore, when the team asked for clear data on rejected quantity of gourd against the 12 PCs, they were only able to provide estimated quantity rejected, not the true rejected quantity. Moreover, there was no historical data on rejections over the years to analyze a trend.*

Therefore, there is a strong possibility that the analysis conducted in this section does not reflect the true nature of the gourd export rejection scenario.

1.3 SAFE BD PROJECT OVERVIEW AND OBJECTIVES

Swisscontact's SAFE BD project is a national initiative designed to strengthen Sanitary and Phytosanitary (SPS) compliance in Bangladesh's export-oriented vegetable sector, with a focus on gourd varieties.

Project Implementation Partners and Roles

SAFE BD is jointly implemented through a public-private partnership framework, combining the expertise of government agencies, private sector actors, and international organizations. Each partner plays a distinct but complementary role in ensuring the successful execution of activities related to SPS compliance, farmer capacity building, and export facilitation.

TABLE 2: PRIMARY RESPONSIBILITIES OF SAFE BD'S IMPLEMENTING AND COLLABORATING PARTNERS

Partner / Institution	Main Role
Standards and Trade Development Facility (STDF)	Funding & Strategic Guidance
Swisscontact	Lead Implementer
Ministry of Commerce (MoC)	Policy & Oversight
Department of Agricultural Extension (DAE)	Regulatory & Technical Partner
Bangladesh Fruits, Vegetables and Allied Products Exporters Association (BFVAPEA)	Industry Coordination
SGS Bangladesh Limited	Inspection & Testing Partner

1.4 RATIONALE FOR THE BASELINE ASSESSMENT

Innovision Consulting was commissioned for this baseline assessment of the SAFE BD project to provide an evidence-based understanding of the gourd export value chain, current practices, capacity gaps, and stakeholder dynamics ensuring that project locations, project interventions, performance indicators, and targets are firmly grounded in the sector's existing conditions and realities.

02. OBJECTIVES AND METHODOLOGY

2.1 OBJECTIVES

The core objective of the baseline assessment was to understand and report the status quo of region wise production, farming practices, market linkages, and regulatory practices. Specifically, the assessment looked at:

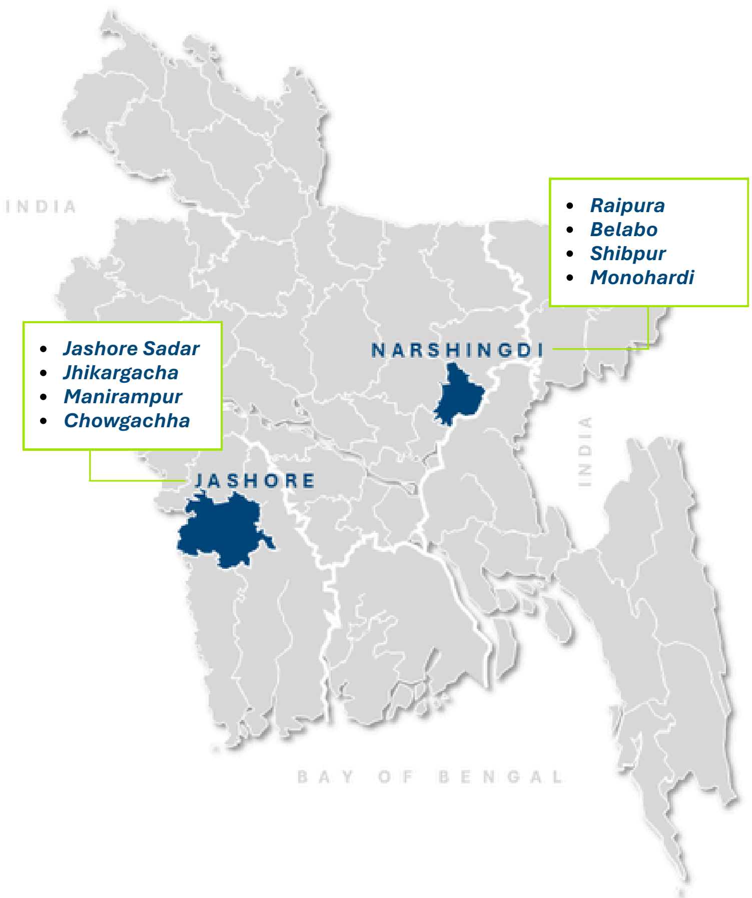
- **Assessing gourd production patterns, key locations, and farmer demographics, with emphasis on women's participation.**
- **Mapping the gourd value chain, including actors, roles, challenges, market access, and critical infrastructure.**
- **Evaluating SPS compliance, pest management, pesticide use, and capacity-building needs of farmers, exporters, and institutions**
- **Identifying potential collaborations, other projects, and opportunities to enhance SAFE BD interventions and export readiness.**

2.2 METHODOLOGY

The assessment followed a mixed-method approach, combining quantitative household surveys with qualitative consultations. This approach allowed for both measurement of compliance indicators and deeper understanding of behavioural, institutional, and systemic barriers to SPS adoption. Detailed methodological steps are available in Annex 1.

Geographic Scoping

The baseline assessment was conducted in strategically selected upazilas across Jashore and Narshingdi, two key hubs of export-oriented vegetable production in Bangladesh. In Jashore, the upazilas of Jashore Sadar, Jhikargacha, Chowgacha, and Manirampur were chosen based on consultations with DAE officials, as these areas are widely recognized for their high concentration of gourd cultivation and relatively good farming practices. Similarly, in Narshingdi, the upazilas of Shibpur, Monohardi, Raipura, and Belabo were included due to their significant production of export-quality vegetables and their relevance to the project's focus on SPS compliance. Together, these locations offer a representative landscape of the major production zones targeted under SAFE BD, ensuring that the baseline captures diverse farming practices, challenges, and compliance behaviours across the value chain.



Data Collection Mechanisms

A combination of quantitative and qualitative tools was used to ensure depth, triangulation, and accuracy of findings

TABLE 3: OVERVIEW OF DATA COLLECTION MECHANISMS

District	Sub-district	Farmers Surveyed	Female Farmers	Youth Farmers (≤35 years old)	FGDs	KIIs
Jashore		202	77 (38%)	51 (25%)	2 (40% female participants)	13 (4 female informants)
	Jhikargacha	49	18 (36%)	6 (12%)		
	Manirampur	51	23 (45%)	12 (23%)		
	Chowgachha	50	14 (28%)	17 (34%)		
	Jashore Sadar	52	22 (42%)	16 (30%)		
Narshingdi		199	67 (33%)	45 (22%)	2 (50% female participants)	
	Belabo	48	21 (43%)	14 (29%)		
	Raipura	52	22 (42%)	14 (26%)		
	Monohardi	49	4 (8%)	9 (18%)		
	Shibpur	50	20 (40%)	8 (16%)		
Total		401	144 (36%)	96 (23%)	4	

Quantitative Mechanisms

Quantitative surveys were conducted with 401 gourd farmers using KoBo Toolbox, applying a multistage purposive and stratified sampling approach across selected sub-districts in Jashore and Narshingdi. Farmers were identified through field visits and local markets to reflect major production areas, farm size variation, and diverse practices, with basic randomization applied where feasible. The survey captured data on production systems, pesticide use, SPS awareness, training exposure, income, and post-harvest practices to establish baseline SPS and productivity indicators.

Qualititative Mechanisms

The baseline combined 13 Key Informant Interviews (KIIs) with key institutions and value chain actors, four Focus Group Discussions (FGDs) in Jashore and Narshingdi with male, female, and mixed farmer groups, and field observations at farms and collection points. Together, these methods provided insights into SPS practices, compliance gaps, gender dynamics, and on-ground production and handling conditions.

Data Analysis and Validation

All baseline data were cleaned and validated through systematic checks in Excel to remove inconsistencies, correct errors, and ensure completeness. Quantitative datasets were processed using descriptive statistics, while qualitative inputs were organized through thematic coding to support accurate and reliable analysis. Both quantitative and qualitative data were validated through local and central workshops with the DAE and BFVAPEA to co-develop recommendations.

TABLE 4: LIST OF VALIDATION WORKSHOPS

Workshop Level	Stakeholder	Workshop Focus
Local	Jashore DAE	Jashore specific quantitative and qualitative findings
	Narshingdi DAE	Narshingdi specific quantitative and qualitative findings
Central	Dhaka DAE	Overall baseline findings and recommendations
	BFVAPEA	

2.3 LIMITATIONS

While the methodology ensured broad coverage and triangulated insights, several limitations were acknowledged in the inception phase:

- The baseline team faced severe lack of reliable government level data, particularly on the true rejection rate of gourd export.
- The fieldwork period overlapped with the late monsoon season, which affected accessibility to some remote sites.
- The findings rely partly on self-reported data from farmers, which may introduce recall bias.
- Laboratory residue testing could not be conducted during the baseline due to time and resource constraints.
- The study focused only on two districts, which, while significant for gourd export, may not fully represent all vegetable-producing regions in Bangladesh.
- Data collection was conducted directly with farmers found in markets and cultivation fields, as a result, it may not fully represent the entire farmer population, particularly those who sell directly to exporters.

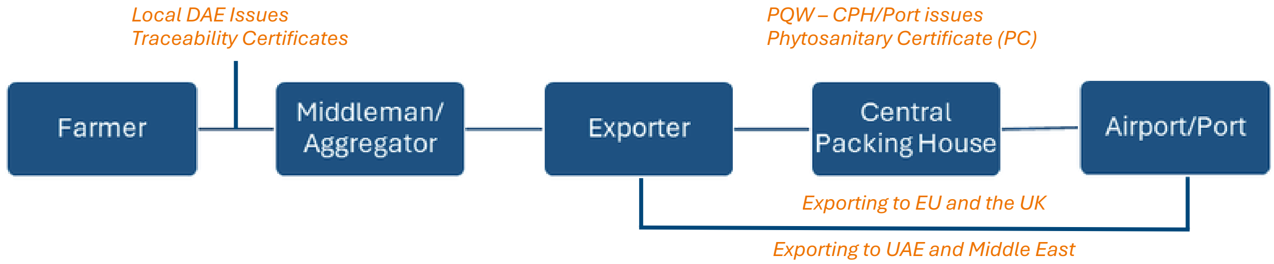
Nevertheless, the combination of robust sampling, mixed-method triangulation, and planned validation with key stakeholders ensures that the baseline provides a reliable foundation for planning SAFE BD's future interventions.

03. OVERVIEW OF VALUE CHAIN AND LOGFRAME INDICATORS

3.1 THE VALUE CHAIN

The snapshot below shows the full sequence of actors involved in exporting gourd from Bangladesh and highlights the two possible routes produce can take. It begins with farmers, who supply vegetables to middlemen or aggregators responsible for initial collection and bulking. From there, the produce moves to exporters, who determine the appropriate export pathway. For destinations like the EU and the UK, vegetables typically pass through a central packing house for sorting, grading, and meeting stringent SPS requirements before reaching the airport or port. For markets such as the UAE and Middle East, exporters may send the produce directly from collection points to the airport or port, following a shorter and less processing-intensive route.

FIGURE 2: THE GOURD EXPORT VALUE CHAIN



Key Observations:

1. Farmers mainly sell their produce in local markets, and only occasionally to middlemen or aggregators. Since they cannot distinguish between the two, **most farmers remain unaware of whether their gourds ultimately enter export channels.**
2. Exporters procure vegetables through these middlemen or aggregators. Although exporters prefer contract farming for better control and coampliance, **middlemen sometimes supply gourds purchased from local markets** or non-contract farmers to help exporters meet shipment quotas.
3. Before sending produce to the packing house, exporters obtain a **Traceability Certificate** from the local DAE office, which links the consignment to its production origin.
4. Middlemen typically arrange transportation, sending gourds either to the central packing house in Shyampur or directly to the airport or port, depending on the destination market.
5. Shipments bound for the **EU or UK must pass through the Shyampur central packing house,** where sorting, grading, and SPS compliance testing are conducted due to stricter standards.
6. Exporters collect the **Phytosanitary Certificate (PC)** from Shyampur for EU-bound consignments, as this certificate is mandatory for entry into EU markets. **For non-EU Middle Eastern markets, the produce is sent directly to the airport or port,** where a PC is not required.

3.2 VALUE CHAIN PLAYER PROFILES

The gourd export value chain in Bangladesh involves multiple actors responsible for production, aggregation, testing, and certification. Each plays a role in maintaining SPS compliance, though their capacities and coordination levels differ. The baseline assessment identified the key stakeholders and institutions that collectively shape this compliance ecosystem.

Farmers

Gourd farmers whose main source of income comes from selling produce to local markets/ middlemen/aggregators. Most lack awareness of SPS and GAP, rely heavily on pesticide vendors for advice, and rarely maintain pesticide records. Despite gaps, farmers show strong willingness to improve if supported with training and market incentives.

Local Aggregators (Beparis/Traders)

Aggregators and commission agents link farmers with exporters by collecting and bulking produce from many smallholders. Their handling is mostly informal, with minimal SPS checks, poor cleanliness, and no residue-based sorting, leading to mixed-quality consignments and a higher risk of export rejection.

Exporters

BFVAPEA-affiliated exporters lead sorting, grading, packaging, and shipment. They rely heavily on aggregators for sourcing and manage traceability and certification. High testing costs and procedural delays limit routine compliance with strict EU standards.

Transporters & Cold Chain Providers

Transporters move produce from farms to packhouses and airports, but **cold chain infrastructure is largely absent.** Trucks with no temp control are mainly used. Manual, unhygienic handling and temperature fluctuations lead to damage and quality loss, reducing overall SPS compliance effectiveness.

Department of Agricultural Extension (DAE)

DAE provides field training, inspections, and traceability certificates. Their ability to enforce GAP and monitor pesticide use is limited by low manpower, logistical challenges, and lack of government-run testing laboratories and digital systems. In addition, they issue Traceability Certificates and PQW under DAE issues Phytosanitary Certificates (PC).

Testing and Certification Agencies

SGS was identified as the main provider of laboratory testing and GAP certification, while the Plant Quarantine Wing under DAE issues Phytosanitary Certificates. Although other public and private laboratories exist, their role in export-oriented testing is limited. Capacity and staffing constraints affect timely testing and inspections.

3.3 BASELINE LOGFRAME INDICATORS

Farmer Stage Indicators

Farming Practice

79%
respondents reported female family members participate in farm work

280 (69.82%)
farmers used biopesticides or pheromone traps in the last cultivation season. But they also use chemical pesticides at the same time

4.07 Days
average pre-harvest interval after pesticide spraying among farmers

33 (8.23%)
farmers wash gourds before packaging

99.25%
farmers use DAE-approved pesticides

31.47 Gram/Decimal
average pesticide usage per unit of land by farmers

197 (49%)
farmers use jute/bamboo bags instead of recycled fertilizer/chemical sacks

12 (2.99%)
farmers keep written or verbal records of pesticide or fertilizer use

246 (61.34%)
farmers use tube-well or deep-well water for irrigation

58%
average gross margin for gourd cultivation

377 (94.01%)
farmers earn profitable income from farming gourd varieties *(amount varies between varieties)*

52% local market & 43.64% middlemen
represent primary sales channels for farmers

49 (12%)
farmers received training on pesticide use, hygiene, SPS, GAP and climate smart agricultural practices

Awareness

2.7 (out of 5)
average SPS adoption score among farmers

308 (77%)
farmers aware of the concept of Maximum Residue Limit (MRL)

323 (80.54%)
farmers aware of at least one type of biopesticide or non-chemical pest control method

308 (77%)
gourd farmers have heard of SPS standards required for export

Although there are such high levels of awareness, actual adoption score is very low, reflecting awareness is not compliance.

Exporter Level Indicators

100%
exporters use approved or certified packhouse facilities

1 Day
average time between harvest and export

100%
exporters report SPS compliance costs are a barrier

~ 10 (out of 349)
exporters trained on international phytosanitary requirements

0%
exporters conduct pesticide residue testing before export

0%
exporters using cold storage before export

100%
exporters have in-house or contracted access to a certified/approved packhouse

~5 (out of 349)
BVFAPEA members trained on improved trade linkage and negotiation

100%
exporters include traceability certificates in shipments, to ensure SPS compliance traceability

~10-20 (out of 349)
exporters trained on GAP and hygiene safety management

809
exporters part of BFVAPEA
(349 General and 460 Associate Members)

Regulatory Level Indicators

12 Cases
of SPS compliance violations occurred in international markets in the last year for gourds

6842 metric tons
total export of gourds from Bangladesh in the last year

41%
target Upazila Agriculture Officers (UAO) & Sub-Assistant Agriculture Officers (SAAO) trained on Good Agricultural Practices (GAP), pest risk and hygiene principles on global standards

On-site weekly survey: 5 blocks of 50 acres each
existence and functionality of a pest surveillance system in the target districts

Basic to Intermediate
capacity of DAE for Pest Risk Assessment (PRA) as per ISPMs (International Standards for Phytosanitary Measures)

3.4 COMPLIANCE RISKS ACROSS THE VALUE CHAIN

TABLE 5: COMPLIANCE RISKS ACROSS THE VALUE CHAIN

Stage	Compliance Strengths	Major Gaps/Challenges	Risk Level
Farm Production	Use of improved seeds, familiarity with basic IPM	Excessive pesticide use, weak record-keeping, poor Post-Harvest Interval (PHI) observance	High
Post-Harvest Handling by Farmers	Basic sorting and grading practiced	Reuse of packaging, contamination risk, lack of hygiene	High
Aggregation / Collection	Strong linkages with exporters	Product mixing, lack of cold storage	Moderate
Exporter Operations	Existing packhouses and exporter association support	Costly residue testing, weak traceability	High
Regulatory Testing	National system for PC issuance	Limited lab capacity, manual records	Moderate
Transport and Shipment	Accessible routes and logistic chains	No cold chain, high rejection risk due to delay	High

04. KEY FINDINGS FROM THE ASSESSMENT

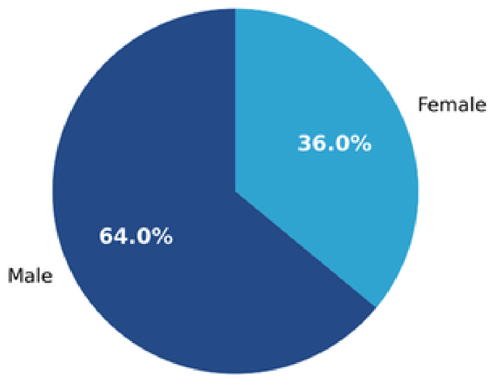
4.1 FARMER STAGE

This stage discusses the findings from the farmer level survey in Jashore and Narshingdi by the project's field team. The findings in this section highlight the demographics of the survey respondents, their farming practices, compliance to SPS standards, and their awareness on good agriculture practices. Detailed survey datasets are available in Annex 2.

Survey Demographics

The farmer survey covered 401 respondents, including 257 men and 144 women, with roughly equal samples across all sub-districts. Most farmers had primary or secondary education, indicating generally low formal schooling. Despite this, respondents reported an average of 20 years of farming experience, demonstrating strong practical knowledge and long-term involvement in gourd cultivation

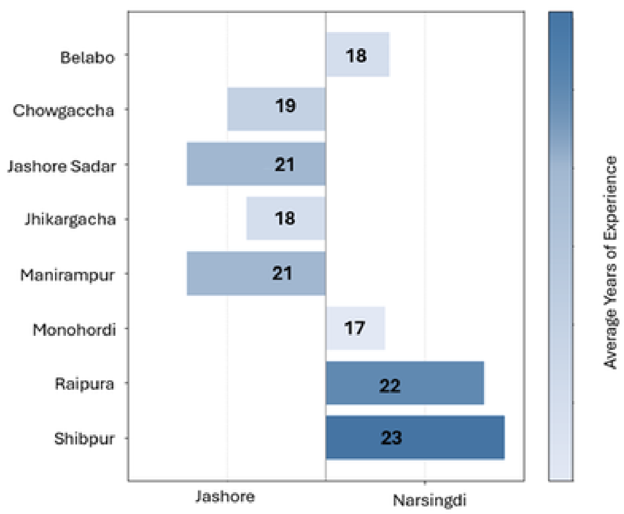
FIGURE 3: GENDER DISTRIBUTION OF SURVEY PARTICIPANTS



Key Observation:

The field team noted that none of the 144 female farmers surveyed were active farmers. That is, they were not the sole decision maker, rather they played more of a support role for their husbands. During our field visits, we noticed that engagement of female farmers was mostly concentrated in post-harvesting practices.

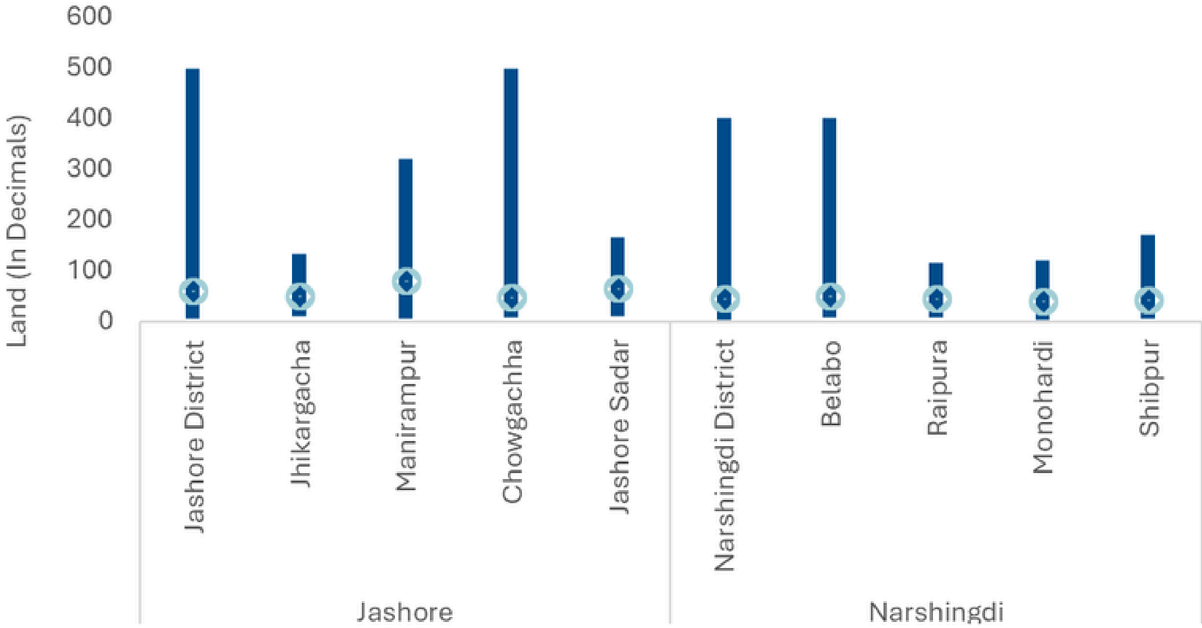
FIGURE 4: AVERAGE YEARS OF EXPERIENCE PER SUB-DISTRICT



Key Observation:

Farmers in each sub-district surveyed were highly experienced in vegetable farming. Most of them had an educational level up to primary or middle school. After which they dropped out to support their family in farming. Farming is a family business in these hubs. Their knowledge on farming practices mainly comes from their family and vast self-experience.

FIGURE 5: LAND AREA USAGE PER SUB-DISTRICT (RANGE VS AVERAGE)



The survey indicated that 96 out of 401 respondents (23.9 percent) were aged 35 years or below, representing the youth segment of the sample, of whom 38 were female (39.6 percent of youth respondents and 9.5 percent of the total sample). Surveyed farmers in both districts manage land areas that vary widely in size and ownership type. The average cultivated area stands at approximately 50 decimals (≈0.5 acres) per farmer, ranging from as small as 4 decimals to as large as 495 decimals. 98% of the surveyed farmers were smallholder farmers with cultivated land being less than 247 decimals[7], while the rest were identified to be middle scale farmers. Larger-capacity farmers often lease additional land to expand production beyond their own holdings. Across districts, landholding patterns are consistent: Jashore averages around 58 decimals, and Narshingdi around 42 decimals. However, a few sub-districts such as Manirampur and Belabo reported significantly singular and larger maximum landholdings of up to 495 decimals, suggesting the presence of more commercially oriented producers.

Productivity

The production and yield data together highlight clear patterns in gourd cultivation across Jashore and Narshingdi. Farmers in Jashore show stronger participation in pointed gourd cultivation, with 183 producers compared to only 33 in Narshingdi, indicating Jashore's dominance in this crop. However, Narshingdi has a far larger number of farmers producing bottle gourd, teasel gourd and sponge gourd, reflecting different market preferences and agro-ecological conditions. Sub-district variation is also evident: Belabo and Raipura lead in producing multiple gourd varieties, while Monohardi shows strong participation across most crops. Alongside gourd production, eggplant and Beans are the most frequently listed crops cultivated in seasonal rotation or at times simultaneously by farmers. Followed by Yard long beans, Paddy (rice), and Malabar spinach.

Yield patterns complement these production trends. High-yield pockets are concentrated in Manirampur (Jashore) and Monohardi (Narshingdi), which consistently record some of the highest yields across varieties, particularly pumpkin, snake gourd, sponge gourd and ridge gourd. Shibpur also demonstrates high productivity in specific crops such as teasel gourd and ash gourd. Conversely, several sub-districts such as Jhikargacha and Raipura show comparatively lower yields for certain gourds, suggesting differences in input use, farming practices, or soil suitability.

[7] One hectare equals 2.471 acres; since one acre is equivalent to 100 decimals in Bangladesh, one hectare corresponds to approximately 247 decimals. Cultivation of land below 247 decimals is defined as smallholder farming. (FAO; USGS)

FIGURE 6: AVERAGE GOURD YIELD BY SUB-DISTRICT

Cluster Farming Capacity

Cluster farming remains a relatively new and largely unadopted concept among most farmers interviewed; although some had been approached for cluster or contract farming, few had participated, citing concerns over loss of autonomy. To achieve SAFE BD's project objectives, a key consideration is targeting hubs that are more adopted to cluster farming. The baseline team could not find any data on the cluster farming capacity in the sub-district or district level, especially for gourd producers. DAE does not collect such data, and neither did members of BFVAPEA want to reveal such information. Therefore, the baseline consulted with them in a different way, i.e., asked them to rank the sub-districts according to the level of adoption of cluster farming.

Key Observation:

The consultations revealed the following rankings:

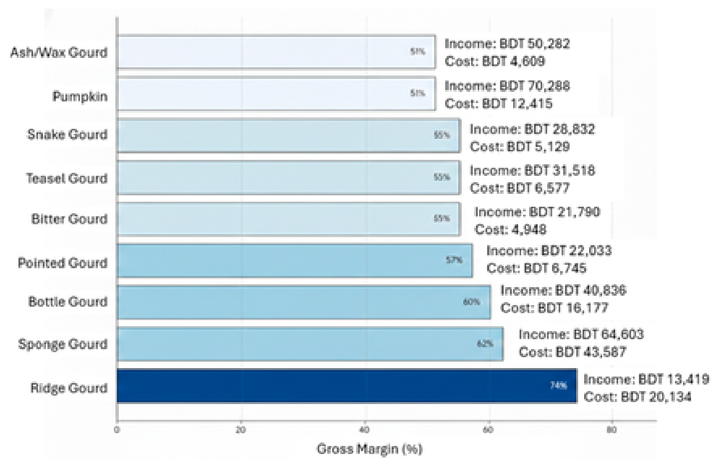
Jashore:
1. Jashore Sadar,
2. Manirampur,
3. Chowgachha,
4. Jhikargaccha

Narshingdi:
1. Shibpur,
2. Raipura,
3. Belabo,
4. Monohardi

Profitability

The gross margin analysis reveals strong profitability across most varieties, led by Ash/Wax Gourd at 91%, followed by Pumpkin and Bottle Gourd at 82%. Snake (79%), Ridge (77%), and Sponge (69%) gourds also perform well, with Bitter (60%) and Pointed (33%) gourds showing moderate returns. Conversely, Teasel Gourd shows a -50% margin because farmers reported that prices they got from local bazars were significantly lower compared to previous years. Targeted support in production and market linkages is essential to address these viability gaps. Gourd marketing is dominated by domestic informal channels, with around 50% sold in local markets, 40% through farm-gate middlemen, and only 5–7% via collectors or aggregators, with almost no direct sales to exporters.

FIGURE 7: AVERAGE SEASONAL INCOME, COST AND GROSS MARGIN BY GOURD VARIETY



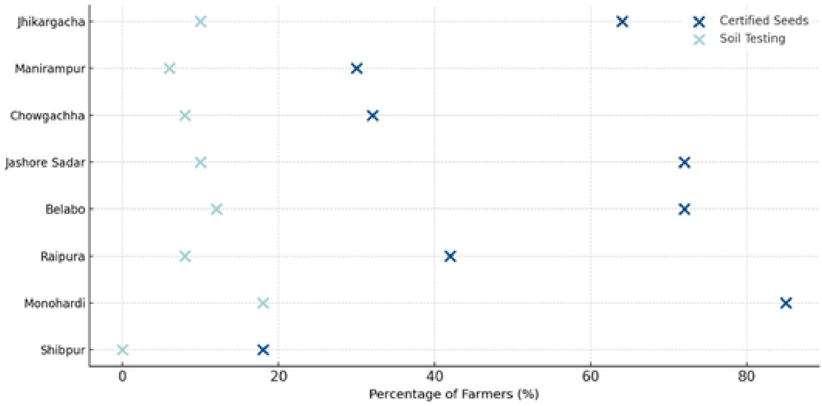
Key Observation:

During FGDs, farmers noted that production costs vary little, and profit largely depends on the retail price received. Indicative farm-gate prices for major gourds in Bangladesh range from BDT 20 to 70 (USD 0.16 to 0.6) per kg, with pointed and teasel gourds fetching higher prices, while bottle, sponge, ridge, and snake gourds sell at lower but more stable prices depending on season and location.

Farming Practices

The adoption of modern and scientific practices remains moderate among surveyed farmers. 58.6% of the farmers use certified seeds. It was noted from the validation workshop with DAE that certified seeds are the higher quality seeds (2nd based on the breeding quality). Furthermore, famers usually use the Hybrid seeds which are imported and even higher in quality. From our FGDs, it was observed that farmers think that buying packaged seeds from the market equals buying certified seeds. This is because the retailers/shopkeepers market them as such. It shows that, although famers are not aware of the seeds they use, the supply of quality seed is available and accessible. Thus, it is mistermed to be called as certified seeds, and rather should be termed imported seeds.

FIGURE 8: PERCENTAGE OF FARMERS USING CERTIFIED SEEDS AND CONDUCTING SOIL TESTING



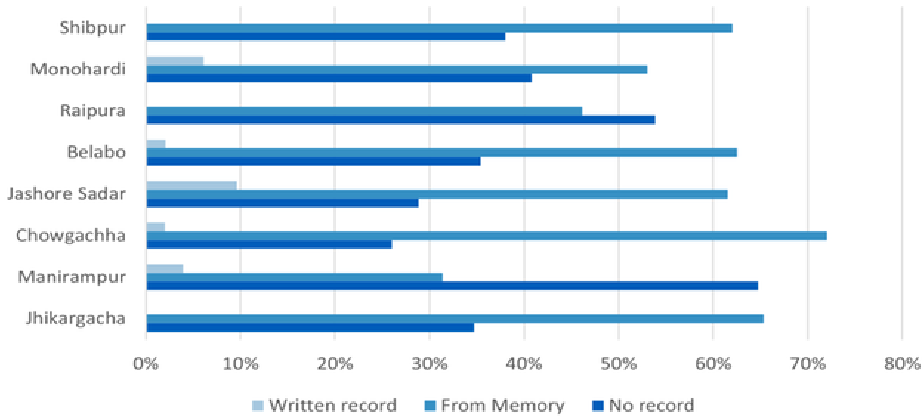
Key Observation:

Farmers show moderate adoption of scientific practices: many use high-quality imported seeds but there remains a misconception about what is called certified seeds. Very few farmers conduct soil testing due to perceived cost, complexity, and low trust, despite available government services. Irrigation remains mostly conventional, with pumps and deep tubewells dominating.

Only 7% of farmers conduct soil testing, largely because the process is perceived as expensive and cumbersome. FGD discussions revealed that many farmers find it ineffective and inaccessible; some reported unreliable results or not receiving reports even after months. This indicates limited integration of extension advice and laboratory-based decision-making. However, DAE reports no capacity or accessibility gaps. Soil tests are done by the Soil Resource Development Institute (SRDA) Bangladesh Agricultural Research Institute (BARI) at a cost of BDT 63–70 (USD 0.51–0.55) per test, and BARC's Mrittika Map provides soil quality and nutrient data to support efficient fertilizer use. Irrigation is mainly sourced from motorized pumps (45%) and deep tubewells (41%), while rainwater harvesting and reservoir use remain rare.

Only 3–7% of farmers maintain written records, limiting traceability and financial management. Most rely on memory for pesticide use, and 38% cannot recall the exact type or quantity applied, indicating reactive, symptom-based application rather than protocol-driven practices. However, farmers in Jashore Sadar and Monohardi show higher recordkeeping rates, likely due to more frequent field officer visits and inspections, which drive better compliance.

FIGURE 9: RECORD KEEPING PRACTICES OF FARMERS



Key Observation:

When farmers were asked why they do not keep any written records, they simply answered that they had been already farming for 15-20 years. They are experienced enough to not need records, but rely on intuition and memory.

Chemical Pesticide Usage

Most farmers could not recall the exact pesticides or quantities they used, with only 62 percent able to name products and many recognizing them only when shown in pictures. A small share could not identify pesticides at all, indicating heavy reliance on agro-input retailers who recommend chemicals based on farmers' descriptions of crop problems. This shows that pesticide use is largely supplier-driven, with limited understanding of proper dosage or application. During FGDs and KIIs, farmers reported using pesticides mainly to control fruit fly, aphids, whiteflies, thrips, mites, leaf miners, cutworms, and armyworms, as well as fungal diseases such as powdery mildew, downy mildew, and anthracnose common in gourd cultivation[8].

Average pesticide use ranges from 0.08 to 0.10 kg per decimal, rising sharply in Shibpur (0.23 kg) and Jhikargacha (0.15 kg). Standardized by yield, this equals roughly 0.3–0.4 grams per kg of produce. However, the team found no clear national reference levels for commonly used brands, revealing a major information gap regarding safe or approved doses.

Farmers depend heavily on broad-spectrum chemicals such as Sobicron/Sabricon, Amistar Top, Cypermethrin, and Abamectin, along with fungicides like Mancozeb and insecticides like Imidacloprid and Dimethoate. Many admitted mixing multiple pesticides in single sprays without guidance, a practice that heightens residue risks, accelerates pest resistance, and degrades soil health.

On average, farmers apply pesticides 40-50 times per growing season, with the highest frequency observed in pointed gourd (47 sprays), followed by teasel gourd (23-26 sprays). From analysing the pesticide names mentioned by farmers, it was found that many of the commonly used chemicals such as Sobicron and Amistar Top are recommended for use no more than three times per season according to product guidelines. However, farmers reported using these same chemicals over 50 times within a single season, illustrating the severity of overapplication and misuse.

40-50
average number of times a farmer sprays chemicals in a season

5-6
different pesticides /chemicals are mixed by farmers when spraying

3-4
times per season
recommended usage as per DAE and chemical companies

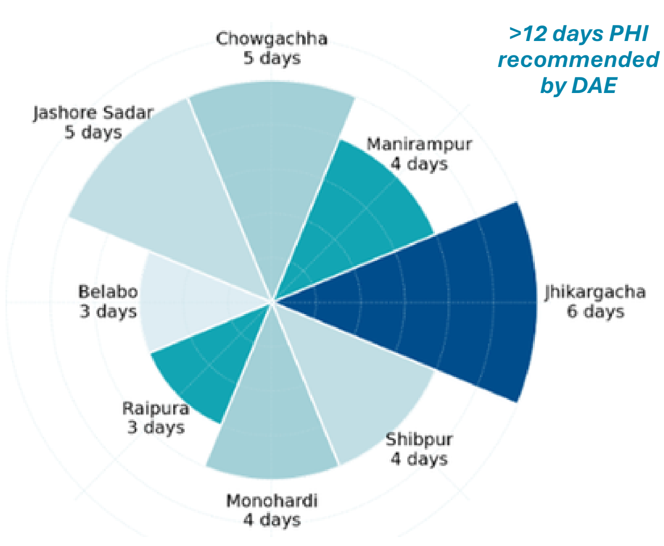
FIGURE 10: AVERAGE NUMBER OF TIMES PESTICIDE USED BY FARMERS IN A SEASON

[8] Further information on common pest infestations in Bangladesh can be found at https://sps.apaari.org/index.php/pests-bangladesh-and-exotic/

This intensive spraying pattern reflects continuous pest pressure and a limited understanding or adoption of Integrated Pest Management (IPM) practices. Across districts, Jashore farmers reported slightly higher spraying frequencies than those in Narshingdi, which may be attributed to variations in pest prevalence, the accessibility of agrochemicals, and overall production intensity. The most heavily treated crops pointed gourd, teasel gourd, and bitter gourd are among the most pest-susceptible vegetables, further explaining their high chemical dependency and the urgency of introducing safer, more sustainable pest control strategies.

The survey also revealed a concerning gap between awareness and practice regarding Pre-Harvest Intervals (PHI). Although 80-84% of farmers claimed to be aware of PHI guidelines, only 1-3% actually followed the recommended minimum 12-day waiting period between pesticide application and harvest. The average observed PHI across both districts was just 4-5 days, indicating that many vegetables are harvested only a few days after spraying. This practice substantially raises the risk of chemical residues in marketed produce and undermines compliance with national food safety standards as well as export market requirements.

FIGURE 11: AVERAGE PHI PER SUB-DISTRICT (DAYS)



Key Observation:

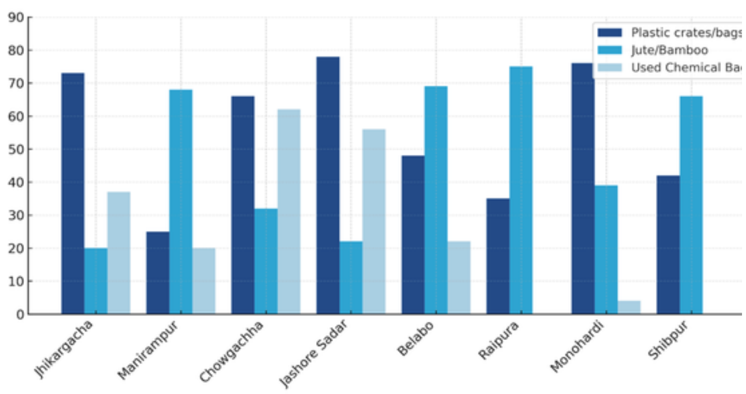
Farmers reported relying mainly on their own farming experience and advice from agro-input retailers for information on pesticide use and pre-harvest intervals. Retailers, in turn, indicated that their knowledge is based on prior farming experience and guidance from chemical company sales representatives.

Packaging and Post-Harvest Practices

Post-harvest management plays a crucial role in determining the quality, safety, and marketability of agricultural produce. However, the survey results indicate that post-harvest handling among gourd farmers remains largely informal, unhygienic, and poorly regulated, posing significant challenges to achieving Sanitary and Phytosanitary (SPS) compliance.

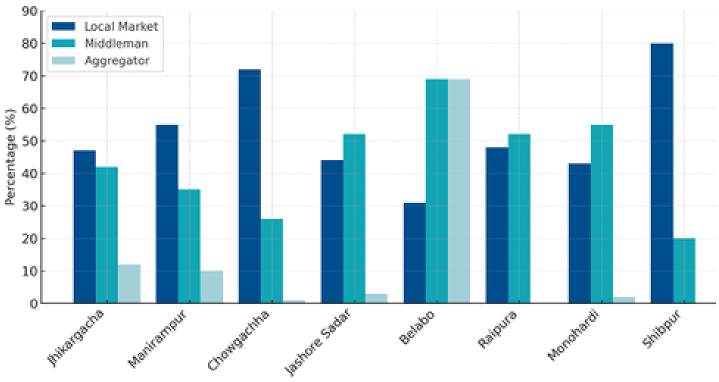
Most farmers rely on basic and often unsafe packaging materials to transport their produce. The use of plastic crates or bags was reported by around 50-60% of farmers, while jute or bamboo bags were used by about 60-70%, depending on the sub-district. However, an alarming finding was that 44% of farmers admitted to reusing empty fertilizer bags to store or transport gourds. This practice presents a serious food safety risk, as chemical residues from these containers can easily contaminate the produce. Farmers reported using these bags primarily because they are cheap and readily available, suggesting that cost and convenience outweigh awareness of contamination hazards.

FIGURE 12: PACKAGING MATERIALS USED BY FARMERS



Marketing of gourds is dominated by local and informal channels. About 50% of farmers sell directly in local markets, and another 40% rely on middlemen who purchase produce at the farm gate. Only a small proportion (around 5-7%) sell through collectors or aggregators, and virtually none of the surveyed farmers sell directly to exporters. This limited market diversification indicates that farmers are price-takers rather than price-makers, with low bargaining power and limited exposure to quality-driven value chains. It also shows that most production is geared toward domestic fresh markets, where SPS enforcement is minimal compared to export channels.

FIGURE 13: SALES CHANNELS USED BY FARMERS

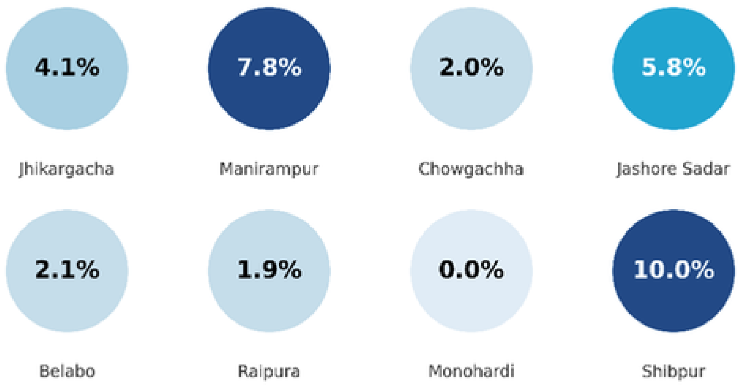


Key Observation:

Exporters usually source their vegetable from contract farming through aggregators/collectors/middlemen. But, when the middleman is unable to meet the quota, he/she buys vegetable from the local market or directly from non-contract farmers and send it to the exporter. So, while farmers sell to middlemen, they don't know if this vegetable is being exported or not. It is highly likely that farmers may export their vegetable sometimes without knowing.

Washing practices across all surveyed sub-districts are extremely low, with most averages falling between 1–5 percent, indicating that the vast majority of farmers do not wash vegetables after harvesting. Even in comparatively higher-performing locations like Shibpur (10 percent) and Manirampur (around 8 percent), the rates remain minimal relative to safe post-harvest handling expectations. Several sub-districts, including Chowgachha, Belabo, Raipura, and Monohardi, show consistently near-zero washing across multiple gourd types. The pattern suggests that washing is not an established practice in the value chain, likely due to lack of awareness, absence of guidelines, and limited infrastructure for hygiene management.

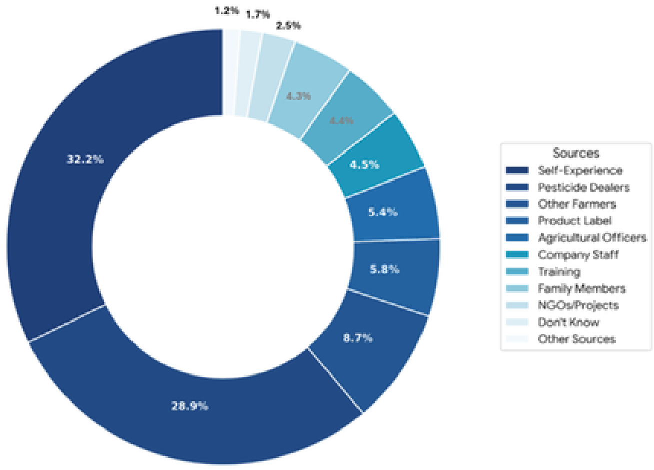
FIGURE 14: PERCENTAGE OF FARMERS WASHING VEGETABLES BEFORE SELLING



Overall Awareness Versus Practices

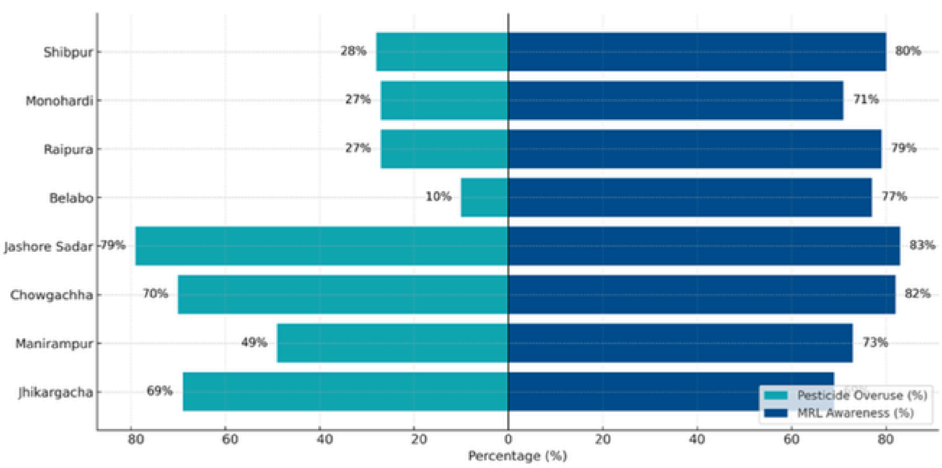
The analysis of farmer awareness and corresponding practices reveals a clear disjunction between what farmers know about SPS requirements and how they apply that knowledge in daily production. Although most respondents reported being aware of the concept of safe pesticide use and residue management, many continue to exceed recommended chemical application limits and neglect record-keeping or alternative pest control practices.

FIGURE 15: SOURCES OF KNOWLEDGE FOR FARMERS' FARMING PRACTICES



When asked about how they determine pesticide dosage or frequency, most farmers reported relying on informal or non-technical sources. The majority depend on self-experience (78 responses) or advice from pesticide dealers and shopkeepers (70 responses) actors who often lack formal training in SPS standards. Only a small proportion referred to product labels (14 responses) or DAE agricultural officers (13 responses) for official guidance. This pattern suggests that dealer-driven knowledge ecosystems dominate pesticide decision-making, often leading to overuse and unsafe handling. The limited reliance on official or evidence-based sources underscores the need for greater extension outreach and structured communication channels on safe pesticide use. Across both Jashore and Narshingdi, an average of 77 percent of farmers reported awareness of MRL concepts, indicating broad understanding of pesticide limits. However, about half of these farmers still applied pesticides more frequently than permitted. Considering that a typical export-oriented gourd production cycle involves around 5-6 different chemical products (found by the frequency of Pesticide name mentioned by the farmers), each allowed a maximum of three applications per season, the upper limit of safe use can be estimated at 15-20 total spray applications. Survey data show that a substantial share of farmers particularly in Jashore Sadar and Chowgachha exceeded this threshold. These results confirm a strong awareness base but inconsistent behavioural compliance, particularly in the western districts where chemical dependency remains high. In contrast, Narshingdi shows relatively better adherence, likely due to more frequent engagement of DAE field officers and exporter-linked monitoring.

FIGURE 16: PERCENTAGE OF FARMERS WITH SPS AWARENESS VS PESTICIDE OVERUSE



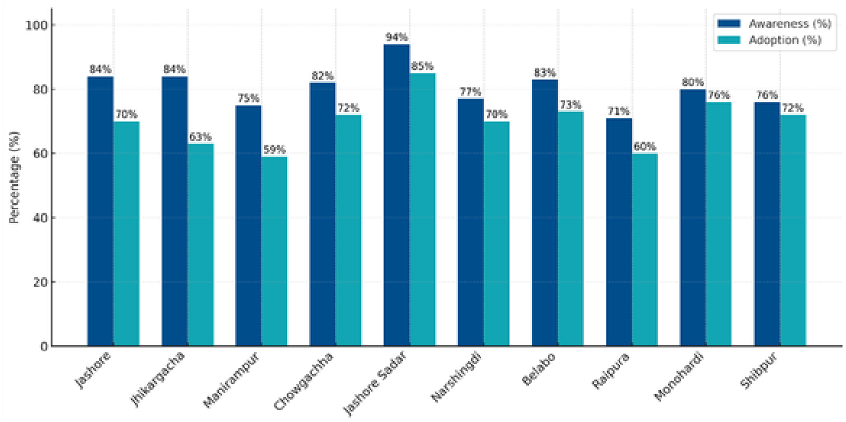
Key Observation:

The reason why farmers don't abide by good farming practices despite knowing about them to some extent is that they believe their vegetable will not grow to be big enough or be spotless without excessive pesticide use. Also, they noted that pests have become more resilient over the years, or that pesticide quality has been compromised.

In addition, they think that climate change over the years resulted in pest infestations increasing, which prompts them to overuse pesticide.

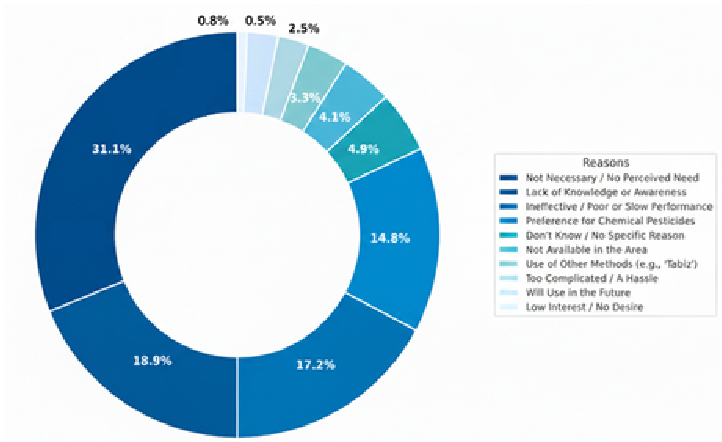
The pricing for pesticides and biopesticides is more or less similar. So encouragingly, biopesticide awareness is relatively high across both study areas, with over 80 percent of farmers reporting some familiarity. However, actual adoption remains uneven and misuse persists. Approximately 70 percent of farmers used biopesticides in the last season, but nearly one-third continued to exceed chemical usage thresholds, indicating that biopesticides are often treated as supplementary inputs rather than substitutes. The most common types of biopesticides cited by farmers included primarily pheromone traps with lures (including box traps, bottle traps, and pot traps) as well as yellow sticky traps/cards, light traps, and botanical or organic inputs such as neem-based products, cow dung, ash, oil cake, and organic fertilizers[9]. These insights demonstrate that although awareness campaigns have reached many farmers, perception and accessibility barriers persist. There remains a need to demonstrate the tangible benefits of biopesticides through on-farm trials, cost-benefit illustrations, and reliable market availability.

FIGURE 17: PERCENTAGE OF FARMERS WITH BIOPESTICIDE AWARENESS VS ADOPTION



Farmers who have not adopted biopesticides primarily cited a lack of perceived need, limited awareness, and doubt about effectiveness. Other reasons include availability issues, perceived complexity of application, and habitual preference for chemical inputs. When asked would farmers switch to relying solely on biopesticide, they responded that biopesticide by itself were not reliable enough. The reason for such belief was revealed in our KIIs, that while chemical pesticides had over 90% efficacy, biopesticide only had 60-70%. Which shows that rather than trying to make farmers switch entirely to biopesticide, they should be trained on how they can use both types of pesticides together, so the reliance on chemical pesticide lowers. Which can be achieved by frequent, practical, and localized training initiatives. These insights demonstrate that although awareness campaigns have reached many farmers, perception and knowledge barriers persist. There remains a need to demonstrate the tangible benefits of biopesticides through on-farm trials, cost-benefit illustrations, and reliable market availability.

FIGURE 18: REASONS FOR NOT USING BIOPESTICIDE

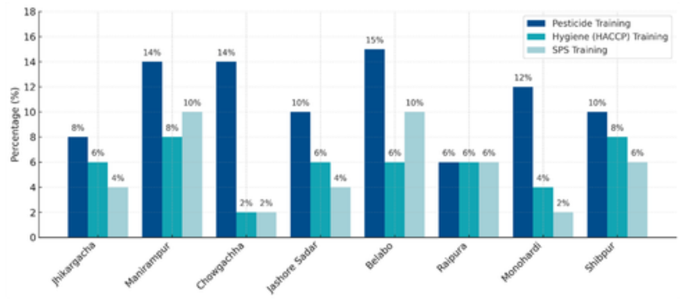


[9] For further information on bio pesticides, please refer to https://sps.apaari.org/index.php/pesticide-residues-mrls/

The analysis shows that participation in formal training programs related to pesticide use, handling hygiene, and SPS compliance remains limited among surveyed farmers. On average, only 11 percent of farmers received training on pesticide use, 5-6 percent on vegetable handling and hygiene (HACCP), and just 5 percent on SPS requirements. The highest participation rates were recorded in Manirampur and Belabo, while Chowgachha and Monohardi showed the lowest. This low coverage indicates that most farmers have not yet received structured guidance on SPS standards or safe pesticide handling procedures.

Despite the limited scale, the data suggest that trained farmers tend to demonstrate relatively better awareness and improved handling practices than untrained groups, particularly regarding pesticide dosage and hygiene. However, the reach of these programs remains narrow, and there is no uniform system for refresher or follow-up sessions. Strengthening farmer training through regular, coordinated initiatives by DAE and exporter associations could therefore help bridge the gap between awareness and practice, ensuring that SPS knowledge translates into consistent compliance behaviour across all production zones.

FIGURE 19: PERCENTAGE OF FARMERS PARTICIPATING IN DIFFERENT TYPES OF TRAINING



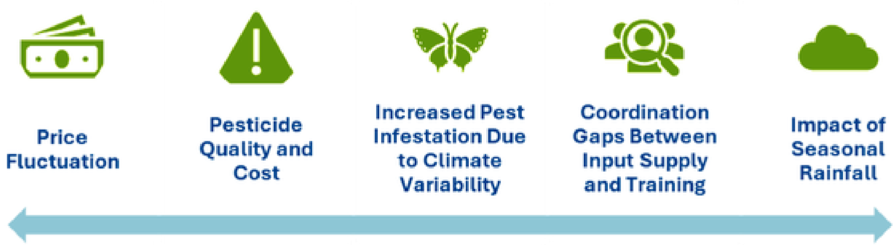
Key Observation:

It was observed by the baseline team that farmers showed interest in participating in training but mentioned that they are hardly ever notified or invited. DAE officers on the other hand said that they regularly arrange training sessions, but the outcome is not evident, as farmers still adhere to their historical practice.

Problems Faced by Farmers

Post-Despite their central role in the gourd export value chain, farmers face multiple challenges that undermine both productivity and SPS compliance. Insights gathered from the farmer surveys and Focus Group Discussions (FGDs) across Jashore and Narshingdi reveal that these constraints stem from a combination of market volatility, input management issues, environmental factors, and institutional gaps.

FIGURE 20: PROBLEMS FACED BY FARMERS



Some of the major problems shared by farmers during FGDs and KIIs are:

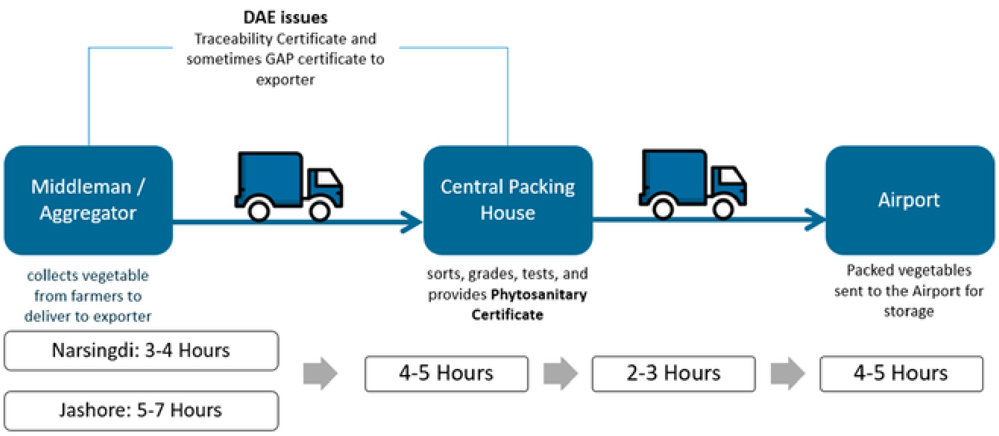
- **Price Fluctuation:** Farmers face sharp seasonal price swings, often selling below production cost during oversupply. With middlemen setting prices and farmers having little bargaining power, uncertainty discourages investment in quality improvement and SPS compliance, especially when export rejections occur.

- **Pesticide Quality and Cost:** Farmers report inconsistent or adulterated pesticides, often bought on credit from dealers who push specific brands. Rising input prices and limited access to affordable biopesticides reinforce dependence on chemical pesticides, increasing residue risks and SPS violations.
- **Climate-Driven Pest Infestation:** Fruit fly and other pest attacks have intensified due to irregular rainfall and higher temperatures, forcing farmers to spray more frequently than recommended. Without localized pest surveillance, farmers struggle to manage outbreaks, raising costs and residue levels.
- **Weak Coordination in Input Support and Training:** Inputs such as vermicompost are distributed without accompanying technical guidance, and similar gaps exist in pesticide handling and bio-input use. This disconnect reduces the effectiveness of government and NGO interventions.
- **Impact of Seasonal Rainfall:** Heavy monsoon rains cause waterlogging, crop loss, and harvest delays, with inadequate drainage worsening damage. Farmers receive little mitigation or compensation, and the absence of crop insurance leaves them financially exposed after extreme weather events.

4.2 TRANSPORT AND EXPORTER STAGE

The transport and exporter stage forms the critical link between domestic production and international markets. It is where compliance with Sanitary and Phytosanitary (SPS) standards is ultimately verified before shipment. Findings from the Key Informant Interviews (KIIs) with leading exporters reveal both progress and persistent constraints in ensuring quality, traceability, and competitiveness within the gourd export value chain. Exporters operate in a challenging environment marked by limited infrastructure, volatile freight costs, and weak upstream compliance mechanisms that collectively undermine export readiness.

FIGURE 21: FIELD TO PORT (PROCESS AND TIMEFRAME)



Production and Procurement Systems

Exporters typically source vegetables through two primary systems: contract farming and open-market procurement. Contract farming is the preferred approach for export-quality produce, as it allows exporters to maintain control and traceability over pesticide use, harvesting practices, and input management. Under these arrangements, exporters sign agreements directly with selected farmers, providing detailed instructions on what can and cannot be applied during cultivation.

Field inspections are then conducted by officers from the Department of Agricultural Extension (DAE), particularly the Plant Quarantine Wing (PQW), a wing under DAE, who issue Traceability Certifications confirming compliance with SPS standards. This inspection is completed at the central packing house and the PC is provided there. Following certification, vegetables are harvested. After this the vegetables are:

1. transported to the ShyampurCentral Packing House, if is being exported to Europe or the UK, or
2. transported to the Airport Central Packing House, if it is being exported to any other destination.

The vegetables are then sorted and packaged by the exporter's in-house teams under supervision. DAE PQW is also responsible for issuing the Phytosanitary Certificate (PC) that authorizes export clearance and finally dispatched to the airport for shipment. Each PC costs BDT 220 (USD 1.8) and can include multiple vegetable and fruit varieties. This PC is provided in the central packing house upon inspection there.

For high-SPS-requirement markets, exporters work through local aggregators who collect vegetables from contracted farmers and ensure proper traceability and SPS compliance. Theses aggregators collect the vegetables and send them to the central packaging house, where the packaging workers, employed by the exporters, sort, grade the vegetable manually and finally package them for shipment.

On the other hand, with less stringent SPS requirements, such as the Middle East, exporters purchase vegetables from non-contracted farmers particularly for markets. According to interview data, roughly 60-70% of sorted produce meets export standards, while the remainder is diverted to domestic markets.

Key Observation:

Exporters mentioned that the Central Packing Houses do not yet have adequate resources or machinery to properly conduct tests to detect SPS compliance (such as the Maximum Residue Limit (MRL) test). An interview with the Central Packing House authority revealed that upgrades are being made and expected to be completed by 2026.

Crop Selection and Export Trends

Exporters currently handle a narrow set of gourd varieties suited for different international markets. Varietal selection depends on pest susceptibility, SPS sensitivity, and historical rejection rates.

TABLE 6: CROP SELECTION AND EXPORT TRENDS

Crop/Product	Export Market	SPS Risk Level	Remarks
Bottle Gourd	EU, UK, Middle East	Low	Commonly exported, minimal pest issues
Pumpkin	EU, UK, Middle East	Low	Stable export item
Snake Gourd	EU, UK, Middle East	Low	Consistent demand
Sponge Gourd	EU, UK	Moderate	Moderate monitoring required
Ribbed Gourd	Europe (Black Seed), Middle East (Green Seed)	Moderate	Colour-based seed differentiation for market destination
Ash/Wax Gourd	EU, Middle East	Low	Easy compliance
Spiny Gourd/Teasel Gourd	--	High	Discontinued due to frequent rejections
Bitter Gourd	Middle East	High	Not exported to EU due to pest and residue issues
Pointed Gourd	Limited EU Markets	Moderate	Requires careful monitoring and traceability

Exporters noted that Spiny/Teasel Gourd and Bitter Gourd have been phased out since the last FY 2024-25 from European shipments due to high rejection rates linked to pest presence and pesticide residue failures. This gradual phasing out has resulted in a self-ban being imposed by PQW on Teasel Gourd, along with reduced exports of Bitter Gourd. In contrast, Bottle Gourd and Pumpkin remain the most reliable export crops, requiring minimal intervention. Seasonal patterns also influence export volume: shipments peak during December, January, and March, when European demand is highest, and slow significantly between May and July due to both lower demand and high airfreight costs.

Key Observation:

Bangladesh's export of Spiny Gourd has been self-banned in EU and UK for the last fiscal year due to consecutive rejections. The team noted that if consecutive shipments are rejected, the exporting country gets blacklisted for an indefinite period. The Ministry of Commerce has put a self-ban on spiny gourd export to keep Bangladesh form getting blacklisted.

SPS Compliance and Testing

Exporters reported that high MRL test failures remain one of the biggest constraints to export growth, largely driven by farmers' dependence on local pesticide vendors, which leads to chemical overuse and residue exceedance. Bangladesh still lacks an accessible national MRL testing facility; although a new lab is being developed at the central packing house, exporters fear that high fees and slow turnaround (5-7 days) will make it impractical for perishable vegetables that require rapid shipment. Exporters also highlighted inconsistencies in DAE field inspections and delays in traceability certificate issuance, which disrupt shipment planning.

Biopesticides remain scarce in the market and adoption among contracted farmers is still low. Exporters stressed the urgent need for mass farmer training, stronger DAE oversight, and strict enforcement of pesticide standards to reduce rejection risks and ensure reliable export operations.

Key Observation:

SGS Bangladesh reported that an MRL test requires 5-7 days to show results. SGS is one of the few private testing labs in Bangladesh offering this test in Dhaka. The baseline team discussed sending a sample of the vegetable from the field to Dhaka to conduct the test. This would have to be timed one week before harvesting.

However, exporters opposed it saying that farmers would keep on spraying pesticide in the last week before harvesting. Therefore, the test would not be accurate. In addition, there would be extra costs associated with the sample transport and testing.

Transport and Storage

Transport and storage remain some of the weakest links in the vegetable export chain, creating significant SPS and quality-compliance risks. Once harvested, vegetables are placed in crates or bags and transported by vans to middlemen or aggregators, where they typically sit for about an hour in informal truck-parking areas. From there, produce is loaded onto mostly roofless or semi-covered trucks, often with only thin polythene shading and almost never with temperature control. This exposes vegetables to heat, dust, and contamination during the crucial early hours post-harvest. For EU-bound consignments, trucks deliver the produce to the Central Packing House, while non-EU shipments travel directly to the airport. Regardless of the destination, the absence of cold-chain infrastructure means vegetables frequently heat up during transport, increasing moisture loss and accelerating spoilage.

Poor Transport Conditions

Vegetables sit in parking lots and are moved in roofless or semi-covered trucks with no temperature control, exposing produce to heat, dust, and contamination.

No cold chain at packing houses or airports

The entire system lacks cooling, causing 5–10 percent product loss during sorting and transport and weakening SPS compliance.

Heavy dependence on limited airfreight

With 99% exports moving by air and only a 14–16 hour window from harvest to airport clearance, restricted flight capacity heightens quality and rejection risks.

Although exporters must follow ISO 2000 packaging guidelines, enforcement is minimal, leading to inconsistent packaging quality and improper handling. After reaching the packing house or airport, vegetables are repacked and prepared for export within a total journey time of 14 to 16 hours. Exporters also require a minimum of six hours before flight departure for sorting, testing, and clearance. With 99 percent of vegetable exports moving by air, the entire sector depends on limited airfreight capacity, which remains costly and highly constrained. Temperature instability at both packing houses and airport cargo terminals remains a recurrent problem, especially in peak seasons.

These logistical inefficiencies result in 5 to 10 percent product loss, equivalent to approximately 50–120 kilograms per shipment during sorting, transport, and loading, directly reducing exporter profitability. Most exporters manage five shipments per week, each averaging 1,000–1,200 kilograms depending on flight schedules. This amounts an annual food loss of approximately 13–31 metric tons. Without investments in affordable cold-chain systems, improved transport conditions, and monitoring at packing houses and airports, the current system directly undermines both product quality and SPS compliance, leaving exporters vulnerable to rejection risks and profit instability.

Key Observation:

The team discussed cold transport and storage options with multiple stakeholders. They informed that cold transport storage is largely unavailable for vegetable. Certain large private companies have their own cold transport and storage, but they are mainly used to transport frozen food or medicine.

TABLE 7: EXPORT TRANSPORT PROCEDURE AND TIMEFRAME

Process Stage	Duration/Condition	Key Observations
Harvest to Packaging	3-7 hours	Manual loading, limited shade, no temperature control
Packaging and Sorting	4-5 hours	Manual Sorting and packaging, no temperature Control
Packaging to Airport	2-3 hours	Transport via open trucks or vans
Airport Holding	4-5 hours	No cold storage, delays increase spoilage
Average Total Duration	14-19 hours	Quality deterioration and moisture loss
Minimum Export Load	1000 kg (Airline requirement)	
Typical Load per Shipment	1200-1400 kg (5-10% damage)	

Export Markets and Compliance Requirements

Bangladesh's gourd exports are concentrated in Europe, the United Kingdom, the Middle East, and Canada, each with varying compliance expectations. European markets especially Germany and Italy have the strictest SPS enforcement under EU regulations, whereas UK standards, particularly in Manchester and Birmingham, are comparatively lenient.

In contrast, the Middle East and Canadian markets maintain minimal pesticide residue monitoring, allowing exporters to include produce from non-contracted farmers. Exporters cautioned that repeated rejections in the EU pose a major risk: after five consecutive rejections, a complete ban may be imposed on further exports.

Key Observation:

One Exporter reported potential financial losses that could get up to BDT 100,000 (USD 820) for a rejected shipment, especially when products are returned for destruction or re-export. With exporters operating daily shipments, the financial impact of losses escalates rapidly.

Bangladesh cannot export fresh vegetables to the United States because it has no APHIS-approved Pest Risk Assessments or irradiation facilities, making the country ineligible for entry under US quarantine rules. Even if permitted, weak cold-chain logistics and very high airfreight costs make the US market commercially unviable for Bangladeshi exporters.

TABLE 8: SPS COMPLIANCE REQUIREMENTS IN KEY EXPORT MARKETS

Destination	Key Markets	SPS Compliance Level	Remarks
European Union	Germany, Italy, Finland	Very High	Strict MRL limits and documentation, potential ban after 5 rejections
United Kingdom	Manchester, Birmingham, London	High	Easier than EU, moderate rejections
Middle East	Saudi Arabia, Qatar, Kuwait, Malaysia	Moderate	Lower compliance barriers, major destination for Bitter Gourd and Pointed Gourd
Canada	Toronto, Vancouver	Moderate	-
USA	-	-	No current exports

Problems Faced by Exporters

The KII discussions identified a consistent set of operational and systemic challenges. These issues affect both the short-term profitability and long-term sustainability of Bangladesh's export competitiveness.

TABLE 9: PROBLEMS FACED BY EXPORTERS

Category	Identified Challenges	Impact
Infrastructure	Lack of cold storage at airports and packing houses, poor temperature control	Product spoilage, reduced shelf life
Central Packing House	Lack of air conditioning and storage in the Central Packing House located in Shyampur	Strain on workers and Product spoilage
Certification Collection	Analogue system for traceability certificate collection and shortage of Agriculture officers	Longer wait time after harvest
Location	Large Distance between Airport and Packaging Facility	Long travel time to reach Airport
Transport	Long transit times, no cooling during loading /unloading, Shortage of Cargo Space	Physical damage and quality loss
Pesticide Compliance	Overuse and mismanagement by farmers, limited biopesticide use	Frequent MRL failures
Testing and Certification	Absence of functional MRL labs, inconsistent DAE inspections	Delays and rejections
Freight Costs	Volatile airfreight rates driven by RMG cargo demand	Unpredictable export pricing
Profit Margins	Very low net profit (below BDT 5/kg or USD 0.04/kg)	Unsustainable business for small exporters
Governance and Oversight	Corruption, middlemen exploitation, and unfair licensing	Higher transaction costs and limited accountability
Market Barriers	Limited government engagement in promoting new destinations	Market stagnation

These structural barriers collectively reduce the competitiveness of Bangladeshi exporters in global value chains. Exporters noted that even with high-quality products, the lack of logistics support and transparent oversight discourages further investment in the sector.

4.3 REGULATORY, MONITORING, AND TESTING STAGE

Ensuring SPS compliance in Bangladesh is a multi-layered process that relies on coordinated action between public and private institutions. In theory, compliance begins at the farm level through training, pesticide management, and traceability procedures and then progresses to inspection, certification, and testing at the export stage. In practice, however, the system suffers from gaps in outreach, weak surveillance, limited testing capacity, and heavy reliance on manual documentation, all of which undermine SPS performance.

Despite repeated attempts during this baseline study, official rejection statistics could not be obtained from DAE, PQW, or packaging houses due to the absence of any centralized data system. Records were found to be paper based, fragmented across institutions, and not readily traceable. This highlights a critical governance gap: Bangladesh lacks a digital SPS performance tracking system, making evidence-based policy and compliance monitoring difficult.

Department of Agricultural Extension (DAE)

DAE is expected to be the primary institution supporting SPS compliance at the production level. Its responsibilities include:

- Training farmers on GAP, pesticide management, and traceability
- Conducting field visits and verifying production practices
- Regulating inputs, prices, and production

However, farmer-level evidence shows that DAE's outreach is limited.

Key Observation:

The baseline team noted three major feedback from farmers on DAE engagement:

1. They rarely see DAE officers in the field
2. Trainings are infrequent and reach only a small proportion of producers
3. Advice tends to come not from DAE but from pesticide retailers, who influence chemical

TABLE 10: NUMBER OF SUB-ASSISTANT AGRICULTURE OFFICERS (SAAO) IN EACH UPAZILA

District	Sub-district	Actual Posts	Working Officers	Open Slots	Trained Officers
Jashore	**Jashore District**	166	124	42	5
	Jhikargacha	34	20	14	0
	Manirampur	52	41	11	1
	Chowgachha	34	27	7	1
	Jashore Sadar	46	36	10	3
Narshingdi	**Narshingdi District**	162	132	30	4
	Belabo	24	24	0	1
	Raipura	73	51	22	2
	Monohardi	37	33	4	0
	Shibpur	28	24	4	1

This weak extension coverage results in poor adoption of GAP, weak recordkeeping, and widespread non-compliance with pre-harvest intervals. DAE's capacity constraints are compounded by the absence of government-run post-harvest testing facilities, forcing exporters to depend on private labs.

DAE officials also acknowledged limited pest surveillance capability, a shortage of trained personnel, and insufficient logistics for regular monitoring.

Plant Quarantine Wing (PQW)

PQW is a wing under DAE that oversees trade regulation considering SPS compliance. PQW plays a critical role at the export stage, overseeing Phytosanitary Certificates. Its responsibilities include:

- Issuing Traceability Certificates (confirming product origin and production details)
- Issuing Phytosanitary Certificates (PCs) after inspection
- Conducting pest surveillance and ensuring SPS compliance at packhouses and airports

What Traceability Certificates and PCs Require

To issue these documents, PQW must:

- Verify production sources: farmers identity, land, pesticide usage record
- Sort and grade vegetable according to buyer's requirements
- Conduct a manual/visual inspection of the vegetable

Challenges faced by PQW officials

- Very limited capacity to conduct field monitoring and laboratory testing
- No functional system to test for Maximum Residue Limits (MRLs)
- Heavy reliance on visual inspection
- Widespread farmer non-compliance with the 14-day pre-harvest interval
- Limited cold-chain facilities at packing houses and airports

PQW Although PQW conducts exporter training sessions, they agreed that farmer-level training must increase, particularly on pesticide use, pest management, and post-harvest hygiene.

Key Observation:

From the field visits, the baseline team noted that Traceability Certificates are issued by field officers or regional DAE offices. The middlemen/aggregator collects this on behalf of the exporter. Sometimes even though farmers may not maintain records or adhere to good farming practices, the middleman can still acquire the certificates through their close connectivity with the regional offices.

This stage of the process makes the involvement of middlemen vital for exporters.

Role of Testing Labs

Public and national laboratories form the backbone of Bangladesh's SPS testing ecosystem for agricultural exports. These include laboratories under Bangladesh Council of Scientific and Industrial Research (BCSIR), BARI, selected public universities such as Bangladesh Agricultural University (BAU) and IPSA, and facilities operated by BSTI, which provide chemical and microbiological testing services relevant to food safety and plant health. Among these public institutions, BCSIR plays a central role in MRL testing. However, they do not do so commercially for export, rather for research purposes. Most of these institutions possess technical capacity for MRL and microbiological analysis, but their role in routine export certification is limited to research with centralized operations in Dhaka.

Alongside public institutions, SGS operates as the primary private testing and certification provider and a partner of the SAFE BD project, contributing through MRL testing, microbiological testing, GAP certification, and training for exporters and supply-chain actors. Although SGS is not a government-authorized body for issuing official phytosanitary or SPS certificates, its test results are widely accepted by exporters and international buyers due to its accreditation scope and operational efficiency. In practice, exporters rely heavily on SGS, which is currently the only private testing company with laboratory facilities located in Bangladesh, primarily in Dhaka, constraining timely access to testing services for exporters and farmers in production hubs such as Jashore and Narshingdi. Other private companies, including Intertek, ALS, and Eurofins, operate in or with Bangladesh but conduct testing through laboratories located in India or other countries, resulting in longer turnaround times and higher costs. Private companies play a role in providing other certifications such as the (Hazard Analysis and Critical Control Points) HACCP certification.

HACCP certification in Bangladesh is delivered by accredited private certification bodies, while public institutions do not issue HACCP certificates and instead perform regulatory and inspection functions. However, HACCP is not a strict requirement by PQW to issue PCs.

Major Operational Constraints for Testing

- MRL test results take 5-7 days, too long for perishable vegetables
- Farmers must send samples several days before harvest, which is often not feasible
- The central SGS laboratory is located in Dhaka, far from major producing areas like Jashore and Narshingdi
- Their equipment cannot detect internal pest infestations, one of the main reasons for EU rejection

Furthermore, SGS is not yet mandated to issue government-recognized verification for export certification, limiting its role to voluntary compliance and exporter-driven testing.

Major Gap in Testing

Almost all labs lack the ability to detect internal insect infestations, the major cause of gourd export rejections in Bangladesh in the last FY.

05. RECOMMENDATIONS & CONCLUSION

5.1 RECOMMENDED INTERVENTION LOCATION

A scorecard was used to evaluate each sub-district selected under the study. The scorecard was used to mark the sub-districts relatively based on three primary dimensions: 1. SPS compliance, 2. Export Potential, and 3. Population of Trained Farmers.

TABLE 11: LOCATION RECOMMENDATION SCORECARD

District	Sub-district	SPS Compliance (0–5)	Export Potential (0–5)	Trained Farmer Population (0–5)	DAE Supervision	Total Score
Jashore	Jhikargacha	3	1.25	0	0	1.26
	Manirampur	2.8	3.25	4	3.5	3.36
	Chowgachha	2	3	5	2.5	3.11
	Jashore Sadar	3.3	3.75	2	4.5	3.32
Narshingdi	Belabo	3.2	3.75	5	1.5	3.50
	Raipura	1.5	3.5	0	5	2.12
	Monohardi	3	2.25	4	0	2.85
	Shibpur	2.3	4.5	2	2	2.38

Based on this scorecard[10], the recommendations to select two sub-districts from each regions are:

1. **Jashore:** Jashore Sadar and Manirampur
2. **Narshingdi:** Belabo and Shibpur

The scorecard results indicate that Belabo and Monohardi in Narshingdi, as well as Manirampur and Jashore Sadar in Jashore, stand out as comparatively stronger performers in SPS compliance and export potential. Although Monohardi ranks high under Narshingdi, DAE officials noted that actual participation in export supply chains from this location remains limited, with infrequent shipments and weak linkages to exporters. As a result, investments in export-oriented SPS interventions would face higher market-integration risks. In contrast, Shibpur showed stronger practical export potential and greater feasibility for cluster farming. During the validation workshop, DAE identified Shibpur as a more suitable site for cluster-based SPS interventions, leading to the de-selection of Monohardi. Given their relative readiness, these areas are well-positioned for export-focused production interventions, particularly those that aim to fast-track compliance for international markets. Detailed Calculation of the scorecard is given in Annex 3.

In addition to the locations recommended, the baseline team recommends working with Teasel Gourd, Ridge Gourd, and Snake Gourd. The team's findings from the KIIs point to Teasel Gourd as the most critical crop requiring immediate attention. Ridge Gourd and Snake Gourd emerge as the next priority crops based on their rejection patterns and field feedback.

The scorecard evaluates SPS readiness and export orientation across four dimensions: SPS Compliance (recordkeeping, pesticide use, pre-harvest intervals, and packaging quality), Trained Population (share of farmers receiving relevant training), DAE Supervision (field officer coverage and GAP capacity), and Export Potential (a proxy combining production volume, efficiency, and cluster farming practices in the absence of location-specific export data).

[10] Each area was scored by comparing its performance with others, converting this comparison into a simple 0–5 scale, adjusting scores where higher values meant poorer performance, and combining the results across SPS practices, production, training, and supervision using agreed priority weights (given in the scorecard dimensions below) to produce a final score.

Score Card Dimensions

SPS Compliance Dimension (Weightage: 35%)

Evaluates how well farmers follow essential SPS practices needed for export readiness.

- **Record Keeping:** Checks whether farmers maintain written or digital logs for activities like pesticide use and harvest dates.
- **Pesticide Application Frequency:** Assesses how often pesticides are applied during the season, indicating adherence to recommended intervals.
- **Biopesticide Adoption:** Measures the share of farmers using biological or low-toxicity pest control options.
- **Pre-Harvest Interval Compliance:** Tracks whether farmers maintain at least a 12-day gap between final pesticide spray and harvest.
- **Washing Produce After Harvest:** Shows how many farmers wash harvested vegetables using clean water.
- **Packaging Quality:** Evaluates the use of clean, safe, non-chemical packaging materials suitable for export markets.

Trained Population Dimension (Weightage: 17%)

Measures the proportion of farmers who received agricultural or SPS-related training.

DAE Supervision Dimension (Weightage: 28%)

- Number of field officers: Assesses the number and coverage of SAAOs/DAE officers supervising each upazila.
- Number of officers trained in GAP: Assesses the number of Trained DAE officers supervising each upazila.

Export Potential Dimension (Weightage: 20%)

Captures the area’s ability to produce consistently and export.

- **Input Capacity:** Reflects the total production (metric tons) in each location according to data shared by DAE for the last FY.
- **Production Efficiency:** Measures output per decimal, indicating productivity.
- **Cluster Farming Practice:** Shows the presence and strength of coordinated clusters.

5.2 RECOMMENDED INTERVENTIONS

Farmer Stage Recommendations

1. Strengthened Farmer Training (Small Group, Skills-Focused)

Deliver targeted trainings (≤20 farmers per session) on:

- basic recordkeeping and traceability
- correct pesticide dosage and application frequency
- PHI compliance and safe withdrawal periods
- integrating biopesticides with chemical pesticides
- proper packaging and hygiene practices
- biopesticide usage and advantages
- advantages of soil testing
- artificial pollination for higher production efficiency

2. Demonstration Plots and Integrated Pesticide Management (IPM) Farmer Schools

Establish practical demonstration sites to model safe pesticide handling, biopesticide use, IPM practices, and PHI adherence. Link these to IPM Farmer Schools to encourage continuous learning and farmer-to-farmer diffusion.

3. Pilot Implementation of Contract Farming with Trained Farmers

Select a cohort of trained farmers in regions where cluster farming practices are common, pilot improved practices recordkeeping, pesticide schedules, and proper packaging to generate evidence for scale-up and demonstrate measurable improvements.

4. Continuous Monitoring and Follow-Up

Introduce a simple monitoring system with periodic field visits, logbook checks, and PHI verification. Ongoing follow-up will reinforce behavior change and help identify farmers needing additional support. Encourage famers to keep records of field activities for easier monitoring.

5. Biopesticide Awareness and Confidence Building

Conduct short demonstrations and practical sessions showing when biopesticides work best, how to combine them safely with chemicals, how to reduce reliance on high-residue pesticides, and how to use biopesticides as last dose before harvest, to avoid pesticide residue for PHI.

6. Promote Cluster-Based Farming for Better SPS Control

Mobilize farmers into coordinated clusters to harmonize input use, harvest timing, and basic protocols. This will strengthen traceability, reduce variability, and improve access to exporters.

7. Improve Collection and Transport Access for Export-Minded Farmers

Establish or upgrade collection points near farming clusters, open online traceability certificate application, introduce basic storage and handling improvements, and strengthen connections between farmers, aggregators, and exporters to reduce losses and improve compliance incentives.

1. Policy-Level Actions

Exporters highlighted airfreight cost volatility especially during winter when RMG cargo dominates as a major barrier that erodes profit margins. To stabilize the business environment and improve SPS compliance, the following measures are recommended:

- Mandatory soil testing as part of the traceability certificate
- A regulated freight-cost band or price standard for perishable exports
- Dedicated air-cargo quota for vegetables during peak export months
- Chemical and Pesticide Regulation to reduce overuse of pesticides

These interventions would reduce financial unpredictability and incentivize exporters to invest more in SPS adherence.

2. Infrastructure-Level Actions

Infrastructure bottlenecks affect compliance, cost, and product quality. The Central Packing House is far from both production zones and the airport, increasing transit time and compromising freshness. Exporters therefore recommend:

- Training on SPS compliance for exporters to gain knowledge on how to maintain export compliance throughout the export process.
- New packing houses closer to major production clusters or nearer to the airport
- Online Traceability certificate applications to make acquiring the certificate easier and quicker for export
- Expanded cold-chain facilities, including affordable cooling vans and airport cold storage
- Improved transport logistics to reduce physical damage and maintain temperature integrity
- More accessible and faster SPS testing facilities with affordable residue and pest-testing services

Strengthening infrastructure in these areas would reduce post-harvest losses, improve compliance reliability, and enhance Bangladesh's competitiveness in international markets.

Regulatory Stage Recommendations

1. Strengthen DAE's Technical and Field Capacity

DAE needs enhanced technical skills and operational resources to enforce SPS standards. This includes advanced training for officers on pesticide management, PHI enforcement, recordkeeping validation, and export inspection protocols. Additional staffing and logistical support are needed to ensure regular field presence and timely service delivery.

2. Establish Regional Packing Houses Near Production Zones and Improve Existing Facilities

Long distances between farming hubs and the Central Packing House reduce freshness and increase losses. Policy advocacy is needed to create additional packing houses closer to major production clusters or near the airport to improve product quality and streamline SPS enforcement. At the same time, the existing packing facilities should be improved to ensure proper air conditioning and cleanliness and also introduce digital sorting systems.

3. Upgrade National Testing Infrastructure

Regulatory authorities should invest in modern laboratory technologies to expand national capacity for MRL testing, pest detection, and quality analysis. Faster and more affordable testing will help exporters align with strict international timelines.

4. Expand Regional MRL Testing Through SGS and Partners

Given the lack of accessible residue testing, the government should collaborate with private labs like SGS to establish regional MRL testing hubs in areas such as Jashore and Narshingdi. This would reduce sample turnaround time and minimize export delays.

5. Improve Post-Harvest Transport Through Cooling Vans

Regulators should promote the adoption of cooling vans and temperature-controlled transport systems. Incentives, leasing models, or public–private partnerships can help businesses invest in such vehicles, reducing spoilage and maintaining SPS compliance during transit.

6. Expand Cold Storage at Packing Houses

Cold storage capacity at existing facilities is insufficient to maintain product quality before export. Investment in expanded and affordable chilling infrastructure is essential to preserve freshness and meet the requirements of high-value markets.

7. Strengthen Monitoring of Agricultural Inputs and Chemical Use

A more robust regulatory mechanism is needed to oversee pesticide sales and usage. This should include routine vendor audits, stricter controls on approved chemical lists, and digital reporting systems to track input usage. Such oversight will reduce misuse and improve compliance with MRL and PHI standards.

5.3 CONCLUSION

This baseline assessment report under the SAFE BD project provides a comprehensive picture of Bangladesh's gourd export ecosystem, highlighting both its significant potential and the critical barriers that hinder full compliance with international Sanitary and Phytosanitary (SPS) standards. The findings reveal that while farmers and exporters demonstrate strong motivation to access global markets, their efforts are constrained by gaps in awareness, infrastructure, and coordination among key institutions. Practices such as excessive pesticide use, weak record keeping, and limited adoption of biopesticides persist due to inadequate training and enforcement mechanisms. Moreover, the absence of functional cold-chain systems, high testing costs, and manual data management continue to compromise export readiness and traceability.

Institutional actors like DAE, PQW, SGS, and BFVAPEA play vital roles in managing different aspects of compliance, yet the study found limited integration across their activities, leading to inefficiencies and inconsistent oversight. Despite these challenges, there are strong foundations to build upon including existing farmer networks, emerging testing infrastructure, and growing awareness of export standards. The upcoming DAE workshops will serve as an important platform to align institutional priorities, validate field data, and co-design targeted interventions.

Overall, the baseline findings reaffirm the need for a systematic, multi-stakeholder approach that strengthens SPS governance, promotes safe and sustainable production, and enhances gender-inclusive participation across the value chain. Through collective action, knowledge transfer, and institutional accountability, SAFE BD can help position Bangladesh as a trusted source of safe, high-quality vegetables in global markets contributing not only to export growth but also to safer food systems and improved livelihoods for farming communities.

ANNEXES

The Annexures for this baseline can be found in the respective links below:

1. Annex 1: Methodology
2. Annex 2: Survey Datasets
3. Annex 3: Scorecard Construction Methodology

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