



International
Labour
Organization

Market Study and Marketing Strategy of Tomato Sector in Mafraq

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Executive Summary

Jordan is a regional tomato production and export powerhouse as it ranks the world's 4th largest exporter of fresh tomatoes. Tomato production is by far the highest vegetable production in Jordan at 43.4% of the Kingdom's total vegetable production. Jordan's production of tomato has undergone tremendous development in the last few years, as more investments have been in the sector to upgrade and expand production, such as the introduction of greenhouse production of tomato, mainly in the governorate Mafraq. Jordan's production of tomato has more than doubled over the last decade.

Market analysis in this report provides a range of statistics and indicators that show the high potentials for further sector growth. There are several opportunities that can be exploited as demand is increasing as a result of relatively high population growth, as well as the marketing opportunities of maximising export prices (provided that quality is enhanced through application of better post-harvest handling practices), expanding exports in regional markets, and the multiple benefits projected from any potential marketing and branding consolidation of Mafraq tomato growers.

However, despite enjoying several marketing strengths, mainly the relatively large production base in Mafraq, strong competitive position in domestic and key regional export markets, availability during the summer season (where Jordan valley's tomato production halts) as well as geographic proximity to key regional markets, the sector suffers from a number of internal weaknesses and is quite vulnerable to a number of external challenges.

Key internal weaknesses revolve around lack of modern grading and picking facilities and techniques, limited shelf-life of Mafraq tomatoes as well as producer losses due to lack of post-harvest facilities (pre-cooling, cold storage, calibration), quality issues related to poor post-harvest handling, packing and transportation practices, improper use of fertilizers and pesticides, as well as failure of farmers to market their tomato produce in a joint, collaborative manner. Key external challenges are related to security issues and political instability concerns in key regional export markets, namely Iraq, scarcity of water resources and salinity of ground water, as well as remaining vulnerable to wholesalers' bargaining power which dictates prices in the market and restricts the growers' access to retailers and supermarkets directly.

Key recommendations include: establishing a farmer cooperative in Irbid to achieve economies of scale through collective procurement, and handle collective marketing, branding and packaging of member farm, as well as introducing and expanding production of tomato by-products such as: home-style tomato paste, sundried tomatoes, as well as certain varieties such as: clustered and cherry tomatoes. Another key recommendation is to establish a grading house (which can be operated by women) that offers sorting and grading services to Mafraq farms on subcontracting basis. The report proposes other recommendations in the areas of: capacity building to farmers and workers mainly in the areas of enhancing water pumping techniques and post-harvest handling practices.

Introduction

Background

ILO value chain assessment reports of the Mafraq tomato sector highlighted pitfalls within various phases of the value chain of the sector. Some of the main weaknesses are related to marketing practices, including: branding, product quality, packaging, distribution and other marketing and operational shortcomings. The value chain assessment report concluded that it was necessary to conduct a market study that examines market demand and supply dynamics, marketing challenges and opportunities, as well as identifying economic opportunities to various players within the marketing channels as well as the local community within the sector, with particular focus on women and small-scale producers.

Objectives

The primary objective of this study was to identify windows of business opportunity within the Mafraq tomato sector that are likely to have a good marketing potential for women, entrepreneurs, as well as micro-to-small-scaled producers. The study also aimed at identifying and describing the corresponding market segment(s), as well as devising a suitable marketing strategy that would ultimately lead to more effective community engagement.

In order to achieve the above objective, the specific objectives of this study, as stated in the ToRs are:

- I. Map out the current situation in terms of available raw materials, local skills, processing and communication infrastructure, marketing channels and appropriate technologies within the Project target area.
- II. Assess the local, regional and national demand for those products that could be efficiently produced at a micro- to small-scale of operation by the women assisted by the project and organized in the form of sole producers or micro- to small-scale enterprises as defined by the Project either producing and marketing on an individual firm basis or networking with other firms in particular for joint purchasing or marketing.
- III. Among the tomato sub sector in Mafraq, identify those with higher potential and with an emphasis on value-added activities (e.g. Food production, processing, and vending; Horticulture; Organic farming).
- IV. Identify potential marketing outlets, including relevant trade flows, procedures and regulations, mainly in the host communities but also in the rest of the country or for export in other countries or overseas (e.g. Europe), if relevant to the selected lines of production.

Methodology

This report is based on desk research as well as field research and analysis of primary qualitative data gathered through interviews with a number of farmers and growers of tomato in Mafraq.

Secondary data presented in this report primarily comes from reports and databases published by Department of Statistics, Ministry of Agriculture, Central Bank of Jordan, ILO Mafraq Tomato Production Value Chain Assessment Report, Jordan Exporters and Producers Association for Fruit and Vegetables (JEPA), as well as any other sector reports and statistics that may be available at official secondary data sources.

The following table shows the main methodological activities and outputs of the desk research and analysis based on secondary data sources:

Scope of Desk Research and Analysis based on Secondary Data Sources	
Methodology	Focus Areas
<ul style="list-style-type: none"> Review of ILO value chain assessment carried out previously 	<ul style="list-style-type: none"> Highlighting sector challenges and weaknesses within the value chain of sectors as well as local community and refugee situation challenges that may have already been identified. In addition, the Consulting Team performed this task to ensure that this study and marketing strategy is in alignment and synchronization with the overall directions and objectives of ILO endeavours in the target areas.
<ul style="list-style-type: none"> Conducting an analytical desk review of available relevant literature and documents that may include data and information on the sector. These include statistical data and sector reports at the following sources: Department of Statistics, Ministry of Agriculture, Jordan Exporters and Producers Association for Fruit and Vegetables (JEPA), Central Wholesale Markets and other sources. 	<ul style="list-style-type: none"> Analysis of market recent supply and demand trends in terms of market size, production trends, trade patterns and import/export activities.
<ul style="list-style-type: none"> Review of all available statistical data and reports from official data sources on the economic and social factors that may have direct and indirect effects on the local communities in each protected area. 	<ul style="list-style-type: none"> Identifying trends and characteristics of the economic and social factors in the areas where the targeted local communities are located.

The following table shows the main methodological activities and outputs of the desk research and analysis based on primary data sources:

Scope of Desk Research and Analysis based on Primary Data Sources	
Methodology	Focus Areas
Structured interviews with the following: <ul style="list-style-type: none"> A randomly selected group of farmers, producers, wholesalers and traders of tomato in Mafraq, with focus on women and micro and small-sized enterprises. Director of the Jordan Exporters and Producers Association for Fruit and Vegetables (JEPA) Subject Matter Experts in tomato agri-business in Jordan. A randomly selected group of customers (small-scale traders and end-consumers) Site visits to the Agricultural Department in Mafraq 	<ul style="list-style-type: none"> Highlighting sector challenges and weaknesses within the value chain of the sector. Verifying market supply and demand trends Identifying issues related to factor conditions Identifying and brainstorming product/ service added-value propositions. Verifying prices and price structures Identifying customer trends, preferences and behavioural patterns Identifying local community needs and expectations. Evaluating resources and capabilities

In assessing marketing practices of the sector, the Consulting Team used the Marketing Mix (4Ps; Product, Price, Promotiom & Place) model. The same model has been used in setting and listing sector marketing strategy recommendations. Analysis and listing of key research findings has been done in accordance to the Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis model. In identifying business opportunities and value-added initiatives in the sector, the Consulting Team relied on both desk research (of similar cases) and field research (by interviewing farmers). In addition, the Consulting Team held internal brainstorming sessions and relied on personal experiences of Subject-Matter Experts on what would be considered as viable recommendations.

Limitations and Data Issues

There are certain limitations and data issues that have been encountered by the Consulting Team while conducting the market research. Some of those limitations are the following:

- A general lack of official data on domestic consumption trends and consumer behaviour. The Consulting Team has therefore relied on qualitative data gathered through field research as well as rational calculations of available production, export and import data in order to arrive at indicative estimates of demand and consumption.
- Lack of official figures on sales volumes and prices of different varieties. There does not appear to be a clear distinction between different varieties.
- Lack of data pertinent to the specific economic activities of refugee and other labour in the target sector within the target areas.

Structure of this Report

This report is divided into four key sections. The first section provides a quick overview of Jordan's socio-economic profile as well as on the Mafraq governorate level, followed by an overview of the Syrian refugee situation and its impact on the agricultural sector as a whole and the tomato production in Mafraq governorate in specific. The second section provides an analysis of the market as well as value chain from a marketing perspective for the tomato sector in Mafraq. Analysis extends to cover in more depth the market demand and supply trends and indicators. The third section provides a listing of key findings within the context of a SWOT appraisal. The fourth section of this report lists strategy recommendations to enhance marketing in the sector and provides a description of proposed business ideas and value-added initiatives with particular focus on women and small-scale producers.

Socio-Economic Overview

Socio-Economic Overview of Jordan

The economy of Jordan has traditionally been characterized by three persistent features: scarce natural resources, a small-sized economy, and a persisting high unemployment level. Jordan's unemployment rate, which currently stands at 12.6% (in 2013)¹, have also been a long-standing problem, with the unofficial unemployment rate is estimated to be closer to 25% due to underemployment. Jordan is a young country with a high birth rate, so the population is growing faster than economic opportunities are. Poverty and a large foreign debt remain major problems. Less than 5% of the country's land is arable, and farm output is further limited by the small size of most farms, inefficient methods of tilling the soil, and inadequate irrigation. The principal crops are citrus and other fruits and berries, tomatoes, cucumbers, grains, lentils, and olives. Many Jordanians support themselves by raising sheep, goats, and poultry.

Despite numerous national efforts to stabilize the economy, Jordan continues to face economic and social challenges. In 2013, Jordan recorded a Gross Government Debt to GDP of an alarming 87.75 per cent of the country's Gross Domestic Product. Over the past 2-3 years, the government has attempted to tackle economic challenges by increasing several tax rates, reducing fuel and electricity subsidies and made efforts to broaden the tax base and increase collection efficiency.

¹ Source: Department of Statistics, 2013

The economy of Jordan started to show signs of recovery in 2010 from the aftermath of the global financial crisis in 2008. However, this slight recovery did not last for long as Jordan's economic challenges have reportedly worsened amid the Syrian crisis which erupted in 2011. The influx of Syrian refugees to Jordan has added a huge burden on the country's economy which suffers from relatively high rates of poverty and unemployment, not to mention huge challenges facing the infrastructure. The table below shows selected socio-economic indicators of Jordan:

Table 1: Selected Socio-Economic Indicators of Jordan

Indicator	2009	2010	2011	2012	2013	2014 (F)
GDP at current prices (JOD million)	16,912.2	18,762.0	20,476.6	21,965.5		
GDP at constant prices (JOD million)	9,759.9	9,985.5	10,243.8	10,243.8		
GDP Growth Rate at current prices (%)	8.5	10.9	9.1	7.3		
GDP Growth Rate at constant prices (%)	5.5	2.3	2.6	2.7		
Gross public debt (JD billion)	9.7	11.4	13.1	16.5	19.2	21.4
as a percentage of GDP (%)	57	61	65	78	87.75	85
Unemployment Rate (%)	12.9	12.5	12.9	12.2	12.6	NA
Total Population (000)				6,338*		
Population Growth Rate (%)				2.2		
Average Household Size (person)				5.4		
Crude Economic Activity Rate (%)				24.6		
Male				39.3		
Female				9.2		
Refine Economic Activity Rate (%)				38.0		
Male				61.3		
Female				14.1		
Inflation Rate (%)				4.8		

Source: Central Bank of Jordan and Department of Statistics

*Excluding Syrian Refugees

In addition to the young population and relatively high birth rate compared to the number of job opportunities created, the problem of unemployment in Jordan has characteristically been due to mismatch between labour market demand and supply. With only 38% of economically active population, Jordan has one of the lowest participation rates in the world. Female unemployment levels are also strikingly higher than male unemployment levels, and are considered to be one of the highest in the region.

The private sector in Jordan is dominated by medium, small and micro enterprises that comprise 98% of Jordanian enterprises and 77% of the workforce. The private sector is generally characterized by being service-oriented and based mainly on low-skilled labour. Insufficient or inadequate technical education, lack of in-the-job training by employers, and the mismatch between education and market needs are some of the causes of unemployment. Informal sector constitutes a hefty share of the overall economy activity in Jordan, with no official accurate figures but several researches and studies citing the percentage of the informal sector to account for around 40%-45% of the Jordanian economy.

There are regional social and economic disparities in Jordan, and this is evident by the differences in unemployment levels which vary from (10.3%) in the Centre, the North (15.6%) and South (18.0%)², and this is mainly due to a mismatch between people's places of residence and work locations, *as well*

² Source: Department of Statistics

as the notion that little focus has been given to rural labour intensive enterprises which represent the livelihood and employment generators for many of the poor in rural areas.

Poverty levels in Jordan remain relatively high, and the relative poverty rate has actually regressed from 13.3% in 2008 to 14.4% in 2010³, which shows that the poverty situation has worsened. There are 27 poverty pockets in Jordan, 6 in the governorate of Mafraq.

Mafraq Socio-Economic Overview

The city of Mafraq is located about 70 km north-east of Amman at the boundary between the Hauran plateau and the Syrian Desert. Mafraq city is situated close to major cities, including: Amman, Zarqa, Irbid and Damascus. The climate is dry most of the year. The western region of the province is part of the fertile Houran plateaus, which extend through southern Syria, the Golan Heights and northern Jordan.

Total area of Mafraq Governorate is estimated at about 26555.6 km² which accounts for 28% of Jordan's total geographic area. This makes the Mafraq Governorate the second largest governorate in Jordan after Ma'an.

The total population of the governorate of Mafraq has reached about 300,300 people which accounts for 4.7% of Jordan's overall population. Male population represent 51.8% of the governorates total population, whereas females account for the remaining 48.2%. About 60.8% of the governorate's population reside in the outskirts of Mafraq city and rural areas.

Mafraq governorate is made up of four districts and ten sub-districts, including: Qasabat Al Mafraq district, Mafraq sub-district, Bala'ama, Arhab, Manshiyyeh, North-Eastern Badia, Salhiyyeh, Sabha, Um Al Jmal, Deir Al Kahf, Um al Qutain, North-Western Badia district, North-Western Badia sub-district, Sarhan, Hosha, Khaldiya, and Ruwashed. The following table show the main demographic indicators of Mafraq governorate:

Districts	Population	Dependency Rate	Area (km²)	Population Density	Less than 15 years old	15-64 years old	65+ years old
Qasabat Al Mafraq	125080	72.9	600.4	208.3	39.1	57.8	3.0
Mafraq sub-district	70050	69.7	186.7	375.2	38.1	58.9	2.9
Bala'ama	25570	82.5	169.8	150.6	42.3	54.8	2.9
Arhab	20370	75.9	203.5	100.1	39.6	56.8	3.5
Manshiyyeh	9090	66.3	40.3	225.4	36.9	60.1	3.0
North-Eastern Badia	70970	87.3	3651.0	19.4	43.9	53.4	2.7
Salhiyyeh	20950	98.6	2584.0	8.1	47.4	50.3	2.3
Sabha	12170	76.2	174.7	69.7	40.6	56.8	2.7
Um Al Jmal	17920	83.0	140.4	127.6	42.5	54.6	2.9
Deir Al Kahf	9150	93.9	665.3	13.8	45.2	51.6	3.2
Um al Qutain	10780	81.8	86.6	124.5	42.3	55.0	2.7
North-Western Badia district	92190	79.5	668.6	137.9	41.6	55.7	2.7
North-Western Badia sub-district	28880	86.6	283.7	101.8	43.8	53.6	2.6
Sarhan	20110	66.6	99.4	202.4	37.2	60.0	2.7
Hosha	17430	83.8	151.5	115.0	42.8	54.4	2.8

³ Source: Department of Statistics – Latest official data on Poverty Rate.

Districts	Population	Dependency Rate	Area (km ²)	Population Density	Less than 15 years old	15-64 years old	65+ years old
Khaldiya	25770	79.9	134.0	192.4	41.8	55.6	2.6
Ruwaished	12060	62.1	21630.5	0.6	35.4	61.7	3.0
Governorate of Mafraq (Total)	300300	77.7	26550.6	11.3	40.9	56.3	2.8
Jordan Total (Kingdom level)	6,388,000	68.2	88793.5	71.9	37.3	59.4	3.3

Latest official statistics on poverty indicators published by the Department of Statistics, based on the Household Income and Expenditure Survey 2010, show that the poverty ratio in Mafraq has reached 19.2% which is considerably higher than the Kingdom's average of 14.4%. The number of the 'poor' in Mafraq Governorate is 54,570 people, accounting for 6.2% of the total number of the 'poor' in Jordan.

The number of Mafraq labour force who are currently employed is estimated at 55,665 in 2012 which accounts for 37% of Mafraq's population, whereas the number of the unemployed is estimated at 6,650. About 43.5% of the Mafraq labour force work in the fields of public administration, social security and related services, 17.8% in education, and only 3.7% work in agricultural, which is quite strange as 68% of population in the Mafraq Governorate live in rural areas.

Foreign labour in Mafraq has reached 12,394 workers, accounting for 4.4% of the total number of foreign labour in Jordan.

Table 2: Key Economic and Labour Market Statistics in Mafraq (2012)

Indicators	Mafraq Governorate	Kingdom-Level
No. of employed labour force	55,665	1,268,093
% of employed labour force	4.4%	
No. of the unemployed	6,650	175,470
% of the unemployed	3.8%	
No. of foreign workers	12,394	279,798
% of foreign workers	%4.4	
Participation in Economic Activity Rate	36.4	38.0
Unemployment Rate	10.7	12.2
Inflation Rate	5.45	4.77
Average Annual Household Income (JOD)	7276.3	8823.9
Average Annual Household Expenditure (JOD)	7674.7	9626.0
Average Annual per Capita Income (JOD)	1228.7	1660.2
Average Annual per Capita Expenditure (JOD)	1290.3	1793.0
Poverty Ratio	19.2	14.4
% of Middle-Class Households (Families) (2008)	14.1	41.0

Source: Department of Statistics (2012)

Overview of Socio-Economic Implications of the Syrian Refugee Crisis on Mafraq Governorate, with Focus on the Agricultural Sector

The governorates of Mafraq, along with Irbid and the northern parts of Jordan, is one of the key areas in Jordan which host the largest population of Syrian refugees, and particularly in the cities of Ramtha, Mafraq and Irbid, where total population reported an increase by 25%, 30% and 20%

respectively⁴. The influx of Syrian refugees to these areas over the last three years has resulted in increased demand for already limited resources (mainly water and electricity) as well as services such as education, healthcare, and sanitation. Jordan's resources in these areas have been strained to their limits.

About 55% of Syrian refugees in Jordan registered by UNCHR are under the age of 18, which means that no less than 120,000 refugees are in school age, which has resulted on an overwhelming demand for education and school overcrowding. More than half of those are located in the governorates of Irbid and Mafraq. According to UNCHR, there has been a similar overcrowding is witnessed at primary healthcare facilities in Ramtha, Irbid and Mafraq where shortages of medicine has also been witnessed. This problem is aggravated by the already low bed capacity in both Irbid and Mafraq governorates, where the number of beds per 10,000 people is as low as 11 and 8 in both governorates, respectively⁵.

Water resources in Mafraq governorate had been scarce even prior to the Syrian crisis, where water distribution to households was only for once or twice a week for a period of up to six hours only. UNCHR, based on meetings with officials and representatives in the Mafraq governorate, indicates that Syrian refugee communities reportedly have little understanding and application of water conservation practices, and this has also contributed to the water scarcity problem.

In terms of employment and labor market, it has been noted that Syrians have been crowding and pushing out Jordanians workers in specific sectors, such as: hospitality, retail, trade, and construction. With regards to agriculture, the situation is quite similar. However, the problem is less severe than in other sectors mainly because Jordanians do not heavily engage with production practices of the sector. Some reports point out to the issue of “the culture of shame” that states that Jordanians refrain from working in low-end occupations including those related to farming and agricultural jobs. However, field research shows that the underlying reason why Jordanians do not pursue such jobs in the agriculture sector is rather down to economic reasons, related to low wage pay offered by producers and poor working conditions, rather than socio-cultural issues. The ILO report on value chain assessment of Mafraq tomato production points out the opportunity of creating higher value adding activities to entice Jordanians to take on such jobs, and that a rapid assessment should be conducted to examine the cultural dimensions related to Jordanians' unwillingness to work in farms. In the agricultural sector, Egyptian workers, who have previously dominated the scene, have been more susceptible than Jordanians to Syrian workers influx and entry to the sector.

The agricultural sector in Jordan has characteristically been limited due to lack of human resources, with Jordanians refraining from working in the sector and the government placing restrictions on the number of foreign labour in the sector. With the influx of Syrian refugees, the situation has changed. Jordanian farm owners have been tempted to increase their tomato production as the unavailability of labour has become less of a problem since the Syrian farmers arrived.

Field research shows that Jordanian producers of tomato prefer Egyptian workers over Syrian workers in the areas of soil preparation, fertilization, seeding and growing. Interviewees mentioned that Egyptian workers remain more skilled and efficient in the early stages of agricultural production, which include soil preparation, fertilization and seeding. However, Syrian workers are more preferred

⁴ Source: UNCHR

⁵ Source: Ministry of Health

in harvesting and post-harvest handling stages, which include picking and handling the harvested crop and performing crop sorting and grading processes. Syrians are deemed to be more skilled than Egyptian workers in these areas. Better quality end product has been reported recently, particularly with regards to Mafraq tomatoes, as a result of better post-harvest handling and grading processes carried out by Syrian workers.

Market Analysis

Supply Analysis

Mafraq is considered as one of the key agricultural areas of Jordan as it represents 19% of total cultivated area in Jordan. The following table shows that Mafraq Governorate contributes 27% of Jordan's total field crops cultivated area, 17% of Jordan's total fruit trees cultivated area, and 5% of Jordan's total vegetable cultivated area. This shows the relative importance of the governorate in terms of agricultural activity.

Table 3: Cultivated Area in Mafraq

Indicator	Mafraq Governorate	Kingdom-Level	Mafraq Governorate's Percentage of Total Cultivated Area in Jordan
Field crops cultivated area (ha)	30,230	112,904	27%
Fruit trees cultivated area (ha)	14,152	85,005	17%
Vegetables cultivated area (ha)	2,247	42,863	5%
Total cultivated area (ha)	46,629	240,771	19%
Number of Agricultural Cooperatives*	28	284	10

Source: Department of Statistics, 2011

*Source: Jordan Cooperative Corporation

Areas, Yield and Production

In Jordan tomatoes are grown as the leading vegetable crop for domestic consumption and exports. It covers about 27.5% the total vegetable cultivated area and approximately 3% of the total cultivated area in Jordan⁶. Tomato production is by far the highest vegetable production in Jordan at 43.4% of total vegetable production in 2012 and is followed by cucumber (9.2%), potato (8.3%), eggplant (7.1%), and water melon (6.4%)⁷.

According to the Department of Statistics' Agricultural Survey data, the total area under production of both greenhouse and open field tomatoes in Jordan increased from 7,656 ha in 2002 to 12,345 ha in 2012, reflecting a growth of 161% over the last 10 years. The following figure illustrates the increase of total tomato cultivated area in Jordan over the (2002-2012) period.

Table 4: Key Statistics of Jordan's Tomato Production (2008-2012)

Crop: Tomato	Level: Jordan					
	Statistic Items	2008	2009	2010	2011	2012
Cultivated Area (ha)		11,752	12,394	14,189	12,954	12,345

⁶ Source: Ministry of Agriculture and Department of Statistics

⁷ Source: Department of Statistics – Agricultural Survey 2012

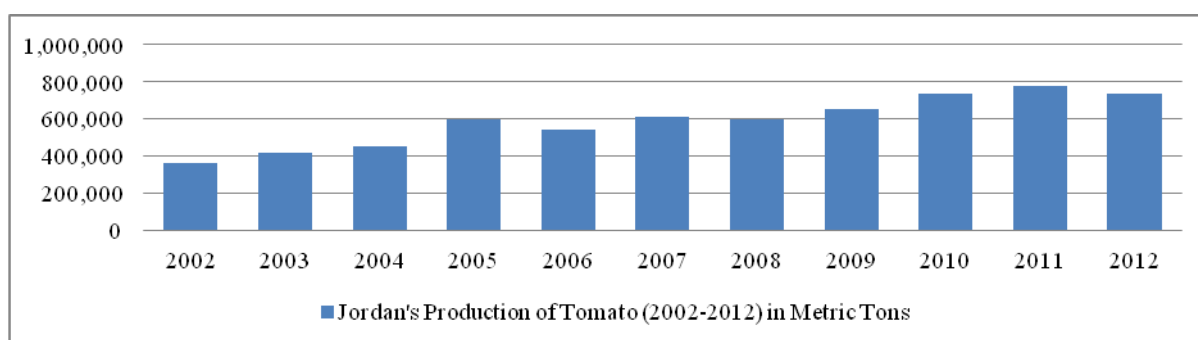
Average Yield (Ton/ha)	51.1	52.8	52.0	60.0	59.8
Production (Mt)	600,336	654,306	737,262	777,820	738,227
Production Growth Rate (%)		9.0%	12.7%	5.5%	-5.1%

Source: Department of Statistics, Agricultural Survey

The table above shows that the total tomato cultivated area in Jordan has increased from 11,752 ha in 2008 to 12,345 in 2012, reflecting a growth of approximately 5%. The average yield has also increased from 51.7 ton/ha in 2008 to a healthier yield rate of 59.8 ton/ha in 2012.

Jordan's production of tomato has undergone tremendous development in the last few years, as more investments have been in the sector to upgrade and expand production, such as the introduction of greenhouse production of tomato, mainly in Mafraq. Jordan's production of tomato has more than doubled over the last decade as shown in the figure below.

Figure 1: Tomato Production in Jordan (2002-2012), tons



Source: Department of Statistics, Agricultural Survey

Structure of Production

There are generally two areas where tomatoes are grown. From September to May in the Jordan Valley, and from April to August in the highlands. More information on the two regions as follows:

- **Highlands (Shafa) region** which includes Mafraq, Karak, Tafila, Ma'an and Aqaba areas and accounts for approximately 51% of the total tomato cultivated area of Jordan. Mafraq alone contributes approximately 18% of the tomato cultivated area of Jordan.
- **The Jordan valley region** which includes Northern Shuna, Dair Alla, Southern Shuna and Ghor Essafi and accounts for approximately 44% of the total tomato cultivated area of Jordan.

Tomato is also cultivated in small quantities in other regions of Jordan such as in Jarash, Ajloun, Madaba, Zarqa and Amman (these areas collectively contribute less than 5% of Jordan's production).

Tomatoes production in Mafraq is mostly open field production and lately farmers have started to grow tomatoes in Greenhouses. Over 2000 Green houses were installed in 2014 for production of Tomatoes in Mafraq, that is to mind the seasonal production gap in order to meet demand during the summer time as well as to make up for and the reduced area grown in Tomatoes in the Safi Valley south of the Dead Sea which usually starts production as early as Late November.

Inputs and Raw Materials

Key research findings related to the first level of the value chain: input and sourcing are the following:

- **High input costs:** this includes rising costs of energy (electricity), raw materials, fertilizers, pesticides and fungicides. Many farmers have complained about the government's high taxation of input materials (such as mulch and fertilizers). High input costs is shrinking

farmers' profitability margins as wholesalers control pricing and is also limiting farmers' ability to expand their tomato business or introduce different tomato varieties of higher quality. In addition, there is the issue of high import tariffs and government taxation for some inputs. Although agricultural raw material are generally exempted from taxes, some farmers claim that they still get taxed for such imported items due to customs department claims that such items can be used for purposes other than agricultural production. Examples of such items include: mulch⁸ (which is locally manufactured from primary plastic raw materials that are subject to taxation), and some types of fertilizers (as they can be used for other purposes/other industries).

- **Seedlings and other raw material quality are not carefully assessed and monitored:** Mafraq producers of tomato do not categorize seedlings according to their origins. This is due to the fact that most farmers are not well-acquainted with different seedling characteristics according to origins and suitability to the Mafraq soil and cultivation environment, whether in open-field or greenhouse cultivation environments. Another reason is that most farmers are not really concerned with the issue of seedling quality or adequacy since they lack awareness of production differentiation factors and are content with the quality of their produce, based on their conviction that the end-customer, especially in the local market, is mostly price-oriented and does not mind the quality or characteristics of existing produce.
- **Limited use and improper application of adequate fertilizers and pesticides:** the application of fertilizers in balanced ratio not only guarantees a good crop but also maintains natural fertility of the soil. In Mafraq, tomato farmers are not applying balanced fertilization techniques mainly because they lack the technical knowledge and know-how of various fertilizers and their optimal application. In addition, there is a lack of use of water-soluble fertilizers. Growers interviewed have expressed their interest in upgrading their limited knowledge and application of fertilizers and pesticides.
- **Increasing use of irrigation water of high salinity at a high cost:** because of changes of climate in recent years and the decline of annual rainfall, Mafraq tomato farmers are increasingly depending on water wells for tomato irrigation. Such water needs to be pumped from about 600 meters underground (also because it is a deeply rooted crop), which requires special pumping equipment which is quite expensive to most farmers. In addition, this type of water is of relatively high salinity which is affecting the quality of the Mafraq tomato produce as well as the effectiveness of some of the treatments used during the farming process.

Local Skills

Despite the influx of Syrian workers into Mafraq, who are considered to be more skilled than Egyptian workers particularly in the areas of harvesting and post-harvest handling.

Farmers are accustomed to complaining about high labour wages. However, there is a shortage of labour, particularly at the skilled and semi-skilled levels. Field research shows that Mafraq farmers feel that the influx of Syrian refugees to Jordan over the last three years has not eased the labour availability problem. Rather, some farmers feel that Syrian workers have contributed to the issue of

⁸ Plastic mulch increases earliness and total yield of tomatoes. The mulch helps regulate soil moisture loss, and prevents weed growth.

workers' demands for higher wages. In addition, some farmers pointed out the impact of Syrian labour has shown only in the area of harvesting and collecting tomatoes, and that there has been no real positive impact in terms of production planning, seeding or tree growing phases of production.

Other Production and Supply Issues

There are multiple production problems that are hindering Mafraq tomato growers from expanding their production to exploit high local and export market potential to the maximum. Key issues are:

- **Conventional production methods and preference to stick to the same product variety:** most tomato growers in Mafraq prefer to follow their current production techniques which are conventional. This is particularly evident in the growers' scepticism and lack of interest in diversifying their tomato varieties to meet specific market demand. They are generally reluctant about investing in new varieties since they lack sufficient knowledge about market potential for such varieties and they consider current tomato variety a 'safer' option, as demand for current tomatoes is guaranteed.
- **Potential for expanding production even further:** tomato production and demand statistics provided in this report, including performance of tomato exports, show that the demand for locally-grown tomatoes is high, and in some seasons it exceeds supply levels depending on export performance (as evident by consumption and export figures of the year 2011). However, during such high export years, producers often give priority to export markets and this is when production capacity issues appear. The ILO report on Mafraq tomato value chain assessment refers to current tomato production in Mafraq as being traditional and low-tech. This has been verified by field research and subject-matter experts' views. There is a sizable opportunity to expand cultivation areas and boost production levels by adopting higher yielding growing practices. Some of those recommended practices include:
 - Use of new varieties that are suitable to the cultivation environment of Mafraq. This should result in a more efficient yield rate.
 - A more controlled use of fertilizers and pesticides.
 - Increased capital investment in new production technologies consistent with GlobalGAP. This would also open up new export venues for Mafraq production as it will boost market access compliance in new export markets (such as the EU).
 - Improving planting, growing, harvesting and post-harvesting techniques.

Demand Analysis

Domestic Consumption and International Trade

There is no statistical data available at official data sources on the actual size of domestic consumption of tomatoes in Jordan. However, based on the Consultant's calculations of production, imports and exports, a rough estimate of domestic consumption has been arrived at in order to provide an indication of domestic demand. The following table shows the domestic consumption of table tomato in Jordan compared to imports and exports:

Table 5: Imports, Exports and Estimated Domestic Consumption of Fresh Tomatoes in Jordan (2007-2012)

Commodity: Tomatoes	2007	2008	2009	2010	2011	2012
Production (1000 Mt)	610.2	600.3	654.3	737.3	777,820	738.2
Domestic Consumption* (1000 Mt)	223	207	968	366	777,385	320
Consumption % of Production (%)	37%	34%	148%	50%	100%	43%
Imports (1000 Mt)	0	0	460.0	0	0	0
Exports (1000 Mt)	387.0	393.4	146.8	371.3	434.8	418.5

Exports % of Production (%)	63%	66%	22%	50%	0%	57%
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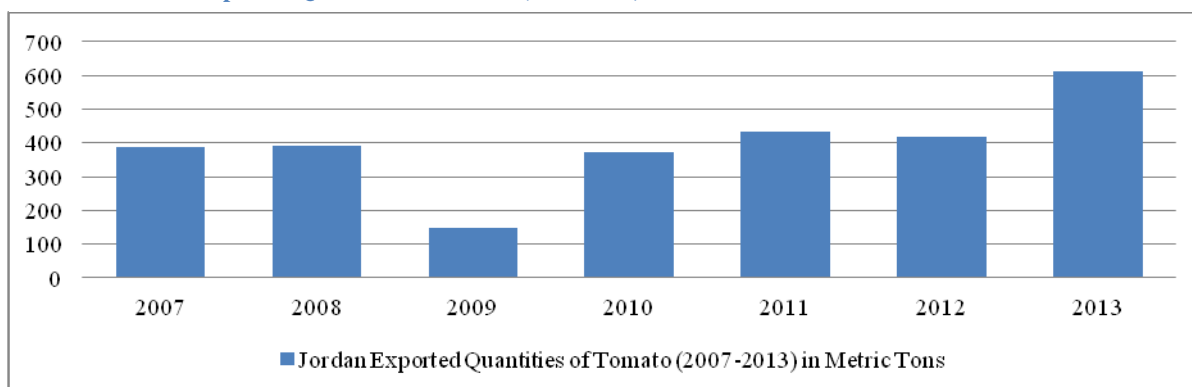
Source: Department of Statistics' Agricultural Survey 2012

*Domestic consumption is based on consultant's calculations.

The table above indicates that current production levels exceed domestic consumption levels of tomato, which implies that Jordan is self-sufficient of tomato and that current production levels exceed domestic demand.

According to International Trade Centre's international trade statistics 2013, Jordan ranked fourth in terms of tomato exported quantities in 2013 behind Mexico, Spain, and Netherlands. However, Jordan ranks ninth in terms of tomato exported value behind Mexico, Netherlands, Spain, Morocco, France, Turkey, Canada and USA.

Table 6: Jordan's Exported Quantities of Tomato (2007-2013)



Source: International Trade Centre

Consumer Trends and Preferences

Domestic consumption and demand for tomato is growing due to increase in population. It is very important vegetable with substantial nutritional value. Despite the increase of tomato customer price in recent years in Jordan, which has now reached JOD 0.35/KG, it is still consumed in every home in different modes, such as vegetable, salad, tomato paste, ketchup. Due to wide seasonal variations in Jordanian tomato is available throughout the year.

The ideal tomato, from the consumer's viewpoint, whether in the domestic or export markets, is one that is full size, vine ripened, unblemished, and characteristically at the red-ripe stage or anything near that stage.

Competitive Position of Mafraq Tomatoes

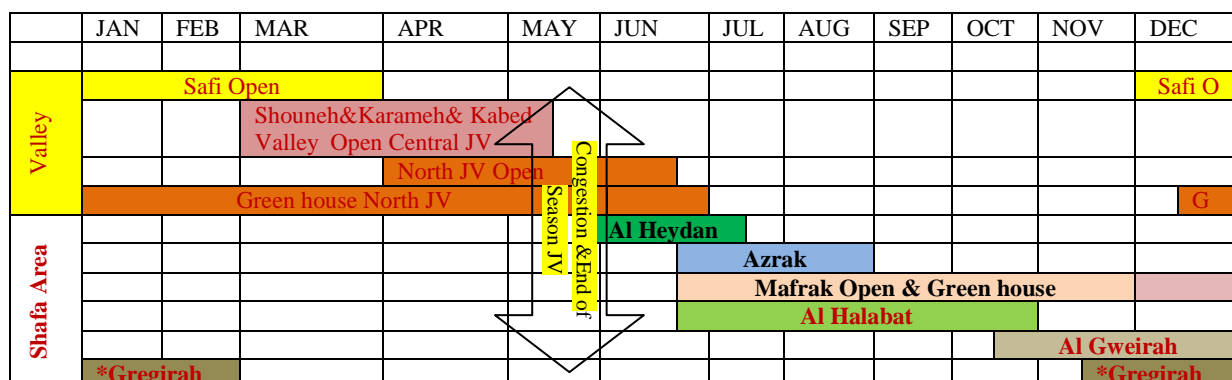
In the Domestic Market

In the domestic market, there is no clear differentiation between locally-produced tomatoes based on the cultivation area, meaning that there is no clear distinction of Mafraq tomatoes and tomatoes cultivated and produced in other regions of Jordan. However, Mafraq's tomato is generally of good quality and it fairly meets local customers' preferences and demands. However, such quality can be further enhanced and shelf-life prolonged by adopting improved harvesting and post-harvest handling practices.

Mafraq tomatoes is generally in pole position to dominate the domestic market during September, October and November when Mafraq tomatoes faces minimal competition from other regions in Jordan, as Mafraq is the only region which produces tomato during these three months of the year.

Usually the prices of tomato go up during this period of the year due to the Mafrak tomatoes near-domination of the market.

Figure 2: Tomato Production Calendar in Jordan



The first production of Tomatoes come from south of the dead sea Mazra'a and Safi valley areas, followed by Central valley north of the dead Sea, then the northern valley which tends to be cooler and therefore production can last till June, Followed by Shafa production which starts mid-May and can last till Late December overlapping with production from Safi and Greigara.

In Export Markets

The main export markets for Mafrak tomatos are the GCC markets, particularly UAE and Saudi Arabia. Mafrak tomatoes are positioned in these markets as a relatively low-priced tomato compared to the competition. For example, Tunisian tomatoes are more than five times higher in price than Jordanian tomato sold in UAE, with no apparent justification with regards to quality or quality.

The main reason why Jordanian tomatoes are so lowly-priced in the regional export markets is down to three main reasons:

1. Jordan tomatoes are not graded or selected according to color and size before they are exported, and usually the grading of Jordanian tomatoes is done by importers, who are usually based in Dubai
2. Comparatively low shipping and transportation costs of Jordanian tomatoes because of Jordan's geographic proximity to those markets.
3. Jordan's tomatoes generally have a low shelf-life because of several reasons, mainly choosing improper timing of crop picking, lack of pre-cooling and proper post-harvest handling facilities, improper packaging as well as poor post-handling practices which all affect the tomatoe's quality, ripeness, firmness and consequently shelf-life.

Jordan tomatoes including Mafrak-cultivated tomatoes should maintain its price-based competitive advantage in regional export markets. However, there is a room to increase profit margins of producers and exporters by adding value through grading and sorting tomatoes prior to exports. This will increase profit margins as Jordanian producers as well as exporters will be in a much better bargaining position with regional importers to ask for a better price that would still be competitive. Just by sorting and grading its tomatoes, Jordan can easily double or triple its export prices and yet remain highly competitive in regional export markets.

A practical experience has been practiced by one Jordanian tomato producer and exporter in May 2013, when the Jordanian company sorted tomatoes were sold at prices that varied between 5.0-7.0 AED, compared to 2.5-3.5 AED that they used to sell their unsorted tomatoes to UAE.

Below are pictures of Tomatoes on the shelf in one of the hyper markets in Dubai, Prices vary from 3.7 AED for the open field Indian – 14.00 AED for Green house Tunisian Tomatoes.

Table 7: Top Exporters of Tomato (2013)

Top Exporters of Tomato	World Rank (2013)	Exported Quantities in Mt'000 (2013)	Top Export Markets (2013)				
			First	Second	Third	Fourth	Fifth
Mexico	1	1,535	USA	Canada	El Salvador	Panama	Netherlands & Japan
Spain	2	1,004	Germany	France	UK	Netherlands	Poland
Netherlands	3	1,002	Germany	UK	Sweden	Italy	Poland, France & Czech Rep.
Jordan	4	611.5	Saudi Arabia	UAE	Iraq	Kuwait	Syria & Qatar
Turkey	5	483.3	Russia	Ukraine	Bulgaria	Iraq	Saudi Arabia
Morocco	6	France	Russia	UK	Spain	Netherlands	Mauritania

Source: International Trade Centre calculations based on UNCOMTRADE data

The table above lists the top five exporting countries of tomato in 2013 according to ITC estimates based on UNCOMTRADE data. The table shows that Jordan is in pole position to dominate the Saudi and rest of GCC markets due to its geographic proximity as well as current production and export performance to those markets. The Russian and Eastern European countries are being dominated by Turkish tomatoes, whereas Spain and Morocco are dominating the Western European markets, with the Netherlands and Belgium a trade distribution hub to Western EU countries as well as Germany and Central EU countries. Mexico is the main exporter to the US and Canadian markets.

The table below shows the top five importing countries of tomato in 2013. The table shows that Saudi Arabia represents a big potential market for tomatoes as it ranks sixth in terms of imported quantities. However, it is noteworthy to mention that Jordan's largest export market, Saudi Arabia, has Syria and Turkey as its main import sources of fresh tomatoes. This is despite that Jordan exports higher quantities of tomato than both Turkey and Syria, and enjoys a better geographic advantage. The main reason apparently is that Jordanian exports of tomato are also focused on the UAE and Iraqi which is spreading exported quantities thin.

Table 8: Top Importers of Fresh Tomatoes (2013)

Top Importers of Fresh Tomatoes	World Rank (2013)	Imported Quantities in Mt'000 (2013)	Top Import Sources (2013)				
			First	Second	Third	Fourth	Fifth
USA	1	1,537	Mexico	Canada	Guatemala	Dominican Republic	Netherlands
Russia	2	852.5	Turkey	China	Netherlands	Morocco	Spain
Germany	3	739.4	Netherlands	Spain	Belgium	Morocco	Italy & France
France	4	558.4	Morocco	Spain	Belgium	Netherlands	Tunisia, France & Italy

UK	5	443.0	Netherlands	Spain	Morocco	Germany	France & Italy
Saudi Arabia	6	290.1	Syria	Turkey	Jordan	India	Egypt
Pakistan	7	265.4	India	Afghanistan	Iran	UAE	Indonesia
UAE	10	103.5	Jordan	Syria	Oman	India	Saudi Arabia & Lebanon
Iraq	16	104.1	Jordan	Turkey	Egypt	Oman	Albania

Source: International Trade Centre calculations based on UNCOMTRADE data

Jordan has an excellent opportunity to expand its exports to the three key regional markets of Saudi Arabia, UAE and Iraq.

Assessment of Marketing Practices

Sales and marketing have characteristically been an area where a lot of improvement can be made to Jordanian agriculture in general, and Mafraq tomato production is no exception. A number of challenges persist and are manifested by growers' general lack of knowledge of market trends, characteristics of new product varieties, negligence or lack of awareness of demand for potentially-marketable by products, as well as pricing, promotion and distribution related marketing challenges. This subsection overviews those challenges according to the Marketing Mix (4Ps) framework.

Product

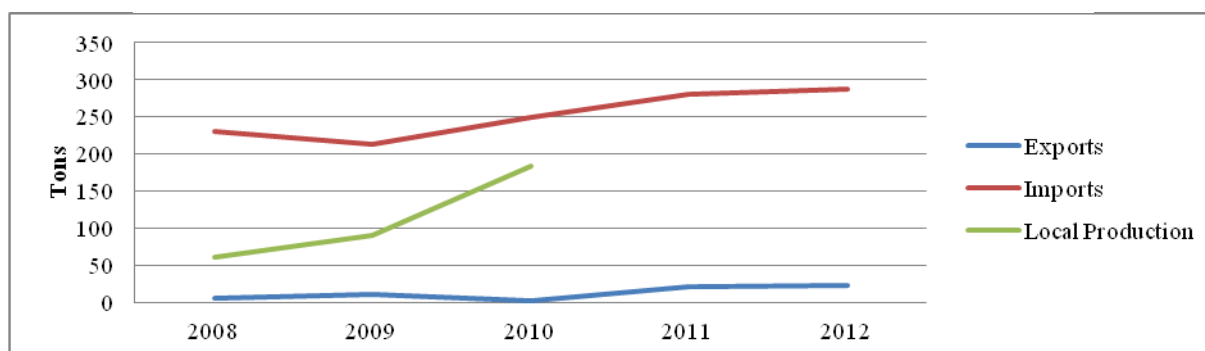
Product Varieties and By-Products

Improving performance of planted varieties is needed to reach the full performance potential of planted varieties. Farmers are unfamiliar with the varieties they plant and how they perform and sometimes fail to achieve the full production potential of the variety. As mentioned previously, farmers lack knowledge and as a result, the interest, in introducing new seedlings to produce new product varieties and this requires raising their awareness and exposing them to market potential.

In terms of product variety, there is a market opportunity in introducing and expanding Mafraq's tomato production of the following new product varieties: **Cluster Tomatoes, Cherry Tomatoes and Organic Tomato**

In terms of by-products, there is a market opportunity in expanding Mafraq's production of the following by-products: sundried tomato and processed tomato paste. Desk research shows that Jordan is under-producing sundried tomatoes as it relies more heavily on importing this product. The ILO report on Mafraq Tomato Production Value Chain Assessment states that Jordan's local production of sun-dried tomatoes in 2010 was only 183 tons, compared to an imported 281 tons of sun-dried tomatoes in the same year. The following figure illustrates Jordan's production, exports and imports of sun-dried tomatoes:

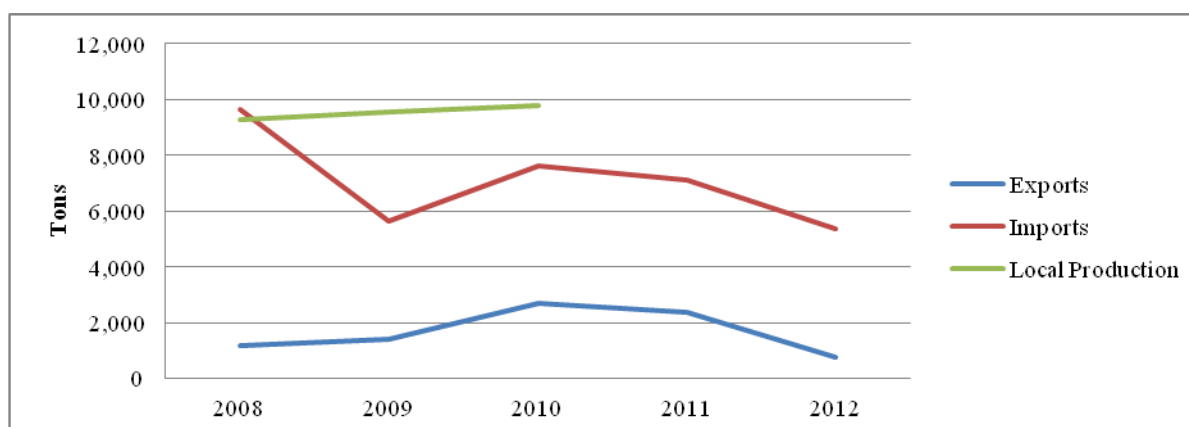
Figure 3: Jordan's Production, Imports and Exports of Sun-dried Tomato



Source: ILO, Mafraq Tomato Production Value Chain Assessment Report based on UNCOMTRADE and Department of Statistics data

The same observation applied to tomato paste. Jordan's local production of tomato paste in 2010 was 12,465 tons, compared to imports in the same year of 7,614 tons of tomato paste. Jordan exports 35% of tomato paste to Palestine, 26% to Saudi Arabia and 17% to Lebanon. Jordan imports 60% of tomato paste from China followed by 26% from Syria. The following figure illustrates Jordan's production, exports and imports of tomato paste⁹.

Figure 4: Jordan's Production, Imports and Exports of Tomato Paste



Source: ILO, Mafraq Tomato Production Value Chain Assessment Report based on UNCOMTRADE and Department of Statistics data

This shows that there is a real opportunity in expanding production of both by-products: sun-dried tomatoes and tomato paste.

Quality

The quality of Mafraq tomato varieties is considered to be of good quality compared to tomato varieties produced in other parts of Jordan, because the crop receives good quality water and a considerable amount of temperature. However, this quality deteriorates when the end product reaches the customer whether in the domestic or export markets. Means of transportation, packaging, harvesting procedures, maturation at harvest, climatic conditions, and many others variables affect the quality and post-harvest life of Mafraq tomatoes. In addition, there are incidences of visible defects due to unbalanced fertilization and pesticide use which results in poor quality of fresh tomatoes (green middle, cracked). The key issues that lead to deterioration of the Mafraq tomato quality include the following:

- **Poor harvesting and post-harvest handling and transportation practices** are degrading the quality of Mafraq tomatoes: Proper harvest management makes it possible to have a higher yield return. Tomatoes may be harvested at the mature green stage, semi-ripe or fully ripe, depending on marketing requirements. They are very perishable and subject to surface and internal damage, and must be handled accordingly. Tomatoes are sensitive to chilling

⁹ Source: ILO, Mafraq Tomato Production Value Chain Assessment Report

injury, with varying degrees of intensity depending on the maturity of the fruit. Proper temperature management for ripening and storage are critical to maintain quality. In Mafraq, workers follow traditional and poor harvesting and post-harvest practices. Such practices include:

- Lack of tomato grading practices: farmers in Mafraq have grown accustomed of ignoring the vital importance of grading. Not only would grading add substantial value to farmers, wholesale traders and exporters, but also it would enhance the quality of the tomato produce. Since Mafraq farmers do not grade their harvested tomatoes, packing of mechanically injured or fungus infested contributes to the deterioration of the tomato quality.
- Inconsistent tomato harvesting practices which often lead to compromising the crop quality and even causes some losses in picked quantities. In addition, workers often harvest tomatoes at the wrong time of the day when the temperature is highest, and leave collected tomatoes on the ground and exposed to high temperature, which affects the crop tenacity and makes it become very soft and less appealing to the end consumer.
- Picking time of tomatoes: The time of picking is considered the most important factor in post-harvest losses as well as deterioration of quality. Many Mafraq tomato farmers choose to harvest tomatoes at the wrong time of the day when the temperature is high which also exposes the harvested tomato to high temperature which affects tenacity and causes tomatoes to soften.
- Inadequate packing and packaging affects product quality: the vast majority of Mafraq tomato farmers pack their harvested tomatoes in wooden or polystyrene boxes. In this type of package, the tomatoes are placed randomly and the boxes are stacked during harvest, transport and distribution to the consumer. This handling leads to deterioration of quality and consequently quantitative and qualitative losses. Generally, container-packing is considered ideal for packing fruits or vegetables because these are easy to handle, provide good protection from mechanical damage, have adequate ventilation and convenient for merchandising. For local wholesale markets tomatoes can be packed in wooden boxes or other traditional crates assuring careful handling.

All of the above is causing limited shelf-life of the Mafraq tomatoes. Planting the right varieties (for example, varieties with more firmness) would also extend the product shelf life, along with upgrading post-harvest practices (i.e. efficient and effective picking, proper packaging) and facilities (i.e. pre-cooling and proper storage facilities).

Branding

Mafraq tomato production lacks any effective or systematic branding that would help consumers, whether local or international, recognize the Mafraq tomatoes. This is mainly due to the fact the sector is fragmented into small-scaled farmers who lack effective marketing organization, representation and coordination. There have been no real national initiatives to launch an effective, unified branding for Mafraq tomatoes.

Packaging and Labelling

Packaging of Mafraq tomatoes is mainly used for transporting the product to the retailers. The poor quality carton and polystyrene boxes used by the producers frequently lose their firmness and collapse as a result of condensation when tomatoes are transported in lorry trucks without refrigeration.

More appropriately, immature tomatoes should be packaged in cartons, two-layer flats and wire-strapped crates. Ripe tomatoes are usually packaged in cartons, tray packs; three-layer stacked trays, and loose packs. One of the standard packs is the seven-ply 30 cm × 25 cm × 30 cm Corrugated Fibre Board box of 10 kg capacity. These boxes feature internal paper pieces as cushioning material to limit bruising and can be stacked in direct proportion to the listed Edge Crush Test (ECT). ECT measures the board's resistance to vertical crushing, with continued emphasis on reducing linerboard weights; ECT is becoming the key determinant of quality packaging worldwide and this would significantly enhance the quality and marketability of Jordanian tomato in export markets.

One of the key market access requirements in advanced export markets, such as the EU, is that tomatoes should be packed in compliance with the Recommended International Code of Practice for Packaging and Transport of Fresh Fruit and Vegetables (CAC/RCP 44-1995). Refer to the FAO website (http://www.fao.org/ag/agn/CDfruits_en/others/docs/CAC-RCP44-1995.PDF). The standards include:

- Tomatoes must be packed in such a way as to protect the produce properly. The materials used inside the package must be new, clean, and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps bearing trade specifications is allowed, provided the printing or labelling has been done with non-toxic ink or glue¹⁰.

Price

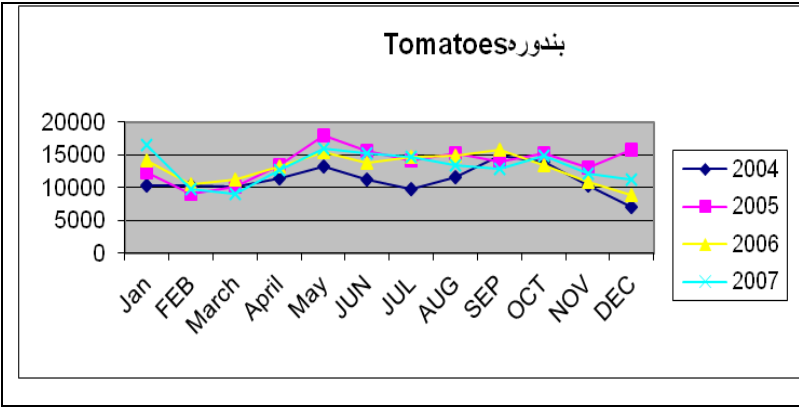
Due to the fact that the sector is fragmented into a large number of small-scale farmers and producers, and that there is no effective representation of tomato farmers in Mafraq, prices are controlled to a large extent by wholesale traders and exporters.

There is no clear pricing strategy for Mafraq tomatoes in the domestic or export markets. Prices are usually dictated by two main factors:

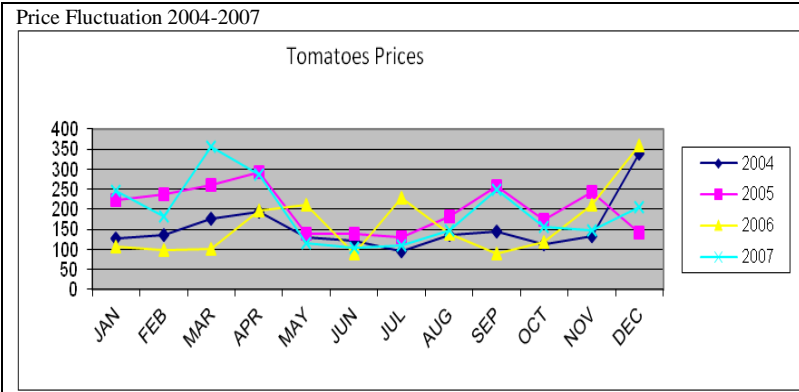
- Bargaining prowess of the wholesale traders and exporters
- Seasonality of the product. Tomato in Jordan is produced throughout the year but different areas produce tomato in different seasons during the year. However, during the summer period (starting June until end of August), prices go down because of the overlap in tomato production among different producing areas such as the Jordan valley and Mafraq. During this period, tomatoes enter the wholesale markets in abundance and as the supply increased, prices go down. However, prices start to go up again in autumn and winter. This price pattern of tomatoes in Jordan has been almost the same for the last 20 years, with the exception of few years where prices recorded odd deviation from their norms.

Quantity entered to the wholesale market 2004-2007	The graph shows the fluctuation of Quantity entering the Amman Wholesale markets during the years 2004-2007.
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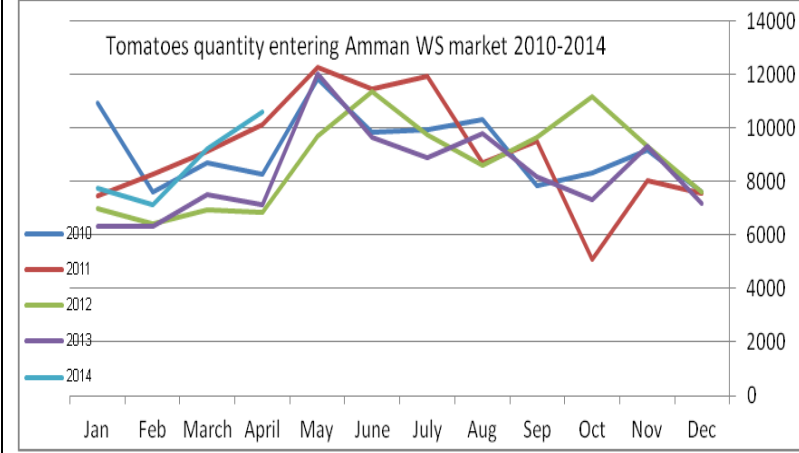
¹⁰ Source: International Code of Practice for Packaging and Transport of Fresh Fruit and Vegetables (CAC/RCP 44-1995). Refer to the FAO website (http://www.fao.org/ag/agn/CDfruits_en/others/docs/CAC-RCP44-1995.PDF).



The Quantity starts declining in the month of OCT/Nov



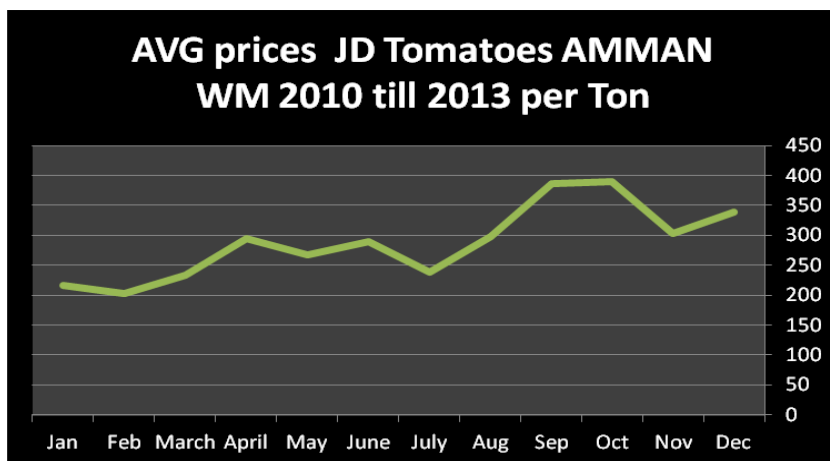
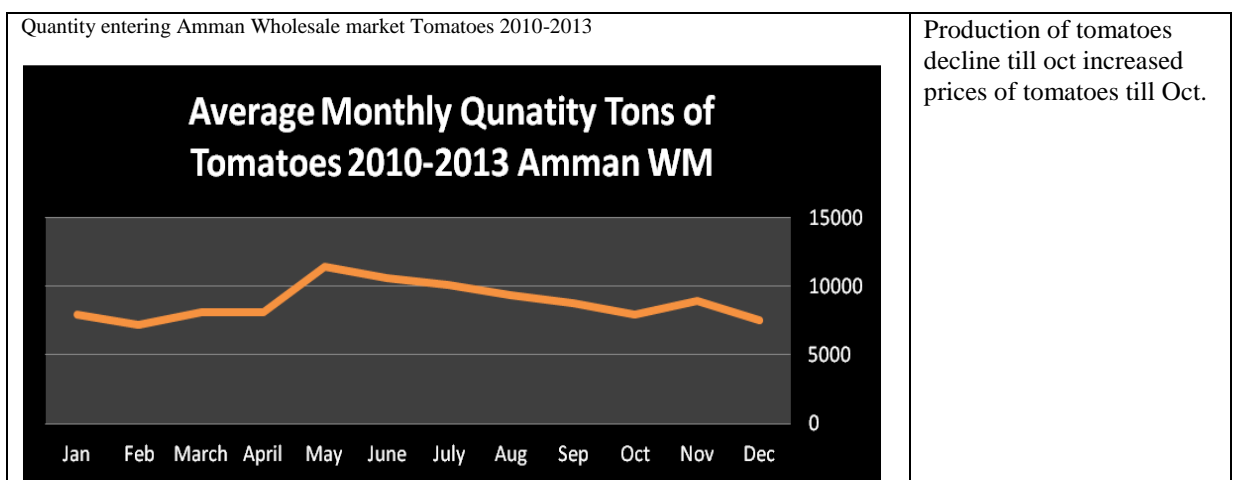
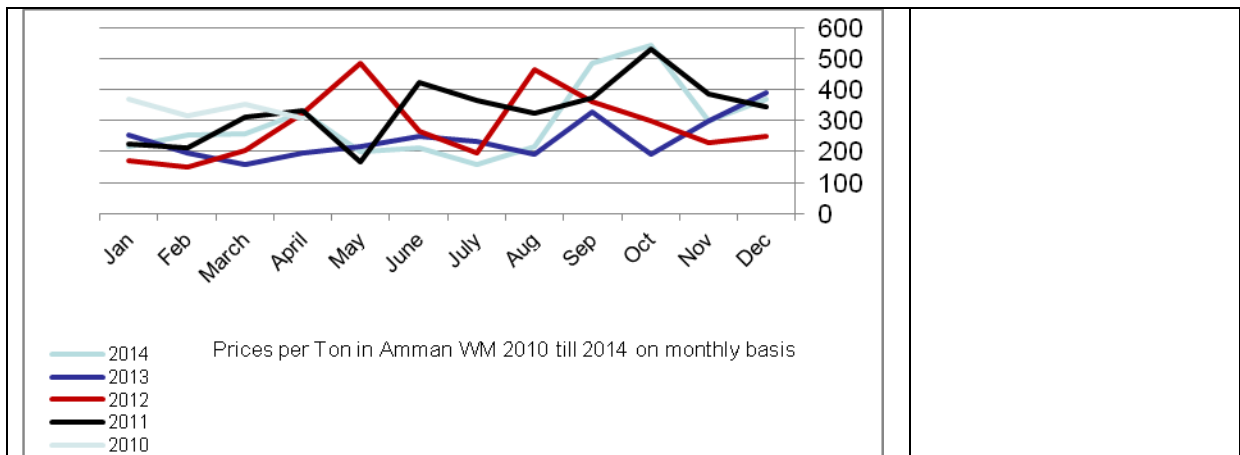
The graph shows the fluctuating prices of the tomatoes driven by the supply shown above. While supply drops prices goes up as show in the graph.



Quantity entering the markets for the years 2010-2014 (April), the exception is the 2012 year were Quantities entered to the market increased and peaked earlier than expected.



Price fluctuations of tomatoes for the year 2010-2014. The years 2010 & 2011 had increase in prices in the month of Sep Oct, in the 2012 & 2013 the increase of prices Sep & Aug. All prices start to increase in Dec.



Promotion

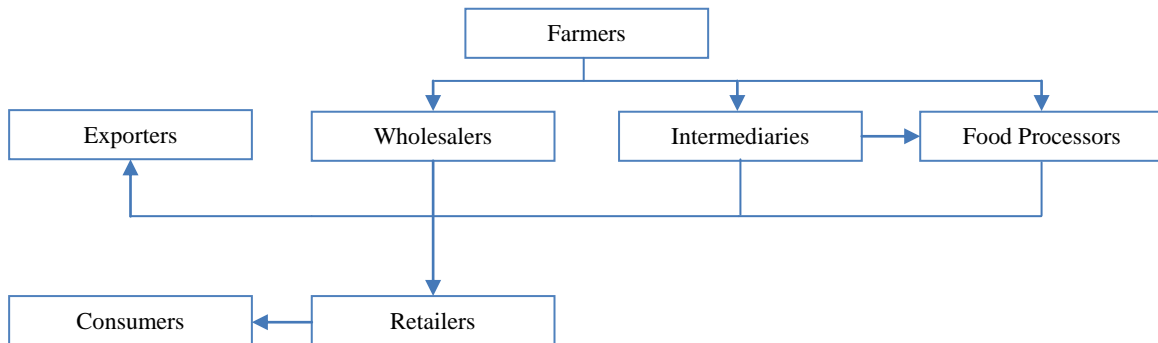
There are hardly any promotional efforts done by tomato producers in Mafraq. This is mainly due to:

- Lack of marketing awareness of farmers as well as traders and retailers: as a result of a general lack of marketing and promotional know-how, the tomato farming base is made by subsistence farming and is typically not perceived as businesses but as mere agriculture production units.

- Fragmentation of farmers and lack of joint marketing collaboration between farmers: in light of farmer fragmentation and lack of any marketing body that takes charge of marketing activities of Mafraq tomatoes,

Distribution Channels

Tomatoes are usually distributed to wholesale markets. There are three main wholesale markets which are located in: Amman, Irbid and Zarqa. There is no reliable data on the distributed quantities and the share of each distribution channel. However, in qualitative terms, the majority of tomatoes are distributed in wholesale markets.



The figure above shows that distribution channels usually follow the following routes:

1. **Farmers to wholesalers** (wholesale markets) to retailers to consumers.
2. **Farmers to intermediaries**, who sell to either food processors (who sell to exporters and/or domestic market retailers) or retailers to consumers
3. **Farmers to food processors** to exporters and/or domestic market retailers.

The figure above shows that distribution channel does not allow access of farmers to sell directly to retailers, exporters or end consumers. The bargaining power of wholesale markets and intermediaries stems from fragmentation of relatively small farmers. In light of such fragmentation and as a result of wholesaler’s bargaining powers, farmers are unable to retain margins of sound profitability, whereas wholesalers and contractors are making much higher margins when they sell to exporters and retailers.

The following matrix shows the key challenges that face Mafraq tomato growers and producers according to distribution channels:

Channels	Critical success factors/ Market Requirements	Improvement Needed	Constraints to achieving improvements
Wholesale markets & Wholesalers	<ul style="list-style-type: none"> • Leveraged bargaining power 	<ul style="list-style-type: none"> • Ability to negotiate prices with wholesalers and traders in different supply periods • Branding & image 	<ul style="list-style-type: none"> • Fragmented small-scaled farmers/growers causing low bargaining power of farmers/growers • Lack of knowledge about appropriate varieties • Limited production planning and harvest scheduling
Intermediaries & contractors	<ul style="list-style-type: none"> • Leveraged bargaining power 	<ul style="list-style-type: none"> • Ability to negotiate prices with intermediaries in different supply periods • Branding & image 	<ul style="list-style-type: none"> • Fragmented small-scaled farmers/growers causing low bargaining power of farmers/growers • Lack of knowledge about appropriate varieties

Channels	Critical success factors/ Market Requirements	Improvement Needed	Constraints to achieving improvements
			<ul style="list-style-type: none"> Limited production planning and harvest scheduling
Retailers and supermarkets	<ul style="list-style-type: none"> Long shelf life (at least 1 week) from the delivery time 	<ul style="list-style-type: none"> Choosing the right timing of harvesting Planting varieties with high firmness Pre-cooling facilities Better post-harvest practices Better packaging 	<ul style="list-style-type: none"> Lack of knowledge of appropriate varieties Lack of pre-cooling facilities Improper post-harvest practices by workers Improper packaging
	<ul style="list-style-type: none"> Capacity to offer supply over extended period 	<ul style="list-style-type: none"> Need for central pre-cooling and short term storage Better production and harvesting planning & scheduling 	<ul style="list-style-type: none"> Relatively high capital and operating cost Limited capacity for planning and scheduling
	<ul style="list-style-type: none"> Long term contracts 	<ul style="list-style-type: none"> Capacity for negotiation and bargaining 	<ul style="list-style-type: none"> Price oscillation Fragmented small-scale farmers/growers which gives them low bargaining power
Exporters (to regional export markets)	<ul style="list-style-type: none"> Long shelf-life 	<ul style="list-style-type: none"> Using cooling facilities 	<ul style="list-style-type: none"> High investment costs and packaging
	<ul style="list-style-type: none"> Leveraged bargaining power 	<ul style="list-style-type: none"> Ability to negotiate prices with intermediaries in different supply periods Branding & image 	<ul style="list-style-type: none"> Fragmented small-scaled farmers/growers causing low bargaining power of farmers/growers Lack of knowledge about appropriate varieties Limited production planning and harvest scheduling
	<ul style="list-style-type: none"> Availability of right varieties 	<ul style="list-style-type: none"> Knowledge of different varieties suitable to growing conditions as well as export market requirements 	<ul style="list-style-type: none"> Lack of knowledge about appropriate varieties

SWOT Analysis

SWOT Analysis

The SWOT matrix below summarizes the key findings of market analysis:

Strengths	Weaknesses
<ul style="list-style-type: none"> Relatively large farms in Mafraq with good production capacity that has potentials to expand further. This has contributed directly to Jordan having a very good production base of tomatoes which has made it the leading tomato exporter in the region and the world. 	<ul style="list-style-type: none"> Lack of modern grading and picking facilities. The problem is aggravated by producers' negative attitude towards grading and adopting new techniques. This is lowering Mafraq producers' margins in export markets. Limited shelf-life of Mafraq tomatoes as

<ul style="list-style-type: none"> • Mafraq tomato is well-positioned as a relatively low-priced tomato in export markets of the region, and there is a possibility of raising export prices a bit to achieve more profitable margins in those markets (provided that producers perform sorting and grading, as well as introducing proper branding and packaging). • Availability in key times of the season when Jordan valley production of tomato stops • Good competitive position in key regional export markets particularly UAE, Iraq and Saudi Arabia • Geographic proximity to key regional export markets is a logistical advantage over competitor countries (i.e. Syria and Turkey) • Jordanian customers prefer domestic products when sure about quality. 	<p>well as producer losses due to lack of post-harvest facilities (pre-cooling, cold storage, calibration)</p> <ul style="list-style-type: none"> • Relatively high incidence of visible defects due to unbalanced fertilization and pesticide use which results in poor quality of fresh tomatoes (green middle, cracked). • Insufficient know-how and inadequate awareness of producers about various types of pesticides and fertilizers • Poor infrastructure and lack of irrigation • Improper packaging causing marketing as well as quality-related losses • Post-handling is missing a warehousing function with the ability to extend shelf-life. Currently there aren't any pre-cooling/cold storage/packing facilities for Mafraq tomatoes. • Shortage of labour that is skilled at harvesting and post-harvesting activities in particular. • Failure to market cooperatively and recognize market standards among small grower operations leads to disparate quality of fresh tomatoes and lack of uniformity of varieties supplied to end markets. • Weak bargaining power against wholesalers due to lack of representation • Lack of direct farmer access to retailers and super markets
<p>Opportunities</p>	<p>Threats</p>
<ul style="list-style-type: none"> • Demand at the regional level is increasing for food and particularly healthy food products. There are vast export opportunities to the GCC markets, which have arid climatic conditions and limited availability of agricultural resources, which forces those markets rely on imports to meet domestic consumption. • The opportunity of maximizing producer/grower profit margins, particularly in export market, if grading and post-harvesting facilities and practices are adopted. • The opportunities that consolidation of small farmers/growers would bring, including: collective marketing & branding, collective raw material and other input procurement (better prices, better terms), minimization of production and marketing costs, as well 	<ul style="list-style-type: none"> • Remaining vulnerable to trader and exporter bargaining pressures in light of fragmentation and small-scale farms • The current political and security situation in Iraq is likely to impact negatively on exports to Iraq • Cheap prices of competition is preventing local producers from penetrating the industrial segment • Scarcity of water resources and salinity of ground water. • The possibility of aggravating the impact of the political and security situations in Syria and other neighbouring countries on the agricultural sector in Jordan.

as collective improvement of packaging and quality	
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Key Findings and Conclusion

Research findings and SWOT analysis shows that the Jordanian tomato sector in general, and the Mafraq tomato sub-sector in particular, has a good potential to grow and expand further, particularly in terms of:

- Raising export prices to achieve higher margins in current and future export markets by enhancing quality (through sorting and grading) as well as effective branding and packaging
- Expanding production further to meet increasing domestic needs in light of increasing population as well as regional export market needs (particularly the Saudi, UAE and Iraq markets). However, a key constraint to increasing production further is the problem of limited water resources and salinity of ground water.
- The opportunity to introduce new businesses that can be run by women and small-scale producers. Such business ideas: producing sun-dried tomato and tomato paste, offering sorting and grading services on sub-contracting basis.

However, the sector has a number of weaknesses that are restricting it from realizing its growth potential. Key weaknesses are related to: lack of sufficient know-how and application of sorting and grading of harvested tomato, lack of proper packaging, improper handling and transportation of harvested tomatoes, all contributing to deteriorations in quality and shelf-life. In addition, there are several weaknesses related to marketing and distribution, with producers having little influence over wholesale traders who have stronger bargaining powers. Marketing weaknesses also include the lack of sufficient market demand and supply trends, as well as the lack of collective marketing and effective branding. There are also the infrastructural issues related to lack of sufficient irrigation, salinity of wells, lack of cooling and proper warehousing facilities.

There are also challenges and threats which are increasingly impacting negatively on the sector. Such threats include: the political instability in the region and the high level of uncertainty associated with it, changing climatic conditions which are causing unpredictable rainfall, competition gaining momentum in regional export markets, as well as domestic market challenges related to consumer trust and declining purchasing power.

In order to enhance the sector's chances of achieving and sustaining growth, the following TWOS Matrix (which is a variant of the SWOT Analysis) provides **recommendations** on how the sector can: utilize its strengths to capitalize on opportunities (SO), utilize strengths to avoid current and potential threats (ST), overcome current weaknesses by exploiting opportunities (WO), and; lessen the impact of weaknesses and avoid current and potential threats (WT).

	<p>Key Internal Strengths</p> <ul style="list-style-type: none"> + Good production base + Good competitive position in key regional export markets + Geographic proximity + Availability during the summer + Domestic consumer preferences 	<p>Key Internal Weaknesses</p> <ul style="list-style-type: none"> - Quality issues and relatively short shelf-life due to lack of sorting & grading - Lack of collective marketing and branding - Improper packaging - Poor cooling and storage infrastructure - Lack of farmer representation - Lack of farmer access to retailers and supermarkets - Shortage of sufficient labour with proper post-handling skills
<p>Key External Opportunities</p> <ul style="list-style-type: none"> + Increasing domestic and regional demand + The opportunity to enhance margins to export prices + Benefits of consolidation and opportunities to achieve economies of scale in collective procurement 	<p>SO</p> <ul style="list-style-type: none"> • Formulate a cooperative of Mafraq tomato farmers to handle collective marketing, branding, packaging and procurement • Conduct technical & feasibility studies examining possibilities of increasing production 	<p>WO</p> <ul style="list-style-type: none"> • Formulate a cooperative of Mafraq tomato farmers to handle collective marketing, branding, packaging and procurement • Establish a grading house (which can be operated by women) that offers sorting and grading services to farms • Advocate among farmers' about the importance of cooling and storage. Launch a joint cooling/storage facility initiative • Build farmers' capacity and knowledge of various seedlings and pesticides
<p>Key External Threats</p> <ul style="list-style-type: none"> - Scarcity of water resources and salinity of ground water. - Competition - Political instability in the region 	<p>ST</p> <ul style="list-style-type: none"> • Launch collective branding and packaging of Mafraq tomatoes • Establish a grading house (which can be operated by women) that offers sorting and grading services to farms • Raise export selling prices according to a cost-benefit analysis (provided produce is properly handled, sorted, graded, packaged and branded) 	<p>WT</p> <ul style="list-style-type: none"> • Enhance farmers' water pumping techniques • Diversify production by expanding business of by-products

Marketing Strategy and Recommendations

Marketing Upgrading Needs & Recommendations

The following matrix provides a summary of key marketing upgrading needs and recommendations for Mafrag tomato sector based on the Marketing Mix (4Ps) Model:

Product		
Improvement Needed	Constraints to Achieving improvements	Recommendations
<ul style="list-style-type: none"> High cost of some raw materials 	<ul style="list-style-type: none"> Government taxation on items that can be used for purposes other than agricultural production (such as mulch and fertilizers) 	<ul style="list-style-type: none"> Develop an advocacy paper and action plan to waive taxation on agricultural items that can be used for other purposes Establish a farmer cooperative to introduce collective procurement
<ul style="list-style-type: none"> Quality of seedlings 	<ul style="list-style-type: none"> Lack of farmers' knowledge of different seedling characteristics and suitability to the local cultivation environment 	<ul style="list-style-type: none"> Enhance farmer awareness on various seedling characteristics through capacity building workshops
<ul style="list-style-type: none"> Limited use and improper application of adequate fertilizers and pesticides 	<ul style="list-style-type: none"> Lack of technical knowledge and know-how of various fertilizers and their optimal application. 	<ul style="list-style-type: none"> Enhance farmer awareness on fertilizer characteristics through capacity building workshops
<ul style="list-style-type: none"> Increasing use of irrigation water of high salinity at a high cost 	<ul style="list-style-type: none"> Improper water pumping by some farmers 	<ul style="list-style-type: none"> Enhance farmer know-how of best-practices of water pumping through capacity building workshops
<ul style="list-style-type: none"> High labour costs 	<ul style="list-style-type: none"> Syrians demanding that all/most household members are hired 	<ul style="list-style-type: none"> Proposed cooperative can handle labour contractual issues in coordination with MoA & MoL
<ul style="list-style-type: none"> Product quality 	<ul style="list-style-type: none"> Inadequate harvesting, post-harvest handling techniques Lack of sorting and grading practices Lack of knowledge and application of right timing of harvesting Inadequate packing and packaging 	<ul style="list-style-type: none"> Enhance farmer know-how and application of post-harvest handling techniques through capacity building workshops Proposed cooperative can introduce sorting and grading services to be performed by women on outsourced services
<ul style="list-style-type: none"> Branding 	<ul style="list-style-type: none"> Lack of identity of Mafrag tomato production Lack of collective branding and strategic messaging of farmer's tomato produce - mainly because of farmer fragmentation and lack of marketing representation 	<ul style="list-style-type: none"> Develop a unified branding strategy and framework around the 'Fresh & Clean' Mafrag tomato concept Proposed cooperative can promote some of member farmers' production under unified branding
<ul style="list-style-type: none"> Packaging 	<ul style="list-style-type: none"> Lack of knowledge of proper packaging Cost of proper packaging 	<ul style="list-style-type: none"> Conducting a technical study and designs to introduce proper packaging Work with proposed collaborative to develop a collective procurement plan (of

		packaging)
• Price		
Improvement Needed	• Constraints to Achieving improvements	
<ul style="list-style-type: none"> The way pricing is dictated in the local market 	<ul style="list-style-type: none"> Bargaining power of wholesalers in light of farmer fragmentation 	<ul style="list-style-type: none"> Establish a cooperative of tomato farmers of Mafraq. Define its representative roles and operations within the context of a business plan. This should address how to handle pricing and commercial contracts
• Promotion		
Improvement Needed	• Constraints to Achieving improvements	
<ul style="list-style-type: none"> Lack of any planned promotional campaigns 	<ul style="list-style-type: none"> Farmer fragmentation and lack of marketing representation Lack of marketing awareness 	<ul style="list-style-type: none"> Proposed cooperative to handle promotional activities for its member produce which should have a unified branding
• Place (Distribution)		
Improvement Needed	• Constraints to Achieving improvements	
<ul style="list-style-type: none"> Enhanced access to retailers and hypermarkets 	<ul style="list-style-type: none"> Weak farmers' bargaining power in light of fragmentation 	<ul style="list-style-type: none"> The mandate of the proposed cooperative should aim at creating a link between members' production and supermarkets particularly in Amman
<ul style="list-style-type: none"> Improving farmers' margins when selling to wholesalers and intermediaries 	<ul style="list-style-type: none"> Weak farmers' bargaining power in light of fragmentation 	<ul style="list-style-type: none"> Establish a cooperative of tomato farmers of Mafraq. Define its representative roles and operations within the context of a business plan
<ul style="list-style-type: none"> Improving farmers' margins when selling to exporters 	<ul style="list-style-type: none"> Weak direct links to exporters Lack of niche products Problems with quality uniformity of fresh tomato production because of post-harvest handling and packing shortcomings Inability to expand production to exportable quantities 	<ul style="list-style-type: none"> Establish a cooperative of tomato farmers of Mafraq. Define its representative roles and operations within the context of a business plan Cooperative can introduce Harvesting and post-harvest handling (including sorting and grading) services to member farms on outsourced basis – to be performed by women.

Business Opportunities/Value-Added Initiatives for Women and Small-Scale Producers

Proposed Business Opportunities and Value-Added Initiatives

The following is a description of recommended small business ideas and value-added activities which can be operated by women and small entrepreneurs in Mafraq:

Proposed Initiative	Establishing a Tomato Packing & Marketing House/Cooperative
Description and Rationale	Women are not heavily engaged in the production of tomato in Mafraq, and as analysis shows, there are a number of production (at the growing, harvest and post-harvest handling levels) as well as marketing challenges facing tomato farmers in Mafraq. Establishing a women cooperative/company to be operated by

Proposed Initiative	Establishing a Tomato Packing & Marketing House/Cooperative
	<p>women would fill key gaps in the value chain of the tomato sub-sector in Mafraq. The idea is that the proposed cooperative/company would comprise women who would be trained to provide outsourced picking, sorting and grading services to the farms, as well as marketing and distribution services by marketing and distributing the farms' tomato produce to hotels, specialty supermarkets, and high-end hypermarkets mainly in Amman.</p> <p>Key services of the proposed would include the following:</p> <ul style="list-style-type: none"> • Outsourced services in the areas of: harvest, picking, post-harvest handling, sorting and grading: the proposed cooperative/company will recruit and train female workers from the Mafraq region on best practices of tomato picking, sorting and grading so as to offer such services to farms on outsourced basis. • Marketing, branding, packing and distribution services: the cooperative/company will have its own tomato branding and packaging of fresh tomatoes, as well as new tomato varieties and by-products including: cherry tomatoes, clustered tomatoes and sun-dried tomatoes. The proposed cooperative/company will pack collect those products from farms, pack them in special packages, and distribute them to hotels, restaurants, specialty supermarkets and high-end hypermarkets mainly in Amman. • Collective procurement of raw materials and packaging to achieve economies of scale for member farmers <p>In addition to the above, the proposed cooperative can host women workers, as well as micro-to-small scale entrepreneurs, to introduce new products under unified branding. Such products are:</p> <ul style="list-style-type: none"> • Harvesting and post-harvest handling (including sorting and grading) services to member farms on outsourced basis. • Home-style sundried tomato and tomato paste • Cherry tomato
Target Groups	<p>The proposed cooperative can be operated by a formed contractual alliance of Mafraq tomato farmers. In addition, some of the value-added activities to be offered by the cooperative (i.e. sorting & grading services, sundried tomato and paste, and cherry tomato) can be operated by women.</p>
Potential Marketing Outlets	<p>Production of the proposed cooperative should a unified branding of the proposed cooperative of Mafraq tomato farmers and can be distributed through the following marketing outlets:</p> <ul style="list-style-type: none"> • Wholesalers • Exporters • Retailers & Supermarkets • Hotels and restaurants <p>In addition to the above, the proposed cooperative may have a showroom to sell its production directly to consumers.</p>