



Food Production-Consumption Assessment to
Improve Sustainable Agriculture and Food Security in
West Bank – Palestine

Literature Review

May 2013

Acronyms

oPt	Occupied Palestinian Territories
WB	West Bank
GS	Gaza Strip
Km²	Squared Kilo Meter
EU	European Union
ARIJ	Applied Research Institute- Jerusalem
FAO	Food and Agriculture Organization
GAP	Good Agricultural Practices
NGO	Non-Governmental Organization
MOA	Ministry of Agriculture
PCBS	Palestinian Central Bureau of Statistics
GDP	Gross Domestic Product
AgBee	Business Enabling Environment for Agriculture

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Introduction

The Occupied Palestinian Territories (oPt) consists of two parts of lands which are the West Bank (WB) with an area of 5,661Km² and Gaza Strip (GS) with an area of 362Km²¹

The Total population in West Bank is around 2.38 million with an average density of population of 414 capita/Km². The West Bank is surrounded by Israel from its North, South, and West whilst the Jordan River is located at its eastern side. West Bank consists of eleven geographical and administrative governorates.

The total population in Gaza Strip is around 1.42 million with an average density of population of 3,905 capita/Km²³ making it one of the most densely populated regions in the world. The Gaza Strip is a coastal territory at the eastern extreme of the Mediterranean Sea on the edge of the Sinai Desert and consists of five geographical and administrative governorates.

Of the 6 million dunums land area in the Occupied Palestinian Territory (oPt), approximately 1.82 million dunums are cultivated; 1.6 million dunums are rain fed and about 270 thousand dunums irrigated. Of the country's total cultivated area, 91.4% is found in West Bank and 8.4% in Gaza Strip. Forested area covers less than 1.5% of the Palestinian land area⁴.

The oPt enjoys a diversified climate and multiple agricultural environments that qualifies it to produce different types of crops through the year.

This diversity gives the oPt two main advantages:

- 1- In the oPt, there are two main growing seasons, one is in Jordan Valley and Gaza which occurs between November to May, whilst the second in and Central Highlands is from April to November.
- 2- Products from oPt is always out of the season which gives it attractive prices especially for the products that are exported to EU and Gulf states.

Many disasters have passed the oPt including, wars, political conflicts, climatic change, drought, and earthquakes. Although the oPt is small in size and does not have a notable impact on the world economy , the Israeli-Palestinian conflict brings about immense international interest. This is in part related to countries' proximity to oil reserve in Middle Eastern countries.

¹ ARIJ, Socio Economic and food Security Atlas

² PCBS, 2010

³ Cite

⁴ ARIJ, Socio Economic and Food Security Atlas

Actions of the conflict, specifically the restrictions on movement of persons and goods imposed by Israel are the main reasons for food insecurity. They have consequences on Food availability, economic access to food, and food utilization⁵.

Economic growth: In oPt the economic growth is stunted due to the conflict mainly, as a result, controls imposed by Israel on the entry and exit of goods, services and people, impediments to construction and infrastructure investment, expansion of the Israeli settlements and associated violence, and the direct destruction of houses, crops, animals, water and sanitation infrastructure. For instance, Gaza Strip blockade affects the livelihood of the Gaza population as they are devastated due to the restrictions on the import of industrial, agricultural and construction materials. The unemployment among Palestinians reached up to 23.9% in oPt in the first quarter of year 2012.⁶

Population growth: The rate of population growth in the oPt is considered a major threat to its capacity for development. Currently, there is a rapid demographic growth in oPt with around 3% annual growth which indicates that the Palestinian population will double in almost 20 years. Increasing population contributes to oPt's lack of space due to Israeli land restrictions. In Gaza for instance, urban densities have reached a critical level which accompanied by social, economic and environmental degradation and subsequent humanitarian concerns regarding the scarcity and provision of basic services⁷.

Reliance on food imports and lack of domestic agricultural growth: The reliance on food imports has exposed the Palestinians to the volatility of International markets. Only 60% of household's main food items are produced locally; less than 5% of the cereals and pulses consumed in the oPt for example are locally produced⁸. Lack of access over land and natural resources have denied the Palestinians their rights to regulate land use. Some of the most productive areas are under Israeli control (Area C), and are thus not accessible for cultivation. One example is the Jordan Valley- most of which falls in Area C and is not accessible for cultivation by Palestinians.

Negative coping mechanisms by Palestinians: The combination of decreased incomes and increased food prices has forced poorer households to change their food consumption habits. Coping strategies in response to rising food prices include deferring payment of utility bills, forgoing healthcare or educational activities, purchasing food on credit, consuming lower quantities of food, and consuming lower quality food.

These mechanisms, even if they are reversible, can have a permanent effect on livelihoods through poorer long-term health, excessive indebtedness, and loss of future employment opportunities. The lowest-risk strategies (deferring utility bills, purchasing

⁵ ARIJ, Socio-Economic and Food Security Atlas

⁶ PCBS, Unemployment, First Quarter, 2012

⁷ ARIJ, Socio-Economic and Food Security Atlas

⁸ Cite

food on credit, use of life savings) have been exhausted for most families in the West Bank⁹.

Factors causing land degradation: “Soil erosion is predominant in regions of intensive field cultivation, and in the mountainous regions of West Bank, where in addition to steep slopes, soils are subject to heavy rainfall and overgrazing by goats and sheep. Decreasing bio-diversity is another major issue facing oPt that caused environmental degradation. Regarding water resources, current extraction from ground water is exceeding recharge and ground water levels are decreasing rapidly”¹⁰.

Exposure to natural disasters: Natural disasters such as drought and frost threaten the future capacity for agricultural development in oPt. Evidence suggests that climate change will lead to greater extremes in weather patterns, given that almost 94% of cultivated land is rain fed in oPt¹¹.

Fragmentation of Palestinian landscape: 38% of total land in West Bank is controlled by the Israeli government for settlements, military use, checkpoints, road closures and the segregation wall¹². The intrusive route of the wall through 8 of the 11 governorates isolates farms, greenhouses, grazing lands and water resources for thousands of farmers. The wall will isolate almost 15% of West Bank agricultural land. In Gaza Strip, the Buffer Zone (24% of Gaza Strip) and the Cast Lead Operation have led to the destruction of natural areas as well as Palestinian assets¹³.

As a result of the factors mentioned above, 38% of Palestinian households (representing 1.6 million persons) are food insecure (25% of households in West Bank and 61% in Gaza Strip). In addition, 11% in West Bank and 16% in Gaza Strip are vulnerable to food insecurity¹⁴.

Food insecure households are unable to secure sufficient income to meet their essential food and nonfood requirements due to the lack of income earning possibilities as a result of Israel’s restrictions on movement of goods and people, and artificially inflated food and transport costs. Therefore, conducting a baseline assessment of the food consumption-production process encompassing food production, food availability and food marketing is very crucial for the development of the agriculture sector. The results, if disseminated correctly will increase farmers’ awareness of the feasibility and sustainability of their cultivation practices; in addition to informing planners and decision makers about related plans and policies towards increasing self-sufficiency, consumer purchasing power and the availability of targeted agro-food produced in oPt.

⁹ ARIJ, Socio-Economic and Food Security Atlas

¹⁰ Cite

¹¹ Cite

¹² Cite

¹³ Cite

¹⁴ Cite

Executive Summary

Food is essential for human survival and access to food is considered as a basic human right. Food access is an important development issue, which has gained attention at a global level and is addressed by the first Millennium Development Goals (MDG) eradicate extreme poverty and hunger¹⁵. The MDG expressed that food provision as an essential component for development and further defined its goal to 'halve, between 1990 and 2015, the proportion of people who suffer from hunger¹⁶.'

The contribution of agriculture to GDP is approximately US\$930 million and around 15% of formal workforce and 39% of informal workforce. Agriculture production is essential for food security in West Bank in two ways: first, as a source of production for local consumption, second, as a source of production for exportation and income generation. Most agricultural activities in oPt are family based, 58% of total production goes for local consumption, 20% for direct sale and 22% as a surplus¹⁷.

Palestine currently imports most of its basic commodities from abroad with the global crises in food prices affecting the prices of commodities in oPt. In October 2011, the consumer price index in West Bank reached 145.6 points. Fruits and vegetables have experienced price increases in the West Bank since 2005; with a percent of change of average food prices increase up to 32.46% and 27.36% respectively¹⁸

Higher food prices have contributed to a high proportion of expenditure that goes for food. The rising proportion of expenditure devoted to food is an effect of combined factors, such as: (i) higher food prices, (ii) complicated market channels and unavailability of diversified crops during all seasons, (iii) lower purchasing capacity and lower incomes, which are raising the overall burden of food expenditure in the household economy. Using household expenditure data to measure food security indicates that many Palestinians are both 'food insecure' and 'poor.'

For any state, sound agricultural management and strategies are important especially if it is to provide adequate food supplies. In order to establish such strategies, the State needs to conduct analysis for its agricultural systems and food production market using such knowledge to build short and long term strategies for crops and animal cultivation, import and export and food distribution¹⁹.

Crop diversification is an important strategy for the sustainability of the agriculture sector in West Bank. However, marketing is the main challenge that facing the farmers and producers who are trying to diversify their products or experience new products. It

¹⁵ The World Bank. Millennium Development Goals; coverage 1990-2011. World Bank online

¹⁶ Cite

¹⁷ ARIJ, Food Production-Consumption Assessment Proposal

¹⁸ PCBS, 2006. Price and Price Indices, Annual Bulletin, 2005

¹⁹ ARIJ, Food Production-Consumption Assessment Proposal

is vital to develop a productive marketing system, and empowering those who work in the agriculture sector through an understanding of the production –marketing systems that affect them, so as they can become more productive agricultural workers, planners, and profitable business owners²⁰.

This project aims at suggesting solutions and actions that can be implemented on the ground to improve agro-production and marketing system. In a second phase of the project, an agro marketing decision support system will be proposed to provide feedback, and act as a planning mechanism, and response tool to the needs of the Palestinian market in West Bank.

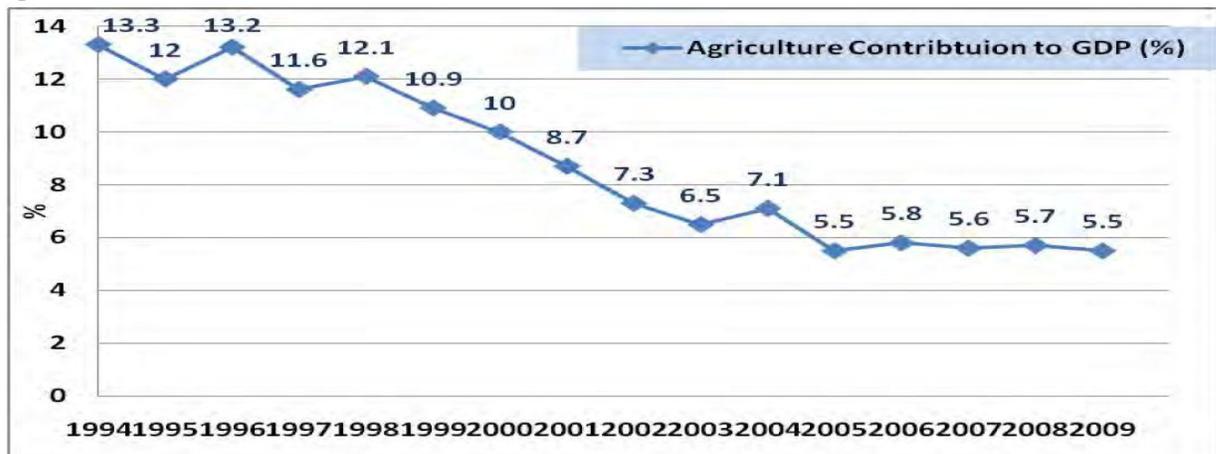
The project will develop a reliable, and up to date analysis of locally produced agro-commodities, marketing and consumption systems to enhance the sustainability of the local agricultural system and assist in improving self-sufficiency of agro-commodities production. This will lead to the longer term access of Palestinian people to more food with better prices in West Bank.

20 FAO, The impact of closure and high food prices

I. The Agriculture sector in West Bank

The agricultural sector plays an important role in the Palestinian economy with its contribution to the Gross Domestic Product (GDP). In 2009, the sector contributed to 5.5% to GDP, comprising 25% of the total Palestinian export. However, the economic contribution of the agriculture sector is slowing down. In year 1998 its contribution was 2.1% decreasing to 5.5% in 2009. This is mainly due to the occupation practices against agriculture and the limited sources paid by the Palestinian authority and donors.

Agricultural sector contribution to total GDP



Source: ARIJ, OSER

Agriculture production is important to oPt for two main reasons: First, it is a source of production for local consumption, and second it is a production for exportation to generate income. The agriculture sector provides the majority of the households' needs of food with 58% of the production of plants and livestock.

The agriculture sector usually attracts women workers especially in urban areas. This is mainly due to the fact that agriculture in West Bank is a family based type and most women work on their lands as unpaid workers (not registered in the formal labor force). The agriculture sector employs about 15% of the formal workforce and 39% of the informal workforce²¹.

Cultivated area: The total cultivated area in oPt is 1.854 million dunums which forms 31% of the Palestinian lands. 91% of cultivated land is in West Bank whilst 9% is in Gaza Strip²². Palestinian agricultural activities are divided into rain-fed and irrigated agriculture. The rain fed area constitutes of 86%, while irrigated agriculture represents

²¹ ARIJ, Food production-Consumption Assessment Proposal

²² Ministry of Agriculture

only 14% of the total cultivated area in the West Bank.²³ In spite of the small area of irrigated agriculture due to limited water resources, it represents 52% of the total agricultural production²⁴.

The Olives cultivation has a great influence on the plant production sub-sector in Palestine as nearly 51% of the total cultivated area is covered with olive trees²⁵. The olive fruits harvest varies from 50,000 and 180,000 tons annually in a two-year production. Thus the plant production varies from year to year based on rainfall season, drought, and olives production²⁶.

The total area for horticulture production in the West Bank is 612,649 dunums, 95,841, and 220,882 dunums for vegetables and field crops respectively. Jenin is the governorate with the largest area of land utilized for horticultural production of 118,285 dunums. Tubas on the other hand is the government with the largest area planted with vegetables (total land of 23,682 dunums), while in planting field crops, Hebron governorate hold the majority with a total land area of 62,268 dunums²⁷.

Livestock: The livestock sector is not stable in the number of animals every year due to the change in feed prices. Across the oPt, there are 34,255 heads of cattle, 744,764 heads of small ruminants, 26,581 thousand broiler birds, 2,797 thousand laying birds, 65,948 beehives²⁸.

Labor force: Agriculture sector forms 15% of labor force as it attracts many workers. However it is noted that far more of the population work in agriculture but are not formally registered. This particularly applies to female, often un-paid household members who participate in agricultural production but are not recognized by the formal labor classification.

The following table shows the distribution of males and females in working in the Agriculture sector:

Percentage Distribution of Agricultural Employees in Agricultural Holdings in Palestine by Type of Employee, Sex and Region, 2010/2011

Region	Type of employee and Sex						
	Unpaid Family Member				Permanent Wages Employee		Temporary Wage Employee
	Permanent Employee		Temporary Employee		Male	Female	
	Male	Female	Male	Female			

²³ ARIJ, OSER

²⁴ ARIJ, Natural Resource Management

²⁵ ARIJ, Socio Economic and Food Security Atlas

²⁶ ARIJ, OSER

²⁷ PCBS 2010

²⁸ ARIJ, Socio Economic and Food Security Atlas

West Bank	21.3%	11.2%	22.8%	18.5%	1.3%	0.3%	24.6%
North	14.6%	7.9%	27.4%	22.2%	1.0%	0.4%	26.5%
Middle	8.1%	13.5%	23.6%	21.2%	1.5%	0.5%	21.6%
South	36.4%	16.0%	13.5%	9.3%	1.8%	0.1%	22.9%

Source: PCBS 2010

In West Bank, females form 11.2% of the unpaid family member permanent employees in the agriculture sector, 18.5% of unpaid family member temporary employees, and 0.3% of permanent wages employee. This distribution is mainly due to the fact that agriculture in West Bank is a family based and most of the members of the family work as non-paid wages employees²⁹.

In terms of labor force, women compose 16.2% of labor force, out of which 21.4% of them work in agriculture. This represents one of the lowest female participation in the labor force of all Arab countries³⁰. However, most of the women work is informal and so their contribution to the agricultural activities is much higher. Based on the World Bank report, 30% of the informal labor is composed by women as part of their domestic responsibilities³¹.

Wages in the agriculture sector are low which is part due to the lack of high return coming from agriculture. The sector suffers from poor performance and using primitive tools in cultivation, and lack of high technology. Moreover, the sector does not have the insurance needed to compensate against hazardous situations which increases farmers' financial burden.

The following table illustrates the wages in agriculture for the period 2007 to 2011:

Average Daily Wage in NIS for Wage Employees in the Agricultural Sector in West Bank* by Year and Region, 2007- 2011 (PCBS 2010)

Region	Year				
	2007	2008	2009	2010	2011
West Bank	52.2	50.7	57.2	57.7	57.8
North	47	48.4	52.2	53.4	54.0
Middle	66.5	55.5	64.1	62.6	63.1
South	58.1	--	67.4	68.2	70.7

Source: PCBS 2010

²⁹ PCBS, Employment Statistics, 2010

³⁰ World Bank. 2010. 'Middle East and North Africa; Women in the Work Force.' World Bank Online.

³¹ ARIJ, OSER

In 2011, the Southern West Bank reflected the highest agricultural wages at an average of 70.7 NIS per day. The North however performed worse with the average daily wage in the agricultural sector at 54 NIS. The average wage in West Bank has increased since year 2007 which was 52.2.

Holdings: The total agricultural holdings in the West Bank reached to 85,885, of which 68% are for plants, 9% for animals and 23% are for mixed holdings. Hebron Governorate has the highest number holding in West Bank with a total of 18,827. This is followed by Jenin with a total of 13,375 and Nablus with 12,859³².

Agricultural holdings in Palestine are usually small (average size 18.6 dunums (1.86 Ha) household holdings. The majority of the agricultural holdings (88%) are owned by the household, but some are either fully rented, or owned land is supplemented by renting an extra area.

Diversification: There is a diversified eco-systems in West Bank that provides a unique diversification of crops. Currently, there are almost 103 cultivated type crops including 38 types of fruit trees, 37 types of vegetable crops and 30 field crops and grain, in addition to different types of cut flowers, olives, citrus fruit, grapes and plums³³.

In local agriculture, some vegetables have achieved self-sufficiency such as tomato, cucumber, eggplant, squash, beans, cabbage, and cauliflower. On fruit side, olive, plum, and grapes have achieved self-sufficiency in addition to poultry and egg. While local production of potato, watermelon, garlic, onion, carrot, and muskmelon did not meet local consumption. Moreover, there was a shortage in red meat, milk and dairy products and wheat. Red meat self-sufficiency is 75%, milk and dairy products is 70% of total consumption, while 85%-90% of the wheat requirements is imported.

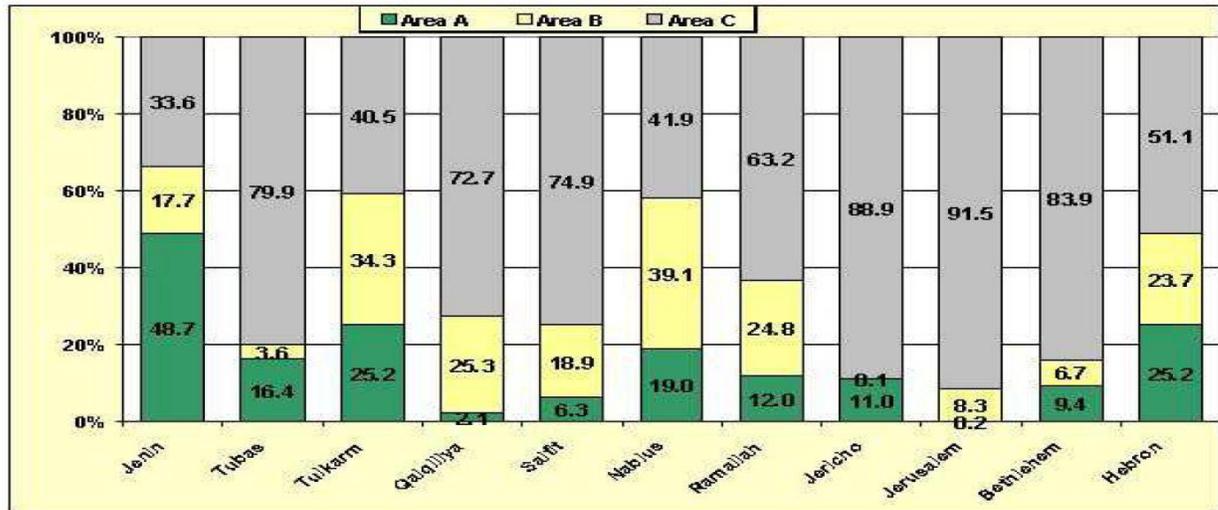
Geopolitics: 63% of the agriculture land in West Bank is located in Area C as per the Oslo Accords II, is under full Israeli control, 19% in Area B (Shared Palestinian Israeli control) and 18% in Area A where the Palestinian have full and administrative control. Therefore farmers in West Bank have only an access to 37% of their agricultural land, and most of their lands are exposed to damage, aggression and obstacles created by occupation. The following diagram indicates the agricultural areas distributed by Palestinian accessibility for each West Bank governorate. It is noted that residents of Jenin has the highest access to their agricultural land (49% of total land). This is due to the fact that most of the Governorate's agricultural land is located in area A. On the other hand, Qalqilia has the lowest rate of accessibility to its agricultural land in Area A (just 2.1%

³² PCBS, Employment Statistics, 2010

³³ ARIJ, OSER

are accessible). This restricted access severely hinders the development and productive capacity of the agriculture sector³⁴.

Distribution of agricultural areas- percentage in each geopolitical classification by Governorate (ARIJ)



Source: ARIJ, OSER

Furthermore, the Segregation wall has isolated many agricultural lands in different locations. Almost 184,899 dunums of arable land, greenhouse and permanent cultivations have been isolated thus causing approximately US\$62 million losses a year to the agriculture sector³⁵.

Obstacles that face the Agriculture sector: In general, there are many obstacles that limit the development of the agriculture sector. The growth in this sector is limited due to many of the reasons listed above, in addition to limited focus and financial/material resources dedicated to the sector on the part of the Palestinian Authority and International donors. For example, donors have spent less than 1% in support of the agricultural sector. Restrictions put in place by the occupation on accessing the land makes it even worse for this sector. The limited access to farmers to their lands, destruction of agricultural infrastructure, land confiscation and taking restrictions of water all participate in stunting agricultural development.

Additionally, the limitations on the movement of Palestinian commodities for exportation put in place by the Israeli authority has severely affected the agriculture sector . The Israeli occupation often more severely restricts the movement of West

³⁴ Cite

³⁵ ARIJ, OSER

Bankers in the seasons of crop cultivation. Adding to this natural crises such as experienced droughts, low rainfall, frost and wind storm help in reducing agricultural productivity. Moreover, 80% of the agriculture activity is family based where many households members work informally and their economic contributions don't include national economic resources. Therefore, it is important to provide a database relating to information for different indicators for this sector to help decision makers develop their strategies to achieve development in this sector.

In summary, the agriculture sector suffers from several constraints³⁶.

- 1- Limited access to land resource mainly due to the Segregation wall built which amongst other restrictions isolates farmed lands in Area C from other parts of the West Bank.
- 2- Water scarcity and limited access to the water resources mainly due to the Israeli rules and regulations and the domination of the major water resources.
- 3- High tax and trade tariffs mainly due to lack of authority on borders, and restrictions on the access to international markets
- 4- Restrictions on people movements mainly due to the road checkpoints that are spread across the West Bank.
- 5- Damages to agricultural infrastructure due to the occupation measures and the resultant lack of rehabilitation from Israel, the PA or international assistance.

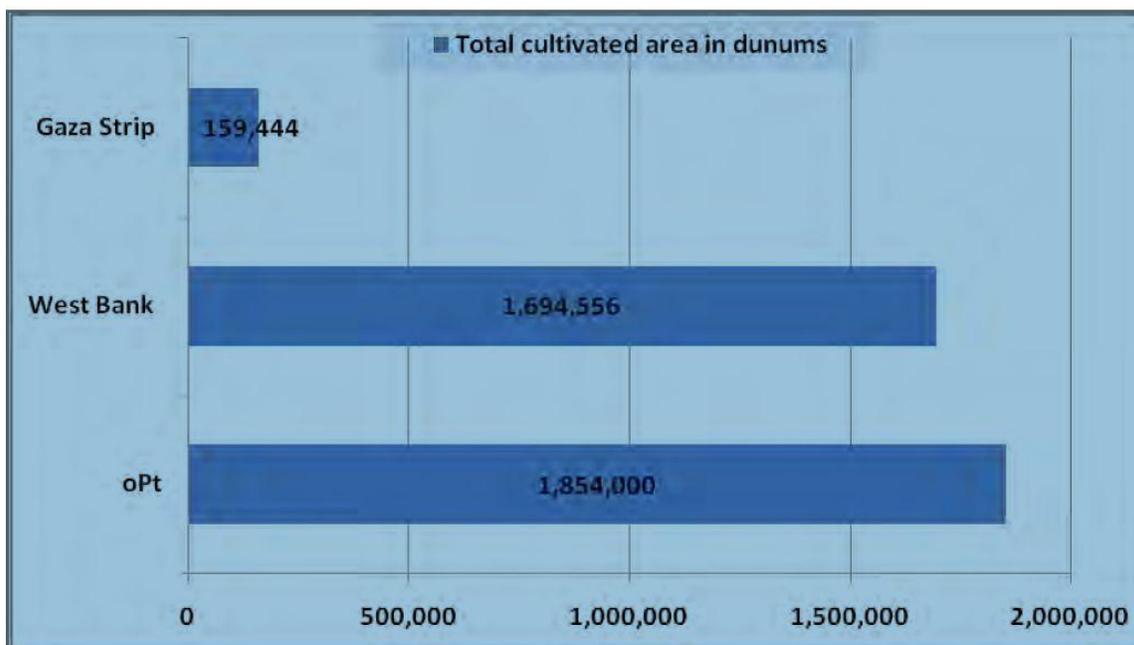
³⁶ ARIJ, OSER

II. Production system in West Bank

The majority of cultivable agricultural land are subject to occupation's obstacle and aggression, isolation and confiscation and damage. For example, 184,889 dunums of arable lands are being isolated by the Western part of the Segregation Wall³⁷.

In oPt, there is a unique diversity in the produced crops due to the diversified ecosystem. The leading fruit crops in the country are olive, citrus fruit, grapes and plums. However, the production is affected by rain falls, as most of the cultivated areas depend mainly on rain-fed methods of cultivation. Last year (2012) witnessed a drop in rain fall and its poor distribution in addition to annual high temperature. This affected the rain fed crops especially field crops noted by a reduction of 35%-40% in production. Moreover, thousands of growing grape vines and recently planted vines wilted and died due to drought and low rainfall. In addition, the olive production reduced by 15%. Wilted olive trees have started to appear and act as a sign for a significant drought³⁸.

Figure (3): Total cultivated area in dunums



Source: ARIJ, OSER

The livestock sector is not stable in the number of animals every year due to the change in feed prices. In Palestine, there are 34,255 heads of cattle, 744,764 heads of small

³⁷ ARIJ, OSER

³⁸ Cite

ruminants, 26,581 thousand broiler birds, 2,797 thousand laying birds, 65,948 beehives³⁹.

Rain fed agricultural area is dominant in West Bank as it accounts for with 91.3% of the cultivated area. Among the planted fruit trees, olive trees cover the largest areas, making up with 81.1% of the total cultivated fruit trees areas. Thus the plant production varies from year to year based on rainfall season, drought, and olives production. 75.5% of the vegetable area is located in West Bank, whilst 24.8% is in Gaza Strip. The main growing vegetables are cucumber, squash and tomato. The total cultivated area with field crops for the agricultural year 2007/2008 was 495.9 thousand dunums. Wheat is the main crop comprising 46.3% of the field crops area followed with barely at 21%⁴⁰.

The majority of agricultural activities in the oPt are conducted as family based production to subsist household own needs. On average, out of all household production, 58% of both plant and livestock production are utilized for domestic consumption, 22% is sold as surplus and 20% for direct sale⁴¹.

Only 60% of the main food items used by Palestinians are locally produced. However food availability is not the main issue in determining to the country's food insecurity levels. Food is supplied in sufficient quantities and acceptable variety on local markets mainly from imports with few exception in which local production covers the domestic consumption. Availability of food is still affected by the political situation and the high dependency on the Israeli market. The local food production would be larger if land, water and other necessary inputs are more accessible⁴².

Further analysis by ARIJ OSER report for the production/consumption balance in oPt showed that the agricultural sector is meeting the demand on main vegetables such as tomato, cucumber, eggplant, squash, beans, cabbage, and cauliflower. The surplus is usually exported to Israel. However, for potato, onion, water melon, and garlic the production does not meet the local demand. In order to make up the shortage of such products they are usually imported from Israel or from other countries through Israel, which controls all borders into the Palestinian territories. Regarding the fruit production, there is a shortage to meet local demand except for olive oil which exceeds local demand. Grapes, plums and citrus are all meeting local demand. In terms of

³⁹ ARIJ, Socio-Economic and Food Security Atlas

⁴⁰ ARIJ, OSER

⁴¹ ARIJ, Socio-Economic and Food Security Atlas

⁴² ARIJ, OSER

livestock, there is a high shortage of red meat, fish, milk, dairy products and honey, while some surpluses were recorded in poultry meat and eggs production⁴³.

⁴³ Cite

III. Demand and supply balance⁴⁴:

The oPt 's agricultural calendar is varied according to different types (irrigated or rainfed) or methods (protected or opened) of cultivation. This is in addition to regional and seasonal variation and the availability of water resources, and agricultural lands. The type of residential communities (urban, rural, camp, Bedouin) also plays a role in the agricultural calendar.

The Palestinian territory has the ability to export the surplus from tomatoes, cucumber, squash, eggplants, beans, cabbage, cauliflower, olive, grape, plum, citrus and egg without affecting the local demand especially at peak season. The local production of potatoes, onion, watermelon, garlic however does not meet the local demand which affects the demand supply balance. Regarding the production of fruits, generally there is a shortage in meeting the local demand except for olive, grape and citrus which achieve self-sufficient, however sometimes there is even a surplus in the production of these types. It is worthwhile mentioning that the oPt's agricultural production is seasonal which cause a surplus at a certain time and shortage at other times.

There is a strong linkage between the Palestinian and the Israeli agricultural sectors, especially that is linked to the marketing networks. Each side covers the shortfall in case there is a shortage of some products at one side. Based on this, the coordination that is built on equality and the free movement for human resources may support the marketing activities and improve the economic activities for both sides. In addition, the marketing relations between both countries should be sustainable and should not only be effective in the times of seasonal shortage.

It is further noted that the main products planted in Israel for local consumption are potatoes, tomatoes, water melon, banana, cucumber, apple, onion, pepper, carrot and grape. The demand for such products is always high. However, the main products that are planted in Israel for food processing are grapefruit, wheat, grape (wine production), maize, potatoes, olive (mainly to produce olive oil), citrus, cucumber, carrot and peas. The value of the Israeli domestic production for the main used products ranked from the most to the least important are potatoes, apple, tomatoes, banana, grape, pepper, cucumber, peach and avocado.

According to Jewish customs, it is forbidden to plant agricultural products in the Jewish land during fallow year (Shameeta year)which occurs every seven years when the land needs to rest. The last shameeta occurred in September of year 2007. This case increased the demand on the Palestinian products from both West Bank and Gaza, in

⁴⁴ Palestinian calendar and ability to market to the local, Israeli and outside markets, 2008

addition to requesting products from Jordan. Israel has signed temporary agreements with Jordan and other countries including West Bank to import agricultural products.

Israel usually imports nuts (it forms 69.9% of total agricultural imported products) for local consumption and processing, in addition to the potatoes seeds and small amounts of dried fruit. As Israel imports small quantities of fruit and vegetables from the oPt, which are mainly distributed to the USA, Turkey and Deutschland.

The Palestinian farmers have the opportunity to increase their products from beans, fig, okra, onion, olive and some dried fruit to fill the need of the Israeli market.

It was estimated the total value of fruit and vegetables that have been imported from Israel during the year 2006⁴⁵ is US\$170 million, out of which 69.4% fruit, 30.6% vegetables, and which forms only 0.36% of total import from Israel. The cereals was the most important agricultural product that have been imported in year 2006. It is worthwhile mentioning that in case there is a political stability in the region, the Palestinian export to Israel will reach US\$300 – US\$500 million yearly⁴⁶.

Many fresh agricultural products that are consumed in Israel are imported from oPt. These products are not registered officially as imported products (The Israeli markets depend in the first place on the personal knowledge of the Palestinian traders). From the other side, Israel prevents the import of the livestock from oPt but allows for livestock production such as meat, egg, butter, fish, and honey to pass directly to Gaza, East Jerusalem and to outside markets.

Based on the Paris agreement, Israel and oPt are considered to be one market, and it was expected that there will be freedom for agricultural products' move between the two sides. However since the agreements ratification and continuing to this day, Israel dominates all the borders and internal corridors, in addition to the strict procedures that are put on the Palestinian products. Currently, and in spite of opening Bisan crossing and increase the amount of products to Israel, the move of the Palestinian products is still jeopardize to physical obstacles and lots of strict inspection procedures. Therefore, there must be an effective and sustainable marketing system between the two sides to secure the free movement of the products under any political circumstances. Based on this, there is a need to reactivate the agreements between the two sides in an equal and fair way, and put efforts into organizing and improving the agricultural marketing system between Israel and the oPt.

⁴⁵ The most updated statistics

⁴⁶ ARIJ, Palestinian Agricultural Production Calendar

IV. Pricing System:

According to a report conducted by FAO and entitled “ The impact of Closure and High Food Prices on Performance of Imported Staple Food and Vegetables and Fruits Market in oPt” 2009, The prices of the vegetables and fruit in West Bank depend on their demand and supply. The pricing system though is very complicated and differs at various levels at the supply chain.

Prices for exported commodities are determined by supply and demand conditions in the Israeli markets. Prices are not negotiated before delivery at central markets, and hence the exporters cannot determine the sales price of the exported commodities. Exporters have the authority to determine the farmers’ prices. The exporters use local market prices for the same product on the day on which they make the sale to determine the producer prices. Exporters give farmers an amount between NIS0.5 and NIS1 per kilogram above the local market price. According to farmers, The profit margin of the exported may reach to 100% while for farmers, it may reach up to 15% above local market prices. Exporters indicated that their profit margins do not exceed 25%. What is important here is that the exporters of vegetables can have a substantial influence on the local prices of export in low production period. The export of vegetables to Israel during these periods can sometimes be more than double of the prices of these vegetables locally putting beyond the economic reach of consumers.

Wholesalers and retailers determines their purchases prices on a daily basis by following market prices and estimating demand on any given day. Therefore, both parties are considered to be price takers. Wholesalers set a profit margin of 10-15 %, while retailers set a profit margin of 30-50% per kilogram for fresh products. Retailers include the high market price decreases and spoilage into their price setting mechanism which leads to a high profit margin. Retailers estimate that their average weighted profit margin ranges between 15-20% which is NIS0.5-0.8 on average per kilogram. This seems to be reasonable as most retailers indicate that 5-10% of their daily purchases go unsold due to damages.

It is worth mentioning that there is a weight loss due to the weight of the boxes used to transport and store produce, which encountered to be 0.5-0.75 Kilogram. This loss varied depending on the type and material of the boxes used.

Importers also follow the market price and they are price takers as well. In setting the sales price, they apply a markup of 15%-20% on their total purchase costs (including costs of purchase, transport and storage).

Availability of demand for fruit and vegetables: “The main problem facing traders is related to reduced sales volumes as a result of depressed demand, especially for fruits and non-staple vegetables, and most prominently in Gaza. All retailers interviewed confirmed that their sales have dropped in the last two years between 30% - 40%, which in turn has forced retailers to reduce the variety of products they have been used to offer as well as reduce their stock levels of various items. Reduced credit by wholesalers has been going the same way as reducing retailers ability to make larger purchases. Moreover, retailers confirmed witnessing an increasing trend towards purchases of lower quality and cheaper products, noting that the majority of their sales are made in the late afternoons and early evening when consumer expect prices to have decreased”⁴⁷.

⁴⁷ FAO, The impact of closure and high food prices

V. Market channels

According to a study conducted by FAO entitled “The impact of Closure and High Food Prices on Performance of Imported Staple Food and Vegetables and Fruits Market in oPt”, 2009, there are two main markets In West Bank for agricultural products which are the wholesale market and the retail market.

Wholesale market: The wholesale markets in West Bank are owned by municipalities where the farmers come and sell their products in bulks. The markets are leased on an annual basis and through a closed- envelope bidding process. The highest bidder is then responsible for the management and facilitation of the trade transactions for a commission on all sales in the market. The commission is determined by a negotiation with the municipality and is taken equally from the buyers and the sellers. Trade transaction in such markets take place in two ways either through direct sales from farmers or through auctions where farmers ask the auctioneers to sell their products. These auctioneers are usually employees of the commission agents.

In West Bank, wholesale markets are limited in number and are located in the urban areas in each governorate. Until 2000, there were four main wholesale markets located in Jericho, Hebron, Nablus and Jenin. Nablus held the central market for agricultural products in the West Bank, Jericho was the center through which the Jordan Valley products were marketed to the West Bank or exported Israel and beyond, Jenin was the center through which the Jenin governorate products were marketed to the West Bank, and Hebron was the center through which goods were distributed form the southern West Bank to the North.

The closure and regimes put on the West Bank by Israeli side made it difficult to access these markets. This led to the closure of West Bank’s central markets in Nablus and Jenin and new markets opened in Qabatia and Beita. The location of these two markets are very close to the main roads in West Bank and near small wholesale markets. Currently the main central wholesale markets in the West Bank are Jericho, Hebron, Qabatia and Beita.

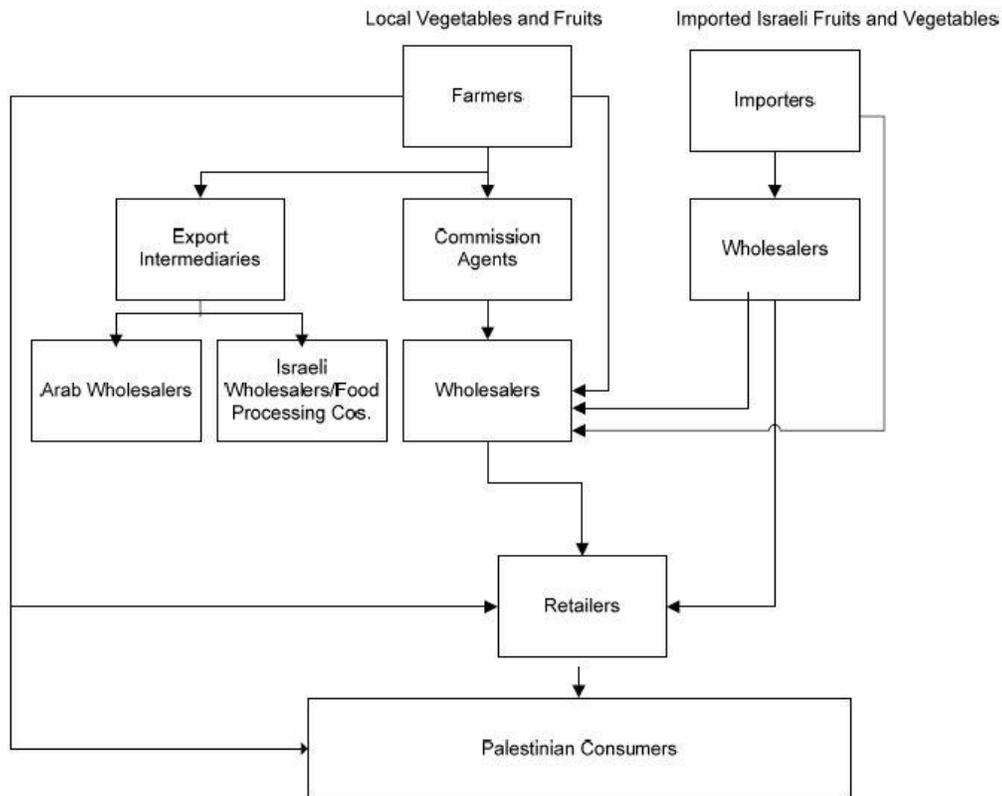
Retail market: The retail market is the market where the retail products are sold to the end users (consumers). The retail market can be a shop in a wholesale market (some of them can be wholesalers), shops outside the wholesale market and temporary roadside kiosks. In addition, sometimes the supermarkets sell vegetables and fruits to attract customers and meet the demand⁴⁸.

⁴⁸FAO, The impact of closure and high food prices

In general, access to fruits and vegetables in the oPt is not difficult physically, but the high dependence on commission leads to a high cost for farmers and high prices for consumers. Farmers usually feel that wholesalers do not pay a high price for their products and hence increase the cost which makes their products less competitive compared with the Israeli products which enter the market without agents. The majority of the fruit wholesalers who depend mainly on imports from Israel rent or own shops outside the central markets through which they conduct their businesses.

Farmers do not search for new channels to sell their products apart from the wholesalers. This is because most of the farmers establish good and long-term relationships with the wholesalers, and part of them are even paid in advance payment on crops. On the other hand, wholesalers can't pay more to the farmers because of the lack of refrigeration facilities, unpredictable supply and low demand.

Supply Chain Actors: The market is considered a traditional market that depends mainly on moving the products from the farmers or the Israeli exporters to the final Palestinian consumers. The main actors are the farmers who sell their products in the market and buy agricultural inputs, traders that include retailers, semi-wholesalers and wholesalers and intermediaries, transporters who carry the products via trucks, final consumers who can be rural or urban consumers who buy the products, and state structure such as the Ministry of Agriculture, Ministry of Trade and National Economy. In addition, there is the Israeli Agricultural Coordination Unit which is responsible for the agricultural trade between Israel and oPt.



The above diagram⁴⁹ shows the commodity flow in the market. The supply chain for the fruit and vegetables market starts with the farmers who produces its crops and sells it to the wholesalers through a commission agents, or through exportation to intermediaries or directly to retailers or to consumers. Wholesalers sell exclusively to retailers who in turn sells to final consumers. Here it is noted that whilst farmers are known to sell directly to retailers and consumers, the most dominant transaction is directly with wholesalers.

The flow of the imported Israeli vegetables and fruits is different than the flow of the local produced vegetables and fruits. The importers buy the products directly from the Central market in Tel Aviv and transport the products to their warehouses, where they sell to wholesaler that are specialized in commodity trades, or to wholesalers who sell them in return to retails and then to the final consumers.

State structures almost play no role in the market except for MOA supported promotional activities to the local produced commodities. Ministry of Agriculture’s role is more regulatory where it provides clearance certificates for shipment destined for

⁴⁹ FAO, The impact of closure and high food prices

import into Israel. Custom Police enforces inspection on whether the shipments to Israel are accompanied by a waybill and lading bills. However the Israeli department of the Agricultural Coordination Unit is responsible for the transfer of agricultural commodity from Israel to West Bank and the opposite in terms of supervision and monitoring that basic standards are met.

Market Structure: It is evidenced that traders dominate the whole market with about 70% -80% of the market. Wholesalers constitute of about 5%-10%, while export intermediaries constitute of 5% of total market. Farmers who engage indirect sales constitute of about 10% of the market. While other studies indicate that 50-80% of fruit and vegetables trade is conducted by wholesalers and commission agents in the central markets.

The vegetable market in West Bank covers 90% of its needs whilst 10% is imported from Israel. The fruit market on the other hand covers only 10% of total market needs through local production, whilst 90% is imported from Israel⁵¹. The intermediaries dominate the market since they can still export commodity to the Israeli market. Although there is a reduction in the exports of vegetables and fruit to Israel because of the closures, still the intermediaries continue to sell to the Israeli market and have a substantial effect on local prices.

ARIJ has conducted a study of market channels inside the West Bank and Between the West Bank and Israel. According to the study, there are three main markets for fresh agricultural products in West Bank:

- 1- **Local Markets:** 55% of the farmers' products are sold to the local markets, through different methods:
 - a- Farm gate: This occurs when the merchants go to the farm's gate and pay cash to the farmer to get the crops. The prices here are usually lower than the main wholesale market-selling price. It was assessed that on average farmer would prefer this way as there is no transportation cost or market fees (paid to relevant Municipality and the middlemen). However this method has decreased in recent times due to restrictions on people's movement by the Israeli occupation.
 - b- Wholesale markets: In this way, the farmer takes his crops to the wholesale market and sells his products to merchants and receive a certain percentage of total selling price in addition to the municipality fees. Under this method, the

⁵⁰ ARIJ, Socio Economic assessment

⁵¹ Cite

- farmer can sell all of his products and get some money to cover the cost of lands. There are many wholesale markets spread in West Bank (Jericho, Tubas, Nablus, Beta, Qabatia, Hebron, Halhul, Bethlehem, Ramallah, Jenin, Jalama, Tammun, Tulkarem and Qalqiliya)
- c- Through merchants: This occurs when the merchants' collect and buy the farmer's products in a place located near his farm. This way is good as it saved transportation expenses and saves time for marketing. However, under this method, certain types of production and not all the farmer's products.
 - d- Direct selling to the consumers: This method applies to small scale farmers when the farmer sell his products to the consumers either at the farm's gate or in a corner at main markets. This way is suitable for small quantities when the farmer can get a good return from his sale.
 - e- Contractual marketing: This method is directed to certain products such as processing crops. A contract is signed between the factory and the farmer to produce a certain amount with a certain quality at a certain dates for a certain price.
- 2- **Israeli markets:** The selling prices for farmers in the Israeli market are better or equal to the local market prices. However, the Israeli markets require certain specification such as covering the agricultural products with certain plastic film, and restrict amounts sold per dunum per day. In addition, the products should be analyzed against pesticide residues and microbial contamination. There are several systems of marketing to Israel:
- 1- Through a Palestinian Middleman
 - 2- Through Israeli Merchants who can buy from farmers who have their own names on the entrance.
- 3- **Export Markets:** Through this method, the farmer exports his products to Europe, and the USA, through Israeli companies. However, certain procedures are required and constraints are imposed by the Israeli authorities which limits the marketing opportunities. Palestinian export companies have been established recently, and could export products to Arab countries through Jordan.

There are different market channels that are applied in West Bank, however the shorter the market channel the better to secure that the products reached the market fast and fresh, in addition to the lower costs and thus lower prices.

Market channels include:

- 1- Farmer- consumer
- 2- Farmer- wholesale market- consumer

- 3- Farmer-middleman-wholesale market
- 4- Farmer-retailer- consumer
- 5- Farmer-wholesaler-retailer- consumer
- 6- Farmer- Palestinian merchant- consumer
- 7- Farmer- Palestinian wholesaler- Israeli wholesaler
- 8- Farmer- Israeli merchants
- 9- Farmer- Israel Central Market
- 10- Farmer- middleman- export company

Main Findings :

1-According to the study selection of 24 crops, 12 crops are concentrated in the northern West Bank, 5 are in the south, and 7 are located in the middle.

Area	Number	Crop
North	12	Olive, Guava, citrus, tomato, cucumber, sweet pepper, cabbage, okra, muskmelon, wheat, potatoes, dry onion
South	5	Grapes, plums, almond, cauliflower, barley
Middle	7	Banana, dates, eggplant, squash, watermelon, beans, garlic
Total	24	

2- The distribution of the 24 crops among the governorates is as follows:

Governorate	Number	Crop
Nablus	1	Olive
Qalqilia	1	Guava
tulkarem	3	Citrus, sweet pepper, cabbage
Jericho	6	Banana, dates, eggplant, squash, watermelon, beans
Ramallah	1	Garlic
Jenin	6	Tomato, cucumber, okra, muskmelon, wheat, dry onion
Hebron	5	Grapes, plums, almond, cauliflower, barley
Tubas	1	Potatoes
Total	24	

3-Among the 24 crops, the total area of each crop in oPt is as follows:

No.	Crop	governorate	Total Area in oPt/ Dunum
1	Olives	Nablus	950,666
2	Wheat	Jenin	229,441
3	Barely	Hebron	107,548
4	Grape	Hebron	74,003
5	Almond	Hebron	44,305
6	Cucumber	Jenin	32,348

7	Squash	Jericho	28,185
8	Citrus	tulkarem	27,191
9	Tomato	Jenin	24,921
10	Plums	Hebron	23,608
11	Potatoes	tubas	21,17
12	Dry Onion	Jenin	17,326
13	Eggplant	Jericho	11,713
14	Cauliflower	Hebron	8,688
15	Dates	Jericho	7,898
16	Cabbage	tulkarem	6,539
17	Okra	Jenin	5,670
18	Beans	Jericho	4,767
19	Water melon	Jericho	3,540
20	Guava	Qalqilia	2,927
21	Sweet pepper	tulkarem	2,796
22	Banana	Jericho	1,680
23	Garlic	Ramallah	1,573
24	Muskmelon	Jenin	1,203

4-Among the 24 crops, the total production of each crop in oPt is as follows:

No.	Crop	Governorate	Total Production in oPt/Ton
1	Cucumber	Jenin	208,182
2	Tomato	Jenin	207,559
3	Olives	Nablus	85,651
4	Potatoes	tubas	69,180
5	Citrus	tulkarem	63,088
6	Eggplant	Jericho	59,665
7	Grapes	Hebron	55,164
8	Squash	Jericho	48,506
9	Dry Onion	Jenin	40,054
10	Wheat	Jenin	31,826
11	Cauliflower	Hebron	24,840
12	Cabbage	Tulkarem	22,756
13	Water melon	Jericho	17,282
14	Sweet pepper	Tulkarem	10,755
15	Barely	Hebron	9,740
16	Plums	Hebron	8,667
17	Almond	Hebron	6,233
18	Beans	Jericho	6,120
19	Banana	Jericho	5,120

20	Guava	Qalqilia	5,049
21	Dates	Jericho	3,997
22	Muskmelon	Jenin	3,733
23	Okra	Jenin	2,411
24	Garlic		1,371

5-Among the 24 crops, the total area of each crop in each governorate compared to total area in opt is as follows:

No.	Crop	Governorate	Area % of governorate compared to oPt
1	Banana	Jericho	100%
2	Grapes	Hebron	61%
3	Plums	Hebron	60%
4	Barley	Hebron	58%
5	Beans	Jericho	55%
6	Eggplant	Jericho	50%
7	Dry onion	Jenin	50%
8	Dates	Jericho	44%
9	Muskmelon	Jenin	42%
10	Squash	Jericho	38%
11	Garlic	Ramallah	30%
12	Okra	Jenin	29%
13	Sweet Pepper	Tulkarem	28%
14	Cauliflower	Hebron	25%
15	Almond	Hebron	24%
16	Cucumber	Jenin	24%
17	Wheat	Jenin	23%
18	Olive	Nablus	19%
19	Potatoes	Tubas	16%
20	Citrus	Tulkarem	13%
21	tomato	Jenin	11%
22	Cabbage	Tulkarem	11%
23	Guava	Qalqilia	9%
24	Water melon	Jericho	4%

6-Among the total production of oPt, the production of each crop at governorate level compared to total production in oPt is as follows:

No.	Crop	Governorate	Production % of governorate compared to oPt
1	Banana	Jericho	100%
2	Grapes	Hebron	66%
3	Plums	Hebron	65%
4	Almond	Hebron	52%
5	Eggplant	Jericho	50%
6	Wheat	Jenin	44%
7	Okra	Jenin	41%
8	Dry Onion	Jenin	39%
9	Sweet pepper	tulkarem	37%
10	Beans	Jericho	34%
11	Squash	Jericho	33%
12	Dates	Jericho	32%
13	Barely	Hebron	31%
14	Muskmelon	Jenin	28%
15	Olives	Nablus	26%
16	Cauliflower	Hebron	25%
17	Cucumber	Jenin	22%
18	Tomato	Jenin	21%
19	Citrus	tulkarem	18%
20	Garlic	Ramallah	17%
21	Potatoes	Tubas	15%
22	Cabbage	Tulkarem	14%
23	Guava	Qalqilia	6%
24	Water melon	Jericho	3%

7-Among the 24 crops, the total area of each crop in oPt compared to total area for the 24 crops is as follows:

No.	Crop	Governorate	Area % compared to 24 crops
1	Olive	Nablus	57.98%
2	Wheat	Jenin	13.99%
3	Barely	Hebron	6.56%
4	Grapes	Hebron	4.51%
5	Almond	Hebron	2.70%
6	Cucumber	Jenin	1.97%
7	Squash	Jericho	1.72%
8	Citrus	tulkarem	1.66%

9	Tomatoes	Jenin	1.52%
10	Plums	Hebron	1.44%
11	Potatoes	Tubas	1.29%
12	Dry onion	Jenin	1.06
13	Eggplant	Jericho	0.71%
14	Cauliflower	Hebron	0.53%
15	Dates	Jericho	0.48%
16	Cabbage	tulkarem	0.40%
17	Okra	Jenin	0.35%
18	Beans	Jericho	0.29%
19	Water melon	Jericho	0.22%
20	Guava	Qalqilia	0.18%
21	Sweet Pepper	tulkarem	0.17%
22	Banana	Jericho	0.10%
23	Garlic	Ramallah	0.10%
24	Muskmelon	Jenin	0.07%

8-Among the 24 crops, the total production of each crop in oPt compared to total production for the 24 crops is as follows:

No.	Crop	Governorate	Production compared to 24 crops %
1	Cucumber	Jenin	20.88%
2	Tomatoes	Jenin	20.82%
3	Olive	Nablus	8.59%
4	Potatoes	Tubas	6.94%
5	Citrus	tulkarem	6.33%
6	Eggplant	Jericho	5.98%
7	Grapes	Hebron	5.53%
8	Squash	Jericho	4.87%
9	Dry onion	Jenin	4.02%
10	Wheat	Jenin	3.19%
11	Cauliflower	Hebron	2.49%
12	Cabbage	Tulkarem	2.28%
13	Water melon	Jericho	1.73%
14	Sweet Pepper	Tulkarem	1.08%
15	Barely	Hebron	0.98%
16	Plums	Hebron	0.87%
17	Almond	Hebron	0.63%
18	Beans	Jericho	0.61%
19	Banana	Jericho	0.51%

20	Guava	Qalqilia	0.51%
21	Dates	Jericho	0.40%
22	Muskmelon	Jenin	0.37%
23	Okra	Jenin	0.24%
24	Garlic	Ramallah	0.14%

9-Among the 8 types of fruit, the total area of each type in oPt compared to total area for the 8 fruits is as follows:

No.	Crop	Governorate	Area % compared to 8 types of fruit
1	Olive	Nablus	83.96%
2	Grapes	Hebron	6.54%
3	Almond	Hebron	3.91%
4	Citrus	Tulkarem	2.40%
5	Plums	Hebron	2.09%
6	Dates	Jericho	0.70%
7	Guava	Qalqilia	0.70%
8	Banana	Jericho	0.15%

10-Among the 8 types of fruit, the total production of each type in oPt compared to total production for the 8 fruits is as follows:

No.	Crop	Governorate	Production % compared to 8 types of fruit
1	Olive	Nablus	36.76%
2	Citrus	Tulkarem	27.08%
3	Grapes	Hebron	23.68%
4	Plums	Hebron	3.72%
5	Almond	Hebron	2.68%
6	Banana	Jericho	2.20
7	Dates	Jericho	1.72%
8	Guava	Qalqilia	1.72%

11-Among the 11 types of vegetables, the total area of each type in oPt compared to total area for the 11 types of vegetables is as follows:

No.	Crop	Governorate	Area % compared to 11 types of vegetables
1	Cucumber	Jenin	24.81%
2	Squash	Jericho	21.62%
3	Tomatoes	Jenin	19.12%
4	Eggplant	Jericho	8.98%
5	Cauliflower	Hebron	6.66%
6	Cabbage	Tulkarem	5.02%
7	Okra	Jenin	4.35%
8	Beans	Jericho	3.66%
9	Water melon	Jericho	2.72%
10	Sweet Pepper	Tulkarem	2.14%
11	Muskmelon	Jenin	0.92%

12-Among the 11 types of vegetables, the total production of each type in oPt compared to total production for the 11 types of vegetables is as follows:

No.	Crop	Governorate	Production % compared to 11 types of vegetables
1	Cucumber	Jenin	34.03%
2	Tomatoes	Jenin	33.93%
3	Eggplant	Jericho	9.75%
4	Squash	Jericho	7.93%
5	Cauliflower	Hebron	4.06%
6	Cabbage	Tulkarem	3.72%
7	Water melon	Jericho	2.82%
8	Sweet Pepper	Tulkarem	1.76%
9	Beans	Jericho	1.00%
10	Muskmelon	Jenin	0.61%
11	Okra	Jenin	0.39%

13-Among the 5 types of field crops, the total area of each type in oPt compared to total area for the 5 types of field crops is as follows:

No.	Crop	Governorate	Area % compared to 5 types of field crops
1	Wheat	Jenin	60.85%
2	Barely	Hebron	28.52%
3	Potatoes	Tubas	5.62%

4	Dry onion	Jenin	4.59%
5	Garlic	Ramallah	0.42%

14-Among the 5 types of field crops, the total production of each type in oPt compared to total production for the 5 types of field crops is as follows:

No.	Crop	Governorate	Production % compared to 5 types of field crops
1	Potatoes	Tubas	45.46%
2	Dry onion	Jenin	26.32%
3	Wheat	Jenin	20.91%
4	Barely	Hebron	6.40%
5	Garlic	Ramallah	0.90%

VI. Challenges facing the agriculture sector in Palestine

1- Accessing inputs: One of the major obstacles to the agriculture sector is access to certain essential elements of the value chain such as inputs, finance and markets. The political and security situation in Palestine creates economic at multiple levels, thus preventing the access to land, water and agricultural inputs, limiting people's movement and goods, adding costs, and delays imports and exports markets which drastically impedes investment.

The two biggest problems facing the Palestinian agricultural sector are (i) water availability and (ii) space available for cultivation. It is estimated that the Palestinians have access to 89 wells in the area, down from 209 before 1967. According to Al Jazeera "The reduction in the amount of water accessible to Palestinians has led to a decline in the amount of land cultivated by Palestinians and to a drop in competitiveness of the crops they grow⁵²,"

Access to water: "According to Amnesty International," Israel uses more than 80 per cent of the water from the Mountain Aquifer, the main source of underground water in Israel and the oPt, while restricting Palestinian access to a mere 20 per cent. In rural areas, Palestinian villagers are continuously struggling to find enough water for their basic needs, as the Israeli army often destroys their rainwater harvesting cisterns and confiscates their water tankers"⁵³.

The access to water in some villages is very restricted which has forced them to reduce the amount of cultivated lands and thus reduce the size of their herds. Some NGOs such as Oxfam and ARIJ, starts to teach the farmers the aquaponic and hydroponic methods to reduce the need of water. These systems provide a way to cultivate fish and vegetables without the need for fertile ground. And because of its circulation nature, it is considered as water and space efficient.

Access to fertilizer: The market of the fertilizer, pesticides and other chemicals is considered as immature market in Palestine. This is due to the many restrictions by the Israeli side. Fertilizers, pesticides and piping needs a special permit from the Israeli Police Bombs Disposal unit for security reasons. These restrictions limit potential productivity gains, and lower the shelf life of the products.⁵⁴

In addition to the Israeli restrictions, the import of such products is subject to regulations put by the Palestinian Ministry of Agriculture under the law on Agriculture. Packaging materials are subject to inspected by the Palestinian

⁵² Taken from: Al Jazeera. 'Israel Restricts Jordan Valley Water Access.' July 2012.

⁵³ ARIJ, Production Consumption Assessment, literature review 2013

⁵⁴ USAID. AgBEE Snapshot of the Business Enabling Environment for Agriculture (AgBEE) for Palestine (January 2012).

Standards Institutions (PSI). Pesticides are regulated by a pesticides committee, which disallows a number of pesticides that are allowed by Israel.

96.9% of total irrigated lands and 87% of rain fed land in West Bank are treated by illegal and harmful pesticides. Although there are restrictions on using such types, the borders between Israel and West Bank is not fully controlled by the Palestinian Authority, and therefore, many imported products are not subject to inspection.

Access to seeds: The 2003 Law on Agriculture provides for regulation by the Ministry of Agriculture (MoA) on the import and export of seeds, their selection and use and the development of a genetic bank for seeds. However, there is no local production of seeds in West Bank, and most of the seeds are imported from Israel. In addition, Israeli testing of seeds destined for the Palestinian market is reported to take days, rather than the 24 hours for seeds destined for the Israeli market.

Land Restrictions: Jordan Valley that represents 30% of total land in West Bank is fully restricted and only 6% of its lands can be used by the Palestinians. It is a border area and is very restricted by the Israeli authority. However, Israeli settlements in the area could develop a modernized agribusinesses that produce crops for high-value export to the European Union (EU) and international markets. Other areas in the West Bank also face restriction and confiscation by the Israeli authority that led to agriculture land seizure and land destruction which stops farmers accessing their lands.

2- **Access to market:** Palestinian farm products are generally sold in either wholesale or retail markets,⁵⁵ with some farmers selling their produce directly to consumers through roadside stands. Farmers generally receive higher prices from direct sales to retail markets. However, most retail markets prefer to purchase from wholesale markets because of the convenience of transport, variety, and receiving all goods in one shipment.⁵⁶ The roads from the North to the South of West Bank are very difficult as a result of the closure of East Jerusalem. The difficulty in moving agricultural products from the West Bank to Gaza is also difficult and subject to Israeli control. For instance, Gaza can export products from West Bank but can't import in return.

75% of the export from Palestine to the European markets is from agriculture. However, a major reason for Palestinian economic dependence on Israel has been the lack of export market access for Palestinian goods and the Israeli

⁵⁵ World Bank, Economic Effects of Restricted Access to Land in the West Bank (2009).

⁵⁶ Intajuna Project. Palestinian Fresh Fruits and Vegetables Sector Overview (2009)

restriction on the flow of goods from abroad. A second dependency is that Israel has been the major employment outlet for Palestinian workers⁵⁷.

It is noted that there is little market information gathering in the West Bank relating to agricultural production and its markets. Municipalities currently collect daily price data from wholesale markets, but there is no effective market information system for economy-wide data collection, storage, and dissemination. Farmers lack information with respect to prices and supply, resulting in large price differences between wholesale markets in different villages⁵⁸.

Logistical restrictions: The restrictions put in place by the Israeli authority on the movement in West Bank increases the export cost, thus preventing farmers from accessing markets and threaten the viability of perishable agricultural products⁵⁹. “The physical barriers such as checkpoints and road blocks have restricted the free movement of people and goods within the West Bank and obstructed access for Palestinian agricultural produce, including olives and olive oil, to internal, Israeli and international markets”⁶⁰.

There are three main marketing systems in West Bank (i) the local Palestinian market, (ii) the Israeli market and the (iii) export market. The fresh agricultural products may enter one of these markets. The products of a Palestinian farm may enter the market through Hisbeh; a whole sale market or to a packing house for exporting. “However and in all cases, an Israeli agent is used to facilitate the entrance of the products through the checkpoints and out to an external market”⁶¹. The following diagram⁶² indicates the flow of agricultural products in West Bank:

⁵⁷ CEPR. 2012. ‘The Agricultural market in Palestine- A post-Oslo Analysis- 2012’

⁵⁸ ARIJ, Production Consumption Assessment, literature review 2013

⁵⁹ UNCTAD assistance to the Palestinian people: Developments in the economy of the occupied Palestinian territory (2011).

⁶⁰ ARIJ, Food Production Consumption Assessment, literature review 2013

⁶¹ Cite

⁶² Mansour. A. ‘Impact of Post Oslo Aid Interventions on the Palestinian Agricultural Sector.’ 2012



Numerous Israeli restrictions contribute to preventing Palestinian farmers from accessing the export market. For instance, Israel implements a “Back to Back” system where all the products from and to West Bank shall pass through one of the five crossings found in the path of the wall. However, Palestinian vehicles or holder of Palestinian ID cannot cross the checkpoints, which reinforce them to upload the products to another Israeli vehicle on the other side and pass through extensive checking. This laces a burden on the farmer and increases his/her costs significantly and leaves Palestinians with little control over their production.

- 3- Financial Access:** Lack of credit is a major obstacle to the agriculture growth in the developing countries. Agribusiness is considered very risky and therefore, the agricultural loans are usually expensive and do not fit with the seasonal nature of agriculture. In addition, farmers do not have land ownership and therefore can’t provide the suitable collateral. Large agribusiness with large bank accounts and land holding do not have any difficulty in accessing credit, while small farmers with small holdings have very little access. In West Bank, only 1.5% of all loans service the agricultural sector although agriculture constitutes 5.5% of GDP in year 2009. A review done by the World Bank shows that microfinance institutions are prevalent with NGOs reporting that the demand for these loans far outstrips the supply ⁶³.

⁶³ World Bank, West Bank and Gaza Financial Sector Review (2008).

In West Bank, some farmers borrow in kind from middle men in the form of inputs for which the middleman deducts his cost when the crops are sold at the wholesale market. This way of financing is not regulated, and there is no market information to help the farmer to assess the risk. Moreover, the farmer usually enters a cycle of debt that force him to deal with the same merchants every year. However and Sometimes, the marketing company or the trader repay the loans of the farmers. Furthermore and according to the World Bank, there is no leasing law, and equipment leasing is in its infancy.

Lack of subsidized farming: Israeli farmers are subsidized by their own government, which makes It hard for the Palestinian farmers to compete with them. The prices for the subsidized products have lower costs, and hence the Palestinian farmers produce at higher prices and thus more expensive products than the Israeli farmers.

4- Quality production:

Improving Harvesting Techniques: The harvesting technique in Palestine is considered to be primitive. In the case of olive, the harvesting is done by hands and which significantly contributes to around half of all labor costs for a Palestinian olive farmer. Although there are institutions that give training, women are not participating in such training.

Olive trees estimates for about 51% of cultivated⁶⁴ land in Palestine , and can contribute to 15% - 19% of agriculture output ⁶⁵. The majority of the harvested olives in West Bank is used for olive oil. The olive oil can be of a high quality if it is well produced. The Export Palestinian market does not always meet the International standards for the extra virgin olive oil, which has lower acidity and peroxide values. Other factors that affect the quality is the pressing method and storing.

Post-Harvest Storage Facilities: Many large agribusiness, GlobalGAP (Global Good Agricultural Practices) - certified farmers, packing houses, and some merchants have their own suitable storage facilities. However smaller farmers lack of suitable access to refrigerated storage⁶⁶.

Agricultural Research and Extension Services: The Ministry of Agriculture in West Bank provides limited assistance to small holders such as providing equipment or monetary assistance incentives in GlobalGAP. In addition,

⁶⁴ ARIJ, OSER

⁶⁵ World Bank.2006. Brief Overview of the Olive and the Olive Oil Sector in the Palestinian Territories

⁶⁶ ARIJ, Food Production Consumption Assessment, literature review 2013

extension services are also provided by donors and NGOs but such services lack of coordination that has often resulted in farmers receiving duplicative or conflicting training.

VII. Gaps and problems facing the agriculture sector

The agriculture sector in oPt suffers from various problems. The closures and restrictions put by the Israeli government damaged the Palestinian economy as a whole. Key elements in West Bank comprise of restrictions on freedom of movement of people and commercial goods, expansion of settlements and related infrastructure, impact of West Bank barrier, lack of access to agricultural land, lack of working permit to the Israeli labor market, and repeated destruction of physical assets during military incursions.

Following are the main gaps that face the agriculture sector in oPt:

- 1- **Lack of funding from donors**, The agriculture sector get the minimum from the donors community as funding. it is only 1% of total funding goes to agriculture. The sector is very risky and the infrastructure is very primitive. There is no insurance to hedge against risks and therefore no one would finance the agriculture sector in oPt.
- 2- **Restriction put by the Israeli authority for exportation**: There are limitations imposed by the Israeli authorities on the movement of Palestinian commodities for exportation. Gates of West Bank (WB) usually close at important times during the agricultural seasons, and crops that need special tendering cannot be grown. Many Palestinian traders still could export their products to the International markets, however, and due to the restrictions, many of them found themselves imposed to market their products locally or on Israeli markets with local prices.
- 3- **Natural crisis such as drought, low rainfall**: Climate change in the form of drought and frost have reduced crop and pasture productivity over the recent years. The water scarcity caused by the changes in climate during winter season 2007/2008 and winter season of 2009 affected 55,000 rain-fed farmers and herder families in oPt.
- 4- **Limited access to land resources**: The Israeli settlements in West Bank confiscated a total area of 67,743 dunums which equals to 50% of irrigated lands in West Bank (95.1% is located in Jordan Valley). 62.9% of agricultural and arable lands are located in Area C under Israeli control.
- 5- **Limited water resources**: Most of West Bank suffers from severe shortage of water supply. On average, domestic water supply covered only 73% of the demand. Regarding the access to water supply, currently almost 9% of the population of West Bank remain unconnected to any form of water networks. Valve closure, coupled with poor state of infrastructure, un accounted for water

and low pressure of water supplied to the Palestinian communities, causing many not receiving more than 30L/c/d.

- 6- **Restriction on people movement:** Checkpoints and military doors are spread all over West Bank. Through these checkpoints, Israel is dominating the movement from and to West Bank. These obstacles in addition to the barrier and sophisticated permits procedures restricted the movement of farmers to reach their workplace and even to visit each other.
- 7- **High transportation costs due to the closures and restrictions on movement:** security procedures put in place by Israel increases agribusiness restrict farmers from accessing markets, export costs and threaten the viability of perishable agricultural products. These physical barriers such as checkpoints and road blocks have restricted the free movement of people and goods within the West Bank and obstructed access for Palestinian agricultural produce to internal, Israeli and international markets. As a result, the transportation costs have increased due to finding other new ways that are far away from the checkpoints which increase in return the prices of products.
- 8- **Limited access inputs such as seeds, fertilizers, water, lands:** Agribusiness face considerable restrictions on access to land, water and chemicals due to the security situation with Israel. In addition, land records are conflicting and outdated, and informal land transactions abound.
- 9- **Water resource management is inefficient and poorly managed:** the water resources are scarce in West Bank, and the ways that are used to get the water is very primitive and needs upgrading.
- 10- **Limited access to finance:** There is a lack of credit for the agriculture as the Agribusiness is considered as very risky. Therefore, the loans available are usually expensive and do not suit the seasonal nature of agriculture.
- 11- **Limited access to markets especially the export markets:** There are obstacles facing the access to local and international markets in West Bank. Closures, restrictions on the movements of people and products make it hard to access the local and international markets.
- 12- **Lack of subsidized farming :** subsidised Israeli agriculture has negatively affected Palestinian farmers. Israeli farmers are subsidised by their government and are able to sell their produce at much lower costs. Palestinian farmers, who are not subsidised, cannot compete against the lower Israeli prices of produce which come into the West Bank and Palestinian produce is more expensive than other comparable products from other countries.
- 13- **Fluctuation in prices due to marketing channels, targeted market and the season:** Prices are not stable in the market in oPt. The change in prices is due to

the differences in transportation costs, marketing channels, and seasonality. The prices for the same product may differ from one market to another and in the same season.

- 14- Dependence on the Israeli market:** A major reason for Palestinian economic dependence on Israel has been the lack of export market access for Palestinian goods and the Israeli restriction on the flow of goods from abroad. A second dependency is that Israel has been the major employment outlet for Palestinian workers.
- 15- Unfair competition between the Israeli and Palestinian agro products inside West Bank:** There is a high competition between the Israeli and local products in the market in oPt in terms of prices. Almost 60% of the crops in the market are bought from Israel. The traders in the market usually sell the Israeli products with a price that is lower than the local products. This is because the traders buy the Israeli products with low quality and almost ripen. Therefore, and as the economic situation in oPt is bad, people buy the cheaper products no matter the quality is and hence this affect the sale of the local products.
- 16- Shortage in fruit production (except olive, plum, grape, citrus):** There is a general shortage in fruit production to meet the local consumption demand. Only olive oil exceeds the oPt consumption requirements despite the irregularity of its yearly production due to seasonality and obstacle of its cultivation. Grapes, plums, and citrus are meeting the vast majority of local consumption demand.
- 17- Surplus in vegetable production (surplus of tomatoes, cucumber, eggplant, squash, beans, cabbage, cauliflower, and shortage of potatoes, carrots, garlic, onion, water melon, muskmelon):** The agriculture sector meets the consumption of the main vegetables in oPt. The production surpluses are usually exported to Israel or to other countries through Israeli borders.
- 18- Shortage in red meat, milk, honey, fish and dairy products:** In oPt there is a high shortage in the production capacity of the livestock production. However, there are surpluses that are recorded in poultry meat and eggs production.
- 19- Little market information gathering:** There are little documentation regarding the quantities and qualities of the products marketed in West Bank. Municipalities currently collect simple daily price data from wholesale markets, but there is no effective market information system for economy-wide data collection, storage, and dissemination. Farmers lack information with respect to prices and supply, resulting in large price differences between wholesale markets in different villages.
- 20- Lack of storage facilities:** In general, there is a shortage in the availability of storage facilities in oPt. Large farmers and agribusinesses and certified farmers

do have their own storage facilities, while smallholder farmers in West Bank still lack suitable access to refrigerated storage.

21- Long process to sell the products to Israel through an Israeli agent: The farmers enter one of the three main markets available in oPt which are the local market, the Israeli Market and the export market. In all cases, the farmer needs an Israeli agent to facilitate the movement of the products through the checkpoints or to enter the Israeli market and the export market. The need for the Israeli agents makes the process of selling the products long and complicated.

22- Primitive harvesting techniques: Most of the harvesting technique used in West Bank is very primitive and ineffective for high quality and/or large scale production. For olives production, which forms approximately 50% of cultivated land, its harvest is conducted by hands.

23- Seasonality which cause to have surplus at certain time and shortage at other times: The sale of the products in the market in oPt is seasonal. Sometimes and at low seasons, the quantities are small and the prices are high. While in the high seasons, the prices are low and the crops are available in large quantities. This seasonality affect the demand in the market severely and thus affect the market as a whole. In the low season, the crops are bought from Israel to compensate the shortage in the crops, while at high season, the crops are exported to Israel. With the limited access to markets, and the complicated procedures to export to Israel, the farmers find themselves with excess amounts of crops at the high seasons that can't be sold in the local market.

24- Lack of food processing factories to use the surplus of some products such as the vegetables: The surplus of crops in the Palestinian markets are treated differently. Some traders reduce the prices of the surplus to secure its sales in the market. While others just get rid of the surplus especially if it is damaged or ripen. There is no food processing factories available in oPt that can use the surplus of the crops in the manufacturing instead of getting rid of large quantities of the surplus.

25- The Palestinian farmers have the opportunity to increase their products from beans, fig, okra, onion, olive and some dried fruit to fill the need of the Israeli market: The Palestinian crops can be used to overcome the shortage at the Israeli market. However, and because of the restrictions on movement of the products put by Israel the export of the crops to the Israeli market is hard. Israeli restrictions have greatly contributed to a reduction in Palestinian access to external and Israeli markets. However, still it can be considered as a potential to the Palestinian market to sell their products in Israel.

- 26- Long process regarding market channels and intermediaries:** The chain from farming to local, Israeli and International market is long. The farm sells its products to the local markets through the wholesale market. However there are many commissioners and wholesalers who are part of the process. In addition, if the farm wants to sell its products to the Israeli market or the International market, it should pass through an exporter and an Israeli agent. The holders of West Bank ID cannot cross the checkpoints so they have to upload their products to another vehicle waiting on the other side of the checkpoint. This long process increases the cost, labor and equipment.
- 27- Lack of official registry of exported products sold between West Bank and Israel:** The movement of the products from and to oPt is not controlled and therefore, there are no official data regarding the export products sold to Israel from oPt. Palestinian goods have to pass through one of the five Israeli commercial crossings that are located along the path of the Wall however, this movement is not fully controlled by Palestinian Authority (PA) and hence there is no official registry of the products entering these crossings.
- 28- There is no regulation for prices, however prices are determined by supply and demand:** The prices of the crops are determined by the demand and supply in the market and there is no regulation or intervention for the prices or qualities in the market in oPt. At low seasons, it is noted that the prices are high whilst the quantities are not available. In the high season however, the prices are moderate and acceptable, and the amounts are available in the market for consumer use.

Gap Analysis:

There are many obstacles and challenges that face the agriculture sector in oPt. The political situation affects the economy in general and the agriculture sector in specific. However, there are gaps and potentialities that can be taken into consideration and which can help in improving the sector as a whole if they are well organized and planned. Multiple PA organizations can play a vital role in studying these gaps and potentialities and put solutions to overcome parts of the problems that the agriculture sector suffers from.

Below is the suggested action plan for each gap and potentiality concerning the agriculture sector:

Action Plan for Each Gap and Potentiality

No.	Gap	Action
1	Competition between Israeli and Palestinian crops	Farmers may reduce the prices of the local products and market their products on quality basis
2	Shortage in fruit production	A Study should be conducted on the shortage of fruit and what types are needed and distribute a plan for the farmers to plant new types of fruit that are needed
3	Surplus in vegetable production	Farmers can improve the quality of their vegetables to market their excess products to Israel or abroad
4	Shortage in livestock production	New livestock farms should be established based on a plan put by the specialized authority
5	Little market information gathering	MOA should play a vital role in gathering formal information about the markets. MOA should appoint an employee at each market to gather information regularly and use such information for studies and analysis on the national level
6	Lack of storage facilities	A Plan by specialized authority should be set to establish new storage facilities
7	Long process to sell to Israeli markets	Farmers should find alternatives for the Israeli agent such as using yellow plate cars to cross the checkpoints
8	Primitive harvesting technique	Training to the farmers by the specialized institutions and donors on how to use

		new techniques in harvesting
9	Seasonality	Farmers should take advantage of seasonality in products by hedging against seasonality
10	Lack of food processing factories	A plan should be set by the specialized authority to build new processing factories and consult with the private sector to establish such factories
11	Increase the products that are needed in the Israeli market	A study should be conducted on the needs of the Israeli market and plant the products needed locally
12	Long process regarding marketing channels	A plan should be set by the specialized authority to reduce the intermediaries in the market chain
13	Lack of official registry of exported products between oPt and Israel	Specialized authority mainly MOA should appoint an employee to register the exported amounts to and from Israel
14	Lack of regulation for prices	A set of regulations by the specialized authority should be used to regulate the prices

Bibliography

- 1- FAO. 2010. "Agriculture, Action plan to Bridge food security and Agricultural development".
- 2- ARIJ (Applied Research Institute – Jerusalem). 2011. "Natural resource management in the West Bank, Potentiality of water and land allocation for irrigation.
- 3- ARIJ (Applied Research Institute – Jerusalem). 2011. "OSER, Chapter 6".
- 4- ARIJ (Applied Research Institute – Jerusalem). 2010. "Socio-Economic and Food Security Atlas".
- 5- PCBS (Palestinian Central Bureau of Statistics). "Reality of Agriculture sector in West Bank".
- 6- FAO. 2001. "Food Security Assessment in West Bank and Gaza Strip".
- 7- Anne Swindale, Punam Ohri-Vachaspati, 2005. "Measuring Household Food Consumption, A technical Guide".
- 8- FAO, UNRWA, WFP, PCBS. 2011. "Socio economic and food security survey, West Bank and Gaza Strip, occupied Palestinian Territory".
- 9- Canadian Agricultural Human Resource Council. 2010. "International agricultural marketing resource development".
- 10- Azhar, Agencia Espaniola de cooperasion Internacional. 2007. "A review of Palestinian agriculture sector".
- 11- FAO,DFID. 2007. "West Bank and Gaza Strip: Comprehensive Food Security and Vulnerability analysis".
- 12- Ministry of Agriculture, Palestinian National Authority. 2010. "Agriculture sector strategy".
- 13- FAO. 2009. "Course on agribusiness management for producers' associations".
- 14- PCBS (Palestinian Central Bureau of Statistics). 2000 - 2008. Agriculture Statistics.
- 15- ANERA. "Agriculture in West Bank and Gaza".
- 16- ARIJ (Applied Research Institute – Jerusalem). 2013. "Food production consumption assessment, Literature review".
- 17- Sustainable Development Solutions Network. 2013. "Opportunities and solutions for sustainable food production".
- 18- FAO. 2013. "The state of food and agriculture".
- 19- IFAD,WFP, FAO. 2012. 'The state of food insecurity in the world".
- 20- FAO. 2009. "The Impact of closure and high food prices on performance of imported staple foods and vegetables and fruits market in oPt".

- 21- ARIJ (Applied Research Institute – Jerusalem). 2010. The Palestinian agro-production and marketing system. A case study of the Northeast Jordan Valley area.
- 22- ARIJ (Applied Research Institute – Jerusalem), ACF. 2008. Palestinian Agriculture production calendar and the possibilities to market to local, Israeli and Outside markets. A case study of Tubas Governorate.