

# **Status of Farmers in Border Areas in the Gaza Strip from a Food Sovereignty Perspective**

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# Status of Farmers in Border Areas in the Gaza Strip from a Food Sovereignty Perspective

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This document has been produced with the support of the Heinrich-Böll-Stiftung – Palestine and Jordan. The views expressed herein are those of the author(s) and therefore do not necessarily reflect the opinion of the Heinrich-Böll-Stiftung

## Abstract

In its endeavors to mainstream the concept of food sovereignty in Palestine and mobilize support and advocacy to enable farmers to access production resources fairly, Dalia conducted this study to assess the reality of farmers in border areas in the Gaza Strip from a food sovereignty perspective.

The study targets all villages located east and north in the Gaza Strip, which have the majority of its lands located in the border areas. The total area of these territories amounts to 86,000 dunums (dunum = 1,000m<sup>2</sup>) of agricultural lands. Therefore, these agricultural lands constitute %50 of the total agricultural area in the Gaza Strip.

The study aimed to assess all agricultural practices, economically and environmentally, in the border areas and to study the impact of the occupation's assaults on agricultural development in border areas and on the economic and social reality of farmers.

The study follows a descriptive analytical methodology, namely the participatory methodology, which is the most commonly used in preparing developmental studies. The reason behind this is the appropriateness of the mechanisms and methods used in this methodology and its ability to realize its goals in a relatively short time. The most important tools of the study were focus groups, structured interviews, and convenings (mujawarat) with stakeholders. The study results showed that the majority of farmers in border areas face the same problems and challenges despite some differences between them in their order of importance. These challenges hinder the flourishing and development of the agricultural sector in those areas. A key part of the problems and challenges stems from the practices of the Israeli occupation, while the other part is due to production factors and marketing problems, including access to agricultural production inputs, securing suitable water resources for irrigation, and marketing constraints. The study concluded that although some farmers are aware of environmentally safe and economically feasible agricultural practices, the majority of practices implemented are not environmentally-friendly and are costly. The study also concluded that the food sovereignty approach that depends on agroecology represents a promising opportunity in the border areas given the strong potential to adopt natural farming techniques depending on local resources, and without the use of chemical inputs. The study recommended the importance of implementing the food sovereignty approach and mobilizing stakeholders in the government and among civil society organizations to prioritize food sovereignty and agroecology. To this end, the study recommended the importance of institutional building that is based on coordination among the different actors in order to better use and sustainably manage available resources.

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## **PART ONE: GENERAL INTRODUCTION**

### **Introduction**

The agricultural sector in Palestine in general and in Gaza Strip in particular suffers from numerous impediments, mainly from the Israeli occupation, the blockade, the scarcity of resources and the poor use of available resources. This is not to mention the lack of policies supporting farmers and the high cost of production inputs, such as imported seeds and chemicals (fertilizers, pesticides herbicides), which have increased the suffering of farmers.

On another hand, the excessive use of chemicals by farmers to combat diseases and as fertilizers has exacerbated their suffering. The severity and impact of these impediments are greater in Gaza's border areas due to their proximity to the barrier and the constant attacks and restrictions by the occupation. Additionally, these lands suffered severe damages during the past years as a result of the clashes during the Great March of Return. As such, the study targets all villages located east and north of the Gaza Strip, where the majority of lands are located in the border areas. These villages are:

- 1. East of Rafah governorate: Al-Shokah;**
  
- 2. East of Khan Yunis governorate: Al-Fukhari, Khaza'a, Abasan Al-Kabeera, Abasan Al-Saghirah, Bani Suhaila and Al-;**
  
- 3. East of Deir Al-Balah governorate: Wadi Al-Salqa, Al-Maghazi and Al-;**
  
- 4. East of Gaza governorate Juhor ad Dik;**
  
- 5. All villages in North Gaza governorate were targeted, which are Beit Hanoun, the Bedouin Village and Beit Lahia, with the exception of Jabalia, as east Jabalia was only targeted. Moreover, east Deir Al-Balah and East Gaza were targeted as well.**

The total area of these territories reached 86,000 dunums of agricultural land, making up %50 of the total agricultural area in the Gaza Strip.

## **Border Areas or Access Restricted Areas**

The areas covered by the study are divided into several sections according to the Ministry of Agriculture in Gaza, which are: access restricted areas that are located 100meters from the barrier with Israel(buffer zones); access restricted areas in times of crisis, which extend to 800meters from the barrier in some locations; and areas where agricultural activity is threatened by risks associated with attacks by the occupation, which extends to 2kilometers from the barrier. <sup>1</sup>

The access restricted area (ARA) that extends to 800meters from the barrier has gained the attention of decision makers and international organizations alike as access has been restricted for the majority of the time since the year 2000. This resulted in severe losses amongst farmers and in the agricultural sector, estimated at 50\$ million annually, between the years 2000 and 2014, due to the lack of use of these lands.<sup>2</sup>

The history of the buffer zone or access restricted area dates back to the security arrangements set in the interim agreement (Oslo II) signed between the Palestinian Liberation Organization and Israel in 1995. The agreement stipulates that a buffer zone is created inside Gaza Strip in an area that extends 50meters from the barrier. In the aftermath of the Second Intifada (Al Aqsa Intifada) that erupted in September 2000, the buffer zone was expanded to 150meters by Israel. In January 2010, the occupation forces disseminated thousands of leaflets warning the residents of the Gaza Strip from getting 400meter close to the border. In reality, the width of the buffer zone ranges between 800-400meters. Interviews with farmers residing in this area revealed that they suffered from the occupation in areas extending as far as 1.5 to 2 kilometers from the border, where they have been subject to different forms of harassment by the occupation.

<sup>1</sup> Based on the observations of directors of agriculture in the different Directorates in the past ten years.

<sup>2</sup> Ministry of Agriculture, General Administration for Planning, 2014, Damage Mapping Report.

# Section One: Study Problem and Methodology

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## Chapter One: Study objectives and Importance

### 1. Study Problem

In light of the decline in the competitive power of agriculture and its increased fragility as well as the deterioration in the soil and the diminished quality of water resulting from the excessive use of pesticides and the depletion of resources, in addition to the other challenges farmers face; how can the food sovereignty approach, which is based on agroecological farming using local resources (without the use of chemicals and imported inputs), present an opportunity to increase the efficiency, effectiveness and sustainability of agriculture in the border areas? Can this contribute to increasing the resilience of farmers?

### 2. Study Objectives

**Overall Goal:** To reach recommendations to adopt a developmental agricultural approach for the border areas from a national food sovereignty perspective.

#### **Specific Objectives:**

1. To assess all agricultural practices economically and environmentally in the border areas.
2. To study the impact of the occupation's practices on the agricultural development process in the border areas.
3. To study the economic and social reality of farmers and the enabling environment in the border areas.
4. To explore the available capacities and resources for agriculture that depends on natural farming methods using local resources in order to reach agroecology in the border areas and study the needs to implement it.
5. To raise the awareness of farmers and decision makers on the importance of agriculture that depends on local resources without the use of chemicals.
6. To explore the role of the food sovereignty approach in supporting the resilience of farmers.

### **3. The Significance of the Study**

1. The significance of the study is connected to the importance of the border area, which constitutes nearly half of the agricultural area in the Gaza Strip.
2. The study highlights ethical developmental approaches that take into consideration the social, economic and environmental circumstances of farmers.
3. It highlights the importance of local resources as well as local knowledge in the agricultural development process depending on agroecology.
4. It proposes effective strategies to empower farmers and promote their resilience in the border areas.
5. It studies the different risks and needs in the area and their correlation.

### **4. Scope of the Study**

The study targets border villages and areas located as far as 2kilometersfrom the barrier surrounding the Gaza Strip.

### **5. Challenges**

The study faced several challenges and difficulties, mainly:

1. The imposed curfew and restrictions on movement in the Gaza Strip during the development of the study, which forced us to communicate with a number of farmers in focus groups through video conference.
2. The lack of literature on food sovereignty in the Palestinian context and the lack of knowledge of many officials and farmers on such literature.
3. The closeness of the study area to the border, which resulted in difficulties in reaching the furthest points that farmers reach.

## Chapter Two: Theoretical Framework and Definitions

Although natural farming and the food sovereignty approach constitute an important opportunity that suits the Palestinian context, this approach may face opposition or lack of interest from important actors and stakeholders. What makes matters more complicated in the Gaza Strip is the intensity of agricultural practices that is already facing major challenges, most importantly shortages in resources and difficulty in accessing them, which results in a decline in the income of farmers. Accordingly, the adoption of a new agricultural approach requires in the first stage a study that confirms its viability and ability to achieve a suitable income for farmers. It also requires a multifaceted process, effective coordination among all stakeholders as well as a supporting institutional framework. In order to study the possibility of implementing the food sovereignty approach in the Gaza Strip through agroecology, we must address these concepts and their suitability for agriculture in Palestine in general and in the Gaza Strip in particular.

### A. Food Sovereignty: The Origin and Development of the Concept

UN agencies, particularly the Food and Agriculture Organization (FAO), have been interested in "food security" since the 1970s to combat hunger, which influenced a number of policies and programs in different countries.

In Palestine, food security is considered a major challenge as 60% of the Gaza Strip's residents lack food security due to the high poverty levels, weak purchasing capacity and difficulty in accessing food. As such, the Palestinian Authority and FAO were interested in developing suitable policies to improve food security in Palestine.

On the other hand, towards the end of the 1990s, the concept of food sovereignty emerged from members of LaVia Campesina, an international peasants movement. This concept is based on the right to produce food by developing mechanisms that ensure that giant capitalist corporations do not control and monopolize global food systems. This lies at the heart of the difference between food security as a goal and food sovereignty as mechanisms towards achieving the goal. Accordingly, food sovereignty is an integral part of larger issues relating to social justice and the rights of farmers and marginalized indigenous and rural communities to enable them to control their future and make their own decisions.

The difference between food security and food sovereignty is important. It is described by Windfuhr and Jonsen in their book "Food Sovereignty: Towards Democracy in Localized Food Systems" **published in 2005; "While food security is more of a technical concept, and the right to food a legal one, food sovereignty is essentially a political concept."**

**The DECLARATION OF NYÉLÉNI defines food sovereignty as follows:**<sup>3</sup>

"The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems where the aspirations, needs and living standards of those who produce, distribute and consume food are in the heart of the food systems and policies rather than the demands of the markets and corporations. Overall, food sovereignty affirms local control and self-sufficiency, while food security affirms dependence on the existing global economy and free agricultural markets."

In the Palestinian context, should the concept of food sovereignty be prioritized over the concept of food security because food sovereignty is an important political issue to highlight the struggle of Palestinians and their endeavor to realize development independent from the occupation?

Can food sovereignty be discussed in Palestine in light of the lack of sovereignty over resources to produce food (land and water) and the difficulty in accessing them?

How can the concept of food sovereignty be translated in the strategies of local and international actors, particularly in light of the rarity of literature that address this concept and the lack of formulation of this approach in Palestine?

In the Palestinian context, food sovereignty presents an opportunity to replace imported production inputs that are very costly for producers. It is also an opportunity to replace imported agricultural products in order to strengthen self-sufficiency. However, this opportunity faces many impediments due to the lack of Palestinian sovereignty over natural resources on the one hand and factors related to production patterns on the other, whereby self-sufficiency cannot be realized with many crops. This mainly includes all types of grains and many types of fruit. At play are both political factors mentioned earlier, but also natural ones, including climatic characteristics such as temperature, lack or intermittency of rainfall, the scarcity of water resources.

This study will focus on the possibility of implementing the food sovereignty approach in the border areas of the Gaza Strip by adopting the agroecological approach.

<sup>3</sup> <https://viacampesina.org/en/declaration-of-nyl/>

## **B. Agroecology in the Context of Food Sovereignty**

The food sovereignty approach aims at achieving self-sufficiency depending on local resources. Agroecology is a key component to realize food sovereignty. Accordingly, in this section we will address the concept of agroecology and the possibility of implementing it in the study area.

Since the end of the last century, calls to introduce agroecology models in the food sovereignty discourse started in an attempt to build an alternative for the global food systems controlled by neoliberalism as an economic model.

Agroecology is a comprehensive approach towards production that includes intensifying small-scale production techniques and farming systems in a socially and environmentally sustainable manner that combines between knowledge and agricultural practices. This is realized by implementing an agricultural program that adopts agricultural methods compatible with the natural ecosystem. Agroecology works in complete harmony with the natural life cycle. The main objective of agroecology is to provide healthy and safe food sources in sufficient quantities and sustainably for both humans and other creatures living on this planet.

**According to agroecology expert Saad Dagher, agroecology is defined as**“the agricultural philosophy and practical application that consider the laws of nature and ecosystems, care for all forms of life on earth, work harmoniously with the surrounding environment without damaging its elements (soil, air, water, biodiversity, human beings) and lead to the renewal of life and its elements to produce healthy food for human beings and animals.”<sup>4</sup>

In agroecological practices, there is clear interest in maintaining natural resources by rationalizing the use of such resources to ensure their sustainability for future generations. Maintaining the natural form and condition of the components of the ecosystem is manifested in the following:

1) Water Resources: For example, this system seeks to sustain the flow of water from its original sources as it has been for centuries. The flow of natural rivers must remain the same and depending on water sources that feed them and valleys must not be filled and their depth and width maintained, even if they are dry for years. Springs must not be deformed and the flow of water must not be altered. Lakes must not be dried and filled. The extraction of groundwater from aquifers must be rationalized in order to lengthen the use of the water supply. Additionally, rainwater-harvesting methods must be adopted and wastewater must be treated.

2) Natural Forests: they must not be deforested. The trees may be cut down for timber, but only while simultaneously planting trees to replace them based on a sound system that maintains the overall form of the forest.

3) Hills and Mountains: leveling and terracing may be implemented for agricultural purposes, but without deforming the overall form of hills and mountains.

4) Agricultural Soil: Must be protected from erosion and its fertility maintained by following an agricultural cycle and selecting suitable crops for each type of soil. Organic fertilizers need to be added to compensate for the lost nutrients, and a plowing system must be followed in a manner that maintains the structure of the soil and the biological balance of living organisms within it. Plowing must be minimized and ultimately stopped.

5) Maintaining nutrients in the Soil: all the remnants of crops, weeds and farm animal waste must be recycled. They are arranged in piles and wet with water, then regularly turned in order for them to become organic material that is added to the soil as an enhancer and fertilizer known as “compost”.

6) Biodiversity: protecting birds, insects and other beneficial organism, both micro and large living ones, and working to provide a suitable environment to ensure their reproduction and persistence.

### **The Relationship between Agroecology and Organic and Sustainable Farming**

Both agroecology and organic farming regulate agricultural practices comprehensively. Both have similar approaches and crosscutting goals. These two approaches represent a more advanced model that seeks to achieve sustainable agricultural activity, despite some differences in the applications and philosophy, particularly with relation to social dimensions.. It should be noted that organic farming may constitute a starting point towards ultimately reaching agroecology. However, organic farming is often not developed to be more encompassing to evolve into agroecology. organic farming uses fewer pesticides, reduces soil erosion, decreases nitrate leaching into groundwater and surface water, and recycles animal wastes back into the farm

### **The Relationship between Organic Farming and Agroecology**

Organic farming is a type of farming that maintains the environment. Organic farming may sometimes be called agroecology without making the proper distinction between the two. For example, some countries, such as Germany, call organic farming agroecology “ökologische Landwirtschaft”, and in Sweden it is called “Ekologiskt lantbruk”. There are some who call organic farming “Biologicalagriculture”, which has the same definition. Meanwhile, sustainable farming seeks to maintain agricultural inputs/resources and production sustainably. To this end, it adopts a combination of some organic farming and agroecological methods as well as comprehensive management of crops or diseases. While organic farming, in its definition, strives for sustainability, through the use of fertilizers of organic origin, there are exceptions to the rule according to the organic standards that also include a certification system that organic farmers should abide by in order to be officially certified organic farmers .<sup>5</sup> On the other hand, agroecology does not allow the use.

<sup>5</sup> <https://www.usda.gov/media/blog/27/10/2020/organic-101-allowed-and-prohibited-substances>

## **The Environmental and Economic Importance of Agroecology**

One of the objectives of adopting agroecology methods is to maintain the integrity and health of the environment, as agroecology would:

- 1) Preserve agricultural soil from erosion.
- 2) Maintain and strengthen the fertility of soil.
- 3) Preserve water resources.
- 4) Preserve the natural habitat of all forms of wild life.
- 5) Contribute greatly to reducing greenhouse gas emissions, thus reducing climate change and the rise in temperatures.
- 6) Contribute to enriching biodiversity.
- 7) Preserve the stability and balance of the natural environment in general.

The economic benefits can be summarized as follows:

- 1) Reducing production inputs and external expenses, consequently increasing the economic viability of farming.
- 2) Increasing the profit of small holding farmers in particular, as farmers depend on resources/production inputs that are available locally, such as seeds, fertilizers, etc.
- 3) Savings on the treatment costs of human diseases caused by chemical farming.
- 4) Depending on manual labor contributes to providing job opportunities and reducing unemployment, particularly in poor countries where efforts were wasted on purchasing farming equipment from large foreign corporations.

## Chapter Three: Methodology

### Study Methodology

In order to effectively study the food sovereignty approach, stakeholders must be motivated to explore, transform and optimize resources. Therefore, changing their direction to support this approach is extremely important and can be achieved through motivating them after identifying them based on their importance, influence and the resources they can provide to the project.

To answer this question, the study adopted the descriptive analytical approach, particularly the participatory approach, which is at this time the most commonly used in preparing developmental studies.

The reason behind this is the suitability of the mechanisms and methods used in this approach and its ability to achieve its goals within a relatively short period of time.

### **The importance of the participatory approach stems from following aspects within it:**

1. It analyzes stakeholders based on their position, potential and capacities.
2. It gathers all actors in the study without excluding those that may be in the opposition.
3. It implements grassroots planning, which puts them in the position of decision makers in the developmental process, rather than mere recipients of services.
4. It increases the sense of ownership amongst stakeholders.
5. It achieves long-term social sustainability.
6. It Increases commitment to the goals and results of the plan by all participants as it reflects their interests, which qualifies it for success.

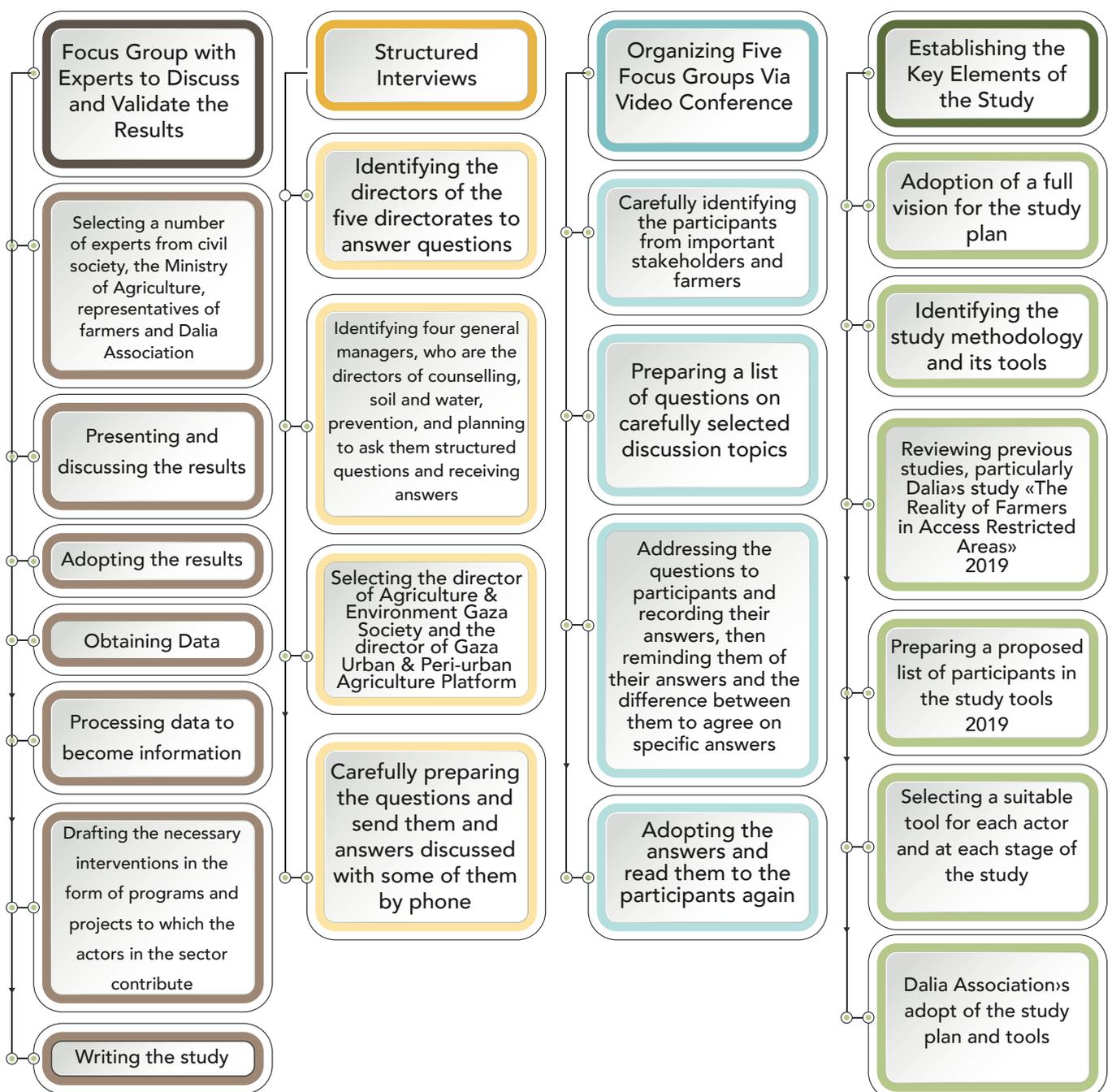
Stakeholders and key actors in the agricultural sector were selected in this study and suitable tools were adopted to ensure their effective participation, as follows:

**a. Farmers:** Their inclusion aims to enable them to identify their needs and problems, arrange their priorities, plan their future and participate in making decisions that aim at improving the quality of their lives through a number of programs and projects. The study depended on the participation of farmers in focus groups, most of which were carried out via video conference because of the COVID19- related restrictions on movement in the Gaza Strip.

**b. Experts and Managers at the Ministry of Agriculture:** Structured questions were addressed to four general managers and directors of the five Ministry of Agriculture Directorates in the five governorates (North Gaza, Gaza, Al-Wusta, Khan Yunis, Rafah).

**c. Experts on Food Sovereignty and Agroecology:** They were contacted by phone and were asked questions in the form of a structured interview.

**d. Experts at the Sectoral Level:** An interactive focus group was held to discuss and validate the results of the study. The participants included experts from all organizations working in the agricultural sector as well as representatives of farmers. The figure below shows the stakeholders and the nature of their participation in the study:



## Managing Working Groups and Analyzing its Results

1. Semi-structured questions were adopted to manage the discussions of focus groups. An initial list of questions on the meeting topic were prepared. The questions were carefully selected and addressed to participants in the meeting. Participants answered the questions orally, which were recorded during the discussion.
2. The Information resulting from the meeting was analyzed horizontally by transforming the qualitative information into quantitative outcomes and data, taking into account the weight and influence of actors in the sector. One of the factors affecting the priority in the selection and importance is the repetition of information or answers to the key questions by a larger number of participants. The answers most frequently repeated by participants took top priority, then the answers with the lower frequency and so on and so forth. There were also other factors that affect the priority in selection.
3. In this study, five focus groups were held; three in north Gaza Strip, east Gaza, Juhur Eddik and east Khan Yunis Khan Yunis and two held through video conference with farmers in Abasan Al-Kabeera and Al-Shoka. These meetings aimed at identifying the main problems faced by farmers as well as their priorities. They also aimed at identifying their most important local resources and the nature of their farming practices to examine the possibility of implementing the food sovereignty approach in their areas.
4. A list of questions was prepared prior to meetings. The questions were carefully selected and addressed to farmers to receive answers.



Picture of a focus group meeting with farmers in Abasan Al-Kabeera, located 350meters from the barrier  
16 September 2020

## **Section Two: Farming Patterns in the Targeted Areas**

### **Chapter One: The Different Social Forms of Production**

Like all Mediterranean countries, farmers practice agricultural activities either just to meet their food needs, or to meet their needs and sell the excess in order to be able to invest where profits from agricultural production is their main source of income.

Social structures differ based on the social relations that combine production factors in different methods: land, work and production means that determine the nature, size and value of production in different ways. These different social structures are referred to as "Social Forms of Production."<sup>6</sup> The theoretical performance of these social forms was mainly analyzed by the Russian rural sociologist Chayanov (1923) as well as Mullassoex (1973).

**Based on this definition, there are many social forms:**

1. Domestic form of production
2. Peasant family form.
3. Marketing family form.
4. State form.
5. Capitalist form.
6. Group form.

Our study will focus on the family production form, as it is the most common in the border areas. Moreover, the UN General Assembly adopted the Decade of Family Farming (-2019 2028). Family farming includes three forms that will be addressed as follows:<sup>7</sup>

#### **1. Domestic Form of Production**

In this form, farmers practice agricultural activity to meet and cover their essential food needs, particularly wheat and some vegetables, or to feed their livestock. This form of rain-fed agricultural activity is mostly characterized by non-extensive farming and low investment. In Gaza, this form was primarily found in Khaza'a and Abasan that have clay soil, which has high capacity to preserve water, making it suitable for grains and other

<sup>6</sup> Abdelhakim. T & Campagne, 2001

<sup>7</sup> Nabil ABU Shammala. Le risqué dans lagriculture palestinienne. IAMM.2003

## 2. Peasant Family Farming

In this form of farming, farmers practice agricultural activities for their own consumption and sell the excess produce to purchase other commodities that serve household needs. Farming in this form is partly rainfed and partly irrigated. It is composed of field vegetables such as peas and zucchini. In Gaza, this form found primarily in Khaza'a and East Al-Breij.

## 3. Marketing Family Form

This is the most important form whereby many farmers invest to increase their income. Farming in this form is extensive and uses machinery, fertilizers and pesticides. It also includes the use of greenhouses. The most common crops in this form are tomatoes and cucumber in greenhouses, and strawberries in plastic low tunnels. This form of farming was found in most border areas, but mainly in Beit Lahia where strawberries are produced as well as a small number of greenhouses in Khaza'a.



Family farming in Gaza Strip

## Chapter Two: The Number and Types of Agricultural Holdings and Planted Areas in Each Locality of the Border Areas

This chapter will address the composition of farming in border areas through identifying the number and types of agricultural holdings\*, in addition to the common farming patterns in the area based on the latest study implemented by the Geographic Information Systems Unit at the Ministry of Agriculture in Gaza.

### 1. Al-Shoka

Al-Shoka is located in the south east of the Gaza Strip. It is bordered by Rafah from the western side and Salah Eddin Street separates it from the city. It is bordered by the Rafah Border Crossing with Egypt and the Egyptian-Palestinian borders from the south. Al-Shoka is also bordered by the Green Line and Sufa Crossing from the east and Al-Fukhari area from the north. The population of Al-Shoka reached 18,290 residents by mid2021.<sup>8</sup> The total area of Al-Shoka is 22,000 dunums, %50 of which is agricultural land. Al-Shoka is considered of great strategic importance, as it is the Gaza Strip's gate to the outer world. Gaza International Airport, the Return Crossing (Rafah) to Egypt and Sufa Crossing are all located in Al-Shoka. It is worth mentioning that the airport is destroyed and not in use.



Drought in Al-Shoka – Rafah  
September 2020

\*An agricultural holding, or holding or farm is a single unit, both technically and economically, operating under a single management.

<sup>8</sup> Palestinian Central Bureau of Statistics, Communities Rafah District and the Estimated Population 2021-2017.

In Al-Shoka, the total number of agricultural holdings is 1,316, distributed as follows: 1,022 tree, 242 vegetable and 52 greenhouse holdings. The total area of these holdings is 5,063 dunums and the number of trees planted is 95,042. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Shoka reached 3.29 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olives	491	1,909	3.29	62,982
	Unclassified	336	1,408		0*
	Lemons	129	339		13,560
	Oranges	37	83		3,302
	Grape Vines	29	76		15,198
Vegetables		242	1,130		0
Greenhouses		52	118		0
<b>Total</b>		<b>1,316</b>	<b>5,063</b>		<b>95,042</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees.

## 2. Al-Fukhari

Al-Fukhari is one of Khan Yunis City's communities (within the jurisdiction of Khan Yunis governorate). It is bordered from the east by the Green Line and from the west by Khan Yunis City. It is bordered by Abasan Al-Kabira from the north and Salah Eddin Street no. 4 and Al-Naser from the south. It is 7km north of Yasser Arafat Airport. The European Hospital as well as the housing projects for those who lost their houses to bombardments in the Intifada, which were implemented by UNRWA in the area, are within the jurisdiction of the municipality. The total area of Al-Fukhari is 9,936 dunums and the jurisdiction of Al-Fukhari municipality is on 7,028 dunums. According to the Palestinian Central Bureau of Statistics, the total population reached 7,192 by mid2021- ("Communities in Khan Yunis Governorate and Population Estimates 2021-2017").

The number of holdings in Al-Fukhari is 1,080, including 773 tree, 257 vegetable and 50 greenhouse holdings. The total area of these holdings is 8,002 dunums, and the number of trees planted in those holdings is 104,298. Data from the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Fukhari reached 4.92 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	337	3,081	4.92	0*
	Olives	272	1,329		43869
	Lemons	113	519		20744
	Grape Vines	34	177		35303
	Clementines	17	110		4382
Vegetables		257	2,695		0
Greenhouses		50	91		0
Total		1,080	8,002		10,4298

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

### 3. Khaza'a

Khaza'a is located east of Khan Yunis City and is adjacent to the Green Line. The residents of the town have a long history that extends to the Arab tribe of Khaza'a originally from the Arab Peninsula. The total area of the town is approximately 8,500 dunums, 4,000 of which are inhabited by town residents and the remaining 4,500 are located inside the Green Line. The population of the town reached 12,712 residents by mid-2021 (Palestinian Central Bureau of Statistics, Communities Khan Yunis Governorate and the Estimated Population 2021-2017).

The number of holdings in Al-Fukhari is 1,717, including 1310 tree, 368 vegetable and 39 greenhouse holdings. The total area of these holdings is 2,327 dunums, and the number of trees planted is 24,468 trees. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Khaza'a reached 0.78 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	437	822	0.78	0*
	Olives	500	511		16,866
	Lemons	259	144		5,774
	Palms	65	32		795
	Almonds	49	26		1,033
Vegetables		368	752		0
Greenhouses		39	40		0
<b>Total</b>		<b>1,717</b>	<b>2,327</b>		<b>24,468</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

#### 4. Abasan Al-Kabeera

Abasan Al-Kabeera is located 4kilometers southeast Khan Yunis Khan Yunis City and is 75metersabove sea level. A local paved road connects it to the villages of Bani Suhaila and Khaza'a. It is bordered by the Green Line from the north, Abasan Al-Jadida town from the northwest, Bani Suhaila from the west, the town of Khan Yunis Khan Yunis "Qa' Al-Ein" from the southwest, al-Fukhari from the southeast and Khaza'a from the east.

The total area of the town is estimated at 19,000 dunums, planted with grains, almonds, watermelons and melons and farming depends on rainwater. The residential area in the town is 6,000 dunums, with a total population estimated at 29,879 in mid2021- (Palestinian Central Bureau of Statistics, Communities Khan Yunis Governorate and the Estimated Population 2021-2017).

The number of holdings in Abasan Al-Kabeera is 3,008, including 2,275 tree, 647 vegetable and 86 greenhouse holdings. The total area of these holdings is 4,084 dunums and the number of trees planted in those holdings is 48,534. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Abasan Al-Kabeera reached 0.86 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	818	1,374	0.86	0*
	Olives	950	1,144		37,755
	Almonds	120	122		4,894
	Lemons	192	99		3,963
	Palms	195	77		1,922
Vegetables		647	1199		0
Greenhouses		86	69		0
Total		3,008	4,084		48,534

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 5. Abasan Al-Jadeeda

Abasan Al-Jadida is located east of Khan Yunis governorate and is bordered by the Green Line from the east, Qarara town from the north, Bani Suhaila from the west and Abasan Al-Kabeera from the south.

The population of Abasan Al-Jadeeda is estimated at 10,370 by mid 2021- (Palestinian Central Bureau of Statistics, Communities Khan Yunis Khan Yunis Governorate and the Estimated Population 2021-2017). The majority of its residents work in agriculture.

The number of holdings in Abasan Al-Jadeeda is 1,027, including 743 tree, 269 vegetable and 15 greenhouse holdings. The total area of these holdings is 2,591 dunums, and the number of trees planted in those holdings is 19,792. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Abasan Al-Jadeeda reached 1.2 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	308	1,024	1.20	0*
	Olives	333	497		16,391
	Lemons	60	50		1,998
	Mandarins	27	25		985
	Almonds	15	10		418
Vegetables		269	974		0
Greenhouses		15	11		0
Total		1,027	2,591		19,792

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 6. Bani Suhaila

Bani Suhaila is one of the most important cities in the Gaza Strip. It is located in the eastern part, east of the main road of Salah Eddin Street. It is 2 kilometers east of Khan Yunis city and 1 kilometer east of Rafah road leading to Gaza. A local road connects it to the main road leading to Khan Yunis city from the western side and Khaza'a from the eastern side. The total area of its lands is around 11,100 dunums. The lands of Bani Suhaila have medium fertility and the crops depends on medium rainwater. The city is known for a number of crops, mainly grains, vegetables and watermelons. The population of Bani Suhaila is estimated at 46,257 by mid2021- (Palestinian Central Bureau of Statistics, Communities Khan Yunis District and the Estimated Population 2021-2017). The majority of its residents work in commerce and services sectors, while others work in the city of Khan Yunis. Many of its residents work in agriculture.

The number of holdings in Bani Suhaila is 2,104, including 1,739 tree, 272 vegetable and 93 greenhouse holdings. The total area of these holdings is 3,071 dunums, and the number of trees planted in those holdings is 49,324. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Bani Suhaila reached 1.07 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olive	757	1,105	1.07	36,466
	Unclassified	413	852		0*
	Lemons	364	247		9,873
	Palms	154	90		2,252
	Sidra	51	15		733
Vegetables		272	646		0
Greenhouses		93	116		0
Total		2,104	3,071		49,324

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 7. Wadi Al-Salqa

Wadi Al-Salqa is located in Al-Wusta Governorate (Deir Al-Balah Governorate) , southeast of Deir Al-Balah. It is bordered from the north by the city of Deir Al-Balah, Salah Eddin Street and the city of Deir Al-Balah from the west, Kisofim Street and Al-Qarara from the south and the Green Line from the east. The population of Wadi Al-Salqa is estimated at around 7,435 by mid2021- (Palestinian Central Bureau of Statistics, Communities Deir Al-Balah Governorate and the Estimated Population 2021-2017). The majority of residents are farmers and the areas under the municipality's jurisdiction are agricultural lands. The percentage of lands falling within its area of its jurisdiction reaches %80, and the total area of Wadi Al-Salqa is 6km<sup>2</sup>.

The number of holdings in Wadi Al-Salqa is 582, including 416 tree, 122 vegetable and 44 greenhouse holdings. The total area of these holdings is 3,335 dunums, and the number of trees planted in those holdings is 43,537. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Wadi Al-Salqa reached 5.48 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olive	214	1,231	5.48	40,625
	Unclassified	189	1045		0*
	Almonds	4	45		1,795
	Palms	8	33		832
	Pomegranates	1	7		285
Vegetables		122	834		0
Greenhouses		44	140		0
<b>Total</b>		<b>582</b>	<b>3,335</b>		<b>43,537</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 8. Al-Maghazi

Al-Maghazi is located in Al-Wusta Governorate (Deir Al-Balah Governorate) on the eastern side of Salah Eddin Street. It is bordered from the north by Al-Breij refugee camp, Al-Masdar village from the south, the Green Line from the east and Al-Zawayde from the west. Agriculture is considered one of the main professions practiced by the residents and their farming depends on water wells as well as rainwater for irrigation.

The number of holdings in Al-Maghazi is 108, including 104 tree, 30 vegetable and 5 greenhouse holdings. The total area of these holdings is 625 dunums, and the number of trees planted in those holdings is 9,770. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Maghazi reached 4.06 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	41	188	4.06	0*
	Olive	42	153		5,053
	Mandarines	6	76		3,039
	Lemons	10	25		1,017
	Clementines	5	17		661
Vegetables		30	157		0
Greenhouses		5	9		0
<b>Total</b>		<b>139</b>	<b>625</b>		<b>9,770</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 9. Al-Breij

Al-Breij is located south of Gaza Valley (Wadi Ghazza). It is bordered by Al-Maghazi refugee camp from the south, Al-Nuseirat refugee camp from the west, Gaza valley from the north and the Green Line from the east. The railway connecting Egypt to Lyd (Al-Qantara-Haifa railway) that used to connect Egypt to the City of Lyd and the international road connecting Cairo to Gaza are located directly to its west. The population of the refugee camp based on the estimates of PCBS in 2020 is around 30,184. Al-Breij is located on a relatively high hill and it is a coastal area, as it is located over 4kilometers away from the Mediterranean Sea. Al-Bureij refugee camp is located near Gaza Valley, which has become an open wastewater pool that flows directly into the sea. According to the United Nations Environment Programme, around 80,000 cubic meters (m<sup>3</sup>) of untreated or partially treated wastewater is poured into the sea in Gaza on a daily basis, which resulted in serious environmentally-related diseases, including diarrhoea amongst children at the refugee camp. Some %90 of the water is not suitable for human consumption. The number of holdings in Al-Breij is 409, including 346 tree, 59 vegetable and 4 greenhouse holdings. The total area of these holdings is 1,983 dunums, with a total of 47,899trees and 34 agricultural wells. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Breij is 4.81 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olive	222	1,191	4.81	39303
	Unclassified	69	285		0*
	Lemons	32	142		5,662
	Palms	19	57		1,429
	Mandarines	4	38		1,505
Vegetables		59	264		0
Greenhouses		4	6		0
<b>Total</b>		<b>409</b>	<b>1,983</b>		<b>47,899</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 10. Juhr Eddik (Gaza Valley Village)

Gaza Valley village is known to Palestinians as "Juhr Eddik". It contains one of the two main solid waste landfills (sanitary dumping sites) in the Gaza Strip, however, it is also an important part of the "vegetable basket" in the Gaza Strip. It is one of the most fertile areas for farming. It provides a large portion of produce to village residents and to the Gaza Strip residents in general. The village is located south of Gaza governorate, in the center between Gaza City and Al-Wusta Military Camps. It is 8 kilometers away from Gaza City and is bordered by the Green Line from the east, Salah Eddin Street from the west, Al-Mintar Crossing (Karni) road from the north and Gaza Valley from the south.

It is characterized by its plains and has some hills such as Al-Ghilani and Juhr Eddik Hills. Its lands slope from the north east towards the south where Gaza Valley flows. The village depends on wells for drinking water and irrigation, as it has 63 wells. Most of the water in the village is saline because the Israeli side dug water wells along the Green Line to the east, and over extracting water from its side affects the water level and salinity in the water wells in Juhr Eddik. Based on the estimates of PCBS in 2020, the population of Juhr Eddik is around 5,014.

The number of holdings in Juhr Eddik is 442, including 364 tree, 76 vegetable and 2 greenhouse holdings. The total area of these holdings is 2,281 dunums, containing 28,765 planted trees 63 agricultural wells. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Juhr Eddik reached 3.10 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	97	750	3.10	0*
	Olive	173	556		18,339
	Lemon	66	207		8,280
	Palms	27	69		1,714
	Apples	1	11		432
Vegetables		76	684		0
Greenhouses		2	4		0
<b>Total</b>		<b>442</b>	<b>2,281</b>		<b>28,765</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 11. Beit Hanoun

Beit Hanoun is located in the north of the Gaza Strip and is 50 meters above sea level. It is bordered by the Green Line from the east and the north and Beit Lahia from the west and south. The location of Beit Hanoun is considered special because it has the largest land crossing connecting the Gaza Strip with what is today Israel (Beit Hanoun Crossing).

Beit Hanoun is considered one of the most densely populated cities 57,118 residents according to 2020 PCBS estimates, all living in an area of 12,500 dunums.

Beit Hanoun is an agricultural city as most of its residents depend on farming for a living. It was well known for citrus fruits, vegetables, stone fruits (drupes such as plum, cherry, apricot, peach, and almond), apples, figs and grapes, which supplied the city and neighboring areas with the fresh produce they need. The area allocated for farming constitutes 46% of the total area of the city; however, the city has become barren due to continued aggression by the Israeli occupation. During the 2000 Intifada, the occupation bulldozed 7,500 dunums of the city's lands, which were all agricultural lands.

The number of holdings in Beit Hanoun is 1,540, including 1,310 tree , 215 vegetable and 15 greenhouse holdings. The total area of these holdings is 8,073 dunums, with 99,212 planted trees and 180 agricultural wells. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Beit Hanoun reached 2.75 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	352	2748	2.75	0*
	Olive	644	1930		63,667
	Lemons	243	560		22,410
	Oranges	47	184		7,362
	Mandarins	24	144		5,773
Vegetables		215	2,480		0
Greenhouses		15	27		0
<b>Total</b>		<b>1,540</b>	<b>8,073</b>		<b>99,212</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 12. Beit Lahia

Beit Lahia is located around 7kilometers north east of Gaza. It is at the far northern part of the Gaza Strip. The former Rafah-Haifa railway and the main coastal road are located 4kilometers east of the city. It is connected to the coastal road leading to Gaza to the south and Haifa to the north. It is also connected by other roads to the Beit Hanoun, Jabalia, Al-Nazleh and the Gaza City. From the North, it is bordered by the land of Hiribya, a forcefully depopulated Palestinian village, incorporated in what is called now Israel. From the west, it is bordered by the Mediterranean Sea, and from the south bordered by Jabalia and Al-Nazleh, and Beit Hanoun from the east. The total area of Beit Lahia is 383,765 dunums and most of its agricultural lands have sandy soil. The trees planted in the area include apples, sycamore figs, grapes, figs, apricots and peaches. The loam soil is planted with different types of citrus, grains and vegetables. Farming depends on rainwater and wells dug in recent years to irrigate the rehabilitated sandy lands. According to PCBS estimates in 2020, the population of the city is around 98,233. The city is surrounded by sand dunes that reach as high as 55meters above sea level. It has many big sycamore fig trees.

The number of holdings in Beit Lahia is 47, including 42 tree, 4 vegetable and 1 greenhouse holdings. The total area of these holdings is 44 dunums, and the number of trees planted in those holdings is 1,489. Data from the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Beit Hanoun reached 2.75 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Lemons	15	13	0.82	525
	Olives	15	11		351
	Mandarins	4	7		290
	Unclassified	7	6		0*
	Grape Vines	1	2		323
Vegetables		4	4		0
Greenhouses		1	1		0
<b>Total</b>		<b>47</b>	<b>44</b>		<b>1,489</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

### 13. Al-Qarara

Al-Qarara is located in the northeastern part of Khan Yunis governorate south of the Gaza Strip. It is bordered by Deir Al-Balah from the northwest, Wadi Al-Salqa from the northeast, Khan Yunis from the southwest and Bani Suhaila and Abasan from the southeast. It is one of the few cities with territories extending to the eastern part of Negev and the sea to the West at the same time. It is one of the cities that are continuously subject to attacks and incursions by the Israeli military due to its proximity to the eastern border of the Gaza Strip (Negev borders) as well as its proximity to the settlements on the coast prior to the Israeli withdrawal from Gaza in 2005. Al-Qarara is considered one of the top regions in the Gaza Strip in terms of population growth. Khan Yunis It is also bordered by the 1948 truce line from the east and the Mediterranean Sea from the west. The total area of Al-Qarara is estimated at 12,000 dunums, constituting around %3 of the total area of the Gaza Strip and the population is constantly increasing because its location is an attraction. The population of Al-Qarara reached 32,376 people by mid2021-.

The majority of its population is located in the center of Al-Qarara, in addition to some communities in the eastern and western parts.

The number of holdings in Al-Qarara is 2,522, including 2089 tree, 356 vegetable and 77 greenhouse holdings. The total area of these holdings is 5,463 dunums and the number of trees planted in those holdings is 95,673. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Qarara reached 1.72 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olive	1,168	2,536	4.81	83,691
	Unclassified	482	1,322		0*
	Palms	205	169		4,214
	Lemons	203	143		5,730
	Peaches	31	51		2,038
Vegetables		356	1,147		0
Greenhouses		77	95		0
<b>Total</b>		<b>2,522</b>	<b>5,463</b>		<b>95,673</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

#### 14. Al-Zaytoun

Al-Zaytoun is located in the southeastern part of Gaza City. It is bordered by Juhr Eddik from the south. The area is known for its clay soil and fertile lands. It has a lot of olive trees, hence its name (Zaytoun in Arabic translates to "olive").

The number of holdings in Al-Zaytoun is 549, including 489 tree, 55 vegetable and 5 greenhouse holdings. The total area of these holdings is 1,817 dunums and the number of trees planted in those holdings is 54,577. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in Al-Qarara reached 3.13 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olives	346	1,076	3.13	35,496
	Lemons	55	246		9,847
	Peaches	3	166		6639
	Unclassified	70	149		0
	Guavas	15	65		2,595
Vegetables		55	107		0
Greenhouses		5	8		0
<b>Total</b>		<b>549</b>	<b>1,817</b>		<b>54,577</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 15. Eastern Area "Izbet Abed Rabbo"

The number of holdings in the Eastern Area "Izbet Abed Rabbo" is 1,305, including 1135 tree holdings, 169 vegetable and 1 greenhouse holding. The total area of these holdings is 3,511 dunums, and the number of trees planted in those holdings is 56,603. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in this area reached 1.82 dunums.

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Unclassified	247	1,047	1.82	0
	Olive	566	941		31,066
	Lemons	287	566		22,645
	Lemons	24	44		17,55
	Oranges	11	28		1,137
Vegetables		169	883		0
Greenhouses		1	2		0
<b>Total</b>		<b>1,305</b>	<b>3,511</b>		<b>56,603</b>

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## 16. Al-Shujaiya "Ijdeeda" and Al-Shujaiya "Al-Turkman"

Al-Shujaiya is one of the oldest and largest neighborhoods in the city of Gaza. It is located east of the city and is divided into two sections: Al-Shujaiya "Ijdeeda" (New) and Al-Shujaiya Al-Turkman (Old).

The number of holdings in Al-Shujaiya "Ijdeeda" is 191, including 170 tree and 21 vegetable holdings. The total area of these holdings is 461 dunums, and the number of trees planted is 9,580. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in this area reached 1.63 dunums.

The number of holdings in Al-Shujaiya Al-Turkman is 171, including 158 tree and 13 vegetable holdings. The total area of these holdings is 135 dunums and the number of trees planted in those holdings is 4665. The data of the Agricultural Atlas issued by the Geographic Information System Department at the Ministry of Agriculture shows that the average area of each holding in this area reached 0.82 dunums.

## Al-Shujaiya Ijdeeda

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olives	97	234	1.63	7,728
	Unclassified	22	90		0*
	Lemons	36	40		1,584
	Pomegranates	10	5		186
	Other	5	2		82
Vegetables		21	90		0
Greenhouses		0	0		0
Total		191	461		9,580

\*The number of trees was not identified as most holdings are mixed between vegetables and trees

## Al-Shujaiya Al-Turkman

Type of Holding	Type of Trees	Number of Holdings	Area in Dunums	Average Holding Area in Dunums	Number of Trees
Trees	Olives	87	93	0.82	3,073
	Lemons	46	28		1,133
	Other	5	6		247
	Palms	12	3		87
	Almonds	8	3		125
Vegetables		13	2		0
Greenhouses		0	0		0
Total		171	135		4,665

## 17. East Salah Eddin Areas

Area	Trees			Vegetables		Greenhouses		Total	
	No. of Holdings	Area in Dunums	No. of Trees	No. of Holdings	Area in Dunums	No. of Holdings	Area in Dunums	No. of Holdings	Area in Dunums
East Salah Eddin North	88	528	22,083	73	2,075	0	0	161	2,603
East Salah Eddin Gaza	312	909	30,054	109	658	1	0.24	422	1,567
East Salah Eddin Al-Wusta	324	1,335	41,582	238	970	39	69	601	2,374
East Salah Eddin Khan Yunis	1521	2,711	104,788	1474	6,483	71	82	3,066	9,276
East Salah Eddin Rafah	227	1,383	57,561	348	4,789	22	78	597	6,250
<b>Total</b>	<b>2,472</b>	<b>6,866</b>	<b>256,068</b>	<b>2,242</b>	<b>14,975</b>	<b>133</b>	<b>229</b>		

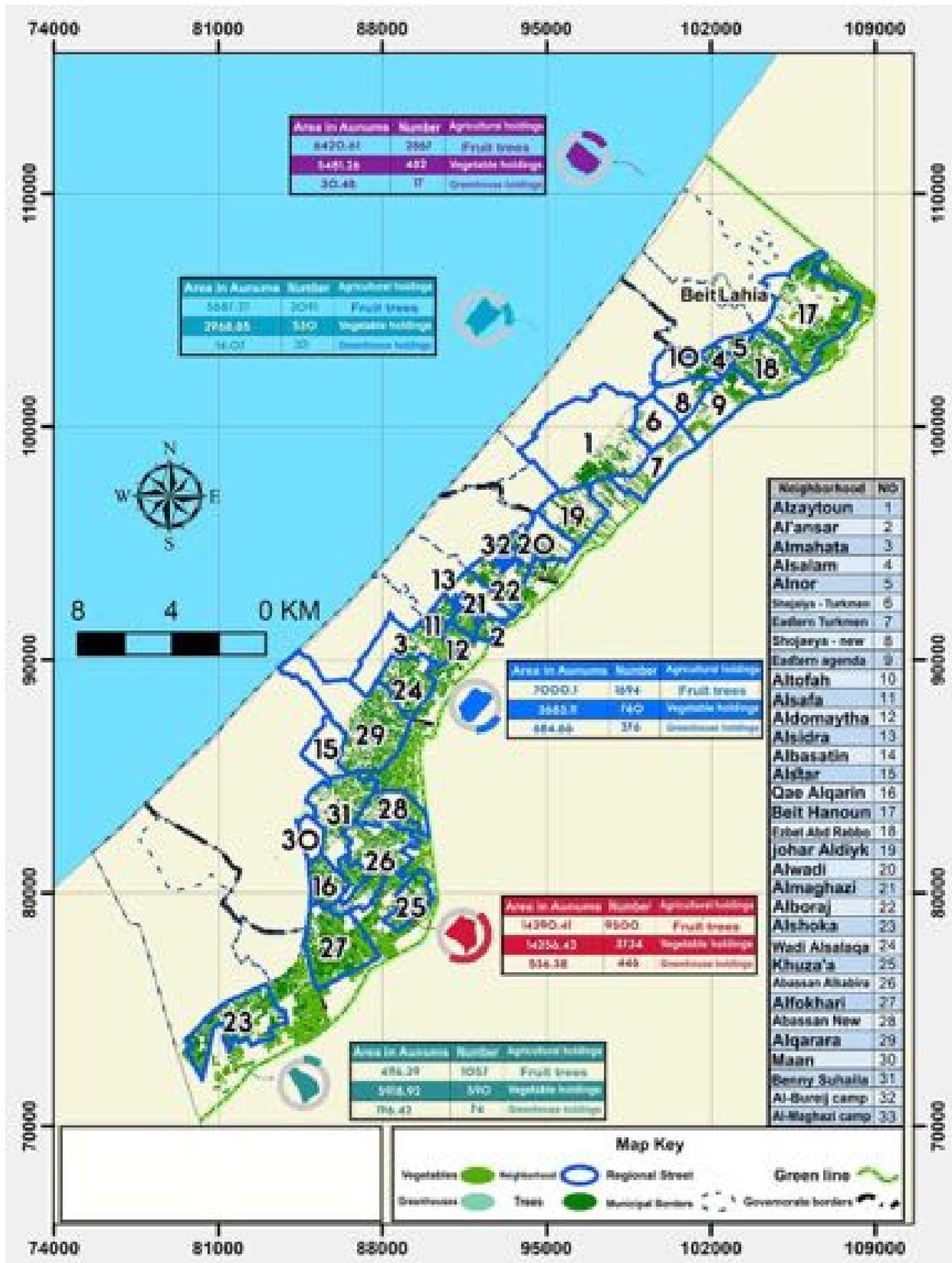
The following table shows the average area of holding in the areas east of Gaza Strip

Area	Average Area of Holding (Dunums)
East Salah Eddin North	6.0
East Salah Eddin Gaza	2.91
East Salah Eddin Al-Wusta	4.12
East Salah Eddin Khan Yunis	1.78
East Salah Eddin Rafah	6.09

The following table shows the number of plant and animal holdings in each locality as well as the area of agricultural holdings. The number of plant holdings reached 22,996 holding and the number of animal holdings reached 3,296, making the total number of holdings 26,292. The total area of the holdings mentioned in the table below is 84,081 dunums.

Neighborhood Name	No. of Plant Holdings	No. of Animal Holdings	Total No. of Holdings	Area of Holdings (Dunum)
Al-Breij	409	77	486	1,983
Al-Shoka	1,316	115	1,431	5,063
Al-Fukhari	1,080	75	1,155	8,002
Al-Qarara	2,522	335	2,857	5,463
Al-Maghazi	139	22	161	9,770
Bani Suhaila	2,104	399	2,503	3,071
Beit Hanoun	1,540	168	1,708	8,073
Juhr Eddik	442	28	470	2,281
Khaza'a	1,717	444	2,161	2,327
East Salah Eddin North	161	5	166	2,603
East Salah Eddin Al-Wusta	601	83	684	2,374
East Salah Eddin Khan Yunis	3,066	351	3,417	9,276
East Salah Eddin Rafah	597	66	663	6,250
East Salah Eddin Gaza	422	20	442	1,567
Abasan Al-Jadeeda	1,027	165	1,192	2,591
Abasan Al-Kabira	3,008	562	3,570	4,084
Wadi Al-Salqa	528	28	610	3,335
Beit Lahia Project	47	10	57	44
Al-Zaytoun	549	127	676	1,817
Eastern Area "Izbet Abed Rabbo"	1,305	137	1,442	3,511
Al-Shijaiya – Ijdeeda	191	37	228	461
Al-Shujaiya – Al-Turkman	171	42	213	135
<b>Total</b>	<b>22,996</b>	<b>3,296</b>	<b>26,292</b>	<b>84,081</b>

The map below shows the distribution of holdings in the areas of the study



Source: Geographic Information System Department, General Administration of Policies and Planning, Ministry of Agriculture, 2020

# PART TWO: CHALLENGES, OPPORTUNITIES AND POTENTIALS

## Chapter One:

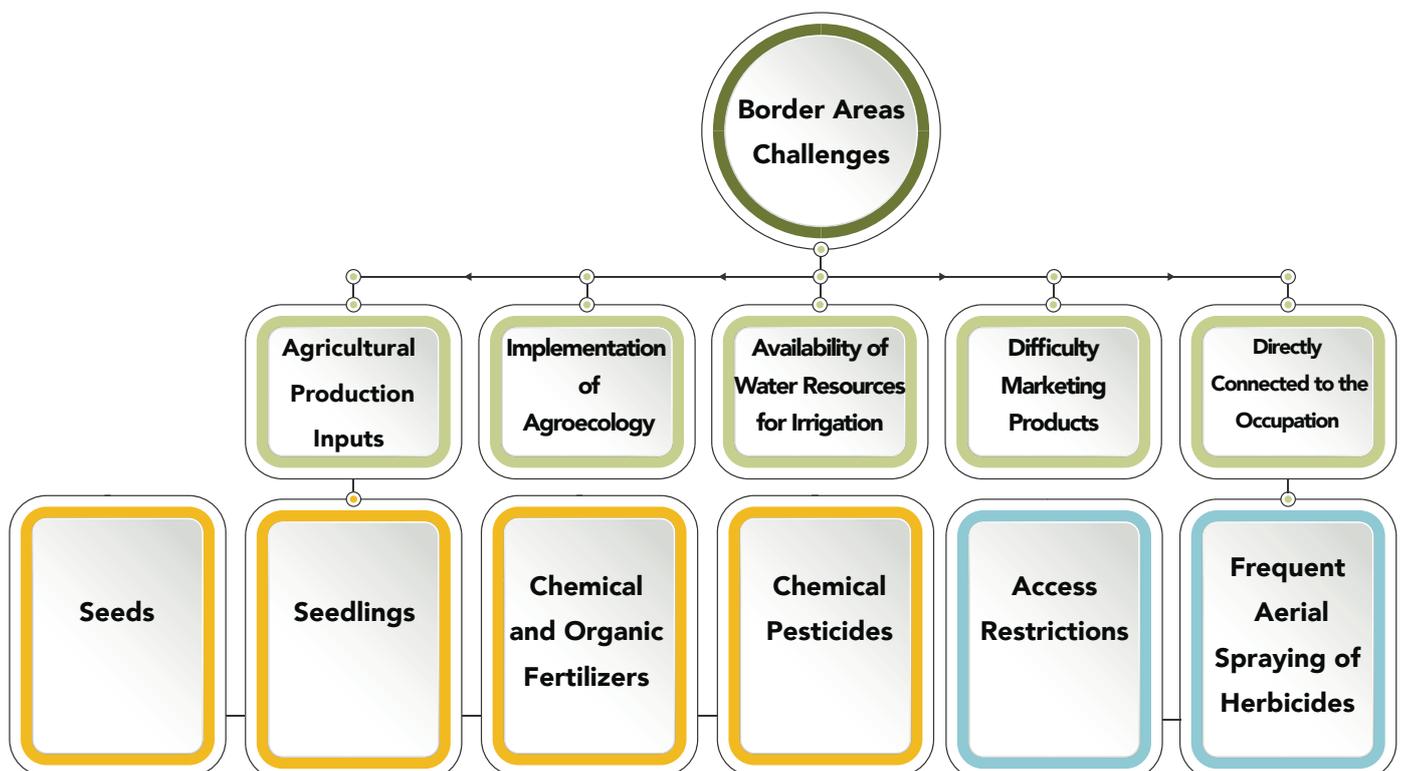
### The Main Challenges Facing Farmers in the Border Areas

The focus groups with farmers in the border areas and the governorates of Gaza, Khan Yunis and Rafah highlight that the majority of farmers in those areas face similar problems and challenges; the order of importance of problems however differs. Such challenges constitute an obstacle to the flourishing and development of the agricultural sector in those areas.

A key part of the problems and challenges is directly connected to the practices of the Israeli occupation; another part is connected to production factors and marketing problems, which include:

1. Access to agricultural production inputs.
2. Marketing problems and challenges.
3. Securing of suitable water resources for irrigation.

The figure below shows the main “challenges and risks connected to border areas” and “the implementation of agroecology”



## **First: Challenges Directly Connected to the Practices of the Israeli Occupation**

### **a. Restrictions on Access and Agricultural Activity**

The Israeli occupation practices constitute the main challenge for farmers in the border areas, particularly those located within 1,000 meters of the barrier. Strict procedures are imposed on them restricting their access to their lands and shooting at them occur if they do not abide by the instructions issued in this regard. Additionally, farmers are not allowed to plant trees and build greenhouses in those areas. They are only allowed, if at all, to cultivate field crops and open vegetable crops. Farmers in the border areas east of Al-Awda Street "Jakar" (300meters away from the barrier) suffer from difficulty in rehabilitating their lands due to the frequent bulldozing of Palestinian farmland by the occupation forces, aimed at leveling and destroying property and resources, thus eroding even further farmer's limited financial capacity.<sup>9</sup>

### **b. Spraying Poisonous Herbicides**

The Israeli practices include the frequent aerial spraying of poisonous herbicides, which reach around 1 kilometer west of the barrier (based on the wind's movement). The herbicides are sprayed in the morning, when the eastern winds are blowing (towards the west), which causes the destruction of open crops. This results in severe damages for farmers, as they are not able to benefit from the agricultural season like farmers in other areas.

<sup>9</sup> Annexed a table that shows the damages suffered by farmers as a result of the frequent Israeli attacks on their lands by bulldozing, Department of Damages, Ministry of Agriculture.



Damages of farmers in border areas (Khaza'a area in 2020) as a result of the spraying of herbicides by the Israeli occupation. Source: Department of Damages, Ministry of Agriculture Archive.

The spraying of herbicides started in 2015. Since then, the action has repeated almost twice a year.<sup>10</sup> The total damages of the spraying of herbicides were estimated in January 2020 at 670,379\$. The total damaged agricultural area reached 1,727dunums.<sup>11</sup>

### **c. Flooding of Agricultural Lands**

In January 2020, the Israeli occupation flooded the lands of farmers in the border areas (in the North and Gaza Districts) by opening the dams collecting rainwater (and wastewater) east of the Gaza Strip in the winter. The total number of affected farmers reached 112; the total damaged area reached 630dunums; and financial losses reached 335,026\$.<sup>12</sup>

<sup>10</sup> Annexed a table that shows the number of dunums damaged and farmers affected by the spraying of herbicides since 2015.

<sup>11</sup> Ministry of Agriculture data – General Administration of Planning and Policies, Gaza, 2020.

<sup>12</sup> Annexed a table that shows the number of affected farmers, damaged area and value of damages, Department of Damages, Ministry of Agriculture.

#### **d. The Great March of Return**

In March 2018, the Great March of Return (demonstrations and protests near the barrier that attracted large crowds particularly young people) was launched along the border of the Gaza Strip as a form of nonviolent popular resistance. However, this was met with violent responses by the Israeli forces against agricultural lands, which resulted in damaging a large number of agricultural areas near the border. According to the Ministry of Agriculture, 201 farmers were affected by the occupation's practices targeting the March of Return, costing them nearly 212,293\$ in damages.<sup>13</sup>

### **Second: Challenges Relating to Agricultural Production Inputs**

Agricultural production inputs for both plant and animal farming (fertilizers, seeds, seedlings, pesticides, animal feed, chicken hatching eggs, veterinary tools) are key for any growing agricultural sector that seeks to provide nutritional needs of the people on the one hand and compete on the other. In reality, however, this issue constitutes a great challenge for farmers in the Gaza Strip, particularly in the border areas. They mainly depend on the Israeli occupation to provide these inputs, and the occupation frequently prevents the entry of some inputs, such as soil sterilizers and some fertilizers under the pretext of dual use\*. Moreover, production inputs are obtained at higher prices compared to their actual price due to the high transportation costs through the Karm Abu Salem Crossing. The prices of production inputs at the country of origin are low and are doubled because of taxes such as the %17 tax imposed on imports. In case of direct import from abroad, the importer needs approvals from the occupation based on their own conditions according to the Oslo Accords.

Furthermore, farmers in the border areas of the Gaza Strip face the problem of being deceived by merchants and suppliers of chemical fertilizers and other production inputs as well as the frequent manipulation of prices. This was confirmed by the interviewed managers of the Ministry of Agriculture Directorates (annex 10).

<sup>13</sup> Annexed a table that details the damages of the March of Return in all districts, Department of Damages, Ministry of Agriculture.

\* Dual use goods are products and technologies normally used for civilian purposes, but which may have military applications. ... The restrictions on transfer of dual use goods, as currently implemented by Israel, are problematic.. the lack of access to fertilizers of standard concentration is a major limitation to improving productivity in the agriculture sector". World Bank, 2019, Economic Monitoring Report to the Ad Hoc Liaison Committee: April 2109 30

There were increased complaints to take a number of strict monitoring procedures by the Ministry of Agriculture in this regard. All of the above constitute an opportunity to transform to natural farming patterns that depend on local resources in the production process, which is also an opportunity to promote the agroecological approach to achieve the principle of national food sovereignty.

The main problems relating to the border areas will be addressed below:

## **Main Agricultural Production Inputs**

### **1. Seeds and Seedlings**

Seeds and seedlings are considered the most important production inputs in terms of suitability with environmental conditions, productivity and natural resistance to diseases. The majority of farmers depend on the imported seeds, which are often not suitable for the local environment and do not have the resistance of local heirloom seeds to climatic and other natural conditions.

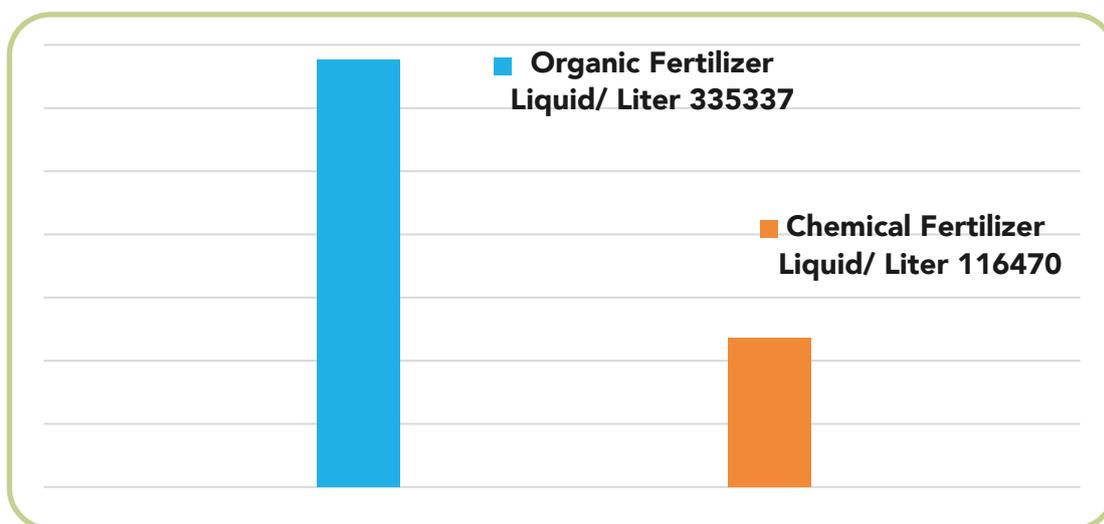
- Farmers face serious problems in obtaining seeds as there is no Baladl (local) seed bank. The price of available seeds, such as wheat and barley, moreover are high. According to farmers in the focus groups, the productivity of seeds such as local watermelon and melon that east Khan Yunis area was known for, are also low.

- With regards to vegetable seedlings, such as tomatoes, cucumber, watermelon and melons, farmers depend on imported and genetically modified seedlings due to their higher productivity, although their prices are high and some are not suitable for the natural conditions in the Gaza Strip.

- With regards to fruit seedlings, many farmers, particularly in Al-Fukhari and Beit Hanoun, have replaced local almonds and citrus with imported seedlings due to their higher productivity and resistance to nematodes (roundworms).

## 2. Chemical and Organic Fertilizers

Palestinian farmers, particularly in the border areas believe in the importance of adding fertilizers (chemical or organic) to the soil prior to and during the season in order to provide it with key nutritional elements. Many farmers excessively use chemical fertilizers, as confirmed by the former General Director of Soil and Irrigation at the Ministry of Agriculture during the structured interview. He provided us with the quantities of chemical fertilizers used for key products in the Gaza Strip. The figure below shows the main chemical fertilizers that are added prior to farming to prepare the soil and the ratio of use. With regards to organic fertilizers, a number of farmers, particularly in Juhr Eddik and North Gaza, complained of the high cost of organic fertilizers and the requirement of cash payment as well as their low quality. It was indicated by the General Director of Counseling and the General Director of Soil and Irrigation at the Ministry of Agriculture that sand is added to some of those fertilizers due to the weak monitoring on local organic fertilizers.



This figure shows the difference between the quantity of liquid organic fertilizers and liquid chemical fertilizers (in liters).<sup>14</sup>



This figure shows the difference between the quantities of synthetic soil, solid organic fertilizers and solid chemical fertilizers (in tons).<sup>15</sup>

<sup>14</sup>2018 Annual Report on the Quantities of Imported Fertilizers, Ministry of Agriculture

<sup>15</sup>Ibid.

### 3. Chemical Pesticides and Herbicides

The border areas are known for field crops in the areas located 500-300meters from the barrier, while those located further than 500 meters are known for farming vegetables, particularly in the southern areas of Gaza Strip.

Farmers in those areas use different chemical pesticides excessively, especially the type “Nemacur”, as well as insecticides. This was admitted by farmers in a number of focus groups organized in Al-Qarara, Al-Fukhari, Khaza’a, Abasan Al-Kabeera, Abasan Al-Sagheera, Al-Shoka and Beit Lahia. They said they do this because they believe they would speed up the elimination of agricultural diseases. They often do not take into account the allowed quantities of such pesticides and the wait time between pesticide applications. Such excessive use causes severe damage to the soil as confirmed by the General Director of Counselling. It also overburdens farmers due to the extremely high financial costs, and sometimes the wait time between pesticide applications is not respected, which causes serious risks to consumers’ health. It should be noted that the wait time does not necessarily provide safe products, as the materials resulting from the dissolution of the active agent in the pesticide are often more serious than the active agent itself.

Based on the interview with the General Director of Plant Protection, the use of pesticides is estimated at half a liter of herbicides and half a liter of pesticides per dunum. Farmers often use these chemicals with each crop cycle. The following table shows the amounts of chemicals used per dunum depending on the type of vegetables each locality of the southern areas is known for producing.

Crop	Pesticides Used			Crop Life Cycle	Area(s) Known for Producing the Crop
	Insecticide LTR/KG	Fungicide LTR/KG	Herbicide LTR/KG		
Zuchinis	4-2	4-2	1	4 months	Al-Fukhari
Cucumbers - open field	4-2	4-2	1	4 months	Gaza and Beit Lahia
Peas	2-1	2-1	1-0.5	90-70 days	Abasan abd Bani Suhaila
Fava beans	1	1	1-0.5	6-4 months	Abasan and Al-Fukhari
Melons-open field	4-3	4-3	1	6 months	Al-Fukhari and Beit Lahia
Chillies – open field	5-3	5-3	1	6 months	Al-Fukhari and Al-Masdar
Tomatoes – open field	6-4	6-4	1	6 months	Al-Fukhari, Beit Lahia and Al-Shoka
Eggplants – open field	5-3	5-3	1	6 months	Al-Fukhari and Abu T'eimeh
Cauliflowers and cabbage	3-2	3-2	1	90-70 days	Al-Wusta (Al-Masdar and Deir Al-Balah)
Onions	4-2	4-2	2-1	6-4 months	Al-Fukhari, Al-Mawasi, Makab Sofa, Beit Lahia
Strawberries	8-6	8-6	2-1	7-6 months	Beit Lahia
Potatoes	4-3	4-3	1	4-3 months	Khan Yunis , Al-Mawasi and Beit Lahia

Source: Department of Pesticides 2018 Report, Ministry of Agriculture

#### **4. Challenges Relating to Irrigation Sources and Projects of Operate Wells Using Solar Power in those Areas**

The border areas suffer from the scarcity and high cost of water, which was highlighted by the interviewed farmers and directors of directorates in all areas:

- There are no water wells in Al-Shoka and Al-Fukhari, which requires pumping water from remote areas in the west, such as Masbah wells, resulting in high costs for water.
- In Khaza'a, Abasan Al-Jadeeda, Abasan Al-Kabeera, Al-Qarara and Wadi Al-Salqa, the problem is less severe due to the availability of aquifers in those areas. However, salinity is high, which makes them unsuitable for irrigation of all crops, including grapes, citrus fruits and some vegetable varieties. Farmers in those areas also suffer from the limited quantities of pumped water due to the double-fold use of some wells for agriculture and drinking water (according to farmers in the focus groups). Farmers in Abasan Al-Kabeera call for targeting eastern areas with irrigation networks through donor projects.
- The availability of water resources in Beit Hanoun, Beit Lahia and Jabalia is considered relatively better. However, farmers in the border areas from the North District (Beit Hanoun and Um Annaser) highlighted that the quality of water is deteriorating. The levels of salinity of aquifer water is rising in light of the excessive number of private wells that deplete the aquifer. This has particularly negative repercussions on productivity of citrus fruits, which in turn weakens the opportunity for crop diversity. Nonetheless, there is an opportunity to use treated/recovered water, as it is expected for East Jabalia Plant to supply Jabalia and Beit Hanoun with recovered water that can be used in irrigation.
- Moreover, throughout the past five years (to date) farmers in border areas suffer from the frequent power outages that force them to operate water wells using diesel generators, which results in increased production costs and a decline in the competitive value of their produce.
- The electricity crisis was exacerbated in May 2017, as farmers suffered from the lack of diesel fuel and its notably high cost. This problem was evident in August 2020 when we conducted the structured interviews. The power was connected for only 4 hours of a day, which caused severe damages to the crops, that is not to mention the high costs of irrigation.

- Some farmers face other challenges in relation to irrigation sources, such as the electricity company imposing high subscription fees, which makes it difficult for farmers to install electrical grids reaching their lands. Jabalia is an example of such a problem.
- Farmers in Jabalia complain from the delayed operation of the wastewater treatment project, which could be useful for the irrigation of garden trees (non-productive) and reduce the water crisis.
- Farmers in Beit Lahia complain from amount of wasted water due to the deterioration of the main water supply lines that reach farmers, which also causes erosion and damage to roads.
- Some farmers in some areas such as Jabalia, Al-Qarara, Abasan Al-Jadeeda, and Abasan Al-Kabeera complain about the unfair consumption of water by other farmers.
- The cost of water is raised for small farmers by large farmers who benefit from solar power projects.
- Some farmers sell the solar power systems after receiving them from the projects of local and international organizations.

All of the above requires monitoring by the Ministry of Agriculture or bodies implementing projects to ensure farmers' commitment to the conditions and targeting areas in urgent need for water in future projects.

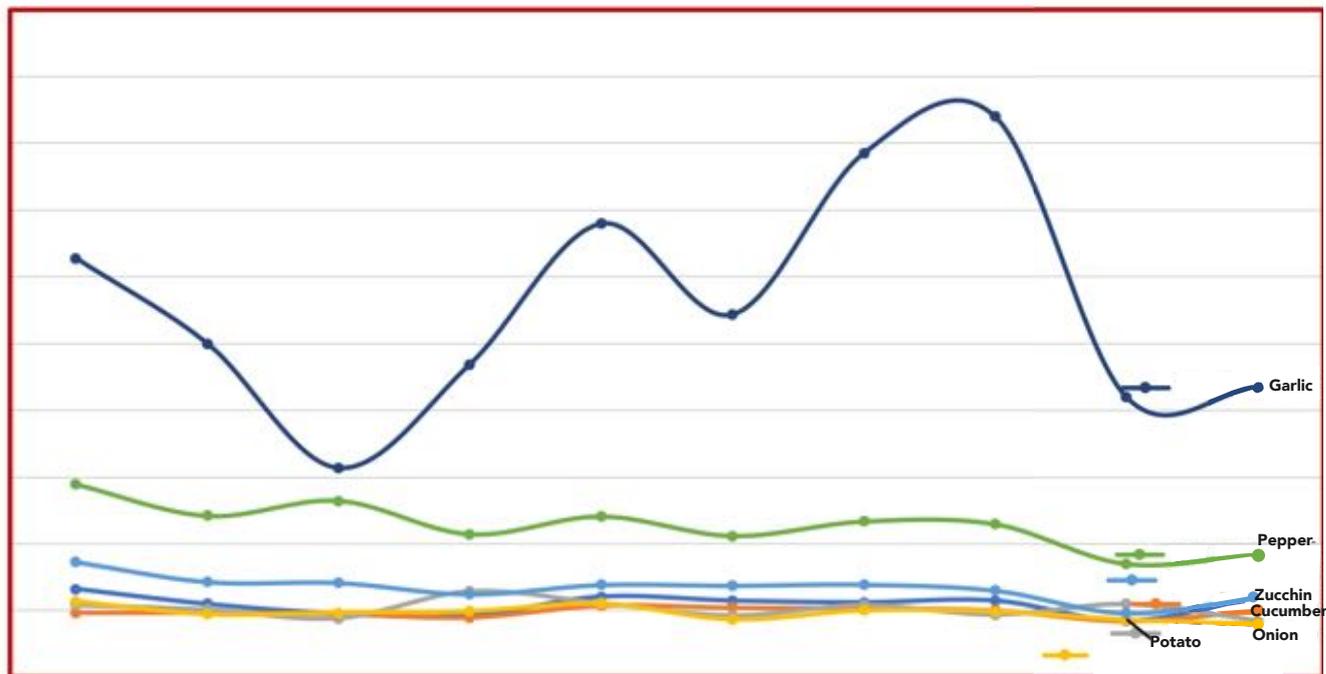
In order to reduce the impact of power outages, decision makers at the Ministry of Agriculture worked on finding innovative solutions that depend on operating agricultural wells using solar power systems. Due to the high cost of installing solar power systems and farmers' lack of financial capacity to install such systems to operate their wells, a large number of agricultural wells in the border areas were targeted by installing solar power systems through funding from NGO projects, which has become a priority in all areas. The benefit from solar power systems projects between 2019-2015 extended to 73 agricultural wells, 62 agricultural pools and 7 water tanks, based on statistics from the Ministry of Agriculture.

### Third: Challenges Relating to the Marketing of Crops

Farmers in the border areas of the Gaza Strip face a serious crisis relating to the difficulty in marketing their produce in the local market. This often leads to an accumulated excess of certain crops and a collapse in the prices, which results in tremendous losses to farmers. This was confirmed by farmers in all focus groups held, who attributed the problem to the reasons below:

- Most of the vegetables, field crops and some fruits produced in border areas are mainly intended for the local market, which may reach self-sufficiency or abundance. There are no guarantees for exporting nor is there sufficient storage capacity and food processing sector to absorb the excess produce.
- Trade restrictions imposed, due to the blockade on Gaza, limits the capacity of farmers to export and to accommodate for the high production capacity.
- In Al-Fukhari, Abasan Al-Jadeeda, Abasan Al-Kabeera, Al-Qarara and Khaza'a, most farmers plant the same crops and have difficulty in marketing their produce.
- The lack of local markets in some areas impedes the quick and efficient marketing of products (Beit Hanoun for example).
- The spread of news or rumors in the media on farmers' use of toxic pesticides affects the marketing of products.
- The weak marketing methods of livestock farmers, particularly in the North District, especially after the closure of Abu Aita Dairy Factory.

The General Director of Counselling at the Ministry of Agriculture, Eng. Naser Deeb, added that the reasons behind dropping and fluctuating prices include the lack of existing food processing industries for agricultural products, such as tomato paste and pickles. The weak organization of farmers in agricultural bodies and councils that would regulate agricultural activities for each crop, weakens their position in the local and foreign markets and leads to the lack of diversity in crops. The repeated cultivation of the same types of crops leads to excess in production. The role of such councils is to assist farmers in planning the type and quantity of crops to be planted and how to market such crops. This was also confirmed by the General Director of Marketing at the Ministry of Agriculture, Eng. Ahmad Al-Dabbagh, in an interview dated 6 September 2020. All the aforementioned factors lead to the fluctuation of prices throughout the year, with a general trend towards low prices during the past decade as confirmed by Eng. Ahmad Al-Dabbagh. The figures below show the main products produced in border areas and their prices in the period between 2019-2010.



- **Garlic 2019 / 7.8**      ● **Pepper 2019 / 3.7**      ● **Zucchini 2019 / 2.4**
- **Cucumber 2019 / 2**      ● **Onion 2019 / 1.7**      ● **Potato 2019 / 1.73**

Source: Prepared by the researcher based on the marketing and standards data.

Note: the vertical axis represents the price of kg in NIS.

Despite what was mentioned above, it should be noted that some crops produced in the border areas were characterized by their competitive capacity in export markets. An example on this is strawberries produced in Beit Lahia, as the planted area in the past season reached 1,758 dunums with a production quantity reaching 5,247 tons. The exported quantity since the start of the season in November 2019 until the end of March 2020 reached 3,101 tons. Additionally, 4,923 tons of different vegetables were exported to Arab states and to Israel in the period between early and mid2020-. The opportunity remains available for farmers to export unless the border crossings are closed by the occupation, which would result in major losses.

## Fourth: Key Impediments to the Implementation of Natural Farming that Depends on Natural Resources towards Reaching Agroecology

There are many impediments that limit expansion in some natural farming practices that promote agroecology in the Gaza Strip. Based on the inputs of farmers in the focus groups, they are as follows:

- The high prices of local fertilizers (cow and chicken manure) and the required cash payment, unlike the delayed payment for chemical fertilizers.
- A number of farmers have lack knowledge on agroecological techniques and practices.
- Local seeds are limited and not available continuously.
- Some farmers are leasing lands, which causes them to seek quick profit in order to be able to pay rent.
- There is no special market or preferential price for environmentally produced crops.
- There are incentives from the Ministry of Agriculture to support natural farming that depends on local resources.
- The weed management, particularly weeds that farmers believe to affect productivity such as grass, mugworts, solanum elaeagnifolium and cyperus rotundus, which are very difficult to remove manually.



Some types of weeds that farmers believe to affect productivity (mugwort on the right and solanum elaeagnifolium on the left)

- The poor quality of local fertilizers, as cow fertilizer contains large quantities of weed seeds that cause damage to crops.
- Chicken fertilizer contains quantities of sand, which affects the percentage of organic material. Moreover, some chicken farms use lime to sterilize farm grounds, and the remnants of the lime is loaded with the manure, which is dangerous for plants.
- The high cost of some environmental practices, such as covering plants with nonwoven fabrics or nets.



Image that shows agricultural practices that overburden farmers

**The General Director of Counseling and General Director of Plant Protection also noted a number of impediments during the structured interviews, mainly:**

- The lack of awareness among farmers, some decision makers and counselors on the importance of agroecology, as well as a lack of knowledge on the grave dangers of agricultural chemicals on people's health, the soil and the environment.
- The lack of a national policy or plans to encourage agroecology.
- The lack of agricultural research centers specialized in natural farming sciences and agroecology.
- The limited agricultural holdings, which are often rented, therefore farmers do not remain in them for long periods to work comfortably and think of implementing agroecology, which needs a long time to reap the results and benefits.
- Initially, the productivity of environmental farms is much less than farms that use chemicals, which does not encourage farmers to try agroecology.

## **Safe Farming Expert Eng. Abd Al-Mun'em Ahmad added:**

- There is a lack of sufficient control on the entry and use of chemicals in the Gaza Strip, which facilitates farmers' tendency to use them.
- There is no counseling team to mainstream natural farming that depends on local and environmental resources.
- The lack of knowledge and training on agroecology.
- The lack of clear and successful models (in the Gaza Strip) where agroecology is fully implemented.

## **Fifth: Other Interrelated and Cross-cutting Challenges and Risks in the Border Areas**

When farmers attempt to find solutions to the many challenges they face in border areas, they run into what is known as "the interdependence of risks".<sup>16</sup> This means that if farmers want to reduce natural risks, they need to invest, which results in an economic risk in the fluctuation and drop of prices. In order to avoid this economic risk, they need to invest more, only to be faced by the political risk of the destruction of infrastructure by the occupation forces.

This interdependence between different risks increases the challenges faced by farmers in all border areas. They suffer from many forms of natural risks, including agricultural diseases, particularly insect related ones, frost, hail, strong winds and storms in the winter as well as drought and high temperatures in the summer.

These factors increase the fragility of farming in the border areas. To reduce such risks, farmers tend to invest in building low farming tunnels or high farming tunnels (with a width of around 7meters and a height of 2meters) at a cost of 1,600 NIS. This intensifies the farming process, requires skilled workers and a larger number of working units. Through this process, farmers succeed in drastically reducing the impact of natural risks. However, a new type of risk emerges, which is the economic risk of low and fluctuating prices due to the lack of efficient policies to regulate prices in response to demand, the inability to continuously market products in the West Bank, or the inability to export in large quantities, which is controlled by the occupation.

<sup>16</sup>The interdependence between three types of risks. IAMM 2002).Nabil Abu Shammala

That is not to mention the lack of storage capacities and food processing industries to absorb the excess produce. To avoid this type of risks, farmers resort to the last option, which is to invest even more in building expensive greenhouses that cost 10,000\$ per dunum in order to produce when prices are high. A new type of risks comes to light, which are political risks that include preventing farmers from accessing their land or harvesting their crops. Sometimes their agricultural facilities, including wells and greenhouses, are destroyed. The attack on Gaza Strip in 2014 serves as an example, as the occupation destroyed all agricultural lands and its infrastructure.

## **Chapter Two: Available Opportunities and Potentials and Proposed Solutions to Assist Farmers in the Border Areas**

Based on the abovementioned challenges and problems facing farmers in the border areas, we present a number of available opportunities and capacities, as well as solutions proposed by farmers themselves, the directors of general administrations and directorates and the experts interviewed. These proposals aim to contribute to supporting the resilience of these farmers on their land and ensuring their continued presence in the agricultural production cycle.

### **First: Available Capacities and Opportunities**

Despite the numerous challenges facing farmers in the border areas, there are a number of opportunities and capacities to develop local knowledge on agroecology. This requires mobilizing stakeholders to maximize and invest in local resources and opportunities including:

#### **a. Reusing Treated and Recovered Water in Irrigation in the Border Areas**

The treated waste water master plan in the Gaza Strip envisages the establishment and operation of three large treatment plants, all located in the eastern areas of the Gaza Strip for several considerations relating to: the depth of the aquifer, the nature of the soil and the flow of underground water.

The treated/recovered water from two of the three plants will be used for agricultural purposes. Following are the characteristics of the two plants:

### **1. East Jabalia Treatment Plant- North Gaza Emergency Sewage Treatment NGEST**

The treatment plant was expected to begin operation at the end of 2013 or early 2014. The treatment and infiltration process only began in March 2018. Its capacity is estimated at 36,500 m<sup>3</sup>/day and the plant is designed for a capacity of 60,000 m<sup>3</sup>/day. The plant has nine infiltration basins on an area of 85 dunums. There is ongoing funding from the French Development Agency (AFD) and other donors to implement the irrigation networks at a cost of over 10 million Euros.

It is intended for the treated water to be reused in irrigation using the Soil Aquifer Treatment (SAT) method, where treated water is collected in infiltration basins and left to be naturally filtered through layers of soil until it reaches the aquifer, and is then withdrawn through a number of recovery wells and pumped into two large tanks with a capacity of 4,000m<sup>3</sup> each.

Should the reuse project be fully implemented, 15,100 dunums will be irrigated. %50 of the said project is currently completed and it is now in the final stages to start implementation. The Food and Agriculture Organization (FAO) will implement a project to install on-farm level irrigation networks for an area of 5,000 dunums out of the total 15,100 dunums. Through a two-phase project with Spanish and European funding, the recycled wastewater and the water recovered will be used for food production and for promoting job opportunities. An estimated 180 dunums will be integrated in the first phase and 400 dunums in the second phase.

With regards to the salinity of water extracted from the recovery wells, the Total Dissolved Solids (TDS) ranges between 1,300 and 1,500 mg/l, which is suitable for irrigating all plants and is in accordance with Palestinian standards to be reused in irrigation.

## Summary of the East Jabalia Treatment Plant Project

- a. The project is the largest that reuses treated water for irrigation, as it will cover an area of 15,100 dunums from east Beit Hanoun to east Gaza.
- b. The quantity of water that will be pumped from recovery wells to the irrigation network is estimated at 38,000 m<sup>3</sup>/day.
- c. Half the recovery wells are completed, one water tank is installed and 5 pumping stations and 5 observation wells are completed.

Important note: water extracted from recovery wells will not be handled as treated wastewater. It was agreed by the Palestinian Water Authority to define it as recovered water, which will be suitable for irrigating all plants (trees and vegetables).

## 2. Wastewater Treatment Plant in Khan Yunis

It is located southeast Khan Yunis in Al-Fukhari area. The establishment of the plant started in early 2017 and operation started at the end of 2019. The implementation, construction and co-financing of the plant are through the UNDP with funding from Japan and Kuwait. Connected to the plant is a project to filter the treated water for the aquifer. Infiltration basins were established on an area of 98 dunums. Private groundwater wells will act as recovery wells. Thus far, 3.5 million m<sup>3</sup> were pumped from an area with a shallow groundwater well with high salinity. The plant uses ultra violet radiation to sterilize the treated water, as such, the water is clear from any pathogens.

The following information regarding the plant's capacity were highlighted during field visit to the plant, interview with the director of the wastewater treatment plant, Eng. Ashraf Abu Shammaleh, and communications with the UNDP Project Manager:

- a. The first stage 26,600 :2019 m<sup>3</sup>/day, currently producing 15,000 m<sup>3</sup>/day that irrigate at least 5,000 dunums and can be currently used if recovery wells are dug. The second stage 45,000 :2025 m<sup>3</sup>/day



Picture of the Wastewater Treatment Plant – Al-Fukhari

- With these standards, the water is suitable for irrigating fruit trees and animal fodder prior to filtration through the infiltration basins. After the filtration, the water would be suitable to irrigate all types of plants, including vegetables.
- These standards are lower than the required Palestinian standards for the reuse of treated water.
- After filtration, the water will no longer be called treated, but would be called recovered water. It is better in salinity than groundwater in the area, which has a salinity of 6,000 particles per million chloride, while the chloride at the plant does not exceed 1,000 particles per million.

**b.** Reusing the sludge resulting from the waste of wastewater treatment plants in manufacturing compost and in direct fertilization.

Sludge is defined as the solid material with damp or dry texture that remains in the wastewater treatment plants. Treated sludge is defined as the sludge that has been biologically, chemically or thermally treated or treated through storage for a long period or any other process to drastically reduce its fermentation and also reduce the health and environmental risks resulting from its use in farming.

## **Facts about Sludge:**

1. Sludge is considered as a soil enhancer. It contains fertilizing value that is connected to the treatment level and preparation method, which guarantees maintaining the fertilizing components, mainly nitrogen compounds. It is classified as an enhancer for the soil rather than fertilizer.

2. Although sludge contains fertilizing elements, untreated sludge is highly polluted due to containing pathogens, as it is human waste. Moreover, it contains metallic compounds that could be poisonous or have negative effects on the soil and crops, such as heavy metals, which could be found in high concentrations.

### **Accordingly, the following recommendations and conditions are necessary to guarantee safe use of sludge:**

- The sludge used in farming needs to be treated properly.
- Treated sludge must undergo periodical laboratory tests prior to use.
- The lands where sludge is used must be directly monitored by competent bodies in accordance with the model adopted for obligatory technical instructions signed by the Minister of Agriculture, the Head of the Water Authority and the Minister of Economy (Template 59 of 2015).
- Should the analysis results prove that sludge may be reused in farming; the quantities used must be identified and set by competent persons at the Ministry of Agriculture.
- The ideal solution to mitigating the damages of using sludge in farming is to use it to make compost as a source of organic material and alternative for local fertilizer. Sludge composting is a widely used method in the treatment of municipal sludge; as composting is considered an additional treatment to eradicate pathogens from the sludge.



Picture of Al-Wusta Treatment Plant – East Al-Fukhari

### **c. Natural Farming Practices towards Agroecology**

According to farmers in the focus groups, particularly in Juhr Eddik, and as confirmed by the interviewed General Director of Counseling at the Ministry of Agriculture, Eng. Naser Deeb, the former General Director of Soil and Irrigation Eng. Shafiq Al-Arawi, and Mr. Abdul Mun'em Ahmad, an expert in safe farming, a limited number of farmers apply some natural and environmental farming practices in border areas, mainly:

- 1 The use of local seeds they produce themselves or trade with friends and neighbors.
- 2 The use of local fertilizer, particularly chicken and cow fertilizer.
- 3 Fertilization using the remnants of crops, and some farmers manufacture compost and compost tea.
- 4 In small farms, the land is regularly plowed using traditional plowing dragged by animals.
- 5 A number of farmers use alternatives to chemical materials that are made from plant extracts and other materials.
- 6 A number of farmers own apiaries, which reduces diseases in the farm and increases pollination of produce and crop productivity.
- 7 A number of farmers use poultry and animals to get rid of pests and weed, such as ducks to get rid of snails and chicken and farm animals to get rid of weeds.
- 8 Intercropping: some farmers plant corn with cucumber and melon, or garlic with berries vertically, which greatly reduces pests.
- 9 The eastern to western direction of farming allows airflow and eliminates numerous fungal pests and insects, particularly whiteflies that cause yellowing on the tops of tomatoes and cucumber.

## **Second: Proposed Solutions Relating to the Challenges and Problems faced by Farmers in Border Areas**

### **a. Solutions relating to limiting the Israeli occupation practices against farmers in those areas and reducing their impact**

1. Conduct lobbying and advocacy programs on the right of farmers in the border areas, and work on providing them direct compensation for the damages they suffer like other economic sectors that are compensated, rather than providing them with partial aid. In addition to pressuring the occupation and preventing it from the frequent spraying of pesticides on the lands of farmers.
2. Activate the Agricultural Risk Prevention Fund and the Agricultural Lending Fund.
3. Influence NGOs working in the agricultural sector towards targeting the border areas with their projects, with focus on agroecology depending on local production inputs from within the location itself or from within the farm itself.
4. Implement projects to rehabilitate a number of agricultural lands bulldozed by the occupation (particularly in Al-Fukhari, Al-Qarara, Khaza'a, Abasan Al-Jadeeda, Al-Masdar and Wadi Al-Salqa).
5. Call on NGOs to implement projects with developmental rather than relief objectives (opening agricultural roads in Al-Fukhari and Al-Qarara east of Jakar Street, Al-Masdar, Wadi Al-Salqa, Um Al-Naser, Beit Hanoun and Beit Lahia; rehabilitating and leveling Abu T'eimeh swamps in Abasan Al-Kabeera, and providing agricultural equipment and tractors in Al-Fukhari).
6. Address the electricity company to provide power to the agricultural areas near the barrier during the day, in order for farmers to be able to irrigate their land in day light, thus minimizing the danger of Israeli attacks which happen mostly during the night.
7. Demand the issuance of permits for farmers in the border areas to be able to enter their lands even during times of tension.
8. Call on the Ministry of Agriculture to add the damages of spraying pesticides, the damages of the Great March of Return as well as the damages from natural disasters to the total damages suffered by farmers in the damage mapping program.
9. Establish projects to support and compensate owners of agricultural lands in border areas that they cannot reach, by rehabilitating agricultural lands that are rented to farmers, or establishing animal farms on rented lands.

## **b. Solutions relating to agricultural production inputs and ways to provide them in the best manner possible**

1. Promote and activate agricultural counseling provided by the Ministry of Agriculture to farmers, which assists them in selecting types of crops suitable for the soil and quality of water, preparing an irrigation and fertilization schedule for farmers and minimizing the use of pesticides and replacing them with organic pesticides.
2. Increase monitoring of farmers to support them in reducing excess use of chemical pesticides (Abasan Al-Kabeera, Abasan Al-Jadeeda, Khaza'a), with the ultimate aim of ending their use completely.
3. Reduce the use of chemical fertilizers in Al-Fukhari (by addressing the Ministry of Economy to transfer the clay soil from the water treatment project for farmers to benefit from it).
4. Develop labs at the Ministry of Agriculture and provide the equipment used for testing the remnants of pesticides.
5. Establish a compost (organic fertilizer) manufacturing unit in Al-Fukhari.
6. Activate the role of NGOs and the Ministry of Agriculture in assisting farmers in combating dangerous pests, such as *Rhynchophorus ferrugineus* and olive knot disease by providing the necessary traps and pheromones (Al-Qarara, Abasan Al-Jadeeda, Al-Masdar and Wadi Al-Salqa).
7. Seek the reduction of taxes on production inputs.
8. Provide wood chippers to farmers to grind the remnants of plants and trimming to use them in increasing the percentage of organic material in the soil.
9. Make use of all the remnants of crops to produce compost or cover the soil surface instead of plastic.
10. Develop a program to improve local seeds by NGOs and the Ministry, and train farmers on methods to improve seeds.
11. Plant legumes to use them as green fertilizer that increases organic material in the soil.

### **c. Solutions relating to marketing agricultural produce of border areas**

1. Advertise in the media the icon available on the Ministry of Agriculture's website, which guides farmers on the number of dunums that can be planted for each type of crop. This would have an impact on reducing ad hoc farming and over-supply of certain crops.
2. Call for the provision of guarantees to market produce in Al-Fukhari, as well as the importance of providing refrigerators to store the excess produce to a time when it is needed, and raise the awareness of farmers on the importance of crop diversity.
3. Open the door for exporting and never close it for vegetable farmers. At the same time, open new markets for farmers (particularly citrus and olive) in the Arab world and internationally and contract certain farmers to farm for exporting purposes.
4. Allow farmers to benefit in case of an increase in prices by restricting imports.
5. Establish food processing industries to absorb the excess local production.
6. Encourage direct marketing through farmers' markets and direct selling to consumers, and develop suitable mechanisms for this purpose.

### **d. Solutions relating to providing water sources for irrigation in border areas**

In Al-Shoka and Al-Fukhari, there is an urgent need of water due to its scarcity, high salinity and high cost to pump it, therefore, it is proposed to:

1. Establish recovery wells for the use of recovered water in agriculture in the area.
2. Establish a vertical water tank with a height of 20m, which can be used to provide a good source of water.
3. Install power lines or solar power system to operate well no. 2, which was established to feed Al-Fukhari area with water for domestic and agricultural use, under the supervision of the municipality. Through the operation of this well, the tank established by the Ministry of Agriculture with a capacity of 1800m<sup>3</sup> can be used.
4. Install water supply pipes and irrigation networks in the area.
5. Encourage rainwater harvesting.

### **In Jabalia:**

1. Install high voltage power lines to the areas that lack electricity, particularly in 16th Street that extends from the station to Abu Safia Street (Al-Khour Street) with a length of 20m. This line will provide power to 11 wells east of Jabalia city, which saves the high cost of diesel fuel for farmers.
2. Influence the electricity company to reduce the subscription fees for farmers.
3. Reduce the price of cubic meter of treated water of the East Jabalia Treatment Plant-NGEST when it becomes operational.
4. Promote the monitoring of solar power projects to ensure beneficiaries' commitment to their maintenance and not increase the price of pumping water in all the areas that have already benefited from such projects.
5. Install meters on solar power projects to reduce the excessive consumption of the aquifer.
6. Provide vital wells in border areas with solar power to benefit the largest number of farmers, particularly in Abasan Al-Jadeeda, Al-Masdar, Wadi Al-Salqa, east Jabalia, Um Al-Naser, Beit Hanoun and Beit Lahia, and have the donor agencies, amend their requirements for funding solar power systems for the operation of wells, to include off-grid systems as well, since there is no electricity network in the area, as their current requirements for providing wells with solar power is for those wells to be connected to an electricity network..

### **In Um Al-Naser north of Gaza Strip**

1. Install power lines for areas that do not have electricity in Um Al-Naser north of the Gaza Strip to reduce the use of diesel fuel, which in turn will reduce production costs.
2. Support water harvesting projects (e.g. establishing greenhouses; collecting water from roofs, and establishing agricultural pools).

### **In Beit Lahia**

1. Install high voltage power lines for remote areas that do not have electricity, such as Al-Shaima' Street, which feeds around 15 wells.
2. Replace the old water supply pipes with new ones to prevent water losses.
3. Support water harvesting projects.
4. Install irrigation networks in areas that depend on rainwater through NGO projects, particularly in Abasan Al-Kabeera, Al-Masdar and Wadi Al-Salqa.
5. Direct farmers towards farming crops that withstand the salinity of water and attempt to reduce the pumping of water from wells in liberated settlements.

## Table that shows the problems and challenges border areas suffer from and the potential and opportunities to face them from the perspective of farmers

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<b>Al-Shoka – Rafah</b>	<ol style="list-style-type: none"> <li>1. There are no aquifers in the area, which requires pumping water from remote areas in the west and leads to increasing the cost of water for farmers.</li> <li>2. The salinity of water is higher than 2,000 particles per million chloride; the highest cost of irrigation water in Gaza Strip at 2.5 NIS per m<sup>3</sup>; the soil is sandy not muddy and does not retain water.</li> <li>3. The existence of harmful weeds, such as mugwort.</li> <li>4. Vast areas of unused land because of water scarcity.</li> <li>5. A large percentage of farmers are renting from outside of the area.</li> <li>6. The lack of associations and representative bodies of farmers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Using treated water from the Khan Yunis treatment plant to irrigate trees/animal-feed crops.</li> <li>2. Digging recovery wells in Sufa, where the percentage of chloride does not exceed 1000 particles per million) according to the director of the plant) and installing pipes to transport recovered water.</li> <li>3. The potential to utilize vast areas and plant them with fodder and field crops if recovered water is delivered to the area.</li> <li>4. Large quantities of treated sludge from the treatment plant, which could be used in making compost.</li> <li>5. Installing pipelines to overcome the water problem.</li> <li>6. Using water harvesting mechanisms and direct storage of rainwater.</li> <li>7. Improving the qualities of soil by increasing muddy soil and organic fertilizers.</li> <li>8. Promote traditional farming in the area, such as stone fruits, and limit vegetable farming, especially in summer, due to water shortage.</li> <li>9. Establishing councils and cooperatives to regulate agricultural production, advocate for their rights and support agricultural marketing</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
Al-Fukhari – Khan Yunis	<ol style="list-style-type: none"> <li>1. There are no aquifers in the area, which requires pumping water from remote areas in the west and leads to increasing the cost of water for farmers.</li> <li>2. The lack of regulatory agricultural bodies and councils for farmers, which weakens their position in the local and external markets.</li> <li>3. The problem of over-supply marketing of excess produce.</li> <li>4. Agricultural lands that require rehabilitation and other lands that cannot be used for farming since 2014.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing recovery wells for the treated water that is suitable for farming and benefit from the treated water from the Khan Yunis treatment plant in irrigating trees/animal feed crops.</li> <li>2. Encouraging the planting of stone fruits and olives due to the suitability of soil and the possibility to irrigate them using recovered water.</li> <li>3. Installing electricity lines – or solar power – for well no. 2 that feeds Al-Fukhari area. The operation of the well will enable the farmers in the area to use the tank, with a capacity of 1,800m<sup>3</sup> established by the Ministry of Agriculture .</li> <li>4. The possibility to establish a compost manufacturing unit in the area.</li> <li>5. Using water harvesting mechanisms and storage of rainwater.</li> <li>6. Establishing councils and cooperatives to regulate agricultural production, advocate for their rights and support agricultural marketing</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
Khaza'a - Khan Yunis	<ol style="list-style-type: none"> <li>1. The fragmentation of agricultural holdings; the average area of one holding is less than one dunum.</li> <li>2. High salinity of water.</li> <li>3. Scarcity of pumped water since the majority of wells belong to the municipality and have dual use (domestic and agricultural).</li> <li>4. Water salinity reaches 4000 particles per million.</li> <li>5. Climate change is starting to affect agriculture; the temperatures in September are higher than the annual average, which causes drought in vast areas planted with spinach and Swiss chard crops and leads to production and income losses for farmers.</li> <li>6. Most farmers plant the same crops and face difficulty in marketing their produce, in addition to the lack of regulatory bodies and councils for farmers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing regulatory agricultural councils and cooperatives for farmers of each type, which contributes to planning for farmers and avoiding excess production.</li> <li>2. Rehabilitating a number of agricultural lands.</li> <li>3. Using complementary irrigation for wheat and barley, particularly from the water harvesting wells, and making use of the treated water from the Khan Yunis treatment plant in irrigating fruit trees/ fodder.</li> <li>4. Encouraging the establishment of greenhouses.</li> <li>5. Using water harvesting mechanisms, particularly small pools in the valleys of the village, and direct storage of rainwater, such as Al-Haj Abu Duqqa pool.</li> <li>6. Opening commercial channels to market produce.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>Abasan Al-Kabeera – Khan Yunis</b></p>	<ol style="list-style-type: none"> <li>1. Fragmentation of agricultural property.</li> <li>2. Salinity of water.</li> <li>3. Continuous violations and bulldozing, particularly after the Great March of Return.</li> <li>4. Most farmers plant the same crops and face difficulty in marketing their produce, in addition to the lack of regulatory bodies and councils for farmers.</li> <li>5. Effects of climate change; the temperatures in September are higher than the annual average, which causes drought in vast areas planted with spinach and Swiss chard crops, leading to production and income losses for farmers.</li> <li>6. Digging ad hoc wells and excessive pumping of water, which affects the pumping capacity of wells and increases the salinity of water.</li> <li>7. The existence of weeds difficult to combat, such as solanaceae.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing regulatory agricultural councils and cooperatives for farmers engaged in different value chains, which contributes to planning for farmers and avoiding excess production.</li> <li>2. Monitoring, by the Ministry of Agriculture, of the bodies implementing solar power projects with farmers to ensure their commitment to the terms of use, .</li> <li>3. Ensuring NGO projects target eastern areas with irrigation networks.</li> <li>4. Rehabilitating and leveling Abu T'eimeh swamps.</li> <li>5. Making use of the treated water from the Khan Yunis treatment plant in irrigating fruit trees/ fodder.</li> <li>6. Encouraging intercropping, particularly corn with melon.</li> <li>7. Using water harvesting mechanisms and direct storage of rainwater.</li> <li>8. Opening commercial channels to market produce.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
Abasan Al-Jadeeda – Khan Yunis	<ol style="list-style-type: none"> <li>1. Salinity of water.</li> <li>2. The lack of councils and cooperatives to mobilize farmers, advocate frothier rights and support marketing of their produce.</li> <li>3. High cost of water from solar- powered wells.</li> <li>4. Combating Rhynchophorus ferrugineus.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing councils and cooperatives to regulate agricultural production, advocate for their rights and support agricultural marketing.</li> <li>2. Targeting Abasan Al-Jadeeda with projects to provide wells with solar power, particularly vital wells that serve the largest number of farmers.</li> <li>3. Activating the role of the Ministry of Agriculture and NGOs in combating Rhynchophorus ferrugineus through providing pheromone traps.</li> <li>4. Using water harvesting mechanisms and direct storage of rainwater.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
Bani Suhaila - Khan Yunis	<ol style="list-style-type: none"> <li>1. The limited size of agricultural holdings; the average area of each holding ranges between 1.7-1.2 dunums.</li> <li>2. The lack of councils and cooperatives to represent farmers, advocate for their rights and facilitate agricultural marketing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing councils and cooperatives to regulate agricultural production, advocate for their rights and ensure agricultural marketing.</li> <li>2. Opening commercial channels to market produce.</li> <li>3. Encouraging water harvesting.</li> <li>4. Encouraging solar power projects.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>Al-Qarara – Khan Yunis</b></p>	<ol style="list-style-type: none"> <li>1. The limited size of agricultural holdings; the average area of each holding is equal to 1.75 dunums.</li> <li>2. The high salinity of water and the high cost of municipal water.</li> <li>3. High cost of water from solar- powered wells.</li> <li>4. The lack of councils and cooperatives to represent farmers, advocate for their rights and support agricultural marketing.</li> <li>5. Combating <i>Rhynchophorus ferrugineus</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Promoting the monitoring of the Ministry of Agriculture of the bodies implementing solar power projects on farmers to ensure their commitment to the terms of use.</li> <li>2. Establishing councils and cooperatives to regulate farmers, maintain their rights and ensure marketing their produce.</li> <li>3. Implementing agricultural land rehabilitation projects in the area and paving some agricultural roads east of Al-Awda “Jakr” Street</li> <li>4. Using water harvesting mechanisms and direct storage of rainwater in the nature.</li> <li>5. Opening commercial channels to market produce.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>East Al-Breij Al-Wusta</b></p>	<ol style="list-style-type: none"> <li>1. Salinity of water.</li> <li>2. The lack of councils and cooperatives to represent farmers, influence their rights and facilitate of marketing their produce.</li> <li>3. Different diseases that attack olives and citrus trees.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing councils and cooperatives to regulate farmers, maintain their rights and ensure marketing their produce.</li> <li>2. Encouraging the use of pheromone traps, particularly in olive tree farms.</li> <li>3. Using water harvesting methods, benefitting from the neighboring Gaza Valley and direct storage of rainwater in the nature.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>East</b> (Wadi Al-Salqa – Al-Wusta</p>	<ol style="list-style-type: none"> <li>1. Salinity of water.</li> <li>2. Some agricultural lands require rehabilitation, and some wells need to be supplied with solar power.</li> <li>3. The increased number of diseases that attack olives and other trees.</li> <li>4. Combating <i>Rhynchophorus ferrugineus</i>.</li> <li>5. The lack of councils and cooperatives to represent farmers, advocate for their rights and ensure agricultural marketing.</li> </ol>	<ol style="list-style-type: none"> <li>1. The possibility of establishing water harvesting projects due to the existence of the valley.</li> <li>2. Establishing dams in the valley to feed groundwater.</li> <li>3. Improving the planting of olives and combat pests naturally.</li> <li>4. Rehabilitating agricultural lands in the area.</li> <li>5. Targeting Wadi Al-Salqa with projects to provide wells with solar power.</li> <li>6. Opening and paving vital agricultural roads.</li> <li>7. Activating the role of the Ministry of Agriculture and NGOs in combating <i>Rhynchophorus ferrugineus</i> through providing pheromone traps.</li> <li>8. Establishing councils and cooperatives to regulate agricultural production, advocate for farmer rights and facilitate agricultural marketing.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>East</b> <b>Gaza</b> and (Jahr Eddik) - Gaza</p>	<ol style="list-style-type: none"> <li>1. Continuous and frequent violations, particularly during the Great March of Return.</li> <li>2. The lack of councils and cooperatives to organize farmers, fight for their rights and ensure marketing of their produce.</li> <li>3. Continuous spraying of pesticides by the occupation, which causes great losses to farmers.</li> <li>4. The electricity crisis and high cost of diesel fuel.</li> <li>5. The salinity of water.</li> </ol>	<ol style="list-style-type: none"> <li>1. Establishing councils and cooperatives to better regulate agricultural production and support agricultural marketing.</li> <li>2. Using water harvesting methods and benefitting from the neighboring Gaza Valley.</li> <li>3. Mainstream environmental practices amongst farmers, such as intercropping, covering plants with nonwoven fabric in the summer to protect them from insects and to reduce the effects of the scorching heat.</li> <li>4. Opening commercial channels to market produce.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p style="text-align: center;"><b>East Jabalía – The North</b></p>	<ol style="list-style-type: none"> <li>1. High cost of water from solar-powered wells.</li> <li>2. The imposition of high subscription fees by the electricity company, which makes it difficult for farmers to install power lines.</li> <li>3. The delayed operation of the treated water project, which could be used in irrigating trees to reduce the effect of the water crisis.</li> <li>4. Some agricultural roads need paving.</li> <li>5. The lack of councils and cooperatives to advocate for farmers' rights and ensure marketing of their produce.</li> </ol>	<ol style="list-style-type: none"> <li>1. Monitoring, by the Ministry of Agriculture, of the bodies implementing solar power projects with farmers to ensure their commitment to the terms of use.</li> <li>2. Providing vital wells with solar power systems to serve the largest number of farmers.</li> <li>3. Providing additional irrigation source from the treated water from the East Jabalia (NGEST) treatment plant should it become operational.</li> <li>4. Contacting the electricity company to reduce subscription fees for farmers.</li> <li>5. Establishing councils and cooperatives to regulate agricultural production, advocate for farmers' rights and ensure marketing of their produce.</li> <li>6. Paving agricultural roads</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p style="text-align: center;"><b>East Beit Hanoun – The North</b></p>	<ol style="list-style-type: none"> <li>1. Saltwater intrusion into the aquifer and limited water sources.</li> <li>2. The lack of councils and cooperatives to represent farmers, advocate for their rights and ensure agricultural marketing.</li> <li>3. The lack of local markets impedes the prompt and efficient marketing of produce.</li> </ol>	<ol style="list-style-type: none"> <li>1. Providing additional irrigation source from the treated water resulting from East Jabalia (NGEST).</li> <li>2. Providing vital wells in the area with solar power and contact NGOs to amend the condition of availability of electricity at wells nominated to be supplied with solar power.</li> <li>3. Establishing agricultural councils and cooperatives.</li> <li>4. Seeking to increase demand in local markets for local produce.</li> <li>5. Opening agricultural roads east of Beit Hanoun (at least 5km).</li> <li>6. Introducing modern farming patterns that focus on vertical rather than horizontal expansion.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>North Beit Lahia</b> – The North</p>	<ol style="list-style-type: none"> <li>1. The increased cost of pumping water due to the use and high cost of diesel fuel.</li> <li>2. The loss of large quantities of water due to the deterioration of main pipelines, which also cause damage to roads.</li> </ol>	<ol style="list-style-type: none"> <li>1. The existence of cooperatives and bodies that represent farmers and regulate their activities needs additional support.</li> <li>2. Opening agricultural roads east Beit Lahia (at least 10km).</li> <li>3. Providing vital wells in the area with solar power and contact NGOs to amend the condition of availability of electricity at wells nominated to be supplied with solar power.</li> <li>4. Installing high voltage electricity lines to remote areas, such as Al-Shaima' Street, which would supply 15 wells with power.</li> <li>5. Support water harvesting projects from greenhouses.</li> <li>6. Rehabilitate the water networks.</li> </ol>

Area	Challenges in each area	Potential and Opportunities to face challenges/ proposed solutions
<p><b>Um Al-Naser</b> – The North</p>	<ol style="list-style-type: none"> <li>1. The intrusion of saltwater to the aquifer and its impact on citrus production, and the limited availability of water resources.</li> <li>2. The high cost of water.</li> <li>3. Limited agricultural area.</li> </ol>	<ol style="list-style-type: none"> <li>1. Opening agricultural roads in Um Al-Naser.</li> <li>2. Providing vital wells (at least two wells) in the area with solar power and contact NGOs to amend the condition of availability of electricity at wells nominated to be supplied with solar power.</li> <li>3. Installing power lines in areas that do not have electricity in Um Al-Naser north of the Gaza Strip in order to reduce the use of diesel fuel, which will in turn reduce production costs.</li> <li>4. Using animal waste as organic fertilizer since the area is known for sheep and goat herding.</li> <li>5. Encouraging intercropping, particularly garlic with berries and vigna.</li> <li>6. Supporting water harvesting projects(e.g. establishing greenhouses and collecting water from their roofs and establishing agricultural pools).</li> <li>7. Opening commercial channels to market produce.</li> </ol>

## Chapter Three: Summary and Recommendations

### Summary

Farmers in the border areas in general face major challenges, mainly the occupation and its frequent violations; the scarcity and high cost of water; marketing constraints; and ongoing electricity crisis. To overcome such challenges, all agricultural development efforts have been directed towards extensive farming that depends on the extensive use of production inputs, which are mostly exported (particularly seeds, fertilizers and pesticides) from the occupation or from abroad. This approach does not take into account the local environmental, social and cultural characteristics of the area and people, and generally undermines the utilization and development of neglected or hidden local resources. Undesired outcomes resulting from this approach to farming includes:

- a. Full reliance on imported seeds, fertilizers and pesticides/herbicides produced by international corporations that benefit some local traders who exploit farmers by hiking up prices such that farmers are dependent on credit and end up highly indebted.
- b. Unfair access to resources, particularly water, for many farmers.
- c. The deterioration and contamination of the soil, as well as the contamination of the aquifer and environment due to the excessive use of chemical pesticides and fertilizers.
- d. The poor quality of produce and the use of pesticides, which negatively affects consumers' health.
- e. The spread of many diseases that did not exist before and are difficult to combat because of the use of pesticides. In addition to the spread of weeds that require special knowledge to deal with, which farmers consider to be competing with their crops.

Sovereign development that depends on food sovereignty approach and takes into account the social and cultural characteristics in border areas would be the suitable approach for the Palestinian case. This approach could be promoted through reliance on local actors, particularly farmers. According to Ahmad Al-Sourani, an expert on food sovereignty interviewed on 17 September 2020, the adoption of the food sovereignty approach requires embarking on the revival of many traditional environmental and agricultural values and practices that are environmentally friendly and friendly to human beings as well, in addition to being based on agricultural sciences. At the same time, such practices could realize a decent economic return for farmers and maintain the health of consumers.

Achieving this is a long and sometimes difficult social building process that requires mobilizing stakeholders on all levels in order to utilize and maximize local resources. Such resources would be used in safe, feasible and sustainable production that promotes the resilience of farmers and liberates them from subordination to major corporations and suppliers and from dependence on chemicals.

According to agroecology expert, Saad Dagher, the realization of food sovereignty is achieved "through following an agroecological approach that promotes the liberation of farmers from any intellectual, political or economic subordination towards sovereign development that depends on local resources and knowledge."

## **Recommendations**

Overcoming many challenges in the border areas and adopting the food sovereignty approach that depends on natural farming and agroecology requires the collaboration of all actors as follows:

### **a. Institutional Capacity Building:**

Organizations play a vital role in coordinating between actors and increasing the efficiency of interventions. Following are the main areas that need institutional building:

1. Institutional building to reuse treated water in irrigation through forming a supervisory body from key actors in the government, and establishing associations of treated water users.
2. Form a committee (agricultural council) composed of municipal council members from each border area; farmer representatives and the Ministry of Agriculture. Through this committee, the problems of farmers in the area will be conveyed to the Directorates of Agriculture, and farmers will be assisted in agricultural production planning (the type and quantity of crops to be planted) and in agricultural marketing.
3. Encourage the establishment of farmer bodies in border areas for coordination, lobbying and advocacy purposes.
4. Develop agricultural cooperatives in all of the border areas, similar to the specialized cooperatives in Beit Hanoun and Beit Lahia.

**b. Encourage natural farming that depends on local resources through promoting the role of the government and organizations in implementing agroecology:**

1. Develop a comprehensive plan to improve agroecology.
2. Establish research centers on agroecology.
3. Exchange expertise with actors in the field of agroecology in the Arab World and globally, and benefit from the West Bank's experience in agroecology, which dates back twenty years.
4. Establish field schools to qualify farmers to work in agroecology and natural farming that depends on local resources.
5. Develop programs and plans to raise the awareness of consumers and farmers on the importance of natural farming that depends on local resources, and clarify its benefits to people's health and to environmental health and safety.
6. Integrate subjects relating to environmental safety in school and university curricula.
7. Organize regular activities in which farmers, representatives of consumers, agricultural experts, researchers and government officials participate in order to develop applicable plans to expand agroecology.
8. Restrict the use of chemicals in farming towards ending their use completely, and work on intensifying research to find natural alternatives for chemicals.
9. Provide cash and in-kind incentives to environmental farmers, including tax exemptions and reducing the price of production inputs for farmers that apply agroecology.
10. Activate laws that preserve the natural environment and wildlife and promote biodiversity, as well as the law in water use, which stipulates on rationalizing water use and prevents digging wells in order to rationalize the use of groundwater.
11. Encourage the use of treated and recovered water by passing new laws to codify the pumping of groundwater until alternative sources are available.
12. Encourage establishing selling points for environmental produce and farmers markets, and exempt them from subscription fees.
13. Regulate agricultural production to prevent over-supply or shortage in some produce at the expense of others. This applies to the agricultural sector in general.
14. Encourage agricultural diversity as an alternative to monoculture.

### **c. The role of farmers in adopting agroecology through:**

1. Ensure commitment to professional ethics and to maintain the health of the environment and consumers.
2. Stop the use of chemical pesticides and fertilizers and convert to chemical-free farming.
3. Start piloting agroecology, even if in a part of farms, through simple applications, such as relay cropping to combat some diseases, and covering the soil with hay, cardboard and plant remnants to maintain the humidity of soil and manage weeds.
4. Dry weeds that farmers consider to have a negative impact on productivity, and add them as fertilizer to the soil.
5. Encourage use of organic remnants of animal and plant farms.
6. Promote exchange of expertise between farmers in the field of agroecology.
7. Encourage farmers to participate in farmer blocs/bodies and cooperate in agricultural work to overcome the problem of limited agricultural holdings. Through such activities, farmers can diversify production and compensate the low price of some produce with produce with higher prices.
8. Organize activities and exhibits for environmental produce in order to promote them amongst consumers.
9. Attract consumers and provide them with incentives to become permanent customers in order to ensure sustainable marketing of environmental produce.
10. Encourage integrated farming – plant production and livestock to provide animal manure from the same farm, which is in line with agroecology, and use legumes in farming in order to use their remnants to fertilize the soil.
11. Create demonstration/model farms in different areas for farmers to view and learn about different agroecological farming techniques.

### **d. The role of the local community**

All actors of the local community have an important role in encouraging agroecology from several aspects:

1. Raise the awareness of farmers and consumers on the importance of agroecology, because aware consumers are considered the key driver that will have the biggest influence on what is offered in the market. The increased pressure of consumers on competent bodies and increased demand for healthy food will push producers towards agroecology.

2. Participate in lobbying and advocacy efforts to prioritize the environment and agroecology amongst decision makers.
3. Advocate towards influencing public policies to support and encourage agroecology.

**e. Develop the Ministry of Agriculture's policies, programs and procedures as follows:**

1. Adopt the food sovereignty approach and encourage and adopt agroecology in the Ministry's strategic plans, and influencing to include agroecology in their programs and priorities.
2. Support solar power projects to operate wells and pump water from agricultural pools.
3. Strengthen the Ministry of Agriculture's agricultural guidance/extension program, which has the responsibility to raise awareness on the dangers of pesticides and advise the use of natural and comprehensive combating of pests.
4. Develop infrastructure projects in border areas, such as opening agricultural roads and installing water pipelines.
5. Prepare and adopt a procedures manual focusing on natural and local production inputs.
6. Increase monitoring of production inputs available in the market.
7. Train staff on agroecology.

**f. Lobbying and advocacy locally and internationally:**

1. Pressure decision makers to activate the Agricultural Lending Fund and the Agricultural Risk Reduction and Insurance Fund.
2. Pressure decision makers and influence public policies to prioritize environmental issues and people's health in government's programs and plans.
3. Pressure donors to amend their funding agendas in accordance with the needs of local communities.
4. Mobilize international support for Palestinian farmers and their just causes.
5. Influence international and human rights organizations to engage in lobbying and advocacy to guarantee farmers' access to their lands and resources in the border areas, and mobilize global opinion to prevent the occupation from continued spraying of chemical materials in those areas.
6. Address non-governmental agricultural and development organizations to allocate part of their programs and funding to agroecology.

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## Annexes

**Annex (1):** Statistics on damages suffered by farmers as a result of frequent Israeli attacks in the previous five years

Year	Rafah	Khan Yunis	Al-Wusta	Gaza	The North	Total (\$)
2015	0	50,075	0	0	0	50,075
2016	1280	7721	0	11,900	18,610	39,511
2017	0	30,874	0	92,350	11,300	134,524
2018	71,930	44,160	0	63,037	27,305	206,432
2019	25,615	159,388	109,785	112,720	300,364	707,872
<b>Total</b>	<b>98,825</b>	<b>292,218</b>	<b>109,785</b>	<b>280,007</b>	<b>357,579</b>	<b>1,138,414</b>

**Annex (2):** Table that shows the number of damaged dunums and number of affected farmers by the spraying of pesticides

Year	Governorate	Number of Damaged Dunums		Number of Affected Farmers		Estimated Value of damages	
April to November 2015	Rafah	3500		-	344	N/A	
	Khan yunis			205			
	Al-Wusta			65			
	Gaza			39			
	The North			35			
December 2016 to January 2017	Rafah	821	4571	15	326	N/A	
	Khan yunis	2138		167			
	Al-Wusta	780		80			
	Gaza	832		64			
	The North	-		-			
January 2018 and October 2018 (Planted areas and pastures)	Rafah	394	4889	15	428	N/A	
	Khan yunis	1530		98			
	Al-Wusta	765		87			
	Gaza	1391		222			
	The North	809		6			
January 2020	Rafah	272.1	1726.65	23	304	65,614	670,379\$
	Khan yunis	428.5		94		158,046	
	Al-Wusta	410		89		115,704	
	Gaza	555		88		265,257	
	The North	61.05		10		65,757	

**Annex (3):** Table that shows the number of affected farmers, damaged area and value of damages resulting from flooding agricultural lands as a result of Israeli practices

Area	No. of Farmers	Damaged Area (in Dunum)	Value/USD
North Gaza	9	13.3	15,747
Gaza	103	616.5	319,279
Total	112	629.8	335,026

**Annex (4):** Table that shows the damages suffered by farmers as a result of the marches of return (March 2018 – present) based on the report adopted by the Ministry of Agriculture and ICRC

Area	No. of Farmers	Value/USD
North Gaza	14	15,478
Gaza	73	61,170
Al-Wusta	33	43,879
Khan Yunis	47	23,216
Rafah	34	68,550
<b>Total</b>	<b>201</b>	<b>212,293</b>

**Annex (5):** Structured interview with directors of directorates

1. Can we envision agroecology in Gaza Strip, particularly border areas? How do you perceive this form of farming? Do you implement some practices that promote this concept?
2. What are the main impediments?
3. How can we overcome them?
4. Do you use organic fertilizers in farming?
5. Have you tried using the remnants of the farm?
6. How do you dispose of the remnants of the farm?
7. What is the extent of your use of pesticides? What are the most commonly used pesticides?
8. What is the available source of water for irrigation?
9. Do you have water harvesting projects?
10. What is the average consumption per Dunum? How do you estimate it?
11. What do you think of the quality and price of water?
12. Have you tried to rationalize the use of water? How? What methods did you use?
13. Are you willing to irrigate using treated or recovered water?
14. What are the main problems you face in the area?
15. What is the size of the area you are prevented from accessing?
16. What is the size of the access restricted area?
17. What are the main Israeli violations you frequently face?
18. What are the main types of farming in the area (common farming)?
19. What is the source of production inputs (local / imported)?

20. How do you evaluate their price and quality?
21. What are your demands to use (recovered) water?
22. What is the size of available holdings and type of ownership?
23. How is the produce marketed?
24. What are the main projects implemented by the Ministry and NGOs in the area?
25. How do you evaluate your relationship with the Ministry and civil society organizations?
26. What are the services provided by the Ministry and such organizations (projects – counseling – training)?
27. What is your opinion on the quality of such services?
28. Have you heard of the concept of food sovereignty (must be explained)?
29. What is the extent of your application of the concept? What is required to implement it?

**Annex (6)** Structured Interview: Abd Al-Mun'em Ahmad, Safe Farming Expert

**First Component: Agricultural Practices and Agroecology:**

1. Can we envision agroecology in Gaza Strip? What form does it take?
2. What is your assessment of farmers' knowledge of this concept? What are the main practices that promote this concept?
3. What are the main impediments before agroecology?
4. How can we overcome them?
5. Are the remnants in the farm used in compost?
6. How do farmers dispose of the farm remnants?
7. Is mulch from hey and plant remnants used to reduce water evaporation from the soil?
8. How is organic material maintained and increased in the soil?
9. How often are lands plowed and why? Can farming be implemented without plowing? How much time and money does plowing require? What do you do with the plant and weed remnants?
10. Do farmers use organic fertilizer in farming?
11. Are chemical fertilizers used?
12. Can the use of chemical fertilizers be abandoned?

## **Component Two: Pesticides and their use**

1. What is the average use of pesticides per Dunum in border areas? What are the most commonly used pesticides?
2. Do farmers use methods other than chemical pesticides, such as mechanic, biological or other methods?
3. Is solar sterilization used?

## **Component Three: Food Sovereignty**

1. Have you ever heard of the concept of food sovereignty? What does it mean to you?
2. How committed are you to implementing it? What is needed to implement it?
3. Are local seeds produced and used in your area?
4. What are the impediments ahead of producing and using local seeds?

## **Component Four: What is the potential to implement agroecology and food sovereignty?**

**Annex (7)** structured interview: Ahmad Al-Sourani: Director of Gaza Urban and Peri-urban Agriculture Platform and food sovereignty expert

1. What does the concept of food sovereignty mean to you?
2. How do you assess its importance in Palestine and Gaza Strip?
3. How aware are people concerned and farmers of the importance of this approach?
4. How committed are decision makers to implementing it?
5. Can it be implemented and what is required to implement it?

**Annex (8):** Structured interview with the general director of counseling and the general director of prevention

## **Component One:**

1. What are the risks connected to living and agricultural activity in border areas?
2. What is the average area of agricultural holdings in border areas?
3. The main crops available?
4. Is there agricultural diversity in a single unit of space?
5. Are intercropping and companion farming used?

## **Component Two: Water, Irrigation and Fertilization**

1. What is the main source of irrigation water in border areas?
2. How do you assess the quality and price of water?
3. Do farmers have equal opportunities to access water and in terms of price?
4. Are there alternative water sources in the area? What types of sources?
5. Are farmers willing to use treated or recovered water in irrigation?
6. How is consumption reduced and irrigation efficiency increased naturally (other than drip irrigation)?
7. Do farmers use organic fertilizer in farming?
8. Are chemical fertilizers used?
9. Can chemical fertilizers be abandoned?

## **Component Three: Agricultural Practices and Agroecology**

1. Can we envision agroecology in Gaza Strip? What form does it take?
2. What is your assessment of farmers' knowledge of this concept? What are the main practices that promote this concept?
3. What are the main impediments before agroecology?
4. How can we overcome them?
5. Are the remnants in the farm used in compost?
6. How do farmers dispose of the farm remnants?
7. Is mulch from hay and plant remnants used to reduce water evaporation from the soil?
8. How is organic material maintained and increased in the soil?
9. How often are lands plowed and why? Can farming be implemented without plowing? How much time and money does plowing require? What do you do with the plant and weed remnants?

## **Component Four: Pesticides and their use**

1. What is the average use of pesticides per Dunum in border areas? What are the most commonly used pesticides?
2. Do farmers use methods other than chemical pesticides, such as mechanic, biological or other methods?
3. Is solar sterilization used?

## **Component Three: Food Sovereignty**

1. Have you ever heard of the concept of food sovereignty? What does it mean to you?
2. How committed are you to implementing it? What is needed to implement it?
3. Are local seeds produced and used in your area?
4. What are the impediments ahead of producing and using local seeds?

### **Annex (9): Structured interview with directors of directorates**

#### Component One:

#### **1. What is the depth of the agricultural space in the area?**

- a. Access prevented
- b. Access restricted
- c. Restricted agricultural activity
- d. High direct risk

#### **2. What are the risks connected to living and agricultural activity in the area?**

- 3.** What are the types of holdings in the area?
- 4.** What is the average holding area?
- 5.** Main crops available.
- 6.** Is there agricultural diversity in a single unit of space?
- 7.** Are intercropping and companion farming used?

## **Component Two: Water, Irrigation and Fertilization**

1. The area of irrigated and rain fed farming in the area
2. What is the source of irrigation water?
3. The quality and price of water
4. Are there alternative water sources in the area? What types of sources?
5. Are farmers willing to use treated or recovered water in irrigation?
6. How is consumption reduced and irrigation efficiency increased naturally (other than drip irrigation)?
7. Do farmers use organic fertilizer in farming?
8. Are chemical fertilizers used?
9. Can chemical fertilizers be abandoned?

### **Component Three: Agricultural Practices and Agroecology**

1. Can we envision agroecology in your governorate? What form does it take?
2. What is your assessment of farmers' knowledge of this concept? What are the main practices that promote this concept?
3. What are the main impediments before agroecology?
4. How can we overcome them?
5. Are the remnants in the farm used in compost?
6. How do farmers dispose of the farm remnants?
7. Is mulch from hey and plant remnants used to reduce water evaporation from the soil?
8. How is organic material maintained and increased in the soil?
9. How often are lands plowed and why? Can farming be implemented without plowing? How much time and money does plowing require? What do you do with the plant and weed remnants?

### **Component Four: Pesticides and their use**

1. What is the average use of pesticides per Dunum? What are the most commonly used pesticides?
2. Do farmers use methods other than chemical pesticides, such as mechanic, biological or other methods?
3. Is solar sterilization used?

### **Component Five: Food Sovereignty**

1. Have you ever heard of the concept of food sovereignty? What does it mean to you?
2. How committed are you to implementing it? What is needed to implement it?
3. Are local seeds produced and used in your area?
4. What are the impediments ahead of producing and using local seeds?

### **Component Six: Obstacles and Potential:**

1. What are the main problems that face farmers in the area?
2. What are the main resources can be utilized and developed in the area?
3. What are the special characteristics in the area?

## Annex (10) List of Interviewees

	<b>Name</b>	<b>Nature of Work</b>
1	<b>Abd Al-Mun'em Ahmad</b>	<b>Safe Farming Expert</b>
2	<b>Ahmad Al-Sourani</b>	<b>Director of Gaza Urban and Peri-urban Agricultural Platform</b>
3	<b>Naser Deeb</b>	<b>General Director of Counseling, Ministry of Agriculture Gaza</b>
4	<b>Shafiq Al-Arawi</b>	<b>Former General Director of Soil and Irrigation, Ministry of Agriculture Gaza</b>
5	<b>Wael Thabet</b>	<b>General Director of Planning, Ministry of Agriculture Gaza</b>
6	<b>Adham Al-Basyouni</b>	<b>General Director of Prevention, Ministry of Agriculture Gaza</b>
7	<b>Akram Abu Dakka</b>	<b>Director of Rafah Directorate of Agriculture</b>
8	<b>Husam Abu Saada</b>	<b>Director of Khan Yunis Directorate of Agriculture</b>
9	<b>Awwad Abu Mustafa</b>	<b>Director of Al-Wusta Directorate of Agriculture</b>
10	<b>Hassan Odeh</b>	<b>Director of Gaza Directorate of Agriculture</b>
11	<b>Mohammad Libed</b>	<b>Director of North Gaza Directorate of Agriculture</b>



Dalia is a community-based organization that works on properly mobilizing and using all necessary local resources (financial and non-financial) to enable and create an independent and responsible civil society governed by transparency and accountability. Dalia believes in the Palestinian people's right to control their resources in order to achieve community development. This is realized through community-controlled grants to support creative and suitable civil society initiatives, particularly the efforts exerted by local communities to use and benefit from their available resources. Our work is focused on four aspects that ensure the realization of comprehensive community development: local economy, environmental aspect, social aspect and cultural aspect. We also aim to promote community philanthropy in Palestine and the Diaspora because we believe that each individual of us has something to provide by contributing with our talents, resources and energy for a flourishing Palestine.



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