WFP World Food Programme

World Vision

FINAL REPORT

Assessment of Vegetable and Fruit Value Chains in Samandağ District of Hatay, Türkiye

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An Assessment of Vegetable and Fruit Value Chains in Samandağ District, Hatay was conducted between April 2024 following the devastating earthquake of February 2023. The objective was to assess the current state of agricultural value chains, identify key challenges, and recommend strategies to support recovery and strengthen the resilience of smallholder farmers, cooperatives, and agribusinesses in the district. This executive summary outlines the key findings from the assessment and proposes an intervention plan to address the immediate and long-term needs of the vegetable and fruit value chain actors.

EXECUTIVE SUMMARY

KEY FINDINGS

The earthquake severely impacted Samandağ's agricultural sector, which plays a critical role in the Hatay province economy. Notable findings from the assessment include:

1 Earthquake-Induced Damages

Approximately 50-75 percent of irrigation systems, agricultural warehouses, and greenhouses were destroyed. Farmers experienced transportation disruptions, increased input costs, and labor shortages, with 83 percent reporting post-harvest losses due to storage and transport challenges.

2 Production Constraints

Most farmers operate small farms (under 1 hectare) and rely on self-financing, which limits their ability to scale production and invest in improved tools or technologies. Only 7 percent of farmers have access to formal credit services, while the majority face challenges in meeting market quality standards.

3 Post-Harvest and Market Access Issues

Post-harvest losses range from 10-50 percent, primarily due to no cold storage facilities and inefficient transportation networks. Farmers depend heavily on intermediaries (middlemen), with significant profit margins lost between farmgate and market prices. For instance, tomato farmers receive 5 TRY per kilogram, while the consumer pays 12 TRY per kilogram.

4 Gender Dynamics

While 85 percent of surveyed farmers did not report gender-specific constraints, qualitative data revealed that women face barriers in accessing financial services and scaling operations. Women-led cooperatives play a vital role in processing activities (e.g. producing pickles, jam, tomato paste, etc), but their growth is hampered by limited access to equipment and rising production costs.

5 Stakeholder Mapping

The assessment identified a diverse range of stakeholders in Samandağ's agricultural sector, including small-scale farmers, cooperatives, government bodies, local retailers, and NGOs. Small-scale farmers are the primary producers, while cooperatives play a critical role in organizing resources and facilitating market access. However, the influence of intermediaries and the limited involvement of microfinance institutions highlight the need for stronger collaborations to support farmers and improve market linkages.

RECOMMENDATIONS

Based on the assessment findings, the following recommendations are proposed to revitalize the vegetable and fruit value chains in Samandağ:

Recommendation	Details
Infrastructure Rehabilitation	Restore irrigation systems, storage facilities, and transportation networks damaged by the earthquake. Invest in cooperative-owned cold storage to reduce post-harvest losses and better control pricing. Rehabilitate transportation routes to improve market access.
Financial Services and Capacity Building	Engage microfinance institutions to develop low-interest loan schemes tailored for smallholder farmers. Implement financial literacy programs, with special attention to women farmers, to improve fund management and access to financial products.
Cooperative Establishment and Strengthening	Focus on the formation of cooperatives and supporting existing farmer cooperatives to enhance their capabilities in resource pooling, market access, and price negotiation. Provide training in cooperative governance, financial management, and market strategies. Offer specific support to women cooperatives through equipment upgrades and quality control training.
Improved Market Linkages and Processing Equipment	Establish direct market links between farmers and buyers, if financially viable based on future in-depth cost analysis. Provide processing equipment and training to cooperatives for value-added product creation.

Empowering Existing Women Cooperatives in the Value Chain	To empower women in the value chain, focus on leadership development and decision-making. Provide specialized training, mentorship, and capacity building for women's cooperatives. This will enhance their leadership skills and decision-making abilities, contributing to sustainable growth in the fruit and vegetable value chains.
Sustainable Agricultural Practices and Technology Adoption	Encourage farmers to adopt climate-smart agriculture, soil management, and pest control practices. Collaborate with agri-tech firms to provide affordable tools and equipment to improve efficiency and production.
Cost Analysis of Production	Conduct a detailed cost analysis in the next study iteration to identify and address the financial challenges and inefficiencies within the agricultural sector. This will provide insights for more targeted interventions.

OVERVIEW OF THE INTERVENTION PLAN

The below table provides an overview of the key components of the intervention plan for implementing partners.

Function	Constraint	Impact on the Market	Potential Partners	Implementing Partners' Role and Interventions
Input Supply	Limited access to agricultural tools and improved seeds	Poor product quality and high input costs	Ministry of Agriculture, local agri-tech firms	Advocate for government-backed seed distribution programs and facilitate partnerships with suppliers for affordable tools and equipment. Invest and support in the provision of drip irrigation, solar-powered solutions, and mobile processing units.
Market Access	High transportation costs and poor infrastructure	Post-harvest losses and lower profit margins	Logistics companies, relevant ministries	Support the establishment of cooperative-owned cold storage facilities and rebuild transportation links damaged by the earthquake. Also support local authorities with branding and marketing strategies on local production.
Processing Equipment	Lack of processing equipment	Limited ability to add value to products	Cooperatives agribusiness	Provide grants or mi-cro-loans for small-scale processing machines and support cooperatives in acquiring affordable equipment for value-added production.

Financial Services	Limited access to affordable credit	Inability to scale operations	NGOs, banks	Partner with microfinance institutions to develop low-interest loan schemes targeting women and marginalized farmers, while offering financial literacy programs. A focus could be on collective financing from the banks through World Vision engaging with targeted cooperatives. This could be showcased as sharing the risk through cooperatives, as opposed to individual farmer financing.
Cooperative Support	Weak cooperative structures and lack of technical support	Limited market access and economies of scale	Cooperatives, NGOs	Strengthen governance through capacity-building workshops, link cooperatives with buyers, and facilitate joint marketing initiatives. WV could also engage in developing a digital platform or app to connect cooperatives with buyers, facillitate joint marketing initiatives, and provide technical supports. The platform could also include a market pricing dahsboard to further increase proce trasnparency in the market. This platform will enhance market access, improve efficiency, and stregnthen cooperative networks.

Labor	Labor shortages and high costs	Reduced productivity and product quality	Farmers, cooperatives	Engage in farming awareness campaigns for youth in Hatay to encourage engagement in the sector. For interested youth and farmers, launch vocational training programs focused on agricultural practices and processing, while promoting labor-sharing models within cooperatives. There is also an opportunity for WV to engage with professionals and youth in the tech space to develop software and technologies tailored towards developing solutions helping farmers to work more precisely, efficiently and sustainably in Hatay district.
Infrastructure	Damaged transportation and cold storage systems	Post-harvest losses and increased costs	Ministry of Infrastructure, municipality, private sector	Mobilize funding for transportation network rehabilitation and establish cooperative-led cold storage and processing hubs to preserve product quality and improve market access.

To optimize the intervention's impact, a strategic approach is crucial. Prioritizing areas with high potential impact, sustainability, feasibility, and stakeholder engagement is key.

Focusing on market access, processing equipment, and financial services can significantly improve farmers' incomes and livelihoods. By improving market linkages through initiatives like market information systems and e-commerce platforms, supporting value addition, providing access to affordable equipment and training, and expanding financial services, the intervention can address critical challenges and contribute to the long-term sustainability of the agriculture sector. Additionally, building the capacity of farmers and cooperatives, and fostering strong partnerships with other stakeholders will ensure the long-term success of the intervention.

On February 6, 2023, two devastating earthquakes struck the southeastern provinces of Türkiye, causing widespread damage and significant loss of life.[1] According to the Türkiye Earthquakes Recovery and Reconstruction Assessment (TERRA), the earthquake's impact was estimated at USD 103.6 billion, equivalent to 9 percent of Türkiye's forecasted GDP for 2023.[2] This disaster claimed 48,448 lives and displaced 3.3 million people, many of whom now reside in temporary shelters such as tent camps and container settlements. The earthquake caused extensive damage across an area spanning 110,000 square kilometers, with apartment towers and village homes lying in ruins. Agricultural production was severely impacted, with losses estimated at TRY 92.23 billion (USD 4.89 billion), affecting approximately 450,000 hectares of cultivated land, including staple crops like winter wheat and key perennial export crops such as pistachios, grapes, citrus fruits, apricots, and olives.[3]

INTRODUCTION

Türkiye's southern provinces, including Adıyaman, Hatay, Kahramanmaraş, Kilis, Osmaniye, Gaziantep, Malatya, Şanlıurfa, Diyarbakır, Elazığ, and Adana, are considered the nation's "fertile crescent." This region accounts for 15.3 percent of the country's total agricultural GDP, and about 14 percent of the nation's farmers work in these areas[4]. In addition to the damage caused to infrastructure, the agricultural sector experienced losses totaling USD 6.3 billion, which includes USD 5.1 billion in production losses and USD 1.3 billion in infrastructure damages. Livestock, fisheries, and agricultural infrastructure, such as irrigation equipment, barns, storage facilities, and greenhouses, were significantly affected, leading to the migration of approximately 2 million people out of the region to safer areas.[5]

Hatay province, one of the most severely affected, saw around 775,000 people migrate due to the disaster. The Samandağ district, in particular, suffered extensive damage, with 50 percent to 75 percent of its irrigation systems destroyed, along with major losses in agricultural warehouses, greenhouses, and food-processing facilities. In districts such as Kirikhan, Samandağ, and Altinözü, agricultural machinery losses were categorized as severe.[6] In response, the Food and Agriculture Organization of the United Nations (FAO) launched a three-year Earthquake Response and Recovery Plan (ERRP), aiming to restore critical agri-food systems and rural livelihoods, ensuring continued food production and availability.

Furthermore, The Türkiye Recovery and Reconstruction Assessment (TERRA) report details the Turkish government's comprehensive plans for restoring agriculture in the Hatay area following significant earthquake damage. It emphasizes recovery and reconstruction efforts, including detailed post-disaster needs assessments developed with support from international organizations like the UNDP and the World Bank. The focus is on rebuilding critical agricultural infrastructure, such as irrigation systems, and providing financial aids and subsidies to help farmers recover. There's also a strong push towards adopting innovative farming practices and modern technologies to increase productivity and sustainability, ensuring the sector's resilience against future disasters. Moreover, the government prioritizes community engagement in the recovery process, tailoring interventions to the specific needs of the affected areas, which is crucial for sustainable agricultural development.

Given the scale of devastation, the World Vision International (WVI) and IBC (International Blue Crescent Relief and Development Foundation) conducted a rapid assessment in Hatay province, in collaboration with the World Food Programme (WFP), to address the needs of agricultural value chain actors in earthquake-affected areas in Türkiye. Samandağ district emerged as a key area of focus for agricultural interventions due to its high production of vegetables and fruits such as citrus, pomegranate, olive, parsley, tomatoes, cucumbers, and peppers. The agricultural value chain in the region suffered severe setbacks following the earthquake, with supply-demand imbalances and transportation disruptions affecting both producers and consumers.

Samandağ's importance as an agricultural hub is further highlighted by its ranking among Türkiye's top vegetable and citrus-producing regions. It contributes 20 percent of Türkiye's total fresh vegetable volume and 17 percent in terms of value, while accounting for 25 percent of the country's citrus production.[7] The district also produces significant quantities of tomatoes and peppers, which are particularly important due to their profitability and sustainability. However, these crops, along with others, were the most affected by the earthquake, severely disrupting the agricultural value chain.

[1]OCHA (United Nations Office for the Coordination of Humanitarian Affairs). 2023
[2]Türkiye earthquakes recovery and reconstruction assessment, Government of Türkiye, 2023
[3]Türkiye Recovery and Reconstruction Assessment, 2023
[4]Agriculture sector needs assessment for earthquake-impacted provinces, FAO, 2023
[5]Türkiye Recovery and Reconstruction Assessment, 2023
[6]Agriculture sector needs assessment for earthquake-impacted provinces, FAO, 2023
[7]Islamic Development Bank (IsDB), Preliminary Global Value Chain Analysis for Turkey: Catalyzing Exports and Creating Jobs in the Fresh Fruits and Vegetables Sectors, 2020

OBJECTIVES OF THE ASSESSMENT

The primary objective of this value chain assessment is to identify key constraints, opportunities, and entry points for interventions that will enable vegetable and fruit value chain actors in Samandağ district of Hatay to restore their production capacities, market linkages, and income opportunities following the earthquake. The focus is on understanding the current barriers to growth, the needs of value chain actors, and identifying strategies to revitalize the agricultural value chain in the region.

Specific Objectives:

1. Assess the Current State of the Vegetable and Fruit Value Chain:

- Map key actors involved in the vegetable and fruit value chain, characterizing their roles, linkages, and power dynamics.
- Evaluate the effectiveness of existing support services, infrastructure, and policies in facilitating the recovery and growth of the vegetable and fruit value chain.

2. Identify Constraints:

- Analyze key challenges faced by smallholder farmers, cooperatives, and SMEs in restoring and enhancing their operations, including supply chain disruptions, access to finance, and market linkages.
- Investigate gender disparities and barriers faced by women in accessing resources, opportunities, and decision-making within the vegetable and fruit value chain.

3. Evaluate Cooperative Capacities:

- Assess the potential for strengthening cooperatives' capacities to provide better services and support to their members, particularly smallholder farmers.

4. Opportunity Assessment:

- Identify opportunities for value chain enhancement, focusing on technology adoption, market expansion, and innovations in products or processes to increase competitiveness and sustainability.
- Explore potential partnerships among value chain actors and stakeholders (e.g., government, NGOs, private sector) to enhance collaboration and resource sharing.

5. Supply and Demand Analysis:

- Evaluate the current state of supply and demand within the vegetable and fruit value chain, considering the impacts of the earthquake on production capacity and market access.
- Assess the reliability of supply and stability of demand for vegetable and fruit products from Samandağ, considering both domestic and export markets.

6. Design Targeted Interventions:

- Recommend appropriate interventions and capacity-building activities to address identified constraints and leverage opportunities for revitalizing the vegetable and fruit value chain in Samandağ.
- Suggest support modalities that focus on the unique needs of different value chain actors, with particular attention to vulnerable groups such as smallholder farmers and women.

The methodology for the Value Chain Analysis (VCA) conducted by WVI in coordination with IBC involved a comprehensive approach using a variety of data collection methods to gain a full understanding of the agricultural value chain in Samandağ district, Hatay. The assessment was designed to provide insights into the challenges and opportunities within the fruit and vegetable value chain, focusing on restoring and enhancing production capacities, market linkages, and income opportunities post-earthquake. The following methods and tools were used during the data collection process:

METHODOLOGICAL APPROACH

DATA COLLECTION APPROACH

Data collection took place over a five-week period from March 26, 2024, to April 18, 2024. The enumerators were responsible for gathering data through surveys, Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and Farmer Organization Readiness and Maturity Assessments (FORMA). The data collection tools included open and closed-ended questions designed to capture both qualitative and quantitative data. The tools were prepared in English and then translated into Turkish and Arabic to ensure accurate communication with participants.

SURVEYS

A total of 70 Turkish national farmers participated in the surveys, with 29 female and 41 male respondents representing different neighborhoods within Samandağ. The survey targeted smallholder farmers engaged in fruit and vegetable production, focusing on their production capacities, challenges, and market participation.

While the survey of 70 Turkish national farmers provides valuable insights into the challenges and opportunities faced by smallholder farmers in Samandağ, the sample size may not be fully representative of the entire population of approximately 6,000 farmers (1,000 registered and an estimated 5,000 unregistered) in the Hatay district. However, the survey data was triangulated with findings from Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and a comprehensive literature review to enhance the overall understanding and validity of the results. The table below summarizes the farmers' survey participation:

Stakeholders		Target	Note
Agricultural Cooperatives	Participants in the board management of the agriculture cooperatives that are affected by the earthquake	6	N/A
Small and Medium-Sized Enterprise	Male and female participants in that have been affected by the earthquake.	10	Fertilizer and pharmaceuticals, agricultural products, packaging, marketing
Farmers	Farmers, both male and female, with an experience in commercial farming, particularly in the cultivation of fruits and vegetables	70	29 female & 41 male 8 different subdistricts

KEY INFORMANT INTERVIEWS (KIIS)

A total of 20 KIIs were conducted with various stakeholders across the value chain, including representatives from local authorities, cooperatives, SMEs, wholesalers, and support organizations such as DRC and STL. These interviews provided in-depth insights into the challenges, opportunities, and potential interventions needed to restore and improve the agricultural value chain in the region.

Stakeholder		Target
Samandağ district directorate of Agriculture	Representative of the Directorate	1
Samandağ district governorship	Head / Deputy Head	1
Chamber of agricultural engineers	Representative of the Agricultural Engineers	1
Local District Muhtar/s	Muhtar/s in Samandag	5
Support to Life_ STL	Representative of STL since they assist local women's groups/cooperatives in the agriculture sector	1
Wholesalers/Retailers/Buyers	Representative of those who can support the participants' long-term and sustainable economic growth	3
Hatay Provincial Agriculture Directorate	Representative of the Directorate	1
Chamber of Commerce Antakya	Head / Deputy Head	1
FSL Co-coordinator Antakya	Co-coordinator of FSL	1
Wholesalers/Retailers/Buyers	Representative of those who can support the participants' long-term and sustainable economic growth	1
	TOTAL	**20**

FOCUS GROUP DISCUSSIONS (FGDS)

Two FGDs were also conducted with members of cooperatives, one with male participants and one with female participants. The FGDs aimed to gather detailed insights into the challenges and opportunities faced by the cooperative members in the fruit and vegetable value chain.

DATA ANALYSIS

The collected data were analyzed using both qualitative and quantitative methods. SPSS was utilized for analyzing the quantitative data, while qualitative data were analyzed using ATLAS.ti and Excel. Descriptive statistics, charts, and graphs were employed to present the results. The data were triangulated with secondary sources to validate findings and develop a comprehensive understanding of the value chain dynamics, including supply-demand interactions, market systems, and production capacities.

KEY FINDINGS

HATAY REGION AGRICULTURAL SETUP

Hatay region, specifically Samandağ, is an agricultural hub with a diverse cultivation landscape. The area spans 12,000 hectares of cultivated land, with specific zones dedicated to various types of agriculture reflecting the region's rich soil and favorable climate. Vegetables are cultivated over 1,500 hectares, while fruit production occupies 5,000 hectares. Notably, olive cultivation, a key economic driver, is spread across 4,000 hectares, underscoring the region's significant role in olive production.

Samandağ is home to a considerable number of farmers, with 1,000 registered and an additional 5,000 unregistered, 10 percent of whom are women. This reflects a dynamic agricultural community with a growing inclusion of women in farming. The agricultural cooperative landscape in Samandağ has also seen growth, increasing from six to seven registered cooperatives post-earthquake, illustrating resilience and an expanding organizational structure to support local farmers. Historically, Samandağ has been an active exporter of citrus and olives, highlighting its strategic role in the agricultural export market, while other products typically respond to local market demands.

Focusing on Hatay, the below table provides an overview of the key agricultural commodities—Tomato, Pepper, Citrus Fruits, and Olive—in the Hatay region, based on data from the Hatay Provincial Directorate of Agriculture and Forestry. The subsequent sections of the value chain analysis will specifically deep dive into the dynamics within Samandağ, focusing on the unique aspects and opportunities for development within these commodities.

Hatay Provincial Directorate of Agriculture and Forestry, 2023

Commodity	Covered Area (Da)	Number of Fruiting Trees	Average Yield per Tree (Kg)	Total Production (Tonnes)
Tomato	11,959	-	-	45,812
Pepper	28,951	-	-	68,933
Citrus Fruits (Oranges, Mandarin, Grapefruit and Lemon)	Combined 251,236	Combined 11,496,144	-	Combined 1,593,281
Olive	566,389	14,204,2`62	9	178,933

This table highlights the extensive cultivation and production scale of these four key commodities across the Hatay region. Citrus fruits and olives, in particular, show significant production numbers, illustrating their economic importance. The analysis to follow will focus on Samandağ to understand more localized agricultural practices, challenges, and opportunities, distinguishing it from the broader regional context.

VALUE CHAIN ANALYSIS DEEP DIVE WITH A VEGETABLE AND FRUIT SECTORS IN SAMANDAĞ, HATAY

The agricultural sector in Samandağ, Hatay is a key sector for the region's economy, characterized by its diverse crop production and the fertile lands that support these activities. Key players in the agricultural space, the District Directorate of Agriculture and Forestry in Samandağ , have provided critical insights into the dynamics of this sector. Agricultural activities in Samandağ are well-documented, with the district showing immense potential for sustainable agricultural projects.

The primary crops produced in this region include tomatoes, olive, peppers, cucumbers, parsley, eggplants, and other vegetables, which together form the backbone of Samandağ's agricultural output. In particular, tomatoes and Samandağ peppers are noted for providing high economic returns and sustainable growth opportunities for farmers. A 2023 assessment conducted by World Vision emphasizes the centrality of these crops in driving the local economy, underscoring their importance for both domestic consumption and market supply.

Chart 1 - Main Crops in Samandağ (World Vision Needs Assessment, December 2023)

Crop	Percentage
Tomato	20 percent
Pepper	20 percent
Cucumber	15 percent
Parsley	10 percent
Eggplant	10 percent
Tangerine	5 percent
Onion	20 percent
Beans	20 percent
Cauliflower	20 percent
Cabbage	20 percent

The agricultural sector in Samandağ is not only a critical source of income for farmers but also a major employment generator. The district's citrus, olive, and stone seedling production—primarily based in the Karaçay and Fidanlı neighborhoods—represents an essential aspect of the local economy. Notably, women make up around 70 percent of the workforce in sapling production, highlighting the vital role they play in the region's agricultural activities. These initiatives underline the importance of agriculture as a means of both economic empowerment and community resilience in Samandağ.

KEY INSIGHTS FROM FARMERS SURVEY, WITH A FOCUS ON FRUITS AND VEGETABLES IN SAMANDAĞ

The survey data from farmers in Samandağ offers a comprehensive view of the dynamics within the vegetable and fruit sectors, providing valuable insights into the agricultural practices and challenges faced by the community. A key aspect of the findings is the variety of agricultural activities undertaken by the farmers. Most farmers, around 87.88 percent, are primarily focused on production processing, indicating that the majority of their efforts are dedicated to the cultivation and preparation of crops. A smaller portion, approximately 12.12 percent, engage in aggregation and trading, which suggests that while many farmers focus on growing crops, fewer are involved in the logistics of bringing these products to market. This reflects a division of labor in the local agricultural system, with production being the main focus for most farmers and trade being a secondary, yet vital, activity.

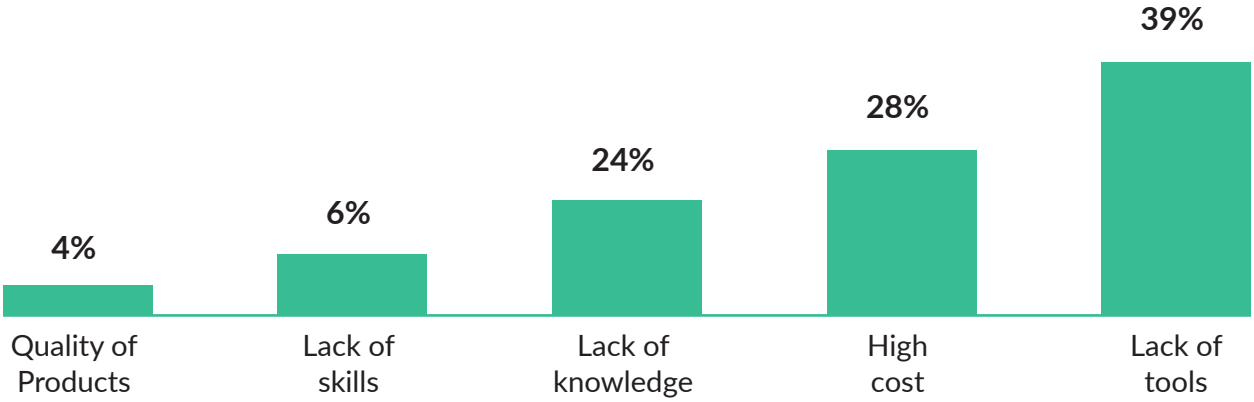
Main Activities of Farmers	Percentage
Production and Processing	87.88 percent
Aggregation/Trading	12.12 percent

Agriculture plays a crucial role in the livelihoods of these farmers. The survey shows that 87.88 percent of respondents rely entirely on agriculture as their sole source of income, illustrating the significant economic dependence on crop production within the region. Only 12.12 percent reported that their families are only partially dependent on agriculture for their income. This data underscores the importance of agricultural stability and sustainability for these communities, as any disruption to agricultural production or market access can have a significant impact on their economic well-being.

Struggle to Meet Market Quality Standards	Percentage
YES	55 percent
NO	45 percent

The reasons behind this struggle are diverse, as shown in the following table. The lack of tools was identified as the leading issue, affecting 39 percent of farmers. Other key challenges included high costs (28 percent), lack of knowledge (24 percent), and, to a lesser extent, lack of skills (6 percent) and product quality (4 percent). These findings indicate that while technical challenges like access to tools and equipment are significant, financial barriers and knowledge gaps also play a substantial role in limiting farmers' ability to meet buyer expectations.

Graph 1: Reasons Farmers Struggle to Meet Quality Standards



Reason stand behind farmers struggle to meet quality standard(s) of the buyers when selling their products

Farm size also plays a key role in determining production capacity and market dynamics in the region. The majority of farmers operate small farms, typically spanning up to 1 hectare. This indicates that small-scale farming dominates the agricultural landscape in Samandağ, with medium-sized farms (between 1 and 5 hectares) contributing to overall production, though to a lesser extent. These small-scale operations make it challenging for farmers to achieve economies of scale, particularly when it comes to accessing inputs, technologies, or financial services that could enhance productivity.

Access to financial services remains extremely limited among farmers in the region. Only 7 percent of surveyed farmers reported using any form of financial products or services to support their agricultural activities. This lack of access to credit or other financial tools significantly hampers the ability of farmers to invest in better inputs, technologies, and infrastructure that could help them improve productivity and reduce losses. It is also worth noting that most commercial banks in Hatay hesitate to support individual small-holder farmers or even medium-size farmers as they have preference to finance the entire agricultural ecosystem. The vast majority of farmers rely on self-financing, which often limits the scale of their operations and their ability to adopt more modern farming practices.

Reasons for farmers' not using financial product/service to perform their production, processing, aggregation and marketing activities.

Graph 2: Reasons for farmers' not using any financial product/service

The farmers survey showed 84.29 percent of farmers are not involved in cooperatives, and the primary reasons for this disengagement are outlined in the chart. A significant 67 percent state that the absence of cooperatives in their community is the main barrier to participation. Additionally, 13 percent cite a lack of information, while 11 percent express distrust among farmers as a reason for not joining. Other reasons include a lack of time (3 percent), the perception that it is more expensive to join a cooperative (3 percent), and gender exclusivity, with 2 percent stating that only men can be members.

Graph 3: Reasons for farmers' not joining cooperatives

While 58.08 percent of farmers recognize cooperatives as vital for agricultural processes such as production, aggregation, processing, and marketing, these participation barriers show that there is still significant room for improvement. Efforts to establish more cooperatives, provide better information, and foster trust among farmers could help increase participation and awareness. Nearly 18 percent of farmers who are either unaware or neutral about the benefits of cooperatives further highlight the need for more education and engagement to maximize the potential of these agricultural support systems.

Importance of Cooperatives	Percentage
Very Important	58.08 percent
Neutral	12.90 percent
Do Not Know	18.13 percent
Not Important	12.90 percent

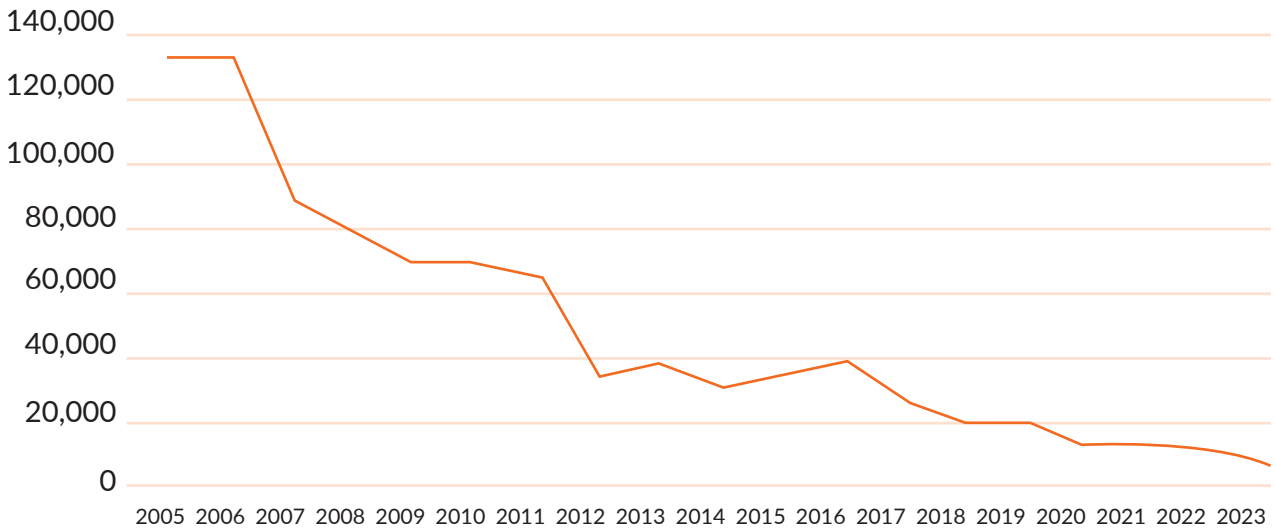
The next section provides a deeper analysis of the vegetable and fruit sub-sector, focusing on both the demand and supply sides. This analysis explores the supporting functions, rules, and regulations influencing the vegetable and fruit markets. Using the M4P (Making Markets Work for the Poor) framework, the following section offers insights into market dynamics and highlights key intervention points for improved market efficiency and inclusivity.

OVERVIEW OF THE VEGETABLE AND FRUIT SUB-SECTORS IN SAMANDAĞ, HATAY

Tomato Sub-Sector Analysis

Tomato farming is a key agricultural activity within Samandağ, Hatay, playing a vital role in the local economy and fulfilling the dietary needs of the community. The region's favorable climate and soil conditions support robust tomato cultivation, which is evident from the comprehensive production figures provided by the Turkish Statistical Institute over the years:

Table 1: Tomato Production in Samandağ, Hatay (Turkish Statistical Institute, 2023).



Tomato Production (Tons)

This data illustrates significant fluctuations, with a notable decline observed from 2010 onwards. The sharp drop in 2023 can be particularly attributed to the impacts of a severe earthquake, exacerbating challenges such as climatic shifts, market dynamics.

The decrease in Turkey's tomato production from 2006 onward can be attributed to a combination of economic, geopolitical, and policy-driven factors. Crude oil price volatility since 2006 drove up production and transportation costs, impacting agricultural sectors heavily reliant on fuel. Additionally, Russia's sanctions on Turkish agricultural exports, including tomatoes, after 2016, significantly affected market access, even though these were lifted in 2018.[8] Turkey's policy reforms, which reduced state support for smallholders in favor of liberalization, further weakened the competitiveness of local producers[9]. This suggests that these combined factors contributed to the sustained decline in tomato production, as seen in the decreasing output since 2006.

[8]World Bank. (2020). Drivers of Food Price Inflation in Turkey. Washington, DC: World Bank.

[9]Euroasian Research Institute. (2018). Agriculture of Turkey: Production, Trade and Policy Reforms. Almaty, Kazakhstan: Euroasian Research Institute.

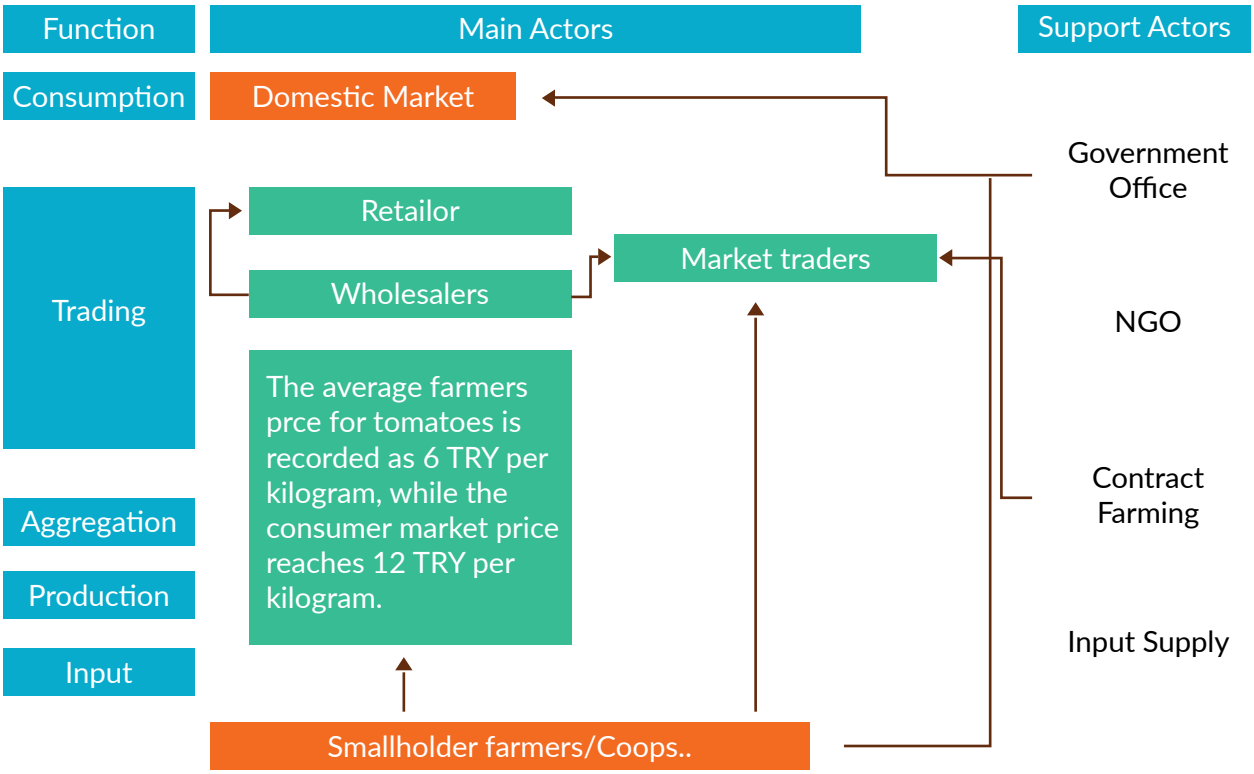
Livelihood Dependence

Tomatoes are not just a staple crop but also a crucial economic pillar for the majority of farmers in the region. Survey data indicates that a substantial 87.88 percent of tomato farmers depend on this crop as their primary source of income, underscoring its importance within regional agricultural practices and market demands.

Market Sales and Distribution

The survey demonstrated that most tomatoes produced are sold directly after harvest, indicating strong local demand and an efficient path from farm to market. This method helps minimize transportation costs and potential post-harvest losses, enabling farmers to maximize returns: The farmer survey also reveals that the majority of tomato producers operate small-scale farms, which typically span up to 1 hectare. This scale underscores the accessibility of tomato cultivation with respect to required capital and space.

Tomato Sub-Sector Commodity Flow



For tomato farmers in Samandağ, the survey data reveals significant insights into the flow of product to the market. On average, the surveyed tomato farmers reported producing 18 MT of tomatoes on average, with a majority of their produce directed toward market sales. Around 85 percent to 90 percent of the total yield is sold commercially, indicating a high reliance on this market for income. The average farmgate price for tomatoes is recorded at 5 TRY per kilogram, while the consumer market price reaches 12 TRY per kilogram. This indicates a significant margin of profit taken by value chain actors other than the farmers, amounting to approximately 140 percent. The substantial difference between the price farmers receives and the price consumers pay underscores the heavy reliance on intermediaries, including middlemen, wholesalers, and retailers, who capture a large

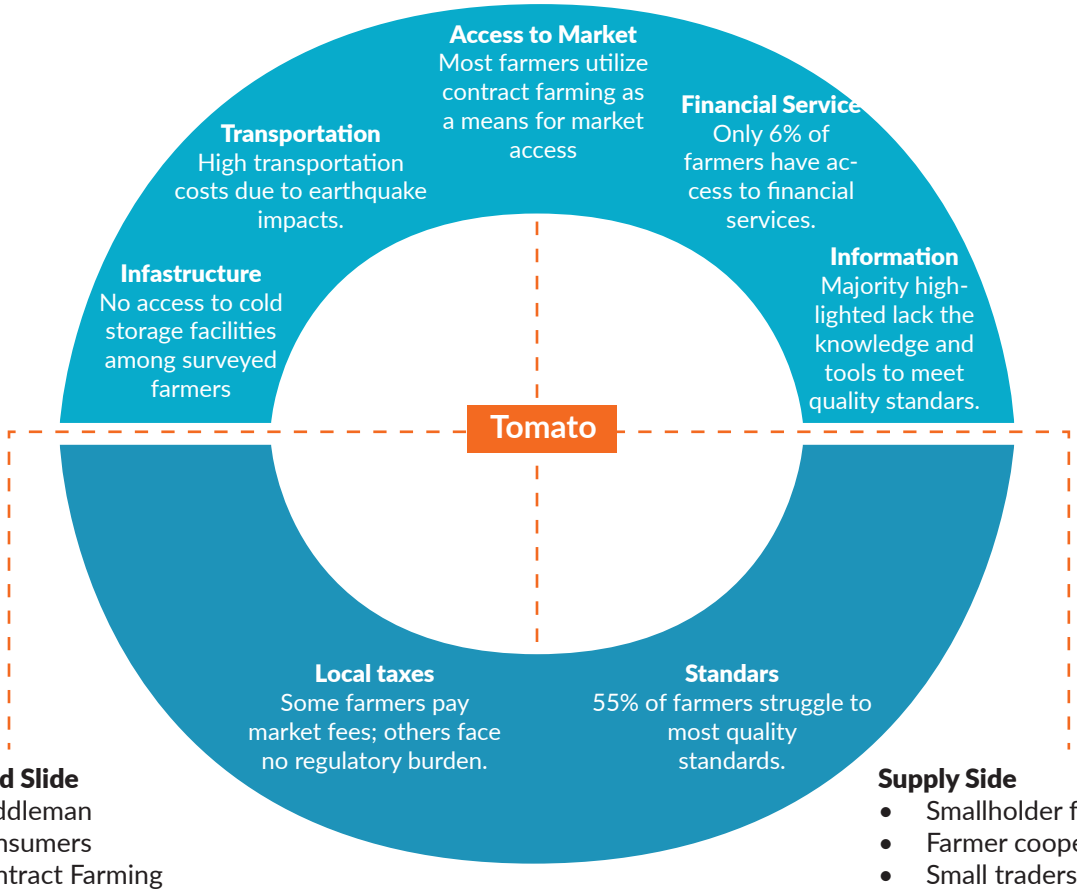
portion of the profit.

Tomato farmers in the region often engage in contract farming or sell directly to middlemen. However, the significant gap in profit margins highlights a major challenge in the marketing and distribution of their produce. Farmers note that middlemen sometimes take margins as high as 150 percent, leaving them with little profit to cover production costs and household expenses. This is a clear area where market inefficiencies exist, particularly in the distribution and sales phases of the value chain.

While many farmers attempt to sell their produce immediately after harvest, which can help minimize transportation costs and reduce post-harvest losses, significant losses still occur for those without access to adequate infrastructure, particularly cold storage facilities. Data shows that post-harvest losses can range from 10% to 50. This emphasizes the need for improved storage solutions and infrastructure to reduce waste and ensure more consistent profitability for all farmers, particularly those in more remote regions.

Tomato farmers typically sell their produce either through direct market sales or contract farming arrangements. Contract farming plays a key role in securing stable pricing for their crops, with many farmers entering into agreements where they sell at fixed prices in exchange for financial support, such as loans from buyers. However, the data suggest that the reliance on middlemen is the most common, which can reduce farmers' control over pricing and profits but provides access to larger markets.

Tomato Sub-Sector Market Systems Analysis (Making Markets Work for the Poor) Donut Framework



Demand Slide

- Middleman
- Consumers
- Contract Farming

Supply Side

- Smallholder farmers
- Farmer cooperatives
- Small traders

The market system for tomato farming in Samandağ reveals a complex and multi-layered landscape, marked by both structural challenges and adaptive strategies employed by farmers to navigate these hurdles. Based on the findings from the survey, it is clear that farmers face significant barriers across multiple components of the market system, such as access to markets, financial services, infrastructure, transportation, and regulatory compliance.

Access to markets remains a central challenge for tomato farmers in Samandağ. Following the earthquake, transportation costs have escalated, making it more difficult and expensive for farmers to move their produce to distant markets. Many farmers have resorted to contract farming as a solution, which guarantees them a fixed sale price. This strategy helps secure market access and provides income stability, especially in times of economic uncertainty. However, this arrangement can also restrict farmers' flexibility in selling their products, particularly if market prices increase after the contract terms are agreed upon. Moreover, many farmers have turned to middlemen to facilitate their access to buyers. While middlemen ease the logistical burden and help farmers connect with markets, they also reduce farmers' profit margins by taking a significant portion of the sales. This reliance on intermediaries further illustrates the limitations farmers face in directly engaging with markets, where they have little room to negotiate prices or improve their terms of sale.

Financial services play a critical role in enabling farmers to expand and improve their operations, but access remains extremely limited. The survey indicates that only 6 percent of farmers have access to formal financial products, such as loans or credit. This lack of financial support hinders farmers' ability to invest in better inputs, infrastructure, or equipment. Many farmers rely on informal loans or personal savings, which are often insufficient for making long-term improvements or covering the increased costs associated with market disruptions. The absence of accessible financial products leaves farmers vulnerable, especially when faced with unexpected costs such as those brought on by the earthquake. In addition, some farmers mentioned that they take loans from buyers in exchange for fixed sale prices, further tying them to specific market arrangements and limiting their independence.

In terms of infrastructure, the survey reveals a critical gap in post-harvest management. None of the surveyed tomato farmers have access to cold storage facilities, a key component in reducing post-harvest losses and maintaining the quality of their produce. Without adequate storage, farmers are forced to sell their products immediately after harvest, regardless of market conditions. This lack of infrastructure not only impacts the freshness and quality of tomatoes but also reduces farmers' ability to negotiate better prices or store products for sale during times of higher demand. As a result, the absence of cold storage severely limits the ability of farmers to compete in larger markets or extend the shelf life of their produce.

Transportation is another critical challenge for farmers, exacerbated by the impacts of the earthquake. The increased transportation costs make it more difficult for farmers to bring their products to market, especially for those located in remote areas. This added financial burden further reduces farmers' profit margins and limits their ability to access more lucrative or distant markets. Additionally, the poor transportation infrastructure leads to longer delivery times, which can affect the quality of perishable goods like tomatoes. Farmers are thus caught in a cycle where high costs and logistical difficulties impede their market access, further restricting their income potential.

On the information front, farmers are struggling to meet the quality standards demanded by the market. The survey indicates that 55 percent of farmers have difficulty meeting these standards, largely due to a lack of knowledge and tools. Many farmers lack access to critical information about market requirements, such as the specific quality parameters buyers are looking for. This gap in knowledge makes it difficult for farmers to adjust their practices to meet these standards, which in turn limits their ability to sell their products at higher prices. Farmers also highlighted the lack of technical support in areas such as post-harvest handling, pest control, and resource management, which could help improve the overall quality of their produce. The absence of extension services and

agricultural training further compounds these challenges, leaving farmers without the necessary skills to optimize production or adhere to market demands.

Regulations and standards also present a mixed picture. While many farmers reported that they do not face significant regulatory burdens, a portion of the surveyed farmers must adhere to market fees and quality standards set by the government. Those who comply with these regulations expressed frustration over price fluctuations and disparities, with some mentioning that the prices they receive are much lower than what consumers pay in the market. This price gap not only impacts farmers' profitability but also makes it difficult for them to meet regulatory expectations. Farmers also cited challenges related to government support, or the lack thereof, indicating that they struggle to comply with standards due to limited financial and technical assistance. In terms of environmental by-laws, farmers mentioned limited knowledge of existing regulations, which further complicates their compliance efforts.

To cope with these regulatory challenges and enhance their market access, many farmers employ different strategies. Contract farming is one of the most popular methods, allowing farmers to secure a fixed sale price and ensure market access. However, this arrangement can also tie farmers to specific buyers, limiting their flexibility in the market. Another common strategy is to rely on middlemen, who facilitate market transactions but also take a portion of the profit. This reliance on intermediaries reflects the broader difficulties farmers face in negotiating directly with buyers. Some farmers also try to improve market access through cooperatives, but they have reported high costs and insufficient support from these organizations. Farmers who cannot rely on cooperative structures or intermediaries are often left to navigate the market on their own, facing significant barriers in terms of pricing and market conditions.

Overall, the market system for tomato farming in Samandağ is marked by significant barriers across multiple fronts, including limited financial services, inadequate infrastructure, high transportation costs, and insufficient access to market information. The reliance on middlemen and contract farming highlights the limited agency that farmers have in determining the terms of their market engagement. The gaps in infrastructure, particularly the absence of cold storage, prevent farmers from maximizing their returns or meeting the quality standards demanded by the market. Addressing these challenges will require targeted interventions to improve access to financial services, build infrastructure, and provide farmers with the necessary knowledge and tools to succeed in a competitive market environment.

Pepper Sub-Sector Analysis

Pepper farming in Samandağ, Hatay forms a crucial part of the local agricultural economy, contributing significantly to both income generation and food security for the region's farming communities. The region's favorable climatic conditions and soil quality support the production of both Samandağ pepper (processed) and Bell peppers, which are staple crops for local farmers. Historical production data from the Turkish Statistical Institute demonstrates a long-standing tradition of pepper cultivation, though recent trends show notable fluctuations due to various challenges.

Table 2: Pepper Production in Samandağ, Hatay (Turkish Statistical Institute, 2023)

Year	Samandağ Pepper (Processed) - Tons	Bell Pepper - Tons
2004	12,000	6,095
2005	12,000	6,100
2006	12,000	6,112
2007	12,000	6,095
2008	12,000	6,095
2009	7,000	6,815
2010	7,200	7,087
2011	7,020	7,080
2012	1,500	1,385
2013	1,500	1,384
2014	750	807
2015	750	807
2016	750	843
2017	-	206
2018	-	210
2019	-	202
2020	-	279
2021	-	213
2022	-	208
2023	-	120

This data highlights significant fluctuations in pepper production, particularly since 2010, when production levels began to show a sharp decline. This trend is closely linked to the broader agricultural challenges faced in Samandağ, such as climatic shifts, natural disasters like the recent earthquake, and market dynamics that have impacted both production capacity and the economic stability of local farmers.

Livelihood Dependence

Samandağ peppers play a vital role in the livelihoods of farmers in Samandağ. According to the farmer survey, 90.91 percent of respondents indicated that agriculture is their only source of income, while 9.09 percent reported partial dependence on agriculture. This underscores the critical importance of pepper farming to the economic well-being of these households, and any disruptions in pepper production can have profound impacts on their overall financial stability.

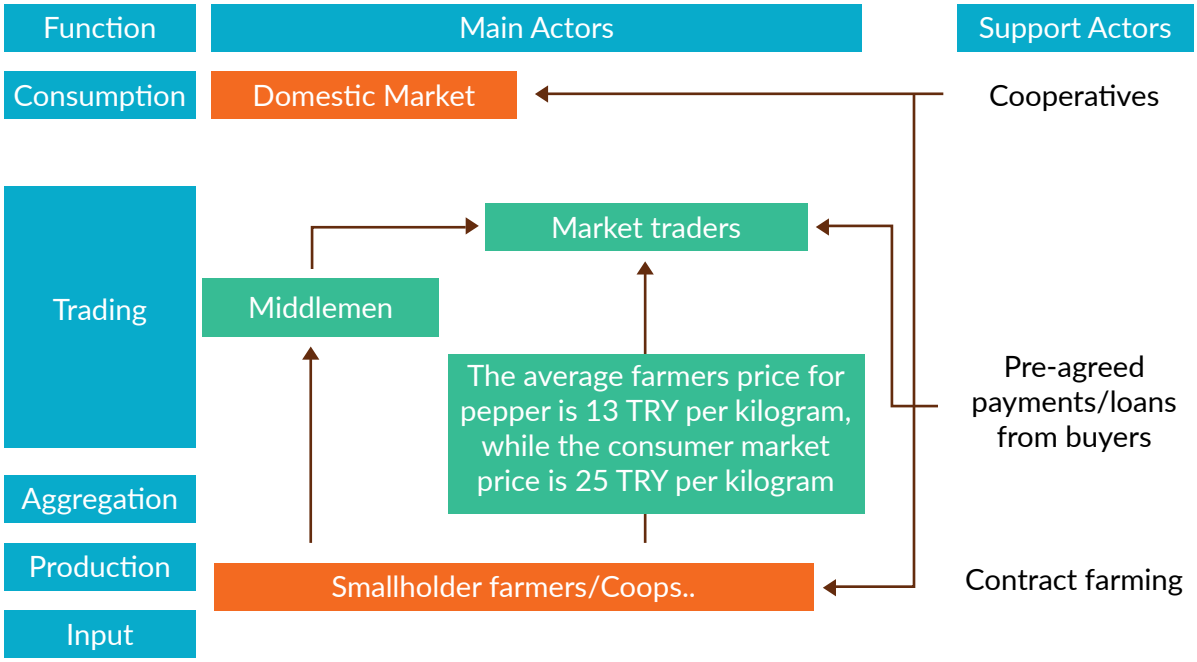
Market Sales and Distribution

The majority of pepper farmers in Samandağ sell their produce directly after harvest, reflecting strong local demand and efficient distribution channels that allow farmers to sell quickly and reduce post-harvest losses. This direct-to-market sales approach minimizes the risks and costs associated with storing produce, especially in the absence of cold storage facilities, a significant infrastructure gap identified in the region. However, market challenges such as price volatility and the presence of middlemen can still impact farmers' profitability, as highlighted in survey responses.

Production Scale

Similar to tomato farming, the majority of pepper farmers operate small-scale farms, typically between 1-5 hectare in size. These small-scale operations highlight the accessibility of pepper farming but also underline the challenges faced in scaling up production or achieving greater efficiency.

Pepper Sub-Sector Commodity Flow



For pepper farmers in Samandağ, the commodity flow from production to market highlights several important dynamics that shape the overall market system. According to survey data, the average production of pepper varies significantly, with surveyed farmers producing 11 MT. The majority

of this produce is sold directly to markets, with a smaller percentage used for home consumption. However, some farmers highlighted struggling with post-harvest losses, which range from 10 percent to 50 percent of total production. These losses are exacerbated by a lack of infrastructure, particularly cold storage facilities, which leads to spoilage and reduced product quality.

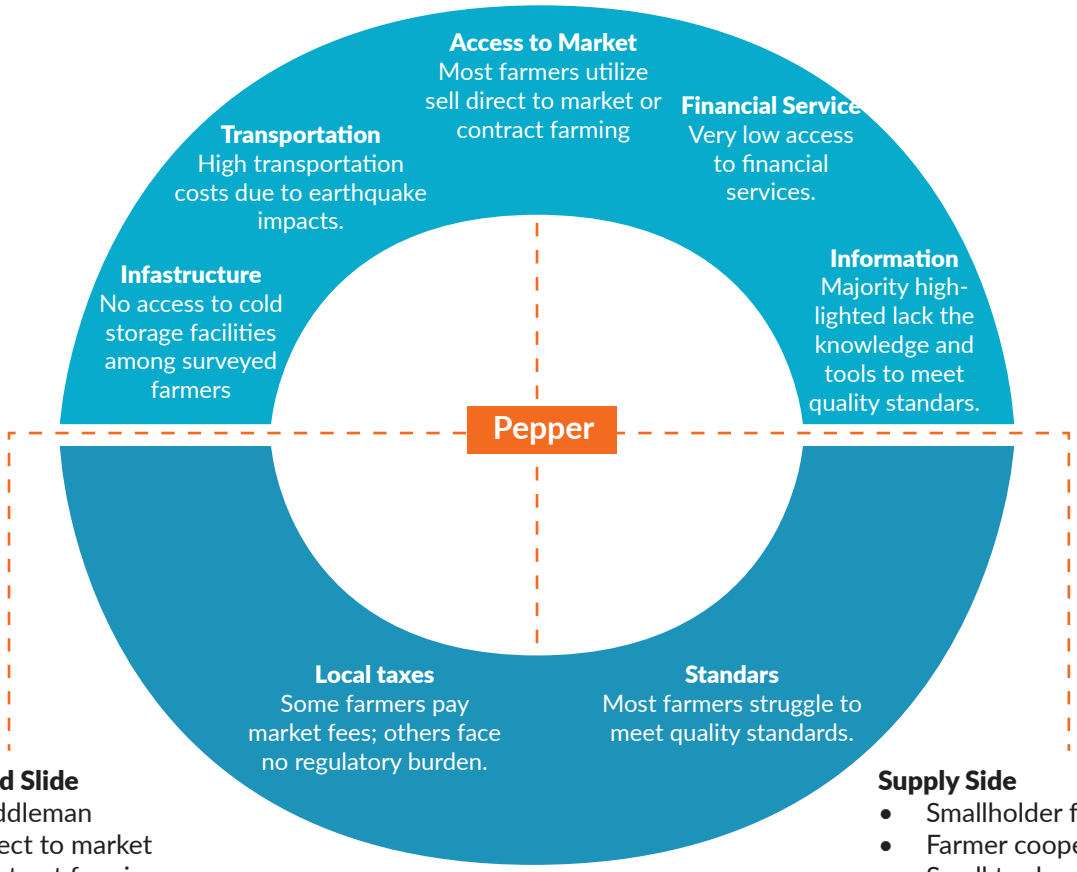
The pepper value chain is heavily reliant on direct market sales. Farmers predominantly sell their peppers either directly to local markets or through middlemen, with a small portion of the surveyed farmers engaging in contract farming. This direct sales model is crucial for the local economy but also presents challenges in terms of pricing and market access. The average farmgate price for peppers is 13 TRY per kilogram, while the consumer market price is 25 TRY per kilogram, highlighting a significant margin taken by intermediaries—92.3 percent according to survey results. This large gap between farmgate and consumer prices underscores the power of middlemen and other intermediaries within the value chain, leaving farmers with limited profit margins.

Contract farming, while not as prevalent as direct sales, plays a key role for some farmers in securing stable pricing. Under this system, farmers sell at fixed prices in exchange for financial support from buyers, such as loans or pre-agreed payments. However, reliance on middlemen remains strong, and farmers often have to negotiate the best possible terms under constrained circumstances.

Transportation costs, which increased significantly following the earthquake, further limit farmers' ability to access distant markets and increase their profits. This has made market access more difficult for many pepper farmers, who rely on either local buyers or middlemen to transport their produce. Without better infrastructure, including storage and transportation solutions, farmers will continue to struggle with post-harvest losses and reduced profit margins.

Moreover, many farmers highlighted that they receive no external support, such as from cooperatives or government programs. For those who do engage with cooperatives, there are often high costs associated with membership, limiting their ability to fully benefit from collective bargaining or shared resources.

Pepper Sub-Sector Market Systems Analysis (Making Markets Work for the Poor) Donut Framework



Demand Slide

- Middleman
- Direct to market
- Contract farming

Supply Side

- Smallholder farmers
- Farmer cooperatives
- Small traders

The market system for pepper farming in Samandağ reveals a complex environment influenced by various challenges, ranging from high input costs to post-harvest handling issues. Based on survey findings, pepper farmers face significant barriers across multiple components of the market system, such as access to markets, financial services, transportation, information, and compliance with regulatory standards.

Financial services are severely lacking, with most pepper farmers self-financing their operations due to high rates or lack of knowledge about available financial products. Only a small number of farmers reported accessing formal credit, and those who did often found the conditions unfavorable. Without affordable credit, farmers are limited in their ability to invest in better inputs or expand their production. The reliance on self-financing constrains the growth potential of many smallholder farmers.

Infrastructure plays a critical role in post-harvest handling, particularly cold storage, which is widely unavailable to pepper farmers. Survey data show that none of the pepper farmers have access to cold storage facilities, leading to significant post-harvest losses. This lack of infrastructure forces farmers to sell their peppers immediately after harvest, regardless of market prices. The absence of cold storage also hinders farmers' ability to store produce for peak demand periods, further reducing their potential profits.

Transportation challenges are exacerbated by the earthquake. Increased transportation costs make

it harder for farmers to access markets, particularly those further from production sites. Farmers often rely on middlemen to manage the logistics of moving their produce, which reduces their control over pricing and quality standards in distant markets. The survey highlighted that farmers face additional financial strain due to transportation difficulties, as goods may spoil or face delays, negatively impacting their marketability.

Information on market requirements and best practices is another significant challenge. The survey indicates that many pepper farmers struggle to meet the quality standards demanded by buyers due to a lack of knowledge and resources. The majority of farmers highlighted that they are unaware of specific buyer expectations for pepper quality, however it was highlighted that peppers are mainly inspected based on its colors and spice levels. The lack of access to agricultural extension services and training further compounds this issue.

Cirus Fruit Sub-Sector Analysis

Citrus farming in Samandağ, Hatay, represents a vital component of the local agricultural economy, providing essential income and supporting food security for farming households. The region's favorable climate conditions contribute to the cultivation of various citrus fruits, including oranges, lemons, tangerines, and grapefruits. These crops have a long history in the area, playing a significant role in the livelihoods of small- to medium-scale farmers. Based on production data from the Turkish Statistical Institute, citrus farming has seen fluctuations in output, which are closely linked to both environmental and market-related challenges.

Table 3: Citrus Fruits Production in Samandağ, Hatay (Turkish Statistical Institute, 2023).

Year	Grapefruits (Tons)	Lemons and Limes (Tons)	Oranges (Washington) (Tons)	Other Oranges (Tons)	Tangerine (Tons)	Bitter Orange (Tons)
2004	-	2,160	7,200	4,800	10,800	-
2005	-	2,160	7,200	4,800	10,800	-
2006	-	2,160	7,200	5,600	10,800	-
2007	-	2,192	7,200	6,048	10,800	-
2008	-	2,160	7,200	5,600	8,577	-
2009	105	3,346	8,010	7,832	24,450	105
2010	136	2,696	9,324	7,082	24,690	109
2011	136	2,568	9,333	9,082	24,690	116
2012	160	2,680	9,585	8,325	25,088	135
2013	200	2,680	10,650	11,042	30,105	155
2014	180	2,360	11,640	10,548	26,050	126
2015	180	2,360	16,490	14,943	30,050	126
2016	180	1,794	16,492	14,885	25,295	126
2017	224	990	18,013	16,789	28,043	144
2018	224	998	15,422	14,420	29,580	144
2019	224	880	13,359	13,291	37,378	144

2020	105	316	4,268	4,725	15,000	152
2021	210	1,039	9907	14,093	63,065	170
2022	84	561	24,736	30,847	51,050	108
2023	253	660	40,720	50,780	102,100	180

The above table highlights significant trends in citrus production, with tangerines and oranges dominating the output. Recent years have shown fluctuating production volumes, with tangerine production increasing significantly in 2023. This rise is indicative of the fruit's market potential and adaptability to local conditions.

Livelihood Dependence

Citrus farming plays an integral role in the livelihoods of farmers in Samandağ. According to the farmer survey, 100 percent of respondents rely on agriculture as their primary source of income, underlining the critical importance of citrus farming in supporting household economies. This dependence on agriculture underscores the vulnerability of farmers to market shifts and environmental changes, as any disruptions to production or sales could have a profound impact on their financial stability.

Market Sales and Distribution

The majority of citrus farmers in Samandağ sell their produce directly after harvest, as evidenced by the survey data. Direct sales minimize storage costs and reduce the risk of post-harvest losses, especially since many farmers lack access to proper cold storage facilities. This model also allows farmers to quickly respond to market demand, though it exposes them to the volatility of prices set by middlemen and other intermediaries. Despite the absence of significant processing activities, the reliance on direct market sales means that any market fluctuations or changes in buyer demand can have immediate effects on the farmers' income.

Production Scale

Citrus farming in Samandağ predominantly occurs on small- to medium-scale farms. The survey data shows that many farmers operate on plots of land ranging from 1 to 5 hectares. While this scale of farming supports the accessibility of citrus production to local farmers, it also poses challenges in terms of achieving economies of scale and improving efficiency. The limited size of the farms makes it difficult for individual farmers to invest in more advanced farming techniques or infrastructure improvements, which could help mitigate some of the issues they face, such as post-harvest losses.

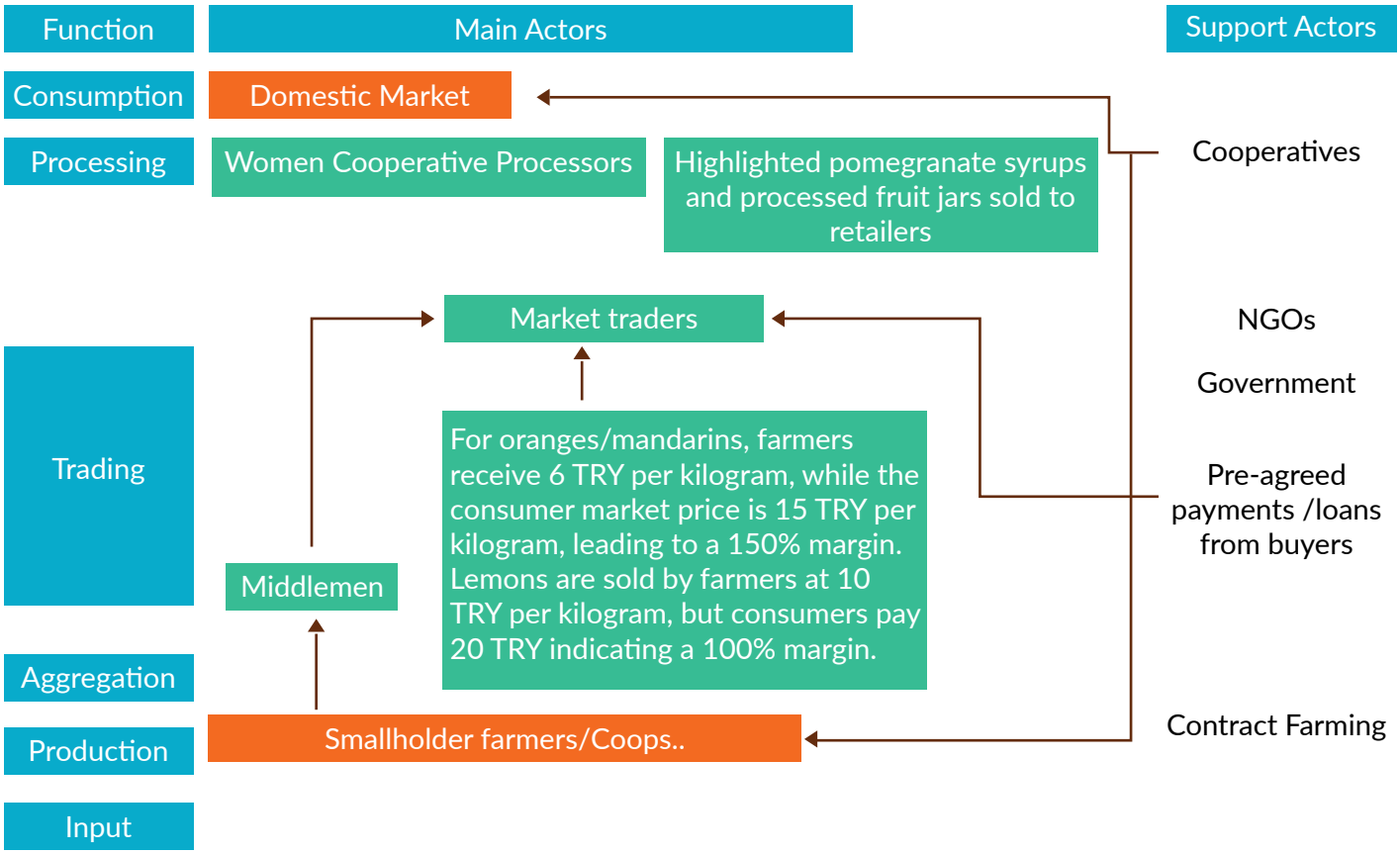
Citrus Fruits Sub-Sector Commodity Flow

For citrus fruit farmers in Samandağ, the commodity flow from production to market showcases a dynamic interaction between smallholder producers, cooperatives, and market actors. According to survey data, citrus fruit farmers primarily engage in direct sales to local markets or through middlemen, with a smaller portion of the produce going to larger market networks. The majority of citrus fruits are sold directly after harvest, helping to minimize post-harvest losses, especially in the absence of sufficient cold storage facilities. However, citrus farmers still face significant challenges related to market access, pricing, and infrastructure, leading to reduced profitability.

Based on observed data, the prices for the major citrus include:

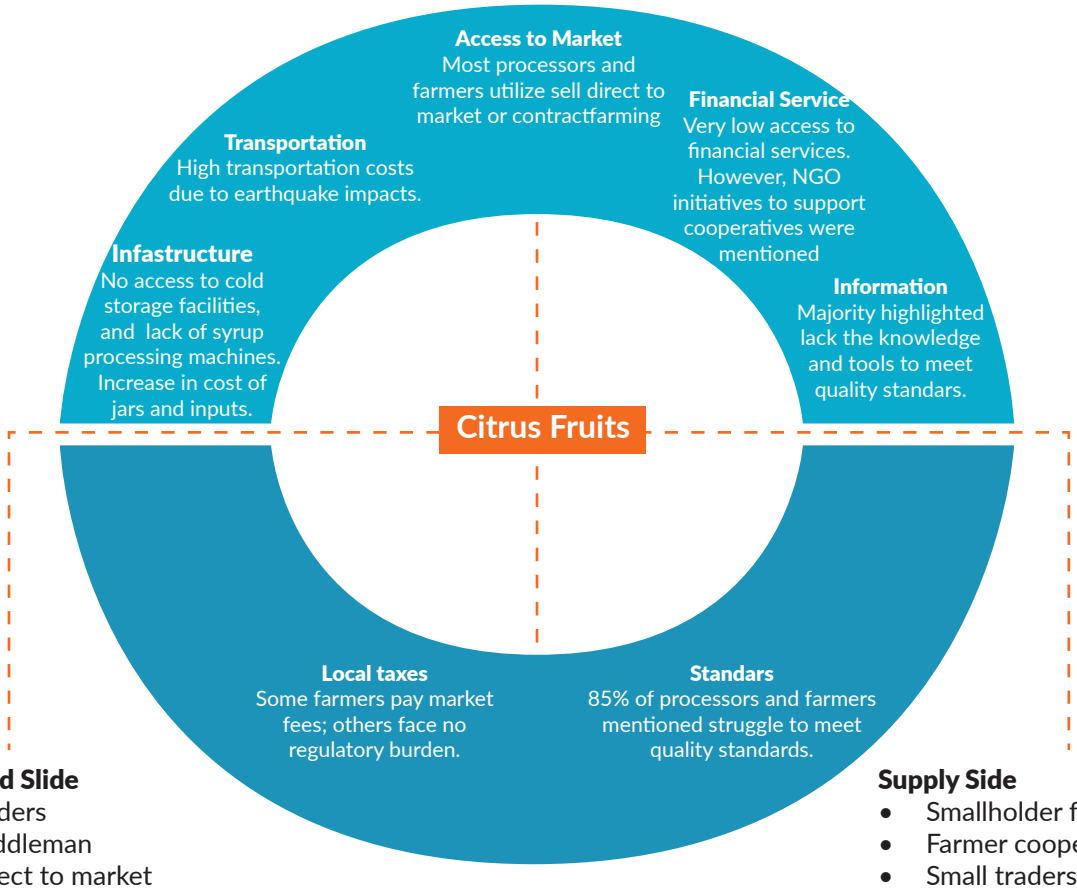
- **Oranges/Mandarin:** The farmgate price is 6 TRY per kilogram, while the consumer market price rises to 15 TRY per kilogram, resulting in a profit margin of 150 percent.
- **Lemon:** Farmers receive 10 TRY per kilogram at the farmgate, but the consumer price doubles to 20 TRY per kilogram, indicating a 100 percent margin for intermediaries and market actors.

These pricing dynamics highlight the disparity between what farmers earn for their produce and the final market prices, emphasizing the need for improved access to markets and support systems that can reduce the reliance on intermediaries.



Although a small contributor to the value chain, women-led cooperatives in the region engage primarily in producing jams, tomato and pepper paste and processed fruit jars, with only minimal involvement in the citrus value chain through small-scale processing of bitter oranges. This limited participation represents a potential opportunity to expand their role within the citrus sector. By enhancing their contributions, these cooperatives could impact the broader value chain, supporting the economic development of citrus farmers in Samandağ and fostering broader cooperative efforts and government support.

Citrus Fruits Sub-Sector Market Systems Analysis (Making Markets Work for the Poor) Donut Framework



Demand Slide

- Traders
- Middleman
- Direct to market
- Contract Farming

Supply Side

- Smallholder farmers
- Farmer cooperatives
- Small traders
- Jam and Syrup Processors

The market system for citrus fruit farming and processing in Samandağ is shaped by various structural challenges, particularly in accessing markets, financial services, and infrastructure. Survey data reveals that many farmers and processors struggle with high transportation costs, worsened by the recent earthquake, which limits access to distant markets and reduces profitability. Most sell their produce directly or through middlemen, while some use contract farming to secure fixed sale prices, though this limits flexibility in responding to market changes.

Financial services are scarce, with few farmers benefiting from formal loans or credit, leaving many reliant on personal savings or informal systems. This lack of financial support hampers investment in improved equipment and modern processing technologies, which are essential for scaling up production and reducing post-harvest losses. Additionally, infrastructure gaps, including the absence of cold storage and syrup and jam processing machines, force processors to sell or process their products quickly, often within a few days, to prevent spoilage.

Standards and regulatory compliance pose significant hurdles, with 85 percent of farmers and processors indicating difficulties in meeting quality standards. Many lack the necessary knowledge and tools to comply with market demands, limiting their access to broader and more profitable markets.

Some farmers pay market fees, though others face minimal regulatory burdens, creating

disparities in operational costs. To address these issues, investments in infrastructure, expanded financial services, and improved access to quality management training are critical. Such measures would enable citrus fruit farmers and processors to better meet market standards, expand their reach, and improve their overall profitability in an increasingly competitive environment.

Olive Sub-Sector Analysis

Olive farming in Samandağ, Hatay, serves as a pivotal component of the local agricultural sector, blending economic viability with deep-rooted cultural traditions. The region benefits from optimal climatic conditions and fertile soils conducive to cultivating high-quality olives and producing renowned olive oil.

Production Capacity and Varieties

In Samandağ, the olive sector is not only robust in terms of production volume but also diverse in the varieties of olives cultivated. The Hatay region is renowned for both table olives and olive oil, supported by an extensive cultivation area of 566,389 decares with over 14 million fruiting trees. Over recent years, olive production in Samandağ has shown resilience and adaptability. The below table provides an overview of the planting and production over the years:

Year	Planting (Da)	Production (Tonnes)
2019	558,051	136,203
2020	556,798	67,212
2021	559,568	119,991
2022	565,204	221,278
2023	566,389	178,933

The olive varieties include both widely recognized types such as Gemlik and Ayvalık, and local varieties like Halhali, Karamani, and Kargaburun, which are favored for their unique flavors and qualities.

Recent data indicates that the olive oil factories in the region have been notably impacted by the recent earthquakes, with estimated losses reaching significant figures. Specifically, 24 olive oil factories have reported a combined estimated loss of 30,000,000 TL, a testament to the sector's impact to the recent earthquakes.

Market Dynamics and Pricing for Table Olives and Olive Oil

Table Olives

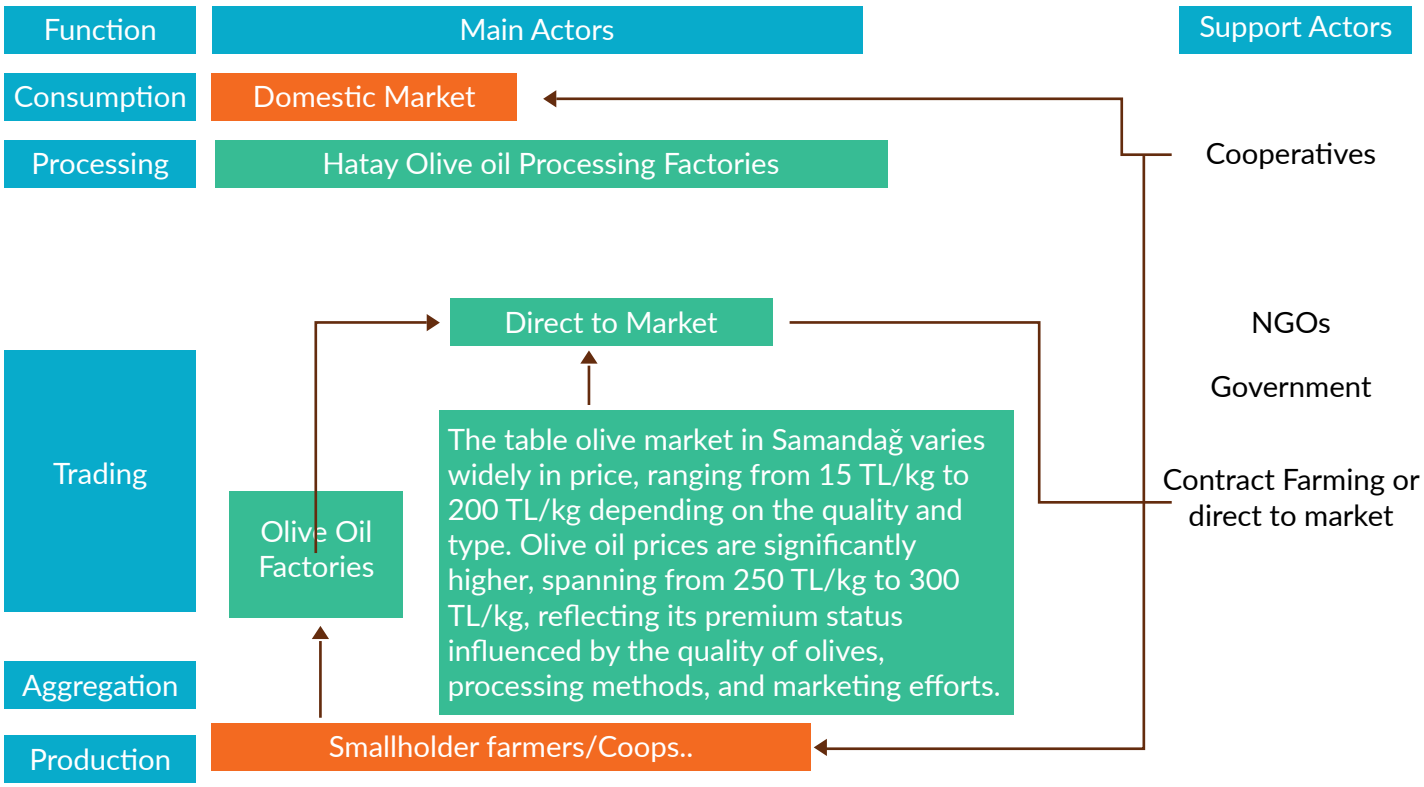
The market for table olives in Samandağ includes diversity in pricing, reflective of the various olive varieties available. The survey data showed that prices range from 15 TL/kg to 200 TL/kg, with common price points around 50 TL/kg, 70 TL/kg, and 100 TL/kg. These variations are indicative of the different qualities and types of table olives available.

Olive oil

In contrast, olive oil prices exhibit even greater variability, highlighting its premium market position. Survey data shows olive oil prices ranging from 250 TL/kg to as high as 300 TL/kg for the highest quality oils. This premium pricing is influenced by the quality of olives used, the extraction and processing methods employed, and the branding and marketing efforts.

Olive Sub-Sector Commodity Flow

For olive producers in Samandağ, the commodity flow from grove to consumer is clearly defined, shaped by both local market dynamics and strategic choices made at the farm level. In the olive value chain, smallholder farmers typically face a key decision post-harvest: either selling directly at local markets or transporting their yield to olive oil factories. This choice significantly influences their revenue streams and integration into the broader agricultural economy.



According to the 2022-2023 National Table Olive and Olive Oil Harvest Official Inspection Board Report, Samandağ supports a vast number of olive trees—14,130,053 fruit-bearing and 2,673,400 non-fruiting. Each fruit-bearing tree on average yields about 10.3 kg of olives. From the total harvest, approximately 145,000 tons of olives are collected annually. Of this, 10,000 tons are designated for table olives and 135,000 tons for olive oil production. With an extraction efficiency of 20 percent, it is projected that around 27,000 tons of olive oil will be produced.

Many farmers opt for direct sales at local markets, conversely, a substantial portion of the harvest is delivered to processing factories, where raw olives are transformed into high-quality olive oil. This route not only provides a stable market for those unable to sell their entire crop directly but also adds value to their produce through processing. During high seasons there are pre-agreed pricing or contract farming, where farmers agree on the selling price with factories beforehand, ensuring predictable income and reducing market risk.

Demand Slide

- Traders
- Processing Factories
- Direct to market
- Contract Farming

Supply Side

- Smallholder farmers
- Farmer cooperatives

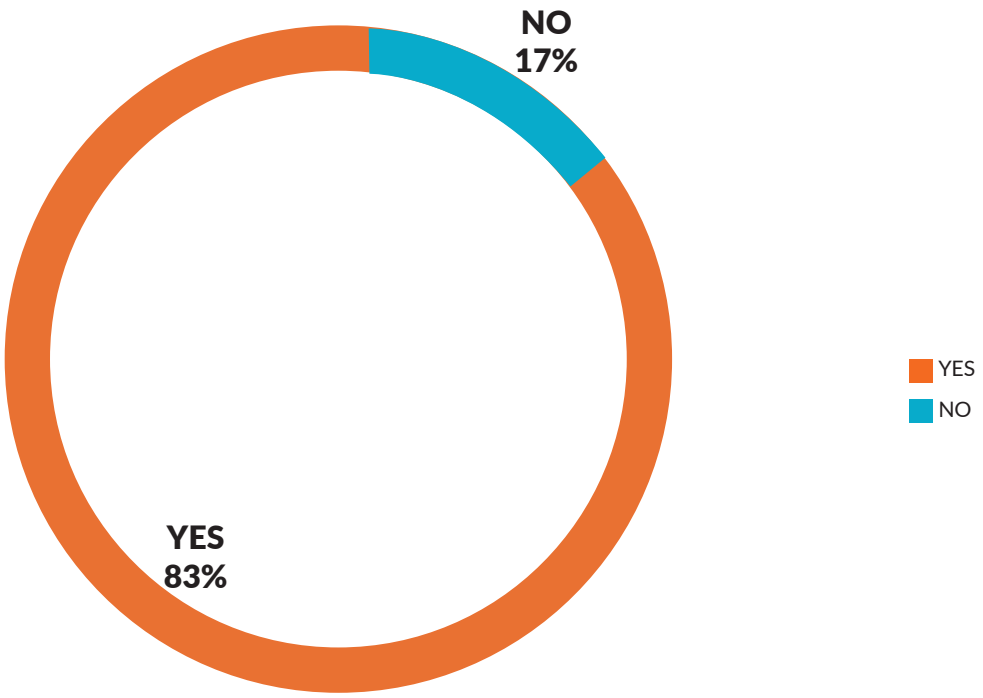
While the local government, specifically the Hatay Provincial Directorate of Agriculture and Forestry, plays a role in supporting these activities, its involvement is just one part of a broader support network that enhances agricultural practices and infrastructure subtly. This ensures farmers have access to necessary resources, although the primary drive for quality and market reach remains rooted in individual and cooperative efforts within the community.

IMPACT OF EARTHQUAKE TO FARMING IN SAMANDAĞ, HATAY

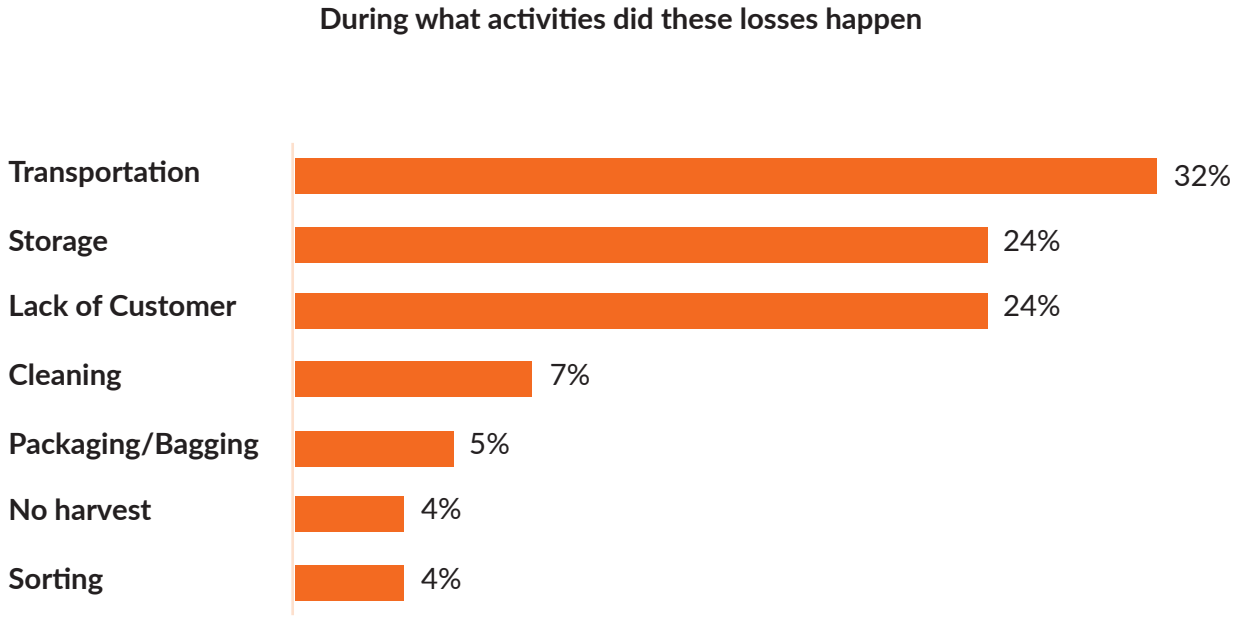
Incorporating data from the farmer survey, FGDs, and KIIs, the earthquake had a profound and lasting impact on the agricultural sector, notably disrupting post-harvest and marketing activities. A substantial 83 percent of farmers reported facing losses during post-harvest activities due to the earthquake, while 17 percent reported no losses (see Graph 3). The survey highlighted that transportation was the most affected area, with 32 percent of losses occurring during the transport of produce. Additionally, storage issues (24 percent) and a lack of customers (24 percent) were significant factors contributing to these losses, compounded by difficulties in cleaning (7 percent), packaging (5 percent), sorting (4 percent), and in some cases, no harvest at all (4 percent) (see Graph 4).

Graph 3: Losses due to earthquake:

Did you face losses during postharvest and marketing activities last year/season due to the earthquake?



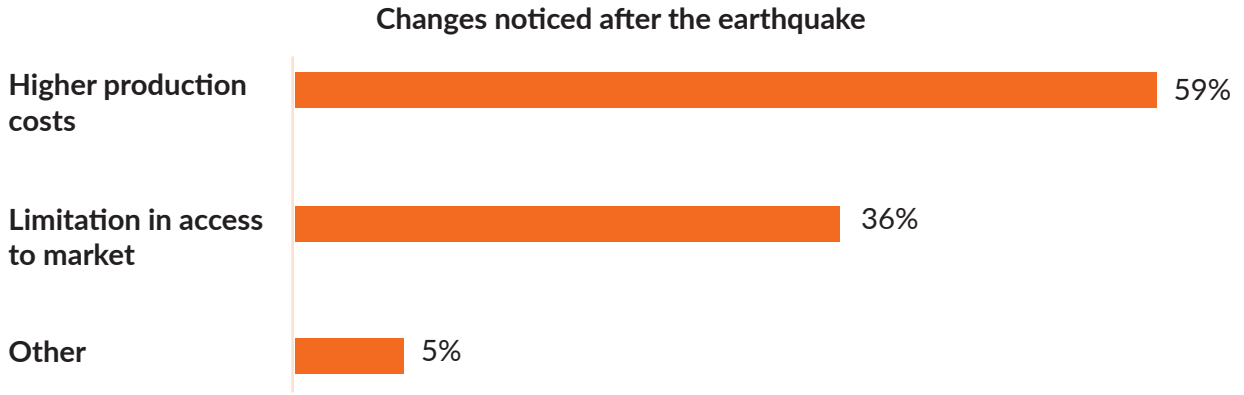
Graph 4: Key activities affected by earthquakes



The post-earthquake environment saw significant challenges in market access. As one participant noted in the FGDs, "After the earthquake, we used to have visitors in the village, but now there are none. Our market opportunities have been limited." This sentiment was echoed by cooperatives, who expressed that "many negotiations have ended negatively because transportation is too expensive. We do not have a fixed agreement; it becomes difficult when there are different prices for different cities." Market disruptions were compounded by the geographical concentration of damage, as "no sales were made in the earthquake year because the market was in the earthquake zone." The shift in consumer priorities post-disaster also made it difficult for producers to maintain sales, with "people's priorities changed" after the earthquake.

Increased production costs were another major outcome of the earthquake. As indicated by 59 percent of respondents, production expenses rose sharply due to the need for repairs, higher input costs, and disrupted access to markets. Additionally, 36 percent of respondents cited significant limitations in accessing markets, a factor compounded by damaged infrastructure and market closures in some regions (see Graph 5).

Graph 5: Key perceived changes post-earthquake



The impact on farmers' income was significant, with 80 percent of respondents stating that they were extremely affected, while 19 percent were moderately affected. Only 1 percent reported no impact on their income. Additionally, recent inflation in Turkey has further eroded purchasing power for individuals, exacerbating the economic challenges faced by farmers.

To what extent did the earthquake affect your income?	
Not affected	1 percent
To a moderate level	19 percent
Affected extremely	80 percent
Grand Total	**100 percent**

In addition to income, the earthquake caused material losses: 43.48 percent of respondents lost crops, land, or agricultural equipment, a devastating blow for smallholder farmers, many of whom were already operating with minimal resources.

Has the earthquake caused you to lose any crops, land, or agricultural equipment?	
No	56.52 percent
Yes	43.48 percent
Grand Total	**100.00 percent**

Supporting functions, such as storage and cold chain systems, were also severely impacted. As noted by a respondent in the FGDs, "Cold storage was provided during the earthquake period," but this temporary relief was not enough to mitigate the long-term effects of infrastructural damage. The lack of fixed agreements, fluctuating costs, and transportation challenges further compounded the difficulties. "Costs are a major problem. They reduce our profit margin," said one participant. This underscores the broader issue of rising costs and diminishing returns faced by farmers and cooperatives alike.

Labor availability became a pressing issue post-earthquake, with many cooperatives struggling to maintain operations. "Labor is limited and expensive, especially after the earthquake; all initiatives are in the hands of the workers." said one cooperative leader. This scarcity of labor not only affected production but also raised costs, further squeezing the already narrow profit margins.

The pre- and post-earthquake assessments underscore the need for stronger infrastructure, reliable market access, and financial support systems to address the vulnerabilities within the agricultural sector. The earthquake's impact has made it clear that a long-term strategy is required to address the root causes of these problems, ensuring that farmers can recover and thrive in the future.

GENDER DYNAMICS IN AGRICULTURAL VALUE CHAINS

Although the majority of survey respondents indicated that gender-specific issues were not a significant concern in their agricultural activities, some qualitative data from the KIIs highlighted certain challenges faced by women. For instance, one respondent mentioned "high rates of deception by labor and brokers," disproportionately affecting women in the market.

Percentage of Respondents Indicating Gender-Specific Constraints in Agriculture	
No, Gender-Specific Constraints	85 percent
Yes, Gender-Specific Constraints	15 percent

Despite these challenges, it is important to note that a significant portion of processors in the value chain are women. Their involvement in processing, especially in transforming raw produce into value-added products like syrups or jams, illustrates their critical role in agricultural production. As one interviewee stated, "In our district, women intensively participate in agricultural activities, especially in greenhouse production." This shows the strong presence of women in key areas of the value chain, particularly in the processing sector, where their skills and contributions are essential.

While some issues were raised in the KIIs, the overall picture is not entirely negative. Many women are active participants in the agricultural value chain, demonstrating high manual involvement in processing and strong contributions to their households and communities. There is a need for more support structures, such as cooperatives and financial services specifically targeted at women, to further enhance their role in the value chain and address the remaining barriers.

While the majority of respondents (85 percent) did not perceive significant gender-related constraints, qualitative insights from KIIs indicate that specific challenges, especially related to financial access and market participation, persist for women farmers and processors.

SWOT Analysis of Gender in Vegetable and Fruit Value Chains

The table below provides a SWOT analysis on the gender dynamics impacting farmers in Samandağ, Hatay.

Strengths

- Women are actively engaged in agricultural production, particularly in labor-intensive tasks like harvesting and greenhouse farming.
- High manual involvement among women, especially in processing fruits.
- Women have shown resilience and adaptability, especially in forming cooperatives despite systemic barriers.

Weaknesses

- Lack of access to machinery and equipment increases the physical burden and limits productivity.
- Women have less control over resources and decision-making due to cultural norms that favor men in ownership and market engagement.

Opportunities

- Establishing women-specific cooperatives and providing access to financial services could help women advance economically and gain more agency.
- Increasing awareness and training programs for women to improve their market engagement and access to higher-value activities like processing.
- Supporting initiatives like the 7-member women's cooperative could serve as a model for scaling up gender-equitable practices.

Threats

- Potential norms that limit women's participation in the market and access to resources.
- Rising production costs and limited access to markets post-earthquake can affect women, who are more vulnerable to economic shocks.
- Deception by labor and brokers remains a significant challenge, with women being seen as more susceptible to manipulation.

This analysis highlights the significant gender dynamics at play within the agricultural value chains and underscores the need for targeted interventions that promote economic advancement, access, agency, and equitable systems for women farmers. "It cannot be said that they have much difficulty because, in the region, women are engaged in farming activities at least as much as men," said one respondent. However, without addressing the systemic barriers, women will continue to face challenges in realizing their full economic potential.

In Samandağ, the agricultural sector's stakeholder landscape is multifaceted, involving entities ranging from local small-scale farmers to key governmental organizations. Central to this network are the small-scale farmers, who drive the primary production of agricultural goods. They are supported by agricultural cooperatives like Samandağ and Vakıflı, which play a crucial role in organizing resources, facilitating marketing efforts, and providing essential supplies. Governmental bodies such as the Samandağ District Directorate of Agriculture and the Hatay Provincial Directorate of Agriculture contribute through policy support, technical assistance, and training programs aimed at improving agricultural practices and compliance with industry standards.

STAKEHOLDER ANALYSIS

Additionally, the sector involves various other stakeholders including local retailers, micro SMEs focused on processing agricultural products, women's cooperatives enhancing economic participation through value-added activities, and wholesalers and middlemen linking produce to broader markets. Institutions like the Antakya Chamber of Commerce and Mustafa Kemal University support regulatory oversight and agricultural education. The network is further supported by microfinance organizations, agricultural equipment suppliers, and logistics companies providing the necessary financial backing, technology, and transportation services.

The below detailed stakeholder list outlines the intricate relationships and varying degrees of influence each entity holds within the region's agricultural framework:

Name of Stakeholder	Stakeholder category	Role in the value chain	Potential contribution or impact within the scope of the project	Stakeholder importance
Small-scale farmers	Manufacturer	Fruit and vegetable production	Direct participation in project activities, increasing production capacity	High
Samandağ Agriculture Cooperative	Private Sector/ NGO	Organising farmers, input supply, product marketing	Providing support to farmers, joint marketing activities	High
Vakıflı Agricultural Cooperative	Private Sector/ NGO	Organising farmers, input supply, product marketing	Providing support to farmers, joint marketing activities	High
Samandağ District Directorate of Agriculture	Public institution	Agricultural supports, regulations	Technical support, training, coordination	High
Local retailers	Private sector	Product sales	Development of the local market	High
Hatay Provincial Directorate of Agriculture	Public institution	Implementation of agricultural policies	Coordination and support at regional level	High

Micro SMEs (processing plants)	Private sector	Product processing (jam, tomato paste, pomegranate syrup production)	Creating added value in the value chain	High
Women's co-operatives	Private Sector/ NGO	Product processing (tomato, pepper, citrus), value addition	Economic empowerment of women, increasing product diversity	Medium
Wholesalers/ Middlemen	Private sector	Product purchase and distribution	Strengthening market connections	Medium
Antakya Chamber of Commerce and Industry	Civil society organisation	Regulation of commercial activities	Providing market information, business development support	Medium
Microfinance organisations	Private sector	Financial services	Providing credit to farmers and co-operatives	Medium
Agricultural equipment suppliers	Private sector	Supply of inputs and equipment	Provision of modern agricultural technologies	Medium
Logistics companies	Private sector	Product transport and distribution	Increasing supply chain efficiency	Medium
Chamber of Agricultural Engineers	Civil society organisation	Technical support and counselling	Providing technical support to farmers and co-operatives	Medium
Samandağ Municipality	Public institution	Local government	Establishment of local sales points, infrastructure support	Medium
Mustafa Kemal University	Educational institution	Research and development	Technical know-how and innovation support	Medium

Mustafa Kemal University Faculty of Agriculture	Educational institution	Agricultural research and education	Farmer trainings, agricultural counselling	Medium

OPPORTUNITIES FOR COLLABORATION

To capitalize on the opportunities identified in Samandağ's agricultural sector, several specific enhancements can be pursued based on the overall key findings of the report:

1 **Technology Adoption and Innovation:** Given the challenges highlighted by the recent earthquake, integrating resilient agricultural technologies such as drip irrigation systems, solar-powered solutions, and climate-resilient crop varieties can increase production efficiency and sustainability. Innovation in product processing, such as the introduction of mobile processing units that can help preserve produce quality immediately after harvest, could also be vital. This will particularly benefit commodities like tomatoes and peppers, where post-harvest losses are significant.

2 **Enhanced Marketing Support:** Developing strong branding strategies that highlight the quality, origin, and unique characteristics of Samandağ's produce can enhance market appeal. This could involve creating labels that promote the organic or eco-friendly nature of the products like olives and citrus fruits to enhance their premium positioning. Additionally, cooperative marketing campaigns, supported by the local chamber of commerce and agriculture departments, can help in creating brand awareness and opening new markets.

3 **Enhanced Coordination and Collaboration:** Strengthening the links between small-scale farmers and larger agribusinesses through cooperatives can improve market access and income stability. For instance, cooperatives could coordinate with local and regional governments to establish farmers' markets that directly connect producers with consumers, reducing dependency on middlemen. Collaborative efforts could also include shared services like collective storage facilities or joint purchasing of inputs to reduce costs.

4 **Partnerships and Synergies:** Forming strategic partnerships with agricultural research institutes and universities, such as Mustafa Kemal University, could bring advanced agronomic knowledge and training to local farmers, enhancing crop yields and product quality. Additionally, linking with tech companies to develop farm management software could help in better resource planning and market prediction. Collaborative projects with NGOs and implementing partners could focus on specific interventions such as improving soil health or providing disaster-resilient farming equipment and training.

These strategic actions, tailored to the unique needs and strengths of Samandağ's agricultural sector, could substantially improve the value chain's effectiveness, leading to increased competitiveness, sustainability, and higher incomes for the community.

In the aftermath of the earthquake in Samandağ, the supply and demand dynamics within the agricultural sector, including essential commodities like olives, tomato, pepper and citrus fruits, have faced significant disruptions. The Hatay Provincial Directorate of Agriculture and Forestry undertook extensive fieldwork to assess the damage, identifying 3,950 individuals whose agricultural products, livestock, and equipment were affected. This emergency intervention revealed profound impacts across various districts, emphasizing the pressing need for recovery and stabilization efforts.

SUPPLY AND DEMAND ANALYSIS POST-EARTHQUAKE

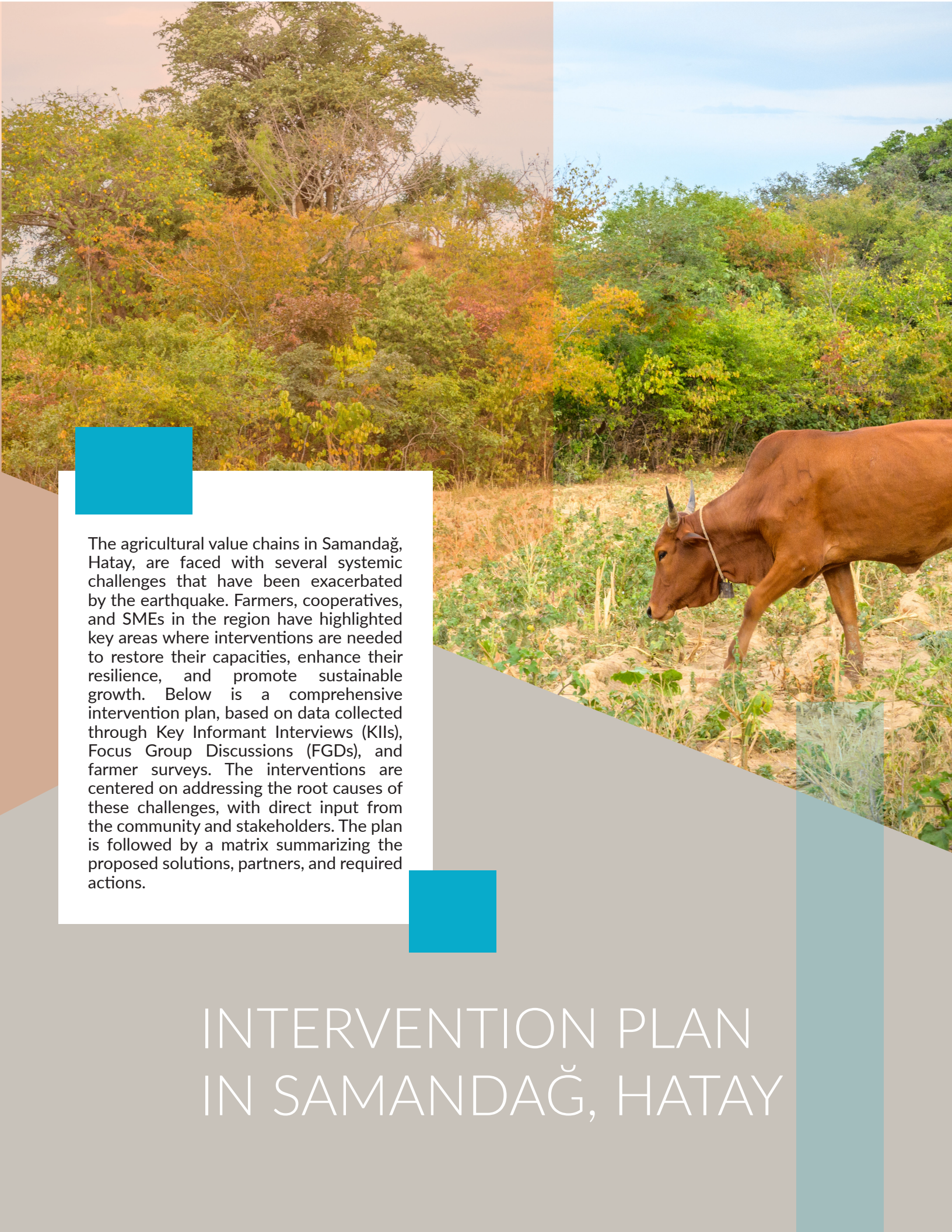
In response to the disaster's impact on agricultural production, the Directorate, along with the UN Food and Agriculture Organization (FAO), initiated the "Earthquake Response Project." This project aims to revitalize agricultural activities by providing crucial support to farmers. This includes the distribution of 1,290 kg of sunflower seeds, over 3.4 million seedlings of tomatoes, peppers, and eggplants, and substantial input packages to 961 producers, which comprised of essential farming tools.

Moreover, the project facilitated a significant financial injection into the local farming community, with 10,601,870 TL in cash payments distributed to 3,771 small-scale producers engaged in agriculture, animal husbandry, and fishing. These efforts are part of a broader strategy to ensure that producers can return to planting and continue their agricultural pursuits without the risk of losing their seasonal crops.

The stability of supply is crucial as it influences the entire value chain from production to market access. The distribution of high-quality seeds and farming equipment directly addresses the immediate needs for restoring production capacity. Meanwhile, the stabilization of demand will require continued support to ensure that agricultural products from Samandağ can reach both domestic and international markets despite the logistical challenges posed by damaged infrastructure.

To further aid recovery, the Directorate's ongoing support includes improving access to markets through rebuilding transportation routes and enhancing food safety measures. Inspection teams were deployed to ensure the reliability of food supply chains, inspecting temporary mobile kitchens, soup kitchens, and food distribution points. These measures are critical to maintaining market confidence and ensuring that agricultural products from the region meet quality standards, thus supporting stable demand.

While the earthquake posed significant challenges to the agricultural sector in Samandağ, the concerted by various partners is crucial in stabilizing supply and demand for vital commodities, including vegetables, fruits, and olives.



The agricultural value chains in Samandağ, Hatay, are faced with several systemic challenges that have been exacerbated by the earthquake. Farmers, cooperatives, and SMEs in the region have highlighted key areas where interventions are needed to restore their capacities, enhance their resilience, and promote sustainable growth. Below is a comprehensive intervention plan, based on data collected through Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and farmer surveys. The interventions are centered on addressing the root causes of these challenges, with direct input from the community and stakeholders. The plan is followed by a matrix summarizing the proposed solutions, partners, and required actions.

INTERVENTION PLAN IN SAMANDAĞ, HATAY

Input Supply Challenges

The most common challenges highlighted by respondents relate to the lack of agricultural inputs such as seeds, fertilizers, and machinery, which are essential for productive farming. Small-scale landowners often have to produce with minimal support and limited resources. High diesel costs, lack of education, absence of soil analysis, and transportation shortages further exacerbate these difficulties. Challenges in government resource allocation have also led to increased input costs and the distribution of substandard seeds, significantly impacting farmers' ability to effectively cultivate their lands. Enhanced government efforts and resource optimization are essential to provide better support and improve agricultural productivity.

Interventions in this area should include financial support, seed and fertilizer subsidies, and improved access to affordable agricultural machinery. Cooperatives can play a vital role in organizing bulk purchasing and distribution of these inputs. Additionally, training on sustainable agricultural practices and proper seed selection would help improve productivity, along with the establishment of a vegetable market to facilitate trade.

Market Access and Infrastructure

Farmers are also facing substantial challenges in accessing markets due to damaged infrastructure and high transportation costs. The earthquake has significantly reduced market access, with one cooperative respondent stating, "After the earthquake, our market areas have significantly decreased". Many farmers have been forced to sell their products at a loss or struggle to reach buyers due to poor infrastructure. Another respondent shared, "No sales were made in the earthquake year because the market was in the earthquake zone."

Establishing cold storage facilities and improving transportation links will be crucial to overcoming these barriers. Cold storage, in particular, can help farmers preserve their produce, reducing post-harvest losses and giving them more control over pricing. A participant in one of the discussions noted, "Cold storage should be within the cooperatives". The intervention should focus on establishing cooperative-owned cold storage and working with local governments and private logistics companies to rebuild transportation networks.

Another critical aspect to consider is the lack of processing machines, which hinders processors such as women cooperatives' ability to add value to their products. One respondent explained, "We make local products by hand" and "We want a pomegranate syrup machine, but it is too expensive." The absence of such equipment forces cooperatives to rely on traditional, labor-intensive methods, limiting their production capacity. Addressing this issue through the provision of modern processing machinery—such as drying machines, juice presses, or packaging equipment—will empower cooperatives to process their produce more efficiently and meet market demand.

Improving access to processing equipment should be a priority, especially for cooperatives aiming to produce value-added goods like fruit juices, pickles, syrups, and jams. One cooperative member pointed out, "Kitchen industry/drying machines are very important" for expanding production capacity. By providing financial support for acquiring these machines, cooperatives can scale up their operations and open new revenue streams, ensuring more sustainable market participation.

Cooperative Support and Development

Strengthening existing cooperatives and establishing new ones is crucial for farmers to pool resources, reduce input costs, and access markets more effectively. Collaboration is needed, with an emphasis on cooperative formation and education. Providing training in financial management, marketing strategies, and cooperative governance will empower cooperatives to support their members more efficiently.

Women cooperative members have expressed the need for tailored support to address unique challenges, including access to labor and equipment. They are interested in expanding cooperative activities to include handicrafts such as needlework, rug weaving, basket making, and knitting. Broadening the scope of cooperatives to support agricultural production and value-added activities like processing and handicrafts can significantly enhance the economic resilience of women in the community.

Financial Services and Government Support

One of the most urgent needs identified by respondents is the provision of financial support to cover the rising costs of inputs, labor, and transportation. Several farmers emphasized the importance of financial assistance, with one noting, "The farmers here require financial support and education for awareness." Another added, "The common problem among the farmers here is ignorance and lack of government support." The need for zero-interest loans, subsidies for agricultural inputs, and government-backed credit schemes was frequently mentioned.

Moreover, respondents expressed a desire for more consistent government intervention, particularly in regulating prices and supporting cooperative development. One cooperative member noted, *"The absence of cooperatives leads to price fluctuations and puts farmers at the mercy of traders"*. Government action is needed to stabilize prices and ensure that farmers are not taken advantage of by brokers and wholesalers.

Proposed Intervention Matrix

The below matrix provides a detailed action plan that implementing partners can consider for their interventions:

Function	Constraint	Impact on the Market	Potential Partner	Implementing Partner Role and Interventions
Input Supply	- Limited access to agricultural tools	- Poor product quality	**Government:** Ministry of Agriculture	- Advocate for government-backed seed distribution programs
	- Lack of improved seeds	- Higher prices	**Private Sector:** Input Suppliers, Local Agri-tech firms	- Facilitate partnerships with input suppliers to deliver affordable tools and equipment to smallholder farmers
	- Labor shortage	- Reduced production capacity		- Train farmers in the use of modern agricultural technologies - Invest and support in the provision of drip irrigation, solar-powered solutions, and mobile processing units.
Market Access	- High transportation costs	- Post-harvest losses	**Private Sector:** Logistics companies, cooperatives	- Collaborate with local authorities to build or rehabilitate transport infrastructure damaged by the earthquake. Also support local authorities with branding and marketing strategies on local production.
	- Poor infrastructure for cold storage	- Reduced access to buyers	**Government:** Trade Ministry, Local Govts	- Support the establishment of community-owned cold storage facilities to reduce post-harvest losses and improve market linkages
	- Damage to market routes	- Lower profit margins		

Processing	- Lack of processing equipment (e.g., pomegranate syrup machines, drying machines)	- Limited ability to add value	**Cooperatives:** SME processors, Agribusinesses	- Provide grants or equipment subsidies through livelihood recovery programs
	- High equipment costs	- Reliance on traditional, inefficient methods	**Private Sector:** Machinery Suppliers	- Support cooperatives in acquiring affordable, small-scale processing equipment for value-added products
				- Deliver training on the use of new equipment
Financial Services	- Limited access to affordable credit	- Inability to scale operations	**NGOs:** LNGOs	- Advocate for the inclusion of farmers including women, in financial programs
	- High cost of capital	- Dependency on middlemen for financing	**Financial institutions:** Regional banks	- Partner with microfinance institutions to develop low-interest loan schemes for cooperatives and women farmers A focus could be on collective financing from the banks through World Vision engaging with targeted cooperatives. This could be showcased as sharing the risk through cooperatives, as opposed to individual farmer financing
	- Gender bias in financial services			- Offer financial literacy programs to improve access to credit

Cooperatives	- Weak organizational structure	- Inability to negotiate better prices	**Cooperatives**	- Establish new cooperatives and strengthen cooperative governance through capacity-building workshops
	- Lack of financial and technical support	- Limited economies of scale	**NGOs**	- Facilitate networking opportunities to link cooperatives with buyers and market actors
	- Limited market access		Private Sector: Cooperatives	- Encourage joint marketing initiatives among cooperatives to improve market access and price negotiation
Labor	- Lack of skilled labor	- Reduced productivity	**Farmers and Cooperatives**	- Launch vocational training programs focused on agricultural best practices and processing
	- High labor costs after the earthquake	- Lower quality of produce	**Cooperative and NGOs** **Private Sector:** Agri-businesses	- Facilitate labor-sharing models within cooperatives to reduce costs - There is also an opportunity for WV to engage with professionals and youth in the tech space to develop software and technologies tailored towards developing solutions helping farmers to work more precisely, efficiently and sustainably in Hatay district.

Infrastructure	- Damaged transportation routes	- Post-harvest losses	**Government:** Ministry of Infrastructure and Municipality	- Mobilize funding for the rehabilitation of damaged transportation networks through community development grants
	- Lack of cold storage and processing facilities	- Increased production costs	**Private Sector:** Local transport companies	- Establish cooperative-led cold storage and processing hubs to improve market access and preserve produce quality

The interventions are designed to build the capacity of smallholder farmers and cooperatives through a mix of direct support, technical assistance, and advocacy. Implementing partners can facilitate access to markets, finance, and essential inputs by collaborating with the private sector and local government, while also strengthening the skills and knowledge of farmers to make their operations more sustainable and resilient to future shocks like earthquakes.

- **Input Supply:** Implementing partners can work with input suppliers and government ministries to provide affordable seeds, fertilizers, and agricultural tools. Training programs for farmers on the use of modern equipment and improved farming techniques will increase productivity and reduce costs.
- **Market Access and Infrastructure:** Implementing partners can advocate for the establishment of cooperative-owned cold storage facilities, which will prevent post-harvest losses and enhance farmers' bargaining power in the market. They can also help rebuild critical transportation networks that connect farmers to buyers, particularly those damaged by the earthquake.
- **Processing Equipment:** Providing grants or micro-loans for small-scale processing machines, like drying machines or pomegranate syrup processors, will allow cooperatives to add value to their products, creating higher profit margins and reducing dependency on middlemen.
- **Financial Services:** To address the challenge of limited access to affordable credit, implementing partners can engage with microfinance institutions to introduce low-interest loans or collateral-free loan schemes specifically targeting women and farmers. Financial literacy programs should accompany these interventions to empower farmers in managing their funds effectively.
- **Cooperative Support:** Implementing partners can help cooperatives improve governance, financial management, and market access through training and mentoring programs. By linking cooperatives to markets and potential buyers, the interventions will improve cooperatives' abilities to secure better prices for their members' products.
- **Labor:** With labor shortages and high costs after the earthquake, implementing partners can develop labor-matching programs or promote labor-sharing models within cooperatives. They can also deliver training programs that increase the skill set of local farmers and promote equitable hiring practices, ensuring that farmers have better opportunities.

The vegetable and fruit value chain assessment conducted in Samandağ, Hatay, reveals significant challenges faced by smallholder farmers and cooperatives in the aftermath of the February 2023 earthquake. The earthquake severely disrupted the agricultural sector, causing major losses in production capacity, infrastructure, and market access. The survey data and interviews with local farmers, cooperatives, and stakeholders illustrate the intricate dynamics within the value chain, with a specific focus on the sub-sectors of tomatoes, peppers, and citrus fruits.

CONCLUSION AND RECOMMENDATION

The earthquake caused substantial damage to infrastructure, with about 50-75 percent of irrigation systems in Samandağ being destroyed, along with agricultural warehouses and greenhouses. Transportation disruptions, increased input costs, and labor shortages have exacerbated the vulnerabilities of the agricultural system. A notable 83 percent of farmers reported losses during post-harvest activities due to transportation difficulties, storage issues, and lack of customers.

Farmers in the region face challenges in achieving economies of scale due to the predominance of small farms, typically under 1 hectare. Access to financial services is limited, with only 7 percent of farmers utilizing any form of credit or financial product. The reliance on self-financing limits the ability to invest in better tools, seeds, or infrastructure. Additionally, farmers face significant barriers in meeting market quality standards, with 55 percent of respondents struggling to meet buyer expectations due to lack of tools, knowledge, and skills.

The market systems are heavily reliant on intermediaries, with middlemen capturing a large portion of the profits. For example, tomato farmers receive only 5 TRY per kilogram at the farm gate, while the consumer price reaches 12 TRY per kilogram. This wide gap highlights the inefficiencies in the distribution process, limiting farmers' profitability. The absence of adequate cold storage facilities further compounds the problem, leading to post-harvest losses ranging from 10 percent to 50 percent.

While the survey shows that most farmers do not perceive gender-specific constraints in agriculture, qualitative data reveal that women face challenges in accessing financial services and market participation. Women play a crucial role in processing activities, particularly in cooperatives that produce value-added products like pomegranate syrup and jams. However, they face barriers such as lack of access to machinery and rising production costs, which limit their ability to scale operations.

Recommendations

To address these challenges and revitalize the vegetable and fruit value chain in Samandağ, the following targeted interventions are recommended:

Infrastructure Rehabilitation and Modernization:

- Develop Cooperative-Owned Cold Storage: Invest in building or upgrading cooperative-owned cold storage facilities to reduce post-harvest losses. This enables farmers to manage supply more effectively, storing produce to leverage higher prices during off-peak seasons.
- Rehabilitate Transportation Networks: Focus on restoring damaged transportation infrastructure to lower the logistical costs of reaching markets, which in turn can enhance farmers' profit margins and access to broader markets.

Enhanced Financial Services and Capacity Building:

- **Tailored Financial Products:** Work with microfinance institutions to introduce low-interest loans and financial products designed for the unique needs of smallholder farmers, with a focus on simplicity and accessibility.
- **Financial Literacy and Management Training:** Provide targeted financial management and literacy training to improve farmers' capabilities in budgeting, forecasting, and managing agricultural finances, with specific modules designed for women farmers to ensure inclusivity.

Cooperative Strengthening and Empowerment:

- **Capacity Building in Cooperative Management:** Strengthen farmer cooperatives by offering training in resource management, market negotiation, and strategic planning to enhance their operational efficiency and market positioning.
- **Equip with Processing Technologies:** Facilitate access to modern processing equipment like processors and drying machines. This will allow cooperatives to increase the value of their produce and open new market opportunities.

Market Expansion and Value Addition:

- **Establish Direct Market Linkages:** Develop platforms or partnerships that connect farmers directly with buyers, both in local and international markets, to diminish reliance on intermediaries and improve profit margins.
- **Support for Value-Added Processing:** Provide technology transfer and training in value-added processing techniques. This could include support for packaging innovations, which can extend the marketability and shelf life of agricultural products.

Gender-Inclusive Growth Strategies:

- **Promote Women's Cooperatives:** Initiate and support women-specific agricultural cooperatives that focus on sectors where women are already active, such as processing of agricultural products. Provide these groups with access to capital, technology, and markets.

- **Capacity Building for Women:** Design training and development programs that specifically cater to increasing the economic empowerment of women in agriculture, focusing on skills that enhance productivity and market competitiveness.

Sustainable Practices and Technological Integration:

- **Promote Sustainable Agriculture:** Encourage the adoption of sustainable and climate-resilient farming practices through workshops and on-field training sessions, which could include integrated pest management and efficient water use. Additionally, strengthening extension services and investing in agricultural research can help farmers access knowledge and technologies.
- **Technology Adoption:** Collaborate with agri-tech firms to facilitate access to affordable, modern farming tools and digital agriculture solutions that can lead to better crop management and increased yields.

Furthermore, to address the gaps identified in the current study, it is crucial to acknowledge that due to the limited scope of this analysis, a comprehensive cost analysis of production across the vegetable and fruit value chains in Samandağ was not conducted. This component is essential for understanding the precise cost inputs and operational pain points faced by the farmers and cooperatives. Therefore, it is recommended that the next iteration of this study includes a detailed cost analysis to better identify and address the financial challenges and inefficiencies within the agricultural sector. This will enable more targeted interventions that can significantly enhance profitability and sustainability for local farmers and cooperatives.

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