إقـــــرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

زراعة الفراولة وأثرها على القطاع الزراعي الفلسطيني

" دراسة تطبيقية على مزراع الفراولة في قطاع غزة"

Strawberry Cultivation and its Impact on the Palestinian Agriculture Sector

"Empirical Study for Strawberry Farming in Gaza Strip"

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DECLARATION

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification

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Strawberry Cultivation and its Impact on the Palestinian Agriculture Sector "Empirical Study for Strawberry Farming in Gaza Strip"

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بسم الله الرحمن الرحيم

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نتيجة الحكم على أطروحة ماجستير

بناءً على موافقة شئون البحث العلمي والدراسات العليا بالجامعة الإسلامية بغزة على تشكيل لجنة الحكم على أطروحة الباحث/ محمد عبدالله عبد القادر الشطلي لنيل درجة الماجستير في كلية *التجارة*/ قسم اقتصاديات التنمية وموضوعها:

زراعة الفراولة وأثرها علي القطاع الزراعي الفلسطيني

دراسة تطبيقية على مزارع الفراولة في قطاع غزة

Strawberry Cultivation and its Impact on the Palestinian Agriculture Sector

Empirical Study for Strawberry Farming in Gaza Strip

وبعد المناقشة العلنية التي تمت اليوم السبت 22 جمادى الآخر 1436هـ، الموافق 2015/04/11م الساعة الثانية عشرة والنصف ظهراً بمبنى طيبة، اجتمعت لجنة الحكم على الأطروحة والمكونة من:

د. خليل أحمد النمروطي	مشرفًا ورئيساً	.....
د. أحمد أنور أبو شعبان	مشـــرفـــاً	.....
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أ.د. خليل محمود طبيل	مناقشاً خارجياً	.....

وبعد المداولة أوصت اللجنة بمنح الباحث درجة الماجستير في كلية *التجارة*/ قسم اقتصاديات التنمية.

واللجنة إذ تمنحه هذه الدرجة فإنها توصيه بتقوى الله ولزوم طاعته وأن يسخر علمه في خدمة دينه ووطنه.

والله ولي التوفيق ،،،

مساعد نائب الرئيس للبحث العلمي والدراسات العليا

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Abstract

The study (entitled Strawberry Cultivation and its impact on the Palestinian agriculture sector "Empirical study for Strawberry Farming in the Gaza Strip") aimed to describe the strawberry cultivation and its impact on the Palestinian agricultural sector. It also aimed to describe the strawberry cultivation system at micro and macro scales, and to investigate its impact on the livelihood of Palestinian farming families in addition to that water resources availability at macro scale. Moreover, the aim of this study is to facilitate planners with clear view in order to design national cropping strategies that consider both macro and micro scales.

The study involved analysis at macro and micro scales using many of socioeconomic research methodologies (descriptive and quantitative analysis). A structured questionnaire was used to reflect farming family production system and livelihood, which have been collected randomly from 289 out of the 600 representing 48.1% of total population of strawberry farmers located and active in Bait Lahia during the season 2012-2013.

The study found that North Gaza is the only productive area of strawberry cultivation, and most of strawberry farmers depend on their family members in this process, which contributes to find new job opportunities. Strawberry cultivation is a significant source to improve the living standards of strawberry farmers in the Gaza Strip. Strawberry farmers are mix cropping farmers using the same available limited resources. Strawberry farmers have better living standards compared to other farmers because of the high return that came from strawberry cultivation (Mix cropping). Agriculture water resources are controlled and owned by strawberry farmers. Also siege is the main reason which negatively affected strawberry cultivation

The study recommends increasing the interest of strawberry cultivation as main source of income generation and decreasing the unemployment rate, despite the high cost of water consumption, the marginal return of strawberry cultivation is higher.

The study recommend that strawberry cultivation in order to have more profitable, reasonable and more efficient of water used. Strawberry farmers should cultivate with other crops (mix cropping).

Water resources should be returned under the control of the Ministry of Agriculture and Palestinian Water Authority, and farmers should pay for water consumption.

Abstract in Arabic Language

ملخص

هدفت الدراسة (بعنوان أثر زراعة الفراولة على القطاع الزراعي الفلسطيني "دراسة ميدانية لزراعة الفراولة في قطاع غزة") لتوصيف زراعة الفراولة وتأثيرها على القطاع الزراعي الفلسطيني ، من خلال وصف نظام زراعة الفراولة على المستوى الكلي والجزئي ، وللتحقيق في تأثيرها على معيشة الأسر الزراعية الفلسطينية بالإضافة الى الموارد المائية المتوفرة على المستوى الكلي. و كما هدفت أيضاً للتسهيل على صانعي القرار بوضع رؤية واضحة لتصميم استراتيجيات الاقتصاد الزراعي الوطنية على المستوى الكلي والجزئي على حد سواء.

استخدم الباحث عدة أساليب منهجية للبحث الاجتماعي والاقتصادي (المنهج الوصفي التحليلي والمنهج الكمي) على المستوى الكلي والجزئي، لقد تم استخدام البيانات الأولية والبيانات الثانوية من خلال استبيان منظم شمل على هيكلة وأسئلة تعكس نظام الإنتاج الأسري وسبل العيش، والتي تم جمعها عشوائيا من 289 مزارع من أصل 600 مزارع فراولة والتي تمثل 48.1٪ من إجمالي تعداد مزارعي الفراولة في منطقة بيت لاهيا للفترة 2012-2013.

أثبتت الدراسة أن معظم مزارعي الفراولة يعتمدون على أفراد أسرهم، والتي تسهم في توفير فرص عمل جديدة. تعتبر زراعة الفراولة مصدر هام لتحسين مستوى المعيشة للمزارعين في قطاع غزة، فمزارعي الفراولة يزرعون عدة محاصيل أثناء موسم الفراولة (محاصيل مختلطة) باستخدام نفس الموارد المحدودة المتاحة. يعتبر مزارعو الفراولة أفضل حالاً في مستوى المعيشة مقارنة مع مزارعين آخرين بما يخص مقدار العائد المادي المرتفع من زراعة الفراولة مع المحاصيل الأخرى، وأوجدت الدراسة بأن مزارعي الفراولة هم من يملكون أو يتحكمون بادراه مصادر المياه ، كما وإن الحصار هو السبب الرئيسي بتأثر زراعة الفراولة سلباً.

أوصت الدراسة بزيادة الاهتمام بزراعة الفراولة كعنصر هام لزيادة الدخل وتقليل نسبة البطالة، بالرغم من التكلفة العالية لاستهلاك المياه، كون العائد المادي من زراعة الفراولة يعتبر مرتفعاً.

أوصت الدراسة من أجل أن تكون زراعة الفراولة أكثر ربحية، ومعقولة، وذات كفاءة لاستخدام مياه الري ، يجب على مزارعي الفراولة زراعة محاصيل أخرى.

وأوصت الدراسة بأن تعاد الموارد المائية تحت سيطرة وزارة الزراعة وسلطة المياه الفلسطينية. وعلى المزارعين دفع ثمن استهلاك المياه.

Dedication

I would like to take this opportunity to express my deepest thanks and dedicate this work to:

My dear parents

Dear wife for her continues support

My lovely children's

My brothers and sisters

My friends and colleagues

My teachers and academic staff of IUG

All my lovely people that I know

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And sent as tribute to my family including my mother, father, brothers, sisters, uncles, and aunts for their continues support and encouragement to complete my graduate studies and completion of this thesis.

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Table of contents

List of Tables

List of Figures

List of Abbreviation

Abbreviation	Description
ARIJ	Applied Research Institute-Jerusalem
CAP	Consolidated Appeal Process
CDM	Clean development mechanism
CM	Cubic Meters
CMWU	Coastal Municipalities Water Utility
Dounm	1000 meter (0.1 Hectare)
FDG	Focus Group Discussion
GDP	Palestinian Gross Domestic Product
GS	Gaza Strip
GUAC	Gaza Urban Agriculture Committee
km^2	Square Kilometer
MAAN	MAAN Development center
MAS	Palestinian Economic Policy Research Institute
MCM	Million Cubic Meters
MoA	Ministry of Agriculture
NIS	New Israeli Shekel
OCHA	UN Office for the Coordination of Humanitarian Affairs
PA	Occupied Palestinian territory
PAS	Palestinian Agricultural Sector
PCBS	Palestinian Central Bureau of Statistics
PCHR	Palestinian Centre for Human Rights
PNA	Palestinian National Authority
PWA	Palestinian Water Authority
SE	Strawberry Export
SLM	Strawberry locally Marketed
SODA	Strawberry Official Development Assistant
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFOA	Food and Agriculture Organization of the UN
US$	US dollars (1 US$ = 3.55 NIS)
WB	West Bank
WHO	World Health Organization

Chapter I: Study Framework

1.1 Introduction.

1.2 Problem Statement.

1.3 Research Hypotheses.

1.4 Research Objectives.

1.5 Research Importance.

1.1 Introduction

Agricultural sector is a major contributor to the national economy all over the world as it provides food security and contributes significantly in the national GDP. Mainly, in developing countries where exports share considerably in the national economy. The Agriculture Sector in Palestine (PSA) contribute 3.8% to the GDP.

For decades, thinking on development has long held that agricultural growth is an important step toward economic development and transformation, Agriculture has been associated with production of essential food crops. Today, processing, marketing and distribution of crops and livestock products etc. are all acknowledged as part of current agriculture. Thus, agriculture could be referred to as the production, processing, promotion and distribution agricultural products. Agriculture plays a critical role in the entire life of a given economy. Agriculture is the backbone of economic system of a given country, in addition to providing food and raw material as well (Xinshen et all, 2007).

Cash crops plays significant role in the Palestinian national economy as it contributes with major share of the national exported products. Strawberry is the main agricultural exported cash crop in Gaza Strip (PCBS, 2014). Its cultivation started in 1967 with 1 dounm and increased to reach 2500 dounm in 2004 (Abu Warda, 1995). Farmers could achieve significant success in producing high quality strawberry with the comparative advantage of cheap labor and production in high season when productivity is higher and chipper.

This has enabled better competitiveness in the international market and encouraged more farmers to cultivate strawberry. The situation remained promising till 2004 when the political situation started to put its negative implications on the exported cash crops (Ayesh, 2005).

The situation was further deteriorated in 2007 when Israel started the siege on Gaza. The strawberry cultivation was significantly decreasing as the local market price is not attractive for farmers. Some farmers kept trying to cultivate strawberry with the hope to export it, or to get subsidies from national and international institutions that

launched several projects to compensate cash crops farmers in Gaza strip (PCHR, 2008).

Several workshops were conducted by the Ministry of Agriculture (MoA) and MAAN Development center (MAAN) during 2011 and 2012 in Gaza Strip discussing the cash crops (strawberry, cut flower, et..) cultivation and its impact on the Agriculture sector.

1.2 Problem Statement:

Strawberry is the main agricultural exported cash crop in Gaza Strip. (PCBS, 2014), where value of strawberry export according to MoA data could reach 58% of the total value of vegetables and fruits exports in the season 2004-2005. Therefore, strawberry generates significant income for the farming families, and sustains their living standard. On the other hand, other group stands against strawberry cultivation as they consider it as a major loss of the scarce water resources because its' cultivation consumes relatively high amount of fresh water, and takes it out of the national water balance (Al Sawaf, 2010).

The water consumption figures reported by MoA in 2007-2008 and by Palestinian water authority in 2004, emphasize that strawberry has the highest water consumption (1000 m^3 per dounm) among other fruits and vegetables crops. Both above views have their logical justifications but conflicting views. Such conflicting perspectives raise the following vital research question that needs to be answered.

The main question of this research is:

What is the economic tradeoff of strawberry cultivation in Gaza?

1.3 Research Hypotheses:

1. There is statistical significant relationship at $\alpha \leq 0.05$ between strawberry locally marketed, strawberry export, political situation, and its effect on the contribution of agriculture sector to GDP.

   H_1a: Strawberry export has significant effect on Palestinian Agriculture Sector (PAS).

   H_1b: Strawberry locally marketed has significant effect on (PAS).

   H_1c: Political situation has significant effect on (PAS).

2. Strawberry consumes significant quantity of the aquifer.
3. Strawberry farmers have better living standard compared to other farmers.
4. Despite the high cost of water consumption, the marginal return of strawberry cultivation is higher than other crops.
5. Strawberry farming reduces farmer's unemployment rate.

1.4 Research objectives:

The overall objective of this study was to describe the strawberry cultivation system at micro and macro scales. Also, it aimed to investigate its impact on the livelihood of farming families and water resources availability at macro scale. The study aimed to facilitate planners with clear view to design national cropping strategies that consider both macro and micro scales. To achieve the overall objective, the study focused on the following specific objectives:

1. Explore the contribution of strawberry export among all exported products.
2. At macro scale, investigate the level of natural resources used in strawberry cultivation comparing to other crops.
3. At macro scale, investigate the benefits and damages that are caused to the national economy and water resources availability by strawberry cultivation.
4. Analyze the economic efficiency of the farming production system and the strawberry cultivation as part of the system.
5. At micro farm level, to investigate the strawberry profitability in relation to resources allocated and potentialities for paying the real price of water.
6. Study the impact on farming activities on the family livelihood.
7. Formulating and testing strategies and scenarios reflecting different water pricing levels at both farming family and national economy levels.

1.5 Research Importance:

During the past years several workshops has been conducted by the MoA, MAAN, and other main players in the agricultural sector in Gaza strip during 2011 and 2012 to discuss the Cash crops cultivation (Strawberry, cut flowers, et..) and its impact on the agriculture sector.

While strawberry production is considered as major cash crop and has substantial contribution to the Palestinian GDP, it has been argued that strawberry production requires high water consumption that offsets the benefits. It is argued that strawberry is considered a major loss of the scarce water resources as it consumes relatively high amount of water and take it out of the national water balance when it is exported. While on the other hand, strawberry cultivation is seen as advantageous as it generates significant income for the farming families and sustains their living standard. Both views depend on personal views and experiences. This study will therefore investigate them through empirical research.

This research is an important contribution to the national development efforts of the Palestinian Authority (PA) because of the following:

1. This research is an attempt to study the cost-benefit and feasibility of strawberry production. It will focus on studying the strawberry cultivation water consumption in comparison with other cash and non-cash crops in addition to a comparison of the contribution of these crops in the Palestinian GDP.
2. In the past few years, international organizations have raised the issue of rationalization of water consumption as a main objective that has effects and implications on the current developmental and social trends and challenges that are affecting the Gaza Strip. As a result, The huge water consumption of strawberry cultivation became an issue in concurrence with international community concerns on water consumption.
3. The conclusions of the research will be considered as consultation to the concerned authority to modify some strategies and policies in this field to review the crops cultivation in Gaza with focusing of which is the most profitable and economical crops and but in their concern the water consumption of each crops in order to improve the Palestinian agriculture sector.

Chapter II: Literature Review

2.1 Introduction

2.2 Palestinian Studies

2.3 Arabic Studies

2.4 International Studies

2.5 Previous Studies Summary

2.1. Introduction:

This chapter scans the several literature reviews on strawberry. Literature review is a crucial part of the study, where it requires an excellent knowledge and understanding of the research area. Furthermore it shows how the research is built rationally on previous works. Besides, it shows the importance and relevance of the research, and identifies different viewpoints and highlights areas of controversy.

In reviewing of literatures, an attempt has been made to review several researches, articles, studies and books related to different issues of strawberry cultivation and its impact on the agriculture sector in different countries, particularly in the PA. From the available literature, different types of thoughts and analyses on strawberry and its impact on the national economy.

Literature review was done throughout the research process. At the beginning, the literature review was to explore the debated around the research issue on the role of strawberry cultivation. This has resulted in the identification of two views: 1) strawberry generates significant income for the farming families and sustains their living standard. 2) On the other hand, other group stands against strawberry cultivation as they consider it major loss of the scarce water resources as it consumes relatively high amount of fresh water and take it out of the national water balance when it is exported; both views have their logic justification. Still there is a vital question that needs to be answered, that is what is the cost and benefits or economics treadoffs strawberry cultivation in Gaza Strip?

Literature review was also carried out during data collection and analysis to discuss the findings from the collected data. Literature used in this research included debates and related studies discussing around the contribution of the strawberry cultivation in economic development in the world and in the Palestinian Territories.

Locally, the researcher reviewed eight previous studies about water demand of strawberry. five studies from Arab countries also been reviewed. Internationally; there are many studies focused on the role water use efficiency for international food trade, here, the researched selected carefully the most relevant ten studies.

2.2. Palestinian Studies:

1-Natsheh Basel, Nawaf Abu-Khalaf1, and Sami Mousa, (2015). Strawberry Plant Productivity Quality in Relation to Soil Depth and Water Requirements.

The study focused on certain variety of strawberry that is popular in PA. They studied the effect of soil types and depth of cultivation on strawberry yield in greenhouses as well as its association with water management.

The aim of this work was to evaluate the effect of different soil depth and water requirements on strawberry plant yield and quality in a greenhouse. The experiment was carried in a greenhouse at Thennaba farm, Tulkarm, located in the West Bank, Palestine during the autumn and spring seasons of 2012/2013.

The results showed that the strawberry plant productivity was higher with 7 cm soil dept comparing with 15 cm soil depth. The water requirements was higher in under the high soil depth in comparison with shallow depth. This indicates the relevance of cultivation depth to water consumption.

2-UN report, (2012), "Gaza in 2020 a liveable place ?"

Study highlighted the United Nations Country Team role in the occupied Palestinian territory see what the Gaza Strip might look like by the year 2020 as a place in which to live. Building on what is known now, the resulting study seeks to highlight the formidable developmental, humanitarian and social imperatives which need to be addressed and resolved, irrespective of the political context.

The study found that there are highlight the longer-term effects and implications of current developmental and social trends and challenges affecting the Gaza Strip. This will draw the attention to major issues such as damage to the coastal aquifer will be irreversible without immediate remedial action.

3-Redwan Hisham, (2011), "the crisis of the Palestinian Agricultural sector and the obstacles of marketing in Gaza strip"

Study aimed to investigate the status of the agricultural sector and agricultural marketing in Palestine and highlighting major challenges.

Findings of the study show that there are a large number of factors that have led to fundamental shifts in the Palestinian agricultural sector. Lack of proper governmental bodies contributed to the deterioration of the problems. Palestinian Authority is unable to completely manage the crisis.

4-Palestinian Central Bureau of Statistics, (PCPS, 2009),"The agricultural survey"

This study focused on agricultural activity in the Palestinian Territory; agricultural sector plays an important role in production activities.

The study found that the contribution of the agricultural sector in the Palestinian Territory was approximately 5.6% of GDP in 2007. It is known that the agricultural sector plays an important role in the national economy. As well as agricultural exports contribute with a significant share of foreign trade, and provide foreign exchange. The agricultural sector provides many raw materials for various other economic sectors.

5-Ministry of Agriculture, (2008), "Agricultural production (Sufficiency - surplus – Gap) part no.1 Gaza strip"

This study aims to recognize the Agricultural production (Sufficiency-surplus – Gap) in Gaza strip. This study focuses on the major problem in order to reduce certain degree of depletion of water resources, by up to 10% of the share of the agricultural sector with a secure food are not available locally.

The study stated that MoA has identified several aspects to improve the national agricultural sector through restricting the export of cash crops that consumes high quantities of water mainly strawberry and cut flowers.

In 2007 and 2008 MOA reported that strawberry consumes 1000 m^3/dounm/year of fresh water. Such water consumption amount makes strawberry the highest water-consuming crop comparing to other fruits and vegetables crops.

6-The Palestinian Centre for Human Rights, (2008). "Impact of the Closure on Gaza Strip Exports of Strawberries and Cut Flowers"

This report described the impact of the siege on Gaza Strip exports of strawberries and cut flowers.

The report stated that strawberry and cut flower farming requires special treatment and care; which relatively increases their costs, strawberry farming is concentrated in the Bait Lahia area in the northern Gaza Strip, the estimated cost for one dounm of strawberry farms is 3,473 USD (totaling approximately 7.64 USD million for the sector).

Cut flower farming is concentrated in the southern Gaza Strip areas of Rafah and Khanyunis, one dounm of cut flower farms costs approximately $US 10,000 to cultivate.

7-Palestine Trade Center, (2006). "The Palestinian Agricultural Sector- Cash Crops"

This study aimed to identify the priorities for the cash crops sector in Palestine.

The most important finding of the study was that increasing yields of export-oriented cash crops such as strawberries, cut flowers, and cherry tomatoes needs investing in greenhouse production, introducing higher yielding varieties, and introducing improved technology and cultivation methods.

Strawberries are grown off-season in Palestine, and can reach European markets as early as late November, bringing in high prices. Due to off-season availability and high quality in terms of taste, scent, and form, this crop has been exported very successfully to the European market. Also new and appropriate crops could be introduced, traditional varieties can be considered as new crops such as dry-farming tomato.

8-Palestinian Water Authority, (2004). "Agricultural Water Management and Conservation methods in Palestine".

The study focused on water deficit problems considering both quantitative and qualitative aspects and the serious difficulties restricting proper allocation of water resources among competing sector. The study also highlighted several problems including the unfair abstraction of the existing Israeli settlements in Palestine and the sequencing water shortage that affect not only availability of water for irrigation but also the availability for other water consumption sector.

This study describes briefly the general features of agricultural water policy, technical and administrative water conservation methods and related investment projects that already applied or may be applied in Palestine to maximize water use efficiency and increase the productivity simultaneously.

The study found that strawberry was consuming 1000 m^3 of fresh water during one season per one dounm.

2.3. Arabic studies:

1-Embassy of the Arab Republic of Egypt, Egyptian commercial services office in Athens, (2010). Study of strawberry market in Greece.

This study investigated the competiveness of Egyptian strawberry in the Greece market where it is locally exported with an average of price per one kilogram is 2.8 euro.

The statistics shows that the Greece imports of strawberry increased to 6.3% in 2008 (518 tons), While in 2009 increased to 17% (606 tons). And the main countries of strawberry export to Greece were Netherlands and Egypt.

The main finding of this study show that the Greece market is a potential market to export to Egyptian strawberry, the figures showed that the total imports of strawberry from foreign countries is 606 tons in 2009. Egypt exported 55.5 tons with total revenue 148.8 thousand euro.

2- Basahi J. M., (2007). Estimation of Water Consumption for Main Field Crops in Different Agricultural Regions of Saudi Arabia.

This study aimed to recognize to estimate water consumption (ETC) using Penman-Monteith equation of the main field crops (wheat, barley, maize, grain sorghum, millet and sesame) in Saudi Arabia agricultural regions.

The obtained results showed that the highest ETC values for wheat and barley were 6217 and 4964 (m^3/ha/season) for Medinah and Eastern regions, respectively, while the lowest values were 4249 and 3804 (m^3/ha/season) for wheat and barley in Tabuk region. Also, ETC values for maize were estimated to be 7136 and 12312 (m3/ha/season) for Aseer and Eastern regions, respectively. On the other hand, ETC for sorghum, millet and sesame were higher for Makkah region comparing to Jazan and Aseer regions. The (ETC) for sorghum were 8563, 8037 and 6998 (m^3/ ha/season), for millet were 6801, 6383 and 5563 (m^3/ha/season) and for sesame 6758, 6357 and 5542 (m^3/ha/season) for Makkah, Jazan and Aseer regions, respectively.

The study also showed that the agriculture water consumption per year was 80% of the total water consumption in Saudi Arabia, which indicate the importance of rationalize the agricultural water consumption.

3- AL Jabareen, A, (2006). Case Study in Economics of Water use in Irrigated Agriculture in the New Areas in Arab Republic of Egypt "Water Pricing Tool Economic Return per Cubic meter".

This case study aimed to identify the application of a water economics concepts in the area irrigated in the Arab Republic of Egypt, specifically in the areas of agricultural production. This case also exposed to one of economic instruments used in the management of water and its pricing. The study tried to link between the concept of pricing and economic value of water through the expense of economic return per cubic meter of water used in the group of horticultural products in these areas.

This case study is based on real data represented in the crop budgets range of products under study in addition to some other technical information which has been adapted from secondary sources, represented one of the studies that have been

developed recently by the Arab Organization for Agricultural Development on the recovery of water supplied value to producers in the Arab region Agricultural Development in Khartoum.

The study found out that the return per cubic meter of water used in the production of crops such as open filed tomato, green onion, sweet pepper, and strawberry, open filed tomato was considered as the first crop with total amount of profit 1.9 LE, while the water consumption is 4000 m^3/Acre[1], the second crops was strawberry with total amount of profit 1.74 LE[2], while the water consumption is 4000 m^3/ Acre[3], the third crop was green onion with total amount of profit 1.35 LE, while the water consumption is 2000 m^3/Acre, the last crop was sweet pepper with total amount of profit 0.89 LE, while the fresh water consumption is 3000 m^3/Acre.

4- Bahram Kh. Mohammed and Shelear .M Taha, (2002). Comparison between five varieties of Strawberry to determine The best fitted one to location of Grdarasha and Ankara / Erbil,

This study is conducted on the year of 2001-2002 at two sites, Grdarasha field of College of Agriculture/University of Sallahaddin and the field of Ankara Agricultural Research Center, were the effect of both planting methods, far rows and plots practiced on five strawberry cultivars to study the trial of growth and yield. Results showed high performance and yield at Grdarasha field in all of the following trials mean no. of stolon's, fruits, fruits size, fruits weight, yield/plant, and yield kg/ha, while the same varieties showed less mean of the same values of the same trials at Ankara site.

5-Ibrahim, Susann, (1990). "Economics of strawberry crop in Egypt"

This study aims to recognize the production; marketing problems of strawberry in Egypt. Export, import and processing of strawberry also are examined, in order to contribute in design rational policy of productivity and export for strawberry. Also the study analyzed cost and returns of strawberry, and calculated the marketing efficiency of strawberry.

[1] Acer = 4.1 dounms.

[2] LE: Egyptian pound

[3] It means that I dounm of strawberry consume 975m^3 per season.

The study found that the total world production of strawberry averaged 1501 thousand tons during the period 1983-1987. The average cost was LE 556 per ton, while the net return was about L.E. 800 per ton. Also the marketing efficiency of strawberry was 43% during the period of 1984-1987; this means that marketing efficiency is rather low due to the limited marketing services.

2.4. International studies:

1- Gilbert Noula, Linyong Sama and Divine Gwah, (2013). Impact of Agricultural Exportation on Economic Growth in Cameron "Case of Banana , Coffee, and Cocoa".

The main objective was to explore and quantify the contribution of agricultural exports to economic growth in Cameroon. It employed an extended generalized Cobb Douglas production function model, using Food and Agricultural Organization (FAO) data and World Bank data from 1975 to 2009. All variables were non stationary and of an order I (1), so the Co-integration test was conducted for long run equilibrium. All the variables confirmed co-integration and as such the conventional vector error correction model was estimated using the Engle and Granger procedure. The findings of the study show that the agricultural exports have mixed effect on economic growth in Cameroon.

The study found that Coffee export and banana export has a positive and significant relationship with economic growth. On the other hand, cocoa export was found to have a negative and insignificant effect on economic growth.

Based on that it is recommended that policies aimed at increasing the productivity and quality of these cash crops should be implemented.

2- Hong Yang, Wang L., Abbaspour K., and Zehnder A., (2006)."Virtual Water Trade: An Assessment of Water use Efficiency in the International Food Trade"

This study aims to recognize the increasing water scarcity in many parts of the world, virtual water trade as both a policy instrument and practical means to balance the local, national and global water budget has received much attention in recent years. And assesses the efficiency of water use embodied in the international food trade from the perspectives of exporting and importing countries and at the global and country levels,

suggests high uncertainties in the virtual water accounting and the estimation of the scale of water saving.

The study found that the virtual water flows primarily from countries of high crop water productivity to countries of low crop water productivity, generating a global saving in water use. The study also raises awareness of the limited effect of water scarcity on the global virtual water trade and the negative implications of the global water saving for the water use efficiency and food security in importing countries and the environment in exporting countries.

The analysis shows the complexity in evaluating the efficiency gains in the international virtual water trade. The findings of the study, nevertheless, call for a greater emphasis on rain-fed agriculture to improve the global food security and environmental sustainability

3- Taparauskiene, (2005). Water Demand of Strawberry and Simulating of Actual Evapotranspiration in Lithuanian Climatic Conditions"

The study discussed the water demand of strawberry and simulating of actual evapotranspiration in Lithuanian climatic conditions during the period of vegetation in 1996-1999 and in 2001–2004 was investigated in the middle part of Lithuania by using evaporators of 1 m^2 sur-face each for a soil column 1.1 m deep.

The study found that strawberry in different climatic conditions consumed from 3,030-6,150 m^3/ha[4] of water. In the flowering period strawberry consumed 2.6 mm/day and in fruiting period – 3.2 mm/day. In July and August evaporation was 30-40 mm per decade. This study however, does not fit the climate conditions in Gaza strip but it shows that even in cold climate region, strawberry still consumes high quantities of water.

4- Hong Yang, and Zehnder J. Alexander, (2002), "Water scarcity and food import for Southern Mediterranean Countries"

This study aims to recognize the water scarcity and food import for Southern Mediterranean Countries, taking six southern Mediterranean countries as a case study,

[4] Ha: hectare= 10,000 dounms

also addresses the water-food challenges facing water-scarce countries and the implications for the world food economy. By accounting the volume of virtual water embedded in food imports into the countries concerned, a close relationship between water endowment and food import dependence is elaborated.

The study found that projection of the cereal demand suggests an increment of 40–60 percentage in these countries by 2020 above their 1998–99 levels, raising the aggregate volume of cereal imports to around 40 million tons. The analysis also founds that the trend of shifting from staple grain crops to higher-value cash crops was weak during the past two decades.

The study found that a deteriorating trade deficit for both cereal and non-cereal agricultural products was evident in almost all the countries, suggesting a rigid and persistent constraint of water scarcity on overall agricultural development. The results of this case study highlight two important points:

1. Food imports are imperative for compensating water resource deficiency;
2. Water scarcity-related food imports will continue to expand and impose increasing impacts on the global food economy.

2.5.Previous Studies Summary :

Previous national studies highlighted the importance of strawberry cultivation in the Palestinian agricultural sector but also indicated the relevance of the natural resources use and efficiency. The results of the studies indicated the need to assess water use efficiency for exported product as this affect the national and international water balance.

Very important aspect of previous Arab studies handled the link between the concept of pricing and economic value of water. Studies suggested water pricing policies based on the economic return per cubic meter of water used in different crops. Strawberry came the second crop after tomato in the amount of return per cubic meter of water.

While the international studies highlighted the role of agriculture export on the national economy and the efficiency of water use in the international food tread.

This study will try to localize the findings of similar studies in other countries as such knowledge is still missing and essential to design proper policy related to cash crops cultivation and exportation.

Chapter III: Palestinian Economy

3.1 Introduction

3.2 Background of State of Palestine:

3.3 Palestinian Economy

3.4 Palestinian Agriculture Economy

3.5 Agriculture Strategy

3.6 Agricultural Sector Contribution to the Total Palestinian GDP

3.7 Employment in the Agricultural Sector

3.8 Agriculture in the Gaza Strip

3.9 Summary

3.1 Introduction:

This chapter will describe general view on the Palestinian economy in general, and the agricultural economy in particular with specific focus on natural resources that affect the performance of agricultural sector.

The sixty sex-year-old Israeli-Palestinian conflicts have deeply influenced the evolution of the Palestinian economy. In the last two decades persisting political instability and the Israeli closure policy have been sources of protracted economic stagnation and poor capital formation.

Agriculture is an essential component of the Palestinian national, cultural, economic and social fabric. Palestinians have been pioneers in transmitting and disseminating agricultural techniques to several countries in the region and outside. In addition to that agriculture is particularly important for Palestinians as it embodies their perseverance, confrontation and adherence to their land under the threat of confiscation and settlement activity. It also provides a refuge and a source of income and food supplies at times of crises. In this context, a significant number of Palestinians, who had denied access to work in Israel, have resorted to the agricultural activity (MoA, 2009).

Agriculture plays an important but limited role in Gaza. Exports of small amounts of strawberries, flowers and cherry tomatoes, mostly to Europe, are too minor to have a substantial impact on the overall economic situation. The future of agriculture is intimately linked with access to water in sufficient quantity and quality. It is equally linked with land access that is not only limited by the buffer zone and access-restricted areas but also by urban development. In this context, urban agriculture can help to grow crops and produce animals while saving water. To gain a clearer picture of the contribution that cash crops and urban agriculture could play in the medium term for the Gazan economy, a proper assessment is needed (UN report, 2012).

It is worth mentioning that the allocated budgets by government and/ or donors for the agricultural sector are very limited and do not respond to the real needs of this vital sector. For example of the total expenditures in all sectors, donors have spent less than 1% in support the Palestinian agricultural sector. Even through the CAP, the

agricultural sector didn‘t manage to get more than 22% ($USD 8.8 million) of the sector appealed budget for the year 2010. Furthermore, there are 1409 employees working in the Ministry, its budget mounted to 72 million NIS in 2008, the share of the development budget did not exceed 10% of the total budget (MoA, 2010).

3.2 Background of State of Palestine:

The PA, including West Bank (WB) and Gaza Strip (GS), covers a total area of 6,020 km^2, which comprises the whole territory occupied by Israel during the June 1967 war, (5655 km2 in the West Bank and 365 km^2 in Gaza Strip). The agricultural area is approximately 957.1 km^2, or 15.9 % of the total area of Palestinian land, including 92% in the West Bank and 8% in the Gaza Strip (PCPS, 2013).

Palestine has a large and rapidly growing population; the population of Palestine was estimated at 4.42 million at mid-2013: 2.72 million in the West bank and 1.70 million in Gaza Strip. The natural rate of increase of the Palestinian population was 2.94% in Palestine in 2013: 2.62% in the West Bank and 3.44% in Gaza Strip. The population density in Palestine was 734 capita/km^2 at mid-year 2013: regionally it was 481 capita/km^2 in the West Bank and 4,661 capita/km^2 in Gaza Strip (PCPS, 2013).

By 2015, the population will be over 5 million. The total population of the WB and GS could reach nearly 6.6 million by 2020 (PCPS, 2012). The average household size in Palestine was 5.5 in 2012: 5.2 in the West Bank and 6.2 in Gaza Strip. 9.4% of households were headed by females in Palestine in 2012.

3.3 Palestinian Economy

Israel continues to impose restrictions on mobility in the Palestinian state, loss of land and productive resources and bleak political prospects, gross domestic product (GDP) decelerated, and poverty and unemployment increased in 2013.These conditions are expected to deteriorate further.

The Palestinian fiscal crisis deepened, owing to less aid and Israel's withholding of Palestinian revenue, posing risks to the whole economy. The crisis is exacerbated by the leakage of Palestinian fiscal revenues from smuggling, and lost tax on imports via Israel, estimated at $300 million annually, would expand Palestinian fiscal policy space. The deepening fiscal crisis triggered political unrest in the Occupied Palestinian

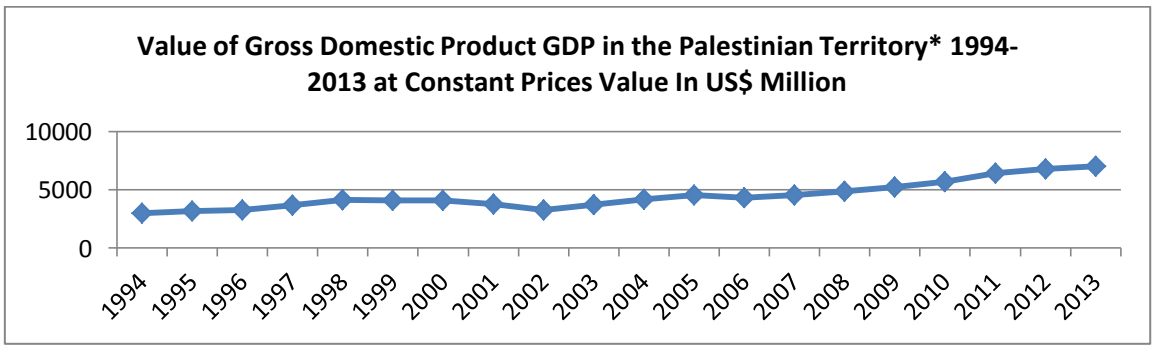
Territory, and hopes for a political settlement dimmed further. Economic growth is projected to decline further in the short to medium term. The present constraints will continue to have an adverse impact on unemployment and poverty, and the limited on Palestinian fiscal space (UNCTAD, 2013)

The Palestinian economy faces massive pressure since 2012. GDP growth decreased to 8.4 percent in 2013, down from double-digit growth in the previous two years, while unemployment increased to 23.4 percent. Structural constraints on economic development have worsened due to the prolonged Israeli restrictions on the movement of Palestinian people and goods, the expansion of settlements, the growing inability of Palestinian producers to access their productive resources, the decline in aid flows and pervasive political and economic uncertainty (PCBS, 2014)

3.3.1 GDP Growth:

The Palestinian GDP[5] passed many stages fluctuating for many times according to the special situation in the Palestinian territories. As shown in Fig. (3.1) the value of the GDP in 2012 was (USD 7314.8 million/year) rose by 5.9% compared with 2011. GDP per capita was USD 3,431.6 in 2012; an increase of 2.7% compared to 2011.Gross national income totaled USD 7,791.5 million in 2012, an increase of 6.1% compared with 2011. GNI per capita was USD 2187.7 Gross disposable income totaled USD 8853.4 million in 2012, a decrease of 8.7% compared with 2010. GDI per capita was USD 1,963.9 (PCPS, 2013).

Figure 3.1
Value of gross domestic product GDP in the Palestinian Territory* 1994-2013 at constant prices value in US$ Million



Source: PCBS, March 2014, Palestine in Figures 2013.

[5] GDP: Gross Domestic Product

Average real GDP increased by 8.4 percent per annum between 1994 and 1999. The outbreak of the second Intifada in 2000 interrupted this trend, bringing increased violence and uncertainty – and most significantly, the intensification by Israel of a complex set of security-related restrictions that impeded the movement of people and goods and fragmented the Palestinian territories into small enclaves lacking economic cohesion. In the ensuing recession, GDP contracted by an average of 9 percent per annum in 2000-2002. An initial period of recovery was interrupted by the turmoil surrounding the internal divide between Fatah and Hamas in mid-2007. Before a sustained period of growth between 2007-11, in which Palestinian reforms were accompanied by large inflows of donor assistance and some easing of movement restrictions (World Bank, 2013).

Recent growth rates are proving unsustainable, however growth in recent years has been driven largely by extraordinary levels of donor budget support, which amounted to USD 1.8 billion, or 29 percent of GDP, in 2008. This fuelled a significant expansion in consumption, particularly the consumption of valuable public services such as policing, education and health (the share of public administration, education, and healthcare in GDP increased from 19 to 26 percent between 1994 and 2011 , By 2012, however, budget support had decreased by more than half, and growth rates had declined from 9 percent in 2008 to 5.9 percent by 2012 and 1.9 percent in the first half of 2013 (PCBS, 2014).

3.4 Palestinian Agricultural Economy:

3.4.1 Agricultural Resources:

Of the total West Bank and Gaza Strip land (6020 km2), which comprises the whole territory occupied by Israel during the 1967 war, the agricultural area is approximately 957.1 km^2, or 15.9 % of the total area of Palestinian land, including 92% in the West Bank and 8% in the Gaza Strip. The rain-fed area constitutes 86% of the cultivated land, including 97% in the West Bank and 3% in Gaza. The irrigated area consists of 14% of the total arable land, including 56% in the West Bank and 44% in the Gaza Strip (PCBS, 2011).

3.4.2 Agricultural Land:

Agricultural holding size:

Based on the PCBS and MoA agricultural survey conducted in the year 2010, there are 111,310 agricultural holdings in PA (81.7% in the West bank and 18.3% in Gaza Strip) of which 79,175 (71.1%) are plant holdings and the remaining are livestock holdings. Compared to the year 2005, the number of agricultural holdings increases in the year 2010 by 10,138 holdings, this mainly due to the land heritage system in Palestine. Up to 29% of the agricultural holders aged 40- 49 years old (PCBS, 2011).

The survey has resulted in calculating a total area of agricultural lands in the PA as 1,207,061 dounms, of which 1,105,146 dounms in the West Bank and 101,915 dounms in Gaza Strip. This refers to the type of the survey which was based mainly on certain definition for the size of the agricultural holding and also for the physical agricultural areas not seasonal areas (they have registered only the land more than half dounms as agricultural holding for irrigated lands and those with area equal one dounms and more are rain-fed holding). Compared to the year 2008 the total agricultural area was 1.854 million dounms. Compared this however to ARIJ, GIS-RS, 2011 analysis for agricultural areas in the year 2010, showed that the total agricultural areas in the West Bank is 2,150,800 dounms (Arij, 2011).

This difference in areas is due to the fact that PCBS and MoA had surveyed the actual agricultural lands and dismiss the fragmented small size agricultural lands which are dominated in the urban areas and in certain areas where springs are located. Also, this showed high percentage of small and fragmented ownership in Palestine where it is being cultivated by families. This means additional 1,045,654 dounms of small land ownerships could be added to the PCBS and MoA official agriculture survey of the year 2010 (PCBS and MoA, 2010).

Agriculture water resources for irrigation:

Water available for agriculture amounts to 114.5 MCM per annum, distributed to 32.2 (MCM) in the West Bank and 82.3 (MCM) in the Gaza Strip. Ground water wells are the main water source for irrigation in the Gaza Strip. In the West Bank, irrigation water is supplied by ground water wells and springs. The majority of which

are located in the area of the Jordan Valley. This includes the unsafe pumping from the coastal aquifer in the Gaza Strip (and does not include the abstraction of the unlicensed wells in Gaza), of which the safe pumping and the basin sustainable yield do not exceed 50-60 (MCM) from the abstracted 184 (MCM) out of which more than 100 (MCM) is sea water intrusion and return flow. More than 90% of the water pumped from the coastal aquifer does not satisfy the water quality standards of the World Health Organization (PWA, 2012).

Based on the World Bank report, which was issued in the year 2009, if the Israeli restrictions on water resources removed and additional provision of additional water quantities occurs this will increase agricultural sector‘s contribution to the Gross Domestic Product (GDP) by 10% and will create approximately 110,000 additional job opportunities (World Bank, 2009).

The **Gaza Strip** suffers from a disastrous situation due to water quality degradation. Based on international reports, more than 90% of the coastal aquifer production is not suitable for human consumption due to the unsafe pumping of more than 100 (MCM). Therefore, this number is considered misleading if used in calculating the per capita consumption. Water–aquifer may become unusable by 2016 and damage to it irreversible by 2020 (UN report, 2012).

Despite the scarcity in water resources in PA, the available resources are not efficiently used due to the over irrigation and existing old damaged irrigation networks. Also, work is on-going on the construction of new and refurbished waste water treatment plants to cope with both present and future demand, but these efforts will need to be accelerated. Some 44 (MCM) of waste water in Gaza is generated annually at present, a figure which could rise to 57 (MCM) annually by 2020 (CMWU, 2012). In the short term, the Palestinian Water Authority (PWA) recommends low-volume desalination of seawater and the reuse of treated wastewater, especially for agricultural use. Longer-term solutions to the challenges of clean water and sanitation for the people of Gaza include large-scale seawater desalination plant(s) (PWA, 2011) .

Completion of strategically placed treatment facilities (UNEP, 2009) construction and rehabilitation of water (UNEP, 2009) and sewerage networks, the

wholesale availability in homes, schools and health centers of water and sanitation systems, and a regime for the management of solid and medical waste that is able to cater for the needs of an urban population.

The investments in wastewater treatment have been blocked due to limited financing resources and restrictions imposed by the occupation on establishing wastewater treatments, especially in area C (UNEP, 2009, World Bank, 2012, and UNDP and ENFRA, 2012).

3.4.3 Agriculture Production:

Based on the Palestinian Central Bureau of Statistics (PCBS) agricultural yearly report of the agricultural production for the agricultural year 2010/2011[6] (PCBS, 2012), the total cultivated area was estimated at 1.0349 million dounms which forms 17.2% of the Palestinian territory area, out of which 89.8% is in the West Bank and 10.2% in Gaza Strip.

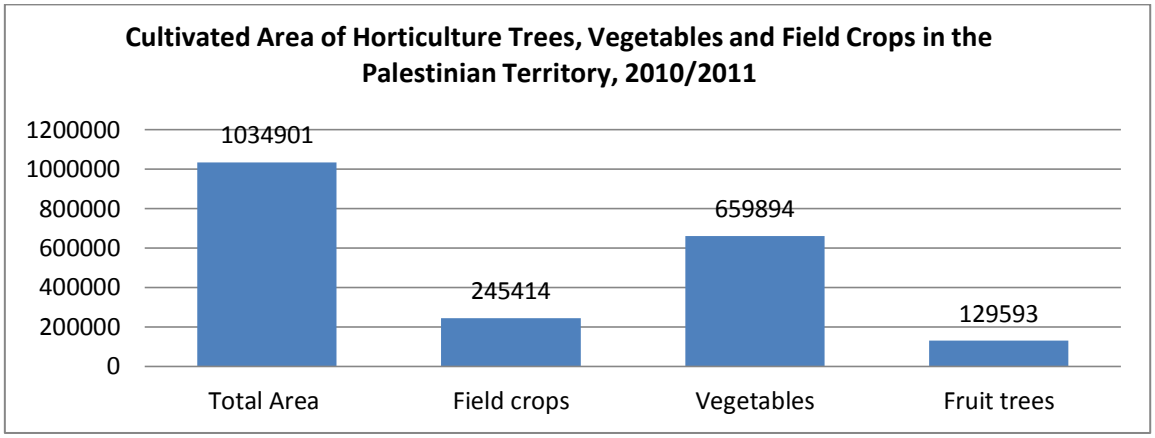
The past year witnessed low levels in total precipitation and the historical average annual rainfall and bad distribution, in addition to high temperatures. This has affected rain-fed crops especially field crops as the total production reduced by 35-40% and many of farmers in the marginal areas didn‘t even manage to get seeds form their planted crops. On the other hand, thousands of the growing grapes vines and recently planted vines became wilted and died; especially in Hebron and Bethlehem Governorates, where 78% of the grape of the PA are concentrated, due to drought and low rainfall. Furthermore, the olive production this year reduced by 15% of its historical average. In addition, this year, wilted olive fruit started appearing for the first time which the sign of significant drought. Accordingly the plant production size is usually affected by weather conditions, even irrigated agricultural, which might be affected by high temperatures and the prevailing of storm wind and frost (ARIJ, 2011).

The PCBS agricultural statistic for the year 2010/2011 showed that the total cultivated area in the PA was 1.0349 million dounms (See Figure 3.2). The largest area was the vegetables forming 63.8%, followed by field crops with 23.7% and fruit trees with 12.2% of the total cultivated areas in the PA.

([6]) 2010/2011 the last publication available in PCBS

Figure 3.2

Cultivated Area of Horticulture Trees, Vegetables and Field Crops in the Palestinian Territory, 2010/2011



Source: PCBS, 2012, Agriculture statistic survey

Irrigated agriculture is dominated in Gaza Strip and forms 72% of the cultivated areas there, while rain-fed agriculture area is dominated in the West Bank and occupies 91.3% of the cultivated area there.

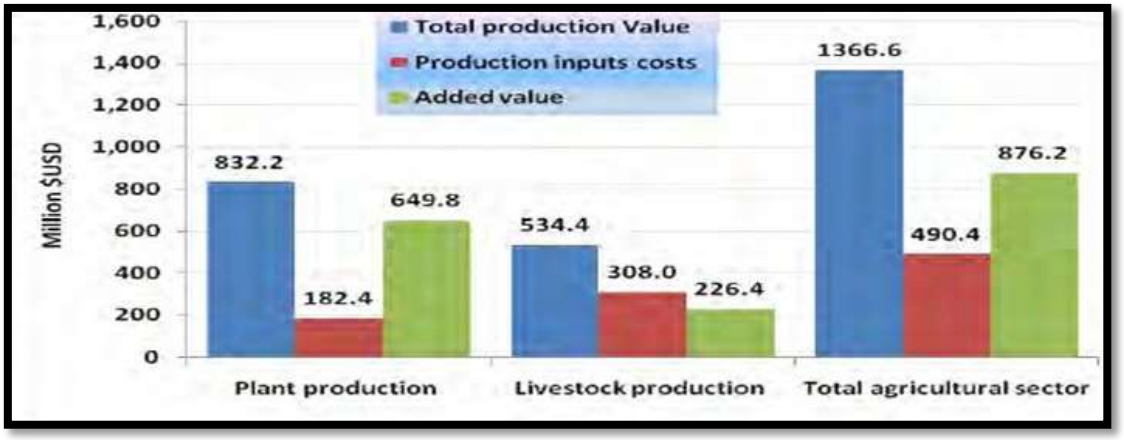
Olive trees area is dominated among the planted fruit crops with 659,900 of the total fruit trees cultivated area. The total cultivated area of vegetables was 129,593 dounms of the total agriculture cultivated area, while 95,841 dounms of the vegetables area is located in the West Bank while 33,752 dounms of the vegetables area located in Gaza Strip. The total area of the protected vegetables reached 26,017 dounms. The main growing vegetables are cucumber, squash and tomato respectively. Regarding the field crops cultivations, the total cultivated area with field crops in the year 2010/2011 reached 245.414 thousand dounms (PCBS, 2012).

The total value of the agriculture production in the PA, for the agricultural year 2007/2008, reached 1,366.6 million $USD divided between 60.9% for plant production (44.4% form West Bank and 16.5% form Gaza Strip) and 39.1% for livestock production (31.2% from West Bank and 7.9% form Gaza strip). The total production cost reached 490.4 million $USD of which 37.2% for plant production and 62.8% for livestock production. The highest costs of agro-production inputs are feed 46.0% followed by fertilizers with 9.6%, veterinary medicines with 7.7%, pesticide with 7.3% and water and electricity with 7.0%.

Accordingly the total added value for the agricultural sector reached 876.2 million $USD distributed between 71.2% in the West Bank and 28.8% in Gaza Strip with a total contribution of 649.8 million $USD by plant production sector (74.2%) and 226.4 million $USD contributed by the livestock sector (25.8%). Of the total value of plant production in the PA vegetables production including cut flower formed 55.6% followed by fruit trees production which contributed with 31.7%, then field crops which contributed with 12.7%, respectively. On the other hand, the total value of the livestock production in the PA constituted of meat production with 55.2%, followed by milk and dairy products with 29.5%, then eggs with 11.1% followed with others which equal to 4.2% (PCBS, 2009) see figure (3.3).

Figure 3.3

Distribution of total production value, cost and added value by agricultural



Source: PCBS, 2009 Agriculture statistic survey

3.5 Agriculture Strategy:

Agriculture Strategy for the years 2011-2013 has developed a long term developmental strategy objective through with its principal goal to increase self-sufficiency through increasing local agricultural products by overall value to over USD 1 billion. According to the strategy, this goal will be achieved by increasing the value of agricultural exports to USD 60 million and providing additional 50,000 jobs through increased water irrigation availability for farming by 60 million cubic meters and reclaiming 5,000 dounms of land. The question is how to achieve such an optimistic plan as the occupation still continues its practices and aggressions on the Palestinian lands, farmers, water, access and movement.

Despite the fact that agricultural activities have somehow assisted in reducing the humanitarian problems in the Gaza Strip, it is found recently that coastal people become importers for fish from Israel and through tunnels under the Gaza-Egypt border due to the limited access imposed by Israeli military to the Gaza Sea shore. Such limited access prevents the 3500 families from fishing and leaving them threatened to become without food and income (UNFOA, 2011).

3.6 Agricultural sector contribution to the total Palestinian GDP:

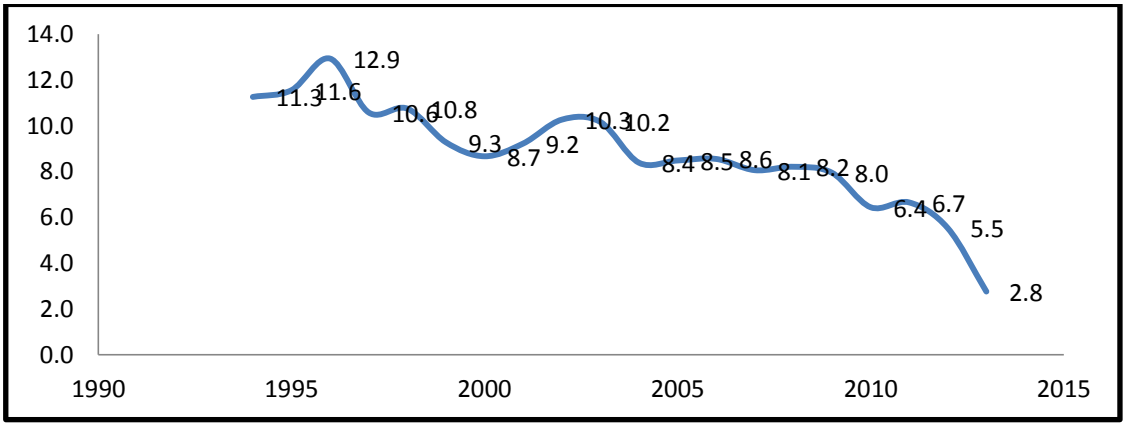
The Agriculture sector is vital for the Palestinian economy as it is the main sector that supports the Palestinian people, especially during in stabilized political conditions where restrictions on closure and movement are usually imposed on the Palestinian people. At least it provides these affected people with food and some income to reduce the impact of crisis on their life's including access to food. The value contribution of agricultural sector to the Palestinian GDP at constant prices remained varied between 358.428 and 427.141 million $USD in the years 1994-1999.

In year 2000 it was 354.19 million USD. While in 2002 it was decreased by 2.3% (205.6383 million USD) the contribution of agricultural sector to the Palestinian GDP remained varied between 205.6383 and 354.191 million USD in the years 2000-2007. Also, the contribution of the agricultural sector compared to other sectors to the national economy has started decreasing from 10.3% of the total GDP in the PA in the year 1998 to 4.9 in the year 2012, while contribution of the agricultural sector compared to other sectors to the national economy in 2013 has remain the same with 2012 (PCBS, 2014).

This showed that the growth in the agricultural sector is very limited and the allocated support by the PA and donors is limited compared to other sectors. Also, restrictions imposed by the occupation on the agricultural sector include; restrictions to the exportation of agricultural commodities from Gaza, limitations of farmers access to lands in the West Bank, in addition to the destruction of agricultural infrastructure through bulldozing the greenhouses, uprooting trees and agricultural lands, land confiscation and taking most of the water resources. In addition to the impact of natural crisis such as drought, low rainfall, frost and storm winds. Furthermore, more than 80% of the agricultural activities are family based cultivations, where many of the family members are working as informal workers and their economic contributions don't included national economic resources see Fig. (3.4)

Figure 3.4

Percentage of Agriculture and Fishing Contribution to GDP in Palestine 1994-2013



Source: PCBS, 2014

All these factors are affecting the development of the Palestinian agricultural sector and its contribution to the national economy. It is important to mention that these shocks and limitations are directly affecting small and medium sized Palestinian farmers.

Agricultural inputs are one of the sensitive factors affecting the feasibility and the sustainability of the agricultural sector as their prices keep increasing. For example, the expenses increased in the year 2009 at a rate of 5.7% from the previous year.

3.7 Employment in the Agricultural Sector:

Furthermore, since 2000, the labor force in the PA has faced several obstacles and the unemployment rates have increased significantly. Accordingly, the participation rates are low as in the in the 2nd quarter of 2011, 45.3 % of Palestinian people in the West Bank and 38.1% in Gaza are participating in the labor force. That means 1.048 million persons in the 2nd quarter of 2011 are participating in the labor force: 711 thousand in the West Bank and 337 thousand in the Gaza Strip. On the other hand, the unemployment rate among labor force participants was 18.7% in the PA Accordingly, the number of unemployed persons was 195 thousand in the 2nd quarter 2011: 109 thousand in the West Bank and 86 thousand in the Gaza Strip. Thus, the unemployment rate in the Gaza Strip was 25.6% compared with 15.4% in the West Bank (PCBS, 2011).

In 2007, the agricultural sector had contributed to 16.1% of the total employment in Palestine, with a total number of 103 thousand workers, whilst later in 2008; the employment in agriculture was estimated at 14.2%. In the years 2008 and 2009 the labor force in agricultural sector formed 15.7% and 14.2% in the West Bank and 10.7% and 6.4% of the Gaza Strip total labor force, respectively. Furthermore, the agricultural products formed about 23% of the total exported products from Palestine in the year 2007. In addition to the high number of informal employed workers, especially women. It is worth mentioning, that 42% of the Palestinians in the West bank and 17% in Gaza strip have been earning from the agricultural sector are a major supplementary income (MoA, 2009a).

About the women status in the labor force in the PA, we found that the participation rate for males was 68.8% compared to 16.2% for females while the unemployment rate for males was 16.4% compared to 28.6% for females. This showed that the participation of women in the formal labor force is limited with higher rates of unemployment rates compared to the males. This showed that gender equality and women empowerment should be one of the strategic planning in the PA on civil society and public levels. The statistics of the year 2010 showed that women depend more on agriculture for employment, as 21.4% of working women were active in this sector, compared to only 9% of working men (PCBS, 2011).

The importance of agriculture in Palestine as food producer for the Palestinian people and it has its economic privacy as it is providing work for more than 39% of those working in informal sectors and providing a crucial income support and assist in food security of the small farming families through their subsistence agriculture. Women only compose 16.2% of the labor force in Palestine and 21.4% of them contribute to the agricultural sector actively (as formal workers). Most of women‘s labor in the informal sector remains uncalculated or considered and thus their contribution to the agricultural home-based activities is much higher than what is officially reported. Based on the World Bank report, over 30% of informal agricultural work in the PA is performed by women as part of their domestic responsibilities (FAO, 2011). On the other hand, women earn only 65% of men‘s wages in the West Bank and 77% in the Gaza Strip (MAS Monitor 2011).

Furthermore, the recent agricultural survey conducted by the PCBS and MoA for the year 2010 showed there were 292,031 employees in agricultural holdings (livestock and Plants) in the PA of which 94.6% are unpaid family members and only 5.4% permanent employees during the agricultural year 2009/2010. This fact reflects the reality of the Palestinian agricultural sector as a family based sector where most of its activities are subsistence activities while the agro-business activities are limited.

This is consistence with what been mentioned in the agriculture sector review in 2007 which was done by ARIJ with the support of the Spanish cooperation, as it showed that 75.6% of the plant cultivations and 8.3% livestock holdings are producing mainly for household consumption while only 17.9% of plant production activities and 24.4% livestock activities are pure agribusiness (direct from sale) (ARIJ & Spanish Cooperation, 2007).

Based on the PCBS agricultural yearly report of Agricultural Labor Force the results indicated that 1,357 agricultural holdings in Gaza Strip hired permanent waged workers, of which 48.9% hired one permanent waged worker, 47.2% hired two to five permanent waged workers, and 3.9% hired six permanent waged workers or more. The results also indicated that 57.3% of permanent waged workers on agricultural holdings were aged between18-29 and 96.0% of permanent waged workers were male.

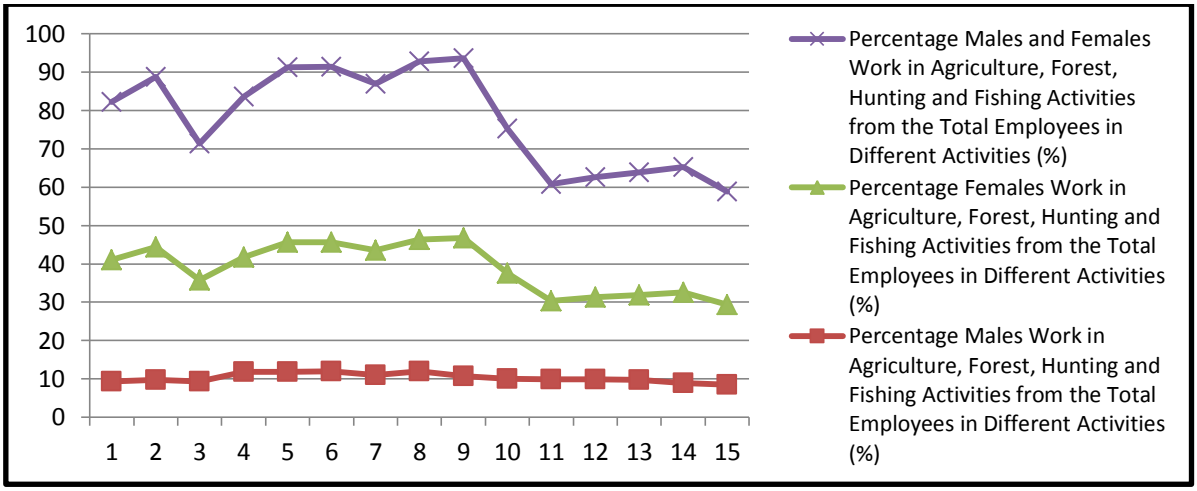
There were 12,629 agricultural holdings in Gaza Strip which hired temporary waged workers, of which 77.6% were plant holdings, 1.9% animal holdings and 20.5% mixed holdings.

The fig. 3.5 shows that the percent of male and female in the agriculture activities in the PA in 2013 29.4%, female participate with 20.9% while male participate with 8.5%, while the agriculture employee represent which indicate that female have more participation than male in the agriculture working activities.

During the 2008 to 2013 the percentage of participation of female and male has decreased from 46.8% to 29.4%, the reason for that resulted by the impact of political situation and siege which affected the decision by farmers to decrease the cost of inputs in Gaza Strip , from the other hand the labors in the West Bank tend to work in Israel labor market.

Figure 3.5

Basic Changes for the Agriculture Labore Force in Palestine ,1999-2013



3.8 Agriculture in the Gaza Strip:

Agriculture is the prevalent sector in Gaza's economy, which contributes to 32% of its economic production. Over the last five years it‘s contribution to the national Gross Domestic Production (GDP) has reduced from 9.1% in 2000 to about 7.0% in 2005 (Al-Najar, 2007). while it increase during 2013 to reach 12.2% of gross domestic production which means that the period of the study is located in economic growth due to the farmer have been import seeds, fertilizers and pesticides from Egypt illegally (MOA, 2014).

Gaza Strip is one of the semi-arid areas where rainfall is falling from October to April. The rate of rainfall is varying in the Gaza Strip and ranges between 200 mm/year in the south to about 400 mm/year in the north. While the long term average rainfall rate in all over the Gaza Strip is about 317 mm/year (Al-Najar, 2007, 2010).

An official resource, the Ministry of Planning (MoP) went further by stating that: All agriculture in Gaza can be considered to be urban agriculture. The main conclusion of the workshop was that we cannot neglect the prevailing potentials problems in the agricultural sector in Gaza Strip. The Palestinian Agricultural Relief Committees (PARC) aims to wide-reaching strategy to carry out potentials problems by the active participations of stakeholders at all levels of society (Sourani, 2005).

Because vegetables consume the highest water quota; water consumption for each type is evaluated to investigate the feasibility of using the groundwater for irrigation. In spite of the crops, which are cultivated in green houses, they consume the highest quota

of irrigated water especially carnation which consumes more than 1500 m^3/dounm /year. The current water tariff which is considered by the Ministry of Agriculture in the total cost of crop production is (0.16 USD/m^3). This value represents only the cost of pumps operation and fuel. Water, as an asset, is never been evaluated on the light of Gaza water crisis (Shaheen, 2014).

For instance; carnation and strawberry are the two main agricultural export products from Gaza Strip (cash crops cultivations). As shown in Table (3.1), the factor of water requirements in percentage, it can be separated into two items by using mass criteria method. One for fruit and olive trees which required 738 m^3/dounm/year and the second for vegetables which required 685 m^3/dounm/year (PWA; MoA, 2013).

Table 3.1:

Cultivated area and water requirement of each crop in the Gaza Strip

Crop Type	Area cultivated (dounms)	Water requirement		
		m^3/dounm	10^6 m^3/year	% of total
Citrus	12,600	900	11.34	14
Olives	22,897	700	16	20
Almonds	3,163	400	1.35	1.7
Fruits	10,333	400	4.13	5
Vegetables (Protected)	21,382	650	13.89	17.3
Vegetables (open fields)	47,044	700	32.93	41
Flowers	514	1500	0.77	1
Ornamental	132	500	0.07	0.1
Field crops	36,562	Rain fed	0	0
Total	154,627	-	80.48	100

Source: PWA & MOA reports 2013

Table (3.1) showed the average water consumption of all plant production activities and the percentage of each crop in year 2013. Only 805 dounm of strawberry was cultivated in the same year with an average consumption of 1000 cubic meter per dounm per year. In total this consumes as 805,000 cubic meter which represents around 1% of the total water consumption in agricultural sector. On the other hand strawberry cultivation has participated with 0.57 Million USD in the agricultural Gazan GDP which represents 0.27% of it. This indicates that 1% of total water consumption in agriculture has contributed with 0.27% of the Gazan agricultural GDP.

3.9 Summary:

In this chapter, the researcher put general description of the Palestinian National economy and the use of the natural resources in agricultural sector. This chapter focused on water resources use in agriculture and the return made in the national GDP. Other role of agricultural sector in the national economy was also discussed in this chapter.

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4 Chapter IV: Strawberry and Economy

4.1 Introduction

4.2 Study Area (Bait Lahia)

4.3 Background Information on Strawberry

4.4 Agricultural Cooperative in Gaza Strip

4.5 Strawberry Exports and its Impact on National Economy

4.1.Introduction:

The chapter, will review the historical background on strawberry cultivation in the Gaza strip, also it explains the strawberry Impact on national economy and on living standard of farming families.

The agricultural activity in the Palestinian State plays an important role in production activities as mentioned in chapter two. The contribution of the agricultural sector is remaining for West Bank and Gaza Strip approximately by 4.9 % of GDP in 2013 (PCBS, 2014) .

While strawberry production is considered as cash crop and has substantial contribution to the Palestinian Agriculture sector, it has been argued that strawberry production requires high fresh water consumption that offsets the benefits. In Palestine newspaper a journalist has called to stop the strawberry cultivation arguing that its high water consumption destroys aquifer of Gaza (Al Sawaf, 2010).

The Ministry of Agriculture has been calling[7] upon the farmers to decrease the strawberry production due to the high water consumption and high quality water requirements. PARC, Enhancement and Improvement of Cash Crops Project has published an article in the same newspaper providing statistics on water consumption of different crops mitigating the allegations of the previous article (PARC,2010).

4.2.Study area (Bait Lahia) :

Bait Lahia area is the study area for the researcher, which is located western part of the northern Gaza Strip. Its population is 64,457 (PCPS, 2009). The total land area of Beit Lahyia is 23,000 dounms, where 15000 dounms of it are used as agricultural lands (MOA, 2013). Also Bait Lahia is common as one of the most areas which has good quality of fresh water, and Also popular in agriculture production especially strawberry, Grape and other open field vegetables and it was selected as the site of research study.

Bait Lahia is one of the main three areas located on the northern part of Gaza strip. See the Table (4.1) for more illustration:

[7] That was in 2007

Table 4.1:

Geographical distribution in North Gaza

Area	Total Area Dounm	Total cultivated area Dounm	Residential area Dounm	Population #
Bait Lahia	23000	15000	8000	64,457
Beit Hanoun	13900	8000	5900	45000
Jabalia	23626	9500	15126	220000
Total	60526	32500	28026	350000

Source: MOA Action plan 2013

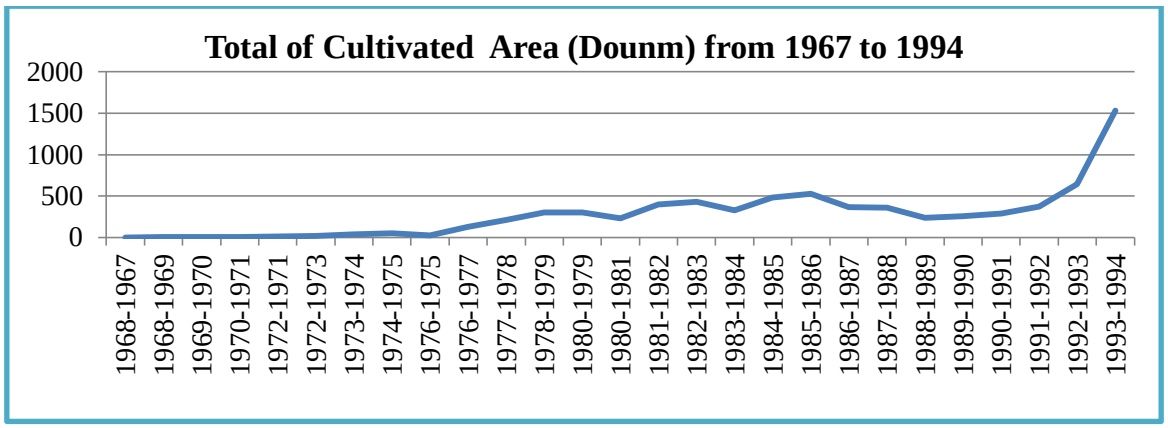
4.3.Background information on strawberry:

4.3.1. Strawberry under the occupation 1967 to 1994 :

Most of the Gaza strawberry farms and farmers are concentrated in the northern Governorate of the Gaza Strip in Bait Lahia. Strawberry cultivation has started in 1967 (Abu Warda, 1995). in Gaza Strip as piloting crop to assess the success of its potentials and adoptability to the local climate and production conditions. In year 1967-68 the first pilot was one dounm with total production of 1.5 tons. One ton was exported and half ton for local consumption. After five years in 1972, 12 dounms have been cultivated strawberry with total production of 12 tons.

Figure 4.1

Strawberry cultivation from 1967 to 1994

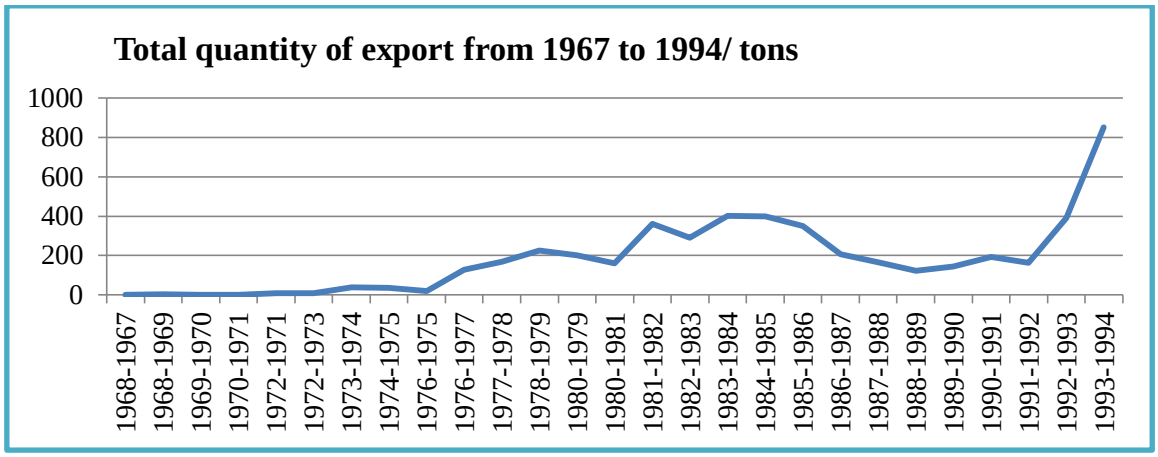


Source: Published reports of MOA 1994.

The success of strawberry cultivation and the generated profits encouraged more farmers to cultivate it. In the period between 1974 and 1987, the cultivated land has increased from 49 dounms to 358 dounms with 13.68% percent increase.

Figure 4.2

Strawberry exportation from 1967 to 1994

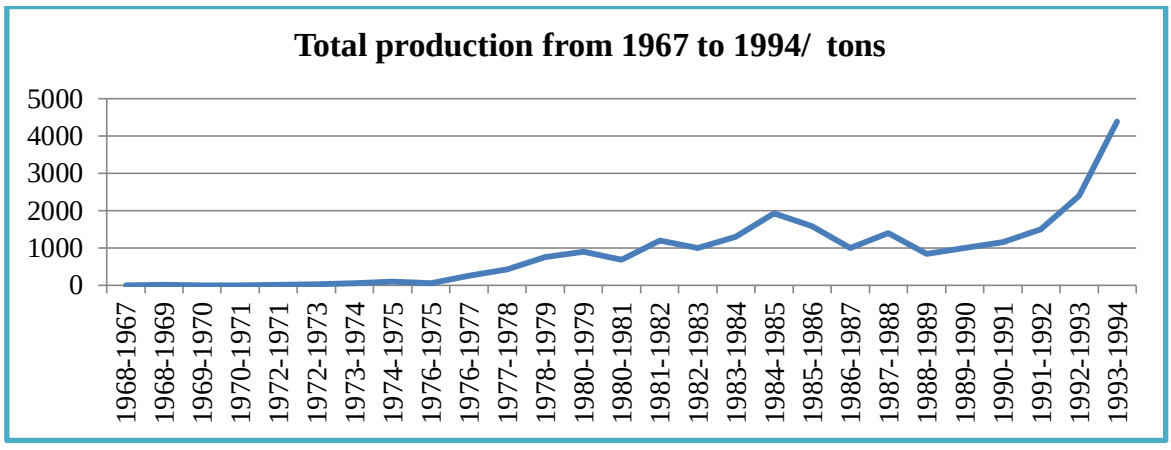


Source: Published reports of MOA1994.

Strawberry cultivation was fluctuating after that time due to the fluctuating political situation and the sequencing impact on external marketing. By the beginning of first intifada in 1987, the planted area has dropped by to reach 240 dounms due to the restriction on export. The situation however, was improved in 1991 as planted area has increased to 373 dounms and reached 644 dounms in 1993 with total production 2400 tons.

Figure 4.3

Strawberry production from 1967 to 1994



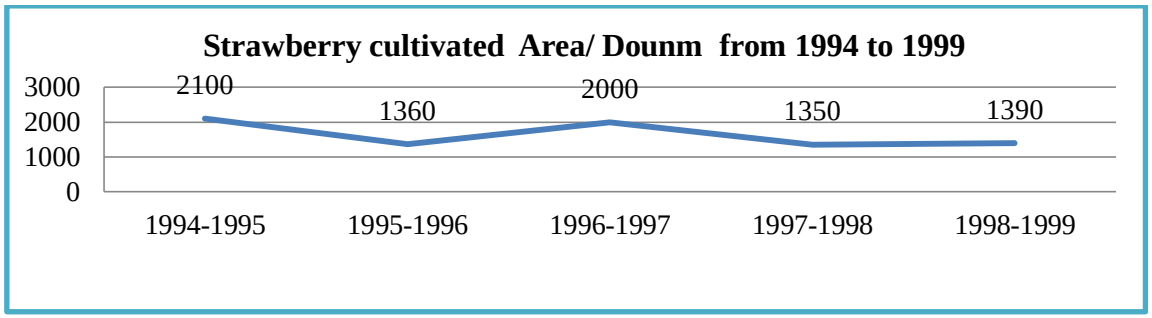
Source: Published reports of MOA 1994

4.3.2. Strawberry under the Palestinian National Authority (1994 to 1999) :

The political and economic situation has significantly improved after Oslo agreement in 1994 which resulted in the establishment of PA. This has encouraged farmers to increase the cultivated area. Significant increase of 42% occurred in 1994 as strawberry planted areas have been increased to reach 1532 dounms and 1675 in 1999.

Figure 4.4

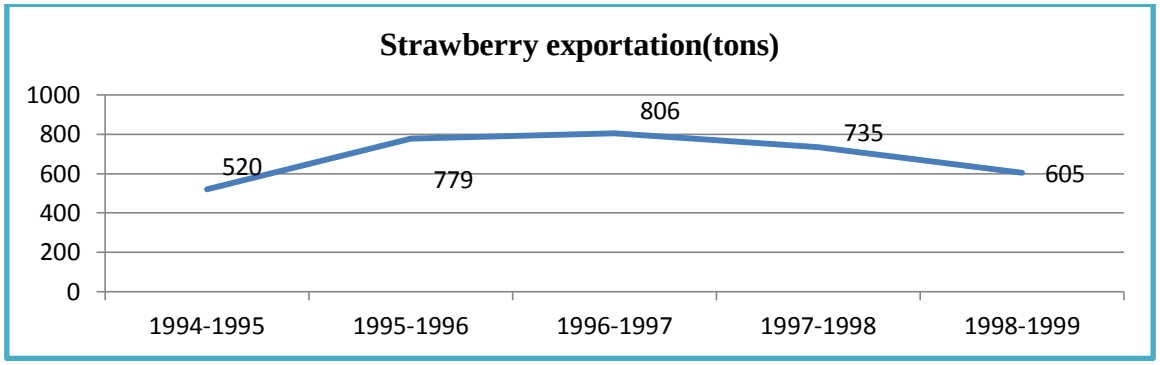
Strawberry cultivation from 1994 to 1999



Source: Published reports of MOA,1999.

Figure 4.5

Strawberry exportation from 1994 to 1999

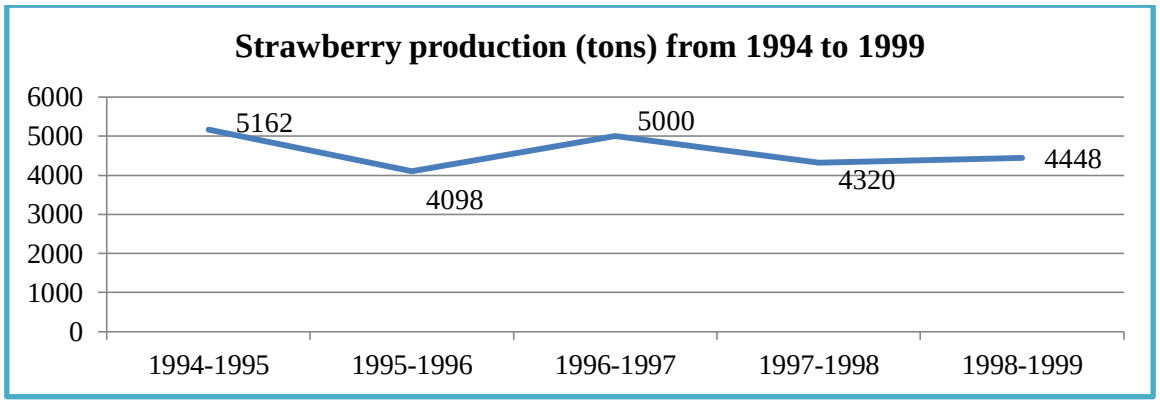


Source: Published reports of MOA,1999

During this period general progress was reported at national economy with major share of agriculture in the National GDP.

Figure 4.6

Strawberry productions from 1994 to 1999



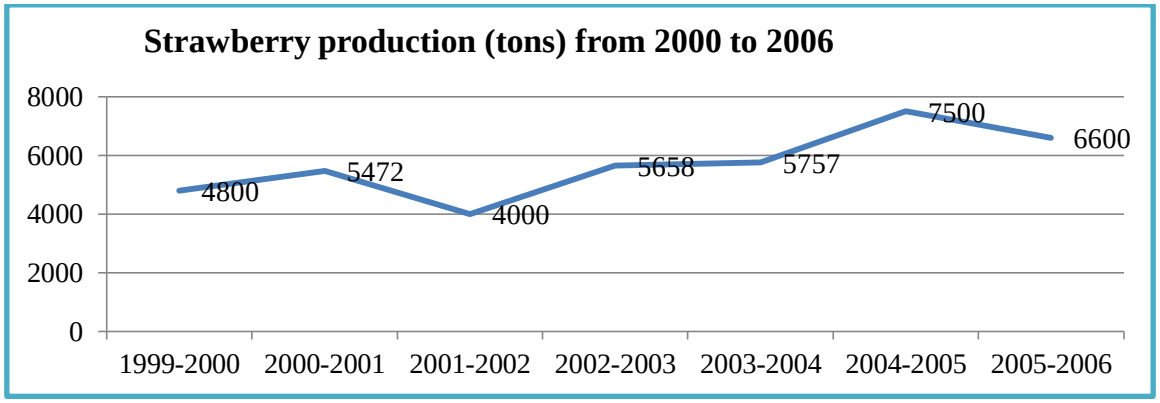
Source: Published reports of MOA 1999.

4.3.3. Strawberry under the Palestinian National Authority (2000 to 2006) :

The second Intifada started in 2000 which affected the completely national economy with significant impact on agricultural sector. However, Intifada did not affect strawberry in terms of the size of the cultivated land. Major reason behind this, is that Israel did not restrict the export of strawberry from Gaza strip. The total cultivated area was 1710 dounms in 2000. The success of strawberry export and its generated profits at farm level has encouraged more farmers to cultivate it.

Figure 4.7

strawberry productions from 2000 to 2006

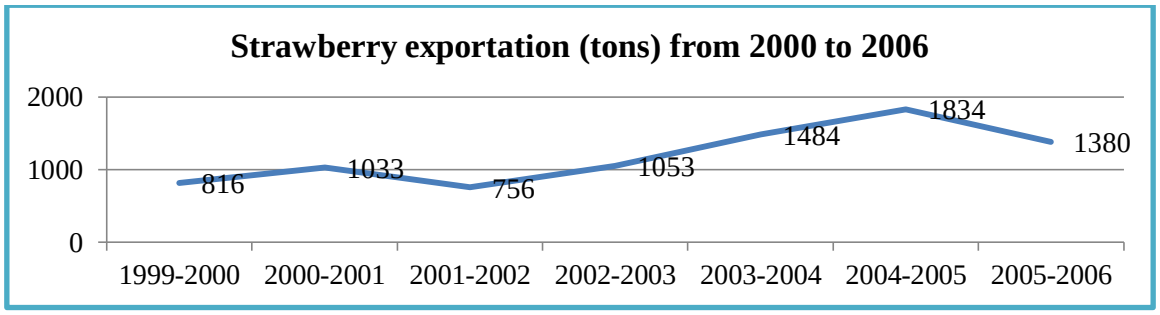


Source: Published reports of MOA 2006

In 2005 was recorded as the highest cultivated area of strawberry in the history of its cultivation in Gaza strip. The cultivated area reached 2500 dounms with total production of 7500 ton. 1834 tons of them have been exported while the remaining quantities were locally consumed.

Figure 4.8

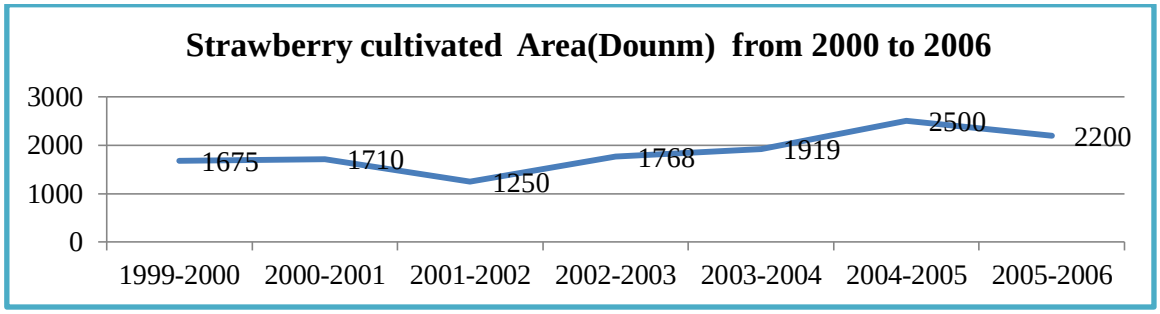
Strawberry exportation from 2000 to 2006



Source of data MOA reports,2006.

Figure 4.9

Strawberry cultivation from 2000 to 2006



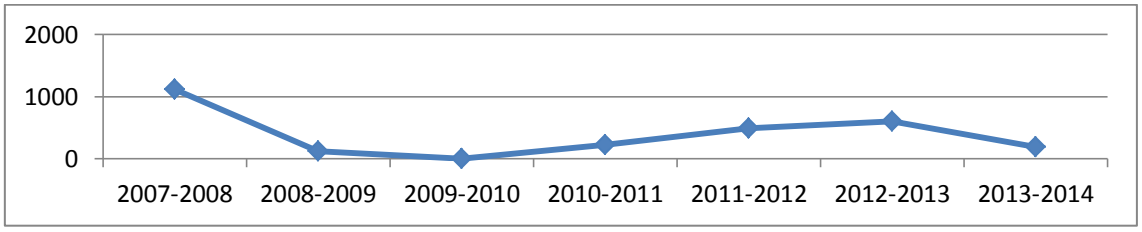
Source of data MOA reports,2006.

4.3.4. Strawberry cultivation (2007 to 2013):

The Israeli siege is considered as main political factor affects the strawberry cultivation and exportation in Gaza Strip especially after 2006. As a result of exportation was decreased dramatically from 1225 metric tons on 2006 to zero tons on 2008 and 2009. Such decrease caused direct negative impact on the strawberry farmers and their families in Gaza strip.

Figure 4.10

Strawberry exportation(tons) from 2007 to 2013

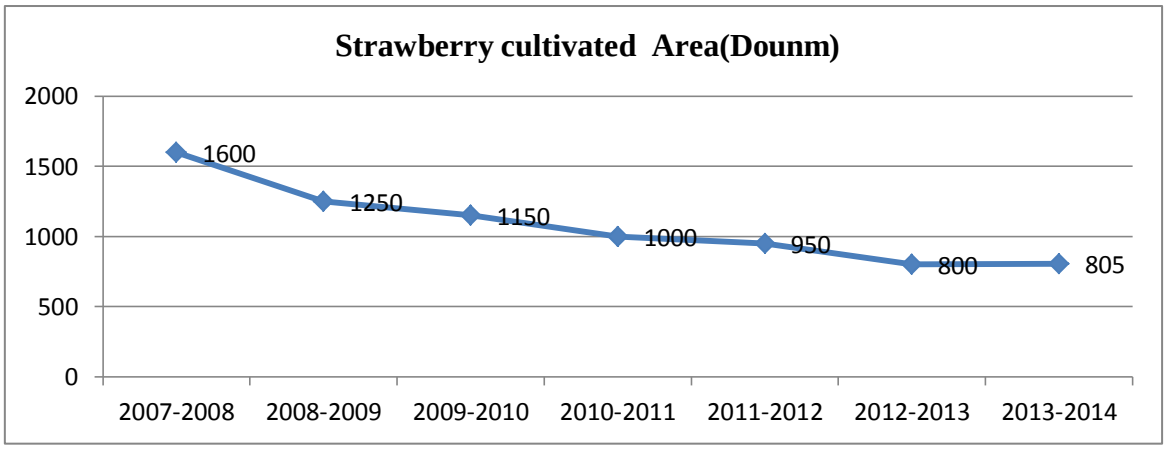


Source of data MOA reports,2013

Ministry of Agriculture in Gaza Strip decided to decrease the strawberry cultivated areas as one of their strategic plan by 700 dounms. Their argument was based on the fact of the deteriorated water resources in Gaza should affect the cropping pattern as to cultivate a crop that consumes less water (MoA, 2008).

Figure 4.11

Strawberry cultivation from 2007 to 2013

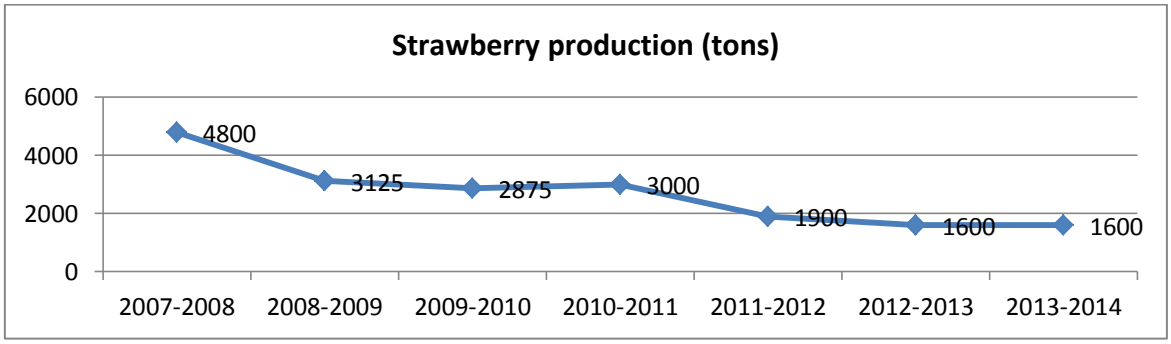


Source of data MOA reports,2013

The MoA was successful in reducing the quantities through the cooperatives. Additionally, siege and restricted export of strawberry did not encouraged farmers to cultivate strawberry. Therefore, strawberry planted area has been decreased from 2000 dounms in 2006-2007 to reach 950 in 2011-2012 with 47.5% percent. The decrease in cultivated area has maintained to reach 800 dounms in the current year and 805 dounms in the year 2013.

Figure 4.12

Strawberry production (tons) from 2007 to 2013



Source of data MOA reports,2013

4.4.Agricultural Cooperative in Gaza strip:

The first association for strawberry has been established In 1977 under the name "Agricultural Cooperative Association for Farmers Strawberry, Vegetables and Flowers" as profit organization. The main goal of this association is to develop the strawberry cultivation. After two years the main board members decided to include vegetables and carnation to their activities, because of that they change the name of the association to be "Agricultural Cooperative Association for strawberry, vegetables and carnation" ,another four associations have been established after that as follow:

1. Bite Hanoun Agricultural Cooperative Association.
2. Gaza Agriculture Cooperative Society for Producing and Marketing Vegetables.
3. Union of the Strawberry Farmers Association.
4. Al Wafa Cooperative Association for Agriculture Safety and Medicine Product Marketing, (MOA, 2013)

4.5.Strawberry exports and its Impact on national economy:

The agricultural activity in the PA plays an important role in production activities, the contribution of the agricultural sector is remaining approximately 4.9% of GDP (2013) in West Bank and Gaza Strip. It is known that the agricultural sector plays an important role in the national economy, agricultural exports contributes with a significant share of foreign trade, and providing foreign exchange. The agricultural sector provides a lot of raw materials for various other economic sectors. The Statistics indicate that the contribution of the Palestinian agricultural sector to the GDP decreased from 11.9% to 4.9% during the period 1994 to 2013.

Cash crops plays significant role in the national economy as it contributes with major share of the national exported products (PCBS, 2010). Strawberry is the main agricultural exported cash crop in Gaza Strip. Table (4.2) shows the total value of registered Palestinian exports, total value of strawberry export , value of vegetables and fruit exports contribution to GDP by agriculture and fishing in Palestine, and value of gross domestic product GDP in the PA by years from 1994-2013 at constant prices. The year 2004 is the base year (value in Million USD) (PCBS & MOA reports, 1994-2013).

Table 4.2:

Values of strawberry to agriculture sector and its contribution in other fields

Year	Value of Gross Domestic Product GDP in the Palestinian Territory* at Constant Prices Value In US$ Million	Agriculture and Fishing Contribution to GDP in the Palestinian Territory* 1994-2012 at Constant Prices Value In US$ Million	Value of Vegetables and fruit exports prices Value In US$ Million in the Palestinian Territory	Value of strawberry export(MOA report) Prices Value In US$ Million in the Palestinian Territory
1994	5144.2	579.3	25.63	5.98
1995	5529	638.8	25.48	4.45
1996	5572.4	720.7	18.87	2.75
1997	6376.9	674.8	33.55	2.51
1998	7352.1	790.4	35.46	2.07
1999	8011.6	743.5	35.87	2.79
2000	8162.8	707.7	60.00	3.62
2001	6954	641.5	14.41	2.65
2002	6175.3	634.1	9.92	3.69
2003	6975.5	709.4	14.64	5.19
2004	7423.4	622.8	11.04	6.42
2005	8224.4	697.9	13.65	4.14
2006	7597.3	649.8	7.99	3.68
2007	7805.5	629.3	11.17	3.36
2008	8353.4	686	17.63	0.38
2009	9073.8	721.4	18.25	0.00
2010	9795.5	631.4	17.14	0.68
2011	10841.1	721.5	21.51	1.48
2012	11832.6	654.7	33.49	1.82
2013	10461.62	439.38	57.05	0.57

Source of data MOA reports & PCBS reports,2013

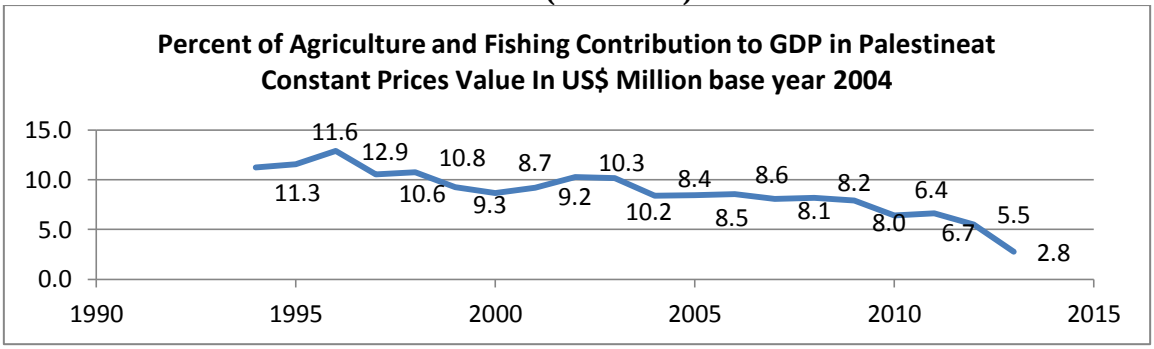
Agricultural sector is very limited and the allocated support by the PA and donors is limited compared to other sectors. Also, restrictions imposed by the occupation on the agricultural sector include; restrictions to the exportation of agricultural commodities from Gaza, limitations of farmers access to lands in the West Bank, in addition to the destruction of agricultural infrastructure through bulldozing the greenhouses, uprooting trees and agricultural lands, and land confiscation and taking most of the water resources. In addition to the impact of natural crisis such as drought, low rainfall, frost and storm winds. Furthermore, more than 80% of the agricultural activities are family

based cultivations, where many of the family members are working as informal workers and their economic contributions are not included in the national economic resources.

All these factors are affecting the development of the Palestinian agricultural sector and its contribution to the national economy. It is important to mention that these shocks and limitations are directly affecting small and medium sized Palestinian farmers. In 2013, the agricultural sector had contributed to 30.4% of the total employment in Palestine, with a total number of 91 thousand workers, in addition to the high number of informal employed workers, especially women. It is worth mentioning, that 20.9% of the Palestinians in the West bank and 8.4% in Gaza strip have been earning from the agricultural sector are a major supplementary income.

Furthermore, the agricultural products formed about 22.84% of the total exported products from Palestine in the year 2013 (MoA, 2013). Main while strawberry was shared 58% of the total Value of Vegetables and fruit exports prices in the Palestinian Territory. Agricultural inputs are one of the sensitive factors affecting the feasibility and the sustainability of the agricultural sector as their prices keep increasing.

Figure 4.13
Percentage of Agricultural sector contribution to the total" Palestinian GDP (1994-2013)

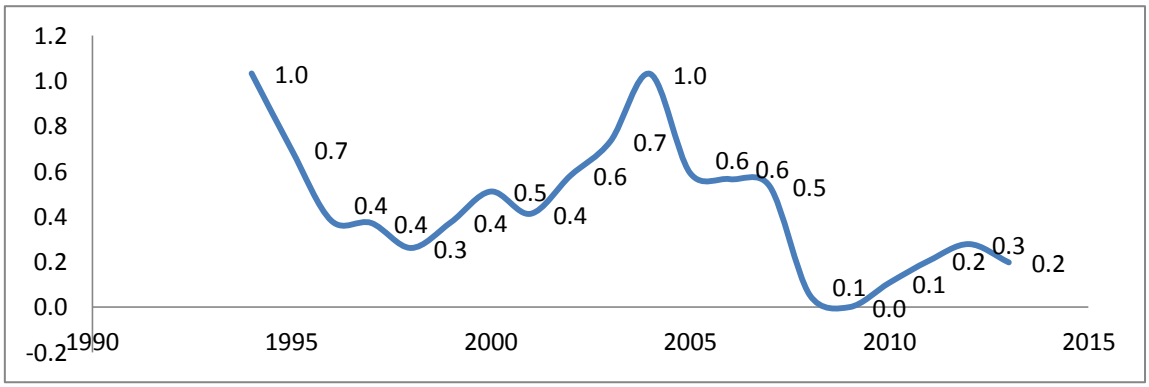


Source: PCBS, 2014

The value strawberry of contribution exports to the Palestinian agricultural sector has started decreasing from 0.7 % in the year 1998 to 0.4 in the year 2012. The value of strawberry export has significant decreased equal to zero in the years 2008 and 2009 due to the siege, closing the terminals at that time by the Israeli government and castled war against Gaza strip in 2008-2009.

Figure 4.14

Percentage of strawberry export to Agriculture and Fishing in Palestine 1994-2013



Source: MoA and BCBS reports,2013.

Fig.(4.14) show that the strawberry export in the best cases has contributed with 2.2 % of agriculture and fishing in Palestine while the vegetables and fruit contributed by 3.7% of to agriculture and fishing in Palestine in the same year 2004. This means that the strawberry exports contributed by 58.1% of the total Vegetables and fruit exports in the year 2004, this gives that the strawberry exportation plays a significant role in the agriculture and fishing in Palestine.. At the same year of 2004 the percentage contribution of the agriculture and fishing in Palestine to GDP was 7.1 %.

4.6. Summary :

This chapter, reviewed the historical background on strawberry cultivation in the Gaza strip, also it explains the strawberry Impact on national economy and on living standard of farming families.

Female agriculture labour was the main labour-hood in the PA and the hall agriculture considered by more than 30% from the Palestinian labour sector.

Chapter V: Empirical study Strawberry Farming in Gaza Strip

5.1 Introduction

5.2 Methodology

5.3 Conceptual Framework

5.4 Farming System Analysis

5.1 Introduction:

The study involves analyses at macro and micro scale and uses wide range of socioeconomic research methodologies. Following is a description of the intended study plan with depiction of the applied methods.

This chapter deals with studying the strawberry cultivation and its impact on the Palestinian agriculture sector. This chapter involves empirical study for strawberry farming in Gaza Strip. The study was based on data collected from 289 famers in the northern village of Bait Lahia. The sample was selected from the total strawberry farmers in the targeted area where 600 strawberry farmers reside.

Both primary and secondary data sources were used to achieve the study objectives. Primary data was collected using semi-structured questionnaire that include structured and open ended questions that reflect farming family production system and livelihood. The secondary data was derived from wide ranging sources including official reports, statistics and previous studies.

5.2 Methodology:

The methodology, which was applied to fulfill the research objective, will be described in this sub-chapter. The first step was data collection and analyses at micro farming family scale, this part includes description of data collection (data sources, data collection process, and sampling techniques), and the second part was data analysis which include descriptive analyses of the socioeconomic characteristic of the farming system.

5.2.1 Data collection and analyses at farming family (micro scale):

Sample was selected systematically to include 289 farmers out of the 600 strawberry farmers in Bait Lahia where most strawberry cultivation takes place. This represents 48.1% of the total study population.

The survey was conducted in the period between February and April 2013 in Bait Lahia area. Primary data was collected through single visit interviews using structured questionnaires.

5.2.2 Questionnaire and interviews:

The questionnaire is designed to capture information on family characteristic designed to cover the following issues:

Family socioeconomic information (Age, source of income, family size, education status, farm size, and expenditure). These factors directly affect the farmers decisions on the farming practices.

Natural resources availability and use, type and amount of resources owned (labour, land, capital), tenure system, land use change, resource use strategies (on farm, off farm and household), production processing, living standers of families (including social as well as economic indicators) and family problems and objectives.

The land size and water quality and availability in addition to the skilled labor will determine the type of crops and farming management. Production system and economic performance illustrating resources use efficiency.

Views and attitudes towards farm, resources and problems in relation to strawberry cultivation. The farmer's views will be explored concerning the importance, profitability of strawberry production and what they think about the feasibility of such production given the high water consumption. It will also explore their willingness to pay for water if their production will be exported and how much will they be willing to pay.

The questionnaire was separated into three parts as follow:

The first part was directed to the household head and includes all the information about the family structure, income, resource availability and use, expenditure, food, clothes, energy, health, accommodation conditions and assets.

The second part covered all the technical information about farming activities during the last season (2011-2012) such as profitability, type and amount of resources

owned (labour, land, capital), tenure system, land use change, resource use strategies (on farm , off farm and household), production processing and marketing.

The third part is covering all the information about the challenges and obstacles facing the strawberry farmers, on the other hand, how strawberry farmers evaluating the current and previous years of strawberry cultivation, production and marketing.

The collected data was entered using excel, and analyzed by using SPSS to serve further descriptive analyses, frequencies and confidence level at 95%.

5.2.3 Sampling method:

Farm size is expected to affect the cropping pattern and farm management. Consequently this will affect resources use and profitability. To achieve this, simple sampling used to select strawberry farmers.

5.2.4 Secondary data:

Secondary data were collected from several sources including:

1. Reports of exporting farmers cooperatives.
2. Data concerning strawberry cultivation and marketing from two Palestinian NGOs, the Agricultural Development Association (PARC) and Union of Agricultural work committees (UAWC).
3. Statistics and time series data about the agriculture activities especially strawberry in the Gaza strip from the Palestine central bureau of statistics and ministry of agriculture.
4. Books, thesis, and previous studies.

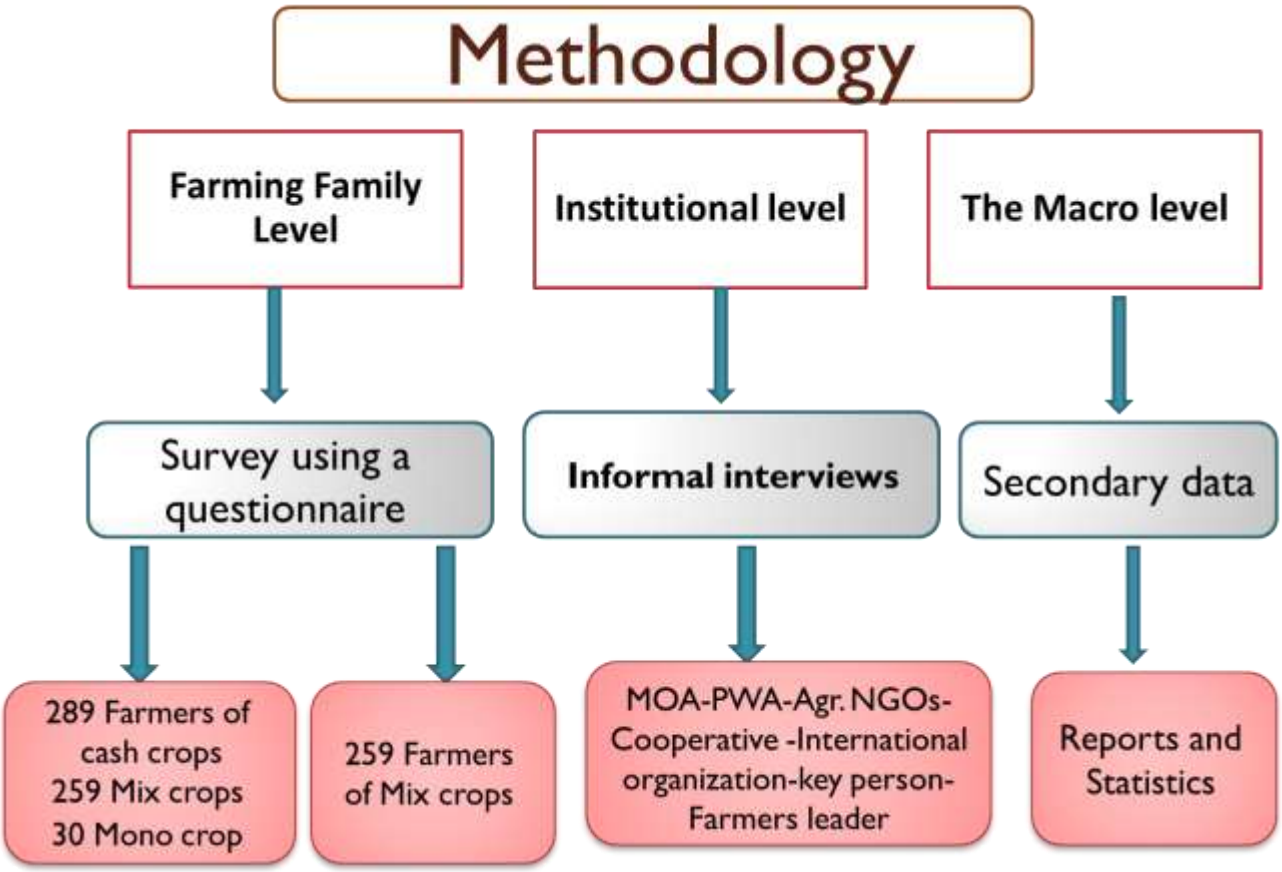
5.2.5 Key person information interviews:

Officers in the ministry of agriculture, chairman of council of the agriculture cooperative, traders of strawberry exportation, and large scale of strawberry farmers were interviewed in order to collect general information for the research.

5.2.6 Data analyses:

The data were analyzed in two phases. The first phase is the descriptive analyses where the resources availability and uses, description of the production systems, gross margin analysis and farmers views illustrated.

Figure 5.1: Research methodology



5.3 Conceptual Framework

The study aimed to Formulating and testing the strategies based on analysis of three levels the farm, family and national level to recommend the most optimal at micro and macro scales as follow:

5.3.1 Farm Level:

Three main factors were studied, which can affect any decision taken by farmer as follow:

1. Farm resource
2. Cropping patterns
3. Profitability

The study descript What type of resource do farmers have?, and what resource can famers use? And shall we cultivate cash crops or other crops?, and what type of factors can affect the strawberry cultivation? Also the study makes comparative analysis between the strawberry cultivation and the other crops, and we study the return to resource using the Gross margin analysis.

5.3.2 Family level:

The researcher studied the socioeconomic characteristic of the strawberry farming families and the socioeconomic of the local market crops (other crops), and how the contribution of farm profits to the family income, and views and attitudes towards strawberry cultivation and water resource and willingness to pay the water social price.

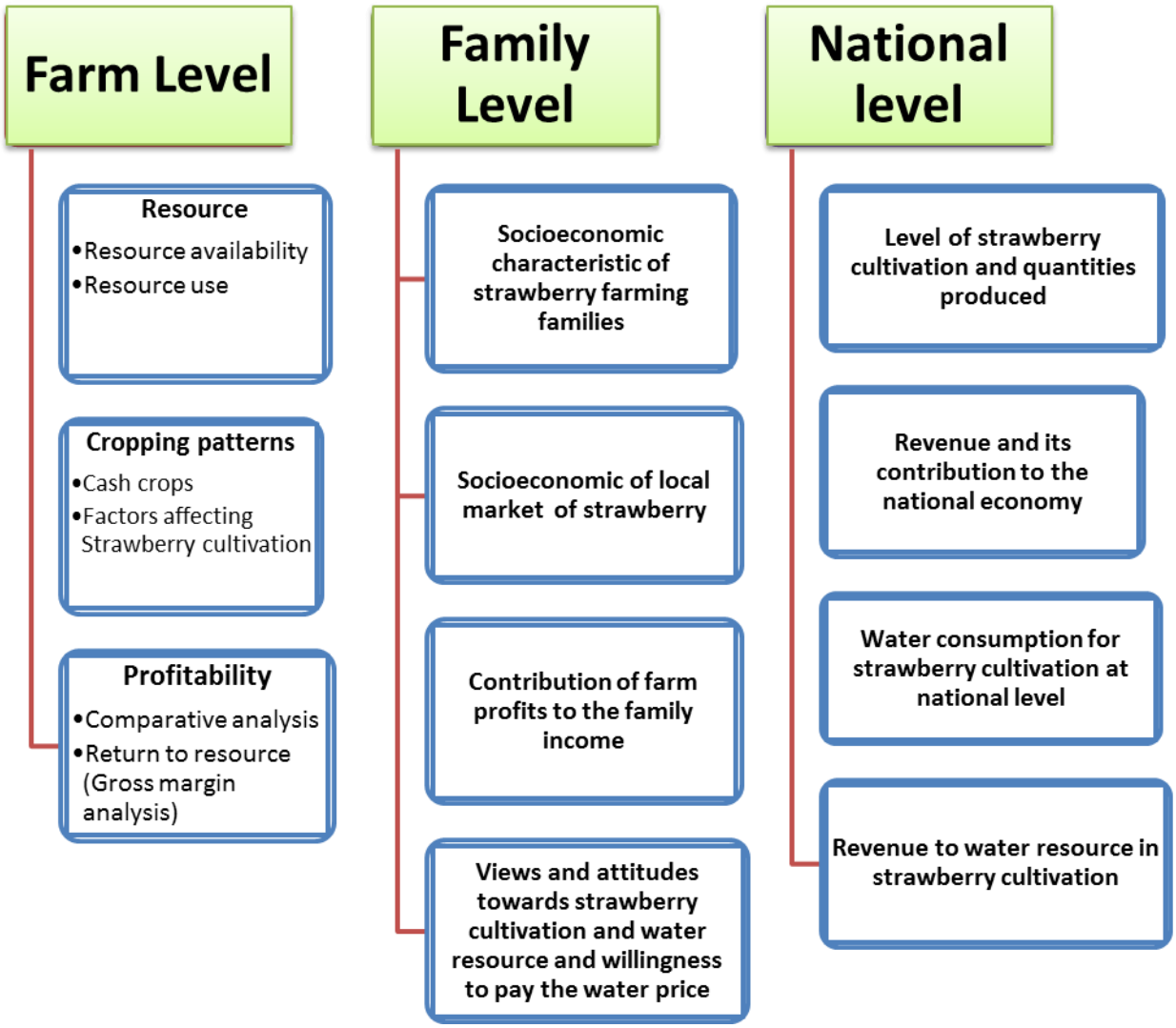
From the other hand, The researcher studied the national level through what level of strawberry cultivation and quantities can produce. Also the revenue and its contribution to the national economy.

Finally, the researcher explored the water consumption for strawberry cultivation and its effects at national level and revenue to water resource in strawberry cultivation and comparative analysis between several crops (cash crops and local market crops). See the fig. 5.2.

5.3.3 National level:

It contains level of strawberry cultivation and quantity produced revenue and its contribution to national economy, water consumption for strawberry cultivation at national level, as well as revenue to water resource in strawberry cultivation. Comparative analysis between several crops (cash crops and local market crops.

Figure 5.2: Research Conceptual Framework



5.4 Farming System analyses

Following is a description of the intended study area with depiction of the applied methods to achieve better understanding of the current situation of the research area and how the farming families use their available resources in order to make decisions related to their farming activities.

Bait Lahia are popular with its good quality fresh water, and therefore is suitable for strawberry, citrus and other open field vegetables such as potato, watermelon,

cucumber, tomato, eggplant, carrot, peas, eggplant, corn pepper, onion and grape et. Also Bait Lahia has other farming activities such as livestock and fishing (MOA, 2013).

5.4.1 Strawberry production

Farmers in Bait Lahia started growing strawberries in the 1970. Most of the Gaza strawberry farms and farmers are located in the north of Gaza Strip in Bait Lahia. The year 2005 was the best year since strawberry cultivation started, and the cultivated dounms reached to 2500 dounms with total production 7500 ton, 1834 tons out of them has been exported.

In 2007 MoA decided to decrease the strawberry cultivated areas as one of their strategic plans by 700 dounms, because MoA believed that strawberry consumes high level of fresh water compared to other crops (MoA, 2008).

Today, the strawberry planted areas are estimated to be 950 dounms, with further potential plans for limitation of strawberry cultivation in Gaza Strip.

5.4.2 Geographical distribution of strawberry farms in Bait Lahia in 2013 by area:

The study area targeted Bait Lahia is located in north of Gaza Strip where most strawberry cultivation take place. The study community of the strawberry farmers are concentrated in three main locations in Bait Lahia, which are Al Shima area 89 farmers with 30.8 percent, 47 farmers at “Teen Wanes” with 16.3 percent, 36 farmers at al Attatra area with 12.5 percent, while the rest of strawberry farmers distributed in different locations at Bait Lahia, the total number of sample was 289 farmers.

As shown in Table 5.1 Strawberry cultivation is widely practiced in some areas of Bait Lahia due to the availability of high quantity and quality of fresh water and suitable soil. In other areas such as Al Nouno and Al Qwasma strawberry is not widely cultivated.

Table: 5.1

Geographical distribution of strawberry farms in Bait Lahia on 2013

NO.	Village	Frequency	Percent
1.	Al Shima	89	30.8
2.	Teen wanes	47	16.3
3.	al Attatra	36	12.5
4.	Hamdouna	20	6.9
5.	AL Sifa	16	5.5
6.	Al Amal	14	4.8
7.	Abu Haloub	12	4.2
8.	Fadous	10	3.5
9.	Al Nada	8	2.8
10.	Dogeet	7	2.4
11.	AL Farouq Mosque	6	2.1
12.	Bedouin	5	1.7
13.	AL Qboun	5	1.7
14.	AL Shadoof	4	1.4
15.	Abu Samra	3	1.0
16.	Others[8]	7	2.2
	Total	**289**	**100.0**

Source: table prepared by the searcher based on questionnaire data results

5.4.3 Farming system analyses at micro level:

To achieve better understanding of the current situation of the research area and how the farming families use their resources specially water resources to achieve their current living standards, this section describes resources availability and use.

This section is based on the strawberry farm-family survey in the Beit Lahyia area. It deals with the analyses of resources in strawberry farming families. This section will discuss the resource use efficiency, especially regarding water. To describe the current living standard of the farming household, a wide range of socio-economic indicators will be described. These indicators are classified into two groups. The first group includes indicators reflecting the economic success of the family, such as, family income, cash balance, liquidity and dependency on external resources. The second set of indicators includes social living standard indicators like, education, health, housing conditions, water supply and social security additionally; farmer perceptions of farming problems will be presented.

[8] Al Ramly Land, Aslan, Al Berka, Al Qwasma, AL Shafee, and Al Nouno areas.

5.4.4 Resources Analyses

Analyses of resources availability and use intend to provide basis information on the scope of decision making of the families. As the main concern of this study is to investigate water use efficiency in strawberry cultivation, it is vital to understand farm-family make their decision regarding allocation of water resources in their farm. Family resources are mainly labour, land, capital, water and knowledge. These resources are used in farm and off farm activities. This section will focus on the availability of these resources by different cropping system.

5.4.5 Human resources

In this section, the family composition (family size, age and sex) will be presented. A descriptive and comparative analyses of the available family labour and its allocation in farm and off farm activities as well as external labour force will be discussed in this section.

5.4.5.1 Family size and composition

Results showed that average family size is 8.6. As shown in Table 5.2, the average family is composed of 4.87 male, 4.19 female, 2.77 children under the age of 10, 1.6 between 10 to 15 years and 2.4 above 15 years old.(numbers is in average term).

Table 5.2

Demographic characteristics of strawberry farming systems, in Bait Lahia, 2013

Farming system		Strawberry farmers
Family size	**Number of cases**	N = 289
Mean number of persons per family		8.6 [a] (±0.534)
Mean Number of family members "Male"		4.872 ± 0.366
Mean Number of family members "Female"		4.190 ± 0.354
Mean number of male children per family (age< 10)		1.37 (± 0.149)
Mean number of female children per family (age< 10)		1.4 (± 0.154)
Mean number of male children per family (age between 10 to 15 years)		.8478 (± 0.137)
Mean number of female children per family (age between 10 to 15 years)		.7612 (±0.137)
Mean number of adult males per family (age > 15 years)		1.3 (±0.193)
Mean number of adult females per family (age > 15 years)		1.18 (±0.193)

Figures in Parentheses are 95% confidence interval of mean. And letter a describe the Mean.

5.4.6 Farm family labour:

The study shows that the average adult family members working outside the farm 4.7% divided into 2.9% for adult males and 1.8 for adult females. While the mean of total number of family members working adults inside the farm 20.8 divided into 12.9 for adult males and 7.9% for adult females.

The results above show that there is high participation of female in the strawberry cultivation process in Gaza Strip, reflecting an equality between both of them and agreed and proof hypothesis number 5 says that Strawberry farming decreases farmer's unemployment rate. See Table (5.3).

Table 5.3

Structure of the family labor force of strawberry farming systems in Bait Lahia, 2013

Farming system	Strawberry farmers
Number of cases	**N = 289**
Family size	
Mean number of adult males per family working outside the farm	0.246 [a] (±0.085)
Mean number of adult females per family working outside the farm	0.156 [a] (±0.060)
Mean number of adult males per family working inside the farm	1.10 (± 0.129)
Mean number of adult females per family working inside the farm	0.68 (± 0.090)

Figures in Parentheses are 95% confidence interval of mean. And letter a describe the Mean.

5.4.7 Household social living conditions:

This section will focus on some living standard criteria mainly education, which are related to the household social living condition. These criteria reflect the social settings of families in the research area. These criteria are education, health, housing and sanitary services, water supply, and social security.

5.4.8 Educational level of strawberry family

In addition to the importance of education status in reflecting the living standard of a family, the educational level of household members may affect the speed of transfer of new ideas. Moreover, higher level of education gives farmers more opportunities to find jobs out of the farm. Since the decision, regarding the use of the new water source for irrigation, is made by the household head, special analysis for the educational status of the household head will be presented (Table 5.4).

Table 5.4 shows that the mean total number of children enrolled in schools are 1.8, take the share of 97 % and 90% for male and female sequentially. The mean of total number of family members who have secondary school or below are 0.3 take the share of 17% and 15% for male and female sequentially.

The notes on primary and secondary school stage have equality in children enrolled for both male and females, which indicate that the awareness from farmers to educate their children's without any discrimination based on sex. The mean of total number of family members graduates in higher education are sequentially 1.6 and 0.1 for male and female. Which indicate that there more attention to educate males rather than females in this stage related to special conditions to strawberry farmer's environment society?

Table 5.4:
Family education level of strawberry farmers

Item /N of cases = 289	Mean
Total number of children enrolled in schools	1.886 (± 0.346)
Number of children enrolled in schools "male"	0.979 (± 0.191)
Number of children enrolled in schools "female"	0.907 (± 0.186)
Total number of family members who have secondary school or below	0.332 (± 0.112)
Number of family members who have secondary school or below "male"	0.179 (± 0.066)
Number of family members who have secondary school or below "female"	0.152 (± 0.075)
Total number of family members graduates of higher education	0.276 (± 0.078)
Number of family members graduates of higher education "male"	0.169 (± 0.058)
Number of family members graduates of higher education "female"	0.107 (± 0.045)

5.4.9 Land resources:

Land resources will be discussed through describing the ownership pattern, average of the farm size and the land use in the current time.

5.4.10 Farm size:

Most of the targeted strawberry farming community 49.5% their farm size is between 1-5 dounms, while 37.4% have 6-10 dounms which means that most of the strawberry community are from the poor farmers. Also 13.1% their farm size is between 11-50 dounms as seen in the (Table 5.5).

Table 5.5
Strawberry Farm size

Item	Farm size (dounm[9])		
	1- 5	6-10	11 and above
Number of farms	143	108	38
Percentage of farm size	49.5	37.4	13.1
Average of farm size	3.6 (± 0.174)	7.73 (± 0.174)	18.2 (± 3.29)
Average of total farm size	7.1 (± 0.70)		

Figures in Parentheses are 95% confidence interval of mean. And letter a describe the Mean.

5.4.11 Type of land tenure:

Result to Table (5.6) shows that most of the strawberry farmers rented the land they cultivated which reflect that renting land is more feasible to those farmers because they can use their land in other activities which reflect an application to alternative opportunities principle, from the other hand some farmers are not land ownership, so they tend to rent. While governmental land is the last option to strawberry farmers to cultivate because is difficult to have such land or its dingers experiment as any moment to demolished by the government because it is illegal.[10]

Table 5.6

Type of land tenure

Type of land tenure	Frequency	Percent
Ownership	44	15.2
Rented	209	72.3
Governmental land	36	12.5
Total	289	100.0

5.4.12 Cropping system pattern:

As shown in Table (5.7), the targeted farming community are mix cropping farmers, because most of them cultivated one or more of other crops with strawberry at the same time and same piece of land. Within the targeted 289 of strawberry farmers

[9] 1 dounm= 1000m^2

([10]) data sample show the cultivation land classification as follow:
Most of the cultivated land in North Gaza used to strawberry farming are 12.5% considered as government land, while 72.3 % is rented land from its native owners, while 15.2% of the land used for strawberry farming by the owners themselves.

living on Bait Lahia, 93.1 percent are mixed cropping of the targeted community while 6.9 percent are mono crops (cultivate strawberry only).

Table 5.7

Number of other crops cultivate with strawberries

Items	Strawberry cropping farmers	Mix cropping farmers with one crop	Mix cropping farmers with tow crops	Mix cropping farmers with three crops	Total
Number of farmers	20	157	89	23	289
Percentage %	6.9	54.3	30.8	8	100%

Table (5.7) shows that 93 percent of the strawberry farmers cultivate one to three crops beside strawberries, because seasonal and land capacity allow them to cultivate one to two crops yearly with convertible condition to soil and without effect on the main activity which is strawberry cultivation. as well as the income revenue from this mixing crops.

The collected data indicated that 203 farmers cultivated corn, 32 farmers cultivate onion, 27 farmers cultivate garlic, 25 farmers cultivate beans, 17 farmers cultivate squash, 84 farmers cultivate watermelon, and 8 farmers cultivate eggplant, while 15 farmers cultivated other crops such as carrot, cabbage, tomato, peas, okra, and Molokai.

This means that most of the strawberry farmers are mix cropping farmers. They cultivate other crops on the same piece of land in order to cover their family needs and benefits; also they used the same available resources (water, capital, labour, land, pesticides, and fertilizing) for more than one crop. This leads to the conclusion that we can say that the strawberry consumed high amount of water in Gaza strip , due to the fact that the result of collected data show that strawberry farmers are using the same amount of water to irrigate other crops in addition to strawberry for the same piece of land.

5.4.13 Ownership patterns of the strawberry farm land in Bait Lahia:

Most of the targeted farming community 76.8 percent of mixed cropping farmers group is found to be more dependent on external land recourses, while 15.2%

rely 100 percent on their owned land, also 8 percent rely on illegal land resource using governmental land to cover their needs. See (Table 5.8):

Table 5.8

Ownership patterns of the strawberry farm land in Bait Lahia

Farmers Ownership	N . Farmers	Percentage %
Owned farm	44	15.2
Rented Farm	222	76.8
Governmental land	23	8
Total	**289**	**100%**

5.4.14 Water resources:

Only one type of water resource will be presented in this section, namely water for farm use. In this section, irrigation water resources, different irrigation systems, quantity and cost of the farming systems will be presented.

5.4.15 Water resources for farm use:

Like all other areas in Gaza strip, the main source of water for agriculture in Bait Lahia is ground water. Usually, the wells are inherited within the land. Therefore, most farmers in Bait Lahia share their wells with their relatives. And most strawberry farmers pump water from their shared wells.

The collected data showed that the water availability in the targeted community are available and most of the strawberry farmers has an easily access to their water resource.

Most of the strawberry farmers usually using diesel pump to irrigate their farm, they pay 3 NIS[11] (New Israeli shekel) per one liter which equal 0.80 USD$. The common way of irrigating their farm is that every farmer has to bring his own fuel and start pumping the water according to the farm size, whenever what size of farm they have and what is the capacity of the water well is.

We found that farmers are pumping certain amount of water regardless of the crops demand based on general acknowledged information. One dounm of strawberry consumes 1000 m3 (MOA report, 2008) however the collected data in the field showed

[11] One USD$=3.55 NIS in 2013

that one dounm would consume around 2655.8 m3 of strawberry crops, the fact that farmers cultivate multi crops at the same time doesn't affect the consumption rate as the only factor for is the pumping capacity of the pump.

Table (5.9) shows that most of the farmers 62% don't have water meter, while the other 38 percent of them have water meter, This indicates that the farmers tend to have fully control on water resources by don't use water meter which allow them to use water as well as they want without any sponsorship from the competent authorities.

Table 5.9

Availability of water meter

Availability of water meter	Frequency	Percent
Yes	111	38.4
No	178	61.6
Total	289	100.0

Also the collected data show that 45 percent of the farmers depending on water resources within the farm, that consider cost saving to the farmer, while 55 percent of the farmers depend on water resource outside the farm. Such result indicates increase in the cost of the cultivation and might be an expletory element to why some farmers gain profit and the process is feasible for them while the others are not. See Table (5.10).

Table 5.10

Water source

Water source	Frequency	Percent
within the farm	131	45.3
outside the farm	158	54.7
Total	289	100.0

Table (5.11) shows that's the most of the strawberry farmers do not count the time of irrigation per month as they do not care to count, because they are tow educated persons, and the count of the time irrigation is not relevant for them.

Which is proof the second hypothesis said that strawberry farmers consume significant quantity of the aquifer.

Table 5.11

Counting the time of irrigation / month

Did you count the time of irrigation / month	Frequency	Percent
Yes	87	30.1
No	202	69.9
Total	**289**	**100.0**

5.4.16 Type of irrigation system:

Sprinklers and dripping systems are the two irrigation systems existing in the research area. Dripping systems and sprinklers are considered as the modern irrigation systems. Dripping systems and sprinklers are only used by the primary, supplementary and mixed cropping farmers.

About 100 % of families of the two type of cropping farmers use only modern irrigation systems (dripping irrigation systems and sprinklers).

5.4.17 Water quantity and cost for farm uses:

Most of water used for agriculture is for irrigation purpose while the rest are used for home consumption. The cost of water here means the cost of pumping the water from wells. Pumping cost includes fuel, oil and maintenance of the pump. The price of purchased water includes the transportation cost.

Table 5.12

Water quantity and cost for farm use, Beit Lahyia 2013

Farming system	Strawberry farm
Number of cases	289
Quantity m^3/Dounm / Year	2655.8 m^3
Cost NIS per m^3	0.5 NIS
Cost NIS/Dounm / Year	1327.9 NIS

Most of the strawberry farmers usually use diesel to irrigate their size of farm, they pay 0.5 NIS (New Israeli shekel) per cubic meter. The common way of irrigating their farm is that every farmer has to bring his own fuel and start pumping the water, whenever what size of land he has and what is the capacity of the water well is.

Farmers are pumping certain amount of water regardless of the crops demand based on general acknowledged information, one dounm of strawberry consumes 1000 m^3 (MOA report, 2008) however the collected data in the field show that one dounm

would consume around 2655.8 m^3 regardless of crop type. The fact that farmers cultivate multi crops at the same time doesn't affect the consumption rate as the only factor for is the pumping capacity of the pump.

As shown in the Table (5.12) the result of the calculations done by the researcher find that strawberry consumed 1447.4 m^3 per dounm per year, which means 44.7% more than the quantity consumed by strawberry as reported by the MoA.

The researcher asked direct questions to 289 strawberry farmers in Bait Lahia about how they irrigate their farms. The answer way three times per week and forty eight munities per one irrigation time?

Most of the strawberry farmers don't give any consideration on the current water pump capacity, which means that they irrigated their farmers upon their farm knowledge and experience.

The researcher after doing data collection tried to investigate about the functionality of the water pump used by strawberry farmers in order to see if its work at the same capacity or not, four irrigation water wells was chosen randomly in Bait Lahia used by strawberry framers, how have been chosen from strawberry population sample.

The researcher found that water wells are not operating at the same delivery capacity as it known by the farmers when they were asked about the capacity of their wells, for example the water well number A66 the farmers says that the capacity of their well are 60 m^3 per hour while after testing the water well we found that the capacity is less than that about 29.4m^3 per hour.

Table 5.13

Quantity of water from the two tested water wells in Bite Lahyia.

Water well no.	Seconds	Volume barrel / liter	Time refillable barrel / sec	Number of barrels per hour	L / h	m^3 / hour
A66	3600	200	24.46	147.179	29436	29.4
A120	3600	200	20	180	36000	36

Data collected by researcher

5.4.18 Gross Margin Analyses of strawberry:

Gross margin analyses are the basis for assessing the resources use efficiency among the different crops. Marginal return of water resources cross cultivated crops in research area. We can calculate the marginal return of water (1m3) by using the following formula:

$$\textbf{Marginal return of water } (\textbf{1m3}) = \frac{\textbf{Gross margin /Dounm}}{\textbf{Quantity of water/Dounm}}$$

The researcher collects all the necessary data by using the above formula in order to calculate the marginal return of water (1m3).
During the research period 7% Strawberry farmer sample are mono crop farmer, While 93% are mix cropping farmer.

In 2003-2004, MoA found that the marginal return of water (1m3) of strawberry was 5.9 Nis per m^3, (MoA, 2004). While the researcher found that marginal return of water (1m3) of strawberry were 0.33 Nis for mono crop farmer and 3.536 Nis of mix cropping farmers during the research period 2012-20013 as shown in table (5.14).

This shows that a significant difference between the two periods because of the siege was held on Gaza strip, so that the exportation was reduced year by year, also limited access to production inputs which increase the production cost, which reflect on the marginal return of water of strawberry cultivation.

From the other hand data shows that strawberry farmer consume high quantity of water during the season (1447.4 m^3) compare with water quantity consumed and mentioned by MoA report(1000 m^3), which effect on the marginal return of water (1m^3) of strawberry.
Based on this information the researcher recommend that strawberry cultivation in order to be more benefit able, reasonable and more efficient of water used. Strawberry farmers should cultivate with other crops (mix cropping).

Table (5.14) Gross Margin Analyses of strawberry

Farming system Number of cases	Mixed cropping farmers N= 269	Strawberry N=20
Local sales value NIS / du	5927.7 (± 67)	5768.42 (± 284)
Export sales value NIS / du	11265 (±196)	10355 (± 647)
Home consumption value NIS/ du	328.1 (± 3.4)	308.5 (± 15.5)
Total production Value NIS /du	21068.6 (±220.17)	16432.18 (±946)
Water cost NIS /du	1304 (± 223)	1304 (± 223)
Hired labour cost NIS /du	6634.26 (±119.58)	6634.26 (±119.58)
Other costs NIS / du	182.2 (±1.16)	182.2 (±1.16)
Variable cost NIS /du	16068.3 (± 510.3)	16068.3 (± 510.3)
Gross margin per unit of water (NIS/ M^3)	**3.536**	**0.332777**

Figures in Parentheses are 95% confidence interval of mean

As shown in Table, farmers produce strawberry, mainly, for marketing and a very small portion is for home consumption. There were a significant differences among the two groups in term of production value. The variable costs are the same among the mono strawberry and mix cropping farmers.

Data found that use of high number of hired labour for strawberry cultivation about 42 %of the total variable cost and followed by exportation cost, land rent, water cost, which constitutes 8 % of the total variable cost.

Therefore, the figure (5.3) shows that the present of labour cost and water cost have significant differences in the season 2012/2013 compare to 2003/2004. This shows how strawberry farmers forced to decrease water consumption and labour force as result of decreasing the quantity of strawberry exportation and siege.

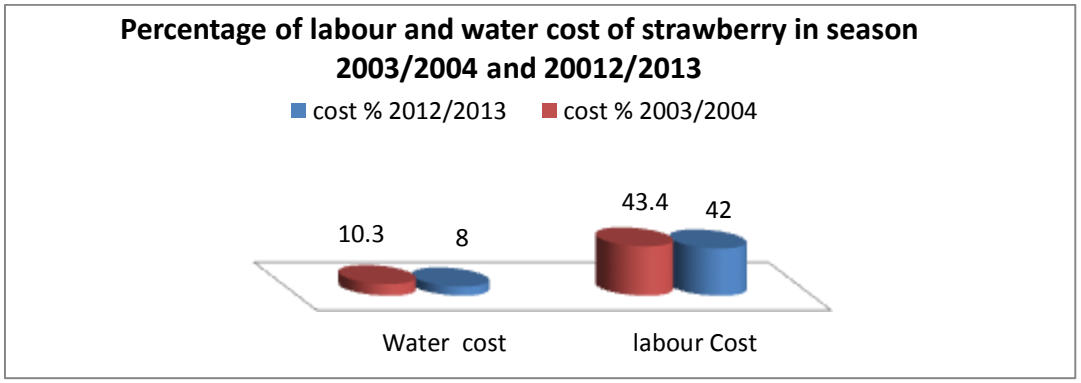


Figure (5.3): Data collected by the researcher

5.4.19 Strawberry farm budget analysis:

Strawberry farms expenditure are ±16876.1 NIS (±4500USD)[12] per dounm, distributed as follows 6634.3 used for annual labour cost, 438.1 annual cost of seedlings, 984.1 annual cost of pest control, 1190.4 annual cost of fertilizing (organic and chemical), 182.2 annual cost of other cost, 1417 annual cost of water used, 350 annual cost of irrigation network, 3500 annual cost of required export materials, 2180 annual cost of plastic sheet. As shown in the Table (5.15) that the three most expensive items are labour cost , export materials cost , and plastic sheet cost.

In the other hand the annual cost of vegetables seedling planted with the same period of cultivating strawberry is 263.4 NIS.

Table 5.15
Strawberry farm budget analysis

Items	Total cost NIS
Total annual labour cost	6634.3
Total annual cost of seedlings	438.1
Total annual cost of pest control	984.1
Total annual cost of fertilizing (organic and chemical)	1190.4
Total annual cost of other cost	182.2
Total annual cost of water used	1417
Total annual cost of irrigation network	350
Total annual cost of required backing materials	3500
Total annual cost of plastic sheet	2180
G. Total NIS	**16876.1**
G. Total USD$ (exchange rate 1 USD$=3.55 NIS)	**4500**
Total annual cost of vegetables seedling planted with the same period of cultivating strawberry	263.4

([12]) *average exchange rate, 1$= 3.55 NIS during 2013*

5.4.20 Monthly family income:

The mean of monthly family income is equal 2026 NIS only from strawberry cultivation. As most of the farmers families usually have large amount of family members needed to such kind of work beside the income from other resource farm gains. The total income will be reasonable which is prove the third hypotheses said strawberry farmers have better living standard compared to other farmers. See Table (5.16).

Table 5.16

Monthly family income

Item	Mean
N of cases = 289	
Monthly family income in NIS	2026.265 (± 134.277)

Figures in Parentheses are 95% confidence interval of mean. And letter a describe the Mean.

5.4.21 Strawberry farmer's returns:

Table (5.17) indicates that the strawberry cultivated area takes over the large share of cultivated dounms followed by other crops. Also, it has the large return per dounm comparing to other crops cultivation total return. Such results lead us to conclude that strawberry cultivation for one dounm is better than the cultivation of the same dounm of other crops in return , in spite of the high cost and labour work needed. In general the income from projects outside the farmer per year is low than the strawberry cultivation projects which reflect the feasibility of this filed compare by other cultivation fields.

This a proof the third hypothesis said strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation.

Table 5.17

Strawberry farmers returns

Item	Mean
N= 289	
Strawberry cultivated area / Dounm	7.066 (±0.703)
Other crops cultivated area / Dounm	5.989 (±0.408)
Return of other crops (NIS / year)	12024.189 (±1313.802)
Return of strawberry (NIS / year)	17392.162 (±646.587)
Total return (NIS / year)	29416.35 (±1496.626)
General total cost (NIS / year)	17449.07 (±185.729)
Mean Net profit (NIS / year)	11967.28 (±1278.29)
Income from projects outside the farm (NIS / year)	1240.899 (±520.360)

Figures in Parentheses are 95% confidence interval of mean. And letter a describe the Mean.

5.4.22 Other non-agriculture financial resource of strawberry farmer and Projects Type:

Regarding to Table (5.18), some of the strawberry farmers directed to agriculture when they tend to have non-agriculture financial resource of strawberry farmer, followed by handcraft financial resource as well as commercial financial resource, because such activities need certain skills.

62 farmers say that they have other non-agriculture financial resource, while the 227 farmers depend on strawberry farming only.

Table 5.18

Other non-agriculture financial resources of strawberry farmer and Projects Type

Project Type	Frequency	Percent
Agricultural	15	24.2
Craftsman	4	6.5
Commercial	4	6.5
Services	6	9.7
Other	33	53.2
Total	62[13]	100.0

[13] 62 of the sample answered the question.

5.4.23 Receiving aids from government or non-governmental institutions:

Table (5.19) shows that 62.3 percent of the strawberry farmers received assistance aid from different government or non-governmental institutions such as Ministry of Social Affairs, CHF International, Agricultural Development Association (PARC), Oxfam, UNRWA, indicating that those farmers reliable on aids, which reflect their financial needs and a proof that they are poor farmers.

Table 5.19

Receiving aids from government or Non-governmental institutions

Do you receive any aid from government or non-governmental institutions?	Frequency	Percent
Yes	180	62.3
No	109	37.7
Total	289	100.0

5.4.24 Strawberry farmers assess their situation:

Table (5.20) shows that the high number of strawberry farmers gaining profit from their farming activities, which means that strawberry production is feasible. While less number of strawberry farmers facing a loss which might be related to conditions of their bad administration or other circumstances. which proves the forth hypothesis despite the high cost of water consumption, the marginal return of strawberry cultivation is higher than other crops.

Table 5.20

Strawberry farmers assess their situation

How do you assess your situation?	Frequency	Percent
Profit	189	65.4
Loss	100	34.6
Total	289	100.0

5.4.25 Profitability of strawberry farmers:

Table (5.21) shows that approximately 65 percent of strawberry farmers gaining financial revenue of 2000 dollar and more , while in the other side the approximately 35 percent lose 2000 dollar and more. Which could be explained that bad administration, laying in answering the questioner or large scales have taken place to those who loose. Which proves the forth hypothesis despite the high cost of water consumption, the Marginal return of strawberry cultivation is higher than other crops.

Table 5.21

Measuring of profitability and loss of strawberry farmers

Value of profit or loss	Profit		Loss	
	Frequency	Percent	Frequency	Percent
500-2000 $	24	12.7	28	28.0
2001- 4000$	78	41.3	29	29.0
4001$ and more	87	46.0	43	43.0
Total	189	100.0	100	100.0

5.4.26 Strawberry farmers whom supporting strawberry cultivation:

Table (5.22) shows that the most strawberry farmers support heavily the strawberry cultivation which explains that it is feasible cultivation production and attractive to them because this field of cultivation allows them to receive aid and financial support from many institutions. Furthermore the revenue of the hole cultivation process as well as its their main job and they have no alternative opportunities.

This is a proof the third hypothesis, strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation.

Table 5.22

Supporting the cultivation of strawberries:

Do you support the cultivation of strawberries?	Frequency	Percent
Yes	216	74.7
No	73	25.3
Total	289	100.0

While the data in table (5.23) show that those farmers who said that strawberry cultivation is not feasible and did not support it have different reasons. Most of them said that the difficulty in exportation is the main reason followed by degradation of water quality, rising costs of production inputs. However those reasons do not seems logical as it represent the less opinion and reflect a state of laziness or bad admiration from this bunch of strawberry farmers as it is approved by most other farmers that it is feasible.

Table 5.23

Reason why farmers who said that strawberry cultivation is not feasible and did not support it

Reasons	Frequency	Percent
Difficulty of exportation	46	70.8
Degradation of water quality	25	38.5
Others	25	38.5
Rising costs of production inputs	24	36.9
Labor intensive	16	24.6
Lower domestic prices	16	24.6
Lack of experience and knowledge	5	7.7
Lack of public demand for consumption	3	4.6
Lack of agricultural areas	3	4.6

5.4.27 Strawberry production cost :

Table (5.24) shows that's the high cost of strawberry cultivation process goes to the following subsequently seedlings 83.4%, sterilize pesticide 83%, plastic sheet 82 % , fertilizer and pesticide 81%, land rent 48.4%, labour 39.8%, water 25.3%, irrigation system 19.7%, and Transport and marketing costs 16.3%. This reflects that the seedling , sterilize pesticide, plastic sheet, and fertilizer and pesticide are the most costly inputs, The high production cost is came as result of Gaza strip restriction on the commercial borders and siege by Israeli occupation.

Table 5.24

Which of the inputs are more expensive for strawberry?

Items	Frequency	Percent
Seedlings	241	83.4
Sterilize pesticide	240	83.0
Plastic sheet	238	82.4
Fertilizer	234	81.0
Pesticide	234	81.0
Farm rent	140	48.4
Labour	115	39.8
Water	73	25.3
Irrigation system	57	19.7
Transport and marketing costs	47	16.3

Table (5.25) shows that high ratio of production cost approximately 86 percent. It is noticeable that the cost of production is weather high or very high, this related to those farmers maximized their cost or really strawberry cultivation is highly coasted.

Table (5.25) shows that most of the strawberry farmers consider that the production cost is high and very high which indicates that there is a trend to maximized the price by the farmers otherwise it will not be feasible to them. Such result rejects many results and indicators came via the farmers answers, or the cost is high related to other agriculture cultivation fields.

This is a proof the fourth hypothesis which said that despite the high cost of strawberry cultivation especially water consumption, the Marginal return of strawberry cultivation is higher than other crops.

Table 5.25

Evaluation of strawberry farmers of their production cost

How do you evaluate your cost of production?	Frequency	Percent
V. High	137	47.4
High	112	38.8
Medium	30	10.4
Low	9	3.1
V. Low	1	0.3
Total	289	100.0

5.4.28 Cooperative societies Role:

Table (5.26) shows that the most of strawberry farmers saw the role of cooperative societies representing in the export process, while the rest of the farmers referred this roll into technical and provide guidance. While other farmers referred that to organizing training courses and provide assistance of inputs.

Table 5.26

Role of cooperative societies in the exportation process

What is the role of cooperative societies in the export process	Frequency	Percent
Intermediary for marketing external	250	87.7
Organizing training courses	57	20.0
Provide assistance of inputs	29	10.2
Technical and provide guidance	21	7.4
Others	19	6.7

5.4.29 Strawberry farmers evaluating their situation by experience, domestic price, global marketing, and revenue:

Table (5.27) shows that 17% of framers informed that the global marketing prices of strawberry are v. good, while 39.8% percent said that is good, which present positive element on the exporting process of strawberry to the global market.

From the other hand 32.2% of framers informed that the total revenue of Strawberry are good, while 15.2% said v. good, while 36.7% said its medium, which indicate that there is half satisfaction toward total revenue. Which explain the uncertainty case to the farmers because of siege.

This a proof the third hypothesis said strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation

Table 5.27

Strawberry farmers evaluating their situation by experience , domestic price , global marketing, and revenue

Questions	V. Good		Good		Medium		Bad		V. Bad	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
How do you evaluate your experience in strawberries cultivation؟	44	15.2	92	31.8	103	35.6	41	14.2	9	3.1
How do you evaluate the domestic price of Strawberry?	20	6.9	51	17.6	113	39.1	89	30.8	16	5.5
How do you evaluate the global marketing prices of Strawberry?	49	17.0	115	39.8	65	22.5	50	17.3	10	3.5
How do you evaluate your total revenue of strawberry cultivation?	44	15.2	93	32.2	106	36.7	39	13.5	7	2.4

5.4.30 Strawberry marketing locally / globally:

According to the results shows in Table (5.28), the possibility of local marketing is not incurable because the price is too low as such good (strawberry) is globally marketed orientated, so the farmers form their marketing strategy plan targeting the global market. While the average number of strawberry farmers inform that the local price is not good as it should be according to the high cost, while possibility of globally marketing is incorrigible because the prices is too high and reasonable.

Table 5.28

How do you describe the prices and the possibility of strawberry marketing locally or globally?

	V. Good		Good		Medium		Bad		V. Bad	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Possibility of marketing locally	3	1.0	39	13.5	125	43.3	112	38.8	10	3.5
Local Prices	3	1.0	36	12.5	127	43.9	113	39.1	10	3.5
Possibility of marketing globally	72	24.9	113	39.1	62	21.5	36	12.5	6	2.1
Global prices	78	27.0	110	38.1	57	19.7	37	12.8	7	2.4

5.4.31 Encouragement of other farmers to grow strawberry:

Table (5.29) shows that the majority of the strawberry farmers 64% tend to say no anyone want to grow strawberry which can be explain the willingness of those farmers to keep other competitors far away from strawberry market.

Table 5.29

Do you encourage other farmers to grow strawberry?

Do you encourage other farmers to grow strawberry?	Frequency	Percent
No	185	64.0
Yes	104	36.0
Total	289	100.0

5.4.32 Support is needed to continue cultivating strawberry:

Table (5.30) shows that the most needed elements in order to continue cultivation strawberry are opening the crossings and end the siege followed by export and global marketing. These are factors controlled by the occupation, and other factors could be treated by the local authorities who are providing technical support and agricultural extension and availability of the agriculture inputs in the local market.

Table 5.30

Supports needed to continue cultivating strawberry

What kind of support you need to continue cultivating your farm with strawberry?	Frequency	Percent
Opening the crossings and end the siege	228	81.7
Export and global marketing	224	80.3
Provide technical support and Agricultural Extension	209	74.9
Availability of the Agriculture inputs in the local market	116	41.6
Provide technical support and Agricultural Extension	31	11.1
Organizing the local market	22	7.9

5.4.33 Main Problem facing strawberry farmers during the past five years:

Table (5.31) shows that the most factor facing strawberry cultivation is exportation followed by lack of capita, high production cost, low prices at local and global market, Local marketing and lower domestic prices, which represent a traditional restriction to exported crops in general, as well as the lack of capita.

Table 5.31

Main problems facing strawberry farmers during the past five years

Main Problems	Frequency	Percent
Exportation	268	93.7
Lack of capita	171	59.8
High production costs	114	39.9
Low prices locally and globally	91	31.8
Local marketing and lower domestic prices	49	17.1
Others	29	10.1
Low production quality	10	3.5
Lack of technical support and guidance	9	3.1

5.4.34 Causes of the problems facing strawberry farmers during the past five years:

Table (5.32) shows that the most reason cause problems to strawberry farmers is Closures and siege followed by bad management and corruption of the association, lack of investors, and increased costs of production inputs. Which indicate that all the reasons are beyond the farmers capabilities and could be managed only with competent authorities**.**

Table 5.32

Causes of the problems facing the strawberry farmers during the past five years

Causes of Problems	Frequency	Percent
Closures and siege	269	93.7
Bad management and corruption of the association	156	54.4
lack of investors	130	45.3
Lack of cooperative experience in the global market	57	19.9
Absence of Palestinian delegates at the global market	56	19.5
Increased the costs of production inputs	63	22.0
Lack of support and technical services provided by MoA	40	13.9
lack of support and technical services provided by the cooperative societies	23	8.0
Low quality of inputs	18	6.3
lack of consumer awareness	10	3.5

5.4.35 How strawberry farmers looks forward to solve these problems:

According to result shown in Table (5.33) most of the problems facing the strawberry farmers could be solved by opening new channels at the local market , or reducing the use of pesticides to reduce production costs which make it easier to produce in low cost and find new channels for marketing.

Table 5.33

How strawberry farmers think to solve these problems:

How strawberry farmers think to solving these problems	Frequency	Percent
Opened new channels at the local market	117	42.1
Others	110	39.6
Reduced the use of pesticides to reduce production costs	83	29.9
You seek help, to the expertise of farmers older than me	36	12.9
Filed a complaint to official body	19	6.8

5.4.36 Main problems expected to face strawberry farmers in the future:

Table (5.34) shows that the main problem will face the strawberry farmers in the near future is marketing in both branches local and global followed by availability of capita and minimized the production cost. Also the deterioration of water quality and increased salinity which indicate that also future problems are the same those existed in the present time and the solutions required is the same.

Table 5.34

Main problems expected to face strawberry farmers in the future

Main problems expected to face strawberry farmers in the future	Frequency	Percent
Marketing	254	93.4
Lack of capital to cover the production costs	186	68.4
The deterioration of water quality and increased salinity	114	41.9
Technical, inexperience and lack of information	5	1.8
Lack of experience in the management of agricultural operations	15	5.5
lack of agricultural extension	13	4.8

5.4.37 How a strawberry farmer looks to solve these problems:

Table (5.35) shows that strawberry farmers contributed according to their capabilities to solve the problems they face by search for new markets, find sources of funding or aid and Find new varieties suited to local climatic which is not enough and need more support from the competent authorities as possible as:

Table 5.35

How strawberry farmers think to solving these problems

How strawberry farmers think to solving these problems	Frequency	Percent
Search for new markets	194	72.7
Find sources of funding or aid	192	71.9
Find new varieties suited to local climatic	97	36.3
Improve quality and increase productivity	14	5.2
To improve harvesting and packaging production	10	3.7
Improve production management	8	3.0

5.4.38 Willingness of strawberry farmers to continue cultivating strawberry:

Table (5.36) shows that the majority of strawberry farmers willing to keep on cultivating strawberry which indicate that strawberry cultivation production is feasible and it is reasonable activity.

This a proof the third hypothesis said strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation.

Table 5.36:

Willingness of strawberry farmers to continue cultivating strawberry

Willingness of strawberry farmers to continue cultivating strawberry	Frequency	Percent
Yes	220	76.1
No	69	23.9
Total	289	100.0

5.4.39 Reasons to continue cultivating strawberry:

Table (5.37) shows that the most of strawberry farmers are considering strawberry cultivation as job opportunity and have no alternative, as well as it is source of income for the family.

This a proof the third hypothesis said strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation, in the same time this proof the fifth hypotheses said that strawberry farming decreases farmer's unemployment rate.

Table 5.37

Reasons for continue cultivating strawberry

Reason for continue cultivating strawberry	Frequency	Percent
There is no other alternative job opportunity	181	82.3
A source of income for the family	167	75.9
Of expertise available for crop production and marketing	104	47.3
Others	30	13.6

5.4.40 Reasons for not continuing cultivate strawberry:

Table (5.38) shows that most of the strawberry farmers who will not re-cultivate strawberry in the future had incurred significant losses over the past years in the past, and did not cover their production cost.

Table 5.38

Reasons for not continuing cultivate strawberry:

Reason for not continuing cultivate strawberry	Frequency	Percent
Did not cover production costs	38	55.9
Has incurred significant losses over the past years	52	76.5
Lack of capital	26	38.2
I have other income resources	11	16.2
Others	10	14.7

5.4.41 Summary:

This chapter shows that North Gaza is the main productive area to strawberry cultivation, meanwhile strawberry contributes to find new job opportunity. Also the researcher found that both males and females participate in strawberry cultivation equally.

Strawberry cultivation is significant source to improve standard of living to strawberry farmers. Strawberry farmers considered as a mix cropping farmers using the same available limited resources.

Strawberry farmers tend to hide the quantity of water they used by not using water meter, and agriculture water resource are managed and owned by strawberry farmers. While seedling, sterilized pesticide, plastic sheet fertilizer and pesticide are the most elements enlarging the total cost of strawberry cultivation. From the other hand strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation. The researcher found that cooperative societies it not eligible enough to play the role of supporting strawberry farmers.

Siege and blockade are main reasons affected strawberry cultivation negatively, and Strawberry exportation to the global market is a milestone in strawberry cultivation production success. Strawberry export has positive effect at agriculture and fishing contribution to GDP under condition where strawberry locally marketed variable has stead value. Strawberry locally marketed positive effect at agriculture and fishing Contribution to GDP under condition where Strawberry export variable has stead value.

The strawberry cultivation activity like other crops affected by the political situation, so in condition of stability and open terminals chance to export strawberry to global market, which make strawberry cultivation reasonable and providing GDP with an income cash follow. Political situation caused by Israeli occupation measures increase the cost of strawberry inputs which lead an increase of final total production cost, and make strawberry cultivation process unfeasible.

Chapter VI: Conclusion and Recommendation

- **Conclusion.**
- **Recommendation.**

Conclusion and Recommendations

6.1 Conclusion:

The main objective of this study was to describe the strawberry cultivation system at micro and macro scales, and to investigate its impact on the livelihood of farming families and water resources availability at macro scale. The study aimed to facilitate planners with clear view to design national cropping strategies that consider both macro and micro scales.

To achieve the main objectives the study focused on the following specific objectives:

To explore the contribution of strawberry export among all exported products.

At macro scale, to investigate the level of natural resources used in strawberry cultivation.

- At macro scale, investigate the benefits and damages that are caused to the national economy and water resources availability.
- Analyze of the economic efficiency of the farming production system and the strawberry cultivation as part of the system.
- At micro farm level, to investigate the strawberry profitability in relation to resources allocated and potentialities for paying the real price of water.
- Study the impact of farming activities on the family livelihood.
- Formulating and testing strategies and scenarios reflecting different water pricing levels at both farming family and national economy levels.

The researcher found the following:

Water sector result:

1. Strawberry farmers tend to hide the quantity of water they used by not using water meter.
2. Agriculture water resource are managed and owned by strawberry farmers.
3. 7% of strawberry farmers are mono crop farmer, while 93% are mix cropping farmers.

4. Marginal return 0f 1 m^3 of water of strawberry were 0.33 Nis for mono crops, while 3.536 Nis of mix cropping farmers during the research period.

Labour sector result:

1. Most of strawberry farmers depend on their family members in this process, which contribute to find new job opportunity.
2. Both males and females participate in strawberry cultivation equally.
3. Strawberry cultivation is Stormont contribute to solve unemployment rate in Gaza strip.

Strawberry sector result:

1. North Gaza is the main productive area to strawberry cultivation as most of the strawberry farmers, where its required conditions exist.
2. Strawberry farmers have better living standard compared to other farmers related to the high return came from strawberry cultivation in a compare with other crops cultivation.
3. Strawberry farmers interested in educate their children as well as using them in cultivation process.
4. Strawberry famers tend to have non-agriculture financial resource of strawberry cultivation in order to gain more revenue.
5. Strawberry cultivation is feasible to mix cropping farmer farmers but not feasible for mono crop farmers.
6. In strawberry cultivation renting land to cultivate is more feasible than other options.
7. Strawberry farmers are mix cropping farmers using the same available limited resources.
8. Seedling, sterilized pesticide, plastic sheet fertilizer and pesticide are the most elements enlarging the total cost of strawberry cultivation.

Strawberry globally market:

1. Siege and blockade are main reasons affected strawberry cultivation negatively.
2. Cooperative societies it not eligible enough to play the role of supporting strawberry farmers.

3. Strawberry exportation to the global market is a milestone in strawberry cultivation production success.
4. There is inverse effect of political situation leading to decrease in agriculture and fishing contribution to GDP.
5. The strawberry cultivation activity like other crops affected by the political situation, so in condition of stability and open terminals chance to export strawberry to global market , which make strawberry cultivation reasonable and providing GDP with an income cash follow.
6. Political situation caused by Israeli occupation measures increase the cost of strawberry inputs which lead an increase of final total production cost, and make strawberry cultivation process unfeasible.

6.2 Recommendations:

1. The researcher recommends the authorities to pay more attention to north Gaza as suitable place to strawberry cultivation.
2. The researcher recommend that strawberry cultivation in order to have more profitable, reasonable and more efficient of water used. Strawberry farmers should cultivate strawberry with other crops (mix cropping).
3. The researcher recommends to take care of strawberry cultivation as it is considered as sort of job creation.
4. The researcher recommends to look to strawberry cultivation as process the contribute to gender culture.
5. The researcher recommends finding more facilities in order to improve the strawberry cultivation as its significant element to increase income generation.
6. The researcher recommends the authorities to encourage strawberry farmers to educate their children side by side with working in cultivation.
7. The researcher recommends to develop strawberry cultivation by reducing the cost in order to make it more feasible to farmers.
8. The researcher recommends the authorities to highlight the culture of the strawberry cultivation in order to attract new farmers to this field.
9. The researcher recommends the authorities to facilitate renting to strawberry farmers.

10. The researcher recommends the authorities to obligate strawberry famers using water meters in order to control the aquifer withdraw.
11. The researcher recommends the authorities and international communities to do their efforts to end Gaza siege.
12. The researcher recommends the authorities to find alternative sources of importing these items in less cost.
13. The researcher recommends the competent authorities to have more control and developing their capacities.
14. The researcher recommends the authorities to find a new channel for exporting strawberry to the global market.
15. Water resources should be returned under the management of MoA and PWA, and farmers should pay the price of water use.

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Appendix

Appendix : Questioner

"Strawberry Cultivation and its impact on the Palestinian Agriculture sector"

"Empirical study for Strawberry Farming in Gaza Strip"

This thesis submitted in partial fulfillment of the requirement for the degree of Master of Development Economics, submitted by: Mohammed A. Shatali (12009/0899).

The researcher is student at faculty of commerce at Islamic university in Gaza , and he is applied his research as fulfillment of the requirement for the degree of Master of Development Economics. The overall objective of this study is to describe the strawberry cultivation system at micro and macro scales. And to investigate its impact on the livelihood of farming families and water resources availability at macro scale. The study aims to facilitate planners with clear view to design national cropping strategies that consider both macro and micro scales.

The results of this research will be directed to decision-makers to develop mechanisms and the right decisions for the advancement of the agricultural community.

Your answer will be used for research purposes and will be dealt with confidentially

Definition of the family

Governorate / Village**..... / ..... :**

The interview date (month / day / year) **/ ..... / ....**

Serial number of the family: ..... Please enter the code on each sheet

1 . Family members

Item	No.	Female	Male
Total Number of family members			
Number of children below ten			
Number of children between 10 to 15 years			
Number of adult family members above 15 years			
Number of adult family members working outside the farm			
Number of family members working adults inside the farm			
Number of children enrolled in schools			
Number of family members who have secondary school or below			
Number of family members graduates of higher education			

2.1 Family income from non-agricultural activities (Privet businesses):

- How many family members who works on special projects (outside the farm)?
- Income from projects outside the farm (NIS / year)
- Project Type: agricultural (1) Craftsman (2) Commercial (3) Services (4) Others.

3.1 Income from government or non-governmental institutions

Do you receive any aid from government or non-governmental institutions? Yes ( ) No( )

What are the institutions you received assistance from them during the last year? Please write the name of the institution and the amount (NIS / year)

1-……..…..…… 4-……..…..……
2-……..…..…… 5-……..…..……
3-……...…… 6-……..…..……

2. Family

1. Monthly home budget (NIS)
2. Food Monthly (NIS)
3. Water domestic use per month (NIS)
4. Monthly rent for the house (NIS)
5. Education annually (NIS)
6. Health care per month (NIS)
7. Electricity per month (NIS)
8. Transportation per month (NIS)
9. How much you spend on clothing for all family members during the year (NIS)
10. The fuel and energy (gas, diesel, etc.) per month (NIS)

2.1 Household equipment's (durable goods):

Equipment's	No.	Total value at the current market price	Equipment's	No.	Total value at the current market price
Gas stove for cooking			Car		
Fridge			Motorcycle		
Fan			Bicycle		
PC			Other Vehicles		
Satellite and receiver			Radio		
			TV		

3. Measure the performance and profitability of agricultural activities:
For the agricultural season: from..... To.....

3.1 How do you assess your situation?

- **Profit** : 500-2000 $ ( ), 2001- 4000$ ( ), 4001$ above ( )
- **Loss** : 500-2000 $ ( ), 2001- 4000$ ( ), 4001$ above ( )

Crop 5	Crop 4	Crop 3	Crop 2	Crop 1	indicator
					Type of land tenure ownership ( ) Rented ( ) Governmental land ( )
					Cultivated area / Dounm
					Type of production (open field - Land tunnel, and High tunnel)
					Farm system: Global Gap - traditional –Integrated Farm Management (IFM)
					Type of cropping : mix crop( ) Supplementary crops( ) primary crop ( )
					Number of other crops with strawberries (you must select varieties)
					Starting date of season
					End date of season
					Water source: within the farm ( ) outside the farm( )
					No. Well / (salinity EC) / Fresh or Salt / Water quality
					Irrigation network Type: drip irrigation ( ) Sprinklers ( )
					Availability of water meter : Yes ( ) No ( )
					Did you count the time of irrigation / month ( ) Yes ( ) No
					How do you assess the plants need for irrigation: soil check - plant growth
					Percentage of water added by sprinklers out of the total amount of water added per dounm
					Average time per irrigations / Average number of irrigations time / week
					Pump power m3 / h
					Cost per cubic meter of water for irrigation
					Irrigation cost (NIS) / Dounm / crop season

					Total cost of irrigation NIS / dounms for all crop season		
					Employment needs during the season(No. of working days/ season) / (No. of working days/week)		
					Total cost	Amount of seedlings	
					After How many days you start cultivation?	soil sterilization : chemical, Solarization , thermal	
					Times Added	Concentration	Name of Sterilize pesticide
					Total cost of soil sterilization /Dounm /per season	Quantity of Sterilize pesticide/Dounm / per season	
					Other pesticide		
					Repeated	Concentration	Name and quantity of pesticide /Dounm / per season
					Repeated	Concentration	Name and quantity of pesticide /Dounm / per season
					Repeated	Concentration	Name and quantity of pesticide /Dounm / per season
					Repeated	Concentration	Name and quantity of pesticide /Dounm / per season
					Repeated	Concentration	Name and quantity of pesticide /Dounm / per season
					Total cost of the other pesticide		
					Total cost of the pest control NIS/Dounm / season(Sterilize pesticide- other pesticide)		

													Chemical Fertilizer	
													Cost NIS/ Dounm / season	Quantity added kg Dounm / season	Name of the first chemical fertilizer
													Cost NIS/ Dounm / season	Quantity added kg Dounm / season	Name of the second chemical fertilizer
													Cost NIS/ Dounm / season	Quantity added kg Dounm / season	Name of the third chemical fertilizer
													Cost NIS/ Dounm / season	Quantity added kg Dounm / season	Name of the fourth chemical fertilizer
													Total cost of the Chemical Fertilizer/NIS/ Dounm / season		
													Organic Fertilizer		
													Cost NIS/ Dounm / season	Quantity added m^3 Dounm / season	Name of the first organic fertilizer
													Cost NIS/ Dounm / season	Quantity added m3 Dounm / season	Name of the second organic fertilizer
													Cost NIS/ Dounm / season	Quantity added m3 Dounm / season	Name of the third organic fertilizer
													Total cost of the organic fertilizer/NIS/ Dounm / season		
													Total cost of the fertilizing (organic + chemical fertilizer /NIS/ Dounm / season		
													Marketing type : Locally ( ) , Exported ( )		

										Price average (Kg ,Ton, flower ,Head)	Quantity of product locally marketed (Kg ,Ton, flower ,Head)
										Price average (Kg ,Ton, flower ,Head**)**	Quantity of exported product (Kg ,Ton, flower ,Head)
										Price average (Kg ,Ton, flower ,Head**)**	Quantity of home consumption(Kg ,Ton, flower ,Head)
										Total cost of transportation	
										Total cost of export (cartoon ,bags, and inspection)	
										Other costs (Plowing and Leveling)	
										Total cost of transportation for product locally marketed NIS /Dounm / season	
										Total cost of transportation for exported product NIS /Dounm / season	
										Total cost NIS /Dounm / season	
										Other cost NIS /Dounm / season	

4. Attitudes and practices and the possibility of cultivation of strawberries؟

4.1 Do you support the cultivation of strawberries? Yes ( ) No ( )
If the answer is no what are the reasons

Rising costs of production inputs	( )	Difficulty to exportation	( )
Lack of public demand for consumption	( )	Lack of experience and knowledge	( )
Lack of agricultural areas	( )	Labour intensive	( )
others	( )	Degradation of water quality	( )
		Lower domestic prices	( )

4.2 From the point of you which of the inputs are more expensive for strawberry? (Sort of most to the less expensive).

Labour	( )	Water	( )
Seedlings	( )	Fertilizer	( )
Plastic sheet	( )	Pesticide	( )
Sterilize pesticide	( )		( )
		Transport and marketing costs	
Land rent	( )	Irrigation system	( )

4.3 What is the role of cooperative societies in the export process? (You can choose more than one answer).

Intermediary for marketing external	( )	Technical and provide guidance	( )
others	( )	Organizing training courses	( )
		Provide assistance of inputs	( )

What are the percentage they take? And how?
.....
.....

4.4 If you're growing strawberries, what is the impact you expect to be raised on your farm?
1- Improve farm income, 2- Development of production capacity, 3- Investment in farm work, 4-others.....

4.5 How do you evaluate your experience in strawberries cultivation؟
(1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

4.6 How do you evaluate your cost of production?
(1) V. Low (2) low (3) Medium (4) High (5) V. High

4.7 How do you evaluate the domestic price of Strawberry?
(5) (1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

4.8 How do you evaluate the global marketing prices of Strawberry?
(1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

4.9 How do you evaluate your total revenue of strawberry cultivation?
(1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

4.10 Did you market your production of strawberries? ( ) Yes ( ) No If yes, How?
Locally: Q..... P.....
Globally : Q..... P .....

4.11 How do you describe the prices and the possibility of strawberry marketing locally or globally?
Possibility of marketing locally (1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good
local price (1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

Possibility of marketing globally (1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good
Global price (1) V. Bad (2) Bad (3) Medium (4) Good (5) V. Good

4.12 Do you encourage other farmers to grow strawberry? Yes ( ); ( ) No If the answer is yes,
At which level you agreed.....

4.13 What kind of support you need to continue cultivating your farm with strawberry؟

Opening the crossings and end the siege	( )	Availability of the Agriculture inputs in the local market	( )
Export and global marketing	( )	Provide technical support and Agricultural Extension	( )
Organizing the local market	( )	Financial aid for production requirements	( )

4.14 How much do you save from the strawberry cultivation? ……. **NIS**

4.15 If the crossing are closed! What are the quantities of your production you can market locally؟ …… Kg.

4.16 How much you will loss in case of no exporting?
Quantity Losses ..... kg **Financial losses** ..... NIS

4.17 From the point of view who must do the following tasks :(please specify if possible)

- Provide technical support and guidance.....
- Provide financial assistance .....
- Provision of marketing guarantees.....
- Monitoring of production and market .....
- Open new markets.....

5. Problems and objectives (problems 5 years ago at farm)

5.1 What are the biggest problems you face on your farm during the past five years?

Exportation	( )	Local marketing and lower domestic prices	( )
Low production quality	( )	Low prices locally and globally	( )
High production costs	( )	Lack of technical support and guidance	( )
others	( )	Lack of capital	( )

5.1. What are the causes of these problems؟

lack of consumer awareness	( )	Closures and siege	( )
lack of investors	( )	lack of support and technical services provided by the cooperative societies	( )
Low quality of inputs	( )	Lack of cooperative experience in the global market	( )
Increased the costs of production inputs	( )	Absence of Palestinian delegates at the global market	( )
		Lack of support and technical services provided by the Ministry of Agriculture	( )

5.1.2 What you do to solve these problems?

Opened new channels at the local market	( )	You seek help, to the expertise of farmers older than me	( )
others	( )	Reduced the use of pesticides to reduce production costs	( )

5.2 Future problems (after 5 years at farm) what are the main problems that you expect to face in the future؟

Marketing	( )	Technical, inexperience and lack of information	( )
lack of agricultural extension	( )	Lack of capital to cover the production costs	( )
The deterioration of water quality and increased salinity	( )	Lack of experience in the management of agricultural operations.	( )

What you do to solve these problems?

To improve harvesting and packaging production	( )	Improve quality and increase productivity	( )
Find sources of funding or aid	( )	Search for new markets	( )
Improve production management	( )	Find new varieties suited to local climatic	( )

8. Are you willing to continue growing strawberries؟ Yes ( ) No( )

If yes, what are the reasons؟

There is no other alternative job opportunity. ( )
Of expertise available for crop production and marketing. ( )
A source of income for the family( )
Others ( )

If the answer is no, what are the reasons؟

Became not cover production costs. ( )
I have other income resources. ( )
Has incurred significant losses over the past years.
Lack of capital( )
Others ( )

زراعة الفراولة وأثرها على القطاع الزراعي الفلسطيني "دراسة تطبيقية لمزارع الفراولة في قطاع غزة"
كلية التجارة /قسم التنمية الاقتصادية
الجامعة الإسلامية -غزة
الباحث محمد الشطلي
2012 -2013

الباحث طالب بقسم التنمية الاقتصادية بكلية التجارة بالجامعة الاسلامية بغزة، ويجري هذا البحث كمتطلب لنيل درجة الماجستير .الهدف من هذا البحث هو وصف نظام زراعة التوت الأرضي (الفراولة) على المستوى الكلي والمستوى الجزئي والتحقيق في تأثيرها على معيشة الأسر الزراعية وتوفر الموارد المائية على المستوى الكلي، وتسهل على واضعي الخطط الاستراتيجية برؤية واضحة لوضع استراتيجية وطنية لزراعة المحاصيل والتي تأخذ بعين الاعتبار المستويين الكلي والجزئي.

سوف يتم استخدام إجابتك لأغراض البحث وسيتم التعامل معها بسرية تامة.

التعريف بالأسرة

المحافظة / القرية: ...../ .....

تاريخ المقابلة (الشهر / اليوم / السنة) : ...../ ...../ .....

الرقم المتسلسل للأسرة :..... الرجاء كتابة الرمز على كل ورقة

اسم رب الأسرة: .....

اسم معطي البيانات: .....

اسم المقابل:..... .

1. أفراد الأسرة

البند	العدد	عدد الذكور	عدد الإناث

إجمالي عدد أفراد الأسرة

عدد الأطفال ما دون العاشرة

عدد الأطفال من 10 إلى 15 سنة

عدد أفراد الأسرة البالغين ما فوق 15 سنة

عدد أفراد الأسرة البالغين العاملين خارج المزرعة

عدد أفراد الأسرة البالغين العاملين داخل المزرعة

عدد الأطفال المسجلين في المدارس

عدد أفراد الأسرة الحاصلين على الثانوية العامة فما دون ذلك.

عدد أفراد الأسرة خريجي التعليم العالي

2.1 دخل الأسرة من الأنشطة غير الزراعية (المشاريع الخاصة/الأعمال):

كم عدد أفراد الأسرة الذين يعملون في المشاريع الخاصة(خارج المزرعة)؟

- الدخل من المشاريع خارج المزرعة (شيكل/سنويا)
- نوع المشروع: 1- زراعي 2- حرفي 3- تجاري 4- خدمات 5-أخرى.....

3.1 دخل من مؤسسات حكومية أو غير حكومية

- هل تتلقى أي مساعدات من مؤسسات حكومية أو غير حكومية ؟ نعم , ( )لا ( )
- ما هي المؤسسات التي تلقيت منها مساعدات خلال السنة الماضية ؟ رجاء حدد اسم المؤسسة والمبلغ (شيكل/سنويا)؟

1-……..……..…… 4- ……..……..……

2-……..……..…… 5- ……..……..……

3 - ..... 6-……..……..……

2. الأسرة:

11. ميزانية المنزل الشهرية شيكل
12. طعام شهري شيكل
13. مياه للاستخدام المنزلي شهرياً شيكل
14. الإيجار الشهري للمنزل شيكل
15. تعليم سنوياً شيكل
16. رعاية صحية شهرياً شيكل
17. كهرباء شهرياً شيكل
18. المواصلات شهرياً شيكل
19. ما المبلغ الذي تنفقه على الملابس لكل أفراد الأسرة خلال عام شيكل
20. وقود (طاقة ، غاز ، سولار، والخ) شهريا شيكل

2.2 المعدات المنزلية السلع المعمرة:

المعدات	العدد	القيمة بسعر السوق الحالي	المعدات	العدد	القيمة بسعر السوق الحالي
سيارة			موقد غاز للطهي		
دراجة نارية			ثلاجة		
دراجة هوائية			مروحة		
مركبات أخرى			كمبيوتر		
راديو			دش وريسيفر		
تلفزيون					

3. **قياس أداء وربحية الأنشطة الزراعية :**
للموسم الزراعي من ..... الي.....

3.1 كيف تقيم وضعك:

- **ربح** ( ) $ 500-2000 :، ( ) $2001- 4000، -4001$ ما فوق ( )
- **خسارة** ( ) $ 500-2000 :، ( ) $2001 -4000، -4001$ ما فوق ( )

المؤشر	المحصول الأول:	المحصول الثاني:	المحصول الثالث:	المحصول الرابع:	المحصول الخامس:
نوع حيازة الأرض ملك ( )ايجار( ) أرض حكومية ( )					
المساحة المزروعة / دونم					
نوع الأنتاج حقل مفتوح -أنفاق مغطاة منخفضة -أنفاق مغطاة عالية					
نظام المزرعة : جلوبل جاب - تقليدي -ادارة مزرعة متكاملة IFM					
نوع زراعة الفراولة تحميل ( ) تكميل( ) أساسي ( )					
عدد المحاصيل الأخرى مع الفراولة					
موعد زراعة العروة الأولى					
موعد انتهاء العروة الأولى					
مصدر المياه داخل المزرعة ( ) خارج المزرعة( )					
نوعية المياه : حلوة او مالحة / درجة الملوحةEC / رقم البئر					
نوع شبكة الري :التنقيط ( ) الرشاشات( )					
توفر عداد مياه ( ) نعم ( ) لا					
حساب زمن الري / شهر ( ) نعم ( ) لا					
كيف تقدر حاجة النبات للري :جس التربة- حالة نمو النباتات					
نسبة المضاف بالرشاشات من الكمية المضافة لكل دونم(للعروة الواحدة)					
متوسط عدد الريات/ الأسبوع / متوسط زمن الرية الواحدة					
قوة المضخة م/^{3}ساعة					
تكلفة المتر المكعب من مياه الري/شيكل					
تكلفة الري /شيكل /دونم للعروة الواحدة					
إجمالي تكلفة الري / شيكل /دونم لجميع العروات					
كم يوم عمل تحتاج خلال الموسم (عدد أيام العمل خلال الاسبوع)					
كمية الأشتال / تكلفتها الأجمالية					

تعقيم التربة: كيماوي،شمسي،حراري	بعد كم يوم تبدأ بالزراعة؟						
اسم المبيد المعقم للتربة	تركيزه	عدد مرات الاضافة					
كمية المبيد المعقم للتربة/دونم للعروة	اجمالي تكلفة تعقيم التربة/ دونم للعروة						
مبيدات مكافحة الآفات الآخرى للمحصول							
اسم المبيد وكميته / دونم للعروة الواحدة	تركيزه	تكراره					
اسم المبيد وكميته / دونم للعروة الواحدة	تركيزه	تكراره					
اسم المبيد وكميته / دونم للعروة الواحدة	تركيزه	تكراره					
اسم المبيد وكميته / دونم للعروة الواحدة	تركيزه	تكراره					
اسم المبيد وكميته / دونم للعروة الواحدة	تركيزه	تكراره					
التكلفة الكلية لمبيدات مكافحة الآفات الآخرى							
إجمالي تكلفة الوقاية من الآفات شيكل/دونم للعروة(تعقيم تربة-مكافحةالآفات)							
السماد الكيميائي							
اسم السماد الكيميائي الأول	الكمية المضافة كجم /دونم للعروة	التكاليف شيكل /دونم للعروة					
اسم السماد الكيميائي الثاني	الكمية المضافة كجم /دونم للعروة	التكاليف شيكل /دونم للعروة					
اسم السماد الكيميائي الثالث	الكمية المضافة كجم /دونم للعروة	التكاليف شيكل /دونم للعروة					
اسم السماد الكيميائي الرابع	الكمية المضافة كجم /دونم للعروة	التكاليف شيكل /دونم للعروة					

اجمالي تكاليف السماد الكيميائي NIS/ دونم للعروة الواحدة							
السماد العضوي							
اسم السماد العضوي الأول	الكمية المضافة م ^{3} / دونم للعروة	التكاليف شيكل /دونم للعروة					
اسم السماد العضوي الثاني	الكمية المضافة م ^{3} / دونم للعروة	التكاليف شيكل /دونم للعروة					
اسم السماد العضوي الثالث	الكمية المضافة م ^{3} / دونم للعروة	التكاليف شيكل /دونم للعروة					
إجمالي تكلفة السماد العضوي شيكل /دونم للعروة							
إجمالي التكلفة الكلية للتسميد / عضوي+ معدني شيكل/دونم للعروة							
نظام التسويق محلي ( )، تصدير ( )							
كمية الأنتاج المسوق محلياً(كجم-طن-زهرة-رأس)	متوسط سعر الوحدة(كجم-طن-زهرة-رأس)						
كمية الانتاج المصدر(كجم-طن-زهرة-رأس)	متوسط سعر الوحدة(كجم-طن-زهرة-رأس)						
كمية الاستهلاك المنزلي(كجم-طن-زهرة-رأس	متوسط سعر الوحدة(كجم-طن-زهرة-رأس)						
تكاليف النقل الاجمالية							
تكاليف التصدير الاجمالية(عبوات، كوموسيون)							
تكاليف أخرى (حراثة وتسوية)							
اجمالي تكاليف نقل المحصول للتسويق المحلي شيكل /دونم للعروة							
اجمالي تكاليف نقل المحصول للتصدير شيكل /دونم للعروة							
إجمالي التكلفة الكلية شيكل /دونم للعروة							
تكاليف أخري شيكل /دونم للعروة الواحدة							

4. المواقف والممارسات وإمكانية زراعة التوت الأرضي؟

4.1 هل انت تؤيد زراعة التوت الأرضي ؟ نعم ( )لا ( )

اذا كانت الإجابة بلا ما هي الأسباب

( )	صعوبة التصدير	( )	ارتفاع تكاليف مدخلات الانتاج
( )	قلة الخبرة والمعرفة	( )	عدم إقبال المواطنين على استهلاكه.
( )	حاجته لأيدي عاملة.	( )	قلة المساحات الزراعية
( )	تدهور نوعية المياه	( )	أسباب أخرى
( )	إنخفاض الأسعار المحلية		

4.2 من وجهة نظرتك اي من مدخلات الأنتاج أكثر تكلفة لزراعة التوت الأرضي ؟

( )	المياه	( )	العمالة
( )	الأسمدة	( )	الأشتال
( )	المبيدات	( )	البلاستيك
( )	تكاليف النقل والتسويق	( )	مواد التعقيم
( )	نظام الري	( )	أجرة الأرض

4.3 ماهو دور الجمعيات التعاونية في عملية التصدير ؟(يمكن اختيار اكثر من اجابة)

( )	فني وتقديم الارشاد	( )	وسيط للتسويق والتصدير الخارجي
( )	تنظيم دورات تدريبية	( )	أخرى
( )	تقديم مساعدات من مدخلات الانتاج		

وماهي النسبة التي تأخذها ؟ وكيف؟

.....

.....

4.4 إذا كنت سوف تزرع التوت الأرضي ، ماذا تتوقع أن تكون آثارها على مزرعتك؟

(1) تحسين دخل المزرعة (2) تطوير امكانيات الأنتاج (3)استثمار في العمل المزرعي (4)أخرى.....

4.5كيف تقيم تجربتك في زراعة التوت الأرضي ؟

(5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

4.6 كيف تقيم تكلفة الأنتاج الخاصة بك ؟

(5)عالية جدا (4) عالية (3)متوسطة ((2منخفضة (1)منخفضة جداً

4.7 كيف تقيم أسعار التسويق المحلي؟

(5) جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

4.8 كيف تقيم أسعار التسويق العالمي؟

(5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

4.9 كيف تقيم العائد من زراعة التوت الأرضي؟

(5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

4.10 هل قمت بتسويق انتاجك من التوت الأرضي ؟ نعم **( ) لا ( ) اذا كانت الاجابة بنعم، كيف تسوق هذه المنتجات**

السوق :كمية .....سعر .....

السوق العالمي :كمية ..... سعر .....

4.11 كيف تصف أسعار وإمكانية تسويق التوت الأرضي محليا أو عالمياً؟

امكانية التسويق محلياً (5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

الأسعار محلياً (5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية
امكانية التسويق عالمياً (5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية
لأسعار عالمياً (5)جيدة جدا (4) جيدة (3)متوسطة (2) سيئة (1)سيئة للغاية

4.12 هل يمكن أن تشجع مزارعين آخرين لزراعة التوت الأرضي ؟ نعم ( )؛ لا ( )
اذا كانت الاجابة بنعم
إلى أي مستوى توافق .....

4.13 ماهو نوع الدعم الذي تحتاجه للاستمرار في زراعة التوت الأرضي بالمزارع الخاصة بك؟

( ) توفير مستلزمات ومدخلات الانتاج في السوق المحلي
( ) توفير الدعم الفني والارشاد الزراعي
( ) مساعدات مادية من مستلزمات الانتاج
( ) فتح المعابر و إنهاء الحصار
( ) التصدير والتسويق العالمي
( ) تنظيم السوق المحلي

4.14 كم يمكنك أن تدخر من خلال زراعة التوت الأرضي ؟ مبلغ :..... شيكل

4.15 في حالة تم إغلاق المعابر التجارية ما هي كمية الإنتاج التي تستطيع تسويقها محلياً؟ .....كجم ؟

4.16 كم تقدر خسارتك في حالة عدم امكانية التصدير ؟

الخسارة الكمية ..... كجم **الخسارة المالية** .....شيكل

4.17 **من وجهة نظرك من يجب أن يقوم بالمهام التالية (الرجاء التحديد ما أمكن)**

- توفير الدعم الفني والارشاد.....
- توفير الدعم المادي .....
- توفير ضمانات التسويق.....
- رقابة انتاج و تسويق ....
- فتح أسواق جديدة .....

.5 المشاكل و الأهداف مشاكل قديمة (قبل5 سنوات في المزرعة)
5.1ماذا كانت أكبر مشاكلك في المزرعة خلال الخمس سنوات الماضية؟

( ) التسويق المحلي وانخفاض الاسعار المحلية
( ) انخفاض الاسعار محلياً وعالمياً
( ) عدم توفر دعم فني وارشادي
( ) قلة رأس المال
( ) التصدير
( ) قلة جودة الانتاج.
( ) ارتفاع تكاليف الانتاج.
( ) أخرى

5.1.1 باعتقادك ما هي أسباب هذه المشاكل ؟

( ) إغلاق المعابر والحصار
( ) قلة الدعم والخدمات الفنية المقدمة من الجمعيات التعاونية
( ) قلة خبرة الجمعيات بالسوق العالمي
( ) عدم وجود مندوبين لنا بالسوق العالم
( ) قلة الدعم والخدمات الفنية المقدمة من وزارة الزراعة
( ) سوء ادراة الجمعيات
( ) قلة وعي المستهلك
( ) قلة المستثمرين
( ) ردءاة مدخلات الانتاج
( ) زيادة تكاليف مدخلات الانتاج

5.1.2 ماذا فعلت للتغلب على هذه المشاكل؟

( ) استعنت بخبرات مزارعين أكبر مني سناً
( ) قللت استخدام المبيدات لتخفيض تكاليف الانتاج
( ) قدمت شكوي للجهات الرسمية
( ) فتحت لي ابواب جديدة بالسوق المحلي
( ) أخرى

5.2 مشاكل مستقبلية (بعد 5 سنوات في المزرعة) ما المشاكل الرئيسية التي تتوقع مواجهتها في المستقبل؟

( ) فنية ، قلة الخبرة وقلة المعلومات
( ) عدم توفر راس المال لتغطية تكاليف الانتاج
( ) قلة الخبرة في ادارة العمليات الزراعية
( ) التسويق
( ) قلة الارشاد الزراعي
( ) تدهور نوعية المياه وزيادة الملوحة

ماذا يمكنك أن تفعل لتجنب هذه المشاكل؟

( ) تحسين الجودة وزيادة الانتاج
( ) البحث عن أسواق جديدة
( ) البحث عن أصناف جديدة ملائمة لظروفنا المناخية المحلية
( ) تحسين حصاد وتعبئة الانتاج
( ) البحث عن مصادر تمويل أو مساعدات
( ) تحسين إدارة الانتاج

.7هل لديك الرغبة بالاستمرار بزراعة التوت الأرضي ؟

نعم ( ) لا ( )

اذا كانت الاجابة بنعم ,ما هي الأسباب ؟

( ) عدم وجود فرص عمل أخرى بديلة .
( ) الخبرة المتوفرة لإنتاج المحصول وتسويقه.
( ) مصدر دخل للأسرة.
( ) أخرى

اذا كانت الاجابة بلا,ما هي الأسباب ؟

( )أصبح لا يغطي تكاليف الانتاج.
( ) لدي مصادر أخرى من الدخل.
( ) تكبدت خسائر كبيرة خلال السنوات الماضية.
( ) قلة رأس المال.
( ) أخرى.