# Palestinian Agricultural Production and Marketing between Reality and Challenges

## Executive Summary for a Research Study

**Prepared by:**

**The Applied Research Institute – Jerusalem (ARIJ)**

**In partnership with:**

**The Ministry of National Economy** **The Ministry of Agriculture**

وزارة الاقتصاد الوطني
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وزارة الزراعة الفلسطينية

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The project team prepared this booklet to reflect the findings of the research study that was implemented over two years, between April 2013 and May 2015. It presents a briefing about the main findings of the baseline surveys conducted covering the Palestinian market channels for agricultural products at the level of farmer, wholesale and retail trader, central market, processor, and the Palestinian consumer. It also presents an analysis for market value chain, agriculture production calendar, and agriculture self sufficiency for 15 agricultural crop cultivated locally and uncover its interrelation with food security at the West Bank level. The main challenges and their response plans are also summarized at the end of each section covering the needs of each market channel at a national level.

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## Preface *about research study*

The research study presented in this booklet "Assessment of food production and consumption to improve sustainable agriculture and food security in the West Bank" aimed at assessing and analyzing the value chain management of agricultural commodities and its main actors, in order to propose policy recommendations that can contribute to the development of the agricultural sector and the food security status of Palestinians in the West Bank. Furthermore, the research aimed at increasing stakeholders' awareness on the importance of supporting sustainable agriculture, while building partnerships between stakeholders and policy makers in order to work together on essential issues, such as self-sufficiency and sustainability. Furthermore, the research focuses on analyzing the value chain and marketing channels of agro production, and their impact on the Palestinian economy.

In order to achieve its objectives, the research has surveyed 15 agro products[1], chosen in cooperation with the project partners in the Palestinian Ministry of Agriculture and the Ministry of National Economy, and other stakeholders. The criteria on which the choice of products was based included an assessment of the economic and nutritional value of these products. Furthermore, the research focuses on analyzing and understanding the different processes of agro marketing, and the value chain of each surveyed agro product (that mainly consists of farmers, traders, middlemen, central wholesale markets, and end consumers). The project also included a comprehensive program that aims at increasing the awareness of the different value chain actors on agro marketing best practices, and ensures communicating all research results with stakeholders, while building on their feedback and recommendations.

Throughout the research, main challenges facing the different actors in the value chain of agro products were identified, and policy recommendations were designed and drafted. In addition, a visual representation of the value chain of each surveyed agro product has been designed, accompanied with a comprehensive agricultural calendar, and a consumption-production analysis that indicates the degree of self-sufficiency and the production surplus/deficiency.
This booklet includes a collection of executive summaries on each report produced throughout the research. Full reports can be accessed on the official website of the Applied Research Institute – Jerusalem (ARIJ), through the following link: http://www.arij.org/index.php/publications/market-information-sytem

[1] Surveyed agro products are: (a) Field crops: Wheat, potatoes, onions; (b) Vegetables: Tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: Citrus fruits, guava, grapes, dates, almonds; (d) olives.

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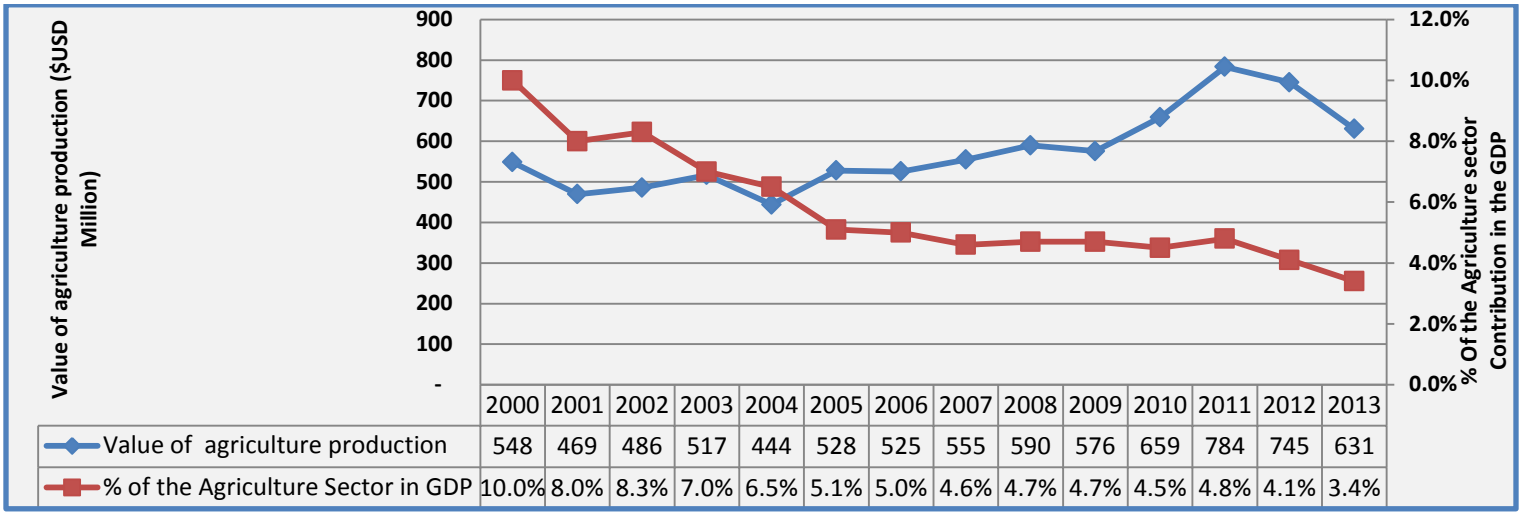
## The Agricultural Sector in Palestine: An Overview

The importance of the agricultural sector in Palestine stems from the contribution of its production to the food security of Palestinian households, in addition to the creation of job opportunities in the Palestinian local market. Data from the agricultural census published by the Palestinian Central Bureau of Statistics (PCBS) for 2010/2011 indicates that there were 85,885 agricultural holdings in the West Bank, of which 68.2% are plant holdings, 10% are livestock holdings, and 21.8% are mixed holdings. It has been noted that the number of agricultural holdings is continuously increasing due to the inheritance system that divides agricultural land between heirs.

The latest agricultural census published by the Ministry of Agriculture and PCBS in 2010 estimated that the total area of agricultural land was 1,207,061 dunum (91.6% or 1,694,554 in the West Bank, and 8.4% in Gaza Strip). The agricultural census of 2008 estimated that the area of agricultural land was 1,854,000 dunum (91.4% in the West Bank, and 8.4% in Gaza Strip). But, the land-use analysis of satellite images – conducted by ARIJ in 2010 – indicated that the area of agricultural land in the West Bank was 2,150,800 dunum. This variation in estimates is due to the use of effective agricultural land to build the agricultural census of 2010, i.e. agricultural land whose area exceeds 1 dunum for rainfed agriculture and 0.5 dunum for irrigated agriculture.

Furthermore, the agricultural sector is an important driver in the Palestinian economy since it creates job opportunities in the local Palestinian market. As of 2010, this sector was employing 11.5% of the Palestinian labor force, of which 33% were women.[2] In 2011, PCBS reports estimated that the value of Palestinian agricultural production was $1,295 million (70% in the West Bank, and 30% in the Gaza Strip)[3]. But, the agricultural sector's contribution to the Palestinian gross domestic product (GDP) was only 4.1% in the year 2013, and 3.4% of the GDP of the West Bank[4]. Accordingly, the agricultural sector's contribution to GDP has been declining over the years, due to growth in other sectors such as services, construction, and information technology, in addition to the continuous Israeli policies that has led to the marginalization of the Palestinian agricultural sector through land confiscation. Climate change and harsh weather conditions have also resulted in fluctuations in the production of some of the main Palestinian agro products such as olives, olive oil, and vegetables. (Graph 1)

[2] PCBS (2012). Agricultural Census – 2010.
[3] PCBS (2012). National Accounts Report – 2012.
[4] PCBS (2014). National Accounts Report – 2013.

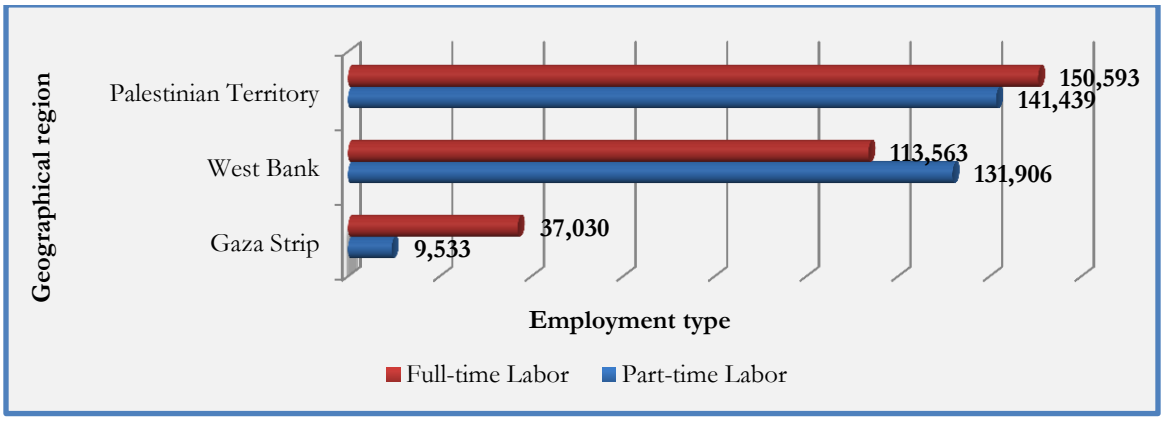



| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Value of agriculture production | 548 | 469 | 486 | 517 | 444 | 528 | 525 | 555 | 590 | 576 | 659 | 784 | 745 | 631 |
| % of the Agriculture Sector in GDP | 10.0% | 8.0% | 8.3% | 7.0% | 6.5% | 5.1% | 5.0% | 4.6% | 4.7% | 4.7% | 4.5% | 4.8% | 4.1% | 3.4% |

**Graph (1): The total agricultural sector's contribution to the Palestinian GDP (2000 – 2013)[5]**

In regards to agricultural trade, the value of agricultural exports grew by 32% from 2011 to reach $56.7 million in the year 2013, contributing to 6.3% of the total value of Palestinian exports[6]. In addition, agriculture plays a major role in the conservation of the environment, and supplies other sectors with inputs.

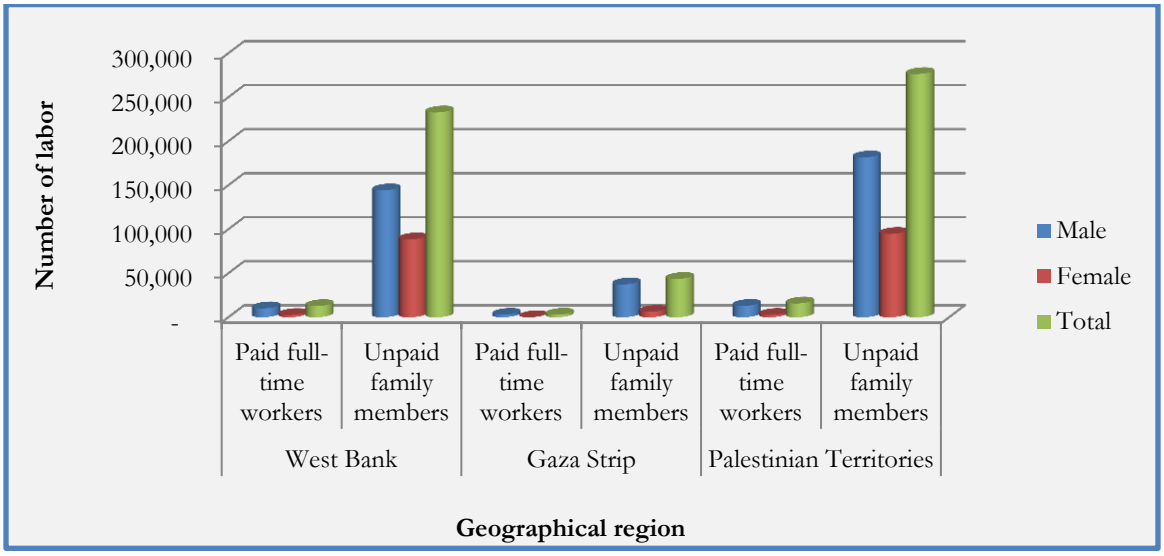
According to the agricultural census published by PCBS for 2010, labor force in the agricultural sector was estimated at 292,000, of which 52% were full-time workers, while 48% were part-time workers. Agricultural labor in the West Bank was estimated at 113,000, i.e. 46% of total agricultural labor force.[7] (Graph 2) It is worth noting that labor has been shifting away from the agricultural sector to other sectors such as services, due to the decreasing revenues of the sector in comparison to others.




**Graph (2): Labor force in numbers in the Palestinian agricultural sector, 2010[8]**

[5] PCBS (2014). National Accounts report – 2013.
[6] PCBS (2013). International Trade, unpublished data.
[7] PCBS (2012). Agricultural Census – 2010.
[8] PCBS (2012). Agricultural Census - 2010.

The agricultural sector is considered the main source of income for many Palestinian households; especially with the prevalence of family farming. (Graph 3) Furthermore, the agricultural census shows that there are 97,400 women working in the agricultural sector, constituting 33% of total labor force in the sector. In addition, 45% of these women are full-time workers, but only 3% of them are paid, with an average daily pay of only 60NIS.[9] Data on women's participation in the agricultural sector also shows that only 7.8% of agricultural holdings have been owned by women in the year of 2009/2010.[10]




**Graph (3): Labor force in the Palestinian agricultural sector by gender, 2010[11]**

Self-sufficiency[12] is one of the major important issues in today's world. Given its importance, stakeholders and policy makers in the Palestinian agricultural sector have made self-sufficiency a priority in their strategic planning efforts. As a result, the rate of Palestinian self-sufficiency has increased by an annual average of 5%.[13] The level of self-sufficiency varies according to seasonality, geographic location, weather conditions, and the availability of water. Analysis of data on the production and consumption of vegetables reflects that these have reached advanced levels of self-sufficiency, because many farmers have recently shifted their activities to vegetables' production due to its higher profitability, and shorter production cycle. In regards to the production of fruit trees, data indicates a shortage in production that does not cover the households' consumption needs. On the other hand, the majority of field crops have low levels of self-sufficiency due to the gap between production and consumption. And although field crops are rainfed, their cultivation and production has decreased in recent years due to fluctuations in rainfall quantities, low profitability per dunum, high production cost, and weak resistance to

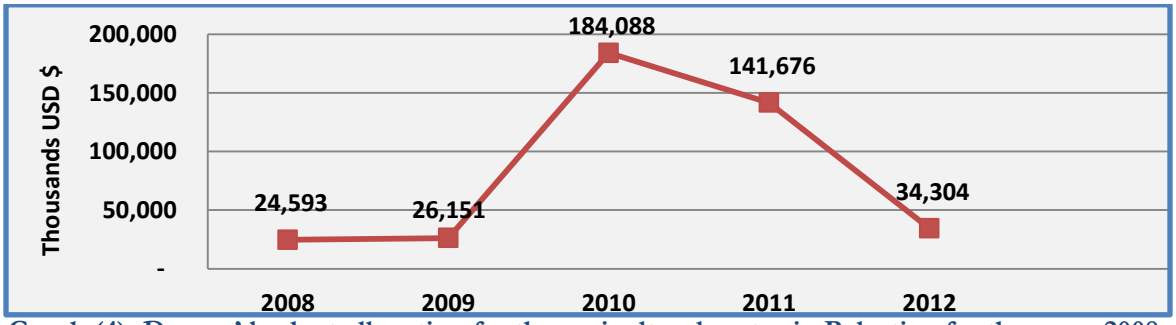
[9] PCBS (2012). Agricultural Census – 2010.
[10] PCBS (2013). Woman and Man in Palestine, Issues and Statistics 2013.
[11] PCBS (2012). Agricultural Census – 2010
[12] Self-sufficiency is defined as the community's ability to achieve complete dependence on its resources in the production of all locally needed food products.
[13] Agriculture Sector Strategy: Resilience and Development 2014-2016

diseases. In addition, these are affected by other macro challenges that the agricultural sector is facing overall, such as urbanization, land confiscation by the Israeli occupation, access restrictions on farmers who are unable to reach their agricultural land in area C, and weak agricultural advising and scientific research.

The analysis of the agricultural sector and its activities shows that the sector is facing many challenges and obstacles. The political conflict in Palestine is the most critical of these challenges, characterized by the Israeli practices of land confiscation, control over natural resources especially water, and restrictions on the mobility of products between Palestinian areas on one hand; and with international markets on the other, thus increasing the cost of agro production and marketing. The last 10 years have witnessed the uprooting and destruction of 2.5 million trees by the Israeli occupying forces with a total value of $55.3 million, and the isolation of 184,899 dunum of agricultural land by the apartheid wall[14]. Furthermore, the agricultural sector has been increasingly suffering from the limited water sources and access restrictions due to Israeli control over more than 82% of water resources in the Palestinian territories. Water resources available for agriculture are therefore limited to: groundwater pumped to wells or used through springs, or water purchased from Israel's national water company (Mekorot). Both sources supplied the Palestinian Territory with 365.7 million square meters of water in 2013, of which 174 million square meters were available for irrigation.[15]

Climate change has also been a major issue challenging the agricultural sector in Palestine, and directly affecting agricultural production, mainly due to changes and fluctuations in rainfall quantities, and the disintegration of agricultural holdings reducing their productivity, efficiency and profitability. These issues have jointly increased the risk of investment in the agricultural sector, and have led many to shift their economic activities away from this sector. Other challenges affecting the agricultural sector include: limited budget allocation by the Palestinian Authority and donor agencies (Graph 4), agro marketing challenges due to the inadequate number of packaging houses and weak storage infrastructure, competition from Israeli products, high production costs, and price fluctuations. This is reflected by the deficit in the agro products balance of trade, where the value of Palestinian agro imports far exceeds its exports.

[14] The Applied Research Institute – Jerusalem (ARIJ) ( 2011). Status of the Environment in the occupied Palestinian territory: A Human Rights-based Approach. Bethlehem, Palestine.
[15] PCBS (2011). Assessment of Plant and Livestock Production in Palestine – 2010.




**Graph (4): Donors' budget allocation for the agricultural sector in Palestine for the years 2008-2012**[16]

In order for the agricultural sector to regain its economic, historical, social and political strength, a set of practical procedures is needed to ensure the sectors sustainability. In terms of planning efforts, more support and commitment is needed from the institutions of the Palestinian government in terms of translating strategic plans and sector assessments into practical steps. Protection of the agricultural sector should be prioritized; especially that it is one of the most vulnerable sectors of Israeli restrictions and actions. Furthermore, there is a need to increase budget allocation to the agricultural sector while establishing a national fund for the compensation of farmers for their losses due to natural disasters, harsh weather conditions, and economic shocks. A group of other recommendations are also expected to push the agricultural sector forward, those include: the protection of small and medium size farms, encouraging research in the different fields of agriculture, building a national agricultural database accompanied with an information management system, and the reevaluation of signed agricultural agreements. On the national level, efforts are needed in order to develop agricultural infrastructure, encourage the use of best practices in terms of water use, and support agro industries. Efforts are also needed to develop agro marketing through increasing the competitiveness of Palestinian agro products locally and internationally, and controlling the entry of Israeli products into the Palestinian market. In order for all these efforts to be beneficial, effective communication is needed between all stakeholders' within the agricultural sector.

[16] Mid–term Review of the Agriculture Sector (2012). Strategy Review 2011-2013. This figure represents the budget allocated by donors for agriculture sector not including the budget allocated by the Palestinian Authorities.

# The Palestinian Farmer: Production Analysis & Challenges

## Study Summary

### 1. Introduction

The agricultural sector is an important driver in the Palestinian economy since it creates job opportunities in the local Palestinian market. As of 2010, this sector was employing 11.5% of the Palestinian labor force.[17] The value of Palestinian agricultural production was estimated at $1,295 million for the year 2011 (70% in the West Bank, and 30% in the Gaza Strip).[18] In regards to agricultural trade, the value of agricultural exports grew by 32% from 2011 to reach $56.7 million in the year 2013, contributing to 6.3% of the total value of Palestinian exports[19]. In addition, agriculture plays a major role in the conservation of the environment, and supplies other sectors with inputs.

The Applied Research Institute- Jerusalem (ARIJ) has conducted a research study to better evaluate the Palestinian agriculture production through conducting a baseline survey for the Palestinian farmers. The survey aimed at evaluating the production stage as one of the most important chain in the agriculture market chain and to understand the challenges that face the Palestinian farmer from harvesting until the marketing stage. This activity comes as part of the project entitled:" Food Production-Consumption Assessment to Improve Sustainable Agriculture and Food Security in the West Bank- Palestine "that is funded by the International Development Research Center (IDRC) and implemented in partnership with Ministry of Agriculture (MoA) and Ministry of National Economy (MoNE). The crops that were selected for the study are namely (a) Field crops: wheat, potatoes, onions; (b) Vegetables: tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: citrus fruits, guava, grapes, dates, almonds; and (d) olives.

### 2. Sample Characteristics

#### 2.1 Geographical distribution

The survey selected 2,019 farmer distributed among the Palestinian governorates of the West Bank. (Table 1 and Map 1)

| Governorate | Number of surveyed farmers | Percentage (%) of total surveyed farmers |
|---|---|---|
| Jenin | **426** | **21.1%** |
| Tubas | **228** | **11.3%** |
| Tulkarem | **264** | **13.1%** |
| Nablus | **220** | **10.9%** |
| Qalqilya | **138** | **6.8%** |
| Salfit | **37** | **1.8%** |
| Ramallah & Al Bireh | **123** | **6.1%** |
| Jericho | **227** | **11.2%** |

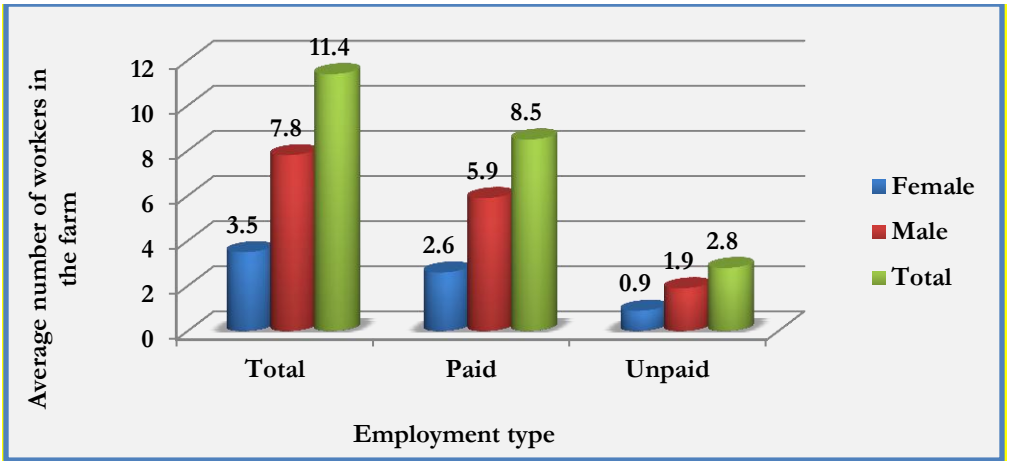
[17] PCBS (2012). Agricultural Census – 2010.
[18] PCBS (2012). National Accounts Report – 2012.
[19] PCBS (2013). International Trade, unpublished data.

| | | |
|---|---|---|
| Jerusalem | **51** | **2.5%** |
| Bethlehem | **70** | **3.5%** |
| Hebron | **235** | **11.6%** |
| **Total** | **2,019** | **%100.0** |

**Table (1): Number of surveyed farmers by governorate**

## 2.2 Labor in farms

Survey results indicate that the average number of workers in a farm in the West Bank is 11.3, of which 69% are male and 31% are female. Furthermore, the 75% are paid workers (formal), while the rest are unpaid (informal) since many of them are family members and owners of farms. (Graph 1)

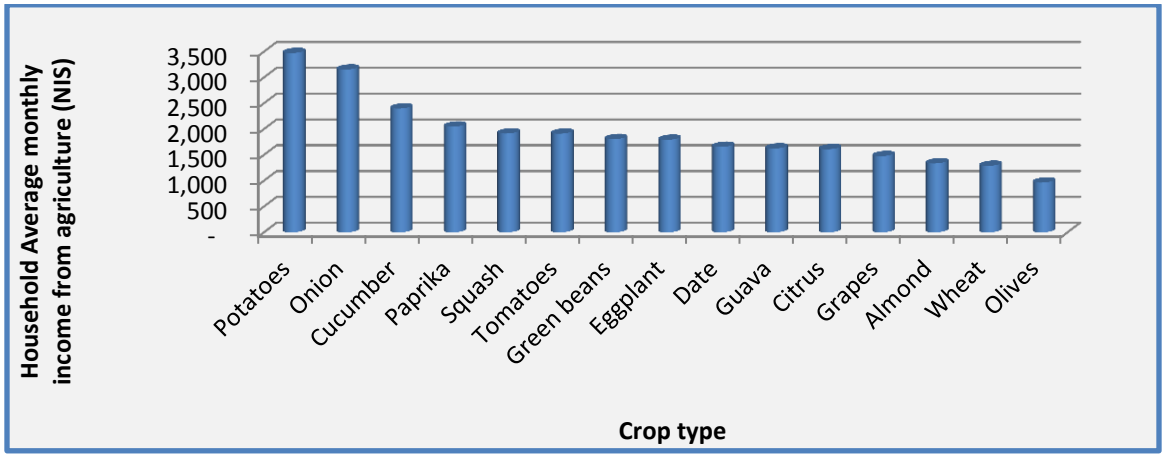



**Graph (1): Average number of paid and unpaid workers in farms by gender**

## 2.3 Farmer's average monthly income

Based on the project survey's results, the farmer's (owners) average monthly income was 2918 NIS. It was also found that 85% of the farmers' household monthly income is generated from agriculture work at the farm; reaching up to 2480 NIS from total household average income.

According to the survey results, the farmers that cultivate potatoes are the ones that enjoy better income among the surveyed farmers. The surveyed farmers who cultivate potatoes are the ones that earn the highest income per month in comparison to the surveyed farmers who cultivate other crops. It was found that the estimated average income earned by Potato farmer's household from agriculture is 3,474 NIS. It was also noticed that the least income is earned by olive farmers, where their estimated average income per household per month reached only is 965 NIS as shown in (Graph 2).




**Graph (2): Household average monthly income earned from working in agriculture by crop (NIS)**

### 2.4 Membership in agricultural cooperatives and associations

Agricultural cooperatives and associations have been established in order to respond to farmers' needs, and support the different processes of agricultural production by acting as advisory councils on one hand, and reducing the cost of inputs through the purchase of shared agricultural machinery. Despite their benefits, results show that only 33% of surveyed farmers are members of agricultural cooperatives and associations[20].

[20] Photo courtesy to ARIJ

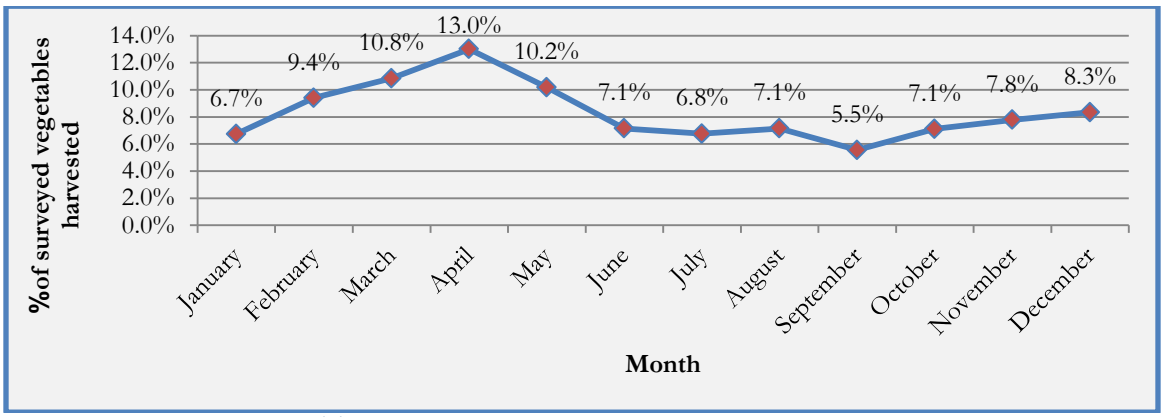
**Map (1): Localities covered during farmers' baseline survey**

## 3. Agricultural Production

### 3.2 Cultivated areas, productivity, and the calendar of agro crops

- **Vegetables**

Vegetables are considered essential elements of the nutritional diet prevalent among Palestinian households. In the West Bank, only 8.1% of total productive agricultural land[21] in the West Bank is utilized for the cultivation of surveyed vegetables[22]. Despite this, the production of vegetables represents 65% of the total production of these crops. This is mainly due to the high productivity of vegetables per dunum in comparison with other crops. Survey results estimate that the average productivity of vegetables is 5,184kg/dunum, with a total annual production of 345,824 tons. Up to 59% of vegetables harvesting takes place during the six months of February, March, April, May, June, and December. (Graph 3)




**Graph (3): The distribution of surveyed vegetables harvesting by month**

Following is a summary of the production analysis for all vegetable products surveyed:

- ✓ **Tomatoes:**

  According to the Ministry of Agriculture, 11,999 dunum of agricultural land has been utilized for the cultivation of tomatoes in the West Bank in the year 2012/2013. Accordingly, tomatoes constitute 1.5% of total agricultural land cultivated[23] in the West Bank[24]. Furthermore, project survey results indicate that the annual total production of tomatoes is estimated at 124,445 tons in the West Bank, representing 23% of total production of all surveyed crops. Jenin governorate is the highest producer of tomatoes, constituting 35% of total production, followed by Tubas governorate (24%), and Hebron governorate (12%).

[21] The total cultivated agricultural land here refers to the total land cultivated with the surveyed crops including vegetables, fruit trees, olives, and field crops.
[22] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[23] The total cultivated agricultural land here refers to the total land cultivated with the surveyed crops including vegetables, fruit trees, olives, and field crops.
[24] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

- ✓ **Cucumbers:**

  According to the Ministry of Agriculture, 24,894 dunum of agricultural land has been utilized for the cultivation of cucumbers in the West Bank in the year 2012/2013. Accordingly, cucumbers constitute 3% of total agricultural land cultivated in the West Bank[25]. Furthermore, the project survey results indicate that the annual total production of cucumbers is estimated at 128,304 tons in the West Bank, representing 24% of total production of all surveyed crops. Jenin governorate is the highest producer of cucumbers, constituting 36% of total production, followed by Tubas governorate (23%), and Tulkarem governorate (18%).

- ✓ **Eggplants:**

  According to the Ministry of Agriculture, 8,365 dunum of agricultural land has been utilized for the cultivation of eggplants in the West Bank in the year 2012/2013. Accordingly, eggplants constitute 1% of total agricultural land cultivated in the West Bank[26]. Furthermore, the project survey results indicate that the annual total production of eggplants is estimated at 44,473 tons in the West Bank, representing 8% of total production of all surveyed crops. Jericho governorate is the highest producer of eggplants, constituting 46% of total production, followed by Tubas governorate (19%), and Jenin governorate (16%).

- ✓ **Squash:**

  According to the Ministry of Agriculture, 17,239 dunum of agricultural land has been utilized for the cultivation of squash in the West Bank in the year 2012/2013. Accordingly, squash constitutes 2.1% of total agricultural land cultivated in the West Bank[27]. Furthermore, the project survey results indicate that the annual total production of squash is estimated at 32,768 tons in the West Bank, representing 6% of total production of all surveyed crops. Jericho governorate is the highest producer of squash, constituting 35% of total production, followed by Tubas governorate (32%), and Hebron governorate (15%).

- ✓ **Paprika/Sweet Pepper:**

  According to the Ministry of Agriculture, 1,512 dunum of agricultural land has been utilized for the cultivation of paprika in the West Bank in the year 2012/2013. Accordingly, paprika constitutes 0.2% of total agricultural land cultivated in the West Bank[28]. Furthermore, the project survey results indicate that the annual total production of paprika is estimated at 9,487tons in the West Bank, representing 2% of total production of all surveyed crops. Jericho governorate is the highest producer of paprika, constituting 30% of total production, followed by Tulkarem governorate (28%), and Jenin governorate (19%).

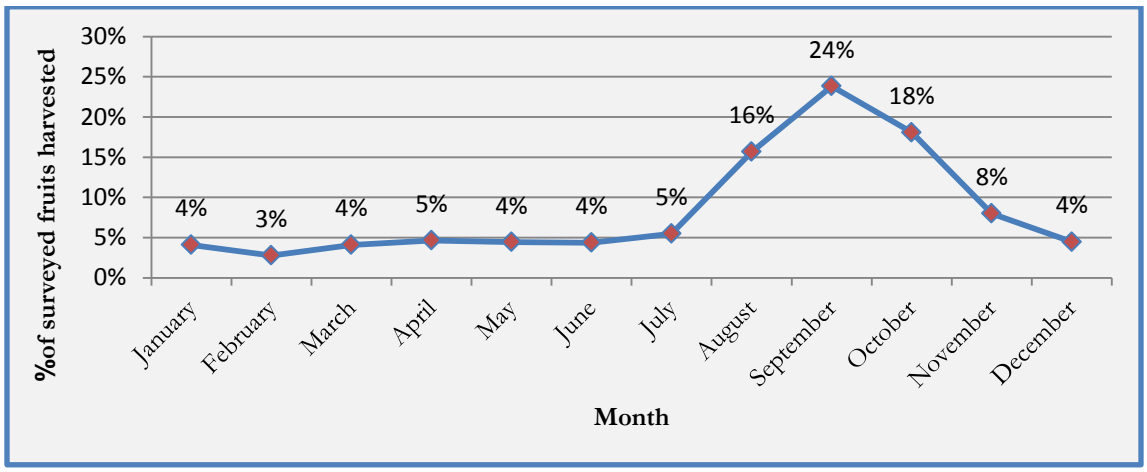
[25] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[26] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[27] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[28] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

✓ **Green Beans:**

According to the Ministry of Agriculture, 2,694 dunum of agricultural land has been utilized for the cultivation of green beans in the West Bank in the year 2012/2013. Accordingly, green beans constitute 0.3% of total agricultural land cultivated in the West Bank[29]. Furthermore, the project survey results indicate that the annual total production of green beans is estimated at 6,348 tons in the West Bank, representing 1% of total production of all surveyed crops. Jericho governorate is the highest producer of green beans, constituting 36% of total production, followed by Tubas governorate (18%), and Tulkarem governorate (15%).

- **Fruit Trees**

In the West Bank, only 9.9% of total agricultural land of surveyed crops (including vegetables, fruit trees, olives, and field crops) is utilized for the cultivation of fruitful fruit trees in the West Bank[30]. The production of fruit trees represents 16% of the total production of these crops. The project survey results estimate that the average productivity of fruit trees is 1,048kg/dunum, with a total annual production of 84,840 tons. 66% of fruit harvesting takes place during the 4 months of August, September, October, and November. (Graph 4)




**Graph (4): The distribution of surveyed fruits harvesting by month**

Following is a summary of the production analysis for all vegetable products surveyed in the project:

✓ **Citrus Fruits:**

According to the Ministry of Agriculture, 9,831 dunum of agricultural land has been utilized for the cultivation of citrus fruits in the West Bank in the year 2012/2013. Accordingly, citrus fruits constitute 1.2% of total agricultural land cultivated in the West Bank[31]. Furthermore, the project survey results indicate that the annual total production

[29] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[30] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[31] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

of citrus fruits is estimated at 19,430 tons in the West Bank, representing 4% of total production of all surveyed crops. Tulkarem governorate is the highest producer of citrus fruits, constituting 49% of total production, followed by Qalqilya governorate (27%), and Nablus governorate (14%).

- ✓ **Almonds:**

  According to the Ministry of Agriculture, 23,794 dunum[32] of agricultural land has been utilized for the cultivation of almonds in the West Bank in the year 2012/2013. Accordingly, almonds constitute 2.9% of total agricultural land cultivated in the West Bank. Furthermore, the project survey results indicate that the annual total production of almonds is estimated at 3,676 tons in the West Bank, representing 1% of the total production of all surveyed crops. Tulkarem governorate is the highest producer of almonds, constituting 31% of total production, followed by Nablus governorate (27%), and Hebron governorate (13%).

- ✓ **Dates:**

  According to the Ministry of Agriculture, 7,120 dunum[33] of agricultural land has been utilized for the cultivation of dates in the West Bank in the year 2012/2013. Accordingly, dates constitute 0.9% of total agricultural land cultivated with in the West Bank. Furthermore, the project survey results indicate that the annual total production of dates is estimated at 4,664tons in the West Bank, representing 1% of total production of all surveyed crops. Jericho governorate is the highest producer of dates, constituting 99% of total production, followed by Nablus governorate (1%).

- ✓ **Guava:**

  According to the Ministry of Agriculture, 1,585 dunum of agricultural land has been utilized for the cultivation of guava in the West Bank in the year 2012/2013. Accordingly, guava constitutes 0.2% of total agricultural land cultivated in the West Bank[34]. Furthermore, the project survey results indicate that the annual total production of guava is estimated at 7,004 tons in the West Bank, representing 1% of total production of all surveyed crops. Qalqilya governorate is the highest producer of guava, constituting 95% of total production, followed by Nablus governorate (3%).

- ✓ **Grapes:**

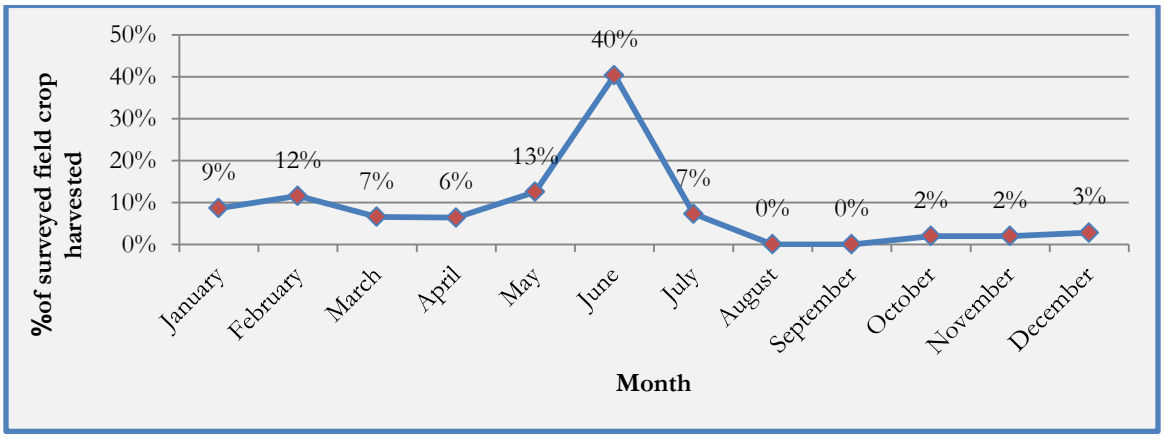
  According to the Ministry of Agriculture, 38,679 dunum of agricultural land has been utilized for the cultivation of grapes in the West Bank in the year 2012/2013. Accordingly, grapes constitute 4.7% of total agricultural land cultivated in the West Bank[35]. Furthermore, the project survey results indicate that the annual total production of grapes is estimated at 50,065 tons in the West Bank, representing 9% of total production of all surveyed crops. Hebron governorate is the highest producer of grapes,

[32] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[33] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[34] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[35] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

constituting 58% of total production, followed by Bethlehem governorate (27%), and Jenin governorate (6%).

- **Field Crops**

In the West Bank, 19.7% of total agricultural land in the West Bank (including vegetables, fruit trees, olives, and field crops) is utilized for the cultivation of productive field crops[36]. Total production of surveyed field crops represents 15% of the total production of these crops. The project survey results estimate that the average productivity of field crops is 492kg/dunum with a total annual production of 79,923 tons. Up to 73% of field crops' harvesting takes place during the 4 months of January February, May, and June. (Graph 5)




**Graph (5): The distribution of surveyed field crops harvesting by month**

Following is a summary of the production analysis for all field crops products surveyed in the project:

- ✓ **Wheat:**

  According to the Ministry of Agriculture, 143,326 dunum of agricultural land has been utilized for the cultivation of wheat in the West Bank in the year 2012/2013. Accordingly, wheat constitutes 17.4% of total agricultural land cultivated in the West Bank[37]. Furthermore, the project survey results indicate that the annual total production of wheat is estimated at 25,926 tons in the West Bank, representing 5% of total production of all surveyed crops. Jenin governorate is the highest producer of tomatoes, constituting 54% of total production, followed by Hebron governorate (16%), and Nablus governorate (11%).

- ✓ **Onions:**

  According to the Ministry of Agriculture, 8,212 dunum of agricultural land has been utilized for the cultivation of onions in the West Bank in the year 2012/2013. Accordingly, onions constitute 1% of total agricultural land cultivated in the West Bank[38]. Furthermore, the project survey results indicate that the annual total production of onions

[36] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[37] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[38] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

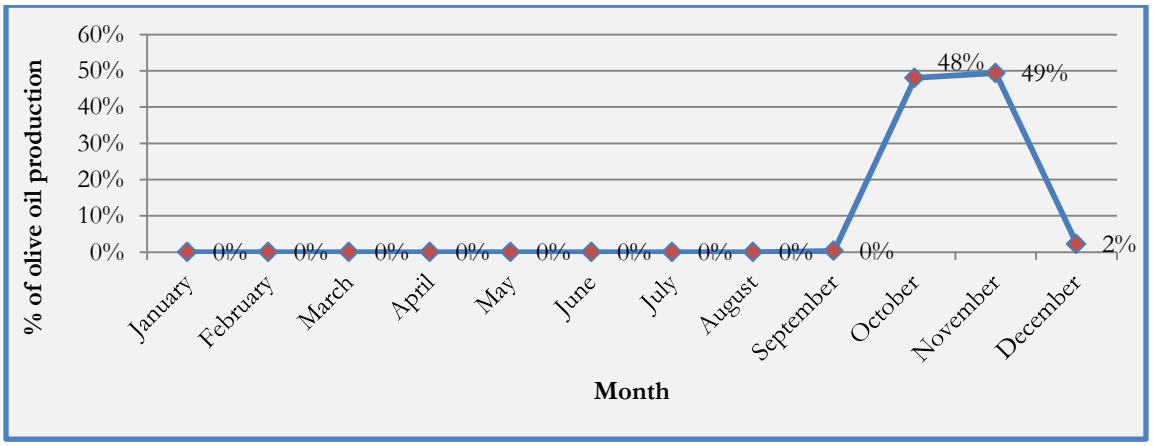
is estimated at 16,446 tons in the West Bank, representing 3% of total production of all surveyed crops. Jenin governorate is the highest producer of onions, constituting 52% of total production, followed by Tubas governorate (31%), and Nablus governorate (13%).

✓ **Potatoes:**

According to the Ministry of Agriculture, 10,835 dunum[39] of agricultural land has been utilized for the cultivation of potatoes in the West Bank in the year 2012/2013. Accordingly, potatoes constitute 1.3% of total agricultural land cultivated in the West Bank. Furthermore, the project survey results indicate that the annual total production of potatoes is estimated at 37,552 tons in the West Bank, representing 7% of total production of all surveyed crops. Tubas governorate is the highest producer of potatoes, constituting 43% of total production, followed by Jenin governorate (27%), and Nablus governorate (25%).

- **Olives:**

In the West Bank, 47.1% of total agricultural land in the West Bank (including vegetables, fruit trees, olives, and field crops) is utilized for the cultivation of fruitful olive trees[40]. The project survey results estimate that the average productivity of olive oil is 47kg/dunum, with a total annual production of 23,947 tons. Olives' harvesting takes place during the 3 months of October, November and December. (Graph 6)




**Graph (6): The distribution of olive oil production by month**

Furthermore, Jenin governorate is the highest among other governorates in terms of total production of olive oil, and its production accounts for 29% of total production in the West Bank.

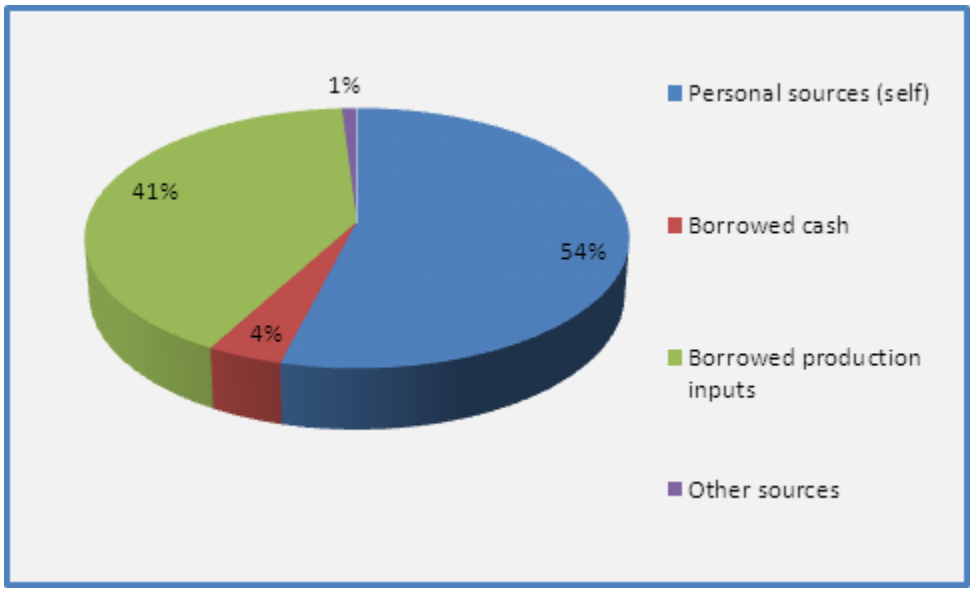
### 3.3 Production inputs & conditions

- **Agricultural land ownership and sources of financial inputs**

The ownership of agricultural land in Palestine is regulated by the Agricultural law number (2) of the year 2003. Agricultural land is considered the main input for the process of agricultural production, and the total production of farmers depend on the area of this land. Ownership of

[39] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.
[40] Palestinian Ministry of Agriculture (2013). Cultivated area of surveyed crops 2012/2013. Unpublished data.

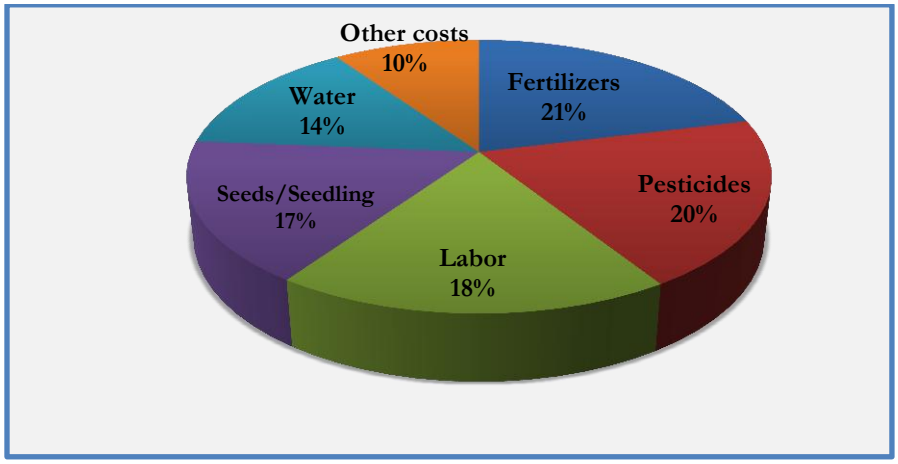
this land varies, and while the land is sometimes owned by the farmer, it can also be rented. The project survey results show that 53% of surveyed farmers own their agricultural land, 34% rent it and pay this rent in cash, while 11% rent it from owners in return of an agreed-upon share of productions. The project survey results also show the variety of funding sources for agricultural production. And while 54% of surveyed farmers use their own resources to cover their production, 41% of them depend on input providers who provide the farmer with inputs in return for either a share of production or cash after the marketing of produced goods. In addition, 4% of farmers' financial resources for the production activity are through borrowing from traders. And despite the prevalence of commercial loans from banks in the West Bank, the project survey results find that the majority of farmers do not utilize these loans as sources of funding. (Graph 7)




**Graph (7): Financial sources for agricultural production**

- **The cost of inputs**

The cost of inputs plays a major role in determining the quantity produced, and directly affect the farmer's profitability. In addition to agricultural land, inputs of agro productions include seeds and seedlings, fertilizers, and pesticides. Survey results show that fertilizers constitute 21% of total cost of inputs, followed by pesticides (20%), and labor (18%). (Graph 8)




**Graph (8): Cost of inputs as a percentage of total input costs**

The increase in input prices is one of the main issues facing the agricultural sector in Palestine, and is sometimes the main reason behind the losses incurred by farmers. Results indicate that 88% of surveyed farmers confirmed an increase in input prices over the 3 previous years with an average annual growth of 10%. In addition, results indicate that that input prices for cultivating field crops were the highest, with an average annual growth of 11%, while input prices of olives were the lowest with annual growth rate of 7%. The reason behind the increase in inputs' prices is the fluctuation of the dollar exchange rate against the NIS, in addition to the increase in petrol prices during the same period. This is in addition that trading in pesticides and fertilizers is limited on a number of trade agencies that control prices at the end.

### 3.4 Farmers' behavior and planning mechanism

Proper strategic planning is considered a key contributor to the success of the process of agricultural production. The planning process consists of a series of steps that include studying the feasibility of the agro production process, the availability of inputs and sources of funding, and the best ways to utilize these inputs. In addition, strategic planning depends on realizing the market needs and priorities, and how to maintain a sustainable flow of agricultural production through profitability.

Results indicate that 68% of surveyed farmers make the choice of which crops to cultivate on their own, while the land owner[41] take this decision in 32% of the surveyed samples. According to these results, agricultural advisors play no role in this key step, on which final production depends.

## 4. Agro - marketing

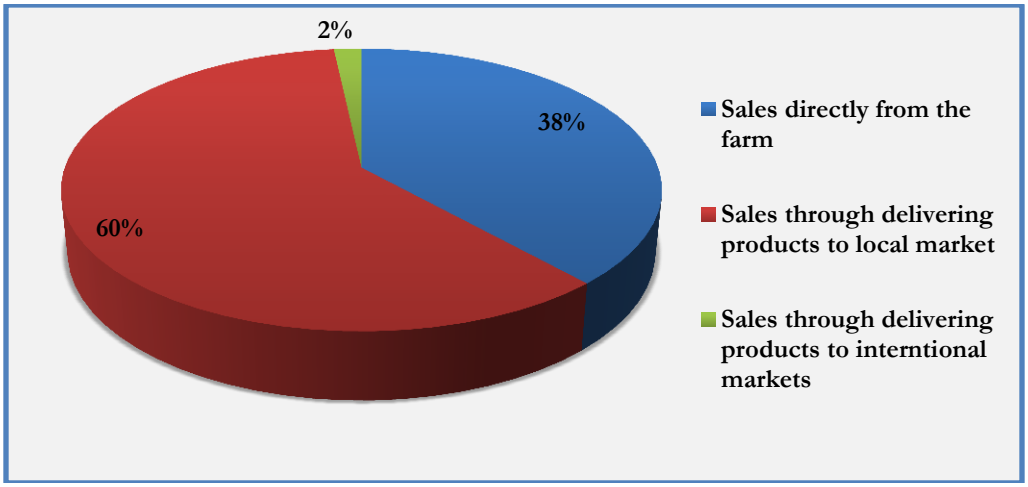
Agro marketing represents the mechanism through which products are transferred from farmers to end consumers. The Palestinian agricultural sector suffers from weak marketing capacities, due to lack of organization and coordination between the different actors involved. These

[41] In some cases the land owners employ farmers to cultivate their lands with a certain type of crop that will be sold at the end to an investor / trader.

problems negatively influence the farmer's income, and hinder the achievement of high level of self-sufficiency.

### 4.1 Sales methods

The project survey results show that the majority of Palestinian farmers (60%) market their products in the local market through central wholesale markets or other sales points. On the other hand, 38% of surveyed farmers sell their products directly from the farm to local traders or exporters. The last sales method is considered more profitable because it excludes the cost of delivery. Furthermore, only 2% of farmers export their products to international markets. (Graph 9)




**Graph (9): Sales methods for agriculture products**

### 4.2 Pricing methods

Results show that 82% of surveyed farmers depend in their pricing on the supply and demand in the local market; while 16% of them depend on prices agreed upon in agreements with traders (most of the agreements are verbal) and 2% price their products based on other methods. These two methods are also prevalent among farmers who export their products to international markets.

It is worth noting that prices vary among governorates depending on the availability of products in the market. The majority of surveyed farmers have confirmed this variation and related it to seasonality and changes in weather conditions. For example, the price of tomatoes is relatively high in the southern governorates during April and May compared to northern governorates due to weak production in the south during these aforementioned months.

## 4.3 Profitability

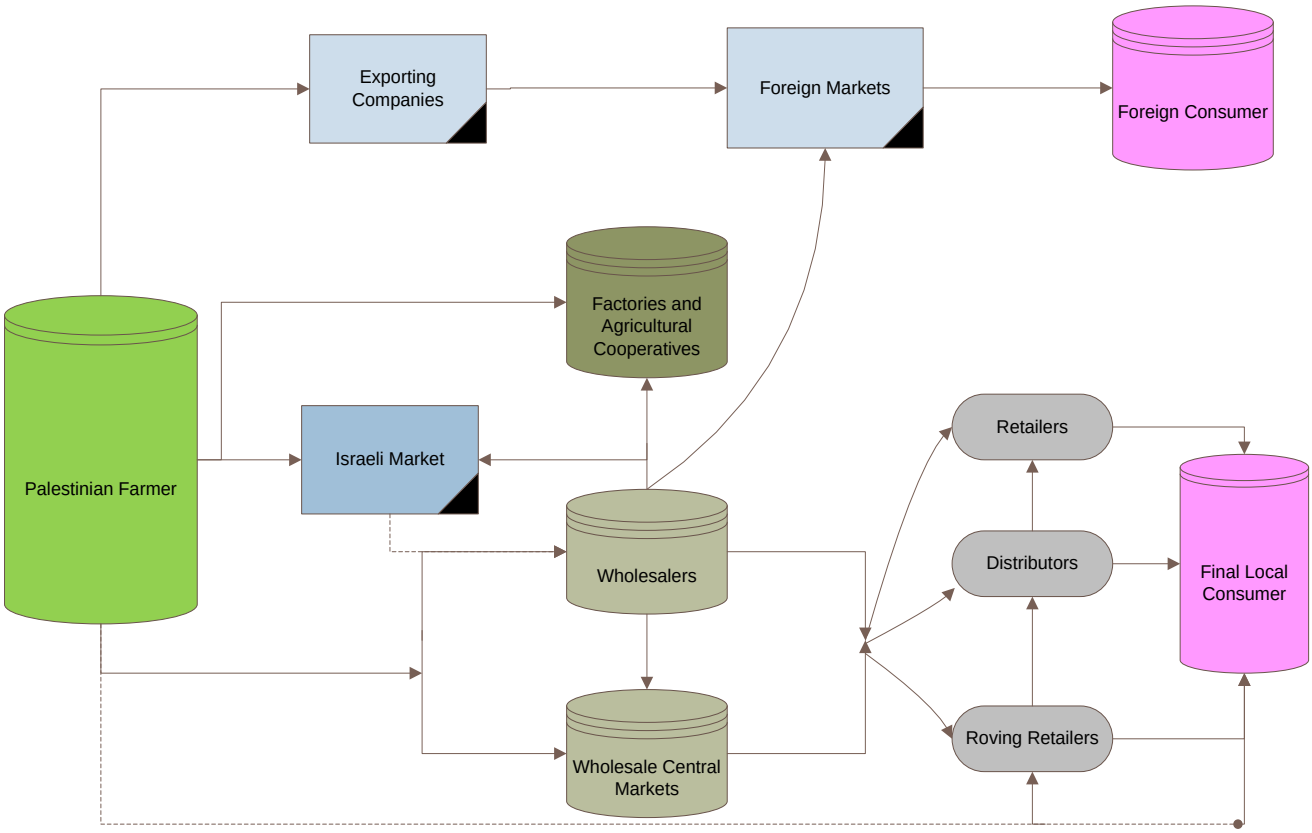
Profitability is one of the main issues that concern farmers throughout the agricultural production process. The project survey results show that the farmer's average profit margin is 26.7% for targeted products. This margin varies from one product to another, and is highest among fruit trees despite the fact that farmers are reluctant in cultivating them due to high input prices. (Table 2)

| Agricultural Crops | | Profit Margin (%) as reported by surveyed farmers |
|---|---|---|
| Vegetables | Tomatoes | 26.3% |
| | Cucumbers | 27.2% |
| | Eggplants | 30.0% |
| | Squash | 24.0% |
| | Paprika | 26.0% |
| | Green Beans | 29.7% |
| **Average** | **27.0%** | |
| Fruit Trees | Citrus Fruits | 26.2% |
| | Almonds | 23.8% |
| | Dates | 56.9% |
| | Guava | 28.2% |
| | Grapes | 35.9% |
| **Average** | **32.0%** | |
| **Olive oil** | **28.1%** | |
| Field Crops | Wheat | 22.1% |
| | Onions | 20.1% |
| | Potatoes | 23.4% |
| **Average** | **22.1%** | |

**Table (2): Profit margin by product as reported by surveyed farmers**

## 4.4 Market Channels for Palestinian agro-commodities

The following diagram shows the main elements of the Palestinian agro-commodities market channels. It appears that the longest chain is from local markets until it reaches the consumer mainly through wholesalers, retailers, distributors and roving retailers.




## 4.5 Enabling Environment

- **Supporting Policies**

Despite the advancements that the agricultural sector has witnessed especially in the use of machinery, fertilizers and pesticides, and the awareness and knowledge the Palestinian farmer has gained in regards to introducing new classes of crops, the Palestinian agricultural sector is still marginalized by the government and donor agencies, where available financial support and budget allocation does not respond to the needs of the sector. On the governmental level, the share of the agricultural sector from the total budget in 2014 was around 1%, although estimates for the year 2015 expect it to rise up to 7% of total budget. On the other hand, the support from donor agencies to the agricultural sector was estimated at $300 million, but the majority of these funds are usually subject to the donor's agenda and policies, and are therefore limited to land reclamation, the provision of production inputs, and farmers' capacity building rather that marketing[42].

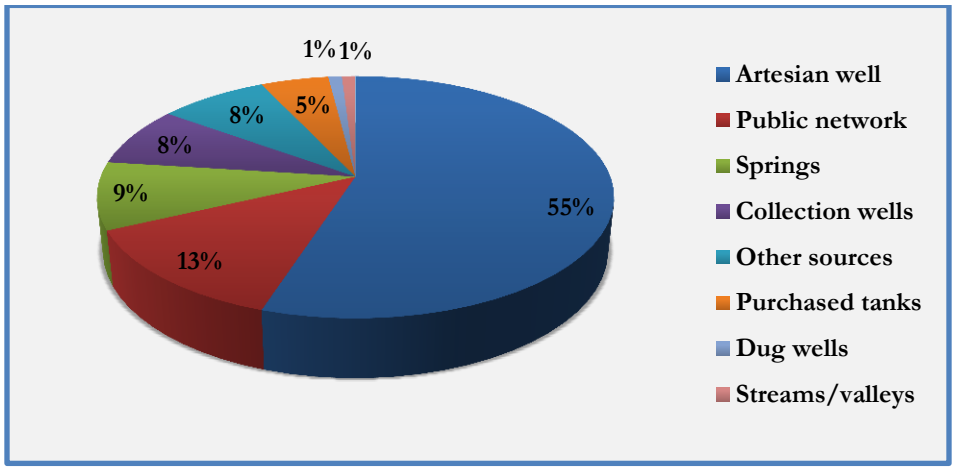
[42] Agriculture Sector Strategy: Resilience and Development 2014-2016

- **Laws and Regulations**

Agricultural production in Palestine is subject to the agricultural law number (2) for the year 2003, which regulates this process and guarantees the establishment of a group of regulatory bodies that aim at developing the agricultural sector, and working directly with farmers especially on issues related to agricultural loans. In addition, the law includes specific articles on agricultural fertilizers and pesticides that are essential for the production of many agro products. These laws also contribute to the protection and development of agro products, and their absence might threaten and weaken agro production as is the case in the Palestinian market, where a group of traders are monopolizing the trade in pesticides, leading to inflation in prices and increasing farmers' reluctance away from farming and agro production.

- **Local Infrastructure**

The agricultural sector currently suffers from weak infrastructure needed throughout the whole process that starts at the farmers and ends at the end consumer. For instance, farmers suffer from annual growth in input prices, estimated at 10%. In addition, water scarcity is another problem that is accompanied by the high cost of water purchased. Allocated annual water for irrigation is estimated at 174 million square meters for the year 2013[43]. The price of purchasing 1 square meter of water ranges between 1.9 – 15 NIS. (Graph 10)




**Graph (10): Water sources for agro production**

In regards to marketing, the farmer still suffer from relatively high spoilage rates of agro products due to lack of infrastructure such as refrigerated storehouse and poor techniques used for loading and unloading of products. In addition, there is no database in Palestine on the needs of the local market, which affects the balance between supply and demand of agro products. This causes a surplus in the production of some agro products, and a

[43] The Palestinian Central Bureau of Statistics (PCBS) (2013). Publishing and Analysis project for Palestinian Agriculture census data for the year 2010. Ramallah. Palestine

deficit in others. This database is very essential for the development of the agricultural sector, in addition to the allocation of funds to compensate farmers for the losses they incur due to natural disasters and harsh weather conditions.

- **The Level of Technology**

The use of technology has allowed the agricultural sector to achieve big leaps in Palestine, especially in increasing productivity and introducing the cultivation of new strategic classes of crops. The ownership of advanced agricultural machinery has therefore become key for the Palestinian farmer, throughout the process of cultivation and harvest. Palestinian farmers have also introduced the use of chemical pesticides, enhanced the quality of seeds, and cultivated disease-resistant seedlings. Therefore, the agricultural sector has managed to achieve good technological advancements, creating an incentive for collaboration from other sectors.

## 5. Main Challenges

The research findings indicate that Palestinian farmers suffer from many challenges throughout the production and marketing phases of agricultural products. These challenges are grounded in the survey results and include the following but are not limited to:

- **Limited capacity of the local market**
- The Palestinian local market is limited in its trading size; this is mainly due to the limitation and difficulties on exports.
- **Lack of insurance systems**
  - The Palestinian farmer suffers from the absence of an insurance system. Therefore, farmers incur huge losses due to natural disasters and harsh weather conditions, without any remuneration.
- **Price fluctuation**
  - The Palestinian market witnesses price fluctuations on daily basis, due to lack of information sharing about supply and demand of many products.
- **Israeli Competition**
  - The Palestinian market is an open market to the Israeli agriculture products the whole year, which weaken the competitive advantage of the local product especially during the production season; given that the Israeli products in most cases trade at lower prices.
- **Poor coordination among relevant stakeholders**
  - Poor coordination between Palestinian farmers and relevant stakeholders especially in regards to the choice of cultivated crops. This results in most cases in surplus or deficiency in the production of agricultural products.

## 6. Recommendations

Following are some recommendations that can contribute to enhancing Palestinian farmers' condition, and contribute to a more successful marketing of agricultural products:

- **Encourage cooperation among farmers**
  - Exchange of experience between farmers through workshops during which success stories and lessons learned are presented
  - Encourage the grading of agro products and reinforce the monitoring of prices
  - Encourage the effective work of agricultural cooperatives and associations, in order to protect farmers and reduce input costs
- **Enhance governmental policies targeting the agricultural sector**
  - Enhance communication channels between farmers and the Ministry of Agriculture through periodic meetings
  - Reinforce the monitoring role of the Ministry of Agriculture on the quality of seeds and seedlings
  - Introduce food safety, quality and testing procedures that meet the international standards in order to expand international marketing opportunities.
- **Increase financial support to the agricultural sector**
  - Establish commercial banks that grant loans for farmers, and encourage them to invest in the agricultural sector through low interest rates
  - Reinforcing the insurance fund to compensate farmers for their losses due to natural disasters and harsh weather conditions
  - Increase financial budget allocation for the agricultural sector
- **Foster & support scientific research in the different fields of agriculture**
  - Establish seeds banks under the provision of the Ministry of Agriculture
  - Establish a research center for testing the quality of seeds and seedlings before use in agricultural production
  - Encouraging the cultivation of products that do not cover the local market's demand mainly through supporting them with appropriate and competitive prices of agricultural inputs.
- **Utilize available natural resources**
  - Rehabilitate old wells and cisterns.
  - Maintain soil fertility through the agricultural cycle and the use of fertilizers
  - Protect agricultural land from wastewater and urbanization through enforcing governmental policies and laws.
- **Adopt recent technologies in production**
  - Enhance productivity through utilizing modern irrigation systems
  - Reduce the operational costs
  - Treat and reuse wastewater in irrigation
- **Increase the levels of self-sufficiency from agricultural products**
  - Target various agricultural crops that meet the market's needs

- Plan production according to season, taking into consideration the feasibility of each choice of crop based on seasonality and weather conditions
- Enhance coordination between farmers, especially in regards to the choice of crops to be cultivated

➢ **Develop a comprehensive agro-marketing system**

- Focus on high-quality packaging of products in order to enhance its image in the market

# The Palestinian Trader's Role in the Value Chain of Agro Commodities
## Study summary

### 1. Introduction

Trade – during which the ownership of goods and services is transferred from one entity to another in exchange for money – exists because of specialization and comparative advantage. Trade in the Palestinian market is either local or international. Palestinian traders are an integral part of the channel through which agro commodities are transferred from farmers to end consumers, and therefore play a major role in the agro marketing. Their presence allows end consumers access to a diverse group of agro commodities, with different price and quality specifications. According to the Palestinian Central Bureau of Statistics (2012), the number of registered agricultural wholesalers and retailers in the West Bank was estimated at 1,565 while no data is available on the number of traders working in the informal sector.

The Applied Research Institute – Jerusalem (ARIJ) has conducted the project survey for agricultural wholesalers and retailers, as part of the "Food Production-Consumption Assessment to Improve Sustainable Agriculture and Food Security in the West Bank – Palestine"; a project that is implemented by ARIJ in partnership with the Palestinian Ministry of Agriculture and the Palestinian Ministry of National Authority, and funded by the International Development Research Centre (IDRC). The survey - conducted by ARIJ's researchers during the period of November – December 2014 - included field visits to central wholesale markets and agricultural retail shops in the different governorates of the West Bank. Interviews were conducted with traders in order to understand the various mechanisms that regulate their operations, including: the mechanisms for purchasing agricultural products; networks and relationships between retailers, producers and consumers; surveyed markets; pricing mechanisms and profitability; packaging and grading processes. In addition, the interviews included a discussion on challenges that these traders face.

As a result, 150 interviews were conducted with wholesalers, retailers and middlemen functioning in both central wholesale markets and retail shops of agro products. The main crops that were selected for the study are namely (a) Field crops: wheat, potatoes, onions; (b) Vegetables: tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: citrus fruits, guava, grapes, dates, almonds; and (d) olives.

In order to achieve the survey's main objectives, the research team has worked on the following:

- Conducted literature review and field research in order to identify the main indicators to be measured by the survey tools.
- Developed the survey questionnaire targeting wholesalers and retailers working in central wholesale markets, or in retail shops of agro products.
- Conducted field visits to central wholesale markets and retail stores of agro products cover all the West Bank Governorates in order to interview retailers and wholesalers.

## 2. Sample Characteristics

### 2.1 Geographical Distribution

The surveyed 150 traders distributed based on their legal registration status among governorates. The sample included 50 wholesalers from central wholesale markets, 50 retailers selected randomly, and 50 registered and unregistered retailers contacted based on recommendations from farmers surveyed by ARIJ under another project activity. Nablus governorate had the highest number of surveyed traders (35) among governorates. In addition, the survey selected a sample of Arab traders working in Israel within the green line area. (Table 1)

| Governorate | Registered Wholesalers[44] | Registered Retailers[45] | Unknown Registration status Traders and Middlemen[46] | Total |
|---|---|---|---|---|
| **Jenin** | 9 | 6 | 14 | 29 |
| **Tubas** | 2 | 3 | 2 | 7 |
| **Tulkarem** | 3 | 5 | 4 | 12 |
| **Nablus** | 14 | 7 | 14 | 35 |
| **Qalqiliya** | 2 | 3 | 1 | 6 |
| **Salfit** | - | 3 | 1 | 4 |
| **Ramallah & Al Bireh** | 1 | 6 | 3 | 10 |
| **Jericho** | 1 | 3 | 2 | 6 |
| **Jerusalem** | - | 6 | - | 6 |
| **Bethlehem** | 2 | 4 | 1 | 7 |
| **Hebron** | 15 | 6 | 4 | 25 |
| **Arab Israeli Traders** | 0 | 0 | 3 | 3 |
| **Total** | **50** | **50** | **50** | **150** |

**Table (1): Number of surveyed traders by governorate and legal registration status**

[44] PCBS (2012). Establishment Census.
[45] PCBS (2012). Establishment Census.
[46] Applied Research Institute – Jerusalem (2014). Palestinian Farmers Survey.

### 2.2 Average Number of Workers

Based on sample data, the average number of workers employed by surveyed traders was 5 workers. This number varied from one trader to another, depending on the volume of work conducted. In general, the project survey results indicated that the least number of workers was 1 per trader, while the highest employment rate reached 20 workers per trader.

### 2.3 Categories of Agricultural Traders

Despite the differences between agricultural traders in terms of quantity sold and method of sales, all agricultural traders eventually aim at receiving agro products from farmers, and delivering them to the end consumer.

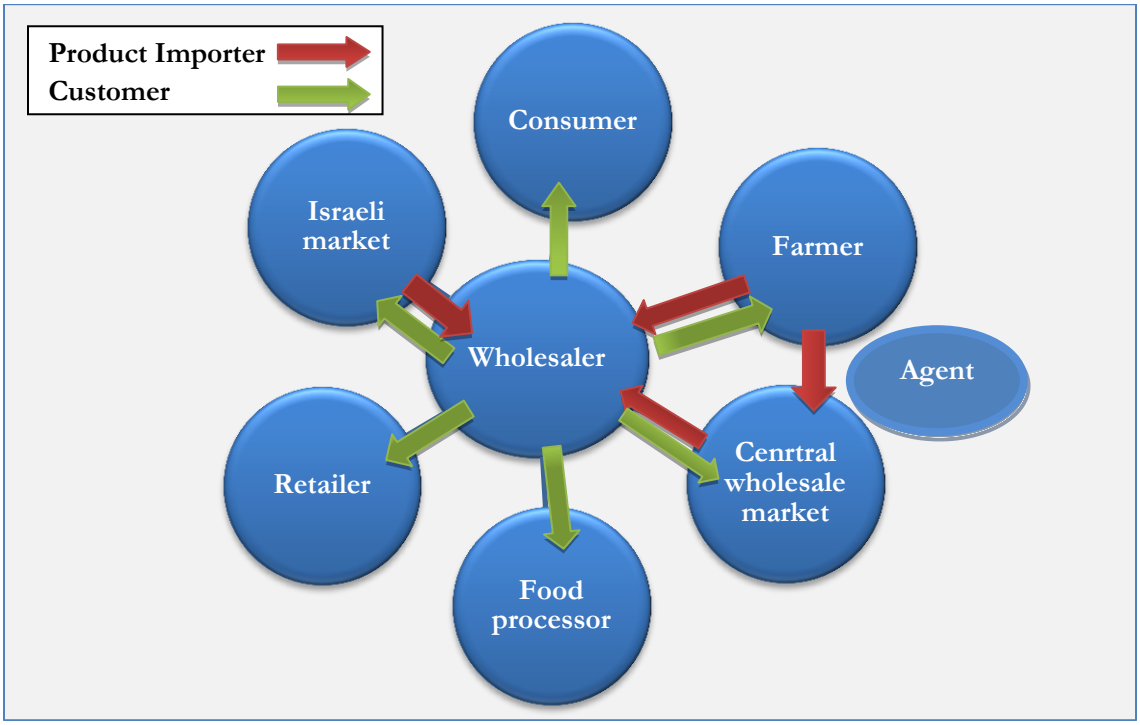
**Traders:** are members or groups working as mediators between the producer and the end consumer. They are specialized in the purchase or sale of agro products, or both. Traders are categorized under 3 groups as follows:

- **Wholesalers:** These traders purchase agro products either directly from the farmer, the local market, or other wholesalers, and then sell those to other middlemen. In addition, they provide some marketing services such as sorting, grading, storage, and transferring products from one market to another.
- **Retailers:** These traders purchase agro products from wholesalers and sell them directly to end consumers.
- **Agents/Middlemen:** Agents and middlemen work on behalf of their farmer clients, while the farmers maintain the ownership of their products. Agents receive a commission in exchange for their marketing services.

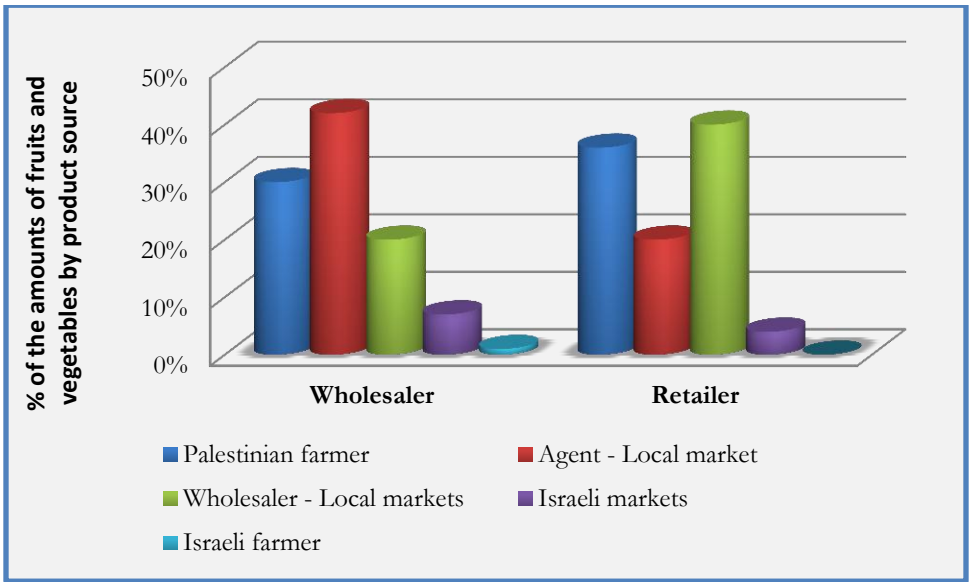
## 3. Sources of Agro Products

The mechanism through which traders obtain agro products is almost the same among Palestinian traders in the West Bank. Most surveyed wholesalers indicated that they rely on the farmer who delivers his/her own production to central wholesale markets. On the other hand, retailers purchase their stock of products from wholesalers located within central wholesale markets then deliver them to their stores either using their own vehicles, or after an agreement with a vehicle owner who can also play the role of a middleman between the retailer and the wholesaler. Graphs (1) and (2) represent the relationships between wholesalers, farmers, and end consumers.

Table (2) presents the source from which traders purchase their stock of agro products. The project survey results indicate that most surveyed vegetables within the project come from local sources (96%), while 4% of them come from the Israeli market. Tomatoes were slightly different, with 92% of their quantities coming from the Palestinian local farmer, while 8% are imported from traders and farmers in Israel.




Graph (1): Network between wholesalers, producers, consumers




Graph (2): Marketing channels between traders by source of agro products

Furthermore, survey results indicates that 88% of the quantity of fruit products surveyed in the project and available in the local market comes from local sources, while the remaining 12% is imported from the Israeli market. The results are different for citrus fruits, where 69% of its quantity comes from local sources, while the remaining 31% is imported from the Israeli market. (Table 2)

| Agricultural Products | | Relative Distribution by Source | |
|---|---|---|---|
| | | Local (%) | Israeli (%) |
| Vegetables | Tomatoes | 92 | 8 |
| | Cucumbers | 97 | 3 |
| | Eggplants | 95 | 5 |
| | Squash | 97 | 3 |
| | Paprika | 97 | 3 |
| | Green Beans | 99 | 1 |
| Fruits | Citrus Fruits | 69 | 31 |
| | Almonds | 100 | 0 |
| | Dates | 90 | 10 |
| | Guava | 92 | 8 |
| | Grapes | 93 | 7 |
| Olives | Olives | 100 | 0 |
| Field Crops | Wheat | 100 | 0 |
| | Onions | 67 | 33 |
| | Potatoes | 73 | 27 |

**Table (2): The relative distribution of surveyed agro products by source based on survey results**

### 4. Payment Methods

Results have found that traders use 2 main methods to pay for agricultural products: (1) cash paid directly to farmers, other traders or middlemen. This method is used by 66% of surveyed traders. (2) Scheduled deferred payment, and is used by 34% of surveyed traders. Using this method has created poor liquidity at the producers' side. But, it is still regularly used by producers in order to market their agro products to retailers and wholesalers given that it is a less restrictive payment method. On the other side, end consumers pay traders either in the form of cash (51%), or installments (49%).

### 5. Markets Targeted by Traders

Traders suffer from the limited number of markets that they could target for the marketing of their products. Usually, traders target markets within their governorates, while others target other governorates especially those with poor agricultural production. For example, the project survey results show that some of Nablus traders target the market of Ramallah and Al Bireh in order to market their products. In addition, these results indicate that traders from Salfit, Qalqilya and Bethlehem limit their marketing efforts to the local markets within their governorates and do not usually import their products to other markets. On the other hand, traders from Tulkarem were found to be the most active in targeting markets within other governorates. In general, results indicate that 44% of surveyed traders target the northern governorates, 30% target the middle governorates, while the remaining 26% target the southern governorates. It is also worth mentioning that traders base their decision of which governorate to target based on the

demographic characteristics, and the prevalent lifestyle and diet trends in each governorate. (Table 3)

| Governorate | Relative distribution of sales according to area in the local market | | |
|---|---|---|---|
| | North (%) | Middle (%) | South (%) |
| **Jenin** | 82 | 8 | 10 |
| **Tubas** | 97 | 3 | 0 |
| **Tulkarem** | 69 | 15.5 | 15.5 |
| **Nablus** | 73 | 14 | 13 |
| **Qalqiliya** | 100 | 0 | 0 |
| **Salfit** | 0 | 100 | 0 |
| **Ramallah & Al Bireh** | 3 | 96.5 | 0.5 |
| **Jericho** | 9.2 | 54 | 36.8 |
| **Jerusalem** | 0 | 100 | 0 |
| **Bethlehem** | 0 | 0 | 100 |
| **Hebron** | 4 | 8 | 88 |

**Table (3): The relative distribution of sales by area in the local market**

## 6. Pricing mechanism

The project survey results indicate that there are no rules that oblige the trader of fixing or determining the prices of agro commodities. But, some rules indicate that those prices should be portrayed on the products so that consumers can know them before purchasing. Prices tend to change on daily or monthly basis, due to the following reasons (presented in terms of importance): supply and demand, seasonality, weather conditions, and the number of competitors. Results indicate that the increase in input prices faced by farmers does not affect the prices of agricultural products on the trader's side.

Prior to sales, traders obtain prices using diverse methods. Traders who export their products to the Israeli market usually use an Israeli prices stock service that informs its subscribers of product prices at 6:40 a.m. every day, through phone calls or text messages. Other traders depend on communicating with other traders based in central wholesale markets (especially Qabatya, Beita, and Nablus central wholesale markets) in order to obtain initial sales prices. In addition, some traders (especially wholesalers and middlemen) base their prices on supply and demand expectations.

## 7. Profitability

A trader's profit is the benefit realized when the amount of revenue gained from trade exceeds the fixed and variable costs. Consistently earning profit is every trader's goal. 38.6% of surveyed traders reported that profit margins were stable throughout the past 3 years, 36.8% reported that these margins have increased, while 24.6% of them reported that they decreased.

A profit margin is an economic indicator measured as the difference between sales revenues and the cost of obtaining, transferring, and storing products. This margin varies among traders and localities, based on the availability of products, soil fertility, weather conditions and climate change. Overall, the project survey results indicate that the average profit margin for surveyed agricultural products was 9.5% in local markets, and 10% in the Israeli market, this is as reported by surveyed trader (Table 4)

| Market | Average Profit Margin | Least Profit Margin | Highest Profit Margin |
|---|---|---|---|
| **Local market** | 9.5% | 3% | 30% |
| **Israeli market** | 10% | 5% | 40% |

**Table (4): Average profit margin by market as reported by surveyed traders**

## 8. Spoiled Agro-Products

The project survey results show that 8% of agro products on the traders' end get spoiled on a monthly average. These are usually disposed through solid waste containers. The reason for the increase in spoilage is due to the lack of refrigerators and special storage houses. In addition, a surplus in the supply of agro products is another main reason that is usually faced by wholesalers and middlemen in central wholesale markets. This surplus is usually due to poor demand, or market saturation. Traders who export products to other markets also face other obstacles that result in the spoilage of agro products. Those include the waiting hours spent on checkpoints and crossings, or the cancellation of shipments from the receiving party at the last minute.

## 9. Packaging and Grading of Agro Products

Results indicate that all surveyed traders use no packaging or grading systems. Instead, traders and middlemen depend on the primitive packaging techniques used by farmers. But, traders who export to Israeli or international markets use some more advanced packaging techniques.
Grading is considered one of the most important steps in the marketing process, where agricultural products are divided into homogenous categories in terms of size, color or other characteristics, while spoiled quantities are isolated. Each category is then associated with a quality level, while keeping in mind the main purpose and use of the product, and the surveyed market. The importance of grading stems from its ability to increase the marketing efficiency of agro products, and facilitate their sales through making their quality visible for consumers.

Grading is part of the packaging process, and it is usually undertaken in the farm. Unfortunately, many farmers ignore this step thus leaving it for the traders. In addition, many traders who import Israeli agro products – specifically citrus fruits – in large quantities, undertake grading based on quality and cleanliness, and base the prices of each category on the associated grade. Results indicate that 55% of surveyed traders use some sort of grading techniques but most of these are manual and simple, like grading products based on size, color and shape. Furthermore, it was found that 79% of agro products are categorized as grade (A), 20% are categorized as grade (B), while 1% only are categorized as grade (C). This is a self grading system since there are no governmental grading standards applied in the West Bank.

## 10. Exports, Imports & International Trade Agreements

In 2013, the value of Palestinian exports of agro commodities reached $56,720,000, representing 6.3% of the total value of exports. In addition, the value of exported ago products surveyed in the project was estimated at $25,571,000[47]. On the other hand, Palestine imported $240,628,000 of agro products in 2013, constituting 4.7% of the value of total imports. Imports of agro products surveyed in the project were estimated at $76,797,000[48]. (Table 5) Given these statistics, it is clear that Palestine has a trade deficit in regards to agro commodities, where the value of its imports far exceeds that of exports. Thus, Palestine is currently a net importer of agro commodities.

| Palestinian Crop | Import (thousand USD $) | Export (thousand USD $) |
|---|---|---|
| Olives | 56 | 57 |
| Oil olives | 407 | 8,842 |
| Citrus | 4,105 | 2,276 |
| Grapes | 93 | 304 |
| Guava | 3 | 3 |
| Dates | 1,519 | 7,169 |
| Almond | 2,782 | 531 |
| Tomato | 4 | 187 |
| Cucumber | 2 | 163 |
| Eggplant | 2 | 17 |
| Squash | – | – |
| Kidney Bean | 17,237 | 3,597 |
| Paprika | – | 22 |
| Wheat | 45,396 | 1,267 |
| Potatoes | 4,828 | 1,095 |
| Dry Onion | 361 | 41 |
| **Total selected crops** | **76,797** | **25,571** |
| **All agricultural products in 2013** | **240,628** | **56,720** |

**Table 5: Value of Palestinian exports of agro commodities in thousand dollars (USD $) for the year 2013**[49]

The Palestinian Authority has signed a group of different trade agreements with other countries, aiming at supporting the agricultural sector through opening new channels for the distribution and marketing of agro production. These agreements also aim at opening the Palestinian market to international markets, and enhancing the Palestinian balance of trade by increasing exports relative to imports. These trade agreements include the Great Arab Free Trade Agreement (GAFTA) that applies to agricultural and animal products, and the Interim Agreement on Trade and Cooperation with the European Union (IAA) which came into effect in 2012, and through

[47] Palestinian Central Bureau of Statistics (2015). Unpublished raw data.
[48] Palestinian Central Bureau of Statistics (2015). Unpublished raw data.
[49] Palestinian Central Bureau of Statistics (2015). Unpublished raw data

which a duty-free, quota-free regime is applicable to agricultural and processed products that meet the required rule of origin.[50]
Furthermore, other trade agreements have been signed by the Palestinian Authority to facilitate trade relations with different parties. These include:

- The declaration of free trade between the United States and the West Bank and Gaza Strip:
  - ✓ Offers duty-free, quota-free treatment to Palestinian products coming into the American market.
- The framework on economic cooperation and trade between Palestine and Canada:
  - ✓ Reduces and eliminates tariffs on agricultural and processed products to a quota system.
- The Interim Agreement with EFTA states:
  - ✓ This agreement has been signed between the EFTA states (Iceland, Liechtenstein, Norway, Switzerland) and the Palestinian Liberation Organization (PLO) for the benefit of the Palestinian Authority in 1998. The agreement has been effective since 1999, and it allows for reduced tariffs on Palestinian processed agro products.
- The Interim Agreement on Trade with Turkey:
  - ✓ The agreement aims at enhancing the economic cooperation between the Palestinian Authority and Turkey, and enhancing the standard of living for both parties.
  - ✓ Allows for the gradual elimination of restrictions on products including agro products.
  - ✓ Encourages economic relations through increasing the volume of economic trade between both parties.
  - ✓ The creation of fair trade conditions between both countries.

To increase efforts aiming at strengthening bilateral relations between the 2 countries, a decision has been reached that exempts 1,000 tons of Palestinian dates exported to Turkey from custom duties. This decision has been in effect since November 2012.

Despite these trade agreements, the marketing of agro products is highly affected by the Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip known as the Paris protocol[51], signed by both parties in 1994. The agreement allows for the free trade of agricultural products exempted from duties between Palestinian and Israeli markets, allowing huge quantities of Israeli agro products into the Palestinian market. These products are the main competitors of Palestinian products.

[50] Palestine Trade Center – PALTRADE (2015). International Trade Agreements.
[51] https://www.paltrade.org/upload/agreements/Paris%20Economic%20Protocol.pdf

In regards to the mobility of agro products between the Palestinian and the Israeli markets, and according to paragraph 9 of article 8 under the Paris protocol, the specialized authority in the receiving country has the right to investigate and search received agro products without causing any damages. But, the Palestinian Ministry of Agriculture indicates that agricultural products entering the Palestinian market undergo security and technical checks by the Israeli government which delays in most cases their entrance into the market for days making them vulnerable to spoilage. And although the Palestinian authorities issue permits for these products, but the final import permissions are issued by the Israeli authorities, according to their own conditions.

Furthermore, the Paris protocol – in paragraph 11 of article 8 – gives Palestinians the right to export their agro products to international markets with no restrictions after receiving the certificate of origin issued by the Palestinian Authority. But, in reality, the Israeli authorities hinder this process for security reasons, and sometimes unload agro commodities from vehicles on crossings, and load them in Israeli vehicles.

In regards to imports, paragraph 12 of the protocol restricts the imports of agro products from a third party if this harms the farmers of both parties. Yet, Israel still imports agro products ignoring the fact that it harms Palestinian producers. It also floods the Palestinian market with imported products.[52]

It is also worth noting that in order to facilitate international trade and support the Palestinian national product, a set of mechanisms and standards has been set. Those include obtaining export and import certificates and permits, and identifying the available quantities and categories of agro products.

In regards to signed agreements between local and international traders of agro products, the project survey results indicate that no official agreements are signed. But, some traders depend on previous experience and verbal agreements instead. This has left many traders vulnerable to fraud – especially from traders functioning in Israel. This also applies to the relationship between farmers and traders, where no official written agreements are in place.

### 11. Challenges Facing Palestinian Traders

The project survey conducted with traders by the Applied Research Institute – Jerusalem (ARIJ) has showed that there are many obstacles and problems that traders continue to face. Below are some of these problems:

- Poor purchasing power of the Palestinian consumers due to the difficult economic situation in the West Bank, thus resulting in poor cash supply needed by trader.
- High cost of transferring and storing agricultural products.
- The fluctuation in the available quantity of agro products, due to seasonality and poor storage and infrastructure.

[52] Palestine Economic Policy Research Institute – MAS (2013). Paris Economic Protocol Working Paper.

- Continuous closures and Israeli checkpoints between the different governorates in the West Bank; restricting the mobility of agro-products affecting the availability of products in central wholesale markets and in some cases causing the spoilage of crops while waiting on checkpoints.
- Lack of legal protection or legal resources that works on protecting the Palestinian traders from fraud during the exporting of agricultural products to Israeli or international markets.
- Poor infrastructure at central wholesale markets in the West Bank, such as the unavailability of parking lots, and refrigerator storehouses for the storage of agricultural products.
- Lack of high-quality packaging and grading systems, therefore reducing the competitive advantage of Palestinian agricultural products.

## 12. Recommendations

- Protecting Palestinian traders through national agreements with the Israeli market, to avoid being vulnerable to fraud.
- Increasing traders' awareness on international trade agreements signed between the Palestinian Authority and other countries, and the mechanism of importing and exporting agricultural products.
- Designing a new mechanism to manage the entry of Israeli agro products into the Palestinian local market, especially those imported by unregistered traders with low quality and mirror the system that Israel is using in dealing with Palestinian products while entry the Israeli market.
- Creating new marketing opportunities through holding international exhibitions to market Palestinian agro-products in international markets.
- Establishing a syndicate or authority responsible for the coordination of traders' work and protecting their rights.
- Designing a market information system for agro-products, in order to track unregistered traders who help import competitive Israeli products to the local market, especially during the production season.
- Encouraging Palestinian end consumers to buy from registered agricultural stores that meet the quality standards set by the relevant ministries.
- Creating a cooperation network between farmers and traders, in order to prioritize local products. This network is expected to enhance communications between stakeholders, especially regarding the market need.
- Setting standardized price ranges for agro products in local markets by the Ministry of Agriculture and the Ministry of National Economy, taking into consideration the seasonality of these products.
- Establishing storage and packaging warehouses through encouraging private investments in this sector

- Establishing a factory for the production of boxes for packaging at affordable prices for the use of farmers and traders.
- Enhancing farmers and traders' technical knowledge on grading agro-products according to national and international standards.

## Central Wholesale Markets in the West Bank
## Study summary

### 1. Introduction

Central wholesale markets for agricultural products are available throughout the governorates of the West Bank; reaching up to 11 markets, except for those of Jerusalem and Salfit. Central wholesale markets are considered main pillars in the marketing process of agricultural products, which starts with the farmer and ends with the consumer. The markets provide a variety of fresh vegetable, fruit and field crop products for the local consumers. Most of the Palestinian wholesale traders and middlemen sell the agro-products through the wholesale central markets. Despite their importance, central wholesale markets have been suffering from major challenges and obstacles in recent years. Those include the administrative problems represented in the lack of organization and monitoring by the authorities in charge of markets' management and the Israeli occupation's continuous policies that aim at weakening the competitive advantage of Palestinian products, and others.

The Applied Research Institute – Jerusalem (ARIJ) has conducted a field survey of central wholesale markets as part of its project "Food Production-Consumption Assessment to Improve Sustainable Agriculture and Food Security in the West Bank – Palestine", which is conducted in partnership with the Ministry of Agriculture and the Ministry of National Economy, and is funded by the International Development Research Centre (IDRC). The project survey of central wholesale markets was conducted during the months of August and September 2014 through field visits to all central wholesale markets (Map 1), conducting interviews with workers, traders and administrative authorities. The project survey has covered the agricultural year set by Ministry of Agriculture (October 2013- September 2014). The main crops that were selected for the study are namely (a) Field crops: wheat, potatoes, onions; (b) Vegetables: tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: citrus fruits, guava, grapes, dates, almonds; and (d) olives.

The survey aims at generating knowledge on:

- The infrastructure of central wholesale markets, operating mechanisms, and the administrative authorities.
- Workers in central wholesale markets, including their numbers and specializations.
- The adopted internal systems and mechanisms used to calculate fee rates on incoming products.

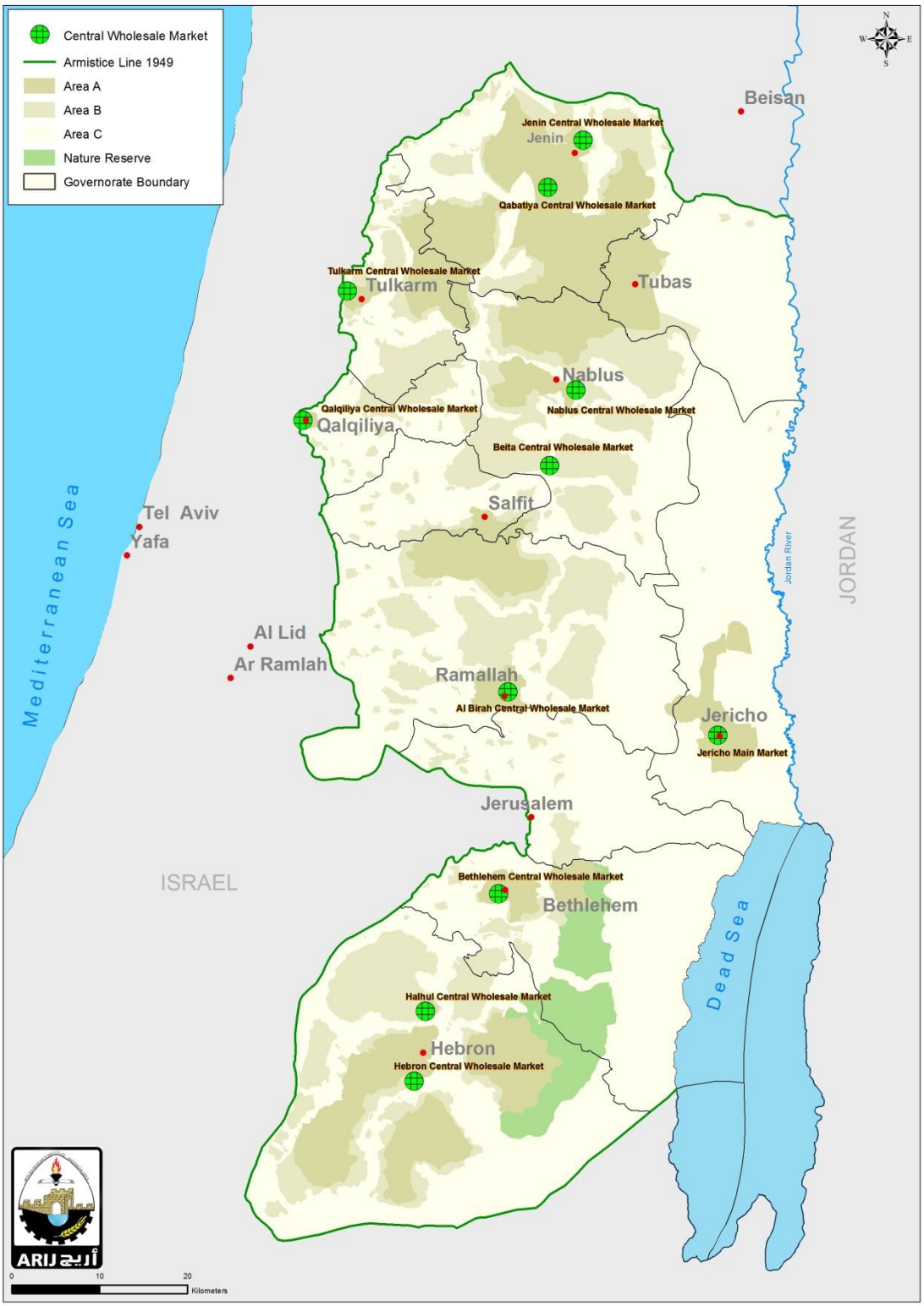
- The adopted mechanism for the disposal of damaged or spoiled products in the central wholesale market.
- The main customers of the central wholesale market.
- The size of commercial trading activities that take place in central wholesale markets, in terms of both quantities and prices of fruits and vegetables entering the markets, in addition to the number of traders.
- The marketing value and supply chain of agricultural products.

In addition, the survey aims at analyzing the current situation in order to foresee future possibilities. This is done through conducting a SWOT analysis under which the strengths, weaknesses, opportunities and threats are identified.

## 2. Research Challenges

The major challenges that have faced the research team of ARIJ during their field surveys of central wholesale markets in the West Bank can be summarized as follows:

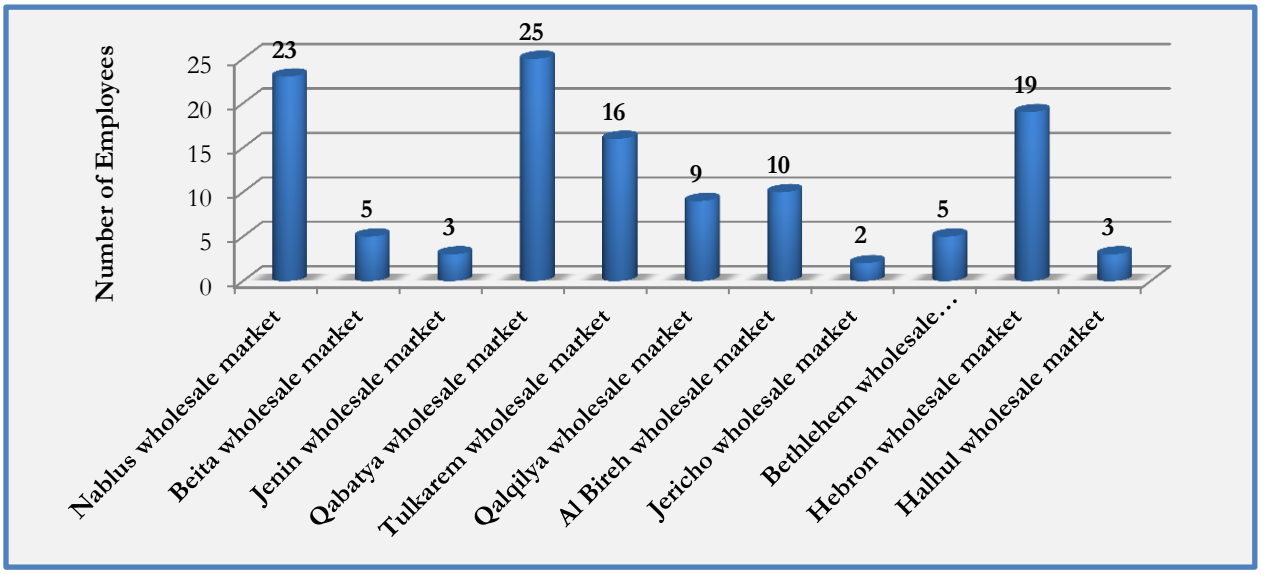
- Difficulty in reaching the personnel in charge of the central wholesale market's administration.
- Postponing field visit dates multiple times due to the busy schedule of surveyed interviewees.
- Difficulty in commuting between governorates, due to the Israeli checkpoints, closures and escalation of the political conflict took place in July-August 2014.
- Lack of registration systems that keep track of the quantities, prices, and sources of incoming agricultural products at central wholesale market. This has resulted in collecting estimated quantities.
- Unwillingness to share specific and accurate information by some traders and market workers, as in the cases of Beita and Tulkarem central wholesale markets.
- The absence of a clear role for the Ministry of Agriculture and the Ministry of National Economy in monitoring the operations of central wholesale markets, resulting in weak administrative and organizational monitoring, which led to the unavailability of information on the quantities and quality of incoming agricultural products to the markets.




Map (1): Locations of central wholesale markets in the West Bank

## 3. Overview

- ✓ Central wholesale markets have been established in order to ensure the provision of a set of services for farmers, traders, and middlemen. The main service of these is the provision of a space in which they can trade agricultural products. In addition, and since central wholesale markets should be running under the supervision of municipalities, they serve as a source of revenue that finances the provision of offered services, that extend to include other members of the community like households, and institutions. Field survey results indicate that the majority of central wholesale markets in the West Bank have been established during the years of 1956 and 1986, except for those in Beita and Qabatya that have been established after the year 2000 as a response to the political situation mainly the continuous closures by the Israeli occupation during the second Intifada.
- ✓ The total number of workers in the central wholesale market of the West Bank is estimated at 119. The average number of workers per market varies according to the administrative mechanism and the size of commercial trading activities. Jenin central wholesale market has the least number of employees with 3 workers, while Qabatya has the highest number with 25 employees. (Graph 1)




**Graph (1): Number of employees per central wholesale market**

- ✓ Central wholesale markets also vary in the area on which they are established. The average area is estimated at 7,500 square meters. Qalqilya central wholesale market was the smallest among all others, with an area of 400 square meters, while Hebron's market is the largest with an area of 27,000 square meters. It is worth mentioning that a new bigger market has been established in Qalqiliya; instead of the old one (2,960 square meters) but it is still undergoing preparations; before the initiation of operations. Furthermore, central wholesale markets offer a total of 416 shops, with an average of 37 shops per market. Only 313 of these are currently occupied and operating, while 103 are closed due to the poor demand on shops in some central wholesale markets. According to results, Jenin

central wholesale market has the highest number of non-operating shops (reaching up to 66 shops). (Table 1)

| Central wholesale market | Area ($m^2$) | Number of shops | | |
|---|---|---|---|---|
| | | Operating | Not operating | Total |
| Nablus central wholesale market | 9,000 | 67 | 25 | 92 |
| Beita central wholesale market | 9,000 | 24 | 0 | 24 |
| Jenin central wholesale market | 5,000 | 9 | 66 | 75 |
| Qabatya central wholesale market | 8,000 | 21 | 1 | 22 |
| Tulkarem central wholesale market | 6,000 | 18 | 0 | 18 |
| Qalqilya central wholesale market | 400 | 40 | 0 | 40 |
| Al Bireh central wholesale market | 2,500 | 22 | 0 | 22 |
| Jericho central wholesale market | 1,000 | 10 | 11 | 21 |
| Bethlehem central wholesale market | 8,000 | 14 | 0 | 14 |
| Hebron central wholesale market | 27,000 | 62 | 0 | 62 |
| Halhul central wholesale market | 7,000 | 26 | 0 | 26 |

**Table (1): The area and number of shops in each central wholesale market**

## 4. Administrative and Regulatory Issues

✓ Survey results show that all central wholesale markets are under the provision of the local authorities as stated by the bylaw of central wholesale markets for vegetables and fruits. Some of these local authorities directly supervise and administer the market operations as in the case of Nablus, Qabatya, Hebron, Qalqilya, Bethlehem, and Al Bireh, while others

lease the market on annual basis to a third party who is then responsible for the collection of fees as in the case of Tulkarem, Beita, Jenin, Jericho, and Halhul.

- ✓ Local authorities provide the central wholesale markets with a set of services that include: cleaning, security, and monitoring. But, some local authorities offer more services like the provision of refrigerator storehouses to store production surplus.
- ✓ The majority of central wholesale markets do not have a registration system to record incoming quantities, except Nablus and Hebron central wholesale market.
- ✓ The percentage of fees collected on incoming and sold products varies from one market to another, depending on the administrative bylaw and system used. But, the majority of the markets do not exceed the maximum 4% fee specified by the Palestinian bylaw for central wholesale markets for vegetables and fruits, except for Jericho central wholesale market that has its own system, and charges 0.60 NIS on each package paid in half by the farmer and trader. Overall, fee charges range between 2%-4% , except for the case of Beita market where a fee of 20-30 NIS is charged on each incoming vehicle depending on its size and Al Bireh market where a 7% fee if collected of the value of sold products. (Table 2)

| Central wholesale market | Collected fees |
|---|---|
| **Nablus central wholesale market** | 3% of the value of sold or displayed products |
| **Beita central wholesale market** | 10 – 30 NIS on each vehicle |
| **Jenin central wholesale market** | 4% of the value of sold or displayed products |
| **Qabatya central wholesale market** | 3% of the value of sold or displayed products |
| **Tulkarem central wholesale market** | 4% of the value of sold or displayed products |
| **Qalqilya central wholesale market** | 3.6% on incoming packages from the governorate, and 0.45 NIS on packages coming from other governorates |
| **Al Bireh central wholesale market** | 7% of the value of sold or displayed products |
| **Jericho central wholesale market** | 0.60 NIS on each incoming package |
| **Bethlehem central wholesale market** | 2% of the value of sold or displayed products |
| **Hebron central wholesale market** | 4% of the value of sold or displayed products |
| **Halhul central wholesale market** | 4% of the value of sold or displayed products |

**Table (2): Fee collection system in each central wholesale market**

- ✓ Field survey results indicate that the quantity of spoiled products is estimated at 1% of total quantity, and it sometimes reaches 2% as in the cases of Bethlehem and Halhul central wholesale markets. Those spoiled products are either disposed in solid waste containers (80% of the quantity), or sold at cheap prices. Qalqilya central wholesale market sells part of its spoiled products to the zoo located in the city.
- ✓ Central wholesale markets in West Bank governorates work all year long, except for Jericho's and Halhul's whose operations depend on the seasonality of agricultural production. And while some markets open on a 24-hour basis, others have more specific working hours. Most markets are off once a week but the day varies from one market to another. For example, Nablus and Bethlehem markets do not work on Fridays, while Jericho and Tulkarem markets official holiday is on Thursdays.

## 5. Commercial Trading Activities

- ✓ Agricultural products at central wholesale markets are either imported from local farmers, from the Israeli market. Overall, 82% of vegetables imported to the market come from local sources, whereas 71% of fruits come from the Israeli market. For field crops, almost have of the received quantities (49%) are locally produced, while the rest is imported from Israel. (Table 3)

| Central wholesale market | Agricultural product | Local market | Israeli market |
|---|---|---|---|
| **Nablus central wholesale market** | Vegetables | 82% | 18% |
| | Fruits | 20% | 80% |
| | Field crops | 3% | 97% |
| **Beita central wholesale market** | Vegetables | ***[53] | *** |
| | Fruits | *** | *** |
| | Field crops | *** | *** |
| **Jenin central wholesale market** | Vegetables | 100% | 0% |
| | Fruits | 10% | 90% |
| | Field crops | 36% | 64% |
| **Qabatya central wholesale market** | Vegetables | 100% | 0% |
| | Fruits | 10% | 90% |

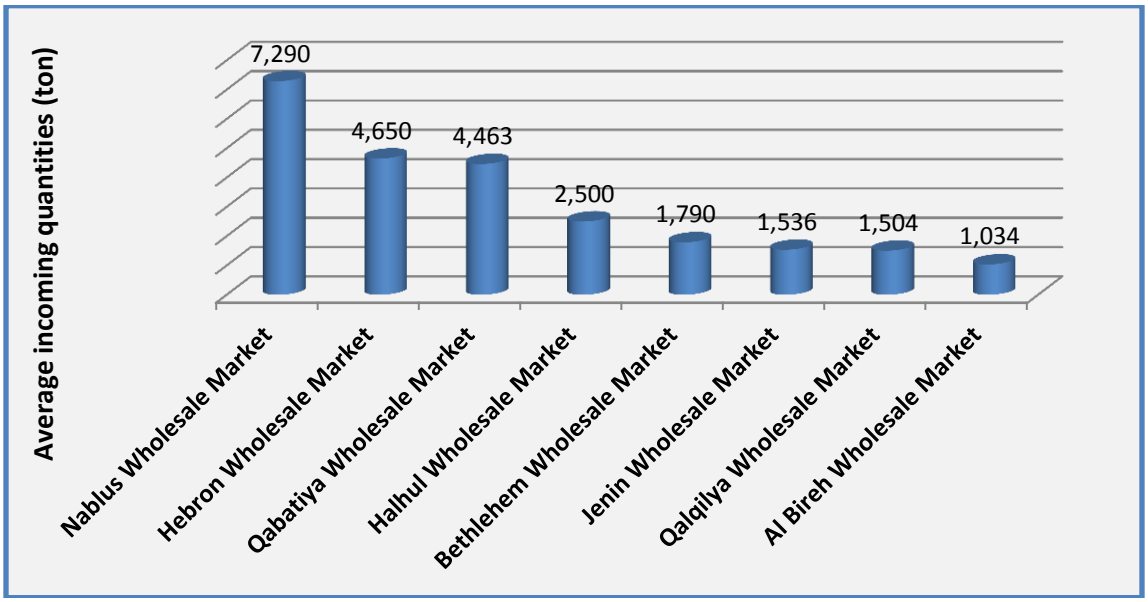
[53] Data is unavailable

| | | | |
|---|---|---|---|
| | Field crops | 42% | 58% |
| **Tulkarem central wholesale market** | Vegetables | 100% | 0% |
| | Fruits | 10% | 90% |
| | Field crops | 42% | 58% |
| **Qalqilya central wholesale market** | Vegetables | 93% | 7% |
| | Fruits | 20% | 80% |
| | Field crops | 65% | 35% |
| **Al Bireh central wholesale market** | Vegetables | 70% | 30% |
| | Fruits | 15% | 85% |
| | Field crops | 9% | 91% |
| **Jericho central wholesale market** | Vegetables | 100% | 0% |
| | Fruits | 5% | 95% |
| | Field crops | 25% | 75% |
| **Bethlehem central wholesale market** | Vegetables | 90% | 10% |
| | Fruits | 20% | 80% |
| | Field crops | 28% | 72% |
| **Hebron central wholesale market** | Vegetables | 32% | 68% |
| | Fruits | 17% | 83% |
| | Field crops | 28% | 72% |
| **Halhul central wholesale market** | Vegetables | 70% | 30% |
| | Fruits | 30% | 70% |
| | Field crops | 30% | 70% |

**Table (3): Sources of imported agricultural products for each central wholesale market**

- ✓ Field survey results reflect that the monthly average quantity of incoming agricultural products is 2,964 tons per market. This quantity varies based on the size of agricultural production available in each governorate, and the demand on these products by

residents.[54] Nablus central wholesale market is the highest in terms of the size of trading commercial activities with 7,290 tons of products incoming to the market each month, followed by Hebron central market with an average of 4,650 tons/month. (Graph 2)




**Graph (2): Size of commercial trading activities by central wholesale market[55]**

## 6. Challenges and Recommendations

Field survey results reflect a number of challenges that face central wholesale markets in the West Bank. Those are summarized as follows:

### ➢ The legal framework

Central wholesale markets are governed by an originally Jordanian bylaw that has modified by the Palestinian Ministry of Local Government in 2012. This bylaw outlines a framework for the operating mechanism of central wholesale market, and specifies the percentage of fees to be collected on sold products. Despite the availability of this bylaw, some local authorities collect lower fees than those stated by the bylaw as in the case of Beita, Bethelehm and Qalqilya. Therefore, there is an urgent need for the creation of a legal body whose main task would be to supervise operations in central wholesale markets, and unify the percentage of collected fees in all central wholesale markets.

[54] It is worth mentioning that the administration at some central wholesale markets refused to provide the research team with data related to incoming quantities.
[55] No data is available on the wholesale markets of Beita, Jericho, and Tulkarem, because administrative authorities refused to provide the research team with this data, for financial privacy reasons.

### ➢ Internal and administrative systems

Central wholesale markets suffer from administrative problems. In cases where the market was administered by the local authority, a lack of employees was noticed. In addition, employees who already work in the markets are not specialized in marketing, or agricultural production. In the cases where markets are leased, the absence of supervision from the local authority was obvious. Therefore, there is a necessity to reinforce the supervisory role of local authorities, and reconsider the leasing of markets, in addition to hiring adequate and specialized staff that can maintain and manage the market's operation in an efficient and effective manner.

Furthermore, the majority of central wholesale markets do not have registration systems. Even in Hebron and Nablus where such systems are available, they still lack the registration of sources and prices of incoming products. Therefore, efforts are encouraged in order to develop electronic registration systems that would be used to build a database on all trade activities in central wholesale markets. Such data would be essential for setting strategic development plans for food and agriculture sectors in the West Bank.

Some central wholesale markets host both wholesalers and retailers, although this is prohibited under the bylaw which states that central wholesale markets are specifically established for wholesalers. Thus, it is recommended that that local authorities provide a different space for retailers in order to better regulate the market operations and control the types of incoming and traded products.

### ➢ Wholesale Market Infrastructure

Some central wholesale markets suffer from the lack of infrastructure, such as the lack of lighting, internal streets, parking spaces, administrative offices, and electronic scales. One of the major infrastructure needs is the provision of refrigerator storehouses, through which traders can store production surplus and avoid its spoilage due to heat and overstocking. Field survey results indicate that the previously mentioned infrastructure needs are either absent or poorly provided. Therefore, local authorities and in collaboration with donor agencies are recommended to work on the provision of such needs, in order to encourage more traders to move their operations to central wholesale markets.

### ➢ Competition of Israeli products

The Israeli agricultural production is a main competitor for the Palestinian local production. This competition increases when the Israeli products enter the Palestinian market during the harvesting season. This competition directly affects prices, lower market returns, and leads to an overstocking of Palestinian local production that sometimes leads to spoilage. In most cases, this competition reduces sales for local

agricultural production, and affects the profitability of Palestinian farmers. As the results of the field survey indicate that this competition is highest for the following products: tomatoes, zucchini, paprika, grapes, citrus fruits, ripe dates, potato and onion.

Therefore, steps must be undertaken in order to protect the Palestinian local product from competition. This could be done by managing the amounts of imported quantities from the Israeli market especially during harvesting season. In addition, more monitoring is required on the quality of imported agricultural products from the Israeli market, especially that the survey results show that majority of those are of class B and C in terms of quality (as reported by traders).

- **Packaging of agricultural products**

Most central wholesale markets lack packaging facilities; since most traders depend on the basic packaging taking place at farm level. There are some cases when traders conduct packaging to agricultural products, but mainly when exporting to the Israeli market or markets abroad. But, since some agricultural products are exported, it would be necessary to provide packaging and labeling facilities in central wholesale markets. This would increase the competitive advantage of local production in the international market, and have an added value for farmers and traders.

- **Direct marketing techniques used by farmers**

Some farmers prefer to use direct marketing techniques from farmer to trader or processor. This affects the size of commercial trading activities at central wholesale markets, as in the cases of Tulkarem central market that only receives 20% of the local production, and Hebron that only gets 8% of the local production. The Ministry of Agriculture is recommended to identify the benefits of marketing products through the central wholesale market to local farmers, through awareness workshops and campaigns. It is worth mentioning that the majority of Palestinian farmers market their products directly to exporters either to the Israeli or neighboring markets such as Jordan, and this reduces product availability of domestic consumption.

# The Food Industry Sector in the West Bank
# Study summary

## 1. Introduction

The food processing industry is considered one of the oldest industries in Palestine. In its early days, this industry was limited to the production of few processed foods and sweets. Currently, this industry is a major contributor to the Palestinian economy and its gross domestic product. In addition, this sector has created job opportunities in the local market, and has been employing 11,400 employees as of the year 2012.[56] This sector's importance also lies in its provision of needed processed foods essential for food security in Palestine, through producing 120 different food commodities.

Developing the food processing industry can have spillover effects on all associated sectors and industries, and in particular on the agricultural sector that acts as the main supplier of inputs. It also plays a key role in creating an added value to agro products.

According to the Palestinian Food Industries Union, following are the most important food processing industries in the West Bank, related to agro products surveyed in the project:

- **Canned vegetables and fruits**: In Palestine, there are 18 factories specialized in the production of canned vegetables and fruits, currently employing 545 workers. Investment in this industry is estimated at $30 million, and these products constitute 20% of total market share. In addition, it contributes to $21 million of the total value of exports. But, this industry still lacks the needed packaging techniques and storehouses, whose provision would drive higher investments.[57]
- **Oils and vegetable fats:** There are 13 factories specialized in the production of oils and vegetable fats, currently employing more than 295 workers. Investment in this industry is estimated at $70 million, and these products constitute 20% of total market share. Within this industry, 3 factories have received the ISO 22000 certification, while 10 olive mills have received the Hazard Analysis & Critical Control Points (HACCP) certification. In addition, this industry contributes to more than $31 million of the value of exports. The olive oil industry still needs to achieve higher international market penetration.[58]
- **Wheat flour and grains:** There are 9 factories working within this industry, employing more than 236 workers. Investment in this industry is estimated at $45 million, while these products constitute to 30% of market share.[59]
- **Pasta and vermicelli:** There are 5 factories working in the production of pasta and vermicelli, employing more than 89 workers. Investment in this industry is estimated at $34 million.[60]

[56] The Palestinian Central Bureau of Statistics (2013). Establishment Census, 2012.
[57] Palestinian Food Industries Union (2014).
[58] Palestinian Food Industries Union (2014).
[59] Palestinian Food Industries Union (2014).
[60] Palestinian Food Industries Union (2014).

The Applied Research Institute – Jerusalem (ARIJ) has conducted several interviews with food processors which depend in their production process on agricultural crops surveyed under the activities of the "Food Production-Consumption Assessment to Improve Sustainable Agriculture and Food Security in the West Bank – Palestine"; a project that is implemented by ARIJ in partnership with the Palestinian Ministry of Agriculture and the Palestinian Ministry of National Authority, and funded by the International Development Research Centre (IDRC). Accordingly, 30 interviews have been conducted with a sample representing 4% of food processing factories and cooperatives in the West Bank governorates. These interviews aimed at analyzing the sources of inputs, production mechanisms, and the main actors in the supply chain of processed foods, in addition to understanding other issues such as pricing, profitability, packaging and grading, and the sector's major challenges. The main crops that were selected for the studies are namely (a) Field crops: wheat, potatoes, onions; (b) Vegetables: tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: citrus fruits, guava, grapes, dates, almonds; and (d) olives.

## 2. Input Sources

Agricultural products are the main inputs for the food processing industry. Sources of agro products vary among factories depending on the size of production and the number of production lines. For example, survey results found that 70% of wheat used for the production of food commodities is imported from foreign markets (specifically Russia and the United States of America). This also reflects low rates of self-sufficiency in regards to wheat production and consumption in the local Palestinian market, estimated at only 11%. On the other hand, olive and olive oil used in food processing come from local sources. This also applies to cucumbers, dates, tomatoes, eggplants, almonds and grapes. Furthermore, almost 50%-70% of the supply of potatoes and citrus fruits used in food processing is imported from the Israeli market.

Other surveyed agro products like guava, paprika, squash, green beans and onions are considered secondary inputs in the food processing industry, and are therefore purchased in very small quantities.

## 3. Processed Agro Products

Data collected through interviews indicate that more than 30 food and industrial commodities use surveyed agro crops as their inputs. It also reflects that most food commodities in the West Bank use wheat and grapes specifically. Wheat is a main ingredient in the production of: flour, maftoul, freekeh, bran, and semolina, while grapes are used for the production of: grape molasses,

grape Jam, malbann, raisins, and grape vinegar. Furthermore, results indicate that around 1,763 tons of wheat flour is produced in the West Bank on a monthly basis. (Table 1)

| Agro Product | Processed Food Commodity | Production (ton/month) | Production Season |
|---|---|---|---|
| **Wheat** | Flour | 763,1 | March |
| | Semolina | 20 | June, August |
| | Bran | 280 | June, August |
| | Freekeh | 12 | April, May, June, July |
| | Maftoul | 12 | March, April, May |
| **Eggplants** | Spiced Eggplant | 0.4 | June, July, August, September |
| | Pickled Eggplant | 22.4 | September |
| | Makdous Eggplant | 0.3 | Variable |
| **Grapes** | Grape molasses | 1.95 | September, October, November |
| | Malbann | 0.74 | July, August, September |
| | Grape Jam | 0.28 | July, August, September |
| | Grape Vinegar | 0.04 | July, August, September |
| | Raisins | 0.33 | July, August, September |
| **Olives** | Olive oil | 127.7 | May, June |
| | Makdous Olive | 48.18 | November |
| | Olive Honey Spread | 0.5 | November |
| | olive oil Soap | 83 | Variable |
| **Dates** | Date | 49 | October, November, the month of Ramadan |
| | Ajwa dates | 1.25 | September, October |
| | Dates stuffed | 0.05 | September, October |
| **Almonds** | Peeled almonds | 13.73 | August, September, October |
| | Almond oil | 0.84 | Variable |
| | Hlawoh almonds with Sesame | 0.15 | January |
| | Candied almonds | 0.15 | January |
| **Cucumbers** | Pickle | 202 | May |
| **Citrus Fruits** | Marmalade | 0.34 | May – November |
| | Lemonade | 0.05 | June – November |
| **Tomatoes** | Dried Tomatoes | 0.63 | Variable |
| | Turkish salad | 0.42 | June, July, August, September |

| | | | |
|---|---|---|---|
| | Vegetable salad | 0.42 | June, July, August, September |

**Table (1): Processed Food Commodities, Production Quantity per Month and Seasonality**

## 4. Targeted Markets

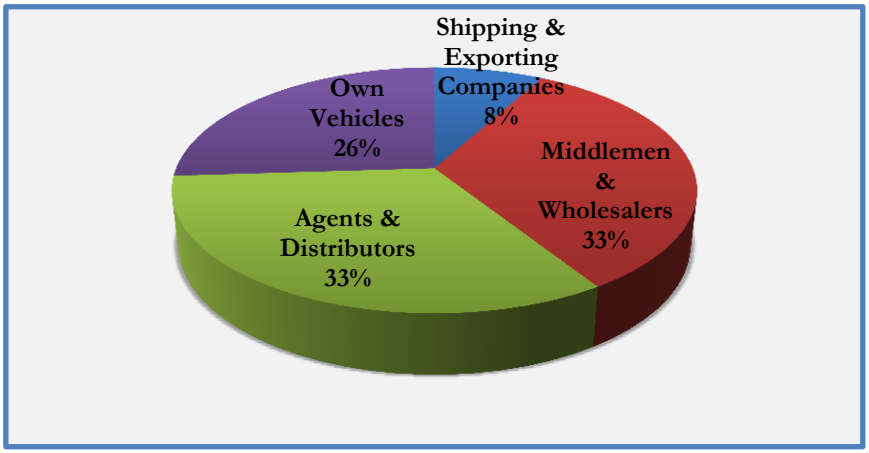
Data collected during interviews shows that 78% of food producers market their production in the Palestinian local market, 52% export their products to Arab and international markets, while the Israeli market is the least targeted. Furthermore, 36% of producers target the northern governorates of the West Bank, 27% target the middle governorates, while 37% target southern governorates. This variation in distribution among governorates depends on the diet norms and trends prevalent in each governorate. (Table 2)

| Agro Product | Processed Food Commodity | Average Price in the Local Market (NIS/kg) | Average Price in the International Market (NIS/kg) |
|---|---|---|---|
| **Wheat** | Flour | 2.2 – 2.5 | No exports |
| | Semolina | 8 | No exports |
| | Bran | 0.7 | No exports |
| | Freekeh | 12 – 15 | 20 |
| | Maftoul | 15 | 20 |
| **Eggplants** | Spiced Eggplant | 3 | No exports |
| | Pickled Eggplant | 3.5 | 3.5 |
| | Makdous Eggplant | 30 | 30 |
| **Grapes** | Grape molasses | 20 – 30 | 20 – 30 |
| | Almbann | 20 – 25 | 25 – 30 |
| | Grape Jam | 25 | 25 – 30 |
| | Grape Vinegar | 8 NIS/liter | No exports |
| | Raisins | 17 – 20 | 17 – 20 |
| **Olives** | Olive oil | 30 | 33 |
| | Makdous Olive | 5.3 | 72.7 |
| | Olive Honey Spread | No local sales | 55.6 |
| | olive oil Soap | 3 NIS/piece | 5 NIS/piece |
| **Dates** | Date | 15 – 40 | 15 – 60 |
| | Ajwa dates | 20 | No exports |
| | Dates stuffed | 50 | No exports |
| **Almonds** | Peeled almonds | 22 | 57 |
| | Almond oil | NA | 218 |
| | Hlawoh almonds with | 55.6 | No exports |

| | | | |
|---|---|---|---|
| | Sesame | | |
| | Candied almonds | 20 | No exports |
| **Cucumbers** | Pickle | 4.3 | 10 |
| **Citrus Fruits** | Marmalade | 20 | No exports |
| | Lemonade | 15.4 NIS/liter | No exports |
| **Tomatoes** | Dried Tomatoes | 66.7 | 86.7 |
| | Turkish salad | 3 | No exports |
| | Vegetable salad | 3 | No exports |

**Table (2): Distribution of Processed Food Commodities by Market**

Furthermore, the channels most frequently used for the delivery of processed food commodities to markets were agents & distributors (33%) or middlemen & wholesalers (33%). (Graph 1)




**Graph (1): Delivery Channels of Processed Food Commodities to Markets**

## 5. Prices of Processed Food Commodities

Commodity prices vary according to cost of production, and targeted markets. (Table 3)

| Agro Product | Processed Food Commodity | Average Price in the Local Market (NIS/kg) | Average Price in the International Market (NIS/kg) |
|---|---|---|---|
| **Wheat** | Flour | 2.2 – 2.5 | No exports |
| | Semolina | 8 | No exports |
| | Bran | 0.7 | No exports |
| | Freekeh | 12 – 15 | 20 |
| | Maftoul | 15 | 20 |
| **Eggplants** | Spiced Eggplant | 3 | No exports |

| | | | |
|---|---|---|---|
| | Pickled Eggplant | 3.5 | 3.5 |
| | Makdous Eggplant | 30 | 30 |
| **Grapes** | Grape molasses | 20 – 30 | 20 – 30 |
| | Malbann | 20 – 25 | 25 – 30 |
| | Grape Jam | 25 | 25 – 30 |
| | Grape Vinegar | 8 NIS/liter | No exports |
| | Raisins | 17 – 20 | 17 – 20 |
| **Olives** | Olive oil | 30 | 33 |
| | Makdous Olive | 5.3 | 72.7 |
| | Olive Honey Spread | No local sales | 55.6 |
| | olive oil Soap | 3 NIS/piece | 5 NIS/piece |
| **Dates** | Date | 15 – 40 | 15 – 60 |
| | Ajwa dates | 20 | No exports |
| | Dates stuffed | 50 | No exports |
| **Almonds** | Peeled almonds | 22 | 57 |
| | Almond oil | | 218 |
| | Hlawoh almonds with Sesame | 55.6 | No exports |
| | Candied almonds | 20 | No exports |
| **Cucumbers** | Pickle | 4.3 | 10 |
| **Citrus Fruits** | Marmalade | 20 | No exports |
| | Lemonade | 15.4 NIS/liter | No exports |
| **Tomatoes** | Dried Tomatoes | 66.7 | 86.7 |
| | Turkish salad | 3 | No exports |
| | Vegetable salad | 3 | No exports |

**Table (3): Processed Food Commodity Prices in Local and International Market**

## 6. Profitability

Profit margin is the difference between revenues collected through sales and the cost of production. This margin varies among factories for many reasons that include the availability of agro products, and the market size. Research findings estimate that the average profit margin for processed food commodities is 12% in local markets, and 20% in international markets.

## 7. Packaging

Packaging techniques are different from one commodity to another, based on the commodity's size and form. But, findings indicate that plastic packages are the most prevalent among food processors given their affordability and availability in different sizes and designs. (Table 4)

| Agro Product | Processed Food Commodity | Package Size | Package Type |
|---|---|---|---|
| **Wheat** | Flour | 20kg, 50kg | Plastic bag |
| | Semolina | 50kg | Plastic bag |
| | Bran | 50kg | Plastic bag |
| | Freekeh | 250g, 25kg | Deflated plastic bag |
| | Maftoul | 250g, 25kg | Deflated plastic bag |
| **Eggplants** | Spiced Eggplant | 180g, 450g, 850g | Plastic can |
| | Pickled Eggplant | 600g, 3kg, 9kg | Metal can |
| | Makdous Eggplant | 600g | Glass can |
| **Grapes** | Grape molasses | 1kh, 3kg, 5kg | Plastic or glass can |
| | Malbann | 500g | Plastic can |
| | Grape Jam | 1kg | Plastic can |
| | Grape Vinegar | 1litre | Plastic can |
| | Raisins | 1kg | Plastic bag |
| **Olives** | Olive oil | 250ml, 500ml, 750ml, 1000ml | Glass can |
| | | 1litre, 3litre, 5litre, 10litre, 16litre, 50litre, 200litre | Metal can |

| | | | |
|---|---|---|---|
| **Olives** | | 1litre, 2litre, 3litre, 16litre, 1000litre | Plastic can |
| | Makdous Olive | 600g, 3kg, 9kg | Metal or plastic can |
| | Olive Honey Spread | 180g, 320g | Glass can |
| | olive oil Soap | 200g | Cardboard box |
| **Dates** | Date | 250g, 500g, 1kg, 2kg, 5kg | Cardboard box |
| | Ajwa dates | 1kg | Deflated plastic bag |
| | Dates stuffed | 1kg | Plastic can |
| **Almonds** | Peeled almonds | 1kg, 20kg, 30kg | Deflated plastic bag or plastic bag |
| | Almond oil | 250litre | Metal can |
| | Hlawoh almonds with Sesame | 45g | ورق بروبليم |
| | Candied almonds | 1kg | Cardboard box |
| **Cucumbers** | Pickle | 600g, 3kg, 9kg | Metal can |
| **Citrus Fruits** | Marmalade | 1kg | Glass can |
| | Lemonade | 1.3litre | Glass can |
| **Tomatoes** | Dried Tomatoes | 150g, 180g | Glass can |
| | Turkish salad | 180g, 450g, 850g | Plastic can |
| | Vegetable salad | 180g, 450g, 850g | Plastic can |

**Table (4): Size and Type of Package for Processed Food Commodities**

## 8. Challenges facing the Food Production Industry

Interviews conducted with food processors and factory owners have shown the following challenges:

- High cost of inputs o agro products, due to fluctuations in their available quantities and lack of coordination between farmers on cultivation and collection dates, in addition to their seasonality.
- Unfair competition between local and Israeli products, given that these products are allowed into the Palestinian local market, and the absence of protection policies for Palestinian infant industries.

- Barriers to entry into new markets due to the high costs of exporting, and the Israeli restrictions on crossings.
- The limited local market size and its inability to absorb all local production, especially during the ongoing financial and economic crisis. As a result, many factories have been shutdown.
- High cost of transportation, delivery and storage.

## 9. Recommendations

- Adopt new technologies in production, and respond to local and international market needs.
- Provide producers and exporters with data from market research.
- Enhance infrastructure and regulations.
- Follow Palestinian and international quality standards in the production of processed food commodities.
- Coordinate activities and reinforce monitoring in central wholesale markets.
- Provide storage, cooling, delivery, packaging and grading services.
- Create an information system on marketing services, and market needs.
- Conduct feasibility studies on the exporting possibilities of processed food commodities.
- Encourage and support agriculture-related exports.
- Apply food safety standards while processing food.

# Palestinian Household Consumption Trends for Agro-Commodities Study summary

## 1. Introduction

The Palestinian consumer living in the West Bank is exposed to an unstable political situation, due to the Israeli occupation, which affects the overall economic situation in Palestine, in terms of employment opportunities, prices of commodities, and trade restrictions. Due to these factors, the livelihood condition of the Palestinian consumer is highly vulnerable especially towards price fluctuation and thus the purchasing power is relatively unstable. The Palestinian consumption trends have changed remarkably over the years, and are expected to continue to further changes, due to globalization that has created new needs, and offered consumers with a variety of options to choose from.

In order to contribute to the understanding of current Palestinian consumption trends specifically in agro-commodities, the Applied Research Institute – Jerusalem (ARIJ) conducted a survey for the Palestinian households under the project "Food Production-Consumption Assessment to Improve Sustainable Agriculture and Food Security in the West Bank – Palestine". The project is funded by the International Development Research Centre (IDRC) and conducted in partnership with Ministry of Agriculture and Ministry of National Economy. The survey has surveyed 419 Palestinian Consumers from all over the West Bank Governorates and form different locality types including rural, urban and refugee camps (Map1). The main crops that were selected for the study are namely (a) Field crops: wheat, potatoes, onions; (b) Vegetables: tomatoes, cucumbers, eggplants, squash, green beans, paprika; (c) Fruit trees: citrus fruits, guava, grapes, dates, almonds; and (d) olives.

The consumer survey aimed at studying the following:

1. The standards of living of the Palestinian households and the spending levels on food and drinks distributed by governorate and locality type.
2. The monthly spending level of Palestinian households on agricultural products compared to the total spending on food.
3. The average family consumption of the agricultural products surveyed in the project interventions.
4. The growth levels and future estimations of the consumption of agricultural products in addition to measuring the extent to which seasonality affect the consumption of agricultural products.
5. Self sufficiency of Palestinian households of agricultural products and the impact it has on the consumed amounts.
6. The most important sources for obtaining the agricultural products and the motives behind buying the agricultural products from a specific source.
7. The response of the Palestinian household's towards the fluctuation in agricultural products prices and its effect on level of consumption.

8. The main reasons behind the decision of buying certain agricultural product and the effect of the promotional tools on the decision.
9. The reasons behind and the level of reliability that the Palestinian household has in the local products.
10. The Palestinian household behavior towards the olive and wheat products regarding consumption and source of production (Olives and Wheat).
11. The challenges facing the Palestinian household in terms of consumption, pricing, availability and other challenges.

## 1. Main Results of the research study

### 1.1 Standard of living and Expenditure Trends

The average monthly income level of the Palestinian household as presented by the study sample was mainly between 1,500 – 3,500 NIS. It was found that more than half of the surveyed households range among two income groups: The first ranges between 1,501 NIS – 2,500 NIS representing 26.5%, and the second ranges between 2,501 NIS – 3,500 NIS representing 25.5%. It was also noticed that the income of 16.7% of the sample households was below 1,500 NIS. (Table 1)

| Household income level from all sources (NIS) | No. of surveyed households | Percentage of surveyed households |
|---|---|---|
| Less than 1,500 | 70 | 16.7% |
| (1,501-2,500) | 111 | 26.5% |
| (2,501-3,500) | 107 | 25.5% |
| (3,501-4,500) | 61 | 14.6% |
| (4,501-6,000) | 45 | 10.7% |
| More than 6,000 | 24 | 5.7% |
| Missing | 1 | 0.2% |
| **Total** | **419** | **100.0%** |

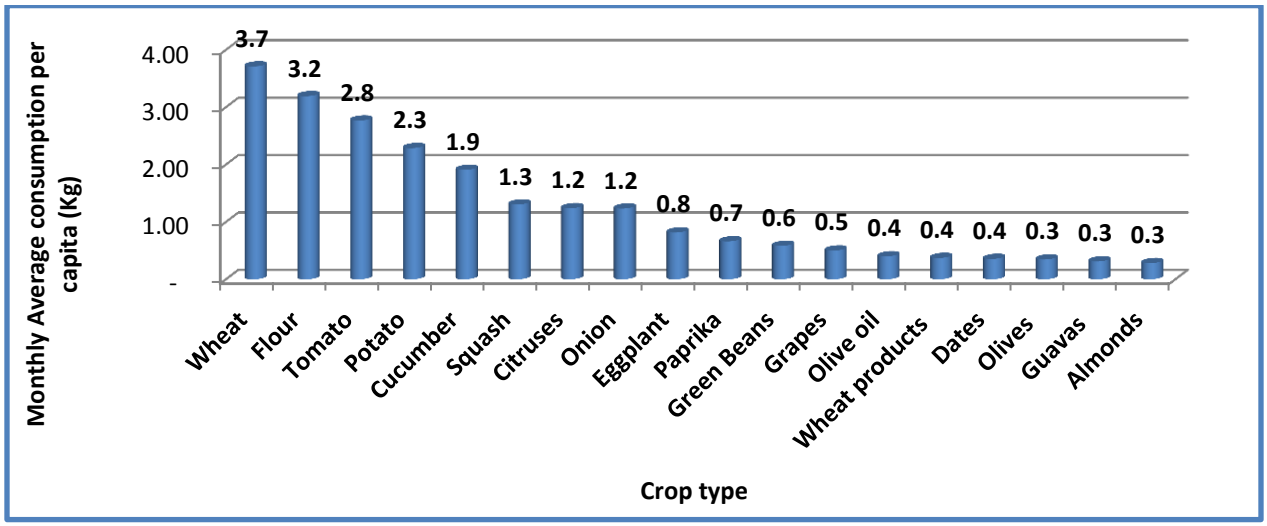
**Table (1): The proportional distribution of the sample households according to their monthly income level of different sources**

It is worth noting that the poverty line in the Palestinian Territory as defined by the Palestinian Central Bureau of statistics (PCBS) is estimated at 2,293 NIS and deep poverty line is estimated at 1,832 NIS for the year 2011[61]. This means that almost 43.2% of the surveyed households live under poverty line.

The average monthly expenditure reaches up to 38.6% on food and beverages. Noting that there is remarkable variation in the portion of expenditure spent on food (as a % of total HH expenditure) among the different governorates of the West Bank. These variations might be a reflection of different consumption trends, living standards, limited consumption option and prices of food commodities. One of the main contributors to changes in household consumption over the year is the production seasonality of agricultural commodities. Survey results show that the Palestinian household expenditure increases by 17% for field crops and fruits, 18% for vegetables, 4% for olive oil, and 6% for olives after the harvesting season.

### 1.2 Annual Consumption of Agro-commodities

The total household consumption of surveyed agro-commodities is estimated at 788.5 thousand tons per year; noting that the per capita total consumption of surveyed agro-commodities reached 22.3 kg per month. Investigating the average annual household consumption distribution over the agro-commodities, it was found: 42% of the consumption goes to field crops, 40% to vegetables, 14% to fruit trees, and 4% to olive and olive oil. (Graph 1)

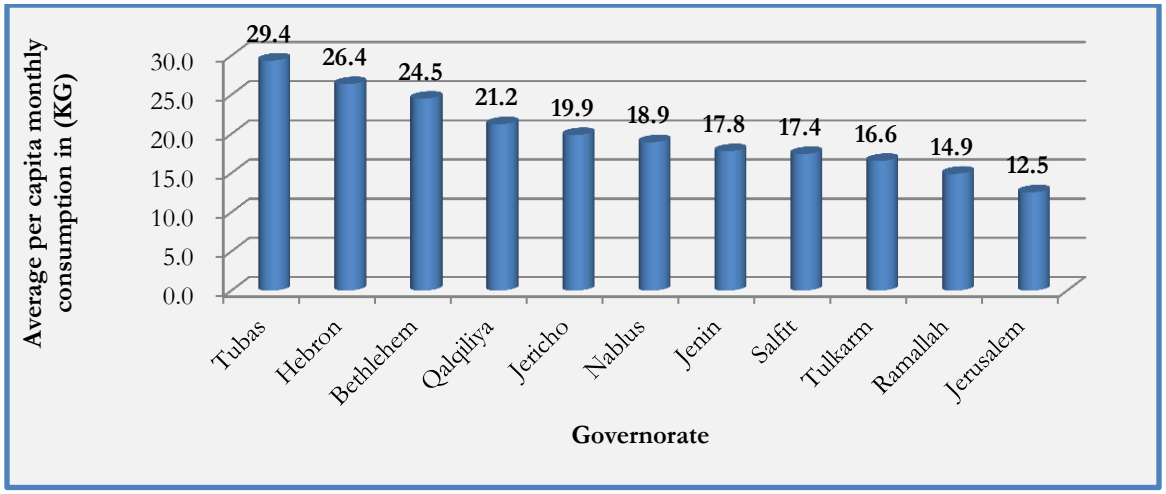



**Graph (1): Monthly average consumption per capita per crop**

[61] Palestinian Central Bureau of Statistics, 2012. Living Standards in the Palestinian Territory. Expenditure, Consumption, Poverty, 2011. Ramallah - Palestine

**Map (1): Surveyed localities during consumers' baseline survey**

On the locality level, survey results show that the average monthly household consumption of surveyed agro-commodities is higher in rural communities in comparison with household consumption in cities and camps. This is due to the larger household size in rural communities, and the household dependence on homemade food. This is in addition to the higher availability of agro-products in their localities or even in their home gardens. On the level of the per capita monthly consumption, it appears that there are differences at governorate level, for example a person in Tubas consumes more than a person in other governorates from the surveyed crops; it is estimated that per capita consumption in Tubas reaches up to 29.4 kg per month, while per capita consumption in Jerusalem reaches only 12.6kg per month (Graph 2).

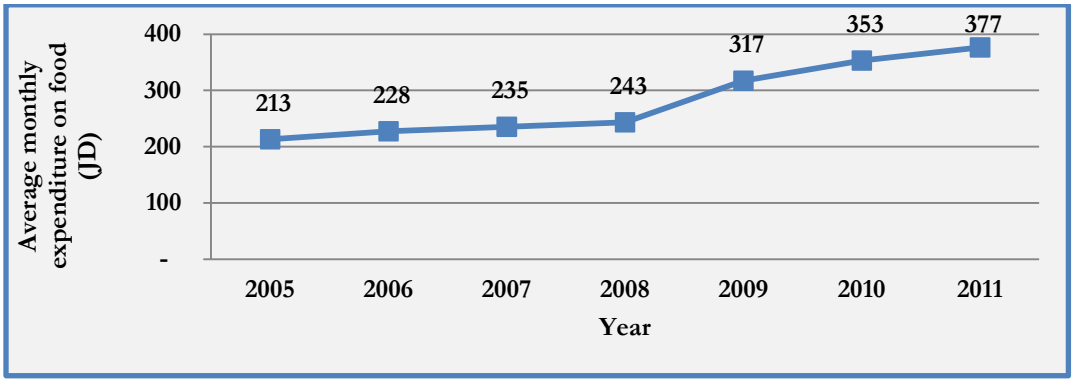



**Graph (2): Average monthly consumption per capita in (KG) for surveyed crops**

### 1.3 Growth indicators

Based on desk research and review of standard of living surveys published by the Palestinian Bureau of Statistics (PCBS), it was found that there is a continuous increase in the consumption of food commodities, including agro-commodities targeted in the project, for a set of reasons that include:

1. An annual population growth of 2.68% affects annual consumption of agro-commodities.
2. An annual growth in expenditure on food commodities in the past 3 years. According to PCBS, monthly household expenditure is 376.5 JD (1,954 NIS). This expenditure has grown by 6% in comparison to the 2 previous years of 2010 and 2009. (Graph 3)




**Graph (3): Average monthly household expenditure on food (JD)[62]**

3. The survey on household consumption trends for agro-commodities has indicated that more than 63% of targeted households perceived an increase in their consumption of agro-commodities during the past 3 years. The average annual growth of consumption was estimated at 12%.
4. The consumption trend in the West Bank indicates that agro-commodities are the mostly consumed food commodity, especially for households in camps and rural communities.

### a. Consumer Behavior Towards Agricultural Commodities

#### i. How People Buy Food

Survey results indicate that 62% of the surveyed households in the West Bank purchase their needs of vegetables and fruits on a weekly basis, while 25.8% do that every 3 days. This frequency is higher for 8.1% of households, which purchase their fruits and vegetables on a daily basis, and is lower for 4.1% which depend on monthly purchases. The variation in purchase frequencies has a number of reasons that include the varying spending and budget planning methods among households, and preferences regarding freshness and quality of purchased fruits and vegetables.

For the majority of the surveyed households (59.7%) the father is the household member in charge of purchasing the household's needs of food items. In 29.8% of surveyed households, the mother is the purchaser of these commodities, while the remaining households depend on either the son or daughter (and in 1.4% of households other members) to do the purchase.

#### ii. Sources Of Purchase

When asked about the sources from which they prefer to purchase agricultural commodities, 58.7% of households targeted in the sample indicated that a nearby fruits & vegetables shop is their source. In addition, 42.5% of the sample indicated dependence on central wholesale markets for the purchasing, while 22.4% indicated peddlers as their source. It is worth mentioning that each household purchases its needs of agricultural commodities from more than one source.

[62] PCBS 2005 – 2011. Living Standards Surveys in the Palestinian Territories: Expenditure, Consumption, Poverty, 2005-2011. Ramallah, Palestine

Only 19.6% of targeted households depend on their own home production of agricultural commodities, while 18.6% buy from grocery shops.

### iii. Consumer Sensitivity to Prices

Earlier results have shown that price plays a main role in the decision making process of Palestinian consumers in the West Bank when purchasing agricultural commodities. Therefore, consumption of agricultural commodities is highly sensitive to price fluctuations. Surveyed consumers saw an annual increase of 15.6% in fruit prices, 14% increase in vegetable prices and 12% increase in prices of field crops and olive oil.

### iv. Marketing and Promotional Tools

A set of promotional tools are used in order to encourage consumers to purchase agro-commodities. These tools are either used individually, or mixed to form a promotional mix. When asked about the most influential promotional tools that affect their purchase decisions, consumers within the sample identified that price discounts are the most influential, followed by additional free quantities, personal selling, awareness campaigns, and gifts. Out of the advertising tools, televised ads were the most important for consumers, whereas magazine and newspaper ads were the least influential.

The effects of price, sources, quality of product, and the marketing and promotional tools on the behavior of Palestinian consumers of agricultural commodities are very evident. Consumers respond to changes in those, and base their final decision based on one or more of them, with different weights assigned to each. Consequently, much attention should be paid to the design of a successful marketing strategy that incorporates the 4 P's of the marketing mix: product, price, placement, and promotion. A specific strategy for each should be designed in response to the analysis of the consumer behavior, in order to ensure both the satisfaction of the Palestinian consumer, and the maximization of profits for farmers, traders, and wholesalers. Such consideration is expected to add value to the supply chain of agricultural commodities, and enhance its management.

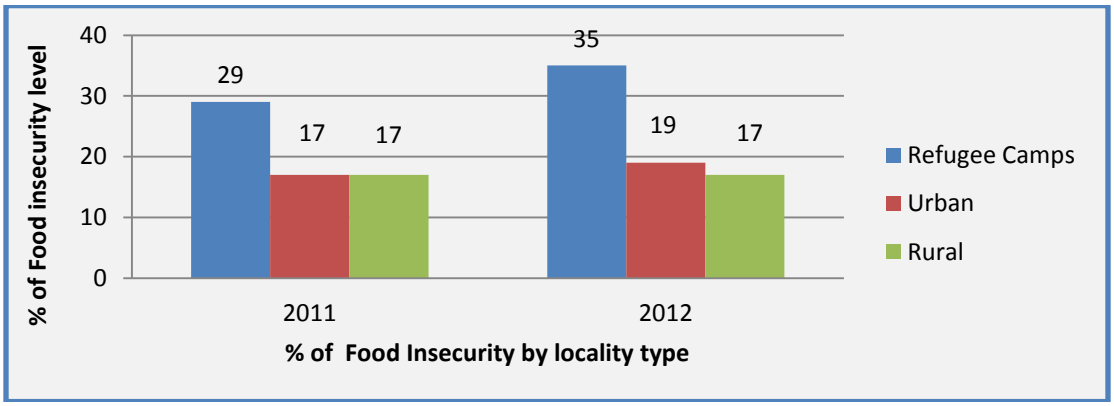
## 3.5 Self –Sufficiency and agro-commodities

Self-sufficiency refers to the consumption of home produced or grown agro-commodities. And although own production of agricultural products has been a common practice in the Palestinian community, this phenomena began to decrease with time, due to urbanization changes in lifestyles, and consumption trends. According to the survey results, only 19.6% of surveyed households produce their own agro-commodities, yet not all of them achieve self-sufficiency of home-grown products. Only 4% of the per capita annual consumption of agro-commodities is provided from the family self-production. Variations in the degree of self-sufficiency were also noticed based on the locality type. Rural communities had the highest rate with 35% of households growing and producing 1 or more agricultural crops at home.

### 3.6 Food Security and consumption patterns

Food security in the Palestinian territory has a special nature that differs from most areas in the world, as it is linked to the political conflict that negatively impact the livelihoods. The basic causes of food insecurity translate into underlying and immediate causes of food insecurity at household level, including: (i) limitations on food availability: negative effects on agricultural production and food trade/market supplies, including food dependency on imports; (ii) insufficient economic access to food: prices artificially high, high cost of production inputs but also lack of opportunities to secure employment and higher household incomes; (iii) impaired food utilization: poor water, sanitation, hygiene, access to health care, and declining quality of the diet, and (iv) unreachable food stability: unorganized food markets and pricing systems, no control on borders and thus limitations on exporting procedures. Upon the current population growth rate[63], this is anticipated to magnify food insecurity prevalence and depth[64].

Food insecurity is increasingly witnessed among the Palestinian households as poverty averages and unemployment rates are in continuous increase in the Palestinian territory; reaching up to 25.8% and 26.7% respectively. Food insecurity affects more than 1.57 million Palestinian people (34% of Palestinian population) during the year 2012. It is becoming a concern among refugee camps in particular as camps has the highest insecurity level reaching up to 35%. (Graph 4) it is also noted that household expenditure on food reached up to 55% of its total expenditure which indicates that accessing food is totally linked to the purchasing power of the Palestinian consumers and thus the poorer households are the ones mostly affected by changes on the level of food prices[65].



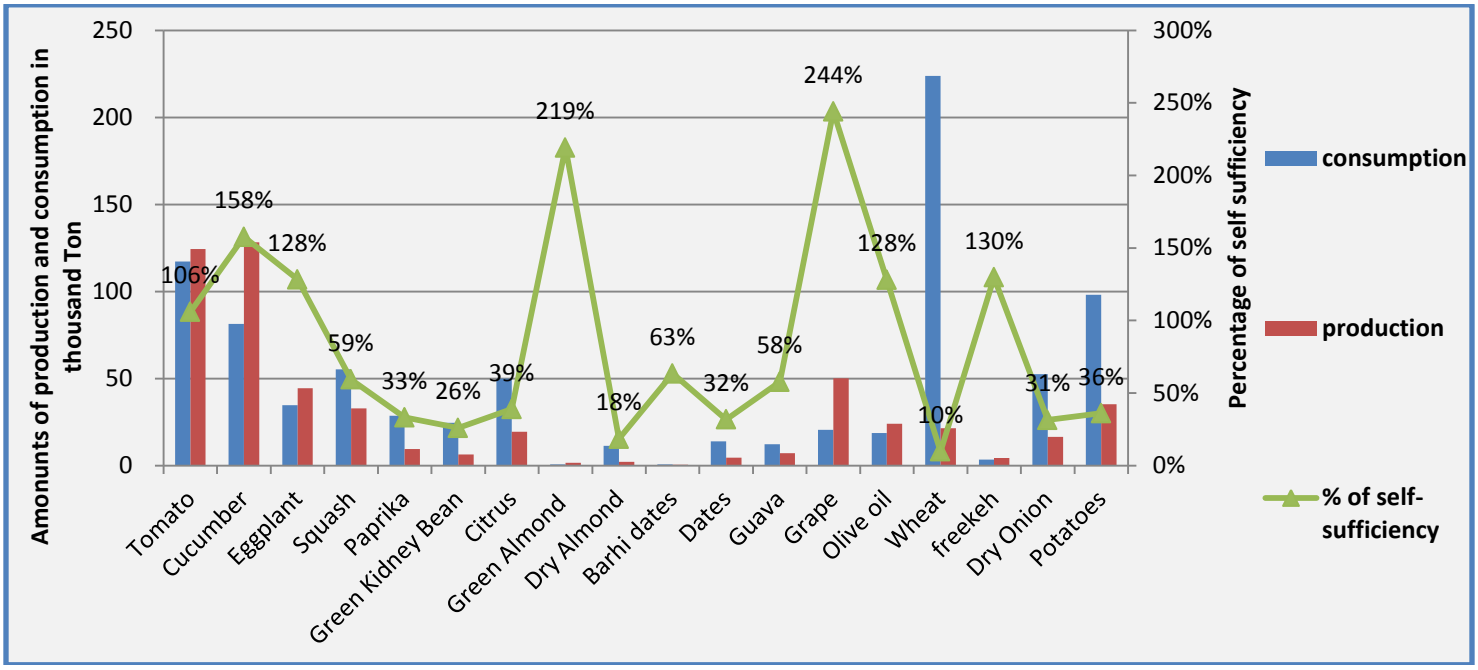

**Graph (4): Food insecurity level in the Palestinian Territory by locality type**

According to the findings of the consumer baseline survey, the prices of the locally produced agro-commodities is in continuous increase; during the last three years (2011-2014) the prices of fruits increased by 15.6%, vegetables prices increased by 14.4%, and field crops and olive oil

[63] Growth rate reached 2.94% in the Palestinian Territory in the year 2013; according to the PCBS (2014), Palestine in Number 2013.
[64] World Food Programme (WFP), the Applied Research Institute- Jerusalem (ARIJ) (2010). Socio-Economic and Food Security Atlas in the Occupied Palestinian Territory. Palestine.
[65] World Food Programme (WFP), Palestinian Central Bureau of Statistics (PCBS), Food and Agriculture Organization (FAO), and UNRWA (2013). Socio-Economic and Food Security Survey 2012. Palestine.

prices increase by 12% respectively. Only 20% of the surveyed Palestinian households indicated that they consume their self produced agro-commodities (cultivated at their home gardens), thus most households depend on purchasing their agro-commodities from the fruit and vegetable markets. There are many factors that limits the capability of the Palestinian households from cultivating their lands mainly deficiency in available cultivated areas such as in Jerusalem governorate, lack of sufficient water along the year, high prices for the cube of water, high prices of agriculture inputs, Israeli occupation policy especially the confiscation of land and control on Area C in a way that limits the possibility of developing these areas. It is also clear that agro-commodities' self insufficiency is not reachable which oblige local consumers to buy their needed commodities from markets, retailers or wholesalers to satisfy their needs and demands despite the commodities' prices or seasonality. Upon the research findings, the highest percentage of locally produced agro-commodities that are essential for food security at household level are available only in certain seasons and in certain amounts which does not guarantee self sufficiency and does not cover the Palestinian market needs and thus oblige the consumer to buy the imported products either from Israel or other regional or foreign markets at any price. This supports few benefited traders especially in the monopoly with prices.

For example, it was found that the products of citrus, date, guava, squash, paprika, green kidney bean, wheat and its derivatives except freekeh, dry onion, and potato do not cover the needs of the local market all over the year; not even in its productions season. This appears clearly in the wheat product since it covers only 10% of the Palestinian market needs. On the other hand, the products of olive oil, grape, tomato, cucumber, green almonds, wheat- freekeh and eggplants are the ones that achieve self sufficiency during their harvesting season (Graph 5). Thus, an agricultural plan for production calendar is very essential to develop the agriculture sector and to reach self sufficiency at the Palestinian agro-commodities along the production seasons. This is also an important step to limit the entrance of non-Palestinian same products to the local markets accompanied with high prices and variant qualities, which affects negatively the market capacity to absorb the products' surplus especially during the local production season.




**Graph (5): Percentage of production, consumption and self sufficiency of surveyed agriculture products during the research study period[66]**

Palestinian households confirmed that their main interest during the purchasing process is the price of the selected commodity more than its nutritive value or quality. This indicates that food intake patterns at the Palestinian household level depend mainly on the availability of low priced products at markets which reflects a general weak nutritive, health and food security status. It is worth noting that those households with high dependency ratio and less education attainment are the ones mostly vulnerable to food insecurity status. For example, up to 51% of the surveyed households indicate that their monthly income is less than 1500 NIS and in most cases they buy their agro-commodities from nearby market on dept. In addition, up to 66% of surveyed households led by an illiterate head secure less than 1500 NIS/month, while 33% of the households led by a head with Masters Degree attainment secure more than 6000NIS/month.

## 4 Recommendations

Understanding consumption trends is highly important for decision makers and stakeholders involved in the production of agro-commodities. Based on the findings of the survey, the following is recommended:

- Encourage farmers to use modern agricultural techniques that would contribute to increase the production and quality.
- Encourage consumers to cultivate their home gardens to improve self-sufficiency at household level and as an attempt to reduce household expenditures.

[66] The production numbers were taken from the surveys specialized in the agriculture sector conducted by the PCBS for the agricultural year 2009/2010. The percentages that exceed 100% are the ones that achieved self-sufficiency at Palestinian market during their production season.

- Design marketing strategies that incorporates a mixture of pricing, placement, quality, and promotional tools, in order to better market agro-commodities for Palestinian consumers.
- Encourage fruits and vegetables retailers to improve their advertising techniques in a way that would find positive response from the consumers. Some influential techniques are the direct communication with consumers and price discounts from time to time are of most successful techniques. Noting that Palestinian consumers depend a lot on their own purchase experience.
- Brand the Palestinian agro- products for better introduction of the local products in the market.
- Conduct awareness campaigns for Palestinian farmers on the utilization of new technologies, modern production techniques. In addition to experience-knowledge exchange, etc. in order to enhance their productivity, Encourage Palestinian households to purchase their agro-commodities during its production season so as to ensure its quality, competing price, and higher nutrition values.
- Encourage the consumption of fresh vegetables and fruits to become a diet followed especially among urban population.
- Encourage consumers to store extra portions of those highly consumed agro-commodities through food processing (drying, prickling or freezing techniques) during their peaks of production season.
- Diversify in food purchase source including agro- commodities to ensure good quality and reasonable prices.
- Purchase agro- commodities from clean markets to meet food safety standards.
- Increase consumers' knowledge on food safety standards.

## Annex (1): The Palestinian Agriculture Production-Consumption Calendar for Fruits, Vegetables, field crops, and Olive oil (agricultural year 2013/2014)

### 1. The agricultural calendar for vegetable crops surveyed in the FPCA project

| Agricultural calendar for vegetable crops target within the project activities | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crop | Item | Total | Months | | | | | | | | | | | |
| | | | January | February | March | April | May | June | July | August | September | October | November | December |
| **Tomato** | Production | 124,445 | 9,401 | 10,106 | 10,468 | 12,951 | 12,642 | 10,058 | 10,104 | 8,565 | 9,528 | 10,886 | 10,664 | 9,073 |
| | Consumption | 117,210 | 4,149 | 5,626 | 6,283 | 9,903 | 15,326 | 12,386 | 11,137 | 15,298 | 10,044 | 11,214 | 6,960 | 8,882 |
| | Gap | 7,236 | 5,252 | 4,480 | 4,185 | 3,047 | (2,685) | (5,240) | 59 | (3,821) | (1,609) | (329) | 3,704 | 191 |
| **Cucumber** | Production | 128,304 | 6,373 | 10,905 | 17,286 | 22,855 | 15,684 | 7,747 | 6,860 | 9,899 | 6,078 | 8,858 | 6,053 | 9,705 |
| | Consumption | 81,419 | 2,414 | 2,626 | 3,343 | 6,738 | 10,580 | 9,751 | 8,364 | 10,037 | 8,423 | 8,286 | 5,152 | 5,706 |
| | Gap | 46,885 | 3,959 | 8,279 | 13,943 | 16,117 | 5,104 | (2,289) | (1,563) | 148 | (2,286) | 572 | 901 | 3,999 |
| **Eggplant** | Production | 44,473 | 4,848 | 4,413 | 4,089 | 5,404 | 3,896 | 3,146 | 2,682 | 2,872 | 2,040 | 2,616 | 3,684 | 4,784 |
| | Consumption | 34,675 | 1,289 | 1,068 | 1,255 | 2,020 | 2,871 | 4,127 | 4,416 | 3,422 | 3,506 | 4,187 | 3,011 | 3,503 |
| | Gap | 9,799 | 3,559 | 3,345 | 2,834 | 3,385 | 1,026 | (276) | (824) | (1,255) | (2,376) | (1,571) | 673 | 1,281 |
| **Squash** | Production | 32,768 | 1,666 | 4,939 | 4,238 | 2,546 | 1,821 | 2,230 | 2,740 | 2,109 | 450 | 1,398 | 4,834 | 3,797 |
| | Consumption | 55,240 | 992 | 1,537 | 3,252 | 7,739 | 9,975 | 5,319 | 5,161 | 6,321 | 4,592 | 2,600 | 3,362 | 4,392 |
| | Gap | (22,472) | 674 | 3,402 | 986 | (5,193) | (8,154) | (4,091) | (1,852) | (3,210) | (4,711) | (1,202) | 1,472 | (595) |
| **Paprika** | Production | 9,477 | 259 | 957 | 876 | 1,007 | 851 | 1,172 | 723 | 852 | 864 | 496 | 633 | 788 |
| | Consumption | 28,556 | 798 | 710 | 744 | 1,817 | 2,596 | 3,327 | 3,233 | 2,756 | 3,375 | 2,766 | 2,981 | 3,454 |
| | Gap | (19,079) | (539) | 247 | 132 | (809) | (1,745) | (1,583) | (2,652) | (2,475) | (2,369) | (2,271) | (2,348) | (2,666) |
| **Green Kidney Bean** | Production | 6,348 | 750 | 1,178 | 562 | 194 | 322 | 362 | 271 | 416 | 223 | 326 | 1,034 | 710 |
| | Consumption | 24,543 | 470 | 589 | 725 | 1,705 | 3,281 | 2,925 | 1,867 | 3,501 | 2,132 | 1,404 | 2,553 | 3,390 |
| | Gap | (18,195) | 279 | 589 | (164) | (1,511) | (2,959) | (3,139) | (1,861) | (2,509) | (1,644) | (1,079) | (1,519) | (2,680) |

Units: production & consumption: Ton
The gap is the difference between the amount of production and the amount of consumption by the Palestinian families and is also a gap index of the amount of Palestinian self-sufficiency of the product
*Number in red indicates a lack of production compared with the amounts of consumption on yield and on the West Bank of the agricultural year 2013/2014

## 2. The Agriculture calendar for fruit trees and olive oil surveyed in the FPCA project

| Agricultural calendar target fruit trees within the project activities | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crop | Item | Production | Months | | | | | | | | | | | |
| | | | January | February | March | April | May | June | July | August | September | October | November | December |
| **Citrus** | Production | 19,430 | 3,477 | 2,208 | 2,304 | 1,982 | 2,503 | 383 | 6 | 6 | 6 | 1,016 | 1,964 | 3,574 |
| | Consumption | 49,960 | 5,062 | 3,832 | 2,661 | 2,528 | 1,371 | 6,199 | 917 | 935 | 2,211 | 1,376 | 8,875 | 13,993 |
| | Gap | (30,531) | (1,585) | (1,624) | (357) | (546) | 1,131 | (552) | (911) | (1,369) | (2,205) | (5,182) | (6,910) | (10,419) |
| **Green Almond**[67] | Production | 1,591 | --- | 73 | 791 | 615 | 113 | --- | --- | --- | --- | --- | --- | --- |
| | Consumption | 726 | --- | 33 | 314 | 248 | 50 | 50 | 33 | --- | --- | --- | --- | --- |
| | Gap | 865 | --- | 40 | 478 | 367 | 63 | (50) | (33) | --- | --- | --- | --- | --- |
| **Dry Almond**[68] | Production | 2,085 | --- | --- | --- | --- | --- | 450 | 600 | 1,034 | --- | --- | --- | --- |
| | Consumption | 11,375 | 475 | 508 | 426 | 1,459 | 803 | 2,196 | 639 | 1,065 | 1,639 | 869 | 557 | 738 |
| | Gap | (9,290) | (475) | (508) | (426) | (1,459) | (803) | (615) | (1,039) | (1,162) | (639) | (869) | (557) | (738) |
| **Barhi**[69] | Production | 23 | --- | --- | --- | --- | --- | --- | --- | 3 | 20 | --- | --- | --- |

[67] (When there is no production the source of the consumed green almonds is usually from stored/refrigerated ones)

[68] (When there is no production the source of the consumed dry Almond is usually either from stored/ refrigerated ones or from Israel)

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dates** | Consumption | 700 | 38 | 52 | --- | --- | --- | --- | --- | 146 | 122 | 40 | 129 | 173 |
| | Gap | (677) | (38) | (52) | --- | --- | --- | --- | --- | (143) | (102) | (40) | (129) | (173) |
| **Dates**[70] | Production | 4,431 | --- | --- | --- | --- | --- | --- | --- | 591 | 2,273 | 1,567 | | |
| | Consumption | 13,971 | 264 | 274 | 470 | 374 | 569 | 3,877 | 361 | 686 | 2,711 | 3,117 | 922 | 348 |
| | Gap | (9,540) | (264) | (274) | (470) | (374) | (569) | (686) | (2,711) | (3,286) | 1,913 | (1,550) | (922) | (348) |
| **Guava** | Production | 7,003 | --- | --- | --- | --- | --- | 5 | 13 | 1,186 | 3,860 | 1,001 | 939 | --- |
| | Consumption | 12,151 | --- | --- | --- | --- | --- | --- | --- | 1,040 | 5,347 | 4,882 | 753 | 129 |
| | Gap | (5,148) | --- | --- | --- | --- | --- | 5 | 13 | 147 | (1,488) | (3,881) | 186 | (129) |
| **Grape**[71] | Production | 50,065 | --- | --- | --- | 403 | 1,250 | 3,047 | 4,380 | 11,245 | 13,947 | 11,679 | 3,887 | 227 |
| | Consumption | 20,435 | 38 | --- | 11 | 133 | 510 | 6,261 | 4,825 | 1,513 | 3,246 | 2,755 | 623 | 521 |
| | Gap | 29,641 | (38) | --- | | 269 | 740 | 1,534 | 1,134 | 4,984 | 9,122 | 8,923 | 3,265 | (294) |
| **Olive oil**[72] | Production | 23,977 | --- | --- | --- | --- | --- | --- | --- | --- | 87 | 11,515 | 11,835 | 540 |
| | Consumption | 18,727 | 75 | 279 | 424 | 125 | 1,009 | 1,057 | 527 | 809 | 706 | 7,543 | 3,833 | 2,340 |
| | Gap | 5,250 | (75) | (279) | (424) | (125) | (1,009) | (809) | (706) | (1,057) | (439) | 3,972 | 8,001 | (1,799) |

Units: production & consumption :Ton
The gap is the difference between the amount of production and the amount of consumption by the Palestinian families and is also a gap index of the amount of Palestinian self-sufficiency of the product
* Number in red indicates a lack of production compared with the amounts of consumption on yield and on the West Bank of the agricultural year 2013/2014

[69] It is fresh dates sold with its branches once it is harvested (When there is no production the source of the consumed Barhi dates is usually either from stored /refrigerated ones or from Israel)
[70] It is processed dates sold as fruits only (When there is no production the source of the consumed dates is usually either from stored/ refrigerated ones or from Israel).
[71] The source of grapes consumed in January is Jericho farms.
[72] When there is no production the source of the olives is usually either from stored or refrigerated ones or exported from abroad.

## 3. The agriculture calendar for field crops surveyed in the FPCA project

| Agricultural calendar field crops target within the project activities | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crop | Item | Production | Months | | | | | | | | | | | |
| | | | January | February | March | April | May | June | July | August | September | October | November | December |
| **Wheat**[73] | Production | 21,512 | --- | --- | --- | --- | --- | 21,119 | 394 | --- | --- | --- | --- | --- |
| | Consumption | 223,857 | 10,157 | 11,559 | 10,094 | 14,787 | 23,006 | 22,180 | 16,750 | 19,803 | 18,921 | 21,661 | 23,824 | 31,116 |
| | Gap | (202,344) | (10,157) | (11,559) | (10,094) | (14,787) | (23,006) | (1,061) | (16,356) | (19,803) | (18,921) | (21,661) | (23,824) | (31,116) |
| **freekeh**[74] | Production | 4,413 | --- | --- | 117 | 449 | 3,847 | --- | --- | --- | --- | --- | --- | --- |
| | Consumption | 3,402 | 137 | 178 | 73 | 136 | 459 | 388 | 442 | 417 | 229 | 261 | 302 | 380 |
| | Gap | 1,010 | (137) | (178) | 44 | 313 | 3,387 | (388) | (442) | (417) | (229) | (261) | (302) | (380) |
| **Dry Onion** | Production | 16,446 | 20 | 1,733 | 103 | 719 | 1,176 | 1,696 | 1,495 | 1,621 | 6,336 | 1,139 | 408 | --- |
| | Consumption | 52,447 | 2,004 | 2,450 | 2,231 | 4,141 | 5,763 | 7,059 | 3,926 | 5,384 | 4,782 | 4,372 | 3,875 | 6,461 |
| | Gap | (36,001) | (1,984) | (717) | (2,128) | (3,423) | (4,587) | (3,688) | (3,286) | (5,438) | 2,410 | (3,233) | (3,467) | (6,461) |
| **Potatoes** | Production | 35,299 | 5,412 | 1,616 | 3,484 | 6,014 | 4,499 | 953 | 2,489 | 2,268 | 1,361 | --- | 1,099 | 6,104 |
| | Consumption | 98,050 | 3,768 | 4,320 | 4,083 | 6,482 | 10,255 | 10,529 | 9,379 | 10,857 | 9,284 | 8,585 | 8,509 | 11,999 |
| | Gap | (62,751) | 1,644 | (2,704) | (599) | (468) | (5,756) | (9,904) | (6,795) | (8,261) | (8,018) | (8,585) | (7,410) | (5,896) |

Units: production & consumption :Ton
The gap is the difference between the amount of production and the amount of consumption by the Palestinian families and is also a gap index of the amount of Palestinian self-sufficiency of the product
* Number in red indicates a lack of production compared with the amounts of consumption on yield and on the West Bank of the agricultural year 2013/2014

[73] When there is no production the source of the consumed is usually important.
[74] When there is no production the source of the consumed freekeh is usually either from stored or refrigerated ones or from aboard