



Palestine Economic Policy Research Institute

**The Economics of Agriculture in the Qalqilya
and Tulkarem Districts:
Improving the Profitability of Farmers Affected
by the Separation Wall**



This research is co-funded by the
European Union



A project implemented by Gruppo di
Volontariato Civile (GVC) – Italy

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Contents

1. Introduction	10
1.2 Objectives of the Study	10
1.3 Research Methodology	11
2. Overview of Qalqilya and Tulkarem	14
2.1 Region Covered by the Study	14
2.1.1 <i>Totally Isolated Ghettos (Between the Wall and the Green Line)</i>	15
2.1.2 <i>Partially or Completely Encircled Ghettos (East of the Wall)</i>	15
2.1.3 <i>Population Clusters Losing Land but not Trapped by the Wall</i>	16
2.1.4 <i>Jewish Settlement Blocs in Tulkarem and Qalqilya</i>	16
2.2 Socio-Economic Profile of Residents of Tulkarem and Qalqilya	16
2.2.1 <i>Demographics</i>	17
2.2.2 <i>Education</i>	17
2.2.3 <i>Labour Force Participation</i>	17
2.2.4 <i>Poverty Levels</i>	18
2.2.5 <i>Economic Establishments</i>	18
2.2.6 <i>Water and Sanitation</i>	19
2.2.7 <i>Environmental Pollution</i>	19
2.2.8 <i>Housing and Residence</i>	20
2.2.9 <i>Electricity</i>	20
2.2.10 <i>Roads</i>	21
3. Agriculture in Tulkarem and Qalqilya	22
3.1 Overview	22
3.2 Agriculture in the Tulkarem District	23
3.3 Agriculture in the Qalqilya District	25
4. Farmers Survey	28
4.1 Description of the Sample	28
4.2 Land Area Affected by the Wall	29
4.3 The Impact of the Wall on Water Resources	30
4.4 Agricultural Crops	31
4.4.1 <i>Tulkarem District</i>	31
4.4.2 <i>Qalqilya District</i>	32
4.5 Difficulties Confronted by Farmers	32
4.6 Procedures to Alleviate Negative Impacts of the Wall	33
4.7 Changes in Prices of Agricultural Products Due to the Wall	36
5. Grocers and Merchants Survey	38
5.1 Description of the Sample	38
5.2 Product Sources	38

5.3 Prices of Agricultural Products	40
5.4 Markets for Agricultural Products	42
5.5 Difficulties Encountered by Grocers	43
6. Consumer Survey	46
6.1 Description of the Sample	46
6.2 Expenditure Patterns	46
6.3 Food Security	47
6.4 Impact on Consumers	49
6.5 Ways of Coping with Problems Imposed by the Wall	50
7. Summary of Main Findings and Recommendations	52
7.1 Farmers Survey	52
7.2 Grocers and Merchants Survey	53
7.3 Consumer Survey	54
References	58
Statistical Annexe	62
An Instruction Leaflet for Farmers Affected by the Separation Wall	94
Maps	89

List of Tables

Table 1:	Area, Output and Value of Agricultural Products in Tulkarem District	15
Table 2:	Area, Output and Value of Agricultural products in Qalqilya District	16
Table 3:	Land Lost by Communities in Qalqilya as a result of the wall	17
Table 4:	Percentage Contribution of Agriculture-based Income in Tulkarem and Qalqilya Districts and the Impact of the Wall on it	20
Table 5:	Agricultural Crops in Tulkarem	22
Table 6:	Agricultural Crops in Qalqilya	23
Table 7A:	Popularity of Possible Solutions to Alleviate the Wall's Negative Effects in Tulkarem District	25
Table 7B:	Popularity of Possible Solutions to Alleviate the Wall's Negative Effects in Qalqilya District	26
Table 8:	Change in Prices of Agricultural Products in Tulkarem and Qalqilya After the Wall	27
Table 9:	Difficulties Affecting the Trade of Agricultural Products <i>Before</i> the Wall (Rated from 1-5; 1 signifies most influential)	35
Table 10:	Difficulties Affecting the Trade of Agricultural Products <i>After</i> the Wall (Rated from 1-5; 1 signifies most influential)	36

1. Introduction

In May 2002 the Israeli government took the unilateral decision to construct a Separation Wall in order to prevent Palestinians from entering Israel, allegedly for security reasons. However, plenty of evidence exists which reveals that security was only a pretext, and that the concealed motive was to expropriate as much land as possible from the West Bank, occupied by Israel in 1967 (PENGON, 2002). From an economic perspective, the Wall could have been built at a quarter of its current cost if it were constructed along the Green Line which extends for about 200 km. Instead, the wall has taken a looping path inside the Palestinian Territories in order to avoid Palestinian population clusters and to include the largest possible number of settlement blocs, regardless of their proximity to the Green Line. As a result, the route of the Wall is expected to exceed 778 km (B'Tselem, 2005).

The Separation Wall has inflicted great damage on numerous aspects of Palestinian economic and social life. Accounting for and recording such damages is a daunting task due to their immense long-term consequences, which exceed the obvious immediate hardships caused by separating families and depriving them of their land. However, the agricultural sector has so far borne the brunt of devastation, with the Wall devouring some of the most fertile land in the West Bank.¹

1.2 Objectives of the Study

This study was commissioned by GVC – *Gruppo di Volontariato Civile* and carried out by the Palestine Economic Policy Research Institute (MAS) as part of an EC-funded project aimed at improving the economic and social conditions of Palestinian rural villages in the Tulkarem and Qalqilya districts by increasing agricultural productivity and profitability and enhancing food security. The study aims to examine the impact of closures and the Israeli Separation Wall on agricultural production in the two districts, analysing supply and demand factors in order to find ways to increase the profitability of farming.

The study stands apart from previous studies on the subject for three

¹ For more details on economic and social damages see (Grassroots International, 2003; OCHA, 2003).

reasons. First, it focuses on the Qalqilya and Tulkarem districts, a region which plays a pivotal role in the food security of Palestine due to its fertile soil and abundance of groundwater. Second, the study does not limit its analysis to simply showing the Wall's negative impact on production, but goes beyond that to examine its impact on food security, markets and consumption. Third, it aims to improve food security by helping farmers to cope with the Wall's negative effects by recommending ways for producers to maximise their productive capabilities and profitability, in addition to providing practical suggestions for governmental and NGO development interventions.

1.3 Research Methodology

A variety of research methods and tools were utilised to collect and analyse data. The research team reviewed available literature and secondary data, collected quantitative and qualitative information from farmers, consumers and grocers, held focus group discussions and conducted interviews with key experts and stakeholders in relevant areas. Following is a summary of the implemented research activities:

1. As part of the project planning process, three focus group discussions were conducted, in Jayyous, Kufr Thelth and Baqa Al-Sharqiya, to pinpoint and assess the research problem. The focus groups had 8-10 participants each and included representatives of municipalities, civil society institutions such as cooperatives and farmers' unions, major farmers in the region as well as other key stakeholders in the agricultural sector. The discussions focussed on major obstacles facing the agricultural sector and possible ways of dealing with the situation, including activities already organised by supporting institutions. Based on these discussions, the work-plan and a detailed methodology were designed.
2. The research team conducted a literature review and secondary data collection of qualitative and quantitative information concerning the effects of the Wall and closures on agricultural production, marketing and consumption. Sources of secondary data included the Palestinian Bureau of Statistics, PENGON, B'Tselem, the Applied Research Institute-Jerusalem and various PNA Ministries.
3. Three questionnaires were designed to survey a representative sample of farmers, consumers and distributors/intermediaries in the Tulkarem and Qalqilya districts. After receiving appropriate training, field

workers successfully conducted the field survey which resulted in 450 completed questionnaires; filled out by 200 farmers, 200 consumers and 50 grocers and agricultural merchants.

4. The questionnaires were filled out during face-to-face interviews with all respondents, as opposed to distributing the questionnaires and collecting them once completed. This method guaranteed the respondents' understanding of the questions and encouraged them to provide all requested information. The average time of an interview required to fill out one questionnaire was 40 minutes.
5. The research team also conducted in-depth interviews with key experts and stakeholders in the targeted areas, such as mayors, heads of agricultural cooperatives and representatives of the Chambers of Commerce. Among the interviewees were:
 - The mayors of Baqa Al-Sharqiya, Jayyous, Kufr Thelth and Qalqilya.
 - Experts in the Chambers of Commerce of Tulkarem and Qalqilya.
 - Key farmers from the targeted villages.
 - Officials from the Ministry of Agriculture's representative office in Tulkarem and Qalqilya.
6. The researchers used SPSS statistical software to process and analyse the results of the three questionnaires and the interviews. In addition to presenting the outcome of the survey, the data analysis also resulted in an overview of the economic conditions and a profile of the agricultural sector in the Tulkarem and Qalqilya districts.
7. The initial results of the study were presented and discussed in two focus groups, in Jayyous and in Kufr Thelth, with the same participants as in point 1 above.
8. Additional interviews were conducted with traders of agricultural support and complementary products (seeds, agro-machines and other equipment). Two meetings were also conducted with agricultural nurseries that produce saplings for farmers. One is located in Qalqilya (Mashtal al-Saba') and the other in Tulkarem (Nurseries of the Agricultural Cooperative Association).

The outcome of the research study is presented in this report and is available in both English and Arabic. The report consists of seven chapters, including this introductory section. Chapter 2 looks at the socio-

economic situation of residents in the Tulkarem and Qalqilya districts and highlights the effects of the Israeli Separation Wall on them. Chapter 3 provides a profile of the agricultural sector in Tulkarem and Qalqilya districts and the damage the Wall has caused it. Chapter 4 discusses the findings of the farmer survey, analysing the patterns of production and how they have changed as a result of the Wall. The findings of the grocers and merchants survey are examined in Chapter 5, looking in particular at strategies used to cope with the effects of the Wall. Chapter 6 reviews the findings of the consumer survey. Finally, Chapter 7 summarises the main findings of the data analysis and introduces a set of policy-oriented recommendations aimed to assist farmers, consumers, grocers, public policy-making institutions and other supporting organisations in improving production strategies and profitability and in finding ways of dealing with the effects of the Wall.

2. Overview of Qalqilya and Tulkarem

2.1 Region Covered by the Study

The impact of the wall affects the entire occupied territories, but varies from governorate to governorate and from town to town in terms of the size and nature of the damage. The negative side effects have not been restricted to a particular facet of life; they have damaged education, health services, labour markets, social safety nets, economic activities, the environment and family and social ties (FAO, 2004). Qalqilya and Tulkarem are amongst the governorates most afflicted by the wall, owing to their proximity to Israeli cities and large settlement blocs and the fact that the agricultural sector represents one of the main sources of income and employment for their residents.

Historically, Tulkarem represented the centre of the governorate which was later partitioned, upon the arrival of the PNA, into the governorates of Tulkarem and Qalqilya. These two cities are located on the western hills of Palestine in a north-south axis. These governorates represent a matter of concern for the Israeli authorities owing to their proximity to main Israeli cities in the middle region. Indeed, in many areas the distance between the Green Line and the Mediterranean coast does not exceed 15 km. In addition to that, Israeli control of this region means its absolute control over the largest water reserve in the West Bank.

The total populations of Tulkarem and Qalqilya are estimated at 167.9 thousand and 94.2 thousand respectively. This represents approximately 11% of the population of the West Bank (PCBS, 2005m). The governorate of Tulkarem is comprised of 39 towns and villages scattered over an area of 246 km², while Qalqilya is comprised of 35 small towns and villages occupying an area of 166 km² (PCBS, 2003c). The total area of permanently farmed agricultural land corresponds to 134 km² in Tulkarem governorate and 61.1 km² in Qalqilya. This means there are about 800 m² of agricultural land per person in Tulkarem and 600 m² per person in Qalqilya, compared to 463 m² per person on average in the West Bank (PCBS, 2002-2003a).

It is possible to view the overwhelming damage caused by the Separation Wall to all aspects of Palestinian life by means of understanding the various types of ghettos created by it.

2.1.1 Totally Isolated Ghettos (Between the Wall and the Green Line)

There are three completely isolated ghettos inhabited by about 7,200 people, representing 2.8% of the population of the two governorates combined. The first ghetto is located to the east of Baqa Al-Sharqya village (inside the Green Line), with a population of about 6,200 inhabitants. The second ghetto consists of Kherbet Ejbarah, located south of Tulkarem (300 inhabitants). The third ghetto lies near Alfe Menashe settlement, south east of Qalqilya (700 inhabitants). It is worth mentioning here that Israel has dismantled a portion of the wall north of Tulkarem that encircled the towns of Dir Elghsoon, Ateel and Zaita. Israel dismantled this portion of the wall and redirected it to run along the Green Line in order to avoid annexing 23 thousand Palestinians living in this region (PCBS, 2004d).

Residents of these ghettos are required to obtain special permits with proofs of residency to allow them access in and out of this region via designated gates and at specified times. Many residents, now separated by the wall, have to commute tens of miles to reach their land which had previously been within easy walking distance.

2.1.2 Partially or Completely Encircled Ghettos (East of the Wall)

In general, the purpose of the wall is to annexe the largest possible area of land but include the minimum possible number of Palestinian people. To achieve this the wall meanders deep into the West Bank, isolating land belonging to large population clusters and seizing their water resources. In many cases, the path of the wall is only a few meters away from the outskirts of Palestinian villages such as Jayyous, Baqa Al-Sharqiya, Qafin, and tens of other similar towns (PENGON, 2004; Vermonters, 2004). Consequently, it has paved the way to the creation of four partially or completely encircled ghettos inhabited by 120 thousand people, approximately 48% of total inhabitants in the two governorates (PCBS, 2003i; Miftah, 2002).

The first ghetto is located in the region of Tulkarem. It is populated by 73,900 inhabitants, about 45% of the district's total population. The second ghetto consists mainly of Qalqilya City (38,200 inhabitants). This city has been completely surrounded by the wall on all sides except for a gate positioned on the eastern side of the city and placed under Israeli control. The third ghetto is located south east of Qalqilya City (the region of Alfe Menashe settlement). This canton is populated with 6,800

inhabitants. The fourth ghetto is comprised of 'Azoon Atmah with 1,500 inhabitants. In short, the wall completely or partially traps around 52% of the residents of Qalqilya (PCBS, 2004c).

2.1.3 Population Clusters Losing Land but not Trapped by the Wall

The wall has separated large numbers of people from their land which they are now only able to access by means of Israeli-issued permits. Even if these are issued, many farmers are allowed access to their land only within specific hours in the day. Furthermore, the Israeli authorities often declare certain regions under closure, and in such circumstances the permit automatically becomes null and void. Consequently, the overall levels of profitability and output have been declining. In many cases, the loss of agriculture-based earnings means a total loss of total income for a family.

There are sixteen small villages and towns partially separated from their land in the governorate of Tulkarem, inhabited by 38 thousand people. Qalqilya has 10 small villages and towns partially separated from their land with a population of 14 thousand.

The total area of land that falls on the western side of the wall is over 900 km², about 16% of the area of land in the West Bank (Palestinian Grassroots, 2005). The total area of the towns and villages to the east of the wall which are partially or completely encircled reached 160 km². This increases the ratio of total land devoured by the wall to 18.7% of the area of the West Bank (B'tselem, 2004d).

2.1.4 Jewish Settlement Blocs in Tulkarem and Qalqilya

Most Jewish settlements in the area are located on the western hills of Palestine in a south-north direction, adjacent to major Israeli cities and the Green Line. There are 15 Jewish settlements built on the land of Tulkarem and Qalqilya, 3 located in Tulkarem and 12 in Qalqilya. About 40 thousand settlers reside in these colonies, representing 18% of the number of settlers in the West Bank (excluding Jerusalem) (Foundation for Middle East Peace, 2005). The scattering of such settlements in large concentrations over vast areas of Palestinian land hampers the civic and economic life of residents of Palestinian towns and villages due to land confiscation in favour of settlements, their specially-constructed road network, and environmental pollution.

2.2 Socio-Economic Profile of Residents of Tulkarem and Qalqilya

In this section we highlight the major socio-economic indicators for the region, comparing them to the whole West Bank whenever data permits. The social and economic characteristics of any society illustrate its ability to cope and adjust in the face of challenges. They also point to the community's ability to make decisions regarding location of residence and the kinds of activities that could be practiced to maximise benefits or minimise pain and suffering.

2.2.1 Demographics

The population of Tulkarem and Qalqilya was estimated at around 262.1 thousand in 2005, 64% in Tulkarem and 36% in Qalqilya. A third of the population dwells in city centres, while the rest reside in villages and towns (PCBS, 2005 and 2004d).

2.2.2 Education

The traditional Palestinian interest in education places them amongst the top of Arab nations for investing in it, despite the hardships and neglect since the 1967 Israeli occupation of Palestinian Territories. The ratio of registered students (5-19 years old) to total population was 75.8% in Tulkarem and Qalqilya combined, compared to 69.2% in the West Bank. Indeed, Qalqilya enjoys the highest ratio of registered students in the Palestinian Territories with 82% (see Table 1 in Annexe).

2.2.3 Labour Force Participation

Labour force participation rates in 2004 for Tulkarem and Qalqilya reached 44.2%, slightly higher than the rate for the whole West Bank (42.5%). However, the data show that the male labour force participation rate, at 67% in Tulkarem and Qalqilya, was below the 68.7% average in the West Bank. Conversely, female labour force participation rate corresponded to 20.7% in Tulkarem and Qalqilya compared to 15.9% in the West Bank.

Employment rates in Tulkarem and Qalqilya combined reached 66.8% in 2004, below the West Bank's level (68.8%) for the same year. Again there is disparity between the sexes, with male employment only 62.7% compared to 66.1% for the whole West Bank but female employment (80.3%) nearly the same as the average (80.8%). This difference could be attributed to the higher rates of under-employment for both sexes in Tulkarem and Qalqilya. The rate of under-employment for males and females for the two governorates were 10.9% and 13.7%, respectively. The

same ratio was merely 8.3% for males and 9.6% for females in the West Bank. This can be attributed to the agricultural nature which dominates the economies of these two governorates.

Around 47% of those employed in Tulkarem and Qalqilya are paid for their services, compared to 55.1% in the West Bank. About 34% are self employed in the two areas, compared to 28.1% in the West Bank. The proportion of unpaid family members in Tulkarem and Qalqilya is 3.7% higher than that of the West Bank.

The greater part of those employed in Tulkarem and Qalqilya work in the services (34.4%) and agriculture (25.0%) sectors. In the West Bank as a whole, 34.9% work in the service sector and 15.9% work in the agriculture sector. The figures for those employed in the transportation sector in Tulkarem and Qalqilya (4.7%) are lower than the West Bank average (5.4%), and the mining, construction and trade sectors are also under-represented in these governorates compared to the average (see Table 2 in Annexe).

2.2.4 Poverty Levels²

Lately, poverty has become a widespread phenomenon in the Palestinian Territories, and Israeli closures and blockades have aggravated the situation. Data released by the PCBS indicates that 68% of Palestinian families suffered from poverty (income-based calculations) in 2003. Poverty levels were graver in Gaza (77.5%) than in the West Bank (62.6%). Poverty levels calculated by consumption reached 35.5% in the Palestinian Territories. Again, the indicator was highest for Gaza (44.7%), compared to the West Bank (30.9%)³. Poverty is expected to increase in the near future, particularly if the Israeli authorities continue their closure and blockade policies on the Palestinian people and land. Consumption-based data indicated that 45% of families in Tulkarem and 17% of families in Qalqilya suffered from poverty.⁴

2.2.5 Economic Establishments

Palestinian businesses are generally characterised by their relatively small size. In fact, 91% of all establishments employ fewer than five workers

² Poverty is defined in accordance with the official definition of poverty adopted by PCBS in 1997. The definition combines absolute and relative features and is based on a budget of basic needs for a family of 6 persons (2 adults and 4 children).

³ PCBS, Press Release: Survey of Poverty in the Palestinian Territories, preliminary results, 2003.

⁴ PCBS, Survey of Poverty in the Palestinian Territories, Dec. 2003, unpublished data, 2004.

and the percentage which employ over 20 workers does not surpass 1%. There are 5,361 establishments operating in Tulkarem and 3,499 in Qalqilya, representing about 13% of the total number of businesses in the West Bank (see Table 3 in Annexe). This rate is a little over the ratio of residents of Tulkarem and Qalqilya to residents of the West Bank.

2.2.6 Water and Sanitation

The volume of water available to Palestinians annually, for all purposes, is about 250 million cubic meters, approximately 25% of yearly natural recharge (Palestine Monitor, 2005). The average per-capita consumption of water in the Palestinian Territories reaches 83 cubic meters, compared to 333 cubic meters in Israel. The Israeli manipulation and control of water reserves, as well as water pollution by settlers, are considered some of the greatest challenges facing Palestinians.

In Tulkarem and Qalqilya, total water used for agricultural and domestic purposes reached 24,444.7 thousand cubic meters, approximately 15.6% of the total water used in the West Bank. About 66.5% of this total is reserved for agricultural use and the rest is designated for domestic use. Groundwater supplies roughly 7,600 cubic meters of water, approximately 93% of the water used for household purposes, the remainder being covered by the Israeli water company (Mekorot). In the West Bank as a whole, water consumption is estimated at 156,900 thousand cubic meters; 36.2% from groundwater, 38.6% from springs and 25.2% from Israel.

The number of groundwater wells in Tulkarem and Qalqilya totalled 132, approximately 43% of the number of wells in the West Bank. The average daily per-capita consumption of water for domestic purposes in Qalqilya reached 77.2 litres (equivalent to the average in the West Bank) and 115.6 litres in Tulkarem (second only to Jericho, where the average per-capita daily consumption reaches 516.4 litres).

The availability of a public sewerage system in Tulkarem and Qalqilya is limited only to city centres and the Nour Shams and Tulkarem refugee camps. The proportion of people who benefit from sanitary networks is about 30% in Tulkarem and 25% in Qalqilya (see Table 4 in Annexe).

2.2.7 Environmental Pollution

There are three main sources of pollution in the Palestinian Territories. One is caused by the dispersion of small Jewish Settlements on hilltops

that are not connected to the main Israeli sewerage system and lack appropriate wastewater recycling plants. Consequently, the only way to eliminate wastewater is to release it downhill into valleys and streams. Secondly, Israel has selected certain sites within the West Bank to dump solid waste, which often contains toxic and hazardous materials. Thirdly, there is an absence of water treatment plants in industrial zones, which leads to the dumping of up to 70% of industrial wastewater in areas which are not equipped to handle such pollutants (ARIJ, 1996).

Table 5 in the Annexe shows that most population clusters in Tulkarem and Qalqilya suffer from around five types of pollution, and every population cluster suffers from at least one. There are 14 population clusters in Qalqilya and 10 in Tulkarem which suffer from water and plant-based pollution; more in Qalqilya owing to its larger number of settlements. The table also shows that residents of Tulkarem and Qalqilya suffer from foul smells, insects, and epidemic diseases.

2.2.8 Housing and Residence

Until 1997, the area of the West Bank designated for housing purposes was 5.1% of the total land, although in the north of the West Bank it represented 4.1% (PCBS, 1997). After the arrival of the PNA, the area of land designated for housing was then extended to reach 5.4%. This means that the density of population reached 10,811 people per square kilometre (PCBS, 2002-2003a). Buildings comprised 55.1% of Tulkarem and Qalqilya urban areas and 44.9% in rural areas. 71.4% of buildings are used for residency, 10.4% for business and 7.8% are either closed or empty.

Other housing indicators show that the area of licensed buildings represents 6.5% of the total building-licensed area in the West Bank. This rate is lower than the rate of residents of both districts to residents of the remaining West Bank (11%). However, the 87 building permits issued in 2003 represents 11.3% of the number of permits issued in the West Bank. In terms of the building material (external walls) of housing in Tulkarem and Qalqilya, stone-based buildings were fewer in Tulkarem and Qalqilya (20.7%) in comparison to the West Bank (66.5%). In fact, the majority of housing in these two governorates was constructed from cement blocks: 75.9%, compared to 23.6% in the West Bank (see Table 6 in Annexe).

2.2.9 Electricity

The Israel Electric Company (IEC) is the main supplier of power for major population clusters around settlements in Tulkarem (24) and Qalqilya (11).

In other towns, town councils provide electricity for their communities through small power plants which usually operate only during specific hours. The majority of population clusters in Qalqilya (20) rely on town councils to provide them with electric power, compared to 7 population clusters in Tulkarem. Many communities have their own electricity generators or do not have electric power at all. In general, electricity in Tulkarem and Qalqilya suffers from frequent power outages mainly due to the inadequate maintenance schemes and overuse during peak hours.

2.2.10 Roads

The length of main roads (those connected to other governorates) reached 16.9 km in Tulkarem and 24 km in Qalqilya, approximately 8.7% of the length of such roads in the West Bank. The length of regional roads (roads that diverge from or merge into main roads) reached 40.0 km in Tulkarem and 26.2 km in Qalqilya, about 17.2% of the total in the West Bank. Access roads, which connect small towns to major and regional roads, reached 131.7 km in Tulkarem and 71.6 km in Qalqilya. Agricultural roads reached 700.5 km in Tulkarem and 462.9 km in Qalqilya (see Table 8 in Annexe).

3. Agriculture in Tulkarem and Qalqilya

3.1 Overview

The districts of Tulkarem and Qalqilya are located within the semi-coastal area of the West Bank. This province is characterised by high annual rainfall levels (600 ml) and an abundance of water resources. Hence, the cultivation of irrigated vegetables, citrus, field crops and rain-fed olive farms dominate its landscape.

The cultivated land area in the Palestinian Territories reached 1,815 thousand dunums during the year 2002/2003, 90.9% of it in the West Bank and 9.1% in the Gaza Strip. Statistical data indicates that 63.8% of agricultural land was cultivated with fruit trees, whereas field crops and vegetables represented 26.6% and 9.6% respectively.

Agricultural paradigms prevalent in the territories are similar regardless of climate differences among ecological regions. The following are the most common forms of irrigated agriculture:

First, open area irrigated vegetables: this is among the most common agricultural practices in the Palestinian Territories. Open area vegetables represent 71.1% of irrigated land in the West Bank. Tomatoes, squash, cucumber and eggplants are amongst the most important agricultural crops (PCBS, 2004). In fact, squash and cucumber represent 32.2% of the total vegetable-cultivated land in the West Bank (Samara et al., 1999).

Second, protected area vegetables: this type of vegetable is cultivated in plastic houses or tunnels (surface and French) to protect crops from low temperatures. It is commonly practiced in coastal and semi-coastal areas, particularly in Tulkarem and Qalqilya. Protected area vegetables are characterised by high production levels; in fact, production output reaches 15 tons per dunum for tomatoes and cucumber in certain areas (Samara, et al., 1999).

Third, field crops: irrigated field crops represent only 6.8% of total field crops. Legumes represent the main type cultivated in the Palestinian Territories.

Fourth, fruit trees: this includes citrus trees in semi-coastal land (like Qalqilya and Tulkarem) and bananas in the coastal areas and the Jordan

valley. Total citrus cultivated land has been declining due to the insufficiency of irrigation water, weak markets and the decline in the number of citrus trees. In fact, the total land designated for the irrigated cultivation of fruit trees has declined from 70 thousand dunums in the early 1990s to 43 thousand dunums by the end of the decade (PCBS, 2003).

Rain-fed agriculture represents 88% of agricultural land. It is characterised by the volatility of production due to its dependence on the weather (Samara et al., 1999). Olive trees represent 75% of the land area cultivated with rain-fed fruits. Field crops (wheat and barley) and rain-fed vegetables also belong to this agricultural paradigm.

The occupation has severely damaged the Palestinian economy and increased its dependency on Israel's. The agricultural sector has been targeted by Israeli authorities since 1967, which created numerous obstacles that have hampered its development and progress. Israel has expropriated agricultural land, seized water resources, and obstructed the transportation and marketing of agricultural products. Furthermore, it has exercised control over inputs of production and dumped agricultural produce on the Palestinian market. The list of unfair practices is crowned with building of the separation wall (Az'ar, 2005).

Despite all of the above-mentioned obstacles, agriculture still plays an important role in the Palestinian economy. Total agricultural output reached US\$856 million in 2002/2003; approximately 55.5% was crop production and 44.5% livestock output. Around 67.6% of agricultural production came from the West Bank and 32.4% from the Gaza Strip (PCBS, 2004).

3.2 Agriculture in the Tulkarem District

Tulkarem district has 253,950 dunums of land, about 209,064 dunums of which are suitable for agricultural purposes. However, actually cultivated land consisted of 156,293 dunums in 2004/2005. Table 1 explains the distribution, total output and the value of agricultural products in the district.

Table 1: Area, Output and Value of Agricultural Products in Tulkarem District

Product	Area/ dunum	Output/ tons	Value (1,000 dollars)
Fruit trees	134,264	39,542	27,655
Vegetables	10,302	53,519	22,025
Field crops	11,727	6,170	2,765

The table shows that fruit trees have the largest share; this is distributed between rain-fed olive trees and irrigated citrus trees and its total value amounted to \$27,655 thousand. Irrigated open- or protected-area vegetables are one of the most popular types of crops in the area. There are about 6,642 plastic houses and 1,375 high-rise tunnels in the Tulkarem area. Cucumber is the most commonly cultivated type of protected-area vegetable; the total area cultivated is estimated at 1,500 dunums with an average output of 6-8 tons per dunum. Tomatoes, Jew's mallow and peppers are also cultivated in the district. Broad bean, chick peas and cucumber are amongst most common rain-fed vegetables in the district.

Wheat and barley represent the main types of rain-fed grains, with the total area cultivated reaching 6,894 and 1,339 dunums respectively. Citrus trees represent the most common type of irrigated trees, with the total area cultivated (most commonly orange and clementine) reaching 3,700 dunums. Olive trees dominated the rain-fed trees, covering over 114,785 dunums of land (Tulkarem Department of Agriculture, 2003/2004).

Despite the agricultural assets Tulkarem is endowed with, the Israeli separation barrier has negatively impacted the lives of 70 thousand people distributed across 17 population clusters and resulted in the isolation of many areas in the region. Although the Israelis have opened about 13 gates in the wall, only 4 of them are accessible for Palestinians - two in the district of Deir Elghsoon, one near Flamyra and Kufur Jamal and the last in the village of Jabara. To complicate matters, Israeli authorities deny tractors access to the land, rendering it very difficult to cultivate (Palestinian Monitoring Group, 2005).

The total agricultural land in the Tulkarem area shrank after construction of the wall, particularly protected area vegetable-cultivated land, notably cucumber. Indeed, the total area cultivated with cucumbers declined by approximately 1,450 dunums, about 45% of the original area. Areas affected included Baqa Alsharqya, Zaita, Deir Elghsoon, Ateel and Kherbet Jabara. Open area vegetable-grown land, planted with cucumbers,

tomatoes, squashes and leafy vegetables, also experienced a decrease in total land area available for cultivation. Olive-cultivated land also experienced a decline. A particular example is Kherbet Jabara, where land planted with olive trees declined from 1,055 dunums to 330 dunums due to Israeli uprooting of trees in that region. On the other hand, the grain-sown land area has increased in the region, in particular land cultivated with wheat and barley.

3.3 Agriculture in the Qalqilya District

The following table represents total area cultivated of the main crops in the district.

Table 2: Area, Output and Value of Agricultural products in Qalqilya District

Product	Area/ dunum	Output/ tons	Value (1,000 dollars)
Fruit trees	55,888	20,951	13,732
Vegetables	5,379	33,944	13,371
Field crops	2,500	769	482

The importance of agriculture in Qalqilya arises from the fact that it is situated over one of the largest groundwater reserves, estimated at 52% of the West Bank's total. This water basin has an estimated 340-355 million m³ of water per year, with an estimated natural recharge of about 130 million m³ per year. Around 22 million m³ is used through groundwater wells and Israel uses 70 million m³ per year from this basin. Moreover, Israel has drilled 8 artesian wells with the abstraction capacity of 1.2 million m³ (PENGON, 2003).

Various types of agricultural paradigms are common in the Qalqilya district. Olive trees make up the largest share of fruit grown on the land in the Qalqilya area, with Kufur Tult, Azoon and Kufur Qadoom having the largest area. Citrus trees assume the second rank after olive tree cultivation in the region. Citrus growing is common in the areas of Qalqilya City, Elnabi Elyas and Azoon Atmah. Protected area cultivation is common in Qalqilya City and Azoon Atmah, where cucumbers and tomatoes are grown. Less land is cultivated using open area cultivation, which is most practiced in Flamy, Habla and Jayous. Grain cultivation is predominant in the areas of Kufur Tult, Jeen Safot and Kufur Qadoom.

Unfortunately, Qalqilya has suffered the most from the separation wall, which has hit the agricultural sector especially hard. First, Qalqilya has lost 15 artesian wells as a result of the wall. Second, it lost 28 thousand dunums of agricultural land, isolated or damaged by the wall (see Table 3). This is over one third of the cultivated land area in Qalqilya district.

Table 3: Land Lost by Communities in Qalqilya as a result of the wall

Location	Land Area Lost (dunum)	Location	Land Area Lost (dunum)
Jayous	9,200	Aldab'a	136
Habla	609	Alnabi Elyas	52
Kufur Tult	1,977	Azoon	2,504
Izbet Suleiman	494	Sinirya	30
Asala	1,635	Almdawer	12
Flamya	1,338	Ras Tira	158
Izbet Jalood	364	Azoon Atmah	7,919
Ras Ateya	310	Qalqilya City	2,073
Total		28,711	

Jayous, Izbet Jalood and Izbet Sulieman were amongst the hardest hit areas by Israeli uprooting of olive trees. Citrus growing land areas also declined, with Qalqilya, Habla, and Izbet Jalood amongst the most affected in the region. There has been also a decline in land area cultivated with open-area vegetables such as tomatoes, cucumber and eggplant, especially in Flamya and Jayous. Land cultivated with tomatoes declined in areas such as Habla, Qalqilya and Azoon Atmah. Legume growing land, on the other hand, has increased at the expense of grain growing land, especially the crops of peas and broad beans (rain-fed crops). This is mainly due to the loss of water resources.

Tables 9 – 20 in the Annexe demonstrate in detail how much land was utilised by each community in Tulkarem and Qalqilya for each crop before (2000 – 2001) and after (2003 – 2004) the construction of the Wall.

4. Farmers Survey

4.1 Description of the Sample

Farmers residing in some of the areas most impacted by the wall were surveyed to capture their opinions and views on the matter. The sample consisted of 200 farmers, distributed across Tulkarem (40%) and Qalqilya (60%) districts (see Table 21 in Annexe). Approximately 51% of Tulkarem respondents resided in Baaqa Asharqya, 26% resided in J'bara and 23% were residents of other affected areas (Ateel and Deir Elghsoon). Of Qalqilya respondents, 33% were from Jayous, the area most hurt by the wall. Kufur Qadoom and Kufur Tilt were represented in the sample with 16.7% each, and farmers from the town of Siniryia were also polled, owed to the large impact the wall has on the town.

The overwhelming majority of respondents were male (98%) and heads of families. In fact, 100% of Tulkarem respondents were heads of families as were 95% of Qalqilya respondents. The survey showed that family sizes are relatively large in the areas in question. The average Tulkarem family consisted of 4 male and 4 female members, whereas Qalqilya families comprised 5 male and 4 female members. Although agriculture is the main occupation in the area, 7.5% of Tulkarem farmers and 15% of Qalqilya farmers did not consider farming as their main profession.

Education levels of the sample are as follows: 5% of Tulkarem and 9% of Qalqilya farmers were illiterate, 17% of Tulkarem and 12% of Qalqilya farmers had between one and six years of education, and 53% of Tulkarem and 44% of Qalqilya farmers had ended their education after finishing high school. A high percentage of the sample had gone on to university: 25% in Tulkarem and 35% in Qalqilya (see Table 22 in Annexe).

The large majority of the sample had considerable experience in the agricultural field. The survey showed that 76% of Tulkarem and 83% of Qalqilya respondents had over 15 years of farming experience. The survey also showed that most farmers are landowners: 78.7% of the Tulkarem respondents and 74.9% of Qalqilya farmers. The survey establishes that undivided interest land⁵ represents 6.3% of land in Tulkarem and 23.3% of land in Qalqilya, while leased land stood for 7.7% of land in Tulkarem

⁵ Land owned and used by more than one person, also sometimes called 'communal usufruct'. The Arabic terminology for such land is "masha'a".

and 1.4% of land in Qalqilya.

The survey revealed that 83% and 72% of Tulkarem and Qalqilya respondents relied principally on agricultural income but 98% of farmers said that their income was reduced since the wall, on average by 62%. On the district level, 97.5% of Tulkarem respondents and 98.3% of Qalqilya respondents claimed that their income had declined, on average by 68.8% and 57.4% respectively (see Table 4).

Table 4: Percentage Contribution of Agriculture-based Income in Tulkarem and Qalqilya Districts and the Impact of the Wall on it

Contribution of Agriculture to Income		Overall %	% of Tulkarem District	% of Qalqilya Income
5 – 25%		8	8.8	7.5
25 – 50 %		6.5	3.8	8.3
50 – 75%		9.5	5.0	12.5
75 – 100%		76	82.5	71.7
% change of agriculture-based income	decreased	98	97.5	98.3
	increased	0.5	0	0.8
	no change	1.5	2.5	0.8
% Change		62	68.8	57.4

Source: Field survey "the Impact of the Wall on Tulkarem & Qalqilya farmers", conducted by MAS.

4.2 Land Area Affected by the Wall

The wall had devoured large areas of land in both governorates. In fact, the wall had caused an average reduction in land owned by Tulkarem respondents by 30% and in Qalqilya by 14%. Land zoned for building purposes was immensely reduced (by 72%) in Qalqilya because of the wall; however, the same category of land was less severely affected (9%) in the Tulkarem sample. However, Qalqilya was better off than Tulkarem when considering other categories of land. For example, the average reduction in open-area land was 20% and in irrigated land 38% in Tulkarem, while in Qalqilya the two types fell by 16% and 20% respectively.

The population clusters interviewed in Tulkarem (see Table 23 in Annexe) were affected in different ways by land loss. For example, respondents in Jebara cluster lost 16% of owned land on average, while Baqa and Ateel

clusters lost 40% and 47% respectively. The wall did not affect land zoned for building purposes at all in Jabara and Ateel but it typically reduced such land used by respondents in Baqa Alsharqya by 37%.

The wall appropriated the land of farmers surveyed in the Jabara bloc in the following manner: land area designated for greenhouses was reduced by an average 39%; actually cultivated land was reduced by 22%; irrigated-agricultural land by 18%; overall cultivated land by 17%; and land not zoned for building purposes by 8%. Although losing fewer dunums on average, Baqa respondents lost proportionately more land area than Jebara bloc did. The study revealed that cultivated land was reduced by 46%; land designated for greenhouses by 47%; areas not zoned for building by 41%; irrigated agricultural land and land zoned for building purposes both by 37%; and open-area land by 34%.

Respondents in Ateel bloc were also hard-hit by the wall, with land area for the sample reduced in the following manner: open-area land by 52%; irrigated agricultural land by 51%; actually cultivated land by 48%; land not designated for building by 47%; tunnels by 42%; total agricultural land by 40%; and greenhouses by 27%.

In the Qalqilya sample (see Table 24 in Annexe) Kufur Tult bloc was the least affected, with the average area of land lost due to the wall ranging up to 14%. In Jayous bloc the impact of the wall on the land used by respondents ranged up to 23%. Kufur Qadoom bloc was worst off, losing an average of 27% of some land due to the wall.

In all blocs it should be borne in mind that the overall effect of even small reductions in land, whether it was actually destroyed or simply put out of practical reach, can have a dramatic effect on the profit margins of small and medium-sized farmers.

4.3 The Impact of the Wall on Water Resources

Water resources in areas covered by the study include artesian wells, mains water networks, rainwater-collecting wells and mobile tanks. Artesian wells were the most important, representing 91.9% of water resources used in Tulkarem and 98.8% in Qalqilya before the wall, and 89.3% and 97.3% respectively after its construction.

Corresponding to the reduction in reliance on artesian wells, the wall increased dependence on mains water networks by 135% in Tulkarem and 115% in Qalqilya. Dependence on rainwater collection wells increased in

Tulkarem by 7.8%, while reliance on mobile tanks there fell by 51%. Qalqilya never relied on either of these two resources, even before the wall.

Drip irrigation comprised the main method of irrigation in Tulkarem and Qalqilya (72.7%), followed by sprinklers (15%) and furrows (7%). Table 25 in the Annexe depicts how irrigation methods in Tulkarem and Qalqilya were negatively affected, in particular the use of sprinklers and furrows.

4.4 Agricultural Crops

4.4.1 Tulkarem District

The average land area cultivated with rain-fed field crops actually increased by 23% in size, while generated income increased by 25%. However, this was the only improvement. The legume-planted area also increased, but average income generated from such crops was reduced by over 80%. The average area devoted to open-area vegetables was reduced by three quarters and earnings generated by them fell by two thirds. Irrigated-vegetable land area and its rendered earnings were reduced by 15% and 59% respectively, while around a fifth more of the crop was consumed by the producers.

Table 5: Agricultural Crops in Tulkarem

Crop	Pre-Wall					Post-wall				
	Irrigation Method		Area (dunum)	Earnings (\$/year)	% consumed domestically	Irrigation Method		Area (dunum)	Earnings (\$/year)	% consumed domestically
	Irrigated	Rain-fed				Irrigated	Rain-fed			
Field Crops	100		8.9	4200	72	100		11.0	5270	43
Legumes	100		3.9	3500	35	100		4.8	550	51
Protected – Area vegetables		100	4.7	41929	8		100	4.0	17128	10
Open-Area vegetables		100	23.2	15157	8	2.5	97.5	6.0	5286	8
Stone Fruits	100		5.9	7400	79	100		3.8	10500	n.a.
Other fruits		100	2.0	2000	1		100	4.7	1000	1
Citrus	7.7	92.3	4.4	6704	14		100	4.0	2064	5
Olive	95.7	2.1	21.5	5902	51	94.9	5.1	19.4	2488	70
Tubers and Bulbs		100	5.0	11100	3		100	3.7	4500	1
Other	100		.3	0	100					

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Land area cultivated with stone fruits (almonds, walnut, etc.) decreased by 36% while average earnings from such crops increased by 42%. Citrus was

not greatly affected by the wall in terms of land area cultivated, but earnings fell by 69% and farmers switched to a completely rain-fed paradigm. Average earnings generated from olives were reduced by 46% and from tubers and bulbs by 59%.

4.4.2 Qalqilya District

The wall negatively affected most agricultural land. The average area planted with field crops was reduced by 27% and average earnings fell by 78%. Legume-growing land fell by 10% and earnings from the product by 57%. Protected-area vegetable land (100% irrigated) was reduced by 20% in area and in earnings generated by 70%.

On average among respondents, open-area vegetable land was reduced by 30% and earnings by 79%. Stone fruit land area was reduced by 9% and earnings by 84%. Citrus-growing land was reduced by 22% and earnings by 87%. Olive-growing land shrunk by 14% and earnings decreased by 67%. The area planted with tubers and bulbs remained unchanged, but income from such products declined by 85%.

Table 6: Agricultural Crops in Qalqilya

Crop	Pre-Wall					Post-wall				
	Irrigation Method		Area (dunum)	Earnings (\$/year)	% consumed domestically	Irrigation Method		Area (dunum)	Earnings (year)	% consumed domestically
	Irrigated	Rain-fed				Irrigated	Rain-fed			
Field Crops	100		38.1	4275	54.9	97.3	2.7	27.7	926	30.9
Legumes	92.3	7.7	11.9	10957	54.5	88.9	11.1	10.7	4670	26.1
Protected – Area vegetables		100	3.0	24783	8.8		100	2.4	7400	6.2
Open-Area vegetables	11.4	88.6	10.1	12023	13.9	10.5	89.5	7.4	2514	5.3
Stone Fruits	71.4	28.6	7.0	3381	29	72.7	27.3	6.4	542	28.8
Other fruits	25	75	7.9	12528	14.2	23.5	76.5	6.7	3417	15.3
Citrus	1.9	98.1	12.4	17115	10.3	2.2	97.8	10.1	2137	6.6
Olive	98.1	1.9	58.0	19043	59	98.1	1.9	49.7	6287	56.4
Tubers and Bulb	50	50	4.0	10000	35	50	50	4.0	1500	10.0
Other	100		4.2	867	20	40	60	3.8	333	3.3

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

4.5 Difficulties Confronted by Farmers

The farmers in question suffered from a variety of problems and

difficulties, political, economical and technical in nature. Most are the result of Israeli measures. According to the survey, the difficulties were ranked in terms of significance to farmers. In Tulkarem the results were as follows, ranked in descending order of importance (see Table 26 in Annexe):

1. Internal closures of cities and towns.
2. Increase in prices of fertilisers.
3. Closing of Israeli markets to Palestinian agro-products.
4. Increase in transportation costs.
5. Small size of cultivated land lots.
6. Increase in sapling and seed prices.
7. Difficulties getting financing.
8. Competition from Israel.
9. Inability to access farm.
10. Poor agricultural guidance.

Many of these problems are not solely the result of the wall, but the wall's role was one of aggravation and exaggeration. The survey reveals that the wall has had an even greater impact on Qalqilya farmers (see Table 27 in Annexe). They ranked their problems as follows:

11. Internal closures of cities and towns.
12. Inability to access farm.
13. Difficulties getting financing.
14. Difficulty obtaining required permits.
15. Competition and low prices of products.
16. Increase in transportation cost.
17. Competition from Israel.
18. Small size of cultivated land lots.
19. Increase in prices of fertilisers.
20. Poor agricultural guidance.

4.6 Procedures to Alleviate Negative Impacts of the Wall

In this section, we analyse a number of potential solutions aimed at alleviating farmers' suffering. The survey proposed a range of possible remedies, and the reaction to them among Tulkarem farmers was as follows: 87% of farmers disagreed with the suggestion of moving agricultural activities to the eastern side of the wall, and the overwhelming majority (88%) disapproved of leasing their land to those who could have better access to it. However 12% agreed and around 4% had actually done

this. Sharecropping wasn't a popular option either, with 87% against it, and 90% disapproved of the idea of exchanging land with farmers on the other side of the wall. 81% also disapproved of hiring workers from the other side. Around 64% disagreed with the notion of changing place of residence to where the land is located now.

The most favoured measures regarded the question of changing agricultural practices in response to the wall. 68% approved of changing agricultural paradigms, 73% agreed with changing crops, and 79% were amenable to diversifying their production. However, it is notable that – perhaps due to the specialised expertise of most farmers - 80% opposed switching from land cultivation to raising livestock.

Table 7A: Popularity of Possible Solutions to Alleviate the Wall's Negative Effects in Tulkarem District

Proposed Remedy	% Answered				% Executed procedure	
	Strongly agree	Agree	Disagree	Strongly Disagree	Yes	No
Moving agriculture to the eastern side of the wall	6.7	6.7	64.4	22.2	-	-
Rent land to those who could have better access to it.	0	11.7	78.3	10	4.4	95.6
Sharecropping	0	13.1	77	9.8	1.7	98.3
Exchange land with those on other side of the wall	0	9.6	75	15.4	4.9	95.1
Hiring workers residing on the wall side of the land	1.9	17	66	15.1	2	98
Changing agricultural paradigm	2.7	64.9	25.7	6.8	15.4	84.6
Changing crops	4.1	68.9	23	4.1	44.9	53.6
Diversification of crop cultivation	6.8	72.6	19.2	1.4	59.2	40.8
Changing place of residence to where land is now located	4.3	30	61.4	2.9	65.7	34.3
Switching to livestock instead of crop cultivation	2.9	17.1	71.4	8.6	16.4	80.6
Other	4.2	0	95.8	0	4.7	93.8

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Although the situation in Qalqilya was similar, the resistance to different changes varied in intensity. 95% of farmers disagreed with the notion of moving agricultural activities to the other side of the wall, 72% disagreed

to leasing land to those who could have easier access to it and 80% disapproved of exchanging land with those who live on the same side of the wall. However, sharecropping was only disfavoured by 62% and hiring workers from the other side of the wall by 51%. Fewer agreed to changing agricultural methods (44%) or switching crops (52%), although diversification of production was again a popular remedy, with 74% agreeing or strongly agreeing with it.

Table 7B: Popularity of Possible Solutions to Alleviate the Wall's Negative Effects in Qalqilya District

Proposed Remedy	% Answered				% Executed procedure	
	Strongly agree	Agree	Disagree	Strongly Disagree	Yes	No
Moving agriculture to the eastern side of the wall	0.8	4.2	44.2	50.8	-	-
Rent land to those who could have better access to it.	0.8	27.5	45	26.7	0	100
Sharecropping	0.8	37.5	38.3	23.3	3.3	96.7
Exchange land with those on other side of the wall	0	20	42.5	37.5	11.7	88.3
Hiring workers residing on the wall side of the land	1.7	47.5	28.3	22.5	0	100
Changing agricultural paradigm	0	44.2	33.3	22.5	8.3	91.7
Changing crops	0	51.7	25.8	22.5	5.8	94.2
Diversification of crop cultivation	1.7	72.5	14.2	11.7	12.5	8.75
Changing place of residence to where land is now located	0	61.7	15	23.3	18.3	81.7
Switching to livestock instead of crop cultivation	0.8	33.3	29.2	36.7	10.8	89.2
Other	-	-	-	-	2.5	97.5

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

It is noteworthy to mention that farmers in Qalqilya had a more positive attitude towards changing place of residence than those in Tulkarem. Sixty-two percent of Qalqilya farmers agreed to changing place of residence, compared to only 30% in Tulkarem. Qalqilya farmers were also more flexible regarding switching towards livestock production, with more

than a third prepared to consider it compared to only a fifth of Tulkarem farmers.

4.7 Changes in Prices of Agricultural Products Due to the Wall

The wall has affected prices of agricultural products in both districts. In Tulkarem, between 70% and 98% of farmers agreed that the wall has induced negative changes in prices of different products. More farmers agreed that more commonly used products (such as tomatoes, cucumbers, potatoes, cabbages, and kidney beans) had been more affected than such items as lemons, onions and paprika. The wall seemed to affect prices in Qalqilya less, with between 23% and 78% of farmers indicating that the wall had negatively affected prices of different products.

Table 8: Change in Prices of Agricultural Products in Tulkarem and Qalqilya After the Wall

Name of Crops	Tulkarem			Qalqilya		
	% Answered					
	Yes	No	% Change	Yes	No	% Change
Tomato	98.4	1.6	45.6	78.2	21.8	40.8
Cucumber	96.8	3.2	47.7	73.6	26.4	42.9
Squash	85.7	14.3	42.2	45.6	54.4	35.1
Eggs plant	84.8	15.2	39.7	55.2	44.8	48.8
Cauliflower	83.8	16.2	46.6	52	48	39.0
Potato	90.3	9.7	43.5	48	52	36.5
Cabbage	89.2	10.8	47.7	51	49	38.5
Lettuce	70	30	44.7	28	72	32.9
Broad beans	78.6	21.4	40.2	45.1	54.9	33.8
Peas	85.2	14.8	39.6	30.9	69.1	35.8
Onion	75	25	45.7	43.8	56.3	37.1
Lemon	75	25	48.7	72.5	27.5	67.4
Hot pepper	80	20	41.6	48.5	51.5	33.6
Paprika	79.3	20.7	44	46.7	53.3	32.5
Spinach	80	20	39.7	23	77	35.8
Jews mellow	85.7	14.3	40.4	29.8	70.2	36.4
Maize	71.4	28.6	26.8	23.9	76.1	31
Kidney bean	92.7	7.3	42.8	44.3	55.7	29.5

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

5. Grocers and Merchants Survey

5.1 Description of the Sample

Owing to their vital role in the agricultural sector, grocers and merchants in Qalqilya (32%) and Tulkarem (68%) districts were surveyed. The majority had over 15 years of experience in the field. The survey consisted of 50 respondents, made up of grocers selling agricultural products directly to consumers and several merchants working in agricultural support activities such as selling seeds, saplings, fertilisers and agricultural equipment.

The majority of surveyed grocers reported that the wall had negatively affected their businesses. The majority indicated having had to change sources for purchasing and selling agricultural products after the construction of the wall, which has inhibited their ability to reach suppliers and targeted markets. The survey pinpointed numerous wall-caused difficulties endured by grocers, which are highlighted in section 5.5.

Indicative of the importance of the agricultural sector for Tulkarem and Qalqilya, survey results pointed out that over 50% of traded products in both districts are locally produced; moreover, Tulkarem and Qalqilya's markets are considered the main target market for the products. Indeed, over 70% of the local output is marketed locally and in other neighbouring markets in the northern West Bank. However, these activities were immensely reduced, hampering the performance of the agricultural sector and the economic condition of workers employed in the sector.

5.2 Product Sources

Signalling the damaging effects of the wall on the trade of fruits and vegetables, 100% of those surveyed indicated that the wall had forced them to change their suppliers. Grocers now rely much less on Tulkarem, Qalqilya and Nablus as a source for agricultural products. Qalqilya and Tulkarem rely heavily on agricultural income, while Nablus is traditionally considered the central market for products originating in the Jordan Valley and Tulkarem, Qalqilya and other regions.

It is worth distinguishing here between products originating in Tulkarem and Qalqilya and those of Israeli origin. Palestinian grocers' ability to reach Israeli markets has been considerably reduced because of the Israeli

and Palestinian efforts to monitor and control inflows and outflows of goods. The construction of the wall has made such efforts more effective. As a result, only a handful of wholesalers could access Israeli markets. The survey indicated that accessing Israeli markets was reduced by 90% and that only 10% of wholesalers, those most powerful in the market, were capable of reaching Israeli markets to purchase agricultural products for distribution in the Palestinian market.

The above-mentioned situation has caused an increase in the proportion of agricultural products obtained from the West Bank's northern districts. Smaller traders used to buy agricultural products directly from Israeli sources, but they now buy them from the few merchants who have the capacity to do so. This situation has caused an increase in the supplies obtained from the West Bank's northern district, but most of the products are originally planted in Israel. Local farmers do not reap the benefits from such trade. In an attempt to compensate for wall-caused shortages in the Palestinian market there has been a 45% increase in Israeli products sold there. This intense Israeli competition affects prices and results in great losses to farmers.

Despite the fact that the share of Israeli agricultural products in the Palestinian market is high, the survey revealed that only a small percentage come from original sources (i.e. directly from Israel and not through a middle-man). Israeli agricultural products purchased from original sources represented over a third of available products in Tulkarem and Qalqilya prior to the wall. They now represent less than 17.5% of the products marketed in Qalqilya and Tulkarem. To compensate for shortages, grocers have resorted to large wholesalers that have access to Israeli markets by means of Israeli issued permits. Consequently, there has been an increase in the reliance of Palestinian governorates as a source of agricultural imports. The reliance on Tulkarem as a source of imports has increased from 19.5% prior to the Wall to 21% post wall and from 16.9% to 24.6% in Qalqilya. Nablus grocers supply the remainder. The survey indicated that the quantity supplied from Nablus reaches 37.3% nowadays in comparison to 31% before the wall.

Locally produced agricultural products, most relevant for this study since they reflect the reality of the agricultural sector in the region in question, were negatively affected by the wall. Having been an important source for agricultural production - not only for local and neighbouring markets but also supplying Israeli markets and other Palestinian markets such as Ramallah and Bethlehem - the historical role played by Tulkarem and

Qalqilya in agricultural production has fallen sharply. The study indicates that the wall has negatively affected the agricultural status of Tulkarem and Qalqilya by reducing output of some products by up to 60%.

Total agricultural output had been reduced in varying proportions in the Palestinian Territories. In Tulkarem, vegetable production is down by 36%, citrus and other fruits were reduced by 40%, and other agricultural products were reduced by over 33%. Qalqilya was not in a better situation, with vegetable production down by 31%, citrus and other fruits by 33% and other types of products by over 50%. The wall also affected other Palestinian growing areas, which had been important suppliers of agricultural products for Tulkarem and Qalqilya. This helps to explain the widespread presence of Israeli agricultural products in the Palestinian market. Israeli-grown vegetables increased by 54% and citrus and fruits by 42%.

In general, it is clear that the wall has damaged the agricultural sector as a whole. However, some products have been worse affected than others, particularly those which require daily tending and care to ensure good quality. The reduction in the production of some varieties of vegetables, fruits and citrus, which need daily care, is mainly attributed to the separation wall. The inability of farmers to reach their farms together with other wall-caused obstacles, has led to the deterioration in the quality of these products and consequently a reduction in income earned from them. In some cases farmers have lost a whole harvest because of inability to reach their land and tend their crops. The new realities on the ground have also affected agricultural paradigms causing farmers to switch towards cultivating specific types of products that require less care and tending. This has led to an increase in the production of certain products and the decline in others. Other products which require less tending, such as grains, legumes, tubers, bulbs, and olives, were also affected due to loss of land.

5.3 Prices of Agricultural Products

The discussion of the impact of the wall on the agricultural sector must be seen in conjunction with prices. This directly affects food security and the Palestinian family's ability to obtain agricultural products. Such items are ranked high up in the Palestinian family's consumption basket according to consumption patterns common in the region.

In general, the survey of grocers and merchants revealed widespread

increases in the prices of agricultural output. A few specific products were listed in the survey to examine how the wall has influenced their prices, taking into consideration family consumption patterns and the importance of such products to them. Amongst the 18 varieties, there was a consensus that prices of only 5 remained unchanged: eggplant, cabbage, Jew's mallow, maize and kidney beans. However, according to the PCBS such products are among the least important in the Palestinian food basket. Products ranked high in priority, such as tomatoes, potatoes, cucumber and onions, witnessed high price increases.

Over two-thirds of the surveyed tradesmen pointed out that the average price of such products had increased in comparison to prior to the construction of the wall. The average price reflects the price of the product during different cultivation seasons, which naturally changes according to supply and demand factors. All respondents indicated that average price of tomatoes increased, by an average of 73% after the wall. The overwhelming majority of respondents (98%) said that the average price of cucumber had increased, by an average of 74%. In addition, 68% of respondents said that prices of potatoes had increased (by 46%) and over three quarters said that prices of onions had risen (by 47%). Respondents indicated that most agricultural products had increased by up to 87% in comparison to prices prior to the wall.

Respondents agreed that the following four reasons were behind price changes:

1. Closure of Israeli markets to Palestinian products.
2. The influx of legally and illegally-imported Israeli products into the Palestinian market.
3. An increase in transportation costs due to the wall and other Israeli obstacles.
4. The inability to reach domestic markets due to closures and other Israeli measures.

The respondents did not believe other proposed factors might have caused the price increases. The following were seen as the least important:

1. Unavailability of marketing information for agricultural products for specific seasons.
2. Lack of coordination amongst farmers to diversify production.
3. Reliance on nearby markets and the lack of coordination amongst the district's grocers in the West Bank and Gaza Strip (availability of

- market database).
4. Lack of cooled storage facilities to preserve products for longer periods.
 5. Unfair competitive practices amongst grocers.
 6. Poor policies by the Ministry of Agriculture aimed at controlling the market.

A closer look at the above-mentioned outcomes provided by respondents reveals that they are in direct violation of supply and demand laws. To illustrate, observe that the first two reasons - the closure of the Israeli markets to Palestinian products and the influx of Israeli products into the Palestinian market - induce an increase in supply, which in turn should lead to a *decrease* in prices. However, other factors are at work which are responsible for the increase in prices:

1. Increase in transportation cost due to the wall and Israeli closures, which causes an increase in production cost.
2. Inability to transport goods from farms to markets due to closures and movement restrictions, causing local supply shortages.
3. Israeli control of when to release their products into the Palestinian market due to use of advanced storage and cooling technologies.
4. Disturbances in the Palestinian agricultural paradigm.
5. The inelasticity of demand for basic goods.
6. Better quality of Israeli products in comparison to Palestinian products, according to 62% of respondents. Consequently, Israeli products carry higher prices (according to 94% of respondents).

It might be thought that price increases could offset the effects of the reduction in output, rendering the Palestinian farmer unaffected by it. This is incorrect because the price increase did not contribute to increasing the farmers' profit margin; instead, it is a result of the big increase in production cost. In addition, farmers are often unable to take advantage of locally or temporarily higher prices owing to their inability to transport their goods to the market.

5.4 Markets for Agricultural Products

Despite the small size of the West Bank area and the closeness of its different regions from one another, the survey revealed that regional markets are not coordinated and function independently of each other. Consequently, prices of products differ from one region to another during the same period. For example, while the price of a 14kg box of lemons in

Qalqilya was about 5 shekels, in Ramallah the price of a single kilogram ranged between 2.5 and 3 shekels. The fact that most lemons in Ramallah come from Israel explains their relatively high price. This disparity is to be seen in other West Bank markets, and as well as the difficulty of transporting produce it demonstrates the weaknesses of agricultural marketing networks and cooperatives. The Ministry of Agriculture has a responsibility to improve this.

The survey demonstrated that over 58% of Tulkarem's and Qalqilya's agricultural products are being marketed in the northern regions of the West Bank, and there is considerable disregard to many other potential markets. For example, no products are marketed in Ramallah and there is little or no focus on Hebron and Gaza. This can be attributed, in part, to the constant but unpredictable Israeli closures and blockades, but the study indicated there are certainly other contributing factors. Amongst these are lack of coordination in the agricultural sector and poor developmental policies aimed at improving and developing production in such a way as to limit large shortages in output in certain seasons. In other words, agricultural paradigms could be reconstructed in accordance with market needs and aggregate supply and demand for a given season.

Selling agricultural products in the Israeli markets has become very restricted after the construction of the wall, and Israel has created many obstacles to commerce between Israel and Palestine. One such barrier is the quality requirements set by the Israeli Institute of Agricultural Standards in coordination with the Ministry of Agriculture. Such restrictions prevent Palestinian producers from acquiring exports permits to Israel for not meeting the required standards. This is an important concern for the Palestinian farmer, and the lack of coherent developmental policies and guidance programmes, together with the difficulty of importing agricultural material that meets international standards at a reasonable cost, are issues that must be addressed.

5.5 Difficulties Encountered by Grocers

Since commercial agricultural activity represents the connecting link between farmers and consumers, it is extremely important to the agricultural sector. Any weakness in the mercantile activity side, and its ability to overcome obstacles, has an impact on the agricultural sector as a whole. Similarly, any problems facing the agricultural sector will be felt in the commercial activity side - although less severely than its impact on the

producers themselves. The following two tables demonstrate the problems faced by grocers before and after the construction of the wall, ranked in order of importance:

Table 9: Difficulties Affecting the Trade of Agricultural Products *Before* the Wall (Rated from 1-5; 1 signifies most influential)

Problem	5	4	3	2	1
Lack of agricultural land	88%	11%	0%	0%	0%
Lack of product diversification within the season	36%	53%	4%	0%	7%
Closure of Israeli markets to Palestinian products	4%	2%	0%	13%	81%
High transportation cost	87%	9%	0%	0%	4%
Surplus of agro products	25%	63%	0%	10%	2%
Shortage of agro products	28%	57%	0%	11%	4%
Inflows of legally imported Israeli agro-products	0%	0%	0%	21%	79%
Inflows of illegally imported Israeli agro-products	4%	0%	0%	2%	94%
Lack in the marketing information in other district markets	98%	0%	0%	0%	2%
Absence of cooler rooms to preserve production for long period	100%	0%	0%	0%	0%
Lack of coordination between farmers and grocers to determine demand for product	100%	0%	0%	0%	0%

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Grocers", conducted by MAS.

Table 10: Difficulties Affecting the Trade of Agricultural Products After the Wall (Rated from 1-5; 1 signifies most influential)

Problem	5	4	3	2	1
Lack of agricultural land	83%	17%	0%	0%	0%
Lack of product diversification within the season	32%	32%	21%	0%	11%
Closure of Israeli markets to Palestinian products	0%	0%	0%	2%	98%
High transportation cost	2%	0%	0%	23%	75%
Surplus of agro products	2%	6%	4%	76%	13%
Shortage of agro products	2%	6%	4%	72%	17%
Inflows of legally imported Israeli agro-products	0%	0%	0%	6%	94%
Inflows of illegally imported Israeli agro-products	4%	0%	0%	4%	92%
Lack in the marketing information in other district markets	98%	2%	0%	0%	0%
Absence of cooler rooms to preserve production for long period	100%	0%	0%	0%	0%
Lack of coordination between farmers and grocers to determine demand for product	100%	0%	0%	0%	0%

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Grocers", conducted by MAS.

Grocers' main concerns included the closure of Israeli markets to Palestinian products and the influx of Israeli products into the Palestinian markets, legally or illegally. These two problems are shared between farmers and agricultural merchants, and although they have worsened they have been perennial. However, it is revealing that almost 90% of grocers and merchants rated both 'shortages' and 'surpluses' of agricultural products as being of first or second importance after the wall, compared to 15% or fewer before the wall. This ties in with 98% giving such ranking to high transportation costs, compared to only 4% before the construction of the wall. The wall has distorted the market and prevented the free flow of goods between producer and supplier, which adversely affects all links in the chain from farmer to consumer.

6. Consumer Survey

6.1 Description of the Sample

The Consumer Survey was prepared in order to canvass the opinions and perceptions of Palestinian citizens on the impact of the Separation Wall on their lives. The following section describes the general characteristics of the survey sample.

The sample consisted of 200 interviews in the districts of Tulkarem (40%) and Qalqilya (60%). Over half (52.5%) of Tulkarem respondents were from Baqa Alsharqya and 25% from Jabara village. 32.8% of the respondents in the Qalqilya district were from Jayyous, and the villages of Kufur Qadoom and Kufur Tult were home to 16.8% each (see Table 28 in Annexe).

In terms of gender, owing to the sampling methodology males represented 72% and females 28% of the sample. Men comprised 93.8% of Tulkarem respondents and 57.5% of the Qalqilya sample. Data showed that there were on average 3.60 males and 3.14 females per family. 86% of respondents were heading a household.

Signalling the importance of the agricultural sector in the Tulkarem and Qalqilya regions, 21.5% of respondents indicated agriculture as their main source of income. At the district level, 25% of Tulkarem respondents and 19.2% of Qalqilya respondents were working in agriculture.

Educational levels were relatively high among those surveyed. 21% of them had finished high school and 31.5% had some form of post high school education. This latter rate was higher in Tulkarem (38.8%) than in Qalqilya (26.7%). 43.5% of the sample had below high school levels of education but only 4% of respondents were illiterate (see Table 29 in Annexe).

6.2 Expenditure Patterns

The new realities created by the Wall have affected the expenditure levels and patterns of Palestinians, particularly in terms of expenditures on food and transportation (see Table 30 in Annexe). A total of 88.9% of respondents indicated a change in food expenditures, with an average increase of 46.0%. 80.5% specified that transportation expenditures had

been affected by the construction of the Wall, rising on average by 50.0% (54.3% in Qalqilya and 44.0% in Tulkarem).

Water expenditures rose on average by 35.0%. The increase was higher in Tulkarem (39.8%) than in Qalqilya (31.5%). Increased water expenditures are especially serious considering that these areas are predominantly agricultural regions.

Considering expenditures on certain specific food commodities, 86.3% of respondents in Tulkarem spent on average 47.6% more on meat products and 85.8% of Qalqilya residents answered that their meat expenditures had risen, by an average of 52.7%. The wall also affected expenditures on fruit. A total of 92.5% of respondents in Tulkarem and 81.7% in Qalqilya indicated that their expenditures on fruit had increased, by 49.3% and 42.2% respectively.

The survey provided information on how the prices of certain basic food commodities have changed as a result of the Wall. The results displayed a 20.3% aggregate increase in prices of the examined food groups in the two districts; 14.4% in Tulkarem and 24.0% in Qalqilya (see Table 31 in Annexe). Looking at the food commodities discussed in the previous paragraph, lamb meat prices increased on average by 15.3% (17.5% in Tulkarem and 13.8% in Qalqilya). Among fruit products, banana prices increased by 13.8% (6.6% in Tulkarem and 18.5% in Qalqilya) and apples became 19.4% more expensive (18.8% in Tulkarem and 19.8% in Qalqilya).

Respondents also pointed out that egg and poultry prices had increased by 39.2% and 37.9% respectively. The price of poultry rose by 39.1% in Tulkarem and 37.1% in Qalqilya, while the price of eggs increased by 33.2% in Tulkarem and 43.4% in Qalqilya. Finally, the price of bread, a fundamental item on the Palestinian daily menu, rose on average by 26.7%. The increase was considerably higher in Tulkarem (32.9%) than in Qalqilya (19.8%).

6.3 Food Security

About 85% of Tulkarem and Qalqilya residents obtain food directly from the market and 26% have food produced at home. The survey revealed that 25.2% of Tulkarem consumers rely on humanitarian aid in securing their food needs. In Qalqilya this rate was only 7.9%, demonstrating a degree of inequality in the distribution of humanitarian aid across the Palestinian

territories and particularly in the areas most hurt by the wall.

Overall, 51.8% of respondents indicated difficulties in accessing food resources. At the district level, this rate was higher in Tulkarem (59.5%) than in Qalqilya (46.7%). Obstacles facing those who had difficulties getting to food included the numerous Israeli checkpoints separating population clusters. In fact, 65.0% of respondents in Tulkarem and 31.4% in Qalqilya considered Israeli checkpoints as the main obstacle. In addition, 41.2% in Tulkarem and 19.3% in Qalqilya viewed the Wall as a considerable impediment to obtaining food. Meanwhile, 27.5% of respondents from Tulkarem, compared to 10.5% in Qalqilya, attributed the difficulty in getting food to the decline in their purchasing power.

In response to problems imposed by the wall, the overwhelming majority of respondents from Qalqilya (89.2%) and Tulkarem (77.2%) stated that they have changed their overall food consumption patterns. Following are some aspects of this reaction.

Almost all of those who had changed their food consumption patterns had decreased the amount of food they consumed (see Table 32 in Annexe). This rate reached 94.7% in Tulkarem and 100.0% in Qalqilya. Unsurprisingly, almost all of them (99.4%) quoted the wall as the key reason for these changes, which has had a massive impact on the food consumption patterns of most consumers living close to the Wall.

Food types that have been removed from or reduced on the Palestinian menu varied according to their degree of substitutability and their relative importance in Palestinian cuisine. The survey showed that 94.6% of respondents had reduced their consumption of fruit and meat by an average of 51.0% and 53.7% respectively. Despite the fact that grains are considered a primary food type and are characterised by low elasticity of demand, 56.2% of the sample indicated that they reduced grain consumption on average by 42.6%. The decline in the consumption of grains in Tulkarem (84.5%) was double that in Qalqilya (42.2%). Furthermore, 75.6% of respondents had reduced their consumption of vegetables, on average by 44.8%.

A total of 67.2% stated that they do not own a home garden to grow vegetables. However, 72.0% of the sample indicated that they have the necessary knowledge and skills required to cultivate land. In Qalqilya, this ability was stated by 86.7% of respondents, whereas the share in Tulkarem (48.1%) was substantially lower.

49.2% said that they would ask family and relatives for support if they could not afford to get food themselves, but only 38.3% of respondents from Tulkarem and 10.1% from Qalqilya indicated that they would seek support from the government to meet their food needs. These low percentages signal a distrust in government institutions and the limited efficiency of their operations. Similarly, non-governmental organisations (NGOs) are not a major source of funds for suffering Palestinians. NGOs seem to have more relief operations in Tulkarem than Qalqilya, which is reflected by the fact that 15.2% of Tulkarem respondents answered that they seek support from NGOs, compared to a mere 3.3% in Qalqilya.

6.4 Impact on Consumers

Nearly the entire sample (98.5%) agreed that the Wall had a terrible impact on their lives, but the kind of problems faced by citizens and their severity varied between places (see Table 33 in Annexe). As many as 97.4% of the respondents specified that they suffer from an increase in prices, which averaged 45.7% (41.5% in Tulkarem and 47.9% in Qalqilya). Moreover, 95.4% of Tulkarem and Qalqilya residents indicated that income levels had declined, on average by 63.0%. This decline is largely due to the fall in employment opportunities in the region; a total of 95.6% of the sample (98.7% in Tulkarem and 94.1% in Qalqilya) reported that the Wall had a negative impact on the number of available job opportunities. According to the respondents, employment opportunities declined on average by 72.3% (75.7% in Tulkarem and 71.3% in Qalqilya).

The Wall also affected the quality of services provided to communities near it. For example, 94.0% of respondents indicated a lack of consumer protection in terms of standards of product. The share of Tulkarem residents suffering from this equalled 98.7%, higher than the 90.5% rate in Qalqilya. The lack of consumer protection was reflected in the quality of goods available in the market. The survey shows that the quality of goods declined on average by 45.1% due to the Wall, divided into 54.8% in Tulkarem and 39.9% in Qalqilya.

Around 80% of respondents faced various problems in obtaining desired goods, including inadequate quantities available to consumers. Furthermore, 60.2% complained of a complete lack of certain products (70.1% in Tulkarem and 53.8% in Qalqilya).

6.5 Ways of Coping with Problems Imposed by the Wall

Palestinians living in areas impacted by the Wall have used different strategies to deal with the problems imposed on them (see Table 34). As already reported, 80.8% of respondents from Tulkarem and 64.2% from Qalqilya reported that they changed their consumption patterns in order to confront the new realities created by the Wall.

73.8% of the sample in Tulkarem and 84.2% in Qalqilya reported that they could rely on home production if land was available. Meanwhile, only 18.8% in Tulkarem and 12.5% in Qalqilya answered that they were not capable of home production even if land was available. The two main reasons for being unable to cultivate land were the lack of required skills and the lack of production inputs, especially land. However, as mentioned in section 6.3, 86.7% in Qalqilya and 48.1% in Tulkarem indicated that they had the skills and capabilities to cultivate land.

Another way of trying to mitigate the negative effects of the Wall, such as supply shortages and increase of prices, was to purchase food from other towns and villages – a strategy used by 41.6% of respondents in Tulkarem and 61.7% in Qalqilya.

It was stated in the previous section that almost 96% of the sample reported that the Wall has reduced the number of employment opportunities by more than 70%. This problem is further highlighted by the fact that 57.7% of Tulkarem respondents and 50.4% in Qalqilya indicated that they had changed their place of work because of the Wall.

Changing place of residence is a complicated and time-consuming matter. Nevertheless, 14.3% of respondents from Tulkarem and 21.7% in Qalqilya reported having moved their residence to areas less affected by the wall, even if only temporarily or part time.

7. Summary of Main Findings and Recommendations

7.1 Farmers Survey

This survey highlighted the wall's negative impact on farmers in both districts. In some cases, agriculture-based income decreased by 95%. The impact of the wall varied according to population cluster surveyed, with Baqa Alsharqya the most affected in Tulkarem and Jayous the worst hurt in Qalqilya. However, the cultivated land area was significantly reduced in both governorates.

Farmers are confronted with various problems ranging from difficulties accessing farms, poor marketability of products to increased production and transportation costs. The study also reveals the urgent need for agricultural guidance and counselling to direct farmers toward more profitable products. Following is a set of recommendations aimed at easing negative consequences of the wall:

1. Local authorities in both districts are urged to protect local crops from Israeli competition. This might be accomplished through planning and controlling the entrance of Israeli products into the market, in addition to facilitating the movement of agro-products at borders and checkpoints by improved coordination with the occupying army.
2. Concerned parties should provide guidance services to counsel farmers on reducing production costs, increasing agricultural output and improving quality. An example is the advice leaflet written for producers as part of this project, which contains practical recommendations to improve profitability in the face of wall-caused difficulties.
3. The study reveals that farmers were unwilling to switch cultivation to the eastern side of the wall, nor were they willing to lease land to others. Therefore, it is vital to concentrate efforts in order to provide financial and in-kind support for farmers in order to continue cultivation of their own land. Authorities should also concentrate their efforts on providing employment opportunities through employment-generating programs.
4. More loans with flexible payment schemes should be offered to

farmers. Since 70% of farmers agreed to changing agricultural methods and diversifying products, loans should be directed to assist with this transition.

5. As well as through financing, farmers should be assisted to diversify their production with information about the economic and practical feasibility of growing different, even non-traditional, crops.
6. Authorities should maintain and improve water networks, given the water-intensive nature of agriculture in the region and the negative effect the wall has had on water supply. Improvements should also be performed on agricultural roads and agricultural land, especially in Baqa Alsharqya area.
7. Government and Non-governmental organizations should focus their efforts on supporting land renovation projects to compensate for lost land and in order to guarantee that farmers can continue farming their land.

7.2 Grocers and Merchants Survey

As shown by all three surveys, a significant percentage of residents of Tulkarem and Qalqilya rely on agricultural income. However, the poor relationship between the agricultural production sector and its associated commercial activities was noticeable, even though they share many of the same problems. This affects the development of the sector, thus affecting the livelihoods of a large number of people.

Looking at the outcomes of the farmers and grocers surveys, one could describe the relationship between them, at best, as under-developed. The opinions expressed in the two surveys serve as an indication of the need to develop a professional relationship between the two groups. This would serve, in turn, as a tool for the development of farmers as well as merchants. Even problems that worry the agricultural sector and do not concern grocers indirectly affect the commercial sector's ability to grow and develop. A cooperative environment must be created between grocers and agricultural producers in order to face foreign competition and to create a value chain with the objective of improving benefits for all members of the chain, starting from seed and raw material producers and ending with providing high quality products to customers. This requires the introduction of the concept of true partnership for all members of the chain in order to achieve the maximum attainable good.

The following recommendations could be adopted to improve the status of commercial activity, which in turn can improve the agricultural sector and society as a whole:

1. Organise awareness campaigns to inform both farmers and grocers of the importance of developing a relationship and establishing the concept of a mutually beneficial partnership between the two parties. Prior coordination is necessary in order to develop Palestinian output and respond to local market needs in different seasons.
2. Encourage the establishment of public agricultural companies within targeted areas and encourage farmers to participate in them. With the benefit of flexible credit facilities, such companies should reinforce the coordination between farmers and the agricultural activity sector and provide the required technical expertise for entering external markets.
3. Establish cooperation between the Ministry of Agriculture and agriculture cooperatives in order to establish technical support units to study export standards in foreign markets, especially in Israel. These should also provide farmers with the technical expertise to meet the required standards and improve the quality of their output.
4. Establish an information centre at the department of agricultural marketing in the Ministry of Agriculture and encourage grocers to supply it with market information. This data should be easily accessible for farmers and grocers alike.
5. Work with the Israelis, through the Ministry of Agriculture, in order to develop unified agricultural standards which may not be unilaterally altered. Assist grocers to obtain long-term exporting permits.
6. Organise activities associated with the trade of agriculture materials and equipment, as well as agricultural products, in accordance with acceptable specifications and reasonable prices. This would encourage the growth and development of the agricultural sector.

7.3 Consumer Survey

The negative effects of the Wall have influenced different aspects of life of

residents in the areas of study. The survey revealed that income levels have decreased for a large percentage of respondents, partly as a result of the decline in employment opportunities. At the same time, the respondents reported an escalation of the prices of goods and services which has led to increased expenditures for consumers since the construction of the Wall.

Over half of the respondents encountered problems in accessing food. This is considered a major problem since most consumers get their food from the market and very few rely on home production of food or humanitarian aid.

Consumer reactions in response to the Wall included a set of consumption changes, where some reduced consumption of certain products and others reduced the overall quantity consumed. Many consumers faced difficulties related to the inaccessibility or lack of products and some therefore purchased goods in other towns or villages. Moreover, the majority of respondents expressed their willingness to rely on home production if the wherewithal was available.

Following are some recommendations of policies to help consumers remedy the difficulties and negative impacts associated with the Wall.

1. Specialised training programmes should be implemented aimed at teaching citizens the essentials of home production, such as the preparation of pickles and manufacturing tomato paste or dairy products, or developing basic entrepreneurial skills to start up small-sized projects with low capital requirements such as honey cultivation and animal breeding. People should be encouraged to grow fruits and vegetables in their gardens to reduce their dependence on the market and risks associated with not being able to access food supplies.
2. More loans with relatively easy credit terms should be provided to residents of the areas most affected by the Wall.
3. The PNA should give priority to residents of the examined areas when targeting employment-generating programs and infrastructure development programmes.
4. The Palestinian National Authority should use tax credits to encourage business owners to open new branches in areas affected by the Wall.
5. As very few residents of these areas receive humanitarian aid while the

needs are considerable, governmental and non-governmental aid agencies are urged to expand their relief efforts in these areas. In fact, there is an increasing need to implement a well-designed action plan to maximise the benefits from such humanitarian programmes by coordinating them better. Furthermore, aid agencies should concentrate on income and employment-generating projects to allow beneficiaries to gradually become self-sustained and financially independent.

6. The role of existing cooperative organisations should be revitalised and new networks created with the purpose of improving the productivity of small projects.

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Statistical Annex

List of Tables

Table 1: Registered Students (2003/2004)	57
Table 2: Labour Force Indicators (%)	57
Table 3: Number of Economic Establishments According to Ownership and Operational Status	58
Table 4: Water and Sanitation Indicators	59
Table 5: Environmental Pollution Indicators	60
Table 6: Housing and Residence Indicators	60
Table 7: Number of Population Clusters According to Source of Electrical Power	61
Table 8: Available Roads	61
Table 9: Main Vegetables in Tulkarem 2000 – 2001 (Dunums)	62
Table 10: Main Field Crops in Tulkarem 2000-2001 (Dunums)	63
Table 11: Main Trees in Tulkarem 2000 – 2001 (Dunums)	64
Table 12: Main Vegetables in Tulkarem 2003 – 2004 (Dunums)	65
Table 13: Main Field Crops in Tulkarem 2003 – 2004 (Dunums)	66
Table 14: Main Trees in Tulkarem 2003 - 2004 (Dunums)	67
Table 15: Main Vegetables in Qalqilya 2000-2001 (Dunums)	68
Table 16: Main Field Crops in Qalqilya 2000 – 2001 (Dunums)	69
Table 17: Main Trees in Qalqilya 2000-2001 (Dunums)	70
Table 18: Main Vegetables in Qalqilya 2003-2004 (Dunums)	71
Table 19: Main Field Crops in Qalqilya 2003-2004 (Dunums)	72
Table 20: Main Trees Grown in Qalqilya District 2003-2004 (Dunums)	73
Table 21: Distribution of the Farmers Sample in Tulkarem and Qalqilya by Location	74
Table 22: Education Levels of Farmers surveyed in Tulkarem and Qalqilya	74
Table 23: Average Land Area of Three Population Clusters surveyed in Tulkarem (Pre-and Post-Wall)	75
Table 24: Average Land Area for Three Population Clusters surveyed in Qalqilya (Pre- and Post-Wall)	75
Table 25: Dependence on Water Resources Before and After the Wall (%)	76
Table 26: Problems Encountered by Farmers in Tulkarem District	77
Table 27: Problems Encountered by Farmers in Qalqilya District	78
Table 28: Distribution of Consumer Survey in Tulkarem and Qalqilya Districts According to Location	78
Table 29: Education Levels of Tulkarem and Qalqilya Respondents	79
Table 30: Impact of the Wall on Levels of Expenditure for Selected Goods and Services	79
Table 31: Impact of the Wall on Prices of Selected Food Items	80
Table 32: Impact of the Wall on the Food Consumption Patterns of	

Tulkarem and Qalqilya Residents	81
Table 33: Main Problems Faced by Tulkarem and Qalqilya Residents Due to the Wall	82
Table 34: Ways of Coping with Problems Imposed by the Wall	83

Table 1: Registered Students (2003/2004)

Region	Nursery School		Elementary Education		Secondary Education		Student /Population (15-19 years)
	Male	Female	Male	Female	Male	Female	
Tulkarem							
Government	.....	.....	16576	16372	1972	2161	72.3
UNRWA	1288	1040	2353	2223	....	....
Private	.....	...	516	250	13	12	
Qalqilya							
Government	....	.....	10578	9857	1224	1140	82.2
UNRWA	1244	1161	1036	1277	....	....
Private	.....	...	572	314	21	9	
West Bank							
Government	.....	.....	213983	208871	24186	27909	69.2
UNRWA	20996	19325	25936	33056	....	....
Private	.....	.....	26429	18420	2091	1426	

Source: PCBS, Distribution of schools and Kindergarteners Students by Directorate, Supervising Authority, Stage and Gender in 2002/2003.

Table 2: Labour Force Indicators (%)

Indicator:	Tulkarem & Qalqilya	Whole West Bank
Labour force Participation rate	42.2	41.9
Male labour force participation rate	64.1	68.6
Female labour force participation rate	18.7	14.7
Employment rate	62.4	68.7
Male employment rate	56.7	66.1
Female employment rate	83.3	81.0
Underemployment rate	13.5	7.5
Male underemployment rate	16.0	8.4
Female underemployment rate	4.05	3.1
Unemployment rate	24.1	23.8
Male unemployment rate	27.3	25.5
Female unemployment rate	12.2	15.9
Employment Status		
Employed for others	2.0	3.7
Self employed	34.0	38.0
Wage workers	47.2	42.9
Unpaid family members	16.8	15.4
Distribution of Employed Workers According to Economic Activities:		
Agriculture and Fishing	25.3	16.5
Mining	11.2	18.3
Construction	7.0	16.3
Trade, Hotels & Restaurants	17.8	22.2
Transportation	4.7	4.8
Other Services	34.0	21.9

Source: PCBS: Percentage Distribution of Employed Persons by Governorate 2003.

**Table 3: Number of Economic Establishments
According to Ownership and Operational Status**

	Tulkarem	Qalqilya	West Bank
Number of Establishments:	6058	4010	81393
Operational	5361	3499	71407
Permanently closed	314	120	4688
Temporarily closed Under construction	39	29	836
Operational	344	362	4462
Operational	5361	3499	71407
Private Ownership	4860	3172	64853
Private Ownership (foreign)			
Native Sector	7	4	150
National Gov. Co.	105	57	1652
Foreign Gov. Co.			5
Central Government	324	194	3839
Local government	48	64	584
Foreign Gov.			64
UNRWA	15	7	189
Foreign Body	2	1	72

Source: PCBS, Establishments by Governorates and Status, 2004.

Table 4: Water and Sanitation Indicators

	Tulkarem	Qalqilya	West Bank
Used Water (1000m³)			
Extracted Groundwater	14852.6	9592.1	156915.4
Water purchased from Mekorot	14587.3	9257.1	56880.7
Extracted spring water	265.3	335.0	39494.7
	....	...	60540.0
Water Usage (1000 m³)	101173.4	6074.0	94007.8
Agriculture	4679.2	3853.7	62907.6
Domestic	4413.9	3518.1	23412.9
Groundwater	265.3	335.0	39494.7
Water purchased from Mekorot			
Number of ground wells for agricultural purposes	52	65	271
Number of ground wells for domestic purposes	11	4	37
Average per capita domestic consumption of water (Litres)	77.2	115.6	77.1
Main Water Resources for Population Clusters			
AlQuds water Company	0	0	55
Palestine Water Authority	1	0	99
Mekorot (Israel)	3	8	112
Groundwater wells	11	5	32
Local Government	10	4	64
Other	4	3	14
Not connected to water network	12	13	204
Sanitation			
Number of population clusters connected to public sewage system (1998)	3	1	30
Percentage of population connected to public sewage network	30%	25%	Na
Number of population clusters using cesspits (1998)	38	31	561

Source: PCBS Water surveys, 1998 and 2003

Table 5: Environmental Pollution Indicators

Pollutant Type	Number of Population Clusters		
	Tulkarem	Qalqilya	West Bank
Groundwater pollution	10	14	249
Plant pollution	10	14	237
Emission of foul smells	26	22	391
Widespread epidemic diseases	24	21	329
Widespread insects	25	22	396
Other	....	...	10
Number of population clusters which suffer at least one type of pollution	42	35	645

Source: PCBS, Local communities Survey 1998.

Table 6: Housing and Residence Indicators

Index	Tulkarem	Qalqilya	West Bank
Number of new licensed buildings	87	19	1546
Area of new licensed buildings	13261	3122	251462
Average area of new licensed building	152.4	164.3	162.7
Number of existing new buildings	15	1	247
Area of existing new buildings (m ²)	1910	169.0	32933
Average size of existing new buildings (m ²)	127.3	169.0	133.3
Issued Building Licenses:	70	17	770
Private building	62	16	738
Public building	5	0	15
Local Government building	0	1	8
Charitable buildings	3	0	8
Building Materials (external walls) :	70	17	770
Stone	17	1	512
Cement Block	50	16	182
Concrete	3	0	72
Other	0	0	4
Population Density	682	562.7	418.7

Source: PCBS 2003

Table 7: Number of Population Clusters According to Source of Electrical Power

Source of Electrical Power	Tulkarem	Qalqilya	West Bank
AlQuds Electricity	0	0	165
Israeli Electric Company (IEC)	24	11	199
Private electrical generators	3	0	22
Local town councils	7	20	68
Other sources	4	1	47
Not connected	3	1	79

Source: PCBS, 2003.

Table 8: Available Roads

Item	Tulkarem	Qalqilya	West Bank
Length of Roads (km)	904.8	618.8	13542.0
Main Roads	16.9	24.0	471.4
Regional Roads	40.0	26.2	385.6
Access Roads	131.7	71.6	2810.4
Bypass Roads	15.7	34.1	735.5
Agricultural Roads	700.5	462.9	9139.1
Area of roads (km²)	4.7	3.4	91.4
Main Roads	0.9	1.2	23.6
Regional Roads	1.2	0.8	11.6
Access Roads	2.6	1.4	56.2

Source: PCBS, Length and Area of Roads in the Palestinian Territory by Region/ Governorate and Road Type, 2003.

Table 9: Main Vegetables in Tulkarem 2000 – 2001 (Dunums)

Cluster	Protected Vegetables			Open Vegetables		
	Tomatoes	Cucumber	Other	Tomatoes	Cucumber	Squash
Qafin	20	80	4	0	0	0
Nazlet Issa	7	60.5	18	8	0	0
Alnazle Alsharqya	5	48	21	4	0	4
Baqa Alsharqya	27	390	90	24	0	55
Alnazle Alwesta	0	0	0	0	0	4
Nazlet Abu Nar	0	0	0	0	0	2
Alnazle alsharqya	4	55	0	8	0	0
Zaita	55	420	0	24	0	18
Saida	4	100	0	12	0	55
Alar	27	235	0	5	0	44
Dier Elghsoon	29	345	0	15	10	36
Bal'a	1	1	0	4	0	4
Kufur Rumman	0	0	0	0	0	0
Zunabah	46	448	0	19	0	0
Tulkarem	60	491	0	45	38	64
Anabta	3	35	0	1	2	3.5
Ramin	1	1	0	2	0	3
Faraon	24	64	0	10	10	18
Showfa	18	225	0	1	0	2
Kherbet Jebara	12	110	0	0	0	3
Safarin	0	0	0	0	0	0
Beit Leed	0	0	0	0	0	4
Kufur Soor	2	8	0	0	0	0
Koor	0	0	0	0	0	0
Kufur Zibad	1	7	0	0	0	0
Kufur Jamal	7	99	0	0	0	0
Kufur Aboush	0	0	0	0	0	0
Ateel	45	640	0	18	10	54
Kufur Elebbad	5	48	0	3	0	3

Source: Ministry of Agriculture, Department of Agriculture Tulkarem.

Table 10: Main Field Crops in Tulkarem 2000-2001 (Dunums)

Cluster	Open Vegetables				Rain-fed Field Crops			
	Leafy	Green legumes	Bulbs	Other veg.	Grains	Bulbs	Dried Legumes	Oily plants
Qafin	38	16	13	25	130	5	0	0
Nazlet Issa	145	19	27	100	120	0	0	0
Alnazle Alsharqya	8	16	2	10	60	24	0	0
Baqa Alsharqya	370	68	68	455	20	24	10	0
Alnazle Alwesta	3	27	8	10	20	10	0	0
Nazlet Abu Nar	0	4	2	0	15	3	0	0
Alnazle Alsharqya	51	15	26	119	35	10	0	0
Zaita	58	92	85	66	110	20	0	0
Saida	80	95	75	165	60	62	10	0
Alar	226	20	17	411	180	30	0	0
Dier Elghsoon	94	96	61	151	75	120	10	0
Bal'a	0	9	0	3	775	30	0	0
Kufur Rumman	0	2	0	0	40	0	0	0
Zunabah	144	43	27	1620	125	150	0	0
Tulkarem	276	336	220.5	187	1090	117	20	8
Anabta	11	30	12	20	490	15	0	15
Ramin	0	13	7	0	190	4	0	0
Faraon	77	42	14	36	30	25	0	2
Showfa	6	22	0.5	0	95	15	0	0
Kherbet Jebara	0	23	0	5	130	0	0	0
Safarin	0	9	0	0	295	5	0	2
Beit Leed	0	22	5	5	400	4	0	3
Kufur Soor	0	0	0	0	35	0	0	0
Koor	0	0	0	0	120	0	0	0
Kufur Zibad	0	8	0	0	190	0	0	0
Kufur Jamal	0	22	0	6	360	0	0	0
Kufur Aboush	0	0	0	0	400	0	0	0
Ateel	124	114	97	278	50	100	10	3
Kufur Elebbad	1	16	3	2	500	8	0	5

Source: Ministry of Agriculture, Tulkarem Department of Agriculture.

Table 11: Main Trees in Tulkarem 2000 – 2001 (Dunums)

Cluster	Olive	Citrus	Stone fruits	Dried Almonds	Fig	Other fruits
Qafin	8730	320.5	0	350	0	0
Nazlet Issa	152.5	155	0	50	0	0
Alnazle Alsharqya	800	123	0	40	4	0
Baqa Alsharqya	990	244.5	0	20	0	0
Alnazle Alwesta	190	88	0	60	0	0
Nazlet Abu Nar	400	0	0	40	0	0
Alnazle Alsharqya	820	48.5	0	50	0	0
Zaita	870	289.5	15	30	5	0
Saida	2570	0	1000	800	12	0
Alar	6570	273.5	400	2500	10	0
Dier Elghsoon	10100	136	30	220	12	0
Bal'a	15150	0	966	900	100	0
Kufur Rumman	2200	0	0	50	5	0
Zunabah	440	103	0	30	3	0
Tulkarem	5685	936.5	32	285	24	0
Anabta	8860	25	5	650	35	0
Ramin	2950	0	50	250	75	0
Faraon	1620	297.5	0	50	20	0
Showfa	5100	109	0	100	2	0
Kherbet Jebara	1055	0	0	40	0	0
Safarin	2680	0	25	90	15	0
Beit Leed	10135	0	95	250	100	0
Kufur Soor	2550	0	0	80	2	0
Koor	1765	0	0	30	2	0
Kufur Zibad	2860	0	0	40	2	0
Kufur Jamal	2810	34	6	120	4	0
Kufur Aboush	4740	0	2	60	0	0
Ateel	5900	4450	3	150	5	0
Kufur Elebbad	9250	6	4	250	4	0

Source: Ministry of Agriculture, Tulkarem Department of Agriculture.

Table 12: Main Vegetables in Tulkarem 2003 – 2004 (Dunums)

Location	Protected Area Vegetables			Open Area Vegetables		
	Tomato	Cucumber	Others	Tomato	Cucumber	squash
Qafin	7	55	0	2	0	0
Nazlet Issa	1	43	1.5	4	0	0
Alnazle Alsharqya	1	26	0	7	0	5
Baqa Alsharqya	15	190	0	10	0	43
Alnazle Alwesta	0	0	0	0	0	3
Nazlet Abu Nar	0	0	0	0	0	5
Alnazle Alsharqya	0	25	0	4	0	0
Zaita	30	196	0	12	0	18
Saida	1	55	0	8	0	41
Alar	18	116	0	0	0	38
Dier Elghsoon	10	160	0	0	2	4
Bal'a	5	28	0	0	0	0
Kufur Rumman	0	0	0	0	0	0
Zunabah	20	282	0	15	3	0
Tulkarem	20	253	0	16	12	43
Anabta	0	16	0	0	0	5
Ramin	0	2	0	0	0	7
Faraon	7	15	0	0	4	10
Showfa	10	70	0	3	0	3
Kherbet Jebara	1	27	0	0	0	2
Safarin	0	0	0	0	0	0
Beit Leed	0	0	0	0	0	8
Kufur Soor	0	2	0	0	0	0
Koor	0	0	0	0	0	0
Kufur Zibad	0	0	0	0	0	0
Kufur Jamal	1	47	0	0	0	0
Kufur Aboush	20	0	0	0	0	0
Ateel	1	245	0	15	0	53
Kufur Elebbad	168	21	0	0	0	0

Source: Ministry of Agriculture, Tulkarem Agriculture Department.

Table 13: Main Field Crops in Tulkarem 2003 – 2004 (Dunums)

Location	Open Area Vegetables				Field Crops (rain-fed)			
	Leafy	Green Legumes	Bulbs	Other Vegetables	Crops	Bulbs	Dried Legumes	Oily Plants
Qafin	21	25	5	7	280	5	16	0
Nazlet Issa	51	23	6	43	190	4	17	0
Alnazle Alsharqya	10	12	11	10	95	3	0	0
Baqa Alsharqya	131	7	28	150	60	6	0	0
Alnazle Alwesta	8	6	4	2	30	0	0	0
Nazlet Abu Nar	0	3	0	0	23	9	0	0
Alnazle alsharqya	49	22	24	71	56	2	0	0
Zaita	25	55	39	31	294	20	21	0
Saida	47	53	41	128	78	35	10	0
Alar	184	32	27	280	271	66	0	0
Dier Elghsoon	64	39	16	34	188	56	3	0
Bal'a	3	6	5	0	503	7	0	0
Kufur Rumman	0	2	0	10	35	0	0	0
Zunabah	185	29	41	126	231	234	0	0
Tulkarem	140	141	138	86	1540	171	48	4
Anabta	2	26	6	7	455	50	7	3
Ramin	0	15	18	0	230	28	6	2
Faraon	20	14	2	15	271	6	0	0
Showfa	25	22	0	0	165	22	0	0
Kherbet Jebara	0	0	0	5	140	0	0	0
Safarin	0	5	0	0	460	12	0	4
Beit Leed	0	23	22	0	340	6	9	2
Kufur Soor	0	0	0	0	50	0	1	4
Koor	0	0	0	0	130	0	0	0
Kufur Zibad	0	0	0	0	190	0	5	3
Kufur Jamal	0	8	0	4	428	0	15	4
Kufur Aboush	0	0	0	0	500	0	11	5
Ateel	67	47	53	132	290	132	6	0
Kufur Elebbad	0	11	4	0	620	0	0	0

Source: Ministry of Agriculture, Tulkarem Agriculture Department.

Table 14: Main Trees in Tulkarem 2003 - 2004 (Dunums)

Location	Olive	Citrus	Stone fruit	Dried Almond	Fig	Other Fruits
Qafin	8045	194.5	0	350	0	0
Nazlet Issa	993	129	0	50	0	0
Alnazle Alsharqya	800	53	0	40	4	0
Baqa Alsharqya	785	192	4	20	0	0
Alnazle Alwesta	190	0	0	60		0
Nazlet Abu Nar	405	0	0	40	0	0
Alnazle Alsharqya	95	74	0	50	0	0
Zaita	521	141	18	30	5	0
Saida	2570	0	1000	800	12	0
Alar	6570	369.5	400	2500	10	0
Dier Elghsoon	9292	25.5	35	195	12	0
Bal'a	15100	0	1011	900	100	0
Kufur Rumman	2200	36	0	50	5	0
Zunabah	402	49	5	30	3	0
Tulkarem	5741	795	22	285	24	0
Anabta	8930	22.5	5	650	35	0
Ramin	3408	0	55	250	75	0
Faraon	1634	294	5	30	0	0
Showfa	5074	264	0	100	2	0
Kherbet Jebara	330	0	0	20	0	0
Safarin	2685	0	25	90	15	0
Beit Leed	10386	0	95	250	100	0
Kufur Soor	2565	0	5	80	2	0
Koor	1765	0	5	30	2	0
Kufur Zibad	2850	0	5	40	2	0
Kufur Jamal	2800	259	6	120	4	0
Kufur Aboush	4497	0	2	60	0	0
Ateel	5259	103.4	3	150	5	0
Kufur Elebbad	9293	0	4	250	4	0

Source: Ministry of Agriculture, Tulkarem Agriculture Department.

Table 15: Main Vegetables in Qalqilya 2000-2001 (Dunums)

Location	Protected Area Vegetables			Open Area Vegetables		
	Tomatoes	Cucumber	Other	Tomatoes	Cucumber	Squash
Flamya	50	118	0	8	0	85
Kufur Qadoom	1	2	0	0	0	0
Jeit	0	1	0	2	0	0
Baqa Alhatab	0	0	0	0	0	0
Hajah	0	0	0	2	0	0
Jayous	55	62	0	70	0	20
Seer	2	12	0	0	0	0
Arab Alramadin	0	0	0	0	0	0
Far Atta	0	0	0	0	0	0
Amatin	1	2	0	0	0	0
Alfandoq	2	3	0	0	0	1
Qalqilya	300	700	1.5	10	4	15
Elnabi Elias	8	7	0	12	0	15
Kufur Laqif	7	2	0	0	0	0
Izbet Eltabib	0	0	0	0	0	0
Jinsafoot	2	7	0	0	0	5
Azoon	25	80	0	0	0	0
Asala	1	1	0	0	0	0
Wadi Elrasha	0	0	0	0	0	0
Habla	18	130	0	12	0	15
Ras Tira	0	0	0	0	0	0
Ras Ateya	8	40	0	0	0	7
Kufur Laqif	0	0	0	0	0	0
Izbet Eltabib	0	0	0	0	0	0
Jinsafoot	15	120	0	0	0	0
Azoon	15	23	0	3	0	10
Asala	15	35	0	10	0	7
Wad Elrasha	5	38	0	0	0	8
Habla	250	38		0	0	10
Ras Tira	12	0	0	0	0	0
Azoon Atmah	0	580	0	10	0	10

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 16: Main Field Crops in Qalqilya 2000 – 2001 (Dunums)

Location	Open Area Vegetables				Field Crops (rain-fed)			
	Leafy	Green Legumes	Bulbs	Other Vegetables	Crops	Bulbs	Dried Legumes	Oily Plants
Flamya	53	40	4	30	70	15	0	0
Kufur Qadoom	0	7	0	0	190	0	0	40
Jeit	0	12	5	0	90	0	3	20
Baqet Alhatab	0	5	0	0	25	0	0	0
Hajah	0	13	10	0	130	0	0	0
Jayous	35	27	0	50	100	15	0	0
Seer	0	9	5	0	40	0	0	0
Arab Alramadin	0	0	0	0	8	0	0	0
Far Atta	0	5	0	0	70	0	2	0
Amatin	0	7	0	0	120	0	2	0
Alfandoq	0	0	4	0	35	4	4	7
Qalqilya	392	45	8	415	13	10	0	0
Elnabi Elias	46	14	3	75	20	0	2	0
Kufur Laqif	0	4	2	0	0	0	0	0
Izbet Eltabib	0	0	0	0	0	0	0	0
Jinsafoot	0	3	10	0	200	28	8	4
Azoon	10	23	5	10	90	0	5	4
Asala	0	0	0	0	15	0	3	3
Wad Elrasha	0	8	0	0	0	0	4	0
Habla	45	87	15	50	15	150	0	0
Ras Tira	0	30	0	0	0	0	0	0
Ras Ateya	0	20	5	20	0	0	0	0
Aldab'a	18	9	0	0	50	0	5	0
Kufur Tult	0	18	5	0	450	5	28	22
Izbet Jalood	0	7	0	0	0	0	0	0
Almdawer	0	13	5	4	0	8	5	0
Izbet Sulieman	10	25	5	10	50	0	0	0
Izbet Elashqar	7	5	0	0	15	0	11	0
Beit Amin	6	19	10	7	20	0	3	0
Sneria	0	15	0	0	60	0	0	0
Azoon Atmah	22	36	0	30	30	45	13	0

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 17: Main Trees in Qalqilya 2000-2001 (Dunums)

Location	Olive	Citrus	Stone fruit	Dried Almond	Fig	Other Fruits
Flamya	407	44	14	4	0	0
Kufur Qadoom	5298	0	0	20	12	0
Jeit	2055	0	0	13	12	0
Baqet Alhatab	2007	0	0	8	4	0
Hajah	6997	0	0	20	15	0
Jayous	2890	163	45	20	11	0
Seer	1083	0	0	25	1	0
Arab Alramadin	0	0	0	0	0	0
Far Atta	58	0	0	22	3	0
Amatin	1765	0	0	8	4	0
Alfandoq	567	0	6	4	5	0
Qalqilya	362	1629	120	0	15	0
Elnabi Elias	1345	194	0	0	2	0
Kufur Laqif	2115	0	0	15	3	0
Izbet Eltabib	94	0	0	0	0	0
Jinsafoot	2692	0	0	5	15	0
Azoon	9465	14	2	10	5	0
Asala	1760	0	0	0	4	0
Wad Elrasha	0	0	0	0	0	0
Habla	105	283	12	0	5	0
Ras Tira	740	0	0	4	2	0
Ras Ateya	399	29	0	0	3	0
Aldab'a	0	0	0	0	0	0
Kufur Tult	10195	0	3	30	15	0
Izbet Jalood	102	88	14	0	0	0
Almdawer	157	0	0	0	0	0
Izbet Sulieman	202	157	0	0	0	0
Izbet Elashqar	134	19	0	0	0	0
Beit Amin	361	109	0	0	4	0
Sceria	2085	0	4	30	6	0
Azoon Atmah	445	108	0	0	6	0

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 18: Main Vegetables in Qalqilya 2003-2004 (Dunums)

Location	Protected Area Vegetables			Open Area Vegetables		
	Tomato	Cucumber	Others	Tomato	Cucumber	squash
Flamya	40	118	0	40	0	85
Kufur Qadoom	1	2	0	0	0	0
Jeit	1	1	0	1	0	0
Baqet Alhatab	0	0	0	0	0	0
Hajah	0	0	0	1	0	0
Jayous	30	67	0	25	0	35
Seer	1	4	0	0	0	0
Arab Alramadin	0	0	0	0	0	0
Far Atta	0	0	0	0	0	0
Amatin	1	2	0	0	0	0
Alfandoq	2	4	0	0	0	0
Qalqilia	200	415	0	35	0	25
Elnabi Elias	15	65	0	5	20	15
Kufur Laqif	0	0	0	0	0	0
Izbet Eltabib	0	0	0	0	0	0
Jinsafoot	2	0	0	0	0	0
Azoon	20	0	0	0	0	0
Asala	1	0	0	1	0	0
Wad Elrasha	20	0	0	0	0	20
Habla	25	0	0	25	0	0
Ras Tira	15	0	0	5	0	5
Ras Ateya	0	0	0	0	0	0
Aldab'a	0	0	0	0	0	0
Kufur Tult	0	0	0	0	0	0
Izbet Jalood	25	0	0	1	0	0
Almdawer	25	0	0	2	0	7
Izbet Sulieman	40	0	0	4	0	5
Izbet Elashqar	20	0	0	0	0	0
Beit Amin	30	38	0	2	0	10
Scneria	0	0	0	0	0	0
Azoon Atmah	300	300	0	25	3	10

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 19: Main Field Crops in Qalqilya 2003-2004 (Dunums)

Location	Open Area Vegetables				Field Crops (rain-fed)			
	Leafy	Green Legumes	Bulbs	Other Vegetables	Crops	Bulbs	Dried Legumes	Oily Plants
Flamya	41	24	2	25	50	17	6	1
Kufur Qadoom	0	8	0	0	195	0	2	20
Jeit	0	19	4	0	80	0	5	15
Baqet Alhatab	0	11	0	0	25	1	3	0
Hajah	0	6	6	0	105	3	5	0
Jayous	23	12	2	0	67	14	9	0
Seer	0	17	2	15	23	6	10	1
Arab Alramadin	0	5	0	0	8	0	0	0
Far Atta	0	8	0	0	35	0	0	0
Amatin	0	15	0	0	85	3	4	0
Alfandoq		7	3	0	30	6	7	4
Qalqilya	397	11	13	400	25	40	6	4
Elnabi Elias	72	7	2	50	24	3	4	0
Kufur Laqif	0	7	3	0	24	0	3	0
Izbet Eltabib	0	0	0	0	0	0	0	0
Jinsafoot	0	10	7	0	140	12	14	5
Azoon	2	17	3	4	110	0	19	4
Asala	1	8	0	0	24	0	2	0
Wad Elrasha	0	15	8	60	13	0	0	0
Habla	85	19	0	0	12	100	4	0
Ras Tira	0	15	3	2	23	5	1	0
Ras Ateya	5	10	0	0	8	18	2	0
Aldab'a	0	9	3	0	33	0	9	0
Kufur Tult	0	20	1	0	305	25	13	6
Izbet Jalood	0	3	3	0	20	3	2	0
Almdawer	10	8	0	3	11	3	2	0
Izbet Sulieman	7	40	3	7	38	0	5	0
Izbet Elashqar	0	11	0	0	15	0	4	0
Beit Amin	15	11	3	15	0	0	3	0
Sceria	0	25	0	0	0	0	5	0
Azoon Atmah	22	15	3	10	5	50	14	0

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 20: Main Trees Grown in Qalqilya District 2003-2004 (Dunums)

Location	Olive	Citrus	Stone fruit	Dried Almond	Fig	Other Fruits
Flamya	300	496	6	2	0	0
Kufur Qadoom	6075	0	1	21	15	0
Jeit	1950	0	0	13	13	0
Baqet Alhatab	1968	0	0	8	4	0
Hajah	6785	0	7	20	9	0
Jayous	2550	185	30	5	3	0
Seer	1006	0	0	25	1	0
Arab Alramadin	0	0	0	0	0	0
Far Atta	555	0	5	22	3	0
Amatin	1732	0	6	8	4	0
Alfandoq	540	0	11	4	7	0
Qalqilya	320	1492	110	0	12	0
Elnabi Elias	1230	147	0	0	2	0
Kufur Laqif	1910	0	3	15	3	0
Izbet Eltabib	63	0	0	0	0	0
Jinsafoot	2985	0	11	5	25	0
Azoon	9000	25	12	10	5	0
Asala	1530	0	0	0	4	0
Wad Elrasha	0	0	0	0	0	0
Habla	94	167	12	0	5	0
Ras Tira	635	0	0	4	2	0
Ras Ateya	300	28	5	0	3	0
Aldab'a	0	0	0	0	0	0
Kufur Tult	9730	0	17	25	12	0
Izbet Jalood	54	18	0	0	0	0
Almdawer	132	0	0	0	0	0
Izbet Sulieman	130	102	0	0	0	0
Izbet Elashqar	134	19	0	0	0	0
Beit Amin	262	121	0	0	4	0
Scneria	1855	0	4	25	6	0
Azoon Atmah	440	109	6	0	6	0

Source: Ministry of Agriculture, Qalqilya Agriculture Department.

Table 21: Distribution of the Farmers Sample in Tulkarem and Qalqilya by Location

Location	% of Total sample	% of Tulkarem sample	% of Qalqilya sample
Baqa Al-Sharqya	20.5	51.3	-
Jebara	10.5	26.3	-
Others	29	22.5	33.3
Kufur Qadoom	10		16.7
Jayous	20		33.3
Kufur Tult	10		16.7

Source: Field survey "the Impact of the Wall on Tulkarem & Qalqilya farmers", conducted by MAS.

Table 22: Education Levels of Farmers surveyed in Tulkarem and Qalqilya

Education Years	%	% of Tulkarem district	% of Qalqilya district
0-1	7.5	5	9.2
1-6	14	17.5	11.7
7-12	47.5	52.5	44.2
13-17	29	23.8	32.5
More than 17	2	1.3	2.5

Source: Field survey "the Impact of the Wall on Tulkarem & Qalqilya farmers", conducted by MAS.

Table 23: Average Land Area of Three Population Clusters surveyed in Tulkarem (Pre-and Post-Wall)

Index	Pre-Wall			Post-wall		
	Jebara	Baqa	Ateel & Deir Elghsoon	Jebara	Baqa	Ateel & Deir Elghsoon
Owned Area (Dunum)	44.5	16.3	26.3	37.2	9.7	14
Land zoned for building purposes	2.2	1.9	3.6	2.2	1.2	3.6
Land area not designated for building purposes.	20.3	10.5	18.1	18.6	6.2	9.6
Agricultural land	29.6	15.9	25.4	24.6	8.5	15.3
Actually cultivated land	25.7	14.9	23.3	20.1	8	12.1
Irrigated land	10	6.8	15.6	8.2	4.3	7.6
Area of greenhouses	2.8	1.7	5.2	1.7	.9	3.8
Area of tunnels	1.4	0	1.9	1.4	0	1.1
Open area agriculture	10.5	5.3	10.6	12.5	3.5	5.1

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Table 24: Average Land Area for Three Population Clusters surveyed in Qalqilya (Pre- and Post-Wall)

Index	Pre-Wall				Post-wall			
	Kufur Qadoom	Jayous	Kufur Tult	Other	Kufur Qadoom	Jayous	Kufur Tult	Other
Owned Area (Dunum)	76.7	72.9	133.7	91.7	56	62.2	121.3	81.7
Land zoned for building purposes	0	1.7	1.2	7.5	0	1.7	1.2	0
Land area not designated for building purposes.	73.2	71	132.6	91.7	56	60.2	120	81.7
Agricultural land	72.2	67.2	125.6	91.2	55.9	57.2	113.1	81.2
Actually cultivated land	65.5	58.8	125.6	90.3	48.3	48	112.9	78.9
Irrigated land	.3	12.9	7	24.3	0.3	9.9	6.9	17.8
Area of greenhouses	0	1.1	0.7	2.8	0	0.9	0.6	2.2
Area of tunnels	0	0	0	0	0	0	0	0
Open area agriculture	65.5	57.4	124.8	87.4	48.3	46.7	112.5	75.1

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Table 25: Dependence on Water Resources Before and After the Wall (%)

Water Resources	Pre-Wall			Post- wall		
	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya
Artisan wells	95.5	91.9	98.8	93.7	89.3	97.3
Mains Network	1.3	1.4	1.3	3.0	3.3	2.8
Rainfall collection	1.5	3.2	-	2.6	5.7	-
Tanks	1.7	3.5	-	0.8	1.7	-
Irrigation Methods						
Drip Irrigation	72.7	80.1	66	73.8	78.7	69.6
Sprinklers	15	7.5	21.9	14.5	6.8	21.2
Furrows	6.7	2.1	10.9	4.6	0.8	7.8
Other	6.1	50.5	1.3	6.9	33.3	1.3
Ownership of Water						
Private	3.9	0	7.5	2.8		5.5
Public	5.1	0	10.0	4.9		9.6
Purchased	87.2	90.8	83.8	86.7	88.6	84.9
Other	4.5	9.2	0	5.6	11.4	0

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Table 26: Problems Encountered by Farmers in Tulkarem District

Problem	% Answered "yes"	% Answered "No"	Contribution of Wall
Difficulty getting to farm	71	29	79
Difficulty obtaining permit	51.5	48.5	66.7
Increase in water prices	66.2	33.8	87.7
Lack of water	22.9	77.1	43.9
Increase in workers' wages	25	75	48.7
Increase in prices of saplings and seeds	72.6	27.4	77.4
Increase in prices of fertilisers	84.9	15.1	88.1
Increase in transportation costs	79.2	20.8	84.8
Competition (low price)	47.2	52.8	72.3
Poor agricultural guidance	68.1	30.6	78.8
Separation from Israeli Market	80.3	19.7	83.1
Lack of market information (price & quality)	42.3	57.7	66.7
Middlemen exploitation	61.1	38.9	68.4
Smallness of agricultural land lots	76.4	23.6	82.8
Difficulty obtaining financing	71.6	28.4	77.6
High land rent	38	62	50
Competition from Israeli products	73.2	26.8	76.2
Closures	95.8	4.2	95.4
Other	12.5	87.5	12.5

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Table 27: Problems Encountered by Farmers in Qalqilya District

Problem	% Answered "yes"	% Answered "No"	Contribution of Wall
Difficulty getting to farm	99.2	0.8	100
Difficulty obtaining permit	97	3	100
Increase in water prices	70.2	29.8	68.8
Lack of water	22	78	69.2
Increase in workers' wages	43.9	56.1	100
Increase in prices of saplings and seeds	69.2	30.8	92.7
Increase in prices of fertilisers	87.3	12.7	88.3
Increase in transportation costs	92.4	7.6	97.3
Competition (low price)	95.8	4.2	92.2
Poor agricultural guidance	85.7	14.3	81.4
Separation from Israeli Market	62.5	37.5	89.5
Lack of market information (price & quality)	69.7	30.3	90.4
Middlemen exploitation	64.7	35.3	96.1
Smallness of agricultural land lots	88.3	11.7	100
Difficulty obtaining financing	99.2	0.8	89.9
High land rent	44.7	55.3	98.4
Competition from Israeli products	90.8	9.2	88.1
Closures	100	0	98.3
Other	-	-	-

Source: Field survey "The Impact of the Wall on Tulkarem & Qalqilya Farmers", conducted by MAS.

Table 28: Distribution of Consumer Survey in Tulkarem and Qalqilya Districts According to Location

Location	Percentage of Total Sample	Percentage of District Population (Tulkarem)	Percentage of District Population (Qalqilya)
Baqa Al-Sharqya	21.5	52.5	-
Jebara	10.0	25.0	-
Kufur Qadoom	10.0	-	16.8
Jayous	19.5	-	32.8
Kufur Tult	10.0	-	16.8
Others	29.0	22.5	33.6

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 29: Education Levels of Tulkarem and Qalqilya Respondents

Education Level	Total Sample (%)	Tulkarem residents (%)	Qalqilya residents (%)
Illiterate	4.0	3.8	4.2
Less than high school	43.5	38.8	46.7
High school	21.0	18.8	22.5
Post high school	31.5	38.8	26.7

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 30: Impact of the Wall on Levels of Expenditure for Selected Goods and Services

Item	Percentage of respondents who indicated a change in expenditures			Change in %		
	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya
Food	88.9	89.9	88.3	46.0	47.0	45.8
Energy	69.0	76.3	64.2	41.0	45.5	37.2
Water	49.5	50.0	49.2	35.0	39.8	31.5
Telecom	59.1	77.5	46.0	48.0	40.4	55.8
Transportation	80.5	78.8	81.7	50.0	44.0	54.3
Health Insurance	23.4	33.8	16.1	52.0	51.9	52.8
Education	47.0	46.3	47.5	57.0	53.2	59.2
Rent	8.0	19.0	0.8	61.0	61.7	50.0
Social Expenditure	38.7	34.6	41.4	46.0	59.3	40.8
Other	29.7	29.7	-	62.0	62.0	-

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 31: Impact of the Wall on Prices

of Selected Food Items

Product	Overall price change, both districts (%)	Price change, Tulkarem (%)	Price change, Qalqilya (%)
Bread	26.7	32.9	19.8
Milk	28.5	30.6	26.9
Chicken	37.9	39.1	37.1
Lamb meat	15.3	17.5	13.8
Veal meat	20.6	24.4	17.8
Eggs	39.2	33.2	43.4
Tomatoes	35.1	12.2	38.5
Cucumbers	22.8	9.0	31.5
Eggplants	22.8	3.1	34.7
Potatoes	22.6	15.1	26.6
Apples	19.4	18.8	19.8
Bananas	13.8	6.6	18.5
Other	8.4	-3.4	13.7
Total	20.3	14.4	24.0

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 32: Impact of the Wall on the Food Consumption Patterns of Tulkarem and Qalqilya Residents

Item	% of respondents who changed food consumption patterns			Change in %			Percentage change due to the Wall		
	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya
Consuming less food	98.2	94.8	100.0	44.0	50.9	42.3	99.4	100.0	99.1
Lowering consumption of:									
Fruits	94.6	98.3	92.7	51.0	54.4	49.8	99.4	100.0	99.0
Vegetables	75.6	75.9	75.5	44.8	47.5	44.0	99.7	95.7	98.8
Grains	56.9	84.5	42.2	42.6	44.7	41.3	99.0	98.0	100.0
Meat	94.6	94.7	94.5	53.7	52.6	54.0	98.8	98.2	99.0
Other animal product (Egg, Fish, Milk)	78.4	89.5	72.7	48.5	51.4	47.5	100.0	100.0	100.0
Other food product	86.2	92.5	83.7	45.5	59.3	43.0	98.3	94.7	100.0
Consuming other brands	83.0	92.1	79.4	43.8	55.3	41.5	98.2	93.9	100.0
Others	72.2	72.4	71.4	45.0	53.8	31.0	92.9	91.3	100.0

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 33: Main Problems Faced by Tulkarem and Qalqilya Residents Due to the Wall

Type of Problem	Percentage of respondents who indicated each type of problem			Change in %		
	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya
Price increases	97.4	98.7	96.6	45.7	41.5	47.9
Shortage of products	60.2	70.1	53.8	42.3	41.1	42.9
Difficulty in accessing products	80.1	83.3	78.0	-	-	-
Insufficient income	95.4	98.7	93.3	63.0	61.3	63.8
Lack of employment opportunities	95.9	98.7	94.1	72.3	75.7	71.3
Lack of consumer protection	93.8	98.7	90.5	67.7	73.3	65.9
Low quality of products	57.9	86.8	39.5	45.1	54.8	39.9
Other	67.7	70.0	-	65.0	65.0	-

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

Table 34: Ways of Coping with Problems Imposed by the Wall

Strategy	% of respondents who indicated change of strategy			% of respondents who indicated no change of strategy			% of respondents who changed to some extent		
	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya	Total Sample	Tulkarem	Qalqilya
Changing consumption patterns	70.7	80.8	64.2	22.7	12.8	29.2	6.6	6.4	6.7
Relying on household production	80.0	73.8	84.2	15.0	18.8	12.5	5.0	7.5	3.3
Purchasing food products from other towns	53.8	41.6	61.7	41.1	54.5	32.5	5.1	3.9	5.8
Moving to or staying in other locations less affected by the Wall	18.8	14.3	21.7	79.2	84.4	75.8	2.0	1.3	2.5
Changing place of work	53.3	57.7	50.4	42.1	38.5	44.5	4.6	3.8	5.0
Other	38.9	38.9	-	61.1	61.1	-	-	-	-

Source: Field survey on the impact of the wall on residents of Tulkarem and Qalqilya, MAS.

An Instruction Leaflet for Farmers Affected by the Separation Wall

The following is an English translation of a leaflet produced by the MAS project team for distribution by GVC among farmers:

Dear farmers affected by the wall,

Although the occupation has turned the separation barrier into reality, this should not stop us from carrying on and trying hard to service and tend our land instead of leaving it for the occupier to utilize it for the benefit of settlers. We should not despair from trying hard and dealing with problems. We should tirelessly keep on working getting to land, servicing it, and cultivating it until the wall is finally dismantled.

Dear farmer, the following are a few tips and instructions that could be beneficial to you if followed, especially under your currently adopted agricultural pattern. Such instructions alleviate damages resulting from the difficulty reaching your land, the limited amount of time available for you to remain there, the difficulty transporting certain materials to the farm, and the possibility you have to leave the farm unattended for long periods. The basis for your success, dear farmer, is first and foremost dependant on your life-long experience and your persistence and determination. Here are a few helpful guidelines:

Dear greenhouse farmer

- Focus on cultivating varieties that require less tending, such as Jew's mallow, tomatoes and peppers, and avoid as much as you can cultivating varieties that require extensive care such as spinach and cucumber.
- Try to adjust your irrigation system so that it can work more efficiently and for longer periods. Irrigate once a week with double the amount of water instead of twice a week.
- Try to make spraying a preventative and not a curative measure. Spray once every 4-5 days particularly to prevent against bacterial and fungal diseases (powdery and downy mildew and sclerotinia).
- Try using soil solar radiation in the summer season. This measure reduces the costs of hot summer cultivation, which is proven economically infeasible, in addition to requiring overuse of water. Soil

solar radiation begins in June 15 and ends in August. Make sure to keep on moistening the soil during the radiation process.

- Clean the ceiling of green houses of soil limestone at the end of summer so that sunlight can get through for winter crops.

Dear farmer of open-area vegetables (potatoes, carrots, onions, cauliflower and cabbage)

- Try to irrigate once every three days during late evening hours (the last time you are allowed to stay at the farm).
- Use fertilisers according to the need of plants such as 20-20-20 fertiliser. Make sure that the fertiliser does not cause poisoning due to over use. Use farm-made organic fertilisers (compost) instead of the illegal locally manufactured organic fertiliser.
- Use preventative spraying, on average spraying once a week for potatoes, cabbage, cauliflower, in order to prevent them from catching late blight disease.

Dear Field Crops Farmer

- Use improved seeds for wheat, barley and sern which yields high production.
- Try cultivating varieties that could allow for the use of machines such as the crop of sern.
- To increase production, try fertilizing crops with nitrogen fertilisers. Use an average of 10-15 Kg of sulfate ammoniac per dunum.
- It is always better to use herbicides with field crops in order to minimize your reliance on manual labour (workers have difficulties getting to farms).

Dear Citrus Farmer

- Caring for citrus trees by pruning, fertilizing, irrigation and pest control leads to great profits if done correctly. This is especially true in the case of irrigation. Irrigation is supposed to begin in April 15 by applying 100 liters of water to every tree every 2 weeks. This should continue until June 15. After that, irrigation should be continued every week applying the same average until September 15. Afterwards, irrigate every two weeks.
- Spray citrus trees preventatively against white mites and scale insects twice a year. Spray once on June 15 and again on August 15.
- Fertilize the land in three phases - May 1, June 15 and August 15 -

using an average of 1 kg of the complete fertiliser (nitrogen, phosphorus and potassium) 28-7-14 per tree. In addition to that, use 1 kg of fertiliser 15-12-5 as basic fertiliser during early February.

Dear Olive Farmer

- Try pruning after the fall of 100 ml of annual rain and spray against the disease of eye peacock (if present). In addition to that try to fertilize, if possible, at the beginning of February using an average of 1 kg of 10-5-15 fertiliser per tree.
- In order to produce high quality olives and exportable oil, watch for the olive fruit fly by means of hanging traps that could attract such flies.
- Stay tuned to instructions from the Ministry of Agriculture regarding olive picking time. This differs from region to region according to olive ripening conditions. Never use sticks during cultivation of olive. It is preferred to use a ventilated olive container during olive picking. Never pile up the olive harvest for long periods.

How to market your produce?

In order to improve your earnings and profitability, try to follow the next few steps:

- Use attractive packaging that is required for exports
- Try to categorize your product
- Try to make a sticker label in order to create a brand name for yourself in the market.
- Try using coolers in order to keep crops for longer time.
- Keep a watchful eye on allowing a safe period after spraying your crops before sending them to the market.

Dear Farmer

Remember the saying “*the nice thing about teamwork is that you always have someone on your side*”?

Work on establishing a cooperative body that functions in a collective form with the objective of studying, dealing with urgent matters, conveying such matters to decision makers and providing means to support farmers to stay put and cultivate their land.

Finally, success in agriculture requires having the ability to change from one agricultural paradigm to another and restructuring according to market needs. This feature is a well-known characteristic of the educated Palestinian farmers. Therefore, try to educate yourself in production skills and ask for help and advice from concerned national government institutions, in particular agricultural aid and counselling organizations.

