

AGRICULTURE  
SECTOR  
REPORT

# IMPACT OF GAZA CRISIS



2 March 2009

## Table of Contents

List of Abbreviations .....	3
Overview .....	5
Coordinated Sector Response to the Gaza Crisis.....	7
Rapid Needs Assessment: Findings and Methodology.....	7
Flash Appeal for Gaza .....	8
Gaza Early Recovery and Reconstruction Plan.....	10
Position Paper of the Agricultural Community .....	10
Scarce Agricultural Inputs in the Gaza Strip.....	10
Priority Interventions .....	11
Summary .....	13
Annex A: Position Paper of the Agricultural Community .....	14
Annex B: List of Agriculture Inputs Availability and Prices in the Gaza Strip .....	17
Annex C: Map of Damages to Gaza Strip (UNOSAT).....	20
Annex D: APIS Report on Agriculture Projects in Gaza Strip, 2008 .....	21
ANNEX E: Active Stakeholders in the Gaza Crisis .....	25

## List of Abbreviations

AAA	Arab Agronomist Association
ACAD	Arab Center for Agricultural Development
ACF-Spain	Action Against Hunger
ACPP	Assembly of Cooperation for Peace
ACTED	Agency for Technical Cooperation and Development
AECID	Spanish Agency for International Development Cooperation
AIRD	Associates for International Resources and Development
APIS	Agriculture Projects Information System
ARIJ	Applied Research Institute – Jerusalem
CAABH	Cooperative Agriculture Association of Beit Hanoun
CAP	Consolidated Appeals Process
CHF International	Cooperative Housing Foundation
DFID	UK Department for International Development
ECHO	European Commission’s Humanitarian Aid Office
ESDC	Economic and Social Development Center of Palestine
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information Systems
INGO	International Non-Governmental Organization
IRPAL	Islamic Relief – Palestine
JCP	Job Creation Programme
LACS	Local Aid Coordination Secretariat
MoA	Ministry of Agriculture
NGO	Non-Governmental Organization
NIS	New Israeli Shekel
OCHA	Office for the Coordination of Humanitarian Affairs
PA	Palestinian Authority
PARC	Palestinian Agriculture Relief Committees
PCBS	Palestinian Central Bureau of Statistics
PFU	Palestinian Farmer’s’ Union
PHG	Palestinian Hydrology Group
PU	Première Urgence
RI	Relief International
SCC	Swedish Cooperative Centre
SCf	Save the Children Federation
UAWC	Union of Agriculture Work Committees
UCODEP	Unity and Cooperation for the Development of People
UNDP/PAPP	United Nations Development Programme – Programme of Assistance to the Palestinian People
UNOSAT	United Nations Operational Satellite Applications
UNRWA	United Nations Relief and Works Agency

USAID	United States Agency for International Development
USD	United States Dollar
UXO	Unexploded Ordinance
WATSAN	Water and Sanitation
WBGS	West Bank and Gaza Strip
WFP	World Food Programme

## Overview

Gaza's agriculture sector was severely affected by Operation Cast Lead (27 December 2008 to 18 January 2009). Twenty-three days of airstrikes and large-scale incursions resulted in USD 180 million in direct damages to the sector. With a projected 6-month indirect impact of over USD 88 million, the **estimated losses to the agriculture community as a result of the Operation totals USD 268 million**. The recent attacks on the Gaza Strip came at a time when the sector was struggling to cope with an eighteen-month blockade on imports and exports that continues to cause acute productivity losses and reduce the population's access to affordable fresh foods.

With over one-third of the land in Gaza prime for agriculture use and an abundant sea for fishing, agriculture plays a vital role in generating economic activity and growth. This is particularly important given the failure of other economic sectors (including industry) to function, owing to the closure of Gaza's commercial crossings since June 2007. Agriculture is a traditional shock-absorber for communities when other social safety nets fail to operate; therefore it plays a critical role in protecting and promoting livelihoods, especially in rural areas. With roughly two-thirds of the population deemed food insecure<sup>1</sup>, agriculture, including home gardens and small-scale animal production, provides a more affordable option to fresh foods that are not traditionally offered in the food aid packages presently being distributed by humanitarian organizations. Agriculture has the capacity to absorb a significant percentage of the work force, of which forty percent in the Gaza Strip are currently unemployed<sup>2</sup>, owing to the flexibility of agriculture's informal labour demand, offering casual employment to family members when other work is not available.

During the military operation, sector stakeholders responded swiftly to the crisis by executing a multi-agency rapid needs assessment, proposing USD 29 million in immediate relief to the sector via the Flash Appeal for Gaza, developing an early recovery strategy in collaboration with the United Nations Development Programme (UNDP) and the Palestinian Authority (PA), prioritizing interventions, advocating for the sector and monitoring agricultural goods availability in Gaza. In light of the damage assessment results, the funds requested in the Flash Appeal cover only a minor portion of the needs, leaving a **shortfall of USD 150 million**. The sector has the capacity to recover from the crisis provided the right conditions are in place. These include: a) an opening of the commercial crossings to allow for free movement of goods and a resumption of trade activities that have been suspended since June



Figure 1 Destroyed greenhouses in Gaza Strip as a result of Operation Cast Lead

<sup>1</sup>FAO, WFP, UNRWA. Joint Rapid Food Security Assessment, May 2008.

<sup>2</sup> Palestinian Central Bureau of Statistics (PCBS), 2006.

2007; b) providing access to the Buffer Zone to restart agriculture activities, including recovery and rehabilitation of agriculture assets, in this area; c) reliable and affordable sources of power necessary for agricultural operations to commence; and d) an influx of cash to help spur marketing activities. Progress in the political situation via fruitful peace negotiations and a permanent end to hostilities in the Gaza Strip will help pave the way for realizing positive socio-economic change for the people of Gaza.

This report provides an overview of the sector's response to the Gaza crisis, including damage absorbed by the sector, Flash Appeal projects, priority inputs and interventions for recovery efforts, and efforts for a sector-wide early recovery plan. The annexes contain supplementary information related to the Gaza crisis, namely: a) an advocacy paper for the agricultural community; b) a list of scarce agricultural inputs in Gaza; c) the latest Geographic Information System (GIS) map of damages from UNOSAT; d) an analysis of 2008 interventions in the Gaza Strip; and e) a list of sector stakeholders.

## Coordinated Sector Response to the Gaza Crisis

During the military operation, a wide spectrum of actors from across the sector<sup>3</sup> convened to respond to the crisis in the Gaza Strip. Stakeholders gathered in weekly meetings to coordinate efforts for identifying gaps, avoiding duplication and optimizing the use of anticipated financial assistance for rehabilitating the sector. With a high spirit of cooperation and focus, sector members took action by:

1. Launching a multi-agency **rapid needs assessment** of direct damages;
2. Proposing 27 projects worth USD 29 912 000 directed at providing immediate relief to the agriculture sector in the framework of the **Flash Appeal for Gaza**;
3. Supporting efforts for **early recovery** plans led by the PA and supported by the UN Early Recovery Multi-Partner Cluster on behalf of the humanitarian community;
4. Speaking out about the affect of the crisis on the sector and urging a quick and coordinated response through an **advocacy paper**;
5. Monitoring and recording **scarce agricultural goods** in the Gaza Strip; and
6. Developing a plan of **priority interventions** to help guide relief, recovery and reconstruction plans for the sector.

Details regarding each action point are further explained below.

### Rapid Needs Assessment: Findings and Methodology

After Operation Cast Lead ceased on 18 January 2009, and building on the rapid loss estimations provided by the Ministry of Agriculture (MoA) and based on its baseline data, UNDP, FAO, and numerous local agricultural NGOs and international NGOs (INGOs) in Gaza<sup>4</sup> coordinated their efforts to assess damages to the agriculture sector across the different districts. The

Table 1. Estimated <sup>1</sup> Direct Losses to the Agriculture Sector in the Gaza Strip during Operation Cast Lead <sup>1</sup>		
Sector	Subsector <sup>1</sup>	Damages (in USD)
Plant production	Fruit trees and open fields (irrigated crops, rain fed crops, strawberries)	84 786 000
Animal production	Cattle, sheep & goats, broilers, layers, beehives, other animals & birds, animal feed	18 133 000
Infrastructure	Green houses, nurseries, water storage facilities (water ponds, wells), agricultural equipment (inputs & materials), agricultural roads, marketing infrastructure, fisheries, animal farms, irrigation networks, main pipelines, other infrastructure losses, agricultural stores, Ministry of Agriculture losses	77 800 000
<b>Total Direct Losses</b>		<b>180 719 000</b>
<i>Preliminary estimates of indirect losses by MoA are USD 88.2 million<sup>1</sup>.</i>		

<sup>3</sup> See Annex E for list of sector actors active in the Gaza crisis response.

<sup>4</sup> The agencies instrumental in carrying out the rapid needs assessment are PARC, UAWC, Ma'an, ACAD, Beit Hanoun Cooperative Association, Air and Light Association, Al-Ahlyia Society for Development of Dates and Palms, Palestinian Welfare Association, Beit Lahiya Development Association, PFU, ACTED, and Agriculture Guide and Awareness Society.

assessment covered the direct losses to the major agricultural subsectors of plant production, animal production, and agricultural infrastructure<sup>5</sup> (see Table 1). All major geographical areas in the Strip, except for the Buffer Zone, were assessed, including: (i) Beit Lahiya, (ii) Beit Hanoun, (iii) Jabalia, (iv) Gaza, (v) Middle Area, (vi) Khan Younis, and (vii) Rafah. In Gaza<sup>6</sup> and Khan Younis<sup>7</sup>, the team also targeted specific localities. The Buffer Zone was inaccessible owing to Israeli restrictions on movement ranging 1 km from the eastern border and 2 km from the northern border; thus, damages could only be estimated. The assessment's results were cross-checked and consolidated with other damage assessments<sup>8</sup> conducted during and after the Operation, namely the MoA and members of the Data Collection Cell.

As a result, the estimation of direct losses provides a first glimpse at the extent of the damage sustained by the agricultural community. The total **direct losses were calculated at over USD 180 million**. This includes damages to 200 km of agricultural roads, 300,000 uprooted trees, and destruction of 225 dunums of greenhouses and 40 dunums of nurseries. Project formulation will require additional in-depth assessment and analysis. Clearly, the estimated **indirect losses of USD 88 million** due to the Operation and the prolonged closure are expected to exceed the direct figures, as the sector will be impacted for years to come. Compounded by this closure of Gaza's borders since June 2007, Operation Cast Lead has undermined farmers' abilities to secure income sources for their households and limited their productive activities to an alarming level. Ultimately, more people, especially those living in deep poverty, will be at risk of becoming food insecure<sup>9</sup> and aid dependent.

<b>Table 2. Total Requested Budget</b>	<b>USD 29 912 000</b>
Total No. Agriculture Projects in Flash Appeal	27
a. No. new projects	25
b. No. revised CAP 09 projects	2
c. No. projects direct relief	3
d. No. projects direct livelihoods recovery	23
e. No. projects necessary reconstruction	1
f. No. organizations submitted projects	16

### *Flash Appeal for Gaza*

Immediately following Operation Cast Lead, the Flash Appeal for Gaza<sup>10</sup> was launched to address the immediate humanitarian needs of the population in Gaza over the initial nine-month period. Led by FAO, the agriculture sector developed a comprehensive plan for directing relief efforts for the agricultural community in Gaza. The sector response plan follows two strategic objectives:

- a. To protect the livelihoods of affected farmers through tailored support to resume their agricultural

<sup>5</sup> Fruit tree orchards, green houses, nurseries, water storage facilities, beehives, open fields, fisheries, agricultural equipment, agricultural roads, marketing infrastructure, animal production subsector, irrigation wells and inputs.

<sup>6</sup> Az Zeitoun, Sheik Ajleen, At Toffah, Johr Ad Deek, Al Mughraga, Netzarim.

<sup>7</sup> Wadi Al Salga, Al Qarara, Khuza'a, Abasan Al Kabira, Abasan Al Jadida.

<sup>8</sup> Agriculture stores, other infrastructure losses, Ministry of Agriculture losses.

<sup>9</sup> 56 percent of Gazans are food insecure, according to Joint Rapid Food Security Assessment (FAO/WFP/UNRWA), April 2008.

<sup>10</sup> OCHA led coordination efforts for the Flash Appeal for Gaza, which complements the CAP 2009 document released in November 2008. With a high level of participation and cooperation from sector stakeholders, FAO directed efforts for agriculture.



production activities and reduce dependency on direct food aid; and

- b. To reactivate household food production and income generation for affected farming families with the capacity to raise small animals and farm backyards.

Sector actors developed 25 new projects and revised two Consolidated Appeals Process (CAP) 2009 projects, subcategorized by type of project: a) direct relief; b) direct livelihoods recovery; and c) necessary reconstruction for delivering humanitarian relief (see Table 2). Overall, the projects aim to provide input packages, irrigation and water well maintenance, greenhouse repair, cash-for-work programs, reconstruction of animal farms, and support for home gardening for the most vulnerable farming households in the Gaza Strip.

In parallel, the multi-agency rapid damage assessment of estimated direct losses to the agricultural sector was conducted (see page 7 for more information). According to the findings, **the coverage of the estimated direct losses by the Flash Appeal is below 20 percent.** Some short term humanitarian concerns are being addressed, but full restoration of the agricultural sector to its pre-27 December level **will require an additional USD 150 million.** However this figure does not consider the indirect losses, estimated at USD 88 million for the six-month

Table 3. Agriculture Projects in Flash Appeal by Subsector and with Budget Shortfall			
Agriculture Subsector	Estimated Direct Losses (USD)	No. of Flash Projects	Project's Total Budget (USD)
Plant Production	84 786 000	9	9 689 000
Plant /Livestock Production	N/A	5	4 238 000
Livestock Production	18 133 000	5	3 860 000
Infrastructure	77 800 000	8	12 125 000
<b>Total</b>	<b>180 719 000</b>	<b>27</b>	<b>29,912,000</b>
<b>Shortfall for the agriculture sector (if all sector Flash Appeal projects are funded)</b>			<b>150 807 000</b>

period following the conflict, which affects the livelihoods of farmers, herders, and fisher folk and agribusiness. At the same time, a return to pre-war conditions is still far from the optimal productivity of the sector, and can only be adopted as a minimum standard required of the recovery efforts. The sector has undergone considerable damage and losses since the start of the second *intifada*. Furthermore, reconstruction of damaged infrastructure alone faces an estimated cost of USD 77.8 million. The Flash Appeal only requests USD 12 million for infrastructure repairs, leaving a shortfall of USD 65.7 million that will be necessary to reestablish assets such as greenhouses, agricultural roads, water networks and fisheries. These shortfalls will need to be made up if the essential role and capacity of agriculture is not to decline from the position it held before Operation Cast Lead. The Flash Appeal and other funding efforts cannot replace the commercial infrastructure that continues to be prevented from receiving reconstruction materials for the private sector. A re-opening of Gaza's borders is the pathway to achieving economic recovery and growth. Still, the successful funding of projects in the Flash Appeal will

provide highly needed assistance to help restart the next growing season and launch a revitalization phase for the sector.

### *Gaza Early Recovery and Reconstruction Plan*

Bridging the gap between humanitarian relief and reconstruction efforts, the PA has developed the Gaza Early Recovery and Reconstruction Plan (GERRP) with support of various actors including the UN. Early recovery is guided by development principles that seek to build on humanitarian programmes and catalyze sustainable development opportunities. Aiming to generate self-sustaining and resilient processes for post-crisis recovery for each sector, the plan coordinated a phased, early recovery approach that prioritized the resumption of planned pre-war interventions and political efforts including: a) the opening of commercial crossings; b) protection of human resources in Gaza; and c) a scale-up of existing responses where possible. A multi-partner assessment of damages to the agriculture sector was carried out under this umbrella. The results of the assessment (see page 7) identified priority areas for intervention and laid the groundwork for project implementation to begin.

### *Position Paper of the Agricultural Community*

While the military operation was still unfolding with its outcome uncertain, stakeholders called for a unified voice among the sector to bring attention to the suffering of the agricultural community in the Gaza Strip. As the crisis unfolded and damage assessments were availed, they became increasingly aware of the importance to highlight damages incurred during the operation, in addition to the ongoing impact of the closure. The sector developed an advocacy paper (see Annex A) that describes and outlines ways to overcome the major challenges faced by the sector.



Figure 2 Destroyed poultry farm in Gaza Strip as a result of Operation Cast Lead

### *Scarce Agricultural Inputs in the Gaza Strip*

One of the major obstacles to revitalizing the sector is a shortage of basic agricultural inputs in the Gaza Strip. Based on field and market estimates<sup>11</sup>, the agricultural sector lacks the capacity to recover from the ongoing crisis without an opening of the borders to allow a free-flow of commercial goods. The list

<sup>11</sup> Conducted by FAO on 11 February 2009

below provides a brief overview of the most urgently needed inputs (see Annex B for a comprehensive list). Most agricultural inputs are in difficult to find in Gaza and prices exceed those in the West Bank.

- Peat moss and vermiculite for nurseries
- Fertilizer (20-20-20, ammonium sulphate, and organic)
- Seedlings (olive, stone fruit, mango, avocado)
- Mulch sheet for greenhouses
- Iron bars for animal shelters
- Plastic shelter covers
- Wheat for animals
- Warming gas, feeders, and drinkers for poultry
- Livestock: layer chicks, Assaf sheep, milk cows, meat cows

### *Priority Interventions*

As a result of coordinated efforts, the sector is prepared to address the needs of the agriculture community in Gaza. Yet major obstacles prevent proper relief, rehabilitation and reconstruction efforts. In addition to the substantial funding necessary to revitalize the sector to its once productive and vibrant era, the borders must be opened to allow for free trade, especially the export of agro-products, and import of agricultural inputs (raw materials) and dependable import of food commodities that cannot be grown in the Gaza Strip.



**Figure 3 Fishing activities in Gaza Strip**

A sufficient supply of cash is also necessary for reviving market activities, both on the micro- and macro-levels. Priority interventions for the sector are listed below, and categorized by urgency.

#### **Stage 1 (Immediate and ongoing):**

1. Rehabilitate and reclaim damaged lands and restore damaged agricultural assets, including but not limited to greenhouses, nurseries, irrigation wells, pumps and networks, poultry farms and other animal farms, fences, olive and citrus groves and fishing boats.
2. Protect vulnerable livelihoods by restoring agricultural productive capacities in order to supply sustainably the rapidly growing Gazan population with fresh foods and mitigate import restrictions.

3. Enhance household or small-scale agricultural activities and food processing industries to reduce dependence on imports for processed food and contribute to employment generation in off-farm activities.
4. Enhance social protection measures by supporting cash-for-work, food-for-work and from-poor-farmers-to-poor-people programmes that will assist in agriculture recovery and provide much needed employment for those living in the deepest poverty. Intervention is linked to the Social Protection/Safety Nets Sector.
5. Advocate for and ensure safe access to restricted farming and herding areas (particularly, the buffer zone) and fishing grounds in order to increase production potentials, create more jobs, and increase the supply of fresh foods. Intervention is linked to the Protection Sector.
6. Strengthen households' economic access to food by complementing in-kind food assistance with food vouchers (or cash transfers once regular and predictable entry of cash is resumed in the Gaza Strip) to enable the diversification of food consumption and support the local market economy. Intervention is linked to the Social Protection/Safety Nets Sector.

**Stage 2 (up to 9-12 months):**

1. Treat and clean possible contamination sites, including soil, water and vegetation, to ensure the safety of agricultural workers and agro-products. Intervention is linked to the WATSAN Sector.
2. Enhance the diversification of agricultural production and optimize its calendar so that it better meets the local market's demand in order to increase self-sufficiency and improve food security.
3. Support the public sector in order to assist the agricultural community in its revitalization process via sectoral coordination mechanisms, capacity and institutional building, and reconstructing public facilities, including non-governmental offices and veterinary/testing laboratories.

**Stage 3 (up to 12-24 months):**

1. Deploy the best available technology to make agriculture production more resource efficient in order to optimize the use of irrigation water, fuel and other inputs, hence reducing production costs and environmental impact.
2. Strengthen market mechanisms to ensure local product prices are affordable to consumers and still profitable for producers.
3. Support the continuity of agribusiness potentials through enhancing active involvement of the private sector in the agricultural early recovery efforts, and by providing technical and institutional support to business oriented agricultural production.
4. Further develop and strengthen the monitoring of food production, availability, access and consumption through the regular collection and analysis of information on land use, harvests, market supplies and prices, sources of income, access to external food and non-food assistance and to solidarity mechanisms, and other coping mechanisms of the population, in order to provide early warnings of food security changes and swiftly adjust agricultural, food and non-food interventions accordingly. Intervention is linked to the Social Protection/Safety Nets Sector.

## Summary

Agriculture is one of the few economic sectors that can quickly recover its productive capacity, contribute to food security with nutritious fresh foods (mainly, meats and vegetables) and employ a significant share of the workforce. The Gazan economy is well endowed with farming knowledge and skilled labour and agriculture provides a livelihood to many families. In addition, the Gaza Strip climate is very conducive to producing high value agricultural products. Land and water resources are limited but available, and require modest capital investments compared to other productive sectors.

Already suffering from a lack of interventions owing to the ongoing closure, the added damages absorbed during Operation Cast Lead has weakened the agriculture sector severely. In total, the sector's preliminary assessment estimates that at least USD 180 million is needed to restore the sector to its pre-27 December levels. Another USD 88 million will recover indirect losses incurred for the initial six-month period following the 23 days of attacks. Despite the high cost of funding necessary to revitalize the sector, even greater change in the political situation is required for agriculture to realize its full potential.



Figure 4 Children in Gaza Strip



## *Annex A: Position Paper of the Agricultural Community*

### **Aim and Purpose**

Representatives<sup>12</sup> of key actors and organizations active in the agricultural sector in West Bank and Gaza Strip, including members of government, international and local non-governmental organizations, and community based organizations, have come together to: (i) raise awareness of the impact of the Israeli military operation in the Gaza Strip as well as the ongoing closure on the agricultural sector; and (ii) develop and adhere to a comprehensive and streamlined sectoral approach to immediate relief, recovery, reconstruction and development efforts in the Gaza Strip.

*Overshadowed by the severe damage and the significant impact of the closure on the agriculture sector in the Gaza Strip, farmers are looking forward to the start of the next growing season, with organizations ready to begin relief and rehabilitation efforts. However, certain preconditions are necessary for recovery efforts to succeed and for agricultural activities to resume, namely: (i) lifting the closure of the Gaza Strip to permit free trade, particularly the inflow of agricultural inputs and export of agricultural products outside and between the West Bank and Gaza Strip; and (ii) supplying sufficient cash to resume market activities.*

*Security within the Strip must be upheld in order to: (i) allow farmers, herders and fishermen to return to their lands and sea; (ii) guarantee the safety of all farmers working to restore their assets, infrastructure, livelihoods, and communities; (iii) maintain regular and reliable sources of power, namely fuel, cooking gas, and diesel; and (iv) support the restoration and growth of the agricultural sector. Agriculture is a time-sensitive sector that has already suffered from lost opportunities during the closure and military operation; therefore, action to achieve these objectives must come swiftly.*

### **Impact of Operation Cast Lead and Closure on the Gaza Strip's Agriculture Sector**

Gaza's agricultural sector has been severely affected by the Israeli military operation which started on 27 December 2008 and lasted until 18 January 2009, as well as by the blockade of agricultural imports and exports starting in June 2007. The Operation resulted in widespread destruction and losses to cultivated lands, livestock and poultry farms, agricultural infrastructure and productive assets. As a result of the closure, the sector has witnessed extensive set-backs, including a complete ban on agricultural exports; a severe shortage of agricultural inputs and supplies that have driven up production prices; and restricted access to sea areas for fishing. The end result is sluggish production, major economic losses, a rise in unemployment, and a threat to food security among the local population, as food imports have been severely limited by the blockade.

<sup>12</sup> Official signatories to the advocacy paper are AAA, ACF-Spain, ACPP, ACS, ACTED, AIRD, ARIJ, CARE International, ESDC, FAO, JCP – Office of the President, MA'AN Center, MoA, OXFAM International, PARC, PFU, PHG, SCC, UAWC, UCODEP, Welfare Association

Extensive relief and recovery efforts are necessary in light of the recent military operation in Gaza, which has exacerbated the impact of the closure on the sector and resulted in a near cessation of agricultural activities throughout the Strip, characterized by the following points.

- A major portion of the agricultural assets in the Gaza Strip has been leveled or destroyed. These assets include fruit trees, open irrigated fields, animal production and more, resulting in an estimated loss of over USD 102.9 million<sup>13</sup>. Further damages to infrastructure (including government buildings), greenhouses and nurseries, roads and water and irrigation networks are estimated at USD 77.8 million. In total, the estimated total direct losses to the agriculture sector are estimated at USD 180.7 million.
- During the military operation, Israeli forces maintained control over the majority of arable land in the Strip, displacing a considerable portion of farming households. Farmers, fisher folk and agricultural workers lacked access to their land to plant, harvest or fish, resulting in USD 88.2 million<sup>14</sup> estimated loss in profits. A large proportion of standing crops have been destroyed resulting in direct loss of food and income. The military operation prevented strawberry, cherry tomato, cut flower and other vegetable growers from completing the winter (and most lucrative) harvest of their crops. The severe shortage of goods and supplies, including fuel for irrigation and the damage of irrigation wells and networks, prevents a resumption of the farming cycle and amasses further losses for the sector.
- Access to the Buffer Zone, which comprised 30% of arable land in Gaza during Cast Lead Operation, continues to be denied. Despite the extremely dangerous situation within the Buffer Zone, as it is monitored by the Israeli forces, much of Gaza's animal production is concentrated here. Owing to severe movement restrictions in this area that comprises 0.5-1.0 km from the eastern border and 1.8-2.0 km from the northern border, farmers have been witnessing severe difficulties in using irrigation water, and must adapt their crop production to rain-fed crops. In a region undergoing years of water stress, the farming and herding community is unable to cope with such conditions. As a result, production activities are restricted due to danger and profits are lost. Gaza's population suffers from this lack of productivity as they must pay higher prices for scarce fresh food items.
- The fragmentation of the Gaza Strip during the military operation divided the producers in the south from the consumers in the north, resulting in marketing losses and the inability of the local population to access fresh foods. Movement continues to be difficult as many access roads were damaged by tanks and airstrikes.
- Fishing activities and animal production have been severely affected as well, mainly owing to inaccessibility to land and sea and a lack of inputs, including fuel, animal feed and its substitutes. Fisher folk have suffered an estimated loss in damages of USD 1.52 million. Two hatcheries and some 200 000 birds have been destroyed and grazing areas for herding animals have been irreparably damaged. Fisher folk are still restricted to fishing within six nautical miles of the

---

<sup>13</sup> All figures in this document are of damages to the sector from 27 December 2008 to 18 January 2009. Damages were estimated during a rapid needs assessment immediately after the military operation ceased by a team of agriculture sector actors in the West Bank and Gaza Strip. For more information, see page 7.

<sup>14</sup> Indirect losses estimated by MoA.

coast. Consequently, the price of animal protein in the local market is high and unaffordable especially for people living in poverty and deep poverty.

- The scarcity of veterinary drugs places the animal population at risk for developing disease that consequently further weakens the animal production subsector from recovering. Laboratory facilities for testing animal disease and the Fisheries Training Centre have also been damaged.
- It is as yet unknown how much unexploded ordinance (UXO) remains on farming land, and reports of chemical weapon residues must be fully investigated. Reports of animal deaths after the conflict are raising fears that grazing areas were contaminated by the military operation; thus, access to test these areas, which are mainly in the Buffer Zone, is necessary to avoid poisoning livestock, crops and ultimately consumers. Farmers and their families must be protected before they can be encouraged back to working their land. Furthermore, disposing of the massive debris accumulated during the conflict should not be done at the expense of the already limited arable land.
- Numerous funded development and humanitarian projects have been destroyed and many agencies have stalled ongoing or planned projects for Gaza, placing development efforts further behind schedule.

In light of soaring food prices worldwide, agriculture is more important than ever for generating economic recovery and growth, reducing costs of foodstuffs in the local market and limiting food insecurity, especially among those living in deep rural poverty. The Gaza Strip, a traditionally agricultural society, relies on animal raising, orchard farming, fishing and horticulture for feeding its people and sustaining livelihoods. Owing to Gaza's already established assets, namely local knowledge, high skill level and suitable climate, an immediate focus on the sector will provide a relatively low cost and effective means of successful post-conflict rehabilitation. A rapid recovery of the sector will reinstate the local population's access to fresh foods, including fruits and vegetables, eggs, fresh meat and fish, which humanitarian agencies traditionally do not offer in the aid pipeline. Thus, a revitalization of the farming households will help restore economic activity in what was once a vibrant productive sector that relies on local assets, and help to strengthen food security for the 1.5 million people living in the Gaza Strip.



## Annex B: List of Agriculture Inputs Availability and Prices in the Gaza Strip

Note: The table below provides general information. Actual transactions may differ from below indicative prices as a result of tight supply.

Input Item	Abundant	Scarce	Rare/ lacking	Unit	Avg. Price /unit GS	Avg. Price/ unit WB	NOTE
<b>1. Nurseries</b>							
Peat moss			*	Sack, 45 Kg	150 NIS	120 NIS	Urgent
Vermiculite			*	Sack, 10 Kg	60 NIS	45 NIS	Very urgent
Seedling trays for nurseries			*	Tray, 260 cells	25 NIS	25 NIS	
<b>2. Seeds</b>							
Melon seed			*	Kg	1500 NIS	1500 NIS	
Watermelon seed			*	Kg	1500 NIS	1300 NIS	
Corn seed			*	Kg	170 NIS	125 NIS	
Cucumber seed		*		1000 seeds	650 NIS	600 NIS	
Squash seed		*		500 g	200 NIS	200 NIS	
Tomato seed			*	10 g	580 NIS	500 NIS	
<b>3. Pesticides/ Fertilizers</b>							
Pesticides		*		Litre/Kg	variable	variable	
Fertilizer 20-20-20			*	25 Kg	200 NIS	N/A	Very urgent
Fertilizer (ammonium sulphate)			*	25 Kg	100 NIS	42 NIS	Very urgent
Organic fertilizer			*	20 Kg	20 NIS	18 NIS	Urgent
<b>4. Seedlings</b>							
Citrus			*	Seedling	15 NIS	10 NIS	
Olive			*	Seedling	18 NIS	18 NIS	Urgent
Stone fruit			*	Seedling	20 NIS	8 NIS	Urgent
Mango and avocado			*	Seedling	50 NIS	25 NIS	Urgent

<b>5. Greenhouses</b>							
Plastic sheet greenhouse		*		Roll , 40 Kg	16 NIS/ Kg	15 NIS/Kg	
Mulch sheet			*	Kg	10 NIS	9 NIS	Urgent
Nylon net			*	Square metre	4 NIS	4 NIS	
Wood base for greenhouse			*	One piece, 3 metres	15 NIS	12 NIS	
Plastic for soil solarization		*		Roll, 150 metres	550 NIS	450 NIS	
<b>6. Irrigation</b>							
Irrigation pipe, 2 inch			*	Metre	5 NIS	4.5 NIS	
Irrigation pipe, 3 inch			*	Metre	9 NIS	7.5 NIS	
Irrigation network			*	Dunum	500 NIS	600 NIS	
Pumps, 2.5 HP			*	Pump	1800 NIS	900 NIS	
Plastic tank, 1cubic metre		*		Tank	700 NIS	420 NIS	
Sprayers			*	Sprayer	Upon size	250-1200 NIS	
Valves			*	Valve	Upon size	35-60 NIS	
Ground water pumps			*	submersible	Upon size	1200 NIS	
<b>7. Animal feed and equipment</b>							
Feed for layers			*	Sack, 50 Kg	120 NIS	110 NIS	
Feed for broilers			*	Sack, 50 Kg	115 NIS	100 NIS	
Feed for sheep, goats, cattle		*		Sack, 50Kg	90 NIS	85 NIS	
Iron bars for animal shelters			*	Metre	n/a	10 NIS	Very urgent
Plastic shelter cover			*	Metre	32 NIS	27 NIS	Urgent
Barley		*		Sack, 50 Kg	55 NIS	45 NIS	
Wheat		*		Sack, 50 Kg	90 NIS	80 NIS	For animals
Cereal bran		*		Sack, 25 Kg	14 NIS	10 NIS	

Corn for animals		*		Sack, 50 Kg	60 NIS	60 NIS	
Warming Gas			*	12 Kg	45 NIS	47 NIS	Very urgent
Feeder for poultry			*	Feeder	30 NIS	30 NIS	Very urgent
Drinkers for poultry			*	Drinker	80 NIS	80 NIS	Very urgent
<b>8. Livestock</b>							
Layer chicks			*	One	3.5 NIS	3.5 NIS	Very urgent
Assaff Sheep			*		n/a	650 USD	Very urgent
Milk cows		*			n/a	1800 USD	Very urgent
Meat cows		*			n/a	1100 USD	Very urgent

## Annex C: Map of Damages to Gaza Strip (UNOSAT)

### SATELLITE - BASED GAZA DAMAGE ASSESSMENT OVERVIEW

#### Summary of Gaza Damages by Type:

1. Buildings: Destroyed & Severely Damaged = 2,662



2. Impact Craters on Roads & Bridges = 220. Est. length of Paved and Unpaved Roads damaged = 125km



3. Impact Craters on Open Ground/ Cultivated Land = 708



4. Greenhouses Destroyed/Severely Damaged = 185. Est. Area of Greenhouses = 20ha



5. Demolition Zones: Est. area targeted by IDF bulldozers, tanks & phosphorus shelling for demolition = 2,242 ha



Satellite Image ..... WorldView-1 & QuickBird  
Resolution ..... 2m (Reduced Resolution)  
Imagery Dates ..... 21, 18, 10 & 6 January 2009  
Copyright ..... Digital Globe (2008)  
Damage Analysis ..... UNOSAT  
GIS Data ..... UNRWA, OCMA, UNDP, WFP, UNOSAT  
Projection ..... UTM Zone 38 North, WGS-84

**UNOSAT** satellite solutions for all

**unitar**

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be accurate nor do they imply official endorsement or acceptance by the United Nations. UNOSAT is a program of the United Nations Institute for Training and Research.

#### GAZA NORTH



#### GAZA



#### MIDDLE AREA



#### KHAN YUNIS



#### RAFAH



**MAP SUMMARY & ANALYSIS DESCRIPTION:**  
This map presents a satellite-based damage assessment for the Gaza Strip following the January ceasefire. Damages have been categorized by the type of damage detected and by their estimated occurrence per governance. Damages to buildings, infrastructure, roads and demolition areas have been identified by standard image interpretation methods using WorldView-1 satellite imagery acquired on 6, 10 and 19 January 2009, and QuickBird satellite imagery of 21 January 2009, at a reduced spatial resolution of 2 meters. Please note: Because of the reduced spatial resolution of this satellite imagery, the confidence level for damage identification within dense urban areas is significantly reduced. It is highly probable, therefore, that the damages identified in this map underestimate the actual building and infrastructure damages present on the ground at the time of satellite image acquisition.

#### Map Legend

- Border Crossing Point
- Refugee Camp
- Urban / Built-up Zone
- IDF Security Zone
- International Border
- 1950 Armistice Line
- Governorate Boundary

#### DENSITY OF DETECTED DAMAGES

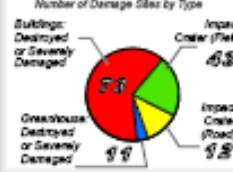
Density of detected damages increases from yellow to red

Low Damage Density

High Damage Density

#### DAMAGE SUMMARY BY GOVERNORATE

Number of Damage Sites by Type



13 February 2009

Version 1.1

UNOSAT-2009-000011



GAZA MAP FRAMES PROVIDED BY COURTESY FROM NOVUS

## *Annex D: APIS Report on Agriculture Projects in Gaza Strip, 2008*

According to information in the Agriculture Projects Information System (APIS)<sup>15</sup>, humanitarian and development projects were unable to address the multiple needs of the agriculture sector in the Gaza Strip during 2008. Looking at interventions implemented in both Palestinian territories, the ratio of funds allocated for the sector is roughly one US dollar spent in Gaza for every seven in the West Bank. The closure of commercial crossings, which prohibited many projects from implementation since June 2007, and the comparison in the size of the two territories provides some explanation for unbalanced funding.

In 2008, the low number of projects aimed at providing machinery and equipments and constructing or rehabilitating infrastructure only exacerbates the heavy damages sustained by the sector during Operation Cast Lead. The plant production, irrigation and water resources subsectors were also hit hard during the Operation and direct losses are estimated at nearly USD 100 million. Less than six percent of interventions were directed towards livestock production activities last year. Thus, considerable attention will be needed to recover lost assets in infrastructure, plant production, animal production and water resources including irrigation. In the medium to long term, more attention to marketing, financial services and the private sector development will be needed.

On a positive note, there was a high proportion of extension and capacity building activities in 2008 that helped advance the already skilled labour force in Gaza. This highlights the ready-and-capable human resources needed for rehabilitating the sector. Home gardening is perceived as a growing subsector that will help improve household level food production and generate income for the most vulnerable groups, particularly newly widowed households.

### Overview of Agricultural Interventions in the Gaza Strip – 2008

- Total expended cost = USD 4 469 252<sup>16</sup>
- Total agricultural interventions = 107
- Total number of agricultural projects (incl. ongoing and completed) = 20
- Well represented subsectors by share of interventions = plant production and irrigation (39.3%); extension and farmer capacity building (18.7%); and water resources (14%)
- Under represented subsectors by share of interventions = financial services (0%); machinery and equipments (0%); marketing (0.9%); private sector development (0.9%); home gardening (1.9%); institution building (1.9%); research, assessment and planning studies (1.9%); and infrastructure (2.8%)

---

<sup>15</sup> Data retrieved from APIS, which is managed by the Ministry of Agriculture (MoA) of the Palestinian Authority (PA) and funded by the Spanish Cooperation (AECID). The UN Food and Agriculture Organization (FAO) acts as a technical adviser to the MoA and compiles analytical reports for the agricultural sector based on data uploaded in APIS. The database members represent 173 governmental, international non-governmental, local non-governmental and community-based organizations, UN agencies and donors, and they provide the project data voluntarily. The data below reflects information uploaded to APIS at the end of a three month campaign among members to update projects in the database (1 December 2008).

<sup>16</sup> Total funds allocated to sector in the West Bank is USD 29 910 528.

- Well represented subsectors by share of expended cost = infrastructure (43.1%); job creation (25%); plant production and irrigation (9.1%); and water resources (7.6%)
- Under represented subsectors by share of expended cost = financial services (0%); Machinery and equipments (0%); home gardening (0.02%); and extension and farmer capacity building (2%)
- Districts targeted (with share of interventions per district<sup>17</sup>) = Deir al Balah (8.4%); Gaza City (12.1%); Gaza Strip<sup>18</sup> (27.1%); Khan Yunis (20.6%); North Gaza (19.6%); and Rafah (12.1%)

Interventions in Gaza Strip by Subsector				
Subsector*	No. of interventions	Percentage of total interventions	Expended cost, USD	Percentage of total cost
Extension and farmer capacity building	20	18.7	87 515	2
Home gardening	2	1.9	1 333	0.02
Infrastructure	3	2.8	1 926 624	43.1
Institutional building	2	1.9	n/a**	n/a
Job creation	7	6.5	1 113 851	25
Land use	6	5.6	n/a	n/a
Livestock production	6	5.6	594 046	13.3
Marketing	1	0.9	n/a	n/a
Plant production and irrigation	42	39.3	405 146	9.1
Private sector development	1	0.9	n/a	n/a
Research, assessment and planning studies	2	1.9	n/a	n/a
Water resources	15	14	340 737	7.6
Total	107	100	4 469 252	100
* Financial services and machinery and equipment subsectors not implemented				
**Figures not uploaded to APIS				

<sup>17</sup> Gaza Strip has five districts (North Gaza, Gaza, Deir Al Balah, Khan Yunis, and Rafah).

<sup>18</sup> "Gaza Strip" is an option for agencies to identify in APIS as a target area. It implies that agencies have executed these interventions in various districts throughout the Strip. Often an agency will use this option when the project is in its first phase of implementation, as target areas are not always identified immediately.

Interventions in the Gaza Strip by District				
District	No. of interventions	Percentage of total interventions	Locality	Implementing Agency
Deir al Balah	9	8.4	Deir al Balah (9)	FAO, GDERD, JCP, World Bank
Gaza	13	12.1	Ash Shati' Camp (1), Gaza (9), Gaza District (3)	FAO, GDERD, JCP, PHG
Gaza Strip	29	27.1	Gaza Strip (29)	ACF, CRIC, FAO, GDSI, Ma'an, PARC, World Bank
Khan Yunis	22	20.6	Al Mawasi (Khan Yunis) (3), Bani Suheila (3), Khan Yunis (16)	FAO, GDERD, JCP, PHG, World Bank
North Gaza	21	19.6	Beit Hanoun (8), Beit Lahiya (11), Jabalya (2)	FAO, JCP
Rafah	13	12.1	Rafah (11), Shokat as Sufi (2)	AOAD, FAO, JCP, World Bank
Total	107	100		

### Number of interventions in Gaza Strip by district, 2008

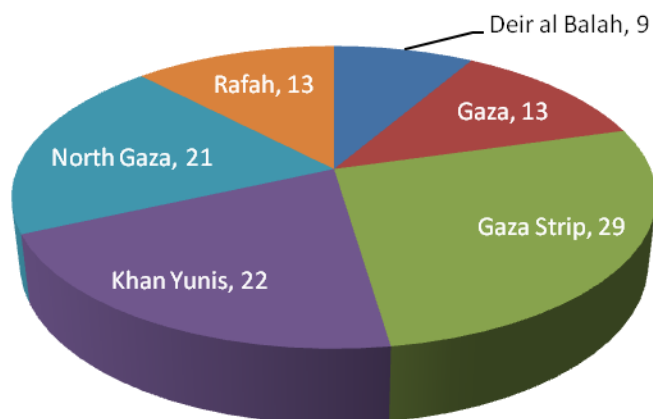


Figure 5 Number of interventions in Gaza Strip by district, 2008

Project List for the Gaza Strip			
No.	Organization	Project Name	Donors
1	ACF	Cash-for-Work through the construction of ponds for agricultural water harvesting in the Gaza Strip	ECTAO
2	AOAD	Poverty Alleviation	AOAD
3	CRIC	Improving living conditions of Bedouin communities living in Gaza Strip by enhancing the most vulnerable households' economy and food security.	ECTAO
4	FAO	Agriculture Revitalization Action Project	JICA
5	FAO	Emergency Assistance for Preparedness and Response to Avian Influenza Outbreaks in West Bank and Gaza Strip	SIDA
6	FAO	Emergency Support and Employment Generation for Female-headed Households through Backyard Farming and Cottage Industry in WBGS	Italian Cooperation
7	FAO	Improving the Livelihoods of Farming Households through Crop Diversification and Introduction of Global GAP(EurepGAP) Certification in the West Bank and Gaza Strip	AECI
8	FAO	Improving the Livelihoods of Farming Households through Diversification of Vegetable and Medicinal Plant Production in WBGS	AECI
9	FAO	Restoring the agriculture productive capacity in the Gaza Strip through emergency support to farmers and enhanced sectoral coordination	AECI
10	FAO	Support to Household Food Security and Income Generation through Bio-intensive Backyard Agricultural Production and Cottage Industry for Women	NORAD
11	FAO	Enhancing livelihoods and entrepreneurship skills of vulnerable youth through Junior Farmer Field and Life Schools in the WBGS	NORAD
12	GDERD	Integrated Agricultural Development Project (Phase2)	AQF
13	GDSI	Water management and water saving strategies in the Middle East	CGF
14	JCP	Food Security and Job Creation in the Gaza Strip-AECI-( Phase 3 )	AECI
15	MA\AN	Employment project through the rehabilitation of damaged agricultural facilities	UNDP / PAPP
16	PARC	Towards Capacity Building and Sustainable Rural Development	Luxembourg
17	PHG	Improvement of the economic conditions and food security of the rural population in the Gaza Strip, Occupied Palestinian Territories	N/A
18	PHG	Sustainable management of natural resources in the Middle East, through sustainable rural development, use of renewable energies, protection of water resources and improvement of productivity and commercialization. Middle East.	AECI
19	World Bank	Improving level of income for disadvantaged rural families	World Bank
20	World Bank	Reclamation and rehabilitation of farming lands for poor farmers in Rafah and Khan Yunis Districts	World Bank
21	World Bank	Rehabilitation of greenhouses and agricultural land	World Bank



## *ANNEX E: Active Stakeholders in the Gaza Crisis*

Association for Integrated Rural Development (AIRD)  
Action Against Hunger – Spain (ACF – Spain)  
Agency for Technical Cooperation and Development (ACTED)  
Agriculture Guide and Awareness Society  
Air and Light Association  
Al-Ahlyia Society for Development of Dates and Palms  
Applied Research Institute – Jerusalem (ARIJ)  
Arab Agronomist Association (AAA)  
Arab Center for Agricultural Development (ACAD)  
Assembly of Cooperation for Peace (ACPP)  
Beit Lahiya Development Association  
CARE International  
CHF International  
Co-Operative Agriculture Association of Beit Hanoun (CAABH)  
Economic and Social Development Center of Palestine (ESDC)  
European Commission’s Humanitarian Aid Office (ECHO)  
Food and Agriculture Organization of the United Nations (FAO)  
Islamic Relief – Palestine (IRPAL)  
Italian Development Cooperation (ACS)  
Job Creation Program – Office of the President (JCP)  
Local Aid Coordination Secretariat (LACS)  
Ma’an Center for Development  
Ministry of Agriculture of the Palestinian Authority (MoA)  
Ministry of Planning of the Palestinian Authority (MoP)  
Netherland’s Representative Office to the Palestinian Authority  
OXFAM International  
Palestinian Agriculture Relief Committees (PARC)  
Palestinian Farmers’ Union (PFU)  
Palestinian Hydrology Group (PHG)  
Palestinian Welfare Association  
Première Urgence (PU)  
Relief International (RI)  
Save the Children Federation (SCf)  
Spanish Cooperation (AECID)  
Swedish Cooperative Centre (SCC)  
UK Department for International Development (DFID)  
Union of Agriculture Work Committees (UAWC)  
United Nations Development Programme – Programme of Assistance to the Palestinian People (UNDP/PAPP)  
United States Agency for International Development (USAID)  
Unity and Cooperation for the Development of People (UCODEP)

Welfare Association