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PROSPECTS



The state of

Covered Horticulture in Lebanon

Results of a baseline survey of covered
horticulture farmers, workers and wholesalers
in Akkar and Baalbeck-Hermel

Survey conducted by



CONSULTATION & RESEARCH INSTITUTE
مؤسسة البحوث والاستشارات

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The state of covered horticulture in Lebanon: Results of a baseline survey of 200 covered horticulture farmers, 100 horticulture workers and 20 wholesalers in Akkar and Baalbeck-Hermel

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Cover page: Farmer in Akkar inspecting the quality of tomatoes produced in his new modern greenhouse
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This baseline study entitled: “The state of horticulture in Lebanon” was developed by the International Labour Organization (ILO) under the “Partnership for improving prospects for forcibly displaced persons and host communities,” also known as PROSPECTS, which is spearheaded by the Government of the Netherlands. The PROSPECTS global programme is a four-year partnership between the Netherlands, the ILO, the International Finance Corporation (IFC), the UN Refugee Agency (UNHCR), the UN Children’s Fund (UNICEF) and the World Bank, which operates in eight countries across the East and the Horn of Africa and the Middle East to support education, employment and protection in the context of forced displacement.

In Lebanon, the partnership focuses on reducing multidimensional vulnerabilities and increasing social stability for both Syrian refugees and Lebanese host communities, under the three main pillars of education and learning; employment with dignity; and protection and inclusion.

This survey of 200 greenhouse farmers, 100 greenhouse workers and 20 wholesalers in Akkar and Baalbeck-Hermel was conducted on behalf of ILO by the Consultation & Research Institute (CRI). Field work for this survey was conducted in March 2020 and led by Zeinab Harkous. Subsequent compilation and analysis of results was led by Jinane Chameddine and Redha Hamdan from CRI.

This survey report was drafted by Nadja Nutz, ILO Technical officer on the Approach to Inclusive Market Systems (AIMS), with support and technical guidance from Redha Hamdan and Jinane Chamseddine from CRI as well as Rachel Shah and Roger Oakeley from the Springfield Centre. Inputs and comments to this report as well as overall guidance for the survey was provided by Shaza Al Jondi, ILO Regional Chief Technical Advisor for PROSPECTS. The report also benefited from inputs by Nassim Njeim, National Skills Officer, Grace Eid, National Project Officer, and Mustafa Hakki Ozel, External Collaborator on Statistics.



Chapter

01

Introduction

► 1.1. The ILO and PROSPECTS in Lebanon

As part of its efforts to promote decent work, ILO is implementing the Partnership for Improving Prospects for Host Communities and Forcibly Displaced Persons (PROSPECTS), launched by the Government of the Netherlands in 2019 in response to the forced displacement crisis. PROSPECTS brings together the International Finance Corporation (IFC), the International Labour Organization (ILO), the UN Refugee Agency (UNHCR), the UN Children's Fund (UNICEF) and the World Bank in an effort to combine respective expertise and improve prospects of both refugees and host communities. The partnership aims to address challenges to education and skills development, employment and livelihoods, as well as protection for both refugees and host communities in eight countries, namely Egypt, Ethiopia, Iraq, Jordan, Kenya, Lebanon, Sudan, and Uganda.

Within the framework of the PROSPECTS programme in Lebanon, ILO's focus is on enhancing resilience of the country's labour market and creating better livelihoods for both Lebanese host communities and Syrian refugees. It is doing so by promoting the development of market relevant skills, enhancing employment placement services and labour market governance, promoting strengthened and more inclusive social protection schemes, and supporting micro, small and medium sized enterprises (MSMEs) as well as sectors with potential for decent job creation. To this end, ILO's work under PROSPECTS englobes three pillars: education and learning, employment with dignity as well as protection and inclusion.

Work under ILO's employment with dignity pillar has placed a strong focus on maintaining and creating decent work opportunities in Lebanon's agriculture sector. As one of few sectors in which both Syrian refugees and vulnerable Lebanese host communities can legally find employment, the agriculture sector is of strategic importance to livelihoods of both communities as well as to food security in the crisis-battled country.

Amongst other tools and approaches, the ILO is using its Approach to Inclusive Market Systems (AIMS) to develop selected agricultural value chains with potential for inclusive growth and decent job creation. AIMS seeks to apply the market systems development approach (also called Making markets work for the poor, or M4P) to the context of forced displacement with a view to facilitating sustainable change in value chains and market systems that are central to livelihoods of refugees and other vulnerable groups. Applying a systemic approach means refraining from supporting people directly with whatever goods and services they need, but instead taking a step back to understand why certain groups struggle to access economic opportunities in order to design strategies to tackle the 'root causes' of these systemic constraints. This means that projects often do not work with the target group directly, but rather with a variety of public and private actors to incentivize and capacitate them to deliver goods and services sustainably.

▶ 1.2. Lebanon's horticulture sector

In Lebanon, ILO's AIMS component focuses on developing the covered horticulture value chain and surrounding market system. Covered horticulture was selected based on a comparative study conducted in 2019 which showed that it is one of the sectors with the highest potential for inclusive growth and job creation for both Syrian and Lebanese communities. Production of vegetables in greenhouses can be found across all farm types, including hobby, small, medium and large enterprises and comprises both owner-operated and rental-based business models. Production is seasonal, with different vegetables dominating at different times of the year. In 2010¹, there were approximately 170,000 farms, accounting for 230,995 ha nationally and with an average size of 1.36 ha. Greenhouses make up 3,800 ha or 1.6% of

the agriculture land and are mainly located in Akkar (1,574 ha).

Horticulture production in Lebanon is mainly directed at local and regional markets in the wider Middle Eastern region. Labour is one of the most important inputs for the horticulture sector. Most medium and large enterprises rely on paid labourers to cultivate, tend and harvest crops, the majority of whom are Syrian.

A comprehensive analysis of the covered horticulture market system entitled "Unlocking opportunities for decent job creation in Lebanon's horticulture sector" was finalized in early 2020, and identified low productivity in the sector as the principal constraint to job creation and higher incomes. More specifically, the analysis pointed to three principal challenges in the sector²:

A. Low use of high-productivity greenhouse technologies

Greenhouse production remains relatively small despite the many benefits of greenhouse production over open field production that include productivity gains, efficient land use, and an extended production season. Existing greenhouses are usually of the traditional single tunnel design which allow for only limited ventilation, thus affecting both productivity and working conditions negatively. ILO has been conducting trials

on greenhouse productivity that confirmed that upgrading from tunnel to multi-span greenhouse design leads to significant productivity gains as well as better quality of crops and possibilities to extend the season. Yet, most farmers seem to be unaware of the potential value of new greenhouse designs and do not have access to credible data on returns on investment.

B. Mal-adapted production practices and use of agricultural inputs

Inputs including seeds, fertilizers and pesticides are critical to the productivity of vegetable production and constitute a significant cost element. Consequently, producers are under constant pressure to minimise costs, leading to incidences of misuse of pesticides, the use of banned cheaper products, and/or use of inferior seeds and varieties. These production practices impact productivity and ultimately

incomes of horticulture farmers, while use of banned pesticides may also negatively impact well-being of horticulture workers. Information on the implications of sub-standard production practices remains scarce and many farmers are unaware of the potential benefits of quality inputs.

1 Most updated figures available based on 2010 agricultural census of FAO and Ministry of Agriculture

2 ILO, 2020: [Unlocking opportunities for decent job creation in Lebanon's horticulture sector](#)

C. Limited access to market information

Market information flows remain limited and this reinforces the vulnerability of producers vis-à-vis the wholesale market system. The demand in terms of volumes and prices fluctuates almost daily, making investment and planning decisions difficult and risky for producers. This is both a cause and effect of many farmers producing the same, often low-value, vegetable products at the same times throughout the season. Only a few producers and wholesalers appear to actively target niche or off-season vegetables despite the apparent demand locally and regionally. Vegetable processing, and thus opportunities to access more diverse and value-added markets, continues to be limited in Lebanon.

While all of the above-mentioned constraints represent structural issues that have traditionally limited productivity and growth in the sector, these constraints have been exacerbated by the ongoing crises in Lebanon. Farmers are increasingly struggling to access

agricultural inputs including seeds, fertilizers, pesticides as prices for imports increased and informal credit lines from suppliers have mostly dried up. The ongoing credit squeeze makes sorely needed investments into high productivity inputs and greenhouse technologies even more difficult. With these persisting challenges, the income of Lebanese horticulture farmers is increasingly under pressure and, as a consequence, so too are the jobs and livelihoods of the many Syrian labourers who depend on the sector.

While much of the attention of the donor community currently rightly focuses on providing farmers with immediate and direct support to weather the crises and keep agricultural production going, ILO actions under the AIMS component seek to address underlying structural constraints to productivity and income growth to encourage long-term inclusive growth and job creation.

► 1.3. Objectives and methodology of this survey

This survey of 200 covered horticulture farmers, 100 horticulture workers and 20 wholesalers in Akkar and Baalbek-Hermel was conducted in March 2020 with several objectives in mind. First and foremost, it was conducted to serve as a baseline for the AIMS component of ILO PROSPECTS in Lebanon, against which progress and impact of the programme component will be measured. To this end, questionnaires were developed to collect data for a specific set of indicators designed to track and measure changes in the wider horticulture market system and their impact on livelihoods of horticulture farmers and workers. Questions thus naturally focused on collecting information related to the above-mentioned constraints in horticulture, i.e. use of high-productivity greenhouses, production practices and use of agricultural inputs, and access to markets and market information.

Secondly, the agricultural sector in Lebanon has undoubtedly been severely hit by the multiple ongoing crises in Lebanon. The

severe devaluation of the local currency has led to rapidly increasing prices for the largely imported agricultural inputs and anecdotal evidence suggests that many farmers find themselves currently unable to finance seeds, fertilizers and other inputs necessary to keep their agricultural production going. This survey thus presented an occasion to verify how exactly recent shocks have impacted production practices, yields and revenues of horticulture farms and identify possible trends with regard to its impact on horticulture farms of varying sizes and in different regions.

Finally, the survey hopes to contribute to efforts to generate data and information on the state of agriculture in Lebanon. With its central importance for both livelihoods and food security, a significant and growing number of donor-funded initiatives are focusing on the agricultural sector. Yet, statistics on the state of agriculture in Lebanon are scarce. This survey thus aims to shed some light on recent trends and

developments in the horticulture sector and, in doing so, help guide and inform current and future initiatives aimed to support farmers and the sector overall.

The study targeted three profiles of respondents: covered horticulture farmers,

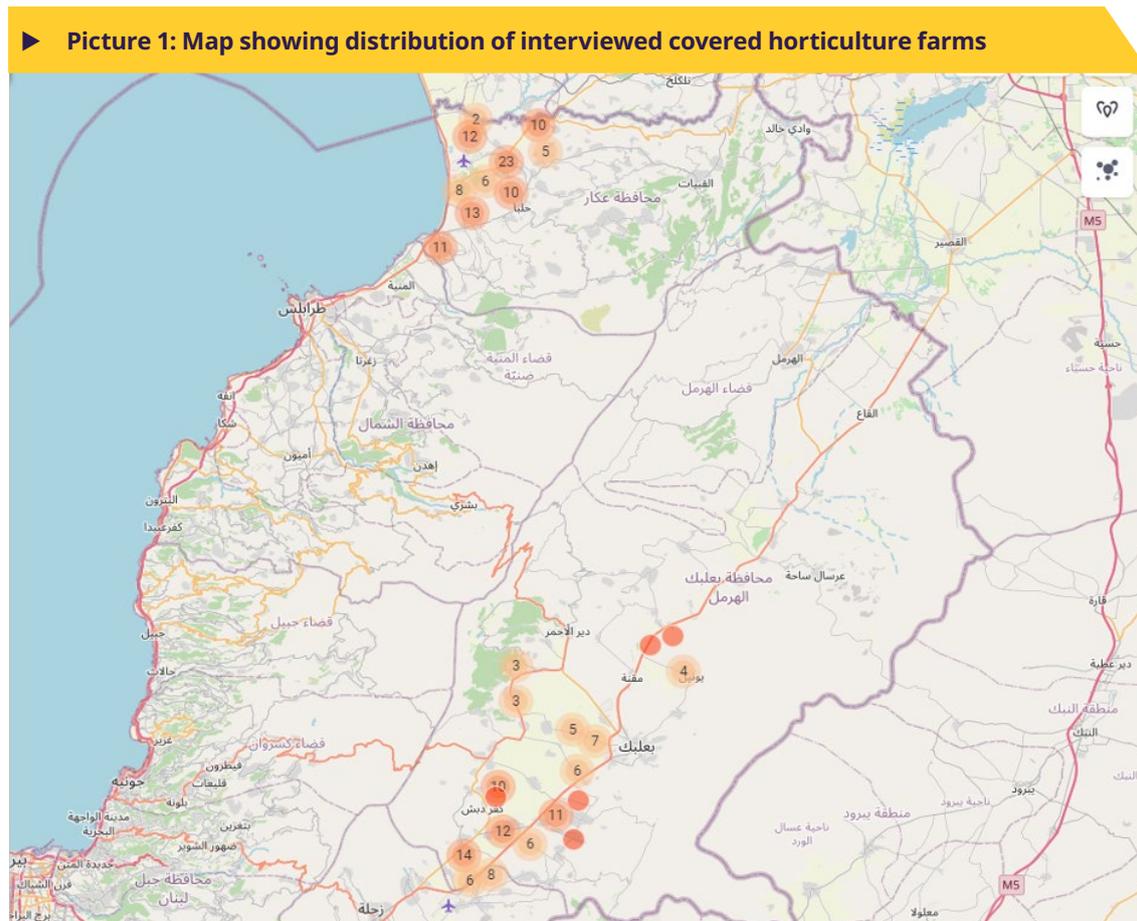
their workers and wholesalers. The overall sample was composed of 200 covered horticulture farmers, 100 permanent covered horticulture workers and 20 wholesalers, of which half was interviewed in Akkar and the other half in Baalbeck-Hermel.

▶ **Table 1. Overview of respondents by profile and region**

Profile/Region	Akkar	Baalbeck-Hermel
Covered greenhouse farmers	100	100
Permanent greenhouse workers	50	50
Wholesalers	10	10

To identify respondents for the farmers’ survey in each of the regions, a convenient sampling methodology was applied. Since the survey focuses on covered horticulture farms, only farmers with greenhouses were targeted. The survey thus concentrated on those regions within Akkar and Baalbeck-Hermel where greenhouse production is prevalent. As a first step, the research team identified

these specific regions and locations based on information obtained from key informants and stakeholders. The geographically diverse sample so obtained provided an entry point for the research team to select a certain number of covered horticulture farms in each location where greenhouse production is prevalent. The distribution of the visited farms is shown on the map below.



In each location, participating farms were selected randomly and interviewed. This convenient sampling strategy was deemed the best effort to obtain a representative sample of covered horticulture farmers in Akkar and Baalbeck-Hermel, while respecting the available time and budget. However, as probability sampling techniques were not used in this study caution should be exercised when generalizing these results.

On each farm, the research team interviewed the person in charge of daily operations and production on the farm. In some cases, this was the owner of the farm, in other cases a designated farm manager. The farmer sample, thus obtained, was the basis for the wholesaler and worker samples. For the workers' sample, only permanent horticulture workers were interviewed. To obtain the workers' sample, the research

team interviewed one permanent worker on every second farm visited. Researchers asked to see 'a worker' and interviewed the person who presented themselves.

It should be noted that the so obtained sample of workers is not representative of greenhouse workers in terms of gender and nationalities, as workers who presented themselves for interviews were predominantly male (72%), and 20% of them were Lebanese. Meanwhile, results of farmers' surveys showed that out of 1,281 workers employed on the 200 farms, 90.8% are Syrian and 69.2% are female. Indeed expert opinion and field visits confirmed that greenhouse workers are predominantly Syrian female. Given these limitations, results of the workers' survey are thus treated with care in the following, and results are not presented whenever doubts on their validity exist.





Chapter
02
Results



► 2.1. Demographics

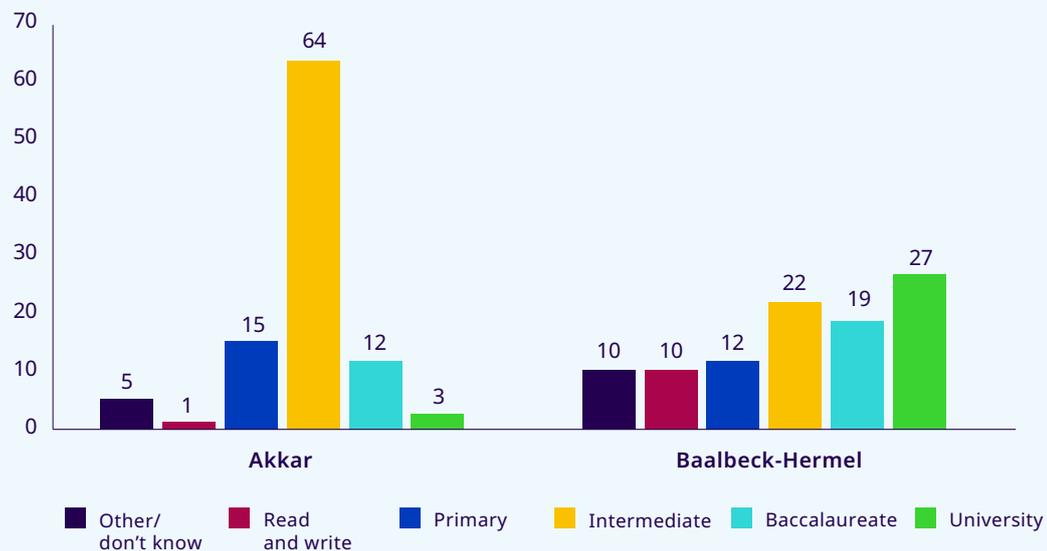
Respondents for the farmers' survey were the persons in charge of daily operations and decision-making on each of the 200 visited farms. 41% of respondents were the owners of the farm, 59% were farm managers. However, regional differences were apparent as 54% of visited farms in Baalbeck-Hermel but only 28% of surveyed farms in Akkar were managed by the farm owner themselves. The remaining visited farms (72% in Akkar and 28% in Baalbeck-Hermel) were managed by hired farm managers.

Covered horticulture farm owners in our sample are predominantly Lebanese male. Of the 200 covered horticulture farms visited, only 2% of farm owners were female, and

1% Syrian. Out of the 118 farm managers interviewed, 3 were female (2.5%) and 3 were Syrian (2.5%). The average age of respondents was 46.8. The average age of farm owners was 52 with no significant difference between regions.

Regional differences with regard to the educational attainment of farm owners are apparent with average educational levels being higher in Baalbeck-Hermel than in Akkar (see Figure 1). In Akkar, the majority of farm owners (64%) have intermediate education. The share of farmers with university degrees is markedly higher in Baalbeck-Hermel (27%) than in Akkar (3%).

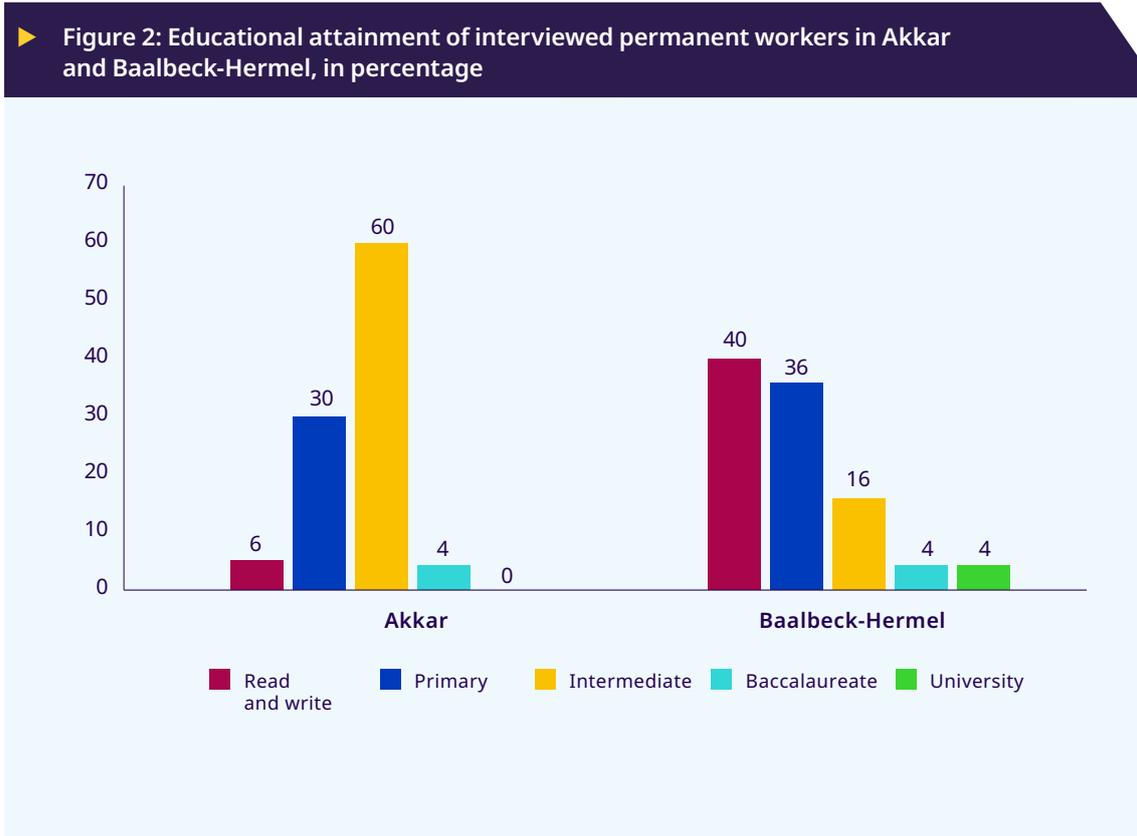
► Figure 1: Educational attainment of farm owners in Akkar and Baalbeck-Hermel, in percentage



The 200 covered horticulture farms visited employ a total of 1,281 permanent workers with an additional 1,072 seasonal workers recruited for peak times. As reported by farm owners and managers, **workers are predominately Syrian with a high percentage of women.** Out of 1,281 permanent workers, 90.8% are Syrian and 69.2% are female. Most Lebanese permanent workers are members of the farmers’ family that help out without receiving a wage. On average, there are 6.4 workers per farm ranging from 28 farms with no workers to 2 farms with 35 workers. 78% of the farmers visited had 8 or fewer workers, 16% had 9-15 workers, and just 7% had 16 or more workers. Out of 1,072 seasonal workers recruited by

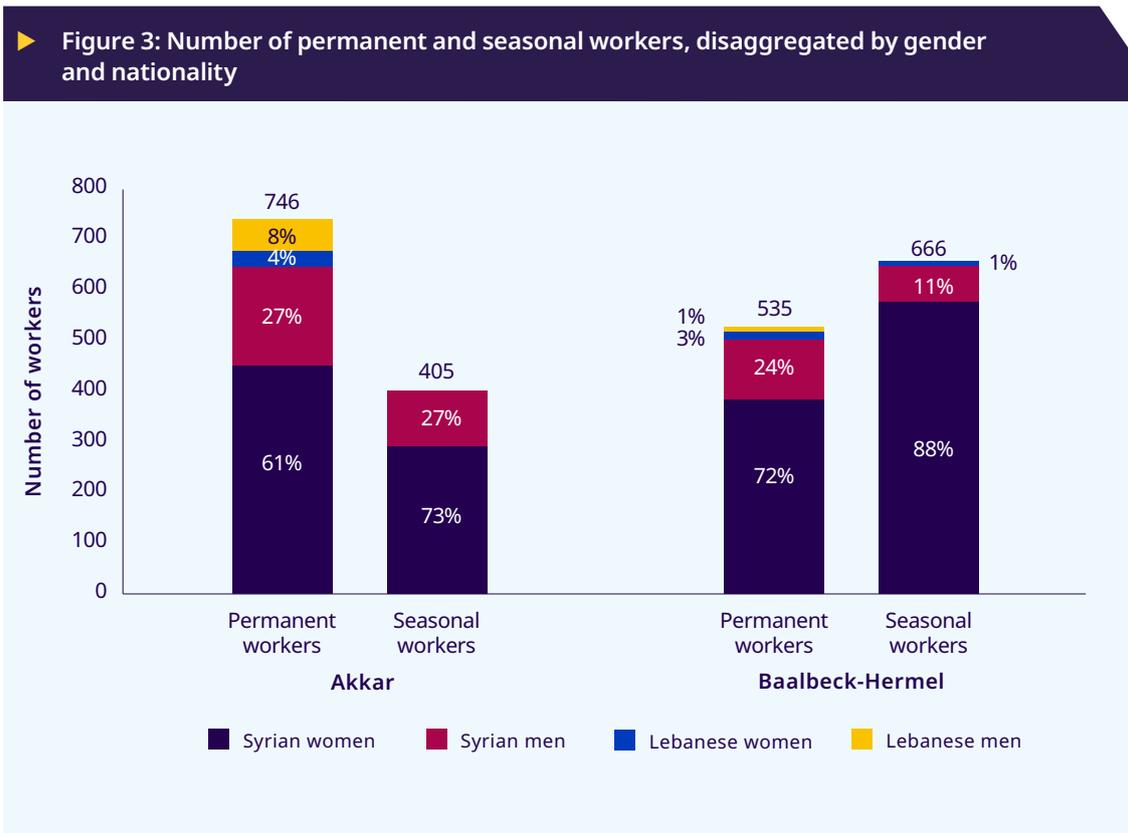
these farms at peak times, 99.1% are Syrian and 82.9% are female.

Based on responses of the 100 workers interviewed, average educational attainments of permanent workers seem to be higher in Akkar than in Baalbeck-Hermel (see Figure 2 below). The share of interviewed workers that can only read and write is notably higher in Baalbeck-Hermel than in Akkar (40% vs 6%), while the share of workers that have intermediate education levels is higher in Akkar than in Baalbeck-Hermel (60% vs 16%). However, as mentioned in the methodology section, workers in our sample are predominantly male and thus not necessarily representative of the predominantly female work force on covered horticulture farms.



Farmers in Baalbeck-Hermel seem to rely much more on seasonal workers for production than in Akkar. The 100 farms visited in Akkar together employ 746 permanent workers and 405 seasonal workers, while in Baalbeck-Hermel interviewed farmers

employ 535 permanent workers, but 666 seasonal ones. The majority of farmers (87.5%) state that they do not struggle to find skilled workers, although the share is slightly lower in the Baalbeck-Hermel (77%) than in Akkar (98%).



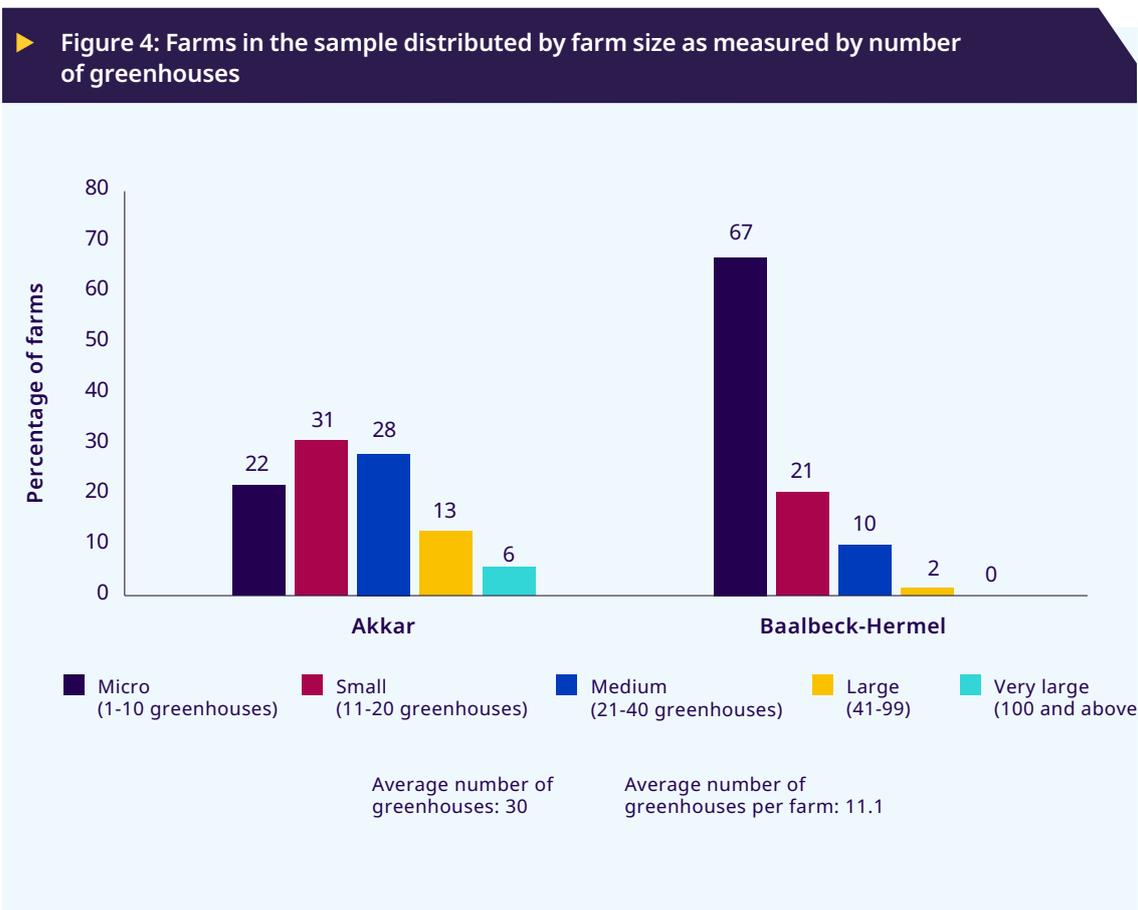
► 2.2. Covered horticulture farm activities and sizes

Farmers predominantly grow tomatoes and cucumbers, with some growing eggplants, peppers, lettuce, cabbages, leafy greens, zucchinis or beans additionally. As climates and seasonality differs, farmers in Akkar often grow tomatoes and cucumbers throughout all seasons, while many farmers in Baalbeck-Hermel grow tomatoes and cucumbers in summer, and lettuce and cabbage in winter season.

On average, farms in our sample dispose of 2.9 hectares (ranging from 0.2 hectares to 145 hectares) with an average of 1.3 hectares under greenhouse cultivation. However, these statistics mask significant regional differences. **Covered horticulture farms tend to be bigger in Akkar** with an average farm size of 3.8 hectares and an average of 30 greenhouses per farms, compared to Baalbeck-Hermel where horticulture farm sizes average 2.1 hectares with an average of 11 greenhouses.

When categorized into different farm sizes, using the number of greenhouses as a proxy, it becomes visible that almost half of covered horticulture farms that were surveyed (44.5%) are micro farms with 1-10 greenhouses. Small farms (11-20 greenhouses) accounted for 26% and medium-sized farms (21-40 greenhouses) for 19% while large farms (41-99 greenhouses) represented only 7.5% and very large farms (100 and more greenhouses) only 3%.

The categorization by number of greenhouses also seems to confirm regional differences, as 67% of surveyed farms in Baalbeck-Hermel are micro and 21% small, with 10% of medium size, and only 2% categorized as large. None of the visited farms in Baalbeck-Hermel had more than 100 greenhouses. In Akkar on the other hand, farms sizes seem to be bigger on average but also more divers, with 22% of visited farms being micro farms, 31% small, 28% medium, 13% large and 6% very large.



► 2.3. Contracts and wages of workers

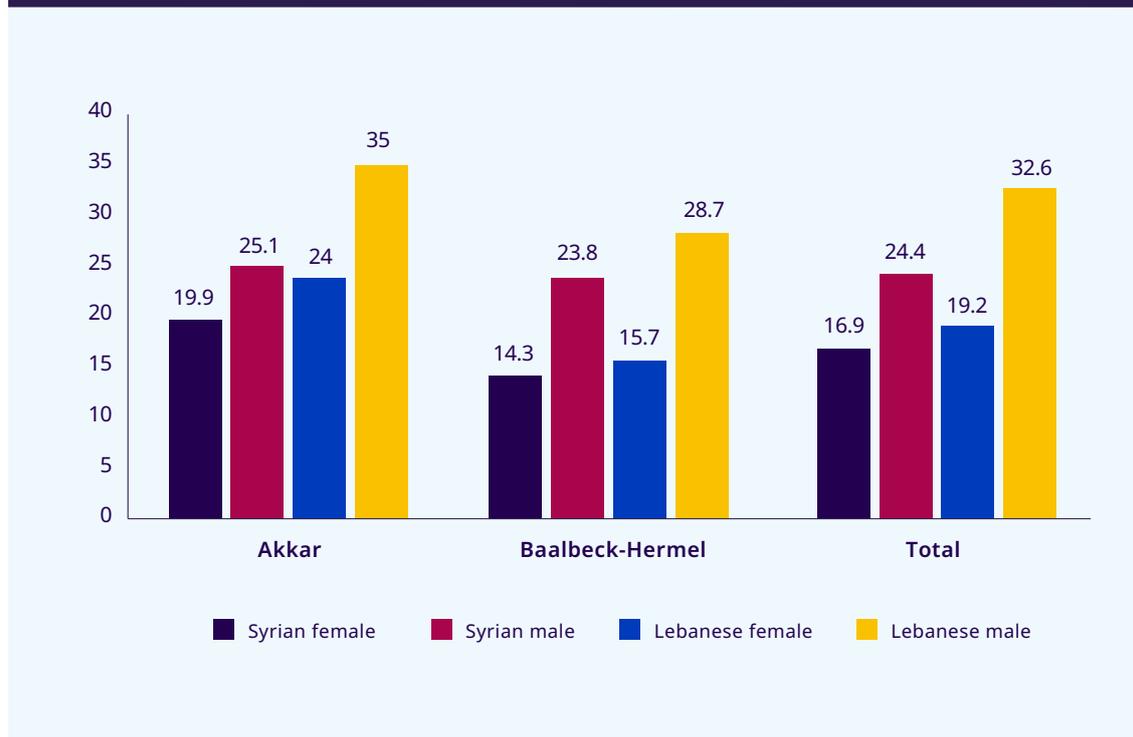
Perhaps unsurprisingly, on all but one of the farms included in the sample **permanent workers only have verbal contracts** or are family workers. According to farmers' responses, out of the 1,281 permanent workers operating on interviewed farms only 11 (0.1%) have written contracts. 1,223 (95.5%) have verbal contracts, the remainder are family workers. The 11 workers who do have written contracts are all employed on the same medium-sized farm in Akkar, and are Syrian. Results of workers' survey confirm this tendency with 85% of the interviewed workers having verbal contracts and the remaining 15% being family workers.

Wages are extremely low and had, at the time of research in March 2021, seemingly not been adjusted following the currency devaluation. Only 14 of the 100 workers interviewed state that their pay has increased in the last 12 months. Based on farmers' responses, **daily**

wages for permanent workers range from 16,900 LBP for Syrian women to 32,600 LBP for Lebanese men at the time of research (see Figure 3). Based on an exchange rate of roughly 8,000 LBP to 1 USD at the time of research, that would translate to roughly 2.10 USD per day for Syrian women, and 4.10 USD for Lebanese men. However, at the time of writing, the pound has devaluated further to over 20,000 LBP to 1 USD.

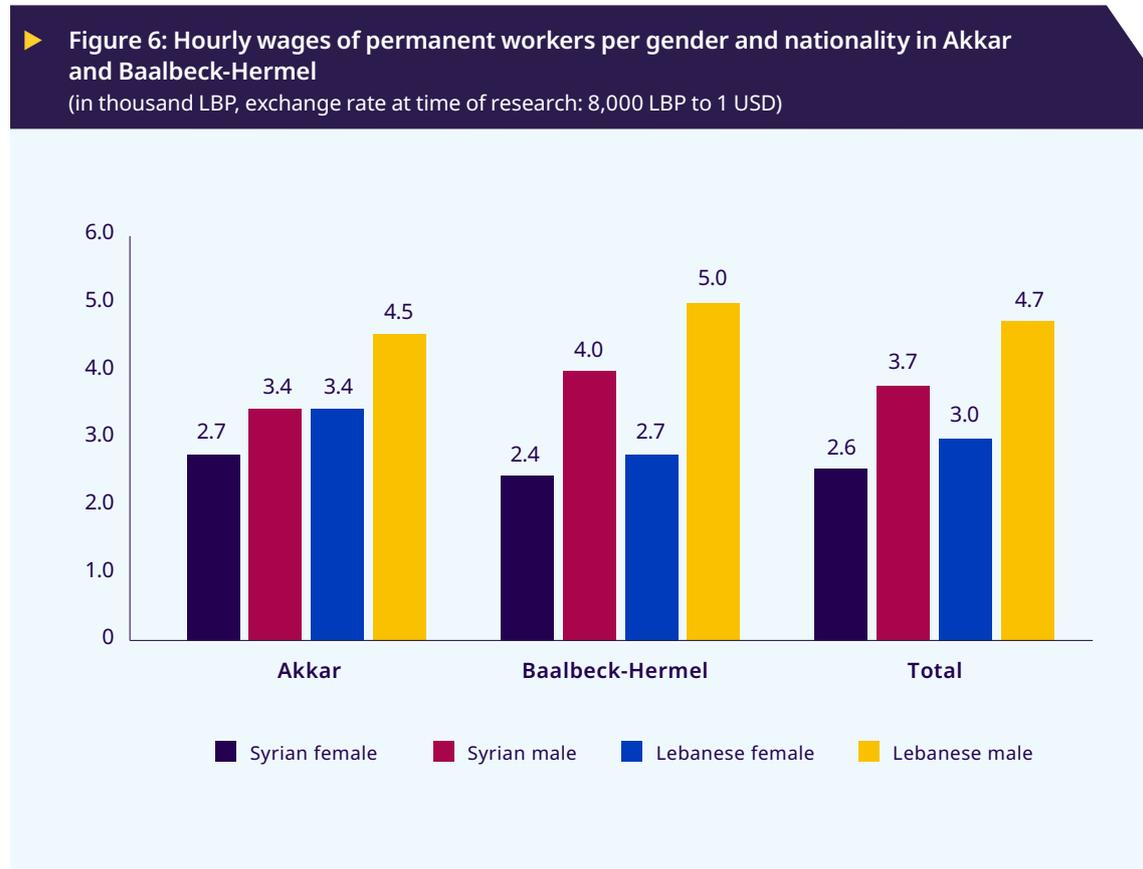
While recent anecdotal evidence indicates that wages may have been adjusted somewhat since the survey was conducted, these wage increases seemingly did not keep up with inflation, leading to further erosion of purchasing power for workers. While continuous fluctuations of the exchange rate make it difficult to calculate the exact wage in dollar terms, it is safe to assume that wages of most greenhouse workers are now below the international poverty threshold of 1.90 USD per day.

► **Figure 5: Daily wages of permanent workers per gender and nationality in Akkar and Baalbeck-Hermel, based on farmers' responses**
(in thousand LBP, exchange rate at time of research: 8,000 LBP to 1 USD)



While it would seem that men tend to get paid more than women, and Lebanese more than Syrian workers, it should be noted that daily tasks performed by workers of different gender and nationality are not necessarily comparable. Anecdotal evidence suggest that women are more often engaged in planting, spraying and harvesting in greenhouses, while men tend to be assigned tasks related to the construction and maintenance of greenhouse structures. Data also suggests that Lebanese workers are more often found in supervisory positions than their Syrian counterparts.

Daily wages of permanent workers are higher in Akkar than in Baalbeck-Hermel, but workers also work longer hours (7 hours per day compared to 6.1 hours in Baalbeck-Hermel), most likely because average covered horticulture farms are slightly bigger in Akkar than in Baalbeck-Hermel. When calculating hourly wages in the two regions, the difference in wages for Syrian women decreases considerably, suggesting that it is largely due to longer working hours in Akkar. In fact, when accounting for number of hours worked daily, wages for both Syrian and Lebanese male workers tend to be slightly higher in Baalbeck-Hermel than in Akkar (see Figure 6).

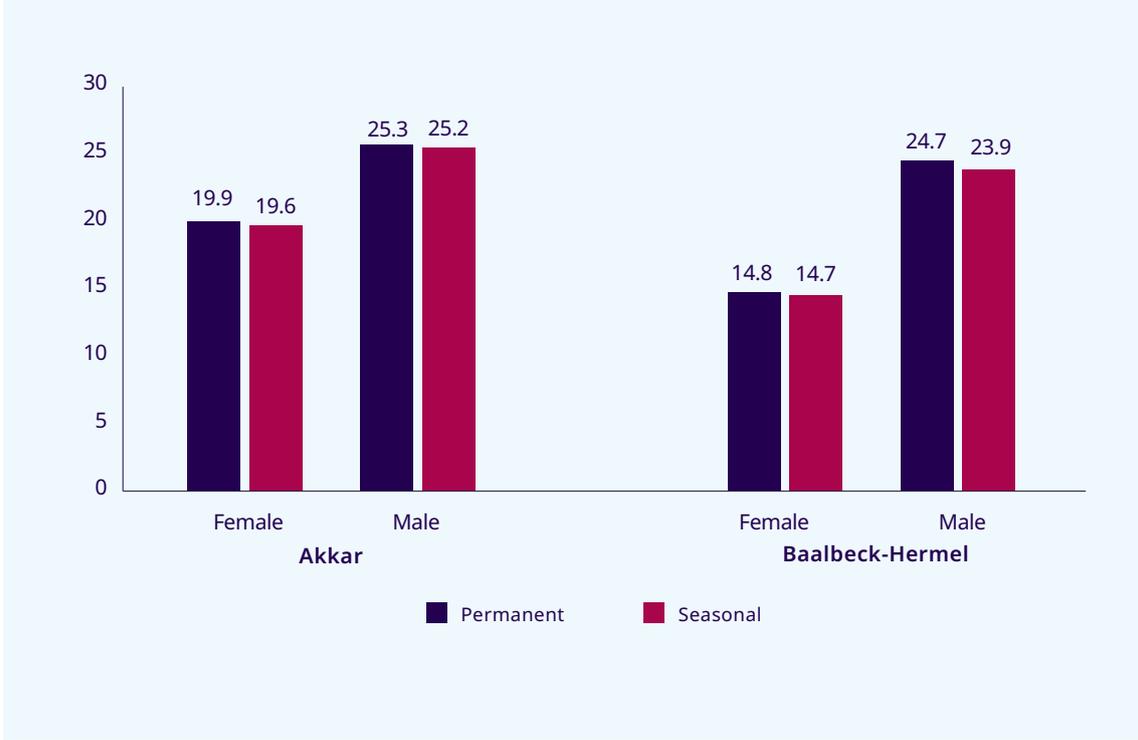


Wages of seasonal worker seem to be only slightly lower than those of permanent workers. However, previous research suggests that seasonal workers are usually recruited on behalf of farmers by Shaweesh (middlemen) who take a significant percentage of seasonal workers wage.³ The net wage of seasonal

workers can thus assumed to be lower than that of permanent workers. Daily wages for seasonal workers seem to be slightly higher in Akkar, in particular for female workers. As is the case for permanent workers, this difference is likely due to longer hours worked in Akkar.

3 Chahal, H. 2019: Promotion of refugee livelihoods, rapid market appraisal, ILO PROSPECTS Lebanon.

► **Figure 7: Daily wages of permanent and seasonal workers per gender in Akkar and Baalbeck-Hermel**
 (in thousand LBP, exchange rate at time of research: 8,000 LBP to 1 USD)



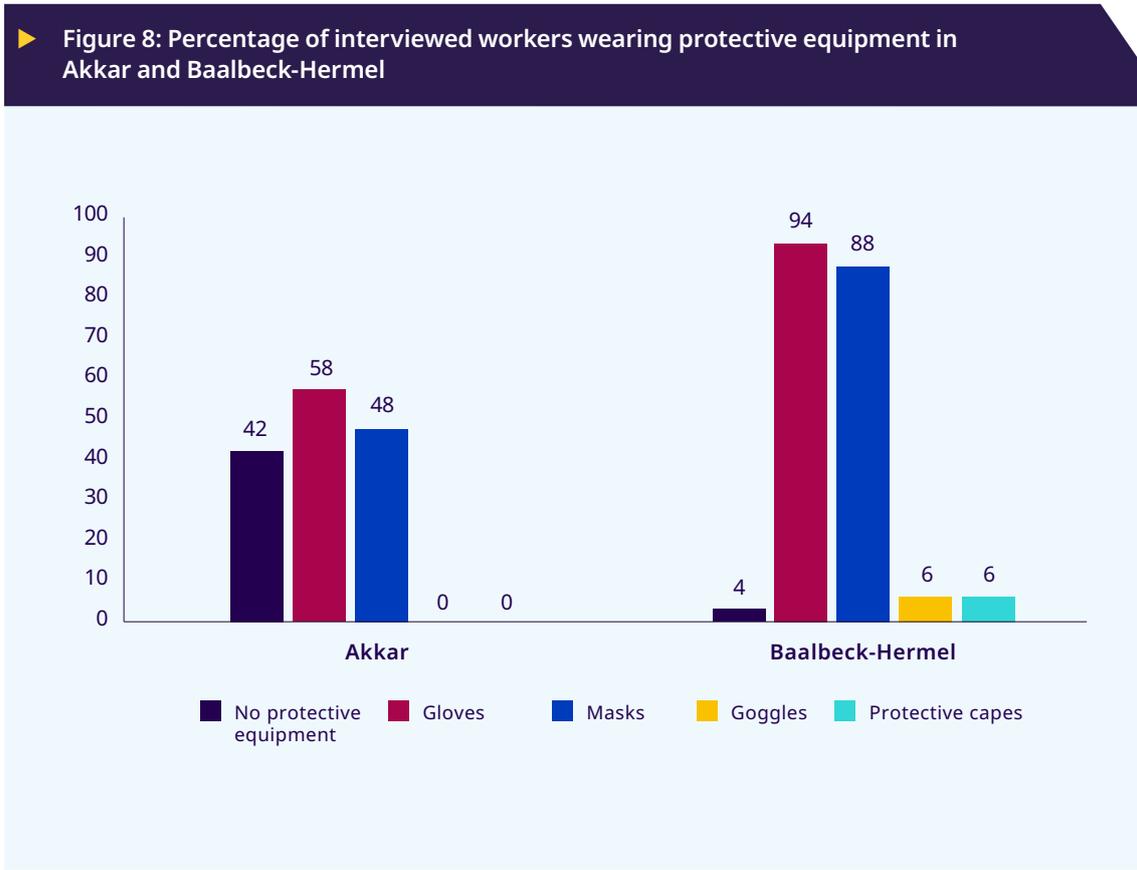
► 2.4. Working conditions and social protection

Based on responses of interviewed farmers, permanent workers seem to work an average of 6.7 hours per day. This corresponds to responses of interviewed workers who, on average, also claim to work 6.7 hours. Average daily hours worked seem to be higher in Akkar (7 hours/day according to farmers, 6.9 hours/day according to workers), than in Baalbeck-Hermel (6.1 hours/day according to farmers, 6.5 hours/day according to workers), reflecting the larger farm sizes in Akkar.

When asked about social protection and support received, 73 out of 80 Syrian workers interviewed (91%), and 1 out of 19 Lebanese workers (5%) interviewed as well as the one Palestinian worker interviewed claim to receive support from UNHCR. One Syrian worker seemingly has some form of health

insurance. The remainder of the interviewed workers (9% of Syrians, 95% of Lebanese) state that they do not receive any form of support or social protection measure.

Use of protective gear seems to be more prevalent in Baalbeck-Hermel than in Akkar with only 4% in Baalbeck-Hermel but 42% in Akkar stating that they do not wear any protective equipment. 94% of workers in Baalbeck-Hermel vs 58% in Akkar claim to wear gloves. 6% of workers in Baalbeck-Hermel each state they wear protective goggles and protective capes compared to none in Akkar. 88% of workers in Baalbeck-Hermel and 48% in Akkar state that they wear masks, although in the context of the ongoing COVID-19 pandemic, it is unclear whether these masks are supposed to protect from toxic chemicals or COVID-19.



74% of surveyed workers claim not be exposed to toxic chemicals at all, while 7% claim to be exposed sometimes, and 19% very often. It should however be noted that this question assesses workers’ perceptions, not their actual exposure to chemicals. Results of farmers’ survey confirm that large quantities

of agri-chemicals are sprayed on most farms. It can be doubted that all workers recognize that materials sprayed are toxic. Furthermore, responses might be distorted since workers in our sample are predominantly male and more often assigned to tasks not associated with spraying in greenhouses.

▶ 2.5. Revenues, production costs and profits

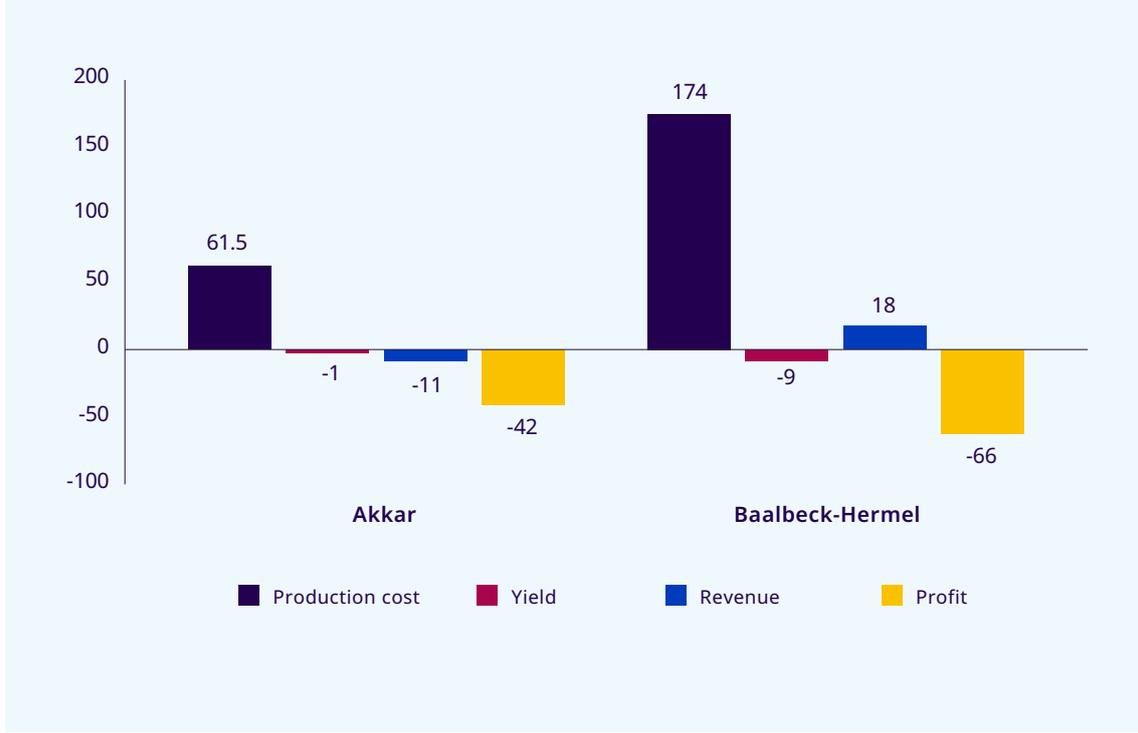
Covered horticulture farmers have been severely affected by the multiple ongoing crises. While the global COVID-19 crisis and related lockdowns have disrupted supply chains worldwide, in Lebanon it coincided with a large-scale financial and economic crisis. The drastic devaluation of the local currency has led to significant price increases for largely imported agricultural inputs such

as fertilizers, seeds, pesticides and production equipment, leaving many farmers struggling to obtain agricultural inputs required to maintain production. An ongoing political crisis meant that Government support for farmers has all but dried up, and sporadically erupting protests and road blocks meant further disruptions of local supply chains and transport routes.

The combined effect of the crises has unsurprisingly severely affected farmers' revenues, production costs and profit. It should be noted clearly that numbers on production costs, yields, revenues and profits should be treated with care and be understood as rough estimations rather than exact figures, since it is commonly believed that farmers do not always keep track of expenses and revenues. Furthermore, the rapidly fluctuating exchange rate means that nominal prices and revenues measured in local currency can change from week to week. Despite these limitations however, clear trends emerge and data seems to suggest that horticulture farms have been affected differently in Akkar than in Baalbeck-Hermel.

Farmers consistently, and unsurprisingly, state that production costs have increased due to the severe devaluation of the Lebanese pound that has led to rapidly rising prices for imported fertilizers, pesticides and other inputs. According to responses of the visited farmers, production costs seem to have increased by 118% on average in the 12 months before the survey.⁴ In Akkar, farmers estimate the increase to be 62% on average, ranging from 40 to 80%. In Baalbeck-Hermel however, farmers estimates range from 30% to 900%, averaging 178%. Responses indicate that the largest increase in production costs is reported by larger farms in Baalbeck-Hermel.

► Figure 9: Reported average percentage change in production costs, yield, revenues and profits over the last 12 months

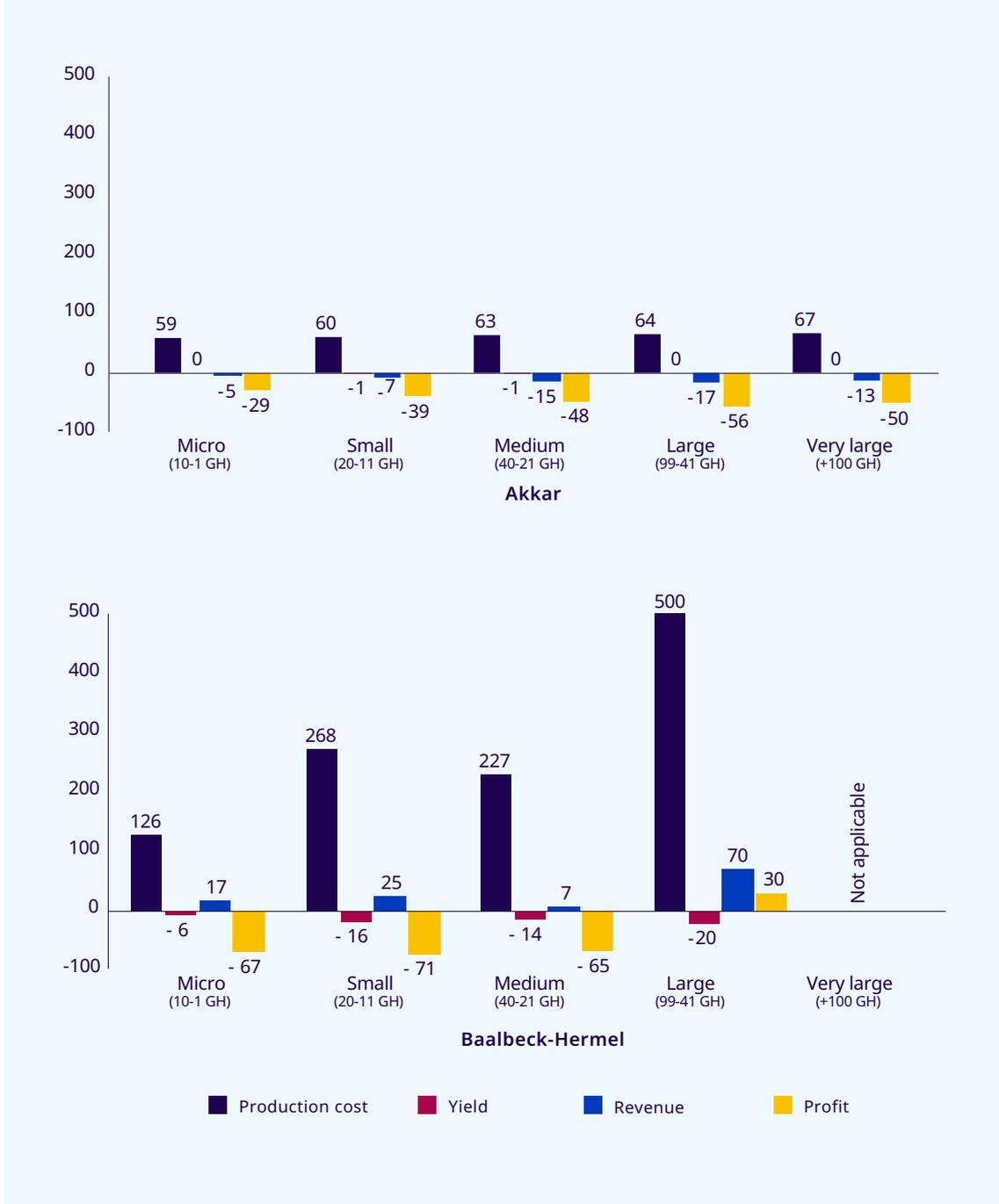


4 Farm visits took place in March 2021

Yields seem to have been somewhat affected by the crises, but more so in Baalbeck-Hermel than in Akkar. 97% of farmers in Akkar state that yields remained unchanged in the past 12 months. In Baalbeck-Hermel, only 68% of farmers say that yields stayed the same with 28% of farmers stating that yields decreased (see Figure 11). For Akkar, this resulted in

an average yield decrease of 1% against a decrease of 9% in Baalbeck-Hermel. This trend seems to be confirmed by responses of interviewed wholesalers as 5 out of 10 wholesaler in Baalbeck-Hermel believe it has become more difficult to obtain the quantities and qualities they need, compared to just 1 out of 10 wholesalers in Akkar.

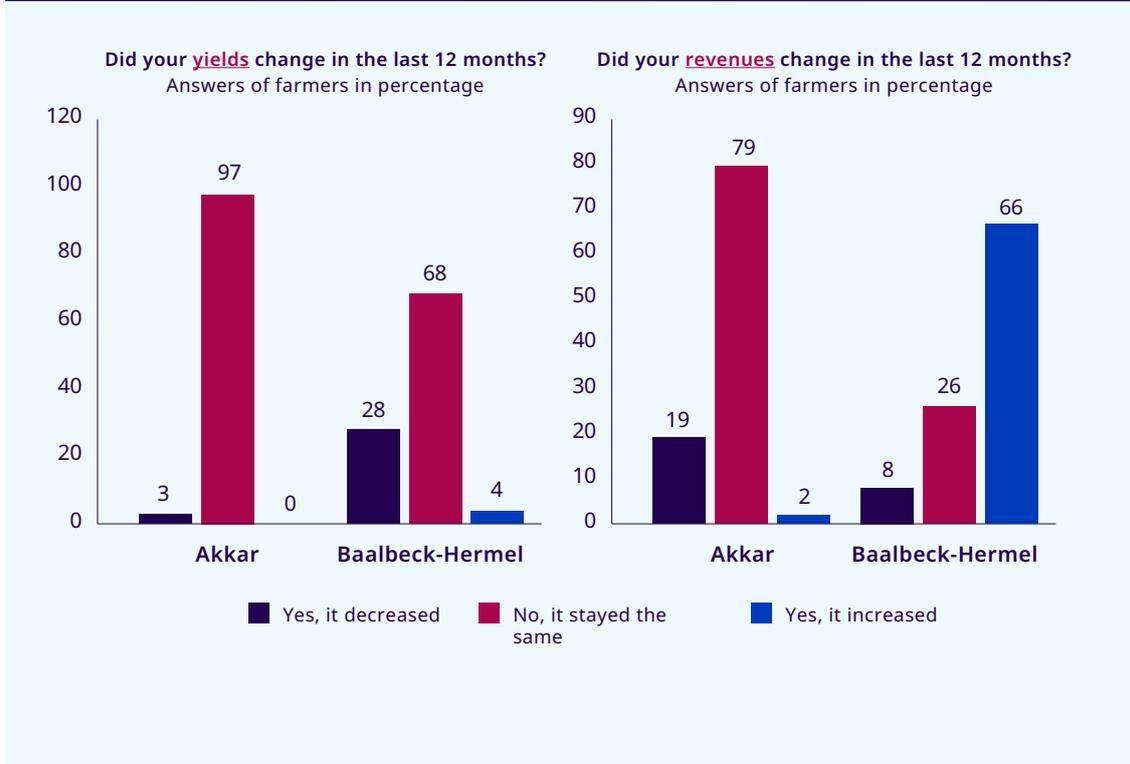
► **Figure 10: Reported average percentage change in production costs, yield, revenues and profits over the last 12 months, per farm size**



Whenever yields decreased, farmers reported that this was due to rising prices for seeds, pesticides, fertilizers and equipment. Rising costs for inputs led many farmers to use fewer inputs or switch to inferior inputs which ultimately affected yields. The fact that yields seemed to have declined more in Baalbeck-Hermel than in Akkar could potentially be a reflection of the lack of informal credit

schemes there. While the vast majority of farmers in Akkar reports having access to informal credit from wholesalers or input suppliers to pre-finance production, 77% of farmers in the Baalbeck-Hermel claim no credit is available, and hence might struggle more to finance inputs required to maintain yields (see section 9 for more information on access to credits).

► Figure 11: Share of farmers that reported yield and revenue changes, in percentage



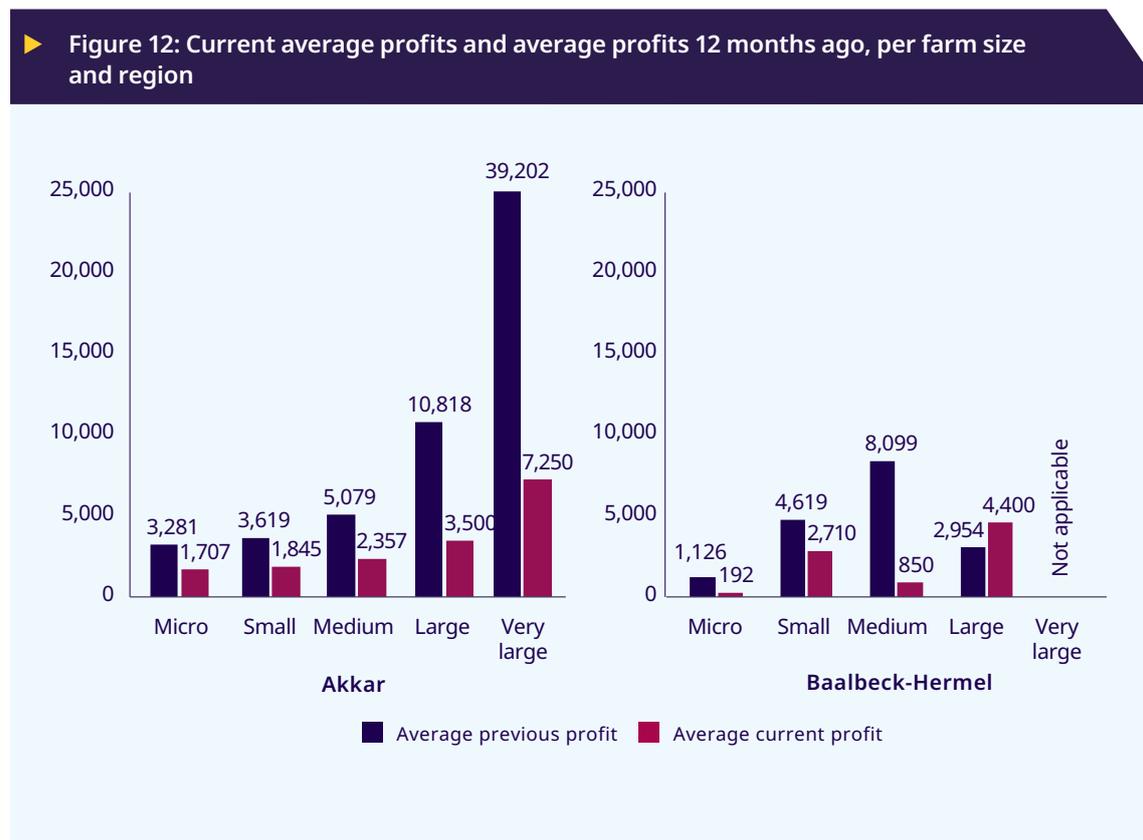
Average revenues seem to have increased slightly in Baalbeck-Hermel but decreased in Akkar in spite of declining yields in Akkar. The vast majority of farmers in Akkar report no yield decreases and prices for produced crops rose in the concerned time period. Nevertheless, the vast majority of farmers in Akkar claim their revenues remained the same (79%) or even decreased (19%). In Baalbeck-Hermel on the other hand, 66% of farmers claim their revenues increased and 26% claimed it stayed the same, despite more farmers there reporting yield decreases. Revenues in Baalbeck-Hermel reportedly increased by an average of 18%.

It might seem like a paradox that revenues in Akkar declined despite mostly stable yields, while revenues in Baalbeck-Hermel rose despite an average decrease in yields. Yet, an explanation could lie in different market dynamics in both regions. With a high concentration of large farms in Akkar, farmers there might struggle more than their counterparts in Baalbeck-Hermel to sell all their produce on the market. Furthermore, the proximity to farmlands in Syria can lead to temporary oversupply as vegetable trucks from Syria arrive. Indeed, only 13% of farmers in Akkar but 86% in Baalbeck-Hermel state that they are always able to sell all produce.

Farmers in Baalbeck-Hermel might also benefit from higher prices due differences in seasonality and access to different markets. Indeed, wholesaler surveys seem to indicate that export volumes increased in Baalbeck-Hermel more than in Akkar. In Baalbeck-Hermel, 4 wholesalers state that export volumes increased a lot and 2 believe it increased a bit. In Akkar, only 2 wholesalers said it increased a bit.

Finally, what seems like a paradox could well be a reflection of the fact that farmers in Akkar by majority receive up front credits from wholesalers to finance production, but not so farmers in Baalbeck-Hermel. While this informal credit mechanism enables

farmers in Akkar to finance required inputs and keep yield stable, it leaves them with little power to negotiate prices at harvest time. Furthermore, credits obtained from wholesalers are deducted from payments to farmers at harvest time and thus reduce the perceived revenue of farmers in Akkar. Farms in Baalbeck-Hermel on the other hand are seemingly unable to obtain pre-financing for inputs and thus struggle more than their counterparts in Akkar to keep yields stable. However, this also means that at the time of harvest, farmers in Baalbeck-Hermel are in a better position to negotiate prices vis-a-vis wholesalers.



Profits of covered horticulture farms seem to have declined in both regions. Profits were calculated based on revenues and production costs. However, as discrepancies exist with the data, profits will need to be treated cautiously too. In Akkar, monthly profits average 2,498,000 LBP (313 USD at the time of research) ranging between -3,000,000 LBP to 16,000,000 LBP. In Baalbeck-Hermel,

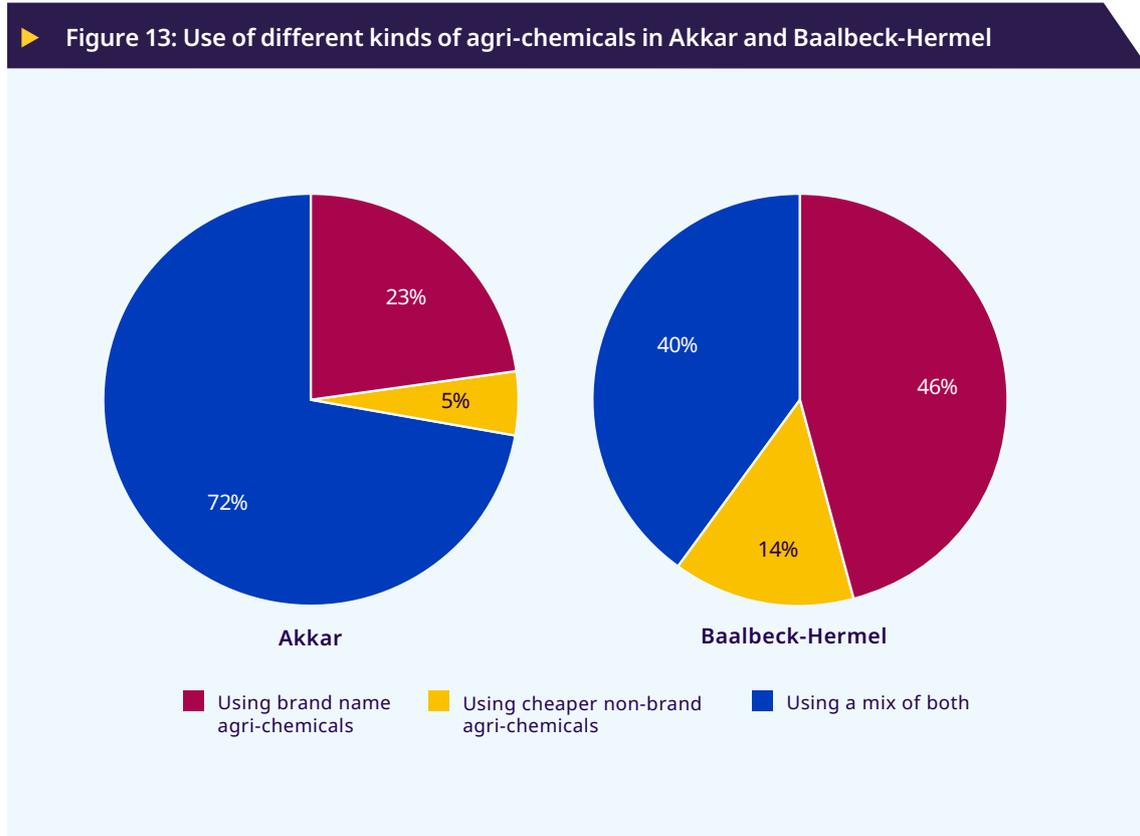
profits averaged 870,000 LBP (109 USD at the time of research) ranging from -7,500,000 LBP to 50,000,000 LBP. But these figures mask noteworthy difference between different farm sizes and regions (see Figure 8). Profits per hectare farmed averages 1,419,000 LBP in Akkar, and 512,000 LBP in Baalbeck-Hermel (177 USD and 64 USD respectively at the time of research).

▶ 2.6. Production practices

Amongst other objectives, the survey also aimed to collect data on production practices and use of inputs by farmers. When asked what kind of agri-chemicals farmers buy, 34.5% of farmers claim to be using improved and legal brand-name chemicals exclusively, while 9.5% resort to cheaper non-brand chemicals that are often smuggled into the country as they aren't government-approved. 56% of farmers use a mix of both. Farmers in Baalbeck-Hermel seem to use more of the brand-name chemicals with 46% in the Baalbeck-Hermel vs 23% in Akkar using these exclusively.

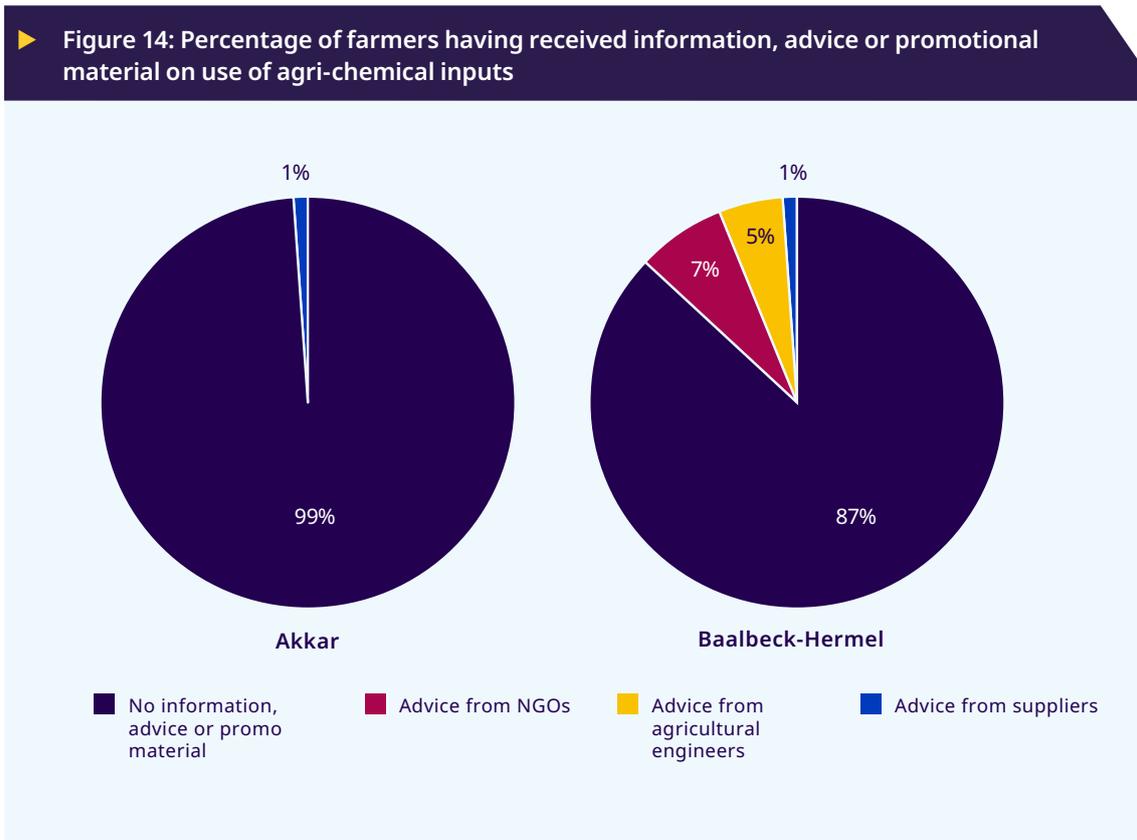
It would appear that farmers in Akkar use more chemicals in general. The total amount of improved chemicals used in Akkar is

318 Kg per month compared to 356 Kg in the Baalbeck-Hermel (resulting in 15 Kg on average per greenhouse in Akkar, and 17Kg in the Baalbeck-Hermel). However, when it comes to cheaper smuggled in chemicals, farmers in Akkar use a total of 1,284 Kg (62 Kg per greenhouse) compared to 443 Kg (22 Kg per greenhouse) in the Baalbeck-Hermel. Indeed, anecdotal evidence suggests that problems with pests are more widespread in Akkar, explaining why farmers there would use more pesticides. Answers may also have been influenced by the fact that farmers in the Baalbeck-Hermel produce lettuce and cabbage in the winter season, for which fewer pesticides are needed.



Only 7% of farmers claim to regularly receive some form of guidance or advice on the use of agri-chemical inputs with the share of farmers that receive advice being notably higher in Baalbeck-Hermel (13%) than in Akkar (1%). Out of the 14 farmers that have received advice, this came either from NGOs (7 farmers) or from 'agricultural engineers' (5 farmers) although it is not clear whether

these engineers belong to any structure or institution. Only 1 farmer has received advice from agri-pharmacies and 1 from suppliers of inputs. None of the farmers has received any information from public extension services. The usefulness of the advice and information received was rated 2.9 on a scale from 1 - 3 by the 14 farmers.

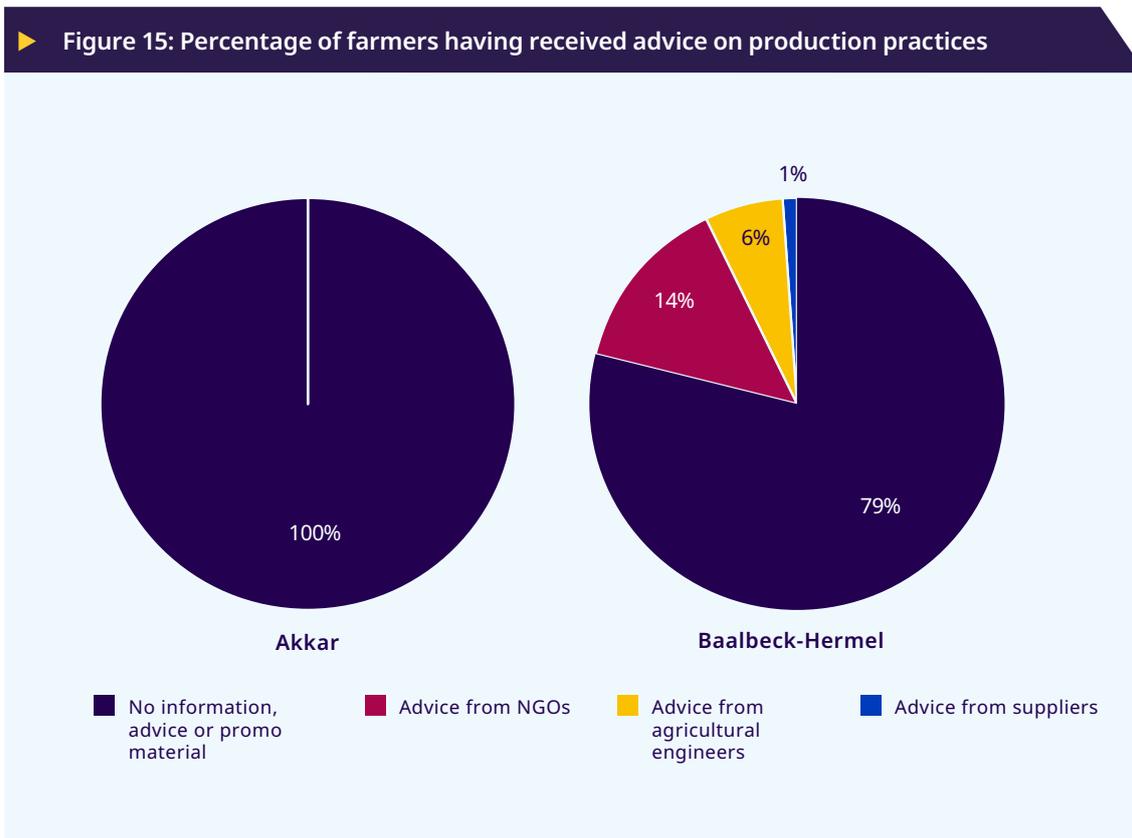


Similarly, when asked whether they received any guidance, advice or training on production practices in the last 12 months, only 20 out of 200 farmers responded positively, all of them in the Baalbeck-Hermel. Seemingly, 20 out the 100 of farmers interviewed in the

Baalbeck-Hermel have received such advice or guidance while none reported receiving such advice in Akkar. The majority of farmers who have received advice state that this came from NGOs. Four farmers cite 'agricultural engineers' that provided advice.

When asked to rank trustworthiness of advice provided by various organizations on a scale from 1 to 3, farmers generally ranked advice from NGOs highest (2.2), followed by friends

and family and MoA extension services (1.9), agri-pharmacies (1.7), input suppliers (1.6), and finally local input dealers and shops, and media (1.4).

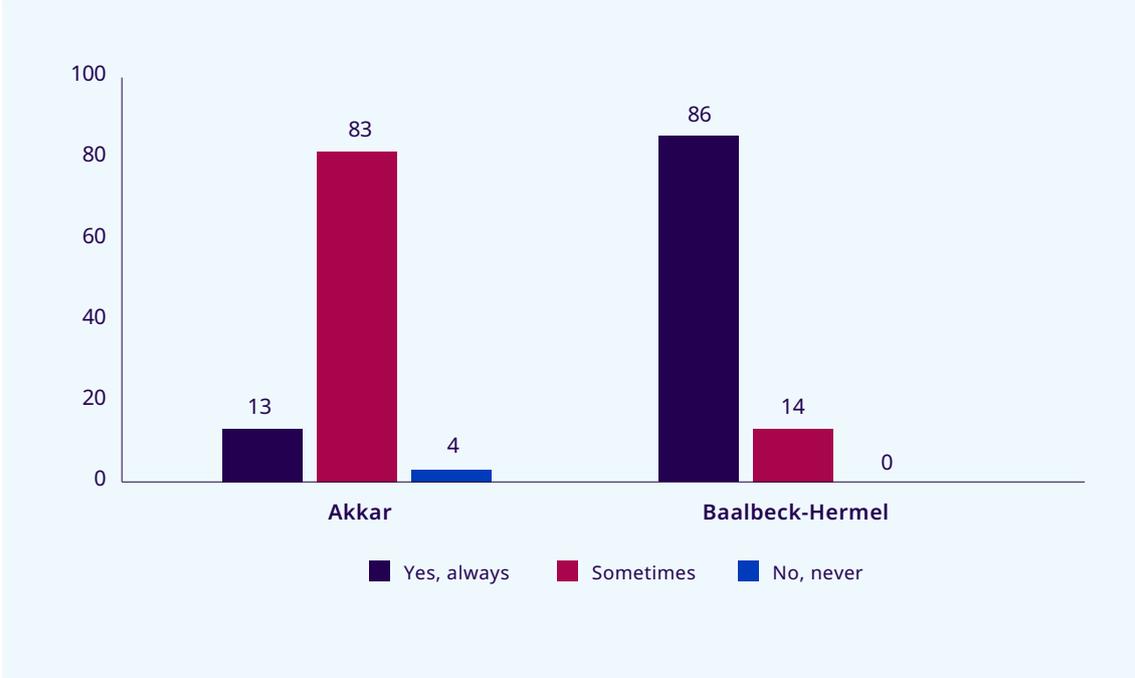


► 2.7. Markets and trade

In terms of market and trade dynamics, results of the surveys point to vast differences between Akkar and Baalbeck-Hermel regions. **Farmers in Baalbeck-Hermel seem to be better able to sell all their vegetables** with 86% of interviewed farmers claiming to always be able to sell their vegetables and 14% that say this is sometimes the case. In Akkar only 13% of surveyed farmers always sell,

compared to 83% that are sometimes able to sell all vegetables, and 4% that never sell all produce. Indeed, the percentage of produce that is not sold on markets averages 7.7% in Akkar compared to 2.5% in Baalbeck-Hermel (see Figure 16). Farmers indicate that most of the unsold produce is usually simply thrown away.

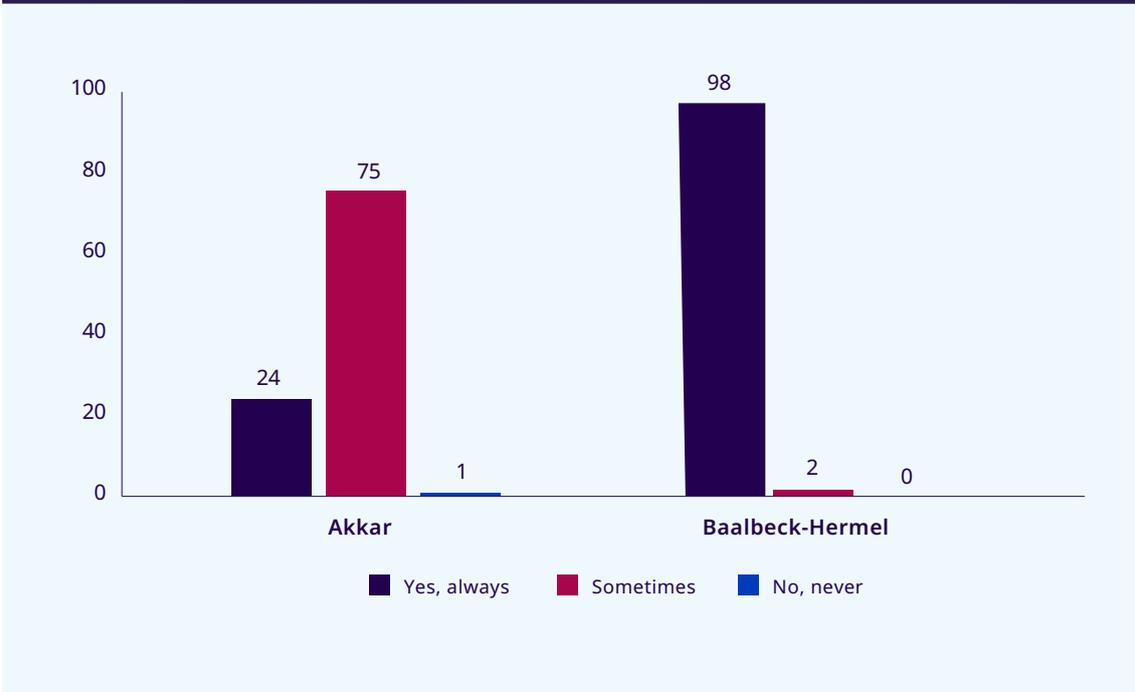
▶ **Figure 16: Answers of farmers to the question “Are you able to sell all vegetables you produce at market rate?” in percentage**



Demand for vegetables follows a similar trend with 98% of surveyed farmers in Baalbeck-Hermel claiming there is always demand for more produce, while only 24% of farmers in Akkar believe that to be the case. The majority of farmers in Akkar (75%) state that demand

for more vegetables only sometimes exists. Indeed, 4 out of 10 wholesalers interviewed in Baalbeck-Hermel confirm that they would like to buy more vegetables domestically compared to only 1 out of 10 wholesalers in Akkar.

▶ **Figure 17: Answers of farmers to the question “Is there demand for more vegetables than you are able to produce?” in percentage**

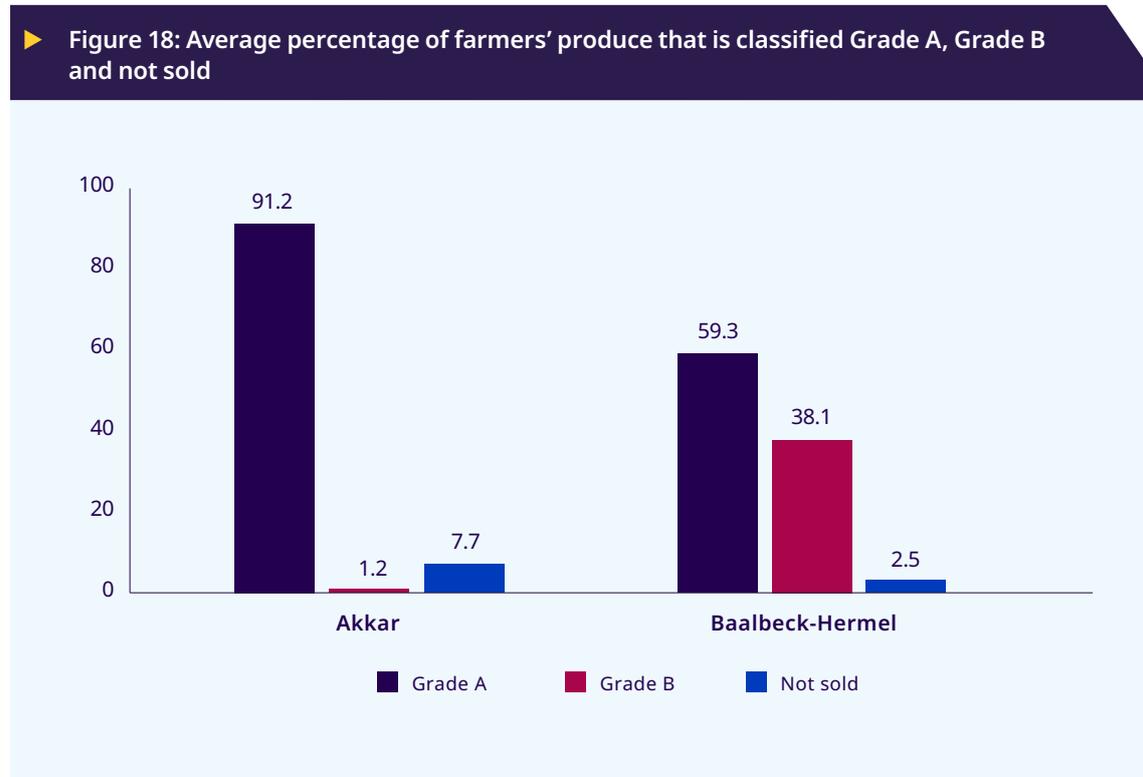


The vast majority of farmers (75.5%) indicate that wholesalers pay more for quality produce with the share being slightly higher in Baalbeck-Hermel (89%) than in Akkar (62%). This trend is confirmed by wholesalers' answers with 10 out of 10 wholesalers in Baalbeck-Hermel and 7 out of 10 in Akkar confirming to pay a premium for quality tomatoes and cucumbers. Quality seems to be primarily defined by looks and size of the vegetables. Only very few farmers mentioned packaging as a defining factor for quality, and none pesticide residues. The focus on looks and size was confirmed by answers of wholesalers. The same price premiums seem to be paid for tomatoes and cucumbers.

Price premiums paid for quality produce seem to be higher in Baalbeck-Hermel than in Akkar. According to farmers' responses, price premiums paid for 'Grade A' tomatoes and cucumbers range between 0% and 50% and average 13% in Baalbeck-Hermel. In Akkar price premiums paid range between 0 and 20% with

an average of only 7%. Similarly, wholesalers in Baalbeck-Hermel state that they pay between 10% and 30% with an average of 22% while wholesalers in Akkar claim to pay between 0 and 20%, averaging 13%. This confirms that price premiums paid are higher in the Baalbeck-Hermel than in Akkar, although it would seem that wholesalers claim to pay a higher premium than what farmers say they receive.

Lower price premiums in Akkar could be a reflection of the relative abundance of Grade A produce. Based on farmers' responses, an average of 91% of farmers' produce in Akkar is marked 'Grade A', compared to 59% in Baalbeck-Hermel (see Figure 17). 5 out of 10 wholesalers in Akkar and 6 out of 10 in Baalbeck-Hermel claim to be struggling to find enough Grade A produce. Perhaps paradoxically, 8 out of 10 wholesalers in Akkar say it is somewhat difficult to find the right qualities while only 3 of the surveyed wholesalers in Baalbeck-Hermel hold that opinion.



With only 20 wholesalers surveyed, regional differences in wholesalers' responses might be coincidental. Yet, responses to questions around trade dynamics and market trend seemingly point to markets in Baalbeck-Hermel being better connected to regional and international markets, than those in Akkar. For

instance, out of the 10 wholesalers interviewed in Baalbeck-Hermel 2 sell to Horeca and supermarkets and one to exporters, additional to selling on the local market. The 10 interviewed wholesalers in Akkar on the other hand all sell exclusively on the local market.

More wholesalers in Baalbeck-Hermel believe that exports volumes increased than in Akkar. Import volumes follow a similar trend, with most wholesalers in Akkar believing that

import volumes stayed the same (7), while in the Baalbeck-Hermel 1 believes it decreased a lot, 5 believe it decreased a bit and 4 that it stayed the same.

▶ 2.8. Market information

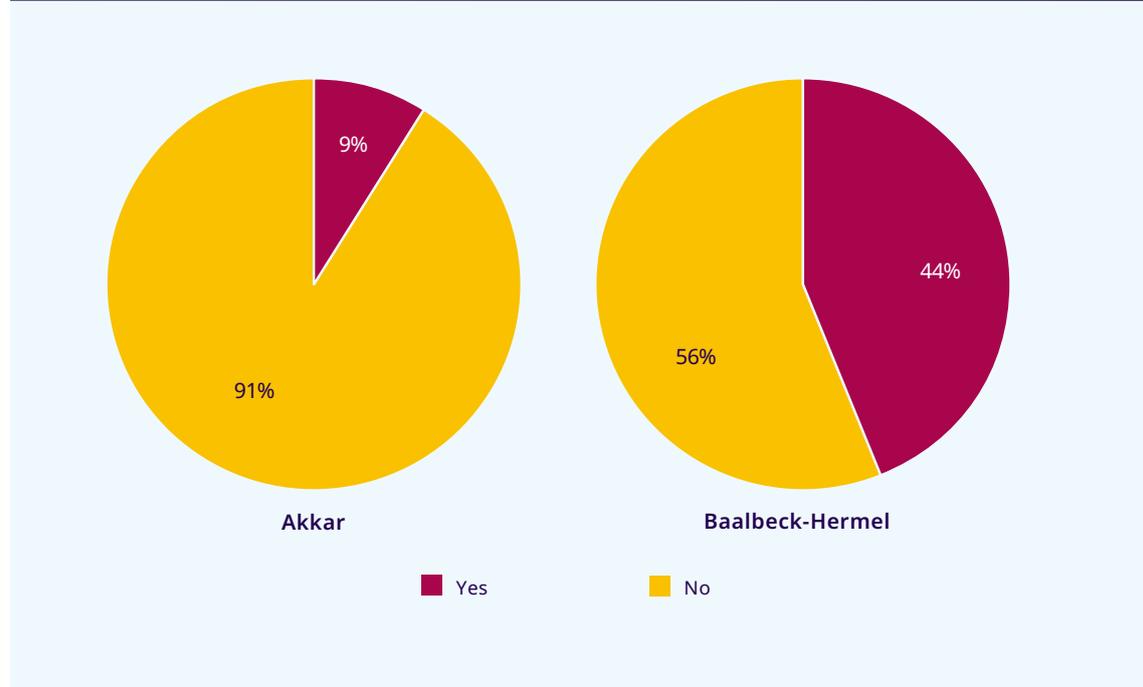
When asked to what extent farmers know the quantities and qualities they need to produce, wholesalers in Akkar differ in their opinion from those in Baalbeck-Hermel. Wholesalers in Baalbeck-Hermel are overwhelmingly positive stating that farmers “have good or extensive experience in agriculture”, and “are well aware of needed quantities and qualities”. Wholesalers in Akkar on the other hand are more cautious and mostly state that farmers know “somewhat, depending on their financial capabilities”. This tendency seems to be reinforced further as the share of wholesalers that state that farmers’ knowledge on the quantity and quality needed on the market is improving is higher in the Baalbeck-Hermel (5 out of 10) than in Akkar (1 out of 10).

Regional differences also emerge with regard to the information farmers receive about market trends, prices and demand

for vegetables. 44% of surveyed farmers in Baalbeck-Hermel but only 9% in Akkar say they regularly receive such information. Of the 44 farmers in Baalbeck-Hermel who receive that kind of information, 41 say they receive it from wholesalers, and 33 receive it from other farmers. In Akkar, the main sources of information are wholesalers (5 out of the 9 farmers) and other off-takers (7 out of 9).

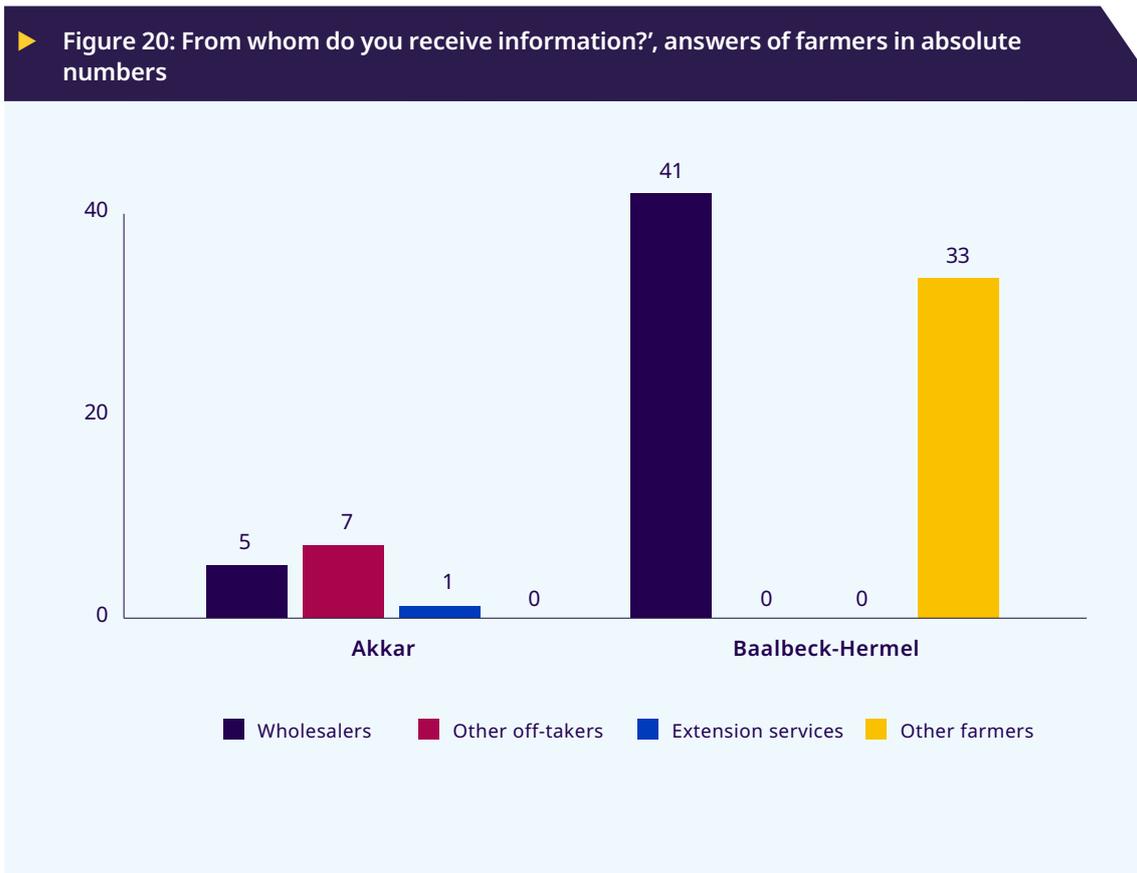
When asked about the kind of information they receive, farmers state that it usually pertains to current prices of vegetables and basic information on supply and demand. **None of the interviewed farmers seem to receive more detailed information on market trends or the specific varieties and qualities in demand.** When asked about their ability to predict prices for their produce, 81% of surveyed farmers in Baalbeck-Hermel and 94% in Akkar state they are unable to do so.

▶ Figure 19: ‘Do you regularly receive information on markets and prices?’, answers of farmers in percentage



Farmers in Baalbeck-Hermel also seem to find the information they receive more useful with 35 out of the 44 farmers who received information stating that this information was 'very useful', 7 farmers rating it as 'somewhat

useful' and 2 saying it was 'not useful'. In Akkar 8 out of the 9 farmers that received information rated it as 'somewhat useful' with one farmer saying it was not useful.



When wholesalers were asked whether they provide farmers with information on the type, variety and quality of vegetables needed, all interviewed wholesalers in Baalbeck-Hermel and 6 out of 10 wholesalers in Akkar claim to do so. This seems to confirm the tendency

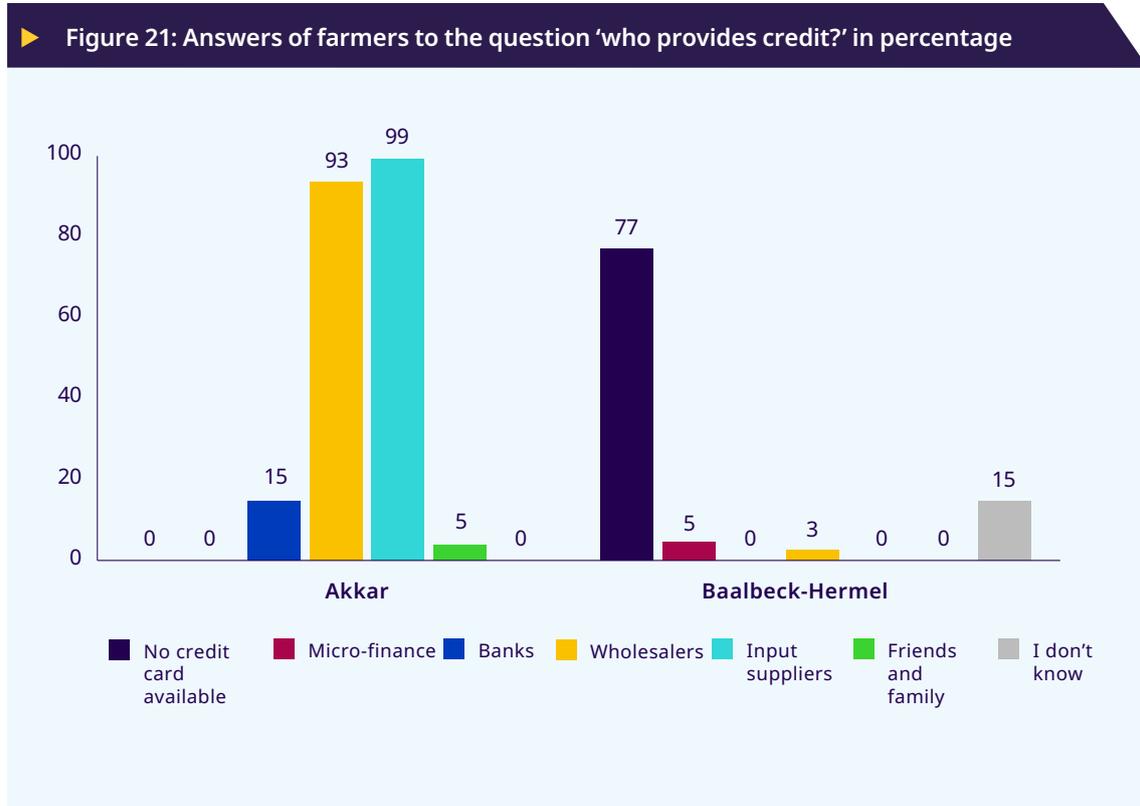
that wholesalers provide more information in Baalbeck-Hermel than in Akkar. At the same time, it would seem that the percentage of wholesalers claiming to provide information is much higher than the share of farmers that confirm receiving it.

▶ 2.9. Credit

The ongoing financial and economic crises has led to a severe credit crunch across all sector. It is thus unsurprising that only a small percentage of interviewed farmers claims to have access to formal credits from banks. Surprisingly though, when asked about access to formal and informal loans and credit, important regional differences emerge, with **different forms of informal credit being much more available in Akkar than in Baalbeck-Hermel**. In Baalbeck-Hermel, 77% of farmers claim that credit is not available and 15% state that they do not know. Only 3% of interviewed farmers in Baalbeck-Hermel state that wholesalers supply credit, and 5% name microfinance institutions. In Akkar on the other hand, surveyed farmers by majority state that credits are provided by wholesalers (93%) and input suppliers (99%) with 15% also

citing banks, and 5% family and friends as possible source (see Figure 21). Consequently, 82% of farmers in Akkar and only 5% in the Baalbeck-Hermel claim to use credit. For those who use credit, these are mostly obtained from suppliers (73%) and wholesalers (62%).

These regional differences seem to be confirmed by responses of interviewed wholesalers. In Akkar, 9 out of 10 wholesalers claim to provide credits to producers, while only 4 of the 10 wholesalers in Baalbeck-Hermel seem to do so. While these responses confirm the relative availability of credits and ‘pre-financing’ mechanisms through wholesalers in Akkar, there seems to be a discrepancy between wholesalers and farmers’ answers regarding credit provided in the Baalbeck-Hermel.



Only 11% of farmers state that they have to pay interest on these credits, although, paradoxically, 56% of farmers say that interest demanded is reasonable. Wholesalers seem

to confirm that interest is not usually charged with 12 out of the 13 wholesalers that provide credit claiming not to charge interest on these.

► 2.10. Relationships with wholesalers

Responses of farmers and wholesalers to questions surrounding relationships and modalities of collaboration between both parties consistently suggest that **farmers have little control over prices and are generally price-takers**, with the vast majority of farmers receiving payment only 1-2 weeks after delivery of their produce. Only 3% of surveyed farmers state that wholesalers commit to purchasing certain quantities and qualities in advance. Indeed 19 out of 20 wholesalers admit not to commit to any advance purchasing orders. Only 1% of surveyed farmers receive payments for products on the spot. Again, all interviewed wholesalers in Baalbeck-Hermel and 8 of 10 interviewed wholesalers in Akkar confirm not paying farmers on the spot, but rather usually 1-2 weeks after delivery of the produce and after deducting their commission and any provided pre-financing.

When asked about payment mechanisms, 7 out of 10 wholesalers in Akkar compared to none in Baalbeck-Hermel state that they provide farmers with 'deposits' to pre-finance production, and then deduct that amount and the commission from the amount paid to the farmer following the delivery of produce. This information is consistent with answers provided to questions regarding availability of credits to finance production summarized in the previous section.

78% of surveyed farmers in the Baalbeck-Hermel and 43% in Akkar tend to sell to the same wholesalers every season. Trust in wholesalers seems to be higher in Akkar with 76% of farmers there stating they trust wholesalers, compared to 32% in Baalbeck-Hermel.

According to farmers' responses, relationships with wholesalers have remained largely unchanged in the last 12 months, with only 7.5% of farmers stating that their relationship has changed. A different picture emerges however from wholesalers' answers. In Akkar, 7 out of 10 wholesalers believe the relationship with farmers has deteriorated. According to wholesalers' answers, deteriorating relationships are largely due to the wholesalers' inability (or unwillingness) to provide cash advancements or increase them to a level needed by farmers to cover the rising input prices. In Baalbeck-Hermel on the other hand, 6 out of 10 wholesalers believe their relationship with farmers improved while the remaining 4 believe it has stayed the same. Wholesalers in Baalbeck-Hermel by majority cited a "common interest" and the "need to work together" as reasons for improving or stable relationships with producers.

▶ 2.11. Information on benefits of multi-span greenhouse technologies

The survey specifically aimed to collect information on farmers' views on modern multi-span greenhouses as a means to increase productivity and thus incomes on horticulture farms. Research suggests that using these modern multi-span greenhouses

can significantly increase productivity while also improving quality of crops and enabling farmers to extend the season further. Yet, as the survey confirms, the majority of farmers do not receive information on these benefits and are thus largely unaware of these.

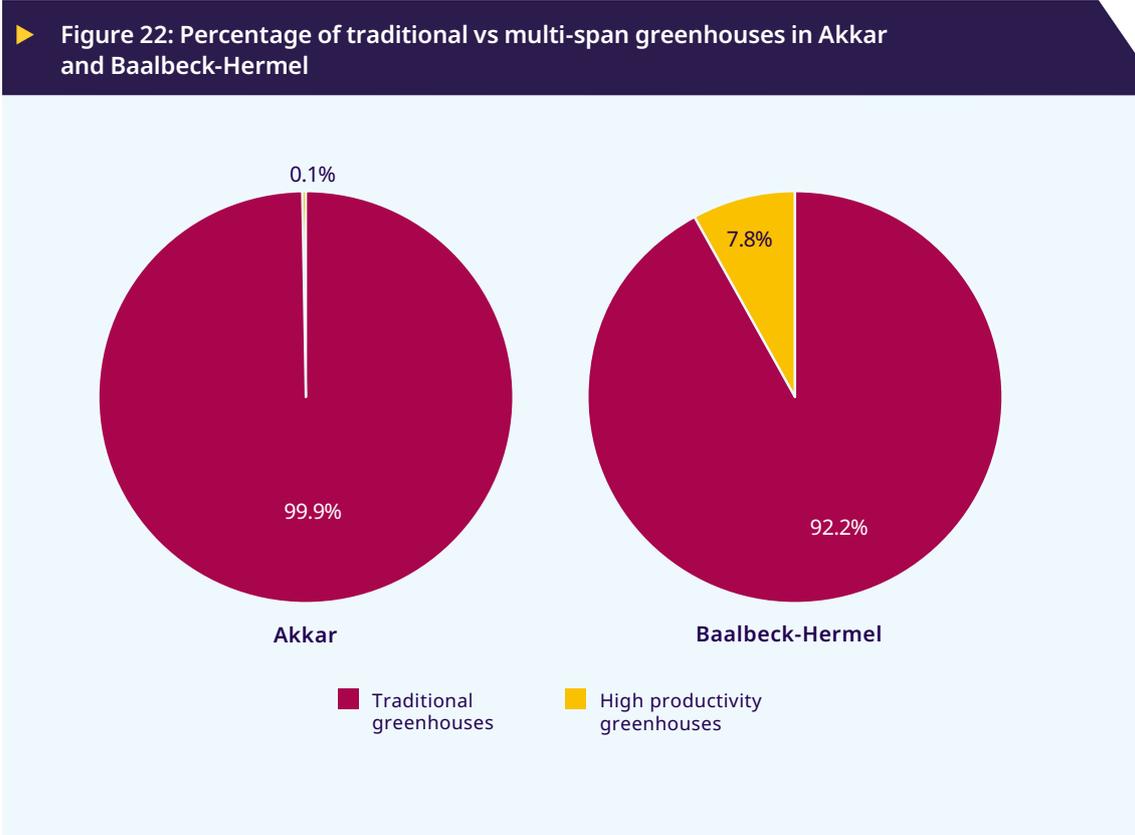
▶ **Picture 2: Traditional greenhouses (left) vs modern multi-span greenhouses**



@ILO/Nadja Nutz

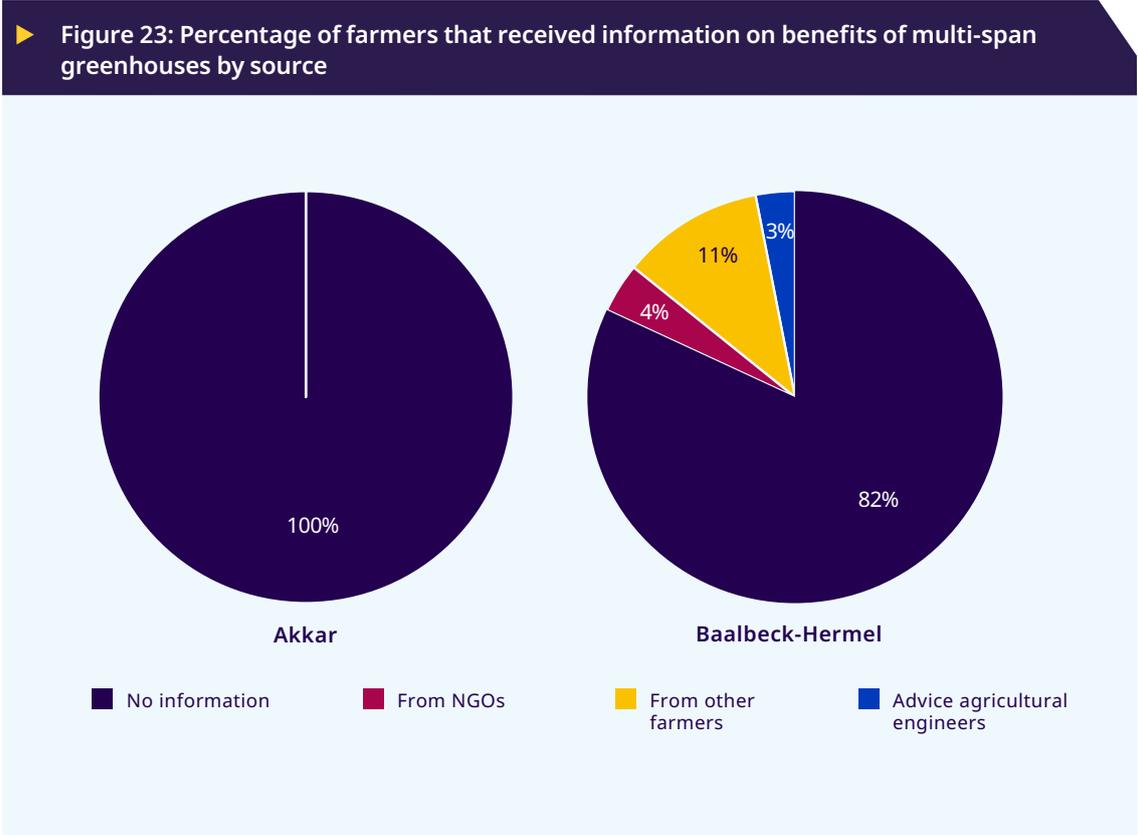
Unsurprisingly, the vast majority of farmers in our sample do not own a multi-span greenhouse but operate with traditional simple plastic-span greenhouses. Farmers in our sample on average have 20.1 traditional greenhouses and 0.4 modern greenhouses on each farm. Only 10 of the 200 farmers (5%) actually own a modern greenhouse. A total

number of 89 modern greenhouses were found on the 200 farmers, compared to 4,022 traditional ones. Almost all of the modern greenhouses (86) were found in the Baalbeck-Hermel, 50 of these on one single large farm. Unsurprisingly, no interviewed farmer has bought a modern greenhouses in the past 12 months.



Survey results confirm that **most farmers do not receive information on the benefits of modern greenhouses**. Only 4 out of 200 farmers (2%), all in Baalbeck-Hermel, have heard about trials on modern greenhouses. Only 18 farmers (9%), again all in Baalbeck-Hermel, have received information on the benefits of modern greenhouses. Information was received from other farmers (11), NGOs (4) or agricultural engineers (3), although it is not clear whether the latter belong to any institution. None of the farmers in our sample claims to have received information from extensions services, chambers of commerce, or greenhouse suppliers.

Whenever farmers received information, it usually pertained to basic information on the capacity and specifications of multi-span greenhouses. Only 2 farmers received information about higher yields in modern greenhouses, and only 1 farmer learned that pest occurrence is lower. None of the interviewed farmers had received information about potential productivity gains through modern greenhouses.



Consequently, when asked about the benefits of modern greenhouses, 33% of interviewed farmers in Baalbeck-Hermel and 13% in Akkar stated that they don't know about these. Other farmers were vaguely aware of some of the benefits, and stated that there is better ventilation and thus lower humidity in the multi-span greenhouses (56% in Akkar, 18% in Baalbeck-Hermel). Only 3% of surveyed farmers in Akkar and 5% in Baalbeck-Hermel were aware that plants in modern greenhouses are less prone to diseases and thus require fewer pesticide sprayings. No interviewed farmer mentioned productivity benefits, extended seasons or improved quality of the produce.

Farmers who owned a multi-span greenhouse were asked about their experience and perceived benefits of multi-span greenhouses. However, as only 10 of the 200 surveyed farmers actually own modern

multi-span greenhouses, responses on the perceived benefits of these greenhouses are not necessarily representative but nevertheless seem to confirm that modern greenhouse hold important benefits. 8 out of 10 farmers say they noticed yield benefits in the modern greenhouses. 6 farmers mentioned higher yield per m², averaging 28.3%, and 5 farmers mentioned higher share of Grade A vegetables, averaging 32%. 7 out of 10 farmers say they noticed fewer incidents of pests in the modern greenhouse.

Answers of the 10 farmers that own modern greenhouses also point to benefits in terms of reduced production costs, with 2 farmers saying production costs are moderately lower, and 8 farmers stating they are slightly lower. Estimates of percentage reductions of production costs range from 1% to 40% and average 14%.





Chapter

03

Conclusion

This survey of 200 farmers, 100 workers and 20 wholesalers aimed to expose trends, dynamics and regional differences in Lebanon's covered horticulture sector, and collect data on livelihoods of both farmers and workers operating in the sector. While the survey methodology had limitations due to constraints with regard to time and budget, results of farmers, workers and wholesalers surveys combined paint a rather clear picture of the situation of farmers and workers in Akkar and Baalbeck regions. Some of the results confirmed findings of previous analysis or anecdotal evidence. Other findings came as a surprise and allow for the formulation of hypotheses, but will require further research and analysis to confirm.

In general, combined results of the surveys point to three main findings:

- ▶ the ongoing multiple crises have impacted both farmers and workers severely
- ▶ regional difference exist between Akkar and Baalbeck-Hermel in terms of market dynamics and market access influence livelihoods and incomes of farms, and
- ▶ farmers claim to receive little support and guidance that would help them upgrade production practices and increase productivity.

These three main findings are summarized in the following.

▶ 3.1. The impact of the crises on farmers and workers

Unsurprisingly, the ongoing economic and financial crises has hit both farmers and their workers hard. The devaluation of the Lebanese Pound has led to rising prices for the mostly imported agriculture inputs, and resulted in rapidly increasing production costs. While the reasons for this trend are not entirely clear, farmers in Baalbeck-Hermel on average report higher production cost increases than farmers in Akkar. In Akkar, farmers' estimates of the increase range from 40% to 80% while in Baalbeck-Hermel, estimates range from 30% to 900%.

Consequently, average yields seem to have been affected more in Baalbeck-Hermel as farmers are unable to afford high-quality seeds, fertilizers and pesticides required to maintain productivity. However, as prices for produced vegetables rose, farmers in Baalbeck-Hermel were, on average, still able to increase revenues despite slightly decreasing yields. Perhaps surprisingly, farmers in Akkar by majority reported stable or even decreasing revenues despite largely stable yields.

One possible explanation for the vastly different dynamics in terms of production costs, yields and revenues may lie in

differences with regard to relationships and financial arrangements with wholesalers in the two regions. The survey results confirmed that many farmers in Akkar receive pre-financing from wholesalers, which enables them to obtain required inputs and keep yields stable. Consequently, farmers in Akkar do not estimate production costs to have risen quite as drastically as farmers in Baalbeck. However, when selling their harvest to wholesalers, these then deduct the 'deposit' from the due payment, resulting in lower perceived revenues for farmers in Akkar.

Farmers in Baalbeck-Hermel, on the other hand, are largely unable to draw on credits from wholesalers. They therefore struggle to pay for costly imported inputs, resulting in lower yields as farmers use less of the required inputs or switch to inferior ones. However, come harvest, farmers in Baalbeck-Hermel are able to sell their produce at market rate and benefit from the rising vegetable prices, which ultimately results in higher revenues for farmers in Baalbeck. While much in the survey data supports this hypothesis, more research is needed to confirm and understand the details of the differing dynamics.

With profits of farmers being squeezed to a minimum, the situation and livelihoods of their mostly Syrian workers has deteriorated rapidly as well. Only 14 out of the 100 interviewed workers report having received pay increases in the 12 months that preceded the survey. Consequently, at the time of research in March 2021, wages of workers ranged from 14,300 LBP per day for Syrian women in Baalbeck-Hermel to 35,000 LBP for Lebanese men in Akkar. While female workers seem to earn less than male workers, and Lebanese more than Syrians, these variations could well at least partially be explained by different nationalities and genders

traditionally being assigned different roles and tasks on horticulture farms.

With the rapid and severe devaluation of the Lebanese Pound, the value of wages of workers across all genders and nationalities is a fraction of what it used to be. It is safe to assume that, in the face of the severe inflation caused by the crisis, wages of workers are below what is needed to pay for the most basic necessities. Without social protection or health insurance, workers are left to struggle for their survival. The support provided by UNHCR to 91% of Syrian workers and 5% of Lebanese workers is seemingly the only support mechanism that workers can currently draw on.

► 3.2. Regional differences with regard to market dynamics and market access

The survey of farmers has uncovered important differences with regard to market and trade dynamics, market access, prices and production practices between Akkar and Baalbeck-Hermel. While more research is needed to fully understand and explain these differences, results of the survey allow for initial hypotheses regarding different market dynamics in both regions.

A striking difference seems to exist with regard to the availability and accessibility of credits to pre-finance required agricultural inputs. While the vast majority of farmers in Akkar state that credit is available from wholesalers (93%) and input suppliers (99%), 77% of farmers in Baalbeck-Hermel claim that credit is not available and 15% state that they do not know. Consequently, 82% of farmers in Akkar and only 5% in the Baalbeck-Hermel claim to use credit. As discussed in the previous section, whether or not farmers can access credits to finance required inputs may well influence perceived changes in production costs, yields and revenues.

Furthermore, farmers seem to be able to obtain higher prices in Baalbeck-Hermel, specifically for quality Grade A produce. Both farmers and wholesalers' answers point to a notable difference in the price premiums paid for Grade A produce with premiums

paid being much higher in Baalbeck-Hermel than in Akkar. Farmers also seem to be better able to consistently sell all their produce in Baalbeck-Hermel.

Both farmers and wholesalers' answers seem to point to differences in trade dynamics in both regions, with markets in Akkar seemingly more often suffering from oversupply of vegetables that depresses prices. This trend is likely a result of a variety of factors, including greenhouse farm sizes that tend to be bigger in Akkar, as well as differences in climate and seasonality that allows greenhouse farmers in Baalbeck to harvest and sell outside peak harvest times. Another possible explanation could lie in the proximity of Akkar to farmlands in Syria that lead to inflows of vegetables to markets in Akkar. Finally, greenhouse farms in Baalbeck also seem to be better connected to markets outside the region as well as export markets which may lead to upwards price pressures.

Differences in prices and access to markets in both regions might well be one reason behind differing production practices in both regions. As higher price premiums paid for quality produce in Baalbeck, farmers in that region have a much higher incentive to invest in high quality brand-name inputs and modern multi-span greenhouses that result in higher quality produce that can be sold at higher prices.

► 3.3. Support and guidance received by farmers

While regional differences exist, farmers in both Akkar and Baalbeck-Hermel, according to farmers' responses, receive surprisingly little information, guidance and support on markets, production practices and technology that would allow them to increase productivity. Only 7% of farmers (13% in Baalbeck-Hermel and 1% in Akkar) claim to receive some form of guidance or advice on the use of agri-chemical inputs. Only 10% of farmers (20% in Baalbeck-Hermel, 0% in Akkar) have received any guidance, advice or training on production practices in the last 12 months. Whenever farmers do receive advice or guidance, this often comes from NGOs. Very few farmers seem to receive advice from private input suppliers who sell relevant agricultural products, nor extension services whose mandate it would be to provide such information.

Survey results also confirmed the suspicion that farmers across regions receive little specific, evidenced information on the benefits of modern multi-span greenhouses, and consequently have very little knowledge of these benefits. Only 18 farmers (9%), all in Baalbeck-Hermel, have received information on the benefits of modern greenhouses, either from other farmers, NGOs or agricultural engineers. Even if farmers received information, it usually pertained to basic information on specifications of multi-span greenhouses, not on benefits in terms

of productivity, yield, quality of produce, pest resistance or extended agricultural seasons.

While it may seem at first glance that information and guidance on high productivity production practices and technology are of secondary importance in times of a severe crisis that leaves farmers struggling for their survival, it could well be argued that it is in fact more important than ever. As the results of the survey confirmed, profits of covered horticulture farms have been severely reduced as a result of the crisis. Profits of most farmers are down to a bare minimum, threatening the livelihoods of both farmers and their workers. Investments to modernize farms and increase productivity will in the long run be the only way to increase profits and thus ultimately incomes and wages of farmers and workers.

Facilitating investments of farmers in these technologies should thus be a priority. This will undoubtedly require either financial assistance or some form of credit schemes that enables farmers to pay for acquired technology. But it will also require better access to relevant information and advice on the exact benefits of multi-span greenhouses without which farmers will be unable to make informed decisions about the benefits of such investments that are crucial to maintaining livelihoods and jobs of both farmers and their workers in the sector.

► 3.4. The ILO's next steps under PROSPECTS

Conclusions from this survey confirm and complement findings from the market systems analysis in horticulture that was conducted by the Springfield Centre on behalf of ILO in 2020 and identified low productivity as the main bottleneck for inclusive growth and job creation in the sector. However, since the completion of the analysis in early 2020,

the crises have further exacerbated existing problems and led to a decrease in profits of horticulture farms that in turn threatens incomes and jobs of both farmers and workers. In this situation, horticulture farmers and workers require immediate and direct assistance to weather the crises and sustain their livelihoods.

The ILO has thus joined forces with other organizations to provide vouchers for agricultural inputs to farmers that would allow them to keep agricultural operations going. Nevertheless, the underlying root causes of low profitability and incomes identified in the 2020 analysis remain the same and supporting horticulture farmers in raising productivity will in the long run be the only way to increase profits of horticulture farms and ensure stable incomes and jobs for farmers and workers.

Under the PROSPECTS Programme, ILO is implementing a comprehensive strategy to promote decent work in the agricultural sector for both Lebanese host communities and Syrian refugees, including through improved working conditions and better social protection for both groups. To this end, a variety of more detailed studies have been conducted or are underway to shed more light on social protection frameworks, working conditions and occupational safety and health (OSH) in Lebanon's agriculture sector. These studies and subsequent consultations with stakeholders at the local and national level will form the basis for actions in these areas under PROSPECTS.

ILO PROSPECTS is also supporting MSMEs in the agriculture and agri-food sector more directly, through trainings on business continuity and financial support to help these enterprises adapt their strategies and business models in the face of the crises. Work under this component further confirmed findings of this survey and showed that these enterprises are constrained by a lack of access to information, support and financial assistance primarily caused by an absence of conducive framework conditions and a lack of public support schemes.

Under its AIMS component, ILO's PROSPECTS Programme will continue to focus specifically on tackling the underlying root causes of low productivity in the covered horticulture sector. Efficient and correct use of high-quality seeds, fertilizers and pesticides plays a key role in this regard. Survey results and consultations with farmers and business owners in the agricultural sector have confirmed that more

needs to be done to provide farmers with information and guidance on production techniques and the correct use of agricultural inputs for increased productivity.

Upgrading existing greenhouse technology is equally of crucial importance. Trials conducted under ILO's AIMS component with farmers under real-live conditions in different regions of Akkar and Baalbeck-Hermel have confirmed that productivity can be increased substantially by switching to multi-span greenhouses. Preliminary results from trials suggest average increases in pure productivity (yield per m²) of between 30% and 50%. Furthermore, the quality of crops produced in multi-span greenhouses is much improved, allowing farmers to gain higher prices for these crops. Multi-span greenhouses also better protect crops against pests and thus require fewer pesticide sprays, and make it possible to extend the agricultural season, allowing farmers to harvest and sell outside peak harvest times for higher prices. These benefits combined allow farmers to increase revenues and profits substantially and come in addition to other benefits such as improved working conditions for greenhouse workers and environmental benefits.

Yet, as the survey results confirm, most covered horticulture farmers are unaware of these benefits and the potential to increase productivity and ultimately revenues through upgrading to multi-span greenhouses. In a next step, actions under ILO's AIMS component will thus focus on working with local stakeholders to launch information campaigns in an effort to better inform farmers about the specific benefits that modern multi-span greenhouses can bring to them. Unfortunately, multi-span greenhouses also demand an important up-front investment that few farmers are able to handle, particularly at a time of crisis when credits for important investments are unavailable to farmers. Actions to better inform farmers will therefore have to go hand-in-hand with measures to enhance or facilitate farmers' access to credit and financial support, so as to enable them to invest in multi-span greenhouses.





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