



Food and Agriculture  
Organization of the  
United Nations

## LEBANON

Impact assessment of the escalating hostilities in southern Lebanon on agriculture, food security and livelihoods

DIEM-Impact report  
February 2024





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## Abbreviations

<b>DIEM</b>	Data in Emergencies
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>MoA</b>	Ministry of Agriculture
<b>NEWSP</b>	National Early Warning System Platform
<b>OCHA</b>	United Nations Office for the Coordination of Humanitarian Affairs

## Key highlights

- > Twelve percent of the total number of surveyed households (1 050) were impacted by the escalating hostilities in southern Lebanon.
- > In El Nabatieh and South governorates, 38 percent of the surveyed households reported being affected in one way or another.
- > Of the affected households, about 39 percent reported being displaced.
- > The productivity of agricultural households has been impacted and 63 percent reported being unable to safely access their fields and 23 percent reported losing their harvest.
- > Satellite imagery<sup>1</sup> revealed significant land cover deviations in October and November 2023 compared to the 2018–2023 historical series. A total of 519 ha was affected between 28 October and 11 November 2023 reflecting fire related incidents that caused damage.
- > Forty-one percent of the affected farming households faced disruptions transporting agricultural products for sales and 67 percent reported reduced market access due to security concerns.
- > To address the above challenges, it is recommended to conduct a comprehensive impact assessment and identify the most affected farmers, followed by the provision of targeted assistance including cash, in-kind and voucher support for essential agricultural inputs.
- > It is also recommended to support farmers in developing their safe storage practices capacities to avoid further depletion of assets through poor storage and lack of market access.

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<sup>1</sup> This assessment used Landsat and Sentinel-2 satellite imagery. The alerts and area calculations were completed using the FAO SEPAL platform and Quantum GIS. The continuous change detection and classification algorithm was used to generate the results.

# Introduction

Southern Lebanon is a region comprising El Nabatieh and South governorates with a long agricultural tradition. Its landscapes, fertile plains and favourable climate make it a prime region for agriculture. Olive trees, citrus fruit trees, grapes and temporary crops including cereals, vegetables and industrial crops are among the most commonly cultivated crops in the area. Olive trees are particularly abundant in the region, allowing for the production of high-quality olive oil while supporting the livelihoods and food security of numerous farmers. However, security concerns and periodic conflicts over the years have widely impacted economic stability and disrupted farming activities.

According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the hostilities observed since 8 October 2023 at the southern border of Lebanon have escalated. As a result of the ongoing escalation of hostilities, damage has been reported to private property, public infrastructure and agricultural land by widespread fires caused by the flammable effect of the projectiles used (OCHA, 2023).

On 6 November 2023, the Director-General of the Food and Agriculture Organization of the United Nations (FAO), received a request from the Ministry of Agriculture (MoA) in Lebanon, asking for support for Lebanese farmers and for an assessment on the impact of phosphorus bombs on agricultural land in southern Lebanon in the wake of the escalation of hostilities. FAO's Data in Emergencies (DIEM) was already conducting a survey in the region through the DIEM-Monitoring System and adapted it in response to the ministerial request.

This survey constituted the sixth round of DIEM-Monitoring in Lebanon. The survey collected data on the impact of the security situation in the south with a focus on agricultural activities, displacement and food security. A specific module was added to the normal household monitoring questionnaire. Out of the 1 050 households that were surveyed in the sixth round, 128 households indicated that they were affected by the ongoing escalation of hostilities in southern Lebanon. In addition, FAO's Forestry Division provided a mapping of the fires likely caused by the projectiles used. The mapping was triangulated with the household survey and some landcover maps which have provided the results outlined in this DIEM-Impact report. Secondary sources of information from the MoA, the Centre Nationale de la Recherche Scientifique and the National Early Warning System Platform (NEWSP) monitoring report were also used in this analysis.

# Findings

## Household survey methodology

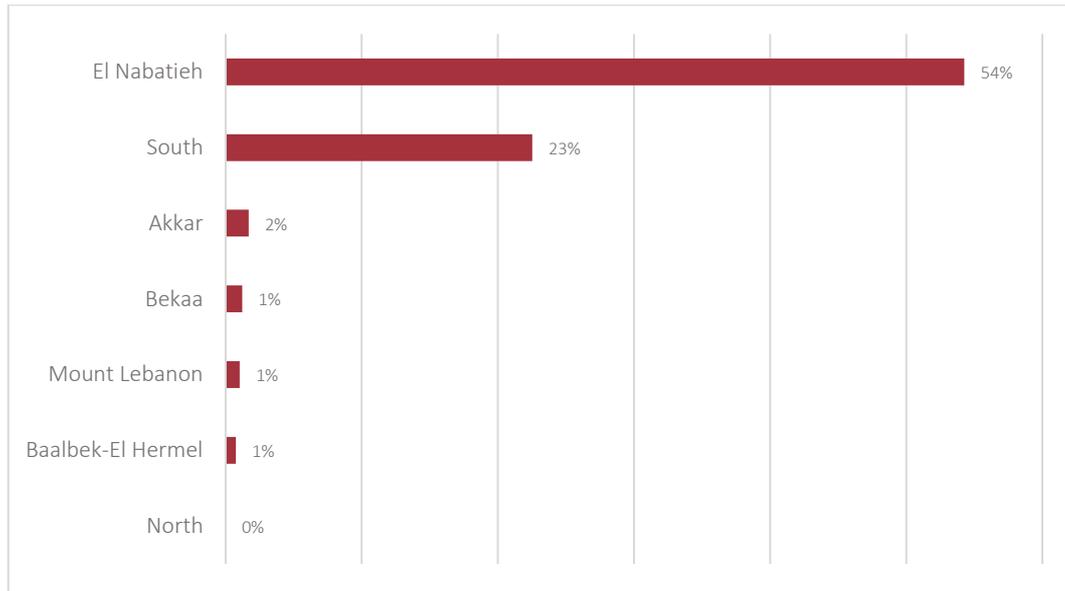
FAO, in partnership with the MoA in Lebanon, conducted a household survey between 31 October and 30 November 2023 using computer-assisted telephone interviews. These interviews were part of the DIEM-Monitoring System which monitors the impact of shocks on agricultural livelihoods and food security. The survey targeted the agricultural population using the sampling frame of agricultural holdings from the 2010 Lebanon Agricultural Census – a list of almost 170 000 holdings (MoA and FAO, 2015). Additional survey questions were added to assess the impacts of the escalating hostilities in southern Lebanon on farmers' agricultural livelihoods and food security.

A total of 1 050 agricultural households were interviewed across seven governorates – Akkar, Baalbek-El Hermel, Bekaa, El Nabatieh, Mount Lebanon, North and South – with 150 agricultural households selected from each governorate using a random systematic approach. Data were weighted at the analytical stage to ensure that farm size and regional population distribution were adequately reflected.

## Impacted households

Overall, around 12 percent of the surveyed agricultural households (127 out of 1 050 households) were impacted by the situation in southern Lebanon. Fifty-four percent of the surveyed households reported being directly affected in El Nabatieh, 23 percent in South, 2 percent in Akkar and 1 percent each in Bekaa, Mount Lebanon and Baalbeck el Hermel (Figure 1). No surveyed households reported direct impacts in North governorate. Farmers residing far from the affected areas, particularly in Akkar, Baalbeck el Hermel, Bekaa and Mount Lebanon, reported experiencing impacts related to crop marketing and livestock production. This was mainly due to lack of demand from usual buyers, difficulty processing products because of the absence of processing inputs typically available in southern Lebanon, and the reduction of consumer access to markets due to security concerns.

Figure 1. Percentage of households that reported being affected by the escalating hostilities in southern Lebanon (by governorate)

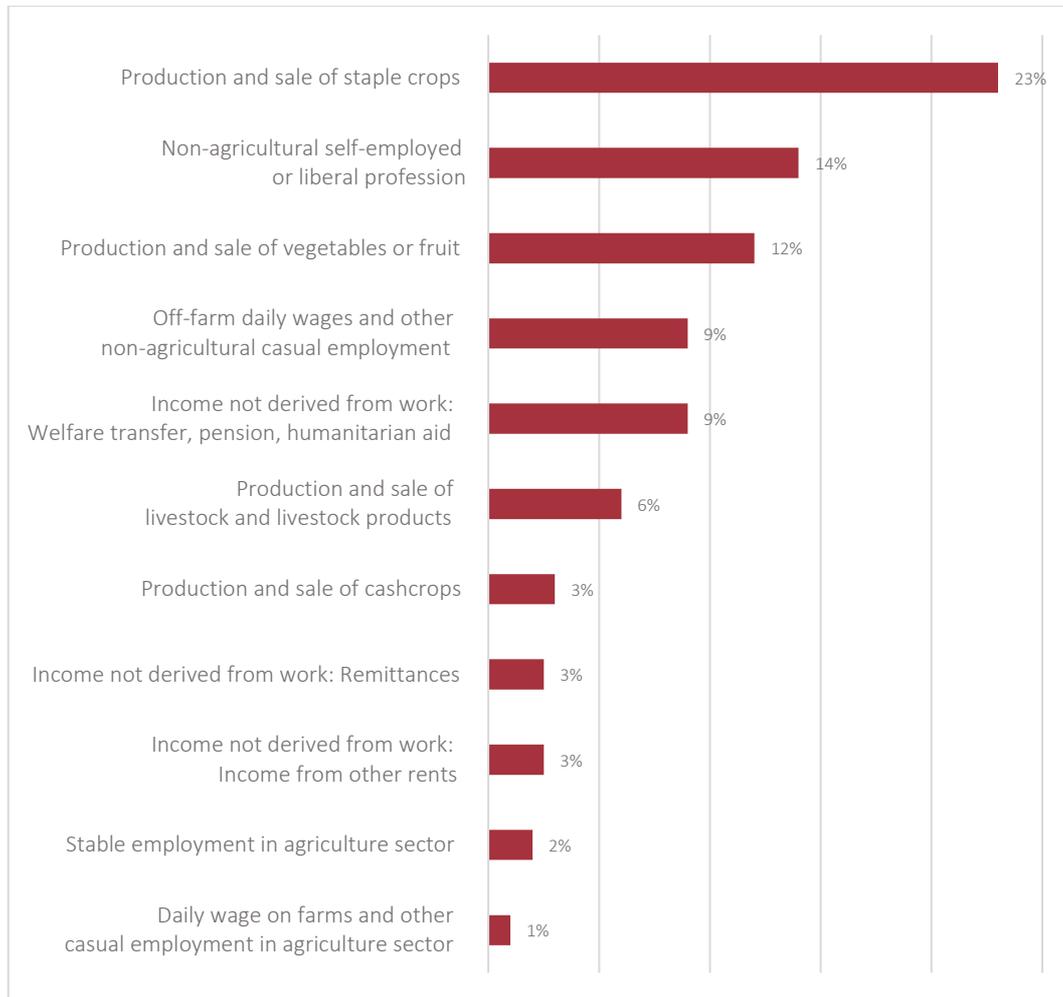


Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

Among the affected households, 39 percent reported being displaced from southern Lebanon (mainly in El Nabatieh and South governorates), 35 percent reported having relocated with relatives and friends and 4 percent reported having had to rent a house.

Most households that were affected by the security situation relied on the production and sale of staple crops (23 percent) (Figure 2). About 14 percent relied on self-employment and non-agricultural sources. In addition, 63 percent of the affected farming households were unable to access their fields safely, 26 percent reported having had to abandon their fields due to displacement movements and 23 percent reported having lost their harvest. A high percentage of farmers also reported damaged or destroyed crops (17 percent) and having had to stop crop or livestock production (14 percent).

Figure 2. Proportion of households affected by the security situation by main source of income



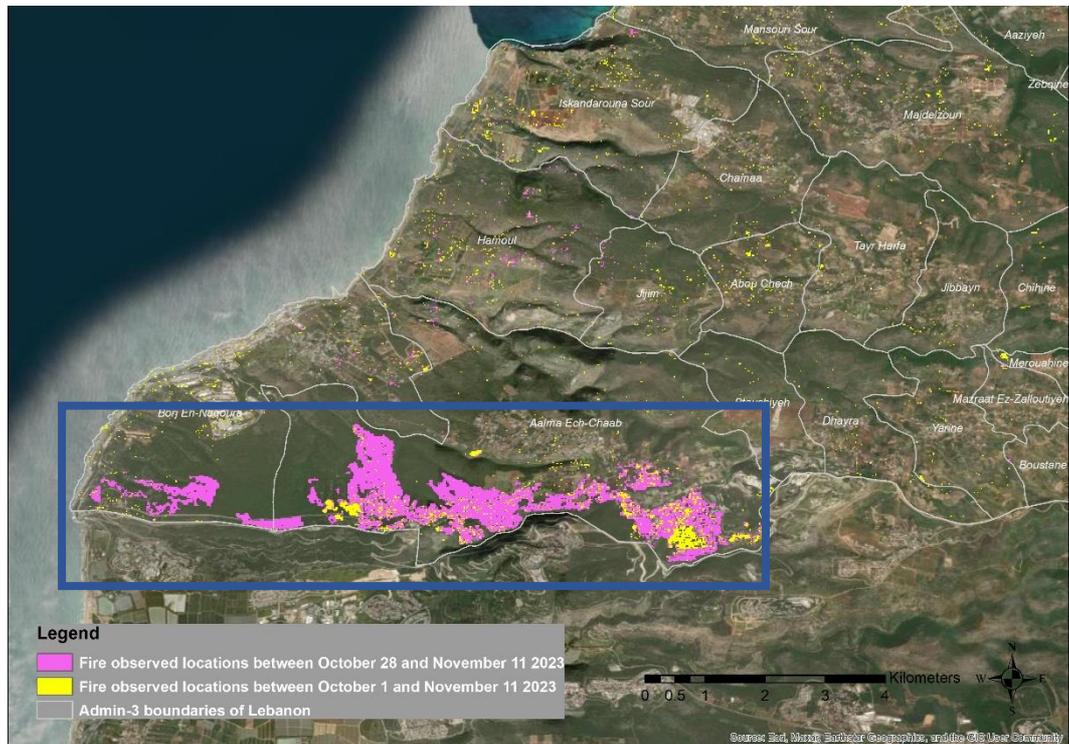
Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

## Geospatial analysis

A sequence of satellite images captured over a specific period, documenting historical changes in landcover, was compiled over the southern part of the country from 2018 to 2023. The Normalized Burn Ratio was calculated for every pixel in every image. Satellite imagery acquired over the last two months has been used to compare to the satellite imagery collected from 2018 to 2023. Significant deviations from the expected land cover were detected and quantified.

Figure 3 zooms into the border of the southern part of Lebanon. The area affected by fire is shown within the blue square. The initial disturbance was identified on 1 October 2023 in El Nabatieh and South governorates.

Figure 3. Fire extent in southern Lebanon



Source: SEPAL. 2024. *SEPAL*. Rome. [Cited 3 January 2024]. <https://sepal.io>

There have been no other significant disturbances detected in El Nabatieh nor South governorates over the entire period of analysis. The DIEM household survey data confirmed that about 4 percent of the 1 050 surveyed households faced a fire shock due to natural factors and an additional 3 percent faced a fire shock as a result of human-induced activities.

DIEM overlaid the fire extent with FAO's remote sensing for water productivity landcover and the findings are depicted in Table 1 (FAO, 2024). A total of 519 ha of affected area was observed between 26 October and 11 November 2023. Most of the affected cropland comprised closed trees of an unknown type, covering about 120 hectares. Open trees of an unknown type were also significantly affected over an area of 119 hectares and about 103 hectares of evergreen needle-leaved trees were also damaged. A total of 77 hectares of shrubland were impacted.

Table 1. Landcover affected by the fires (by ground coverage)

Class	Class name	Fire observed area (ha) between 1 October and 11 November 2023	Fire observed area (ha) between 28 October and 11 November 2023
20	Shrubland	541.20	76.92
30	Grassland	237.60	40.44
41	Cropland, rainfed	111.72	6.92
42	Cropland, irrigated or under water management	98.52	44.04
43	Cropland, fallow	0.84	0.40
50	Built-up	114.64	8.12
60	Bare/sparse vegetation	0.24	0.04
111	Tree cover: closed, evergreen needle-leaved	127.24	102.80
114	Tree cover: closed, deciduous broadleaved	0.32	0.08
115	Tree cover: closed, mixed type	0.60	0.08
116	Tree cover: closed, unknown type	218.28	119.92
121	Tree cover: open, evergreen needle-leaved	0.12	0.00
126	Tree cover: open, unknown type	441.96	119.24
<b>Total</b>		<b>1 893.28</b>	<b>519.00</b>

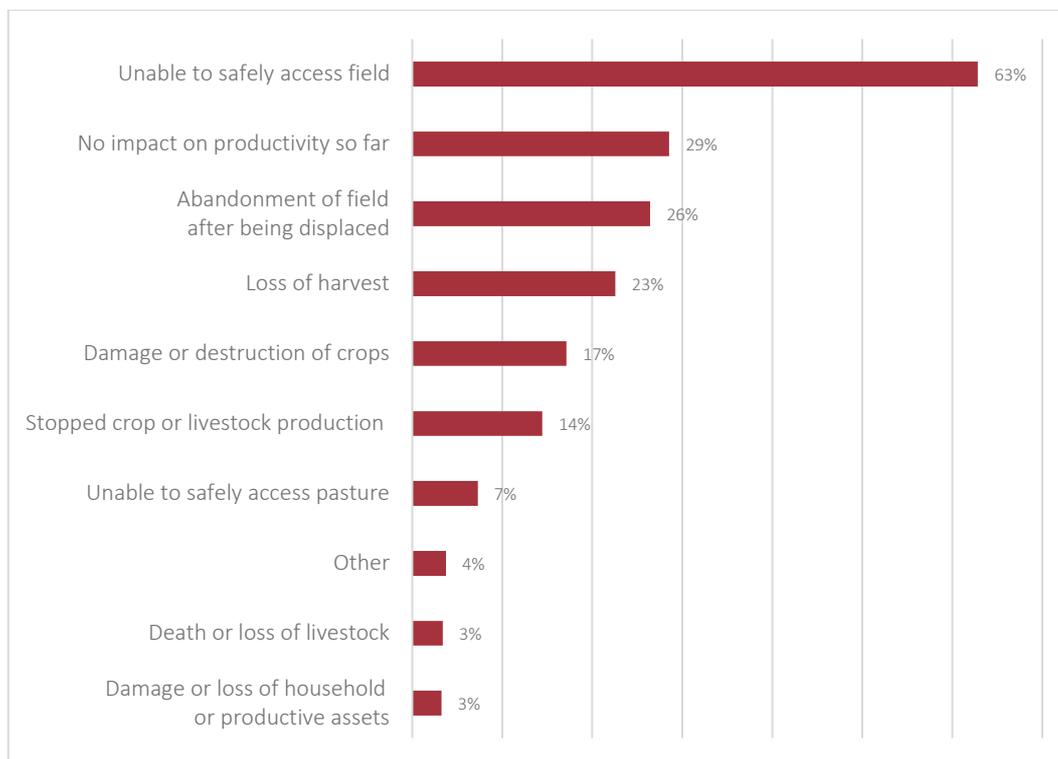
Source: SEPAL. 2024. *SEPAL*. Rome. [Cited 3 January 2024]. <https://sepal.io>

DIEM geospatial data were aligned with those reported by the NEWSP monitoring report covering the period 7 October 2023 to 1 January 2024, results based on satellite images have shown that the total land area affected by fires in southern Lebanon has reached 789.3 hectares. Of the total affected land area, 24 hectares are olive groves, 22.8 hectares are banana and citrus orchards, and 643.9 hectares are forests, including high- and low-density forests – mainly oak (NEWSP, 2023).

### Impact to crop and livestock production, marketing and sales

Based on reports from the MoA and the Centre Nationale de la Recherche Scientifique, the situation in southern Lebanon has resulted in approximately 340 fires as of 14 November 2023. More than 47 000 olive trees were reported as lost, forcing an early end to the olive harvesting season in this area. Based on Lebanon’s agricultural calendar, October–December is the harvest season for olives which are the main crop produced in Lebanon (MoA, 2023). Twenty-nine percent reported no impact to crop or livestock production (Figure 4). About 81 percent of the affected households reported difficulties accessing labour for crop and livestock production. This casual workforce plays a crucial role during the olive harvest season.

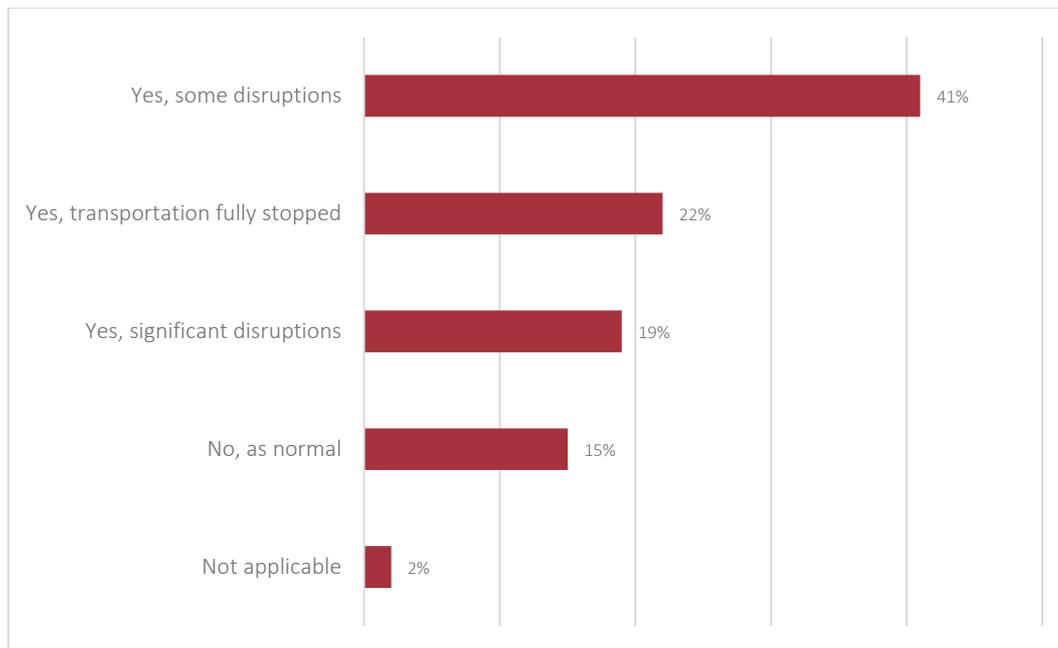
Figure 4. Percentage of households experiencing the impacts of the ongoing escalation of hostilities in southern Lebanon on crop and livestock production



Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

Forty-one percent of the affected farming households reported facing some disruptions when transporting agricultural products for sales, whereas 22 percent fully stopped transporting their products for sales and 19 percent were facing significant disruptions (Figure 5). However, 15 percent of the affected households reported not facing any disruption when transporting their agricultural products. These developments have direct implications on the income levels and subsequent food security of the households affected. As the majority of surveyed households reported that reliance on crop production and sales, the inability to access their fields and disruptions to selling produce, have had direct negative effects on consumption patterns and future reliance on typical livelihood sources.

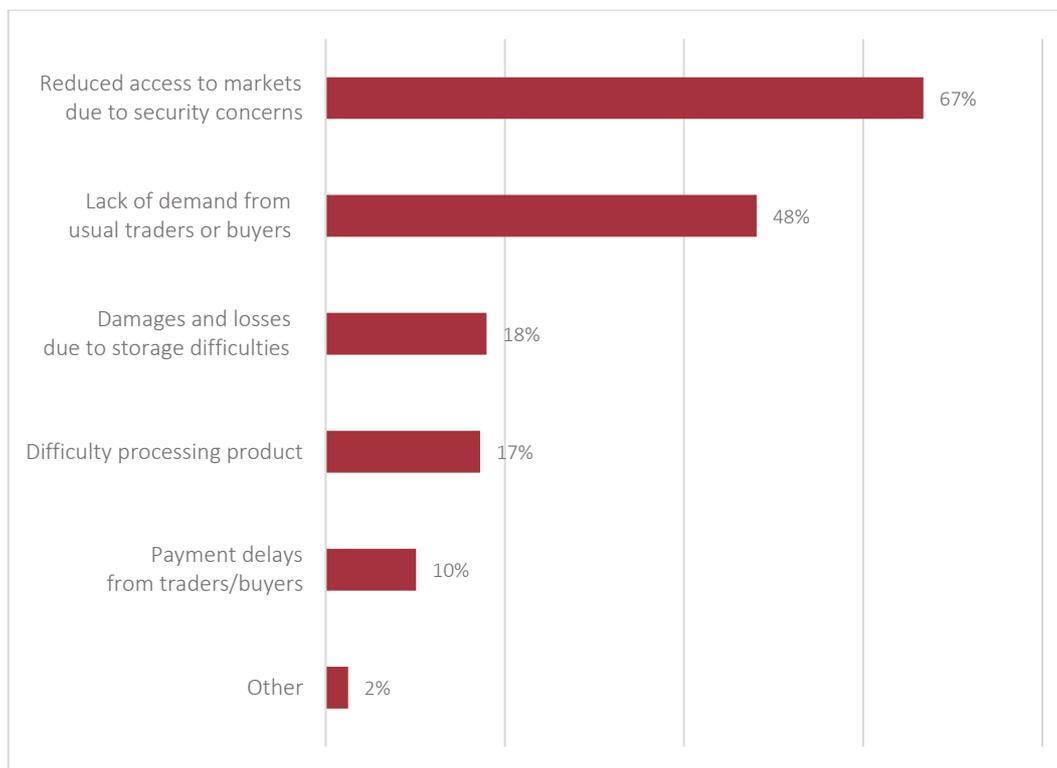
Figure 5. Percentage of affected households reporting disruptions when transporting agricultural products for sales



Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

The most common challenges that farmers face, include reduced crop and livestock marketing and sales, access to markets due to security concerns (67 percent), followed by lack of demand from usual traders or buyers (48 percent), damages and losses due to storage difficulties (18 percent), difficulty processing products (17 percent), and payment delays from traders and buyers (10 percent) (Figure 6). Income levels are expected to decrease because of these disruptions. Furthermore, food storage concerns and the likelihood of food waste because of the inability to sell produce is very likely.

Figure 6. Impact of the ongoing escalation of hostilities on crop and livestock marketing and sales

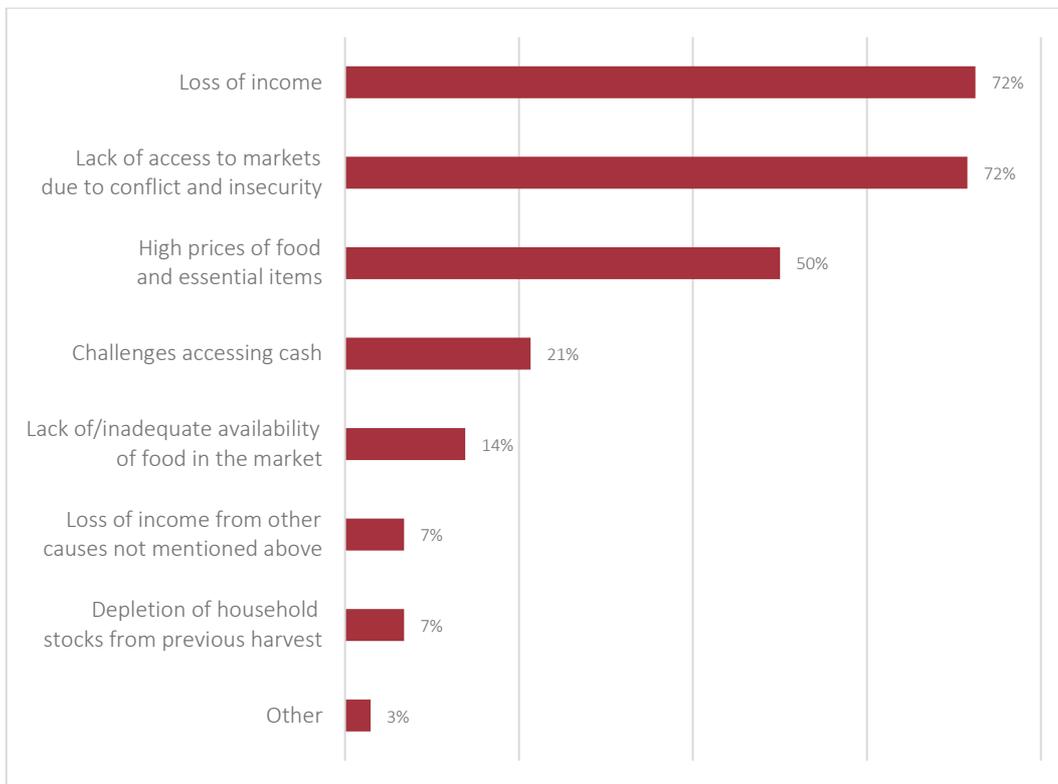


Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

## Food access

Around 35 percent of the affected agricultural households faced challenges accessing food and basic commodities, mainly due to loss of income and lack of access to markets because of insecurity (72 percent each), high prices of food and essential items (50 percent), challenges accessing cash (21 percent), and lack of or inadequate availability of food in the market (14 percent). Furthermore, the escalating situation in southern Lebanon has worsened the existing economic crisis that has impacted the country since 2019. Households reported loss of income as one of the main challenges to accessing food and basic commodities. Inflation continues to be a problem making the difficulties faced by southern Lebanon more severe (Figure 7). The loss of income is set to worsen due to the inability of households to sell their produce and their limited harvest.

Figure 7. Reasons for challenges accessing food and basic commodities (percentage of households)



Source: FAO. 2023. Lebanon: DIEM-Monitoring assessment results (November 2023). In: *FAO Data in Emergencies Hub*. Rome. [Cited 3 January 2024]. <https://data-in-emergencies.fao.org>

## Conclusion

It is evident that the ongoing escalation of hostilities in southern Lebanon has had a significant negative impact on livelihoods. The findings from the survey and ground truthing exercises outlined in this report highlighted a range of challenges – including reductions in crop production and sales – leading to decreased incomes associated with livelihoods and, consequently, an increase in food insecurity among households in the affected areas. Furthermore, the geospatial analysis has shown significant destruction of cropland, pinpointing the damaged land cover that was directly impacted by the conflict.

The situation in southern Lebanon requires constant attention, particularly amidst the prevailing economic crisis characterized by persistent inflation exacerbating the numerous challenges faced by the country. FAO stands ready to consistently assess, monitor and analyse the situation through upcoming DIEM surveys in 2024 and the use of different tools such as GIS. FAO is dedicated to provide timely recommendations to effectively guide response efforts, support recovery and build farmers' resilience.

# Recommendations

## Short-term recommendations (1–6 months)

- > Conduct a comprehensive impact assessment of the ongoing escalation of hostilities in southern Lebanon to assess the damages and losses to crops and livestock, and identify farmers that have experienced major damages and losses to agricultural assets and production.
- > Provide targeted cash and voucher assistance for agricultural inputs to small-scale producers facing production challenges – field access, abandoned lands and safety concerns – and marketing challenges – reduced demand from usual buyers and traders, market access, processing difficulties and transportation difficulties. Priority should be given to El Nabatieh and South governorates.
- > Provide immediate in-kind support for farmers to access seeds, livestock feed, veterinary services and other agricultural inputs in El Nabatieh and South governorates to ensure recovery and reduce asset depletion while coping with the ongoing hostilities.
- > Provide farmers with essential knowledge through capacity building – technical trainings in good agricultural practices – in parallel with voucher support. Assist farmers with trainings on safe storage practices to avoid further depletion of assets through poor storage and lack of market access.
- > Continue to closely monitor the food security status of Lebanese households, with emphasis on those residing in El Nabatieh and South governorates.

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