

**Palestinian National Authority
Palestinian Central Bureau of Statistics**

**Tree Horticulture Survey, 2006
Main Findings**

February, 2007

“Cover Price ** US\$”

PAGE NUMBERS OF ENGLISH TEXT ARE PRINTED IN SQUARE BRACKETS.
TABLES ARE PRINTED IN THE ARABIC ORDER (FROM RIGHT TO LEFT).

New Website:

- All of PCBS publications are available online in electronic format on PCBS website <http://www.pcbs.gov.ps>
- For additional, data requests online form is available on PCBS website and users can track the status of their request and download the data once made available.

**This document is prepared in accordance with the
standard procedures stated in the Code of Practice for
Palestine Official Statistics 2007**

© February, 2007.
All rights reserved.

Suggested Citation:

Palestinian Central Bureau of Statistics, 2007. *Tree Horticulture Survey, 2006- Main Findings.* Ramallah - Palestine

All correspondence should be directed to:
Dissemination and Documentation Department/Division of user services
Palestinian Central Bureau of Statistics
P.O.Box 1647, Ramallah, Palestine.

Tel: (970/972) 2 240 6340
E-Mail: diwan@pcbs.gov.ps

Fax: (970/972) 2 240 6343
web-site: <http://www.pcbs.gov.ps>



Population, Housing and Establishment Census – 2007

Acknowledgment

The success of PCBS' teams could not be possible without the kind reception and full cooperation of the agricultural holders and their families. PCBS expresses its gratitude to all the agricultural holders and their families and appreciates their commitment to bringing this achievement into light.

Financial support for the Horticultural Survey in the Palestinian Territory is being provided by the Palestinian National Authority (PNA) and the Core Funding Group (CFG) for 2006 represented by the Representative Office of Norway to the PNA; The Representative Office of the Netherlands to PNA; Swiss Agency for Development and Cooperation (SDC).

On this occasion, the PCBS extends special thanks to the members of the Core Funding Group (CFG) who contributed in funding this survey for this support.

Team Work

- **Technical Committee**

Shadia Abu Alzain
Waheed Shahrouri
Rasha Hreish
Laila Shoqqo
Khalid Hantoli
Rabah Jamal

- **Report Preparation**

Shadia Abu Alzain
Rasha Hreish

- **Preliminary Review**

Mahmoud Abdalrahman

- **Graphic Design**

Ahmad Sawalmeh

- **Dissemination Standard**

Hanan Janajreh

- **Final Review**

Mahmoud Jaradat

- **Overall Supervision**

Luay Shabaneh

PCBS President

Preface

The availability of statistical data for the agricultural sector is necessary for drawing up policies and plans to develop this important sector. Agriculture plays a vital role and represents a significant share of the Palestinian Gross Domestic Product (GDP), and also of the Palestinian labour force. As a result of the non-implementation of the agricultural census, PCBS has made it a priority to conduct agricultural specialized surveys, Tree Horticulture survey one of these surveys where a statistical unit according to international recommendations

The importance of this survey is seen in light of the low quality of the present data related to the agricultural sector, which is based on estimates and using the locality as a statistical unit, whereas international recommendations use the agricultural holding as a statistical unit for agricultural statistics.

This survey makes available basic data about the Tree Horticulture sector in the Palestinian Territory needed by the data users such as the planners and concerned parties in the agricultural sector. The main beneficiaries of the data of this survey are the governmental institutions including the Ministry of Agriculture, the NGOs, the private sector, international institutions, research centers, universities and other institutions concerned with this type of data.

The Palestinian Central Bureau of Statistics hopes that this report will enable planners to carry out their duties of caring and promoting the agricultural sector in the Palestinian Territory; and to enlighten decision and policy makers engaged in the comprehensive national development process.

February, 2007

**Luay Shabaneh
President**

Table of Contents

Subject	Page
List of Tables	
List of Figures	
List of Maps	
Executive Summary	
Chapter One: Introduction	[23]
1.1 Introduction	[23]
1.2 Objectives of the Survey	[23]
1.3 Report Structure	[23]
Chapter Two: Concepts and Definitions	[25]
Chapter Three: Main Findings	[29]
3.1 Agricultural Holders	[29]
3.2 Agricultural Holdings	[30]
3.3 Land Use	[31]
3.4 Agricultural Crops	[31]
3.5 Production Value	[33]
3.6 Intermediate Consumption Cost	[33]
3.7 Value Added	[34]
3.8 Agricultural Employment	[34]
3.9 Agricultural Practices	[35]
3.10 Agricultural Damages Due to Israeli Measures	[35]
Chapter Four: Methodology	[37]
4.1 The Survey Questionnaire	[37]
4.2 Statistical Unit	[37]
4.3 Survey Sample	[37]
4.4 Reference Period	[39]
4.5 Pilot Survey	[39]
4.6 Fieldwork Operations	[39]
4.7 Data Processing	[40]

Subject	Page
Chapter Five: Data Quality	[43]
5.1 Accuracy of the Data	[43]
5.2 Comparison of the data	[43]
5.3 Technical Notes	[43]
References	[45]
Tables	51
Maps	79
Appendix	89

List of Tables

Table		Page
Table 1:	Number and Area of the Tree Horticulture Holdings in the Palestinian Territory by Region, 2006	51
Table 2:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Sex and Region, 2006	51
Table 3:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Age Group and Region, 2006	52
Table 4:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Relation to the Head of Household and Region, 2006	52
Table 5:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Household Size and Region, 2006	53
Table 6:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Legal Status of the Holder and Region, 2006	53
Table 7:	Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Educational Attainment and Region, 2006	54
Table 8:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Type of the Agricultural Holding and Region, 2006	54
Table 9:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Legal Status of the Holding and Region, 2006	55
Table 10:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Method of Holding Management and Region, 2006	55
Table 11:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Main Source of Irrigation Water and Region, 2006	56
Table 12:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Main Irrigation System and Region, 2006	56
Table 13:	Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Main Source of the Agricultural Extension and Region, 2006	57
Table 14:	Percentage Distribution of the Trees Horticulture Crops in the Palestinian Territory by the Method Used for Harvesting and Region, 2006	57

Table	Page
Table 15: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by Method Used for Packaging Fruits and Region, 2006	58
Table 16: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by Fruits Storage Place and Region, 2006	58
Table 17: Percentage Distribution of the Unharvested Tree Horticulture Crops in the Palestinian Territory by Reason of Unharvest and Region, 2005\ 2006	59
Table 18: Area of the Tree Horticulture Holdings in the Palestinian Territory by Type of Land Use and Region, As in 23/08/2006	59
Table 19: Percentage Distribution of the Horticulture Trees Holdings in the Palestinian Territory by Size Group and Region, As in 23/08/2006	60
Table 20: Area of the Tree Horticulture Treated by Organic Fertilizers, Chemical Fertilizers, and Pesticides in the Palestinian Territory by Region, 2005\ 2006	60
Table 21: Number and Area of Bearing and Unbearing Horticulture Trees in the Palestinian Territory by the Crop and Region, As in 23/08/2006	61
Table 22: Number and Area of Bearing and Unbearing Horticulture Trees in the West Bank by the Crop, As in 23/08/2006	61
Table 23: Number and Area of Bearing and Unbearing Horticulture Trees in the North of West Bank by the Crop, As in 23/08/2006	62
Table 24: Number and Area of Bearing and Unbearing Horticulture Trees in the Middle of West Bank by the Crop, As in 23/08/2006	62
Table 25: Number and Area of Bearing and Unbearing Horticulture Trees in the South of West Bank by the Crop, As in 23/08/2006	63
Table 26: Number and Area of Bearing and Unbearing Horticulture Trees in Gaza Strip by the Crop ‘As in 23/08/2006	63
Table 27: Area of Bearing Horticulture Trees in the Palestinian Territory by Crop and Region, As in 23/08/2006	64
Table 28: Area of Unbearing Horticulture Trees in the Palestinian Territory by Crop and Region, As in 23/08/2006	64
Table 29: Number and Area of the Horticulture Trees in the Palestinian Territory by Type of Irrigation and Region, As in 23/08/2006	65
Table 30: Number and Area of Bearing Horticulture Trees in the Palestinian Territory by Type of Irrigation and Region, As in 23/08/2006	65
Table 31: Number and Area of Unbearing Horticulture Trees in the Palestinian Territory by Type of Irrigation and Region, As in 23/08/2006	66
Table 32: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Method of Farming and Region, As in 23/08/2006	66

Table	Page
Table 33: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Crop Status and Region, As in 23/08/2006	67
Table 34: Harvested Area of the Tree Horticulture in the Palestinian Territory by Crop and Region, 2005\ 2006	67
Table 35: Average of Planting Density of the Horticulture Trees in the Palestinian Territory by the Crop and Region, As in 23\08\2006	68
Table 36: Percentage Distribution of the Horticulture Trees in the Palestinian Territory by the Group Age And Region, As in 23\08\2006	68
Table 37: Area, Yield and Production of the Horticulture Trees in Palestinian Territory by the Crop and Type, 2005\ 2006	69
Table 38: Production of the Horticulture Trees in the Palestinian Territory by the Crop and Region, 2005\ 2006	69
Table 39: Area, Yield and Production of the Horticulture Trees in the North of West Bank by the Crop and Type, 2005\ 2006	70
Table 40: Area, Yield and Production of the Horticulture Trees in the Middle of West Bank by the Crop and Type, 2005\ 2006	70
Table 41: Area, Yield and Production of the Horticulture Trees in the South of West Bank by the Crop and Type, 2005\ 2006	71
Table 42: Area, Yield and Production of the Horticulture Trees in Gaza Strip by the Crop and Type, 2005\ 2006	71
Table 43: Production Value of the Horticulture Trees in the Palestinian Territory by the Crop and Region, 2005\ 2006	72
Table 44: Costs of the Trees Horticulture Intermediate Consumption in the Palestinian Territory by Type and Region, 2005\ 2006	72
Table 45: Value Added of the Horticulture Trees Output in the Palestinian Territory by Region, 2005\ 2006	73
Table 46: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Main Purpose of Production and Region, 2005\ 2006	73
Table 47: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Main Party for Marketing and Region, 2006	74
Table 48: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Crop Status at the Marketing, 2006	74
Table 49: Percent of Using the Agricultural Practices in the Tree Horticulture Holdings in the Palestinian Territory by Type of Agricultural Practice and Region, 2005\ 2006	75
Table 50: Percentage Distribution of the Tree Horticulture Employment in the Palestinian Territory by the Employment Type and Region,	76

Table	Page
2005\2006	
Table 51: Percentage Distribution of the Tree Horticulture Employment in the Palestinian Territory by Sex and Region, 2005\ 2006	76
Table 52: Percentage Distribution of the Tree Horticulture Employment in the Palestinian Territory by the Employment Status and Region, 2005\2006	77
Table 53: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Subjecting to Damage Due to the Israeli Measures and Region During Period 28\09\2000- 23\08\2006	77

List of Figures

Figures	Page
Figure 1: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Sex, 2006	29
Figure 2: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Educational Attainment, 2006	29
Figure 3: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Legal Status of the Holder, 2006	30
Figure 4: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Size Group, As in 23\08\2006	30
Figure 5: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Main Source of Agricultural Extension, 2006	31
Figure 6: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Crop Status, As in 23\08\2006	32
Figure 7: Percentage Distribution of the Horticulture Trees Production in the Palestinian Territory by the Crop, 2005\ 2006	33
Figure 8: Percentage Distribution of Main Economic Indicators of the Tree Horticulture in the Palestinian Territory by the Region, 2005\ 2006	34
Figure 9: Percentage Distribution of the Tree Horticulture Employment in the Palestinian Territory by the Employment Status, 2005\ 2006	34
Figure 10: Percent of Using the Agricultural Practices in the Tree Horticulture Holdings in the Palestinian Territory by Type of Agricultural Practice, 2005\ 2006	35

List of Maps

Map	Page
Map 1: Area of the Horticulture Trees in the Palestinian Territory by Region, As in 23\08\2006	79
Map 2: Area of the Horticulture Trees in the Palestinian Territory by Type of Irrigation and Region, As in 23\08\2006	81
Map 3: Average of the Tree Horticulture Holding Size (in Dunum) in the Palestinian Territory by Region, 2005\ 2006	83
Map 4: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Subjecting to Damage Due to the Israeli Measures and Region During Period 28\09\2000- 23\08\2006	85

Executive Summary

The Palestinian Central Bureau of Statistics conducted the Tree Horticulture Survey during August and September 2006 using agricultural holding as the statistical unit for data collection according to international recommendations. The sample was designed on a scientific basis and consisted of 5,024 agricultural holdings, interviews were completed for 92.5% of the survey sample.

- Data show that 95.1% of the agriculture holders in the Palestinian Territory are male, and 25.8% of the holders have a household size of 10 persons and more.
- The results show that 19.9% of the tree horticulture holders that work on their holdings in the Palestinian Territory have a preparatory school certificate, and 11.4% have a bachelor's degree and above.
- The tree horticulture holdings in the Palestinian Territory are concentrated in the group of small size holdings of 1-10 dunums, representing 60.9% of holdings.
- The results indicated that the number of the tree horticulture holdings in the Palestinian Territory was 70,209 holdings, the percent of plant holdings is 85.8%, and the percent of mixed holdings 14.2%.
- The results show that the total area of the tree horticulture holdings in the Palestinian Territory amounted to 1,306.5 thousand dunums, the percent of land cultivated with horticulture trees is 98.7%, the percent of land with buildings, establishments and roads 1.2%, and the percent of horticulture trees nursery is 0.1%.
- The results show that the total area of the horticulture trees in the Palestinian Territory was 1,289.2 thousand dunums, 92.3% of which are bearing, and 7.7% unbearing.
- The results indicated that 91.8% of the total area planted with horticulture trees in the Palestinian Territory is rainfed.
- The results indicated that 31.0% of the total horticulture trees in the Palestinian Territory are 5-20 years in age, followed by 21.6% that are 21-40 years in age. while 11.1% are more than 60 years old.
- The results show that 84.2% of the total area of horticulture trees planted with olive trees in the Palestinian Territory, followed by grapes with 4.4%.
- The results show that the total value added of tree horticulture production in the Palestinian Territory was US\$ 192.8 million.
- The results show that 78.3% of employment in the tree horticulture holdings in the Palestinian Territory is temporary employment, and 69.3% of employees are male.
- The results show that 49.6% of employment in the tree horticulture holdings in the Palestinian Territory is unpaid family members, followed by employees with 34.9%, self-employed with 7.7%, and employers with 7.8%.
- The results show that 82.3% of the total tree horticulture holdings in the Palestinian Territory used pruning, 58.4% used traditional cultivation, 42.7% farmed without chemical materials, and 45.7% used pesticides.
- The results show that 23.2% of the tree horticulture holdings were subjected to damage during the period 28/09/2000 – 23/08/2006 due to Israeli measures in the Palestinian Territory.

Introduction

1.1 Introduction

The United Nations recommends conducting a comprehensive agricultural census every ten years in order to establish an agricultural statistics program and provide information about the agricultural sector in any country based on the agricultural holding as a statistical unit. Due to the Palestinian political and economic situation there has been no agricultural census conducted according to the international recommendations of the Food and Agriculture Organization of the United Nations (FAO), which has led to a greater need for reliable agricultural statistics that can assist in developing policies and plans related to this important sector.

The PCBS cooperated with the Ministry of Agriculture over a lengthy period to make available agricultural statistics at the locality level, which varies from international recommendations. The Tree Horticulture Survey 2006 was conducted on a random sample drawn from the database of the Agricultural Holdings frame which was established by PCBS in the fourth quarter 2004. After updating in 2006, in which the agricultural holding was used as a statistical unit according to international recommendations.

The planning of this survey began long before in order to develop a group of indicators that could give a comprehensive picture of the tree horticulture sector in the Palestinian Territory. FAO literature was used when preparing the survey documents.

1.2 Objectives of the Survey

The main objective of this survey is to provide a comprehensive picture about the tree horticulture sector in the Palestinian Territory, and so provide the interested people and policy makers and planner with reliable data that is needed to develop this strategic sector.

The other objectives for this survey are:

1. Define the demographic properties of the tree horticulture holders.
2. Define the demographic properties of the tree horticulture holdings
3. Define the pattern of land use for the tree horticulture holdings.
4. Define the tree horticulture crops.
5. Define the production and productivity of the horticulture trees in the Palestinian Territory.
6. Define a marketing tree horticulture crops.
7. Define of applications in the tree horticulture holdings.
8. Define available indicators related to the tree horticulture holdings employment.
9. Define the damages of the tree horticulture sectors due to the Israeli measures

1.3 Report Structure

This report contains five chapters in addition to the Introduction and the Executive Summary. Chapter One is a general introduction about the subject of the survey, its objectives and the structure of the report. Chapter Two displays concepts and definitions used in the survey. Chapter Three displays the main results of the survey. Chapter Four deals with the methodology used in planning and conducting the survey. Chapter Five deals with the quality

of data. The report contains groups of figures and maps, which help represent the survey results.

Chapter Two

Concepts and Definitions

This section presents the main concepts and definitions used to derive the main indicators of agricultural statistics. These concepts and definitions are based on international recommendations in the field of agricultural statistics, and they are the same in all subjects in Palestinian Central Bureau of Statistics. The main concepts and expressions mentioned in this report were as follows:

- Agricultural Year:** The period extended from the beginning of October 2005 to the end of September 2006 .
- Agricultural Holding:** It is an economic unit of agricultural production under single management comprising all kept, livestock and all land used totally or partially for agriculture production purposes regardless to title legal form or size
- Agricultural Holder:** The holder is a civil or juridical person who exercises management control over the agricultural holding operation and takes major decisions regarding for the holding and may undertake all responsibilities directly, or delegate responsibilities related to day-to-day work management to a hired manager.
- Tree Horticulture Holding:** The presence of cultivated or arable land area for Horticultural trees crops controlled by the holder, and must not be less than one dunum.
- Legal Status:** The legal nature of any qualifying them to work within the legal framework under various names, including public and private, the holder may be an individual or a family or corporate body to order etc..
- Household:** One person or group of persons with or without a family relationship, who live in the same housing unit or part of the housing unit, share meals or make joint provision of food and other essentials of living.
- Head of Household:** The person who usually lives with the household and is recognized as head of household by its other member, often he/she is the main decision maker and is responsible for financial support and welfare of the household.
- Artesian Wells:** Those wells are being dug to reach the ground water, for pumped and exploited as a source of water for multiple purposes of drinking or irrigation.
- Nazaz Hotbeds:** Is dig wells to depths of a few pools of water and small quantities naturally through nomination
- Rainfall Wells:** Wells are being dug and lined the purpose of collecting and storing rainwater them.

Springs :	Spring water is a stream of water intakes at the confluence of class-bearing water with the Earth's surface and there is a permanent flow springs continue to flow throughout the year and other seasonal where erupt in winter only, and we in agriculture are those permanent springs used in the summer.
Holding Area:	Sum of area of each parcel making up the holding, where land owned by the holder but rented to others is not included in area of the holding, the farmyards and land occupied by farm buildings are included, the land area of the holder's house is also included if the house is located on the holding, and not used solely for residential purposes.
Plant Nurseries:	Areas utilized for transplants production. Either for vegetables, cut-flowers, fruit trees or else. They do not include plant nurseries producing primarily forestry transplants.
Fertilizer :	Is the all add to the soil to increase the amount of fertilizer plants available for crop growth. Divided primarily to the non-organic fertilizer (chemical) and organic fertilizers (natural).
Organic Fertilizers (municipal) :	Organic materials which are fully decomposed remains of the animal and vegetable and contain nutrients essential to plant
Chemical Fertilizers :	Are the chemicals which are being prepared commercially and contains elements essential nutrients for plant growth, The nitrogenous fertilizer and phosphate fertilizers, and potassium fertilizers, mixed fertilizers and the vehicle.
Pesticides :	The meaning is the chemical pesticides which are being prepared commercially and contain chemical compounds to fight diseases and pests that afflict plants in the agricultural tenure, These include insecticides, fungicides, The herbicides, and various other
Permanent Crops (including trees, horticulture) :	A growing crop growth cycle of one year, and that do not need replanting after each season, and for the last several years. For example, olive trees and citrus trees, and nuts. It is possible permanent crops in intensive agriculture or agriculture scattered, The area planted with crops include ways.
Permanent Crop Area (covering an area of trees horticulture) :	This term refers to the area of the crop at the time of the Permanent specific timetable, normally enumeration day. The area here include permanent crops that have been cultivated to produce fruits, so as not to include nurseries, where is the production of crops in order to reproduce the sale or use in holding

Permanent Crops, which amounted to age production (fruit):	Permanent crops already bearing fruit, producing, and most tree crops become productive after a certain amount lifetime, The fall crop, which amounted to this stage in the crop production and age had not yielded or produced yields in the reference year because of the climatic conditions, or for any other reasons, not included aging trees or other trees, which amounted age production but are no longer productive if identified within the crop at the age of production.
Irrigated Land:	Irrigated land, which is normally provided and deliberately water from the rain - with a view to improving the production of crops and pasture
Rainfed Land:	The cultivated land, which agriculture depends on rain water only.
Intensive Agriculture:	Include plants and trees planted in a planned and organized manner, as well as the plants and trees that are irregular in form, but are dense enough to collect data on the cultivated area as "intensive cultivation."
Agriculture Scattered:	Include plants and trees scattered or isolated degree shift without specifying the total area occupied, In determining the area covered by trees scattered. the total has been remitted to the vast numbers of trees through the allocation area for each standard tree.
The Single Crop:	This term refers to one crop grown alone in the field, may be this crop of crops temporary or permanent.
Mixed Crops:	two crops or more different temporary or permanent crops (but not both temporary and permanent crops), and grown simultaneously in the same field or area.
Associated Crops:	When both temporary and permanent crops are grown simultaneously in the same field.
Area Harvested:	For a particular crop this refers to total area from which the crop is gathered. Some temporary crops are grown more than once on the same land in the same agricultural year, in this case, the land is counted as many times as the crop is harvested to obtain area harvested for that crop. Not included the plots were not laid, banks, walkways, canals and banks, dams, and its top field windbreaks and so on
Agricultural Intermediate Consumption:	All that buys to be used in the production process for the same year, as chemical fertilizers, pesticides and seeds, fodder and water, etc
Biological Control:	Use of natural enemy to control the causal agent of the plant disease in the agricultural holding.

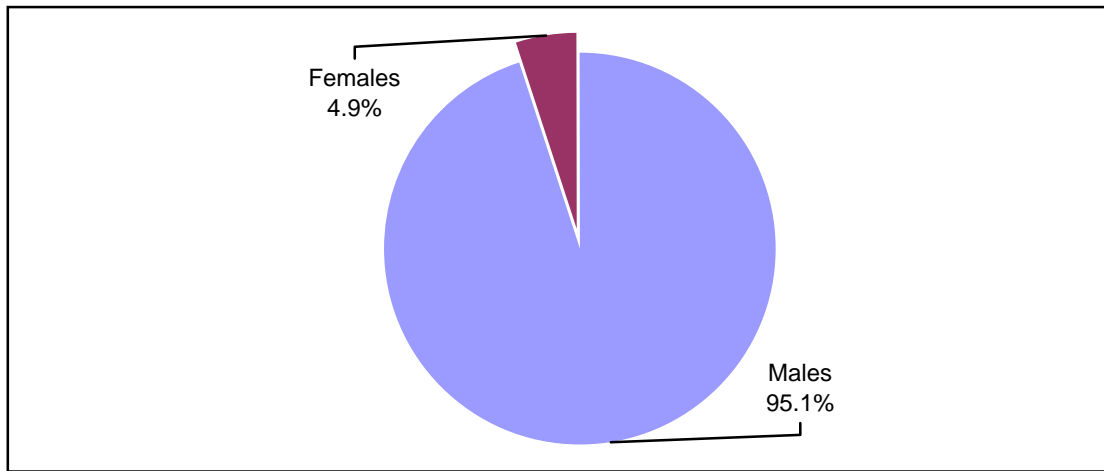
Integrated Management	Pest	Use more than one way to control the causal agent of the plant disease in the agricultural holding., with a focus on the means to reduce the chemical in favor of other means.
Permanent Agricultural Workers		Is a person whose services are utilized regularly and continuously during the agricultural year for agricultural work on the holding. Permanent Agricultural workers works for 8 month at least during the agricultural year.
Occasional Agricultural Workers:		A person working one or more times during the agricultural year who is not expected to work regularly or continuously on the holding. Occasional Agricultural workers works for less than 8 month during the agricultural year.
Employer:		A person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires one or more wage employees.
Self-Employed:		A person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires no employees.
Employee:		A person who works for a public or private employer and receives remuneration in wage, salary, commission, tips, piece-rates or pay in kind.
Unpaid Member:	Family	A person who works without pay in an economic enterprise operated by a related person living in the same household.
North West Bank:		This area includes Jenin, Tulkarm, Nablus, Salfit and Qalqiliya Governorates, and Tubas District.
Middle West Bank:		This area includes Ramallah & Al-Bireh, Jericho & Al-Aghwar, and Jerusalem Governorates.
South West Bank:		This area includes Bethlehem and Hebron Governorates.

Main Findings

3.1 Agricultural Holders

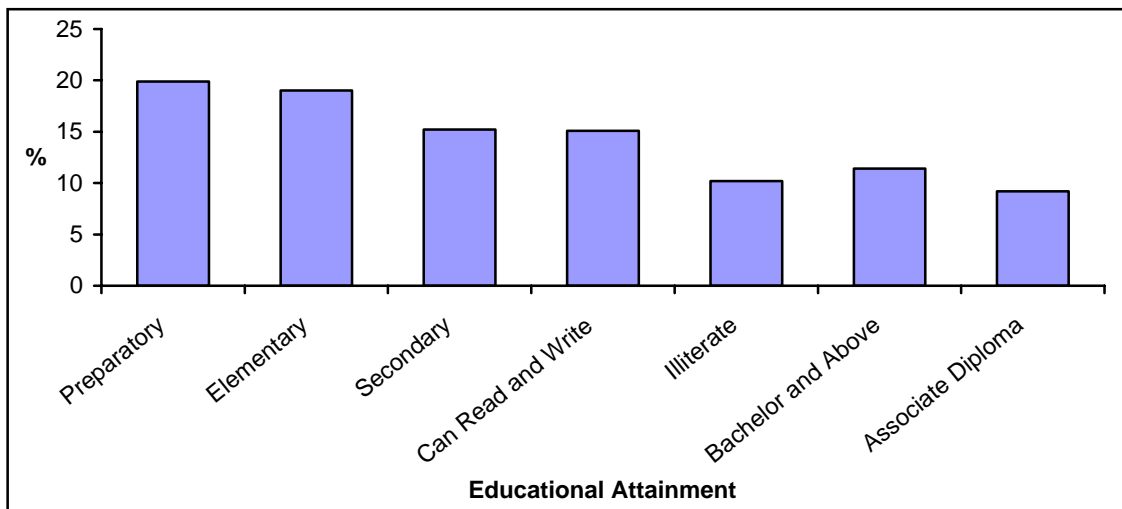
Data show that 95.1% of the horticulture tree holders in the Palestinian Territory are male, and 25.8% of the holders have a household size of 10 persons and more. Data show that the average size of the holder's household in the Palestinian Territory is 7.9 person, the results also show that the average age of an agriculture holder in the Palestinian Territory is 52.8 years.

Figure 1: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by Sex, 2006



Most of the tree horticulture holdings in the Palestinian Territory are household holdings, and 90.9% of the tree horticulture holders are the head of household. Regarding educational attainment, the results show that 19.9 % of the tree horticulture holders that work on their holdings in the Palestinian Territory have a preparatory school certificate, and 11.4% have a bachelor's degree and above.

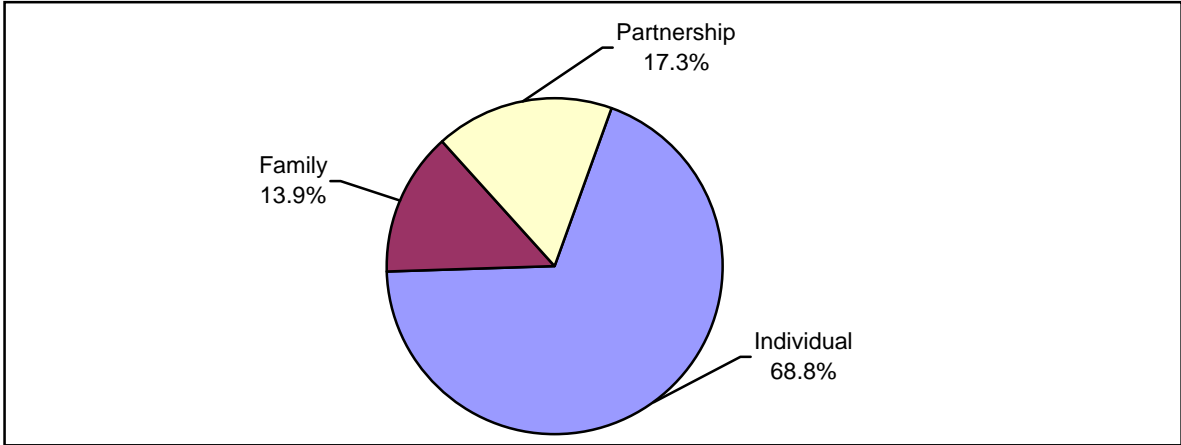
Figure 2: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Educational Attainment,



2006

The results show that 68.8% of the tree horticulture holders in the Palestinian Territory have the legal status of individual, whereas 13.9% of the agricultural holders have the legal status of family, 17.3% are partnership, from the total tree horticulture holders in the Palestinian Territory.

Figure 3: Percentage Distribution of the Tree Horticulture Holders in the Palestinian Territory by the Legal Status of the Holder, 2006

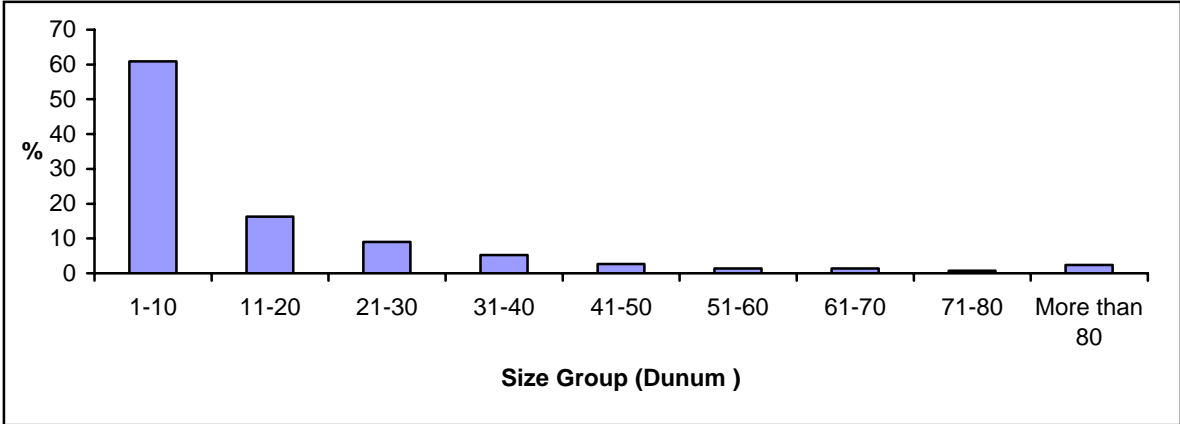


3.2 Agricultural Holdings

The results indicated that the number of the tree horticulture holdings in the Palestinian Territory amounted to about 70,209 holdings, 85.8% of which is plant holdings, and 14.2% mixed holdings. At the regional level the percent of plant holdings in the West Bank is 85.4% and in Gaza Strip, 90.9%.

Tree horticulture holdings in the Palestinian Territory are concentrated in the group of small size holdings of 1-10 dunums, where the percent of the tree horticulture holdings is 60.9%. When comparing the West Bank with Gaza Strip, the tree horticulture holdings in the West Bank are concentrated in the group of small size holdings of 1-10 dunums, where the percent of the tree horticulture holdings is 59.2%, the percent of the tree horticulture holdings in this group in Gaza Strip is 83.4%. The average size of the tree horticulture holdings in the West Bank reached 20.0 dunum, and decreases to 6.9 dunum in Gaza Strip.

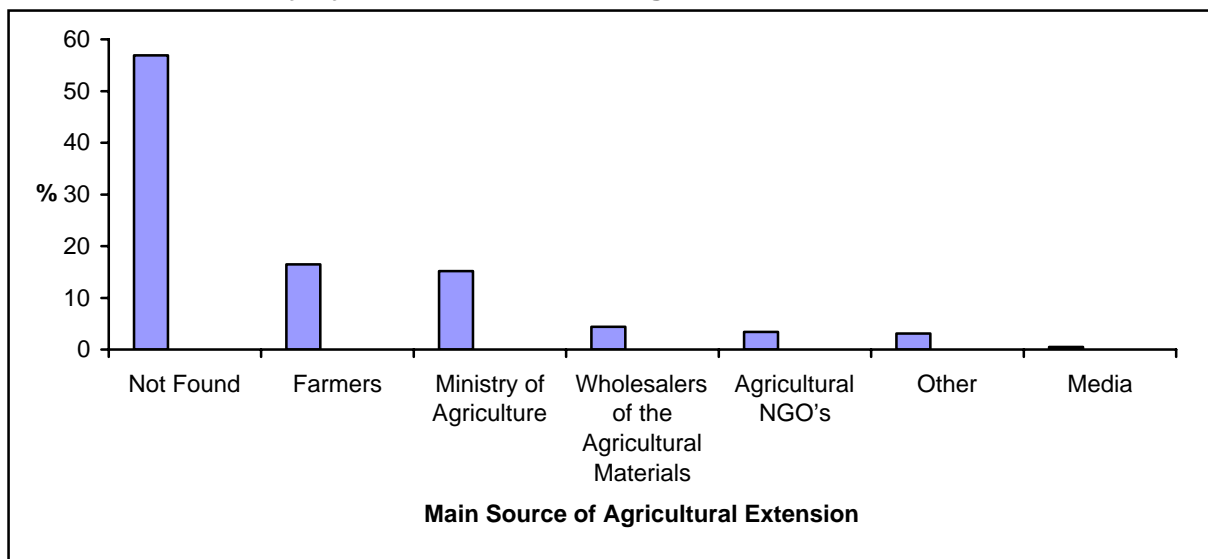
Figure 4: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by Size Group, As in 23\08\2006



The results show that 92.7% of the tree horticulture holdings in the Palestinian Territory have a legal status of owned, whereas 4.9% of the tree horticulture holdings are owned and rented, 1.2% are rented, from the total of the tree horticulture holdings in the Palestinian Territory.

The results show that 56.9% of the tree horticulture holdings in the Palestinian Territory do not receive agricultural extension services from any one, while 15.2% of the tree horticulture holdings in the Palestinian Territory receive agricultural extension from the Ministry of Agriculture, 16.5% from farmers, 3.4% from the Agricultural NGO's, and 4.4% from wholesalers of agricultural materials.

Figure 5: Percentage Distribution of the Tree Horticulture Holdings in the Palestinian Territory by the Main Source of Agricultural Extension, 2006



3.3 Land Use

The results show that the total area of the tree horticulture holdings in the Palestinian Territory amounted to 1,306.5 thousand dunum, The area of horticulture trees represents 98.7% of the total area of the tree horticulture holdings in the Palestinian Territory. The results also show that the area of establishments, and roads constituted 1.2%, and the area of nurseries constituted 0.1% of the total area of tree horticulture holdings in the Palestinian Territory.

The results show that the area of organic fertilizers treatment amounted to 325.8 thousand dunum in the Palestinian Territory, while the area of chemical fertilizers treatment amounted to 129.8 thousand dunum. The area treated with pesticides reached 399.5 thousand dunum during 2005/2006.

3.4 Agricultural Crops

The results indicated that 93.9% of tree horticulture crops in the Palestinian Territory harvested manually. Regarding the method used for packaging fruits, the results indicated that 45.4% of tree horticulture crops are packaged in plastic sacs; as for the storage of fruits, 96.0% of tree horticulture crops are stored in the houses. For 69.4% of tree horticulture crops in the Palestinian Territory, the main purpose of production is for household consumption only, followed by sale the remaining quantity after household consumption rate of 16.6%

3.4.1 Cultivated Area

The results show that the area planted with tree horticulture in the Palestinian Territory was 1,289.2 thousand dunum, 92.3% of which are bearing, and 7.7% unpearing. The olive formed 84.2% of the total area planted with horticulture trees in the Palestinian Territory with 1,085.5 thousands dunums, with 1,073.8 thousand dunums in the West Bank, 11.7 thousand dunums in Gaza Strip. This was followed by grapes with 56.3 thousands dunums, at 4.4%, including 55.0 thousand dunums in the West Bank, and 1.3 thousand dunums in Gaza Strip. As for the pattern of the crop, it varies from one region to another, olive cultivation is concentrated in the Northern West Bank, while grapes cultivation is concentrated in the Southern West Bank.

According to the pattern of irrigation results showed that 91.8% of the total area planted with horticulture trees in the Palestinian Territory is rainfed, About 90.5% of the area cultivated with horticulture trees in Gaza Strip is irrigated, whereas 93.8% of the total cultivated horticulture trees area of the West Bank is rainfed.

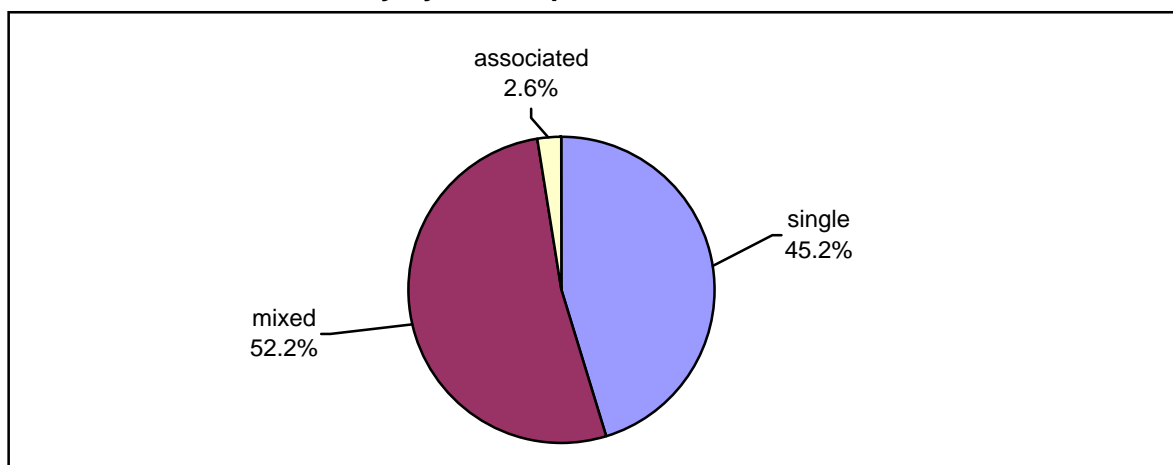
3.4.2 Numbers of Trees

Results indicate that 20.2 million trees in the Palestinian Territory, of which 17.9 million are bearing trees, distributed as 96.4% in the West Bank, and 3.6% in Gaza Strip. 31.0% of the total horticulture trees in the Palestinian Territory is 5-20 years in age, followed by 21.6% that is 21-40 years in age. and 11.1% that is more than 60 years.

3.4.3 Method of Farming and Crop Status

Tree horticultural crops distributed according to the method of farming in the Palestinian Territory are 53.7% by intensive cultivation, and 46.3% by scattered cultivation. in the West Bank the percentage of the planted trees in intensive agriculture was 52.4%, while in Gaza Strip it was 75.6%. Distribution according to the crop status was 45.2% as a single crop, 52.2% mixed crop, and 2.6% associated crop.

Figure 6: Percentage Distribution of the Tree Horticulture Crops in the Palestinian Territory by the Crop Status, As in 23\08\2006



3.4.4 Harvested Area

The area harvested formed 80.0% of the total area planted with horticulture trees in the Palestinian Territory, including 927.6 thousand dunums in the West Bank, and 23.6 thousand dunums in Gaza Strip. Reasons for areas unharvest were due to trees not yet being of productive age (75.1%), lack of economic feasibility (10.9%), due to the, and hindered as a result of Israeli measures (3.0%).

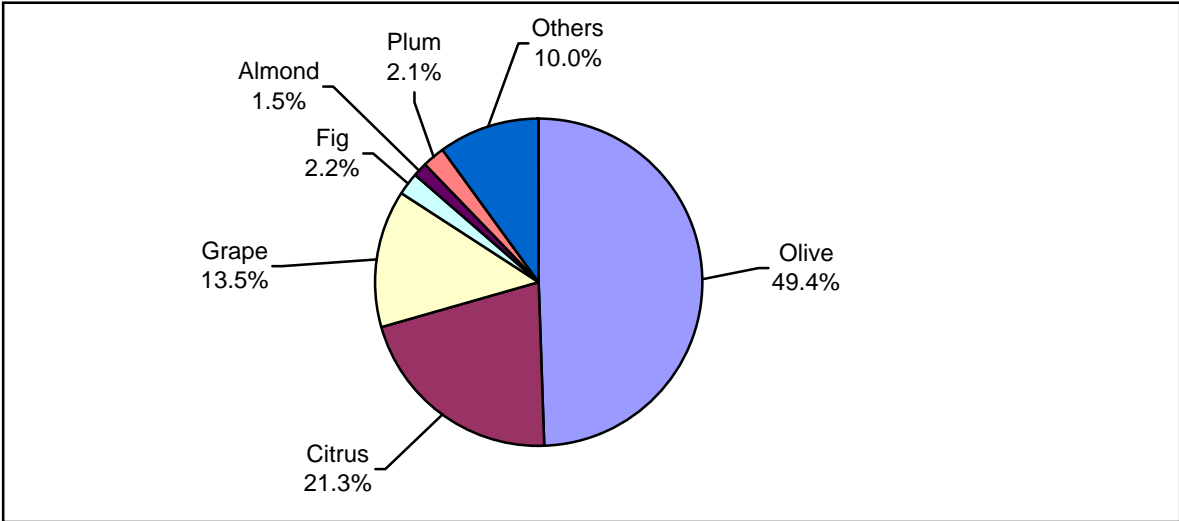
3.4.5 Planting Density

Results showed that the number of trees planted in one dunum was: olive, 11; trees, citrus, 32 trees; grapes, 58 trees; fig, 14 trees; almond, 28 trees; and plum, 39 trees. These rates are comparable with standard rates for tree planting per dunum..

3.4.6 Horticulture Trees Production

Results showed that the total quantity of production of horticultural trees in the Palestinian Territory during the agricultural year 2005\2006 about 317.4 thousand tons: 90.4% in the West Bank and 7.6% in Gaza Strip. Olive represented 49.4% of total horticultural trees production in the Palestinian Territory, followed by citrus at 21.3%.

Figure 7: Percentage Distribution of the Horticulture Trees Production in the Palestinian Territory by the Crop, 2005/2006



3.5 Production Value

Results showed that the total value of horticultural trees production in the Palestinian Territory during the agricultural year 2005\2006 was about US\$240.5 million: 91.5% in the West Bank and 8.5% in Gaza Strip, Olives represented 56.5% of the total value from horticultural trees in the Palestinian Territory.

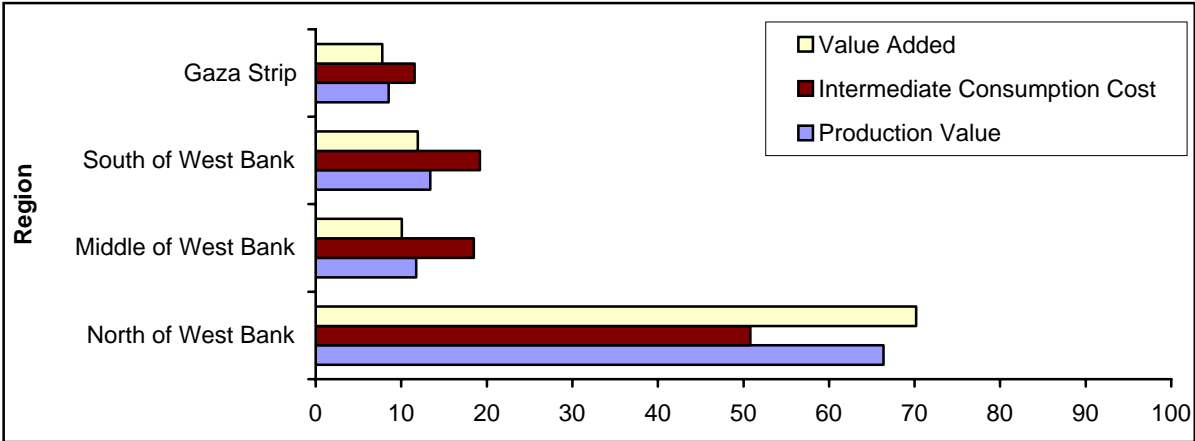
3.6 Intermediate Consumption Cost

The cost of intermediate consumption in the Palestinian Territory during the agricultural year 2005\2006 for horticulture tree production was about US\$47.6 millions (of which fertilizers represented 23.3%, pesticides 9.7%, seedlings 2.7%, water and electricity 12.7%, oil and grease and fuel 8.0%, and other 43.6%

3.7 Value Added

The total value added of the horticultural trees production in the Palestinian Territory during the agricultural year 2005\2006 about US\$192.8 million: 92.2% in the West Bank and 7.8% in Gaza Strip. The northern West Bank represented the highest value added of horticulture trees production.

Figure 8: Percentage Distribution of Main Economic Indicators of the Tree Horticulture in the Palestinian Territory by the Region, 2005\2006



3.8 Agricultural Employment

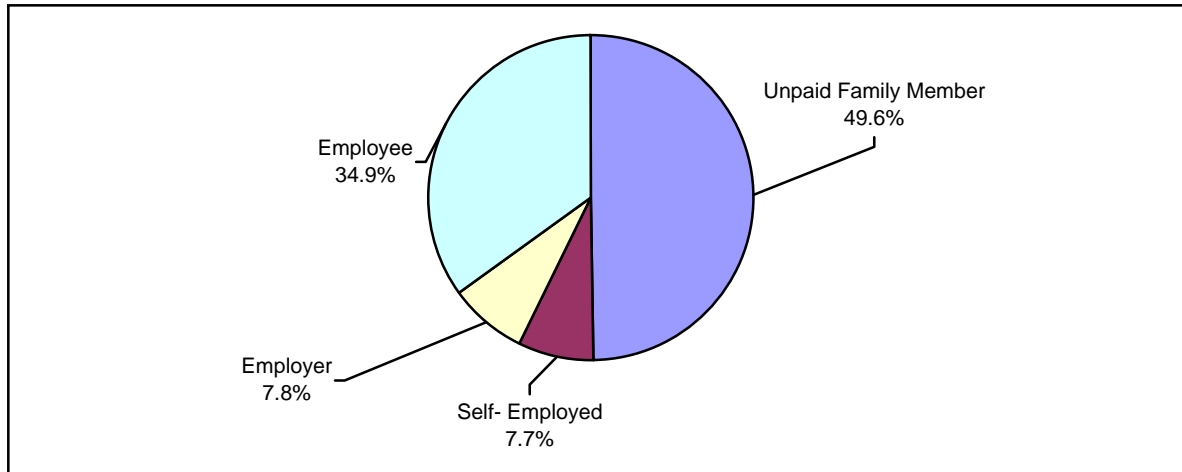
Results indicate that 78.3% of employment in the tree horticulture holdings in the Palestinian Territory is temporary employment, and 21.7% are permanent workers. The rate of temporary employment by region was 80.3% in the West Bank compared to 48.4% in Gaza Strip.

Of all workers in tree horticulture holdings in the Palestinian Territory the results showed that 69.3% were male and 30.7% were female during the 2005\2006. In the West Bank 67.6% of workers in tree horticulture holdings were male compared with 93.8% in Gaza Strip.

The results show that 49.6% of those engaged in tree horticulture in the Palestinian Territory are unpaid family members, 34.9% are employees, 7.8% are employers and 7.7% are self-employed from the total agricultural employment in the Palestinian Territory.

Figure 9: Percentage Distribution of the Tree Horticulture Employment in the Palestinian Territory by the Employment Status, 2005

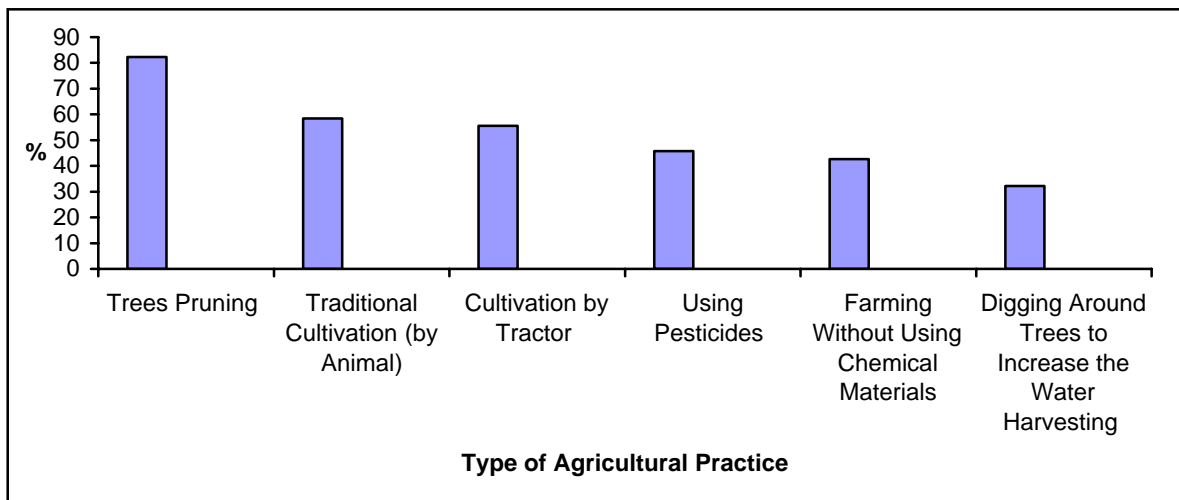
2006



3.9 Agricultural Practices

The results show that the tree horticulture holdings in the Palestinian Territory use one or more types of agricultural practices: 82.3% of the total tree horticulture holdings in the Palestinian Territory use pruning, 58.4% used traditional cultivation, 55.6% cultivation by tractor, 42.7% farmed without chemical materials, 45.7% used pesticides, and 32.2% digging around trees to increase the water harvesting.

Figure 10: Percent of Using the Agricultural Practices in the Tree Horticulture Holdings in the Palestinian Territory by Type of Agricultural Practice, 2005\ 2006



3.10 Agricultural Damages Due to Israeli Measures

The agricultural sector was subject to various kinds of damage from 28\09\2000 till 23\08\2006 due to Israeli measures against this vital sector. The data show that 23.2% of the tree horticulture holdings were subjected to damage due to Israeli measures in the Palestinian Territory; in the West Bank the percentage was 22.5% and in Gaza Strip, 33.7%.

Chapter Four

Methodology

4.1 The Survey Questionnaire

The tree horticulture questionnaire was designed depending on the recommendations of the Food and Agriculture Organization of the United Nations (FAO), also benefiting from the international experience in field of design the questionnaires, in addition, the pilot was conducted during the period 08/07- 11/07/2006 to check the project documents including the questionnaire, in which the questionnaire was changed and developed to suit the tree horticulture sector in the Palestinian Territory.

The questionnaire for the Tree Horticulture Survey 2006 consists of eleven sections as follows:

1. Section One: identification data of the agricultural holder and holding
2. Section Two: demographic properties of the agricultural holders, concerning sex, age and other related indicators.
3. Section Three: regarding agricultural holding, the type, legal status, main source of irrigation water, main source of extension, and other related indicators.
4. Section Four: regarding land use, the total area of the agricultural holding, the treatment of chemical and organic fertilizers, pesticides and treatment area, and other related indicators
5. Section Five: regarding the tree horticulture crops, the type, area and other related indicators
6. Section Six: regarding the production of tree horticulture crops, rainfed or irrigated, and other related indicators.
7. Section Seven: the number of horticulture trees by age.
8. Section Eight: the costs of production requirements for the trees horticulture.
9. Section Nine: the marketing of tree horticulture crops.
10. Section Ten: the agricultural applications for tree horticulture holdings.
11. Section Eleven: agricultural labor, in terms of sex, status, and other related indicators.
12. Section Twelve: damage to agricultural as a result of Israeli attacks, in terms of size, number, and other relevant indicators

4.2 Statistical Unit

The statistical unit used in this survey is the agricultural holding, based on the recommendations of the Food and Agriculture Organization of the United Nations (FAO), where FAO literature recommends using the agricultural holding as the statistical unit in all agricultural surveys.

4.3 Survey Sample

4.3.1 Target Population

The target population of this survey includes all holdings classified as tree horticulture holdings (olive, citrus, grapes, figs, nuts, Alberkouk, others). in the Palestinian Territory.

4.3.2 Sampling Frame

Agricultural holdings of 2004 contains the list of agricultural holdings, which cover most of the agricultural holdings in the Palestinian Territory. This includes all identification data about holder and the types of holdings, excluding animal holdings, and updated sample of tree horticulture holdings formed from the updated frame for Tree Horticulture Survey.

4.3.3 Sample Size

The sample size is 5,024 agricultural holdings in all of the Palestinian Territory, and it is large enough to obtain reliable estimates on a regional level (North, Middle, South of the West Bank, and Gaza Strip) in addition to crop type.

4.3.4 Sample Design

The sample is a one-stage stratified simple random sample.

4.3.5 Sample Classes

The agricultural holdings are stratified into three levels, the objective of this division is to obtain more precise results addition to the provision of an adequate number of holdings in order to extract a sample survey tree horticulture:

1. the level of geographical classification as classified into four geographical regions : the (North, Middle, South West Bank, and Gaza Strip).
2. the level of class size holdings as the classification holdings depending on the size of the holdings in each region.. The use of six categories based on the area of land planted with trees horticulture :
 - a.(1-4) dunum.
 - b.(5-9) dunum
 - c.(10-14) dunum
 - d.(15-29) dunum.
 - e.(30-49) dunum.
 - f. (50) and more.
3. Type of tree horticulture where divided into seven types:
(1.Olive, 2.Citrus, 3.Grapes, 4.Figs, 5.Almond, 6.Plum, 7.Other)

4.3.6 Sample Distribution

The sample is distributed on strata in disproportion among the governorate, agricultural activity and measure size groups. The highest measure size group holdings are completely selected. The other measure size groups are sampled in proportion in range between 2-30 %.

4.3.7 Response Rate

The percentage of completed interviews was 92.5% of the total survey sample in the Palestinian Territory.

4.3.8 Weighting

The preliminary weights of the survey were calculated while drawing the sample. After conducting the survey the weights were adjusted to deal with the non-response cases that emerged during the data collection process. When computed the estimations of the survey indicators, compute the weights was done, where it has a weight for each analysis unit suit with the selection probability of the unit.

Adjusting weights is important to reduce bias resulting from the non-response cases. Also adjusting gives consideration to the number and area of the agricultural holdings in the Palestinian Territory, and their distribution according to size groups and the main activity of the agricultural holding. Therefore, the results, estimates and percentages of this survey represent the reality in the Palestinian Territory.

4.3.9 Variance Calculations

The variance of this survey has been computed by using the “programming package” SPSS 12.0.

4.4 Reference Period

The time period (reference) for this survey is, which is sufficient for the return of required data, is the agricultural year 2005\2006, which is defined as the period extending from the beginning of October to the end of September of the next year. For this survey it covers the period extending from the beginning of October 2005 to the end of April 2006, and the expected period to the end of September 2006. The reference period for the number of trees indicators was an enumeration day according to international recommendations: which was 23/08/2006 was the adopted reference day for the livestock.

4.5 Pilot Survey

The pilot survey is a miniature reflection of the main Survey, and the suitable tool to measure and evaluate the different stages of the survey. PCBS carried out the pilot survey in Nablus and Ramallah governorate during the period 08-11\07\2006, where the pilot survey was prepared and designed to be as similar to the main survey as possible.

The fieldwork and technical objectives that were tested in the pilot survey were:

1. Check of the questionnaire and the training manual.
2. Fieldwork team.
3. Training of the fieldwork team.
4. Structure of the fieldwork team and the communication channels between the different fieldwork teams.
5. The fieldwork procedures.
6. The fieldwork problems.
7. The achievement rate.
8. The response rate.
9. The proposed budget of the project.
10. The proposed timetable of the project.
11. Check of the data entry program and the editing rules.
12. Check of the sample design of the project.

4.6 Fieldwork Operations

4.6.1 Prepare the Training Manual of the Fieldwork Team and Train the Team

The training manual of the fieldwork team was prepared to cover all topics dealing with fieldwork and filling the questionnaires. Moreover, it dealt with the tasks of each member in the fieldwork team, and the procedure to reach the agricultural holding, interviewing, and questionnaire filling. Additional training manuals for the fieldwork supervisors, fieldwork coordinators and fieldwork editors were provided to the fieldwork team in order to secure team training and success of the project. The training schedule was prepared to include all of the topics mentioned in the training manual. A training course was held at the same time in each of the West Bank and Gaza Strip; training of the fieldwork team of the West Bank was in Al-Bireh and Hebron cities, and training of the fieldwork team of Gaza Strip was in Gaza city. The communication between the different teams during the training was via videoconferencing.

The training course of the fieldwork team was held for six days during the period 12-17\08\2006 and another training course was held during the period 01-03\09\2006, refresher meetings were held with the fieldwork team after the first week of starting the fieldwork in all the regions. 81 trainees participated in the training course, 72 of them were in the West Bank and 9 of them were in Gaza Strip.

4.6.2 Fieldwork of the Main Survey

PCBS prepared a plan to execute the fieldwork of the main survey in the West Bank and Gaza Strip. This plan included preparation of the fieldwork team, preparation of the tools of fieldwork (questionnaires, maps, sample lists), distribution of the fieldwork team on the different governorates, 40 fieldworkers, 10 supervisors, 5 editors in addition to 3 fieldwork coordinator were distributed to the all governorates of the West Bank, and 6 fieldworkers, 1 supervisors, 1 editor in addition to a fieldwork coordinator were distributed to all governorates of the Gaza Strip.

The fieldwork period of the survey was during the period 23\08\ - 02\10\2006.

4.6.3 Data Editing in the Field

The project management developed a clear mechanism for editing the data and trained the team of editors accordingly. The mechanism was as follows:

- Receiving completed questionnaires from the fieldworkers on a daily basis.
- Checking each questionnaire to make sure that data were collected for the agricultural holding mentioned in the sample list, and all the questionnaire sections and questions were filled.
- Applying the editing rules on the questionnaires by the fieldwork editors.

4.6.4 Following up and Supervision Mechanism

Special follow-up forms were designed for handing in and receiving questionnaires for all levels as well as the daily accomplishments of the interviewers. Supervisors had the task of allocating work to the teams using the map and the sample list. They provided daily reports to the fieldwork coordinator explaining the completed interviews, refusal cases, not applicable cases and others cases of the interview results, and then the report was sent to the project manager. In addition the technicians and the fieldwork coordinators conducted fieldwork visits in order to monitor the fieldwork, ensure the data quality and to assist in solving any problem faced by the fieldwork team.

4.7 Data Processing

4.7.1 Preparation of Data Entry Programme:

At this stage the data entry program was prepared using the ACCESS package. Data entry screens were designed. Also, rules of entry were established in a manner that guarantees successful entry of questionnaires and queries to check data after each entry. These queries examine the variables on the questionnaire level.

4.7.2 Data Entry

After having designed the data entry program and tested it to verify readiness; and after having trained staff on dealing with data entry programs, data entry began at 27\08\2006 and was finished at 18\11\2006, where 12 data keyers were engaged in the data entry process.

4.7.3 Editing of the Entered Data

Special editing rules were prepared for editing the stored data to guarantee their reliability in order to have an accurate and clean data.

4.7.4 Results Extraction and Data Tabulation

SPSS program was used for extracting the results, and the empty tables were prepared previously in order to facilitate the tabulation process. The report tables were prepared based on the international recommendations while respecting the Palestinian situation in the data tabulation of the survey.

Chapter Five

Data Quality

5.1 Accuracy of the Data

5.1.1 Statistical Errors

Data of this survey affected by statistical errors due to use the sample, Therefore, the emergence of certain differences from the real values expect obtained through censuses. It had been calculated variation of the most important indicators exists and the facility with the report. and the dissemination levels of the data were particularized at the regional level in the West Bank (North, Middle, South) and Gaza Strip, due to the sample design and the variance calculations for the different indicators.

5.1.2 Non-Statistical Errors

Non-statistical errors are probable in all stages of the project, during data collection or processing. This is referred to as non-response errors, response errors, interviewing errors, and data entry errors. To avoid errors and reduce their effects, great efforts were made to train the fieldworkers intensively. They were trained in how to carry out the interview, what to discuss and what to avoid, carrying out a pilot survey and practical and theoretical training during the training course.

Also data entry staff was trained on the entry program that was examined before starting the data entry process. To have a fair idea about the situation and to limit obstacles, there was continuous contact with the fieldwork team through regular visits to the field and regular meetings with them during the different field visits. Problems faced by fieldworkers were discussed to clarify any issues.

5.2 Comparison of the Data

Some comparison of the data with data of the annual report of agricultural statistics, which is collected in coordination with the Ministry of Agriculture and depend on estimation by locality, and data of Farm Structure Survey 2004\2005 showing the convergence of logical data

5.3 Technical Notes

There are important technical notes which should be taken into consideration when reviewing this report, which are as follows:

1. Coverage of the agricultural holdings frame in which the survey sample was drawn represents about 90% of the agricultural holdings in the Palestinian Territory. The

agricultural holdings in some cities and refugee camps of small agricultural activity were not enumerated; a sample of the enumeration areas was taken to enumerate the agricultural holdings in these cities and refugee camps.

2. Some cases of changes appeared in the types of agricultural holdings during the field implementation of the survey, such as changing of some mixed agricultural holdings to plant holdings or to animal holdings; such changes were treated when adjusting data weights and extracting the final results of the survey.
3. The values of productivity and production in the tables contain decimal fractions and therefore should be treated carefully when calculating production manually
4. The concepts of the agricultural holder and the agricultural holding according to international recommendations were well clarified through intensive training and field visits by the project management.
5. The dissemination levels of the data were particularized at the regional level in the West Bank (North, Middle, South) and Gaza Strip, due to the sample design and the variance calculations for the different indicators.
6. The main indicators were revised by the technicians of the Ministry of Agriculture and the results were discussed with them. They expressed that the data was logical and in harmony with the agricultural situation in the Palestinian Territory.
7. Yields were used for agricultural crops that have been obtained from the Ministry of Agriculture during the 2001\2002 and 2003\2004 agricultural year which are Similar Yields of crops for agricultural year 2005/2006, because the lack use of production data that was collected from the field for not illogical.
8. Data disseminated during the press conference on 10\12\2006 announcing the survey results was considered to be primary data; the data was revised while preparing this report.

References

1. Food and Agriculture Organization of the United Nations (FAO), 1995. Programme for the World Census of Agriculture 2000. Rome- Italy.
2. Palestinian Central Bureau of Statistics, 2006. Tree Horticulture Survey, 2006: Training Manual of the Fieldwork Team. Ramallah- Palestine.
3. Palestinian Central Bureau of Statistics, 2006. Tree Horticulture Survey, 2006. Press Conference on the Survey Main Findings. Ramallah- Palestine.

