



International
Labour
Organization

PROSPECTS

▶ **Preliminary
Assessment of
Occupational Safety
and Health in the
Agriculture Sector in
Lebanon**



This is an open access work distributed under the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>). Users can reuse, share, adapt and build upon the original work, as detailed in the License. The ILO must be clearly credited as the owner of the original work. The use of the emblem of the ILO is not permitted in connection with users' work.

Attribution – The work must be cited as follows: *Preliminary assessment of occupational safety and health in the agriculture sector in Lebanon*, Geneva: International Labour Office, 2023

Translations – In case of a translation of this work, the following disclaimer must be added along with the attribution: *This translation was not created by the International Labour Organization (ILO) and should not be considered an official ILO translation. The ILO is not responsible for the content or accuracy of this translation.*

Adaptations – In case of an adaptation of this work, the following disclaimer must be added along with the attribution: *This is an adaptation of an original work by the International Labour Organization (ILO). Responsibility for the views and opinions expressed in the adaptation rests solely with the author or authors of the adaptation and are not endorsed by the ILO.*

This CC license does not apply to non-ILO copyright materials included in this publication. If the material is attributed to a third party, the user of such material is solely responsible for clearing the rights with the right holder.

Any dispute arising under this license that cannot be settled amicably shall be referred to arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of such a dispute.

All queries on rights and licensing should be addressed to the ILO Publishing Unit (Rights and Licensing), 1211 Geneva 22, Switzerland, or by email to rights@ilo.org.

ISBN: 9789220394779 (web PDF)

The designations employed in ILO publications, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the ILO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers.

The responsibility for opinions expressed in signed articles, studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the ILO of the opinions expressed in them.

Reference to names of firms and commercial products and processes does not imply their endorsement by the ILO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

Information on ILO publications and digital products can be found at: www.ilo.org/publns.

► Acknowledgement

The “Preliminary Assessment of Occupational Safety and Health in The Agriculture Sector in Lebanon” was conducted by a team from the American University of Beirut, namely Iman Nuwayhid, Team Leader, Shady Hamade who provided technical advice, and Lamisse Khairallah who managed the fieldwork and interviews, supported by a team of fieldworkers (Hind Farah, Haydar Sleiman, Mohamed Dbaiibo, Haitham Al Khawand).

The assessment was conducted as part of the PROSPECTS programme, an initiative led by the Government of the Netherlands. PROSPECTS brings together different UN agencies including the International Finance Corporation (IFC), the International Labour Organization (ILO), the UN Refugee Agency (UNHCR), and UNICEF. The primary aim of this programme is to develop collaborative and innovative approaches to address inclusive job creation, education, and protection in context of forced displacement – supporting both forcibly displaced individuals and host community members. The PROSPECTS programme operates in eight countries across the Middle East, North Africa (MENA), and the Horn of Africa

In Lebanon, the ILO’s focus in the Partnership is on enhancing resilience of Lebanon’s crisis-hit 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, strengthening social protection schemes, and promoting micro, small and medium sized enterprises (MSMEs) and sectors with potential for decent job creation. Amongst these sectors is the agriculture sector where ILO’s efforts concentrate on enhancing productivity using its Approach to Inclusive Market Systems (AIMS), promoting access to finance, creating a safe and healthy working environment, and safeguarding workers’ rights.

This assessment provides a comprehensive overview of the Occupational Safety and Health (OSH) conditions in selected farms located in the Akkar and Beqaa regions of Lebanon. It encompasses a preliminary survey of OSH hazards and risks, and an analysis of farmers' and agricultural workers' perception and knowledge regarding OSH practices. It also identifies areas of improvement and proposes targeted interventions to enhance workplace safety and protect the well-being of farmers and agricultural workers. Additionally, the assessment maps out public and private entities and organizations that are engaged or interested in providing OSH training and building capacity within the agriculture sector.

The assessment was coordinated and backstopped by Nassim Njeim, former National Officer within the ILO PROSPECTS programme in Lebanon, under the technical guidance of Amin Al Wreidat, the Labour Inspection and OSH specialist at the ILO regional office, and overall guidance by Shaza Al Jondi, the ILO Regional Chief Technical Advisor for PROSPECTS in the Arab States.

The ILO team wishes to thank all constituents and partners whose names are included in the list of interviews for their inputs and contributions to this assessment.

► ACRONYMS

Acronym	Details
ACTED	Agency for Technical Cooperation and Development
AREC	Advance Research, Engage Communities (also known as AUB farm)
AUB	American University of Beirut
AVSI	People for Development (Associazione Volontari per il Servizio Internazionale)
CCIA	Chamber of Commerce, Industry, and Agriculture
CWB	Cooperation Without Borders
EIIP	Employment Intensive and Investment Programmes
ESCWA	<i>Economic and Social Commission for Western Asia (UN agency)</i>
ESDU	Environment and Sustainable Development Unit (at AUB/FAFS)
FAFS	Faculty of Agricultural and Food Sciences (at AUB)
FAO	Food and Agriculture Organization
FFT	Food for Training
FHS	Faculty of Health Sciences (at AUB)
GDP	Gross Domestic Product
IDRC	International Development Research Center
IFC	International Finance Corporation
ILO	International Labour Organization
INGO	International Non-Governmental Organization
ITS	Informal Tent Settlements
LARI	Lebanese Agriculture Research Institute
LMIC	Low and Middle Income Countries
LOST	Lebanese Organization for Studies and Training
MENA	Middle East and North Africa
MOA	Ministry of Agriculture
MOL	Ministry of Labour
NAS	National Agricultural Strategy
NGO	Non-Governmental Organization
NSSF	National Social Security Fund
OSH	Occupational Safety and Health
PHC	Primary Healthcare Centers
PPE	Personal Protective Equipment
RMF	Rene Mouawad Foundation
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WHO	World Health Organization

▶ Table of Contents

▶ EXECUTIVE SUMMARY	8
▶ 1. INTRODUCTION	11
▶ 2. BACKGROUND	12
▶ Economy and agriculture sector in Lebanon	12
▶ Lebanon National Agriculture Strategy (NAS) 2020 - 20258	14
▶ Occupational safety and health (OSH) in Lebanon	14
▶ OSH hazards in agriculture	16
▶ OSH hazards in agriculture and related diseases and injuries in Lebanon	17
OSH hazards among working children in the agriculture sector	17
OSH hazards and living conditions of adult agricultural workers	17
Exposure to agrochemicals	18
Exposure to other OSH hazards	18
▶ 3. OBJECTIVES	19
▶ 4. METHODS	20
▶ List of interviewees (demand and supply sides)	21
▶ Selection of farmers and workers	23
▶ Data collection	23
Farmers	23
Farm inspection	23
Cooperatives	23
Workers	23
Supply side	24
▶ Ethical considerations	24
▶ Data entry and analysis	24
▶ Study limitations	25
▶ 5. FINDINGS	26
▶ Who are the farmers? What farms?	26
▶ Who are the workers?	29
▶ Activities at the time of visit to the farm	31
▶ Observed and reported OSH hazards in farms	33
▶ Observed and reported preventive and protective measures on farms	34
Facilities	34
General safety measures	35
Personal Protective Equipment	35

Tractors	36
Pesticides	36
Sun protection	37
Fruit picking.....	37
▶ Knowledge of OSH hazards and reported work-related diseases and injuries.....	37
Workers' reporting.....	37
Farmers' reporting.....	40
▶ Prior OSH training	40
Workers' reporting.....	40
Farmers' reporting.....	41
▶ Availability/ Provision of PPE and OSH services	41
Workers' and farmers' reporting.....	41
Insurance and healthcare.....	41
▶ Interest in OSH training	42
Interest and priority topics.....	42
Mode of training.....	43
▶ Who is who in OSH training and capacity building?.....	44
Which entities are interested in the agriculture sector?	44
Who is engaged in training activities?	45
Level of collaboration between entities	45
Who is engaged in OSH training?	46
How does OSH intersect with different programs and initiatives?	46
▶ How to secure a sustainable OSH training and capacity building program in agriculture? ..	47
▶ 6. DISCUSSION.....	49
▶ OSH situation	49
▶ OSH training	51
▶ 7. RECOMMENDATIONS	53
▶ Ecosystem needed for an effective OSH program in agriculture	53
Laws and policies	55
Capacity building/ training in OSH-Agriculture.....	55
Surveillance, surveys, and research.....	57
▶ REFERENCES.....	58
▶ APPENDIX I	62
▶ APPENDIX II	74

► List of Tables

► Table 1. Distribution of production, produce, and exports in Lebanon	13
► Table 2. OSH hazards in agriculture (Cause, Effect, Prevention)	16
► Table 3. List of entities (supply side) interviewed.	21
► Table 4. List of farmers, cooperatives, and agricultural workers (demand side) interviewed	22
► Table 5. Characteristics of the 37 interviewed farmers	26
► Table 6. Type and size of the 37 farms	28
► Table 7. Information about workers on the 37 farms	29
► Table 8. Characteristics of the 60 interviewed workers by sex.	30
► Table 9. Main agricultural activities reported by interviewed workers	32
► Table 10. Distribution of farms by region, type, and size	33
► Table 11. Availability of facilities on farms.	35
► Table 12. Priority OSH issues for training reported by workers and farmers	43

► List of Figures

► Figure 1. Different stakeholders engaged in the agricultural sector	20
► Figure 2. Reported work hazards in 15 interviews (60 workers) and frequency each is reported . .	38
► Figure 3. Reported work-related injuries and health problems (19 respondents)	39
► Figure 4. Top OSH hazards reported by 19 farmers and frequency each is reported	40
► Figure 5. Extent of engagement in the agricultural sector by sectors and agencies/ organizations.	44
► Figure 6. Flow of funds between entities.	45
► Figure 7. Intersection of OSH with different thematic and population programs	46



EXECUTIVE SUMMARY

The agriculture sector is among the most dangerous economic sectors in terms of hazards and accidents. The risk of exposure to occupational safety and health (OSH) hazards is high, be it physical, chemical, biological, safety, ergonomics, physiological, or mental. The adoption of safe OSH practices in agriculture and other sectors aims to reduce injuries and illnesses, improve productivity, carry good morale and a healthier workforce, reduce financial costs of insurance, and provide longer life for equipment and machinery. Yet, OSH remains a forgotten field globally, especially in low- and middle-income countries, such as Lebanon. In spite of Lebanon's ratification of many ILO conventions and promulgation of a number of decrees, OSH remains marginalized and of low priority in Lebanon. Lebanon did not ratify ILO Convention 155 (1981) on Occupational Safety and Health, ILO Convention 161 (1985) on Occupational Health Services, and ILO Convention 187 (2006) on Promotional Framework for Occupational Safety and Health. Lebanon as well did not ratify ILO conventions related to OSH in the agriculture sector: ILO Convention 129 (1969) on Labour Inspection (Agriculture) and ILO Convention 184 (2001) on Safety and Health in Agriculture. Furthermore, the agriculture sector is excluded from the Lebanese Labor Law.

Several studies in Lebanon have reported the absence of decent working conditions for agricultural workers, which is further complicated by the fact that they are mostly migrants and refugees and live in suboptimal environmental conditions. Many Syrian refugee children have to work to support their families and most of them work in agriculture. Studies in Lebanon have also reported exposure of farmers and agricultural workers to pesticides and several other OSH hazards and minimal use of personal protective equipment.

This study aims to give an overview of OSH hazards in agriculture in Lebanon, document the perception and knowledge of OSH among farmers and workers, map OSH training and capacity building activities in agriculture in Lebanon, gauge interest in OSH training in agriculture, and share recommendations for improved OSH practices and a potentially sustainable OSH training and capacity building program in Lebanon towards improvement of the OSH situation in agriculture in Lebanon.

The study was limited to crop production in open fields, orchards, and greenhouses at the two largest agricultural regions in Lebanon- Akkar and Beqaa. Interviews were conducted with the different stakeholders engaged in the agricultural sector. On the demand side, large, medium, and small-scale farmers, heads of agriculture cooperatives, and agricultural workers were interviewed. On the supply side, key informants were interviewed from the public sector (ministries and governmental agencies),

private sector (for-profit input suppliers), trade unions, international and local NGOs, and UN agencies. In addition, a number of farms were inspected for OSH conditions. Farms were visited and individuals from all entities were interviewed between August 4 and October 4, 2021. A total of 41 farmers, 5 heads of cooperatives, 60 workers, and 22 key informants from the supply entities were interviewed. In addition, 20 farms were inspected. All farmers were Lebanese and 97% males, while 93% of the workers were Syrian and 66% females.

The current study revealed that the OSH situation in agricultural farms, whether open fields, greenhouses, or orchards, does not meet the code of practice for safety and health in agriculture published by the ILO in 2010.¹ Both male and female workers are exposed to many OSH hazards with minimal protective measures. Those who work outdoors, especially in open fields, are exposed to the sun during the summer season and frequent incidents of fainting under the sun were reported. During the winter season, workers are exposed to cold/rain/humidity and female workers described that their clothes will be drenched with water and their feet stuck in the mud. Injury incidents related to driving tractors, operating machines, and using sharp tools were reported, mostly among men. Exposure to pesticides was significant. Only men mix and apply pesticides and usually without wearing respirators, goggles, gloves, protective clothing, or boots. Some spoke of workers who mix pesticides with their bare hands and arms. A few pesticide applicators reported that occasionally their heads and clothes will be dripping of pesticides especially if they are spraying above their height. Applicators use regular clothes for work which are washed at home, suggesting a high probability that members of the family (adults and children) are indirectly exposed to pesticides. Female workers do not mix or apply pesticides but they have reported potential exposure since they re-enter the farms (orchards, fields, or greenhouses) within less than 24 hours of pesticide application. Back and joint pain is almost a constant for all workers, especially the women who work in awkward postures (squatting, bending, kneeling, or stretching) picking vegetables in open fields and greenhouses for many hours a day. Workers, especially women, spoke of stress at work. Women reported a non-stop daily work schedule that includes an early morning shift (as early as 3:00 or 4:00 am in the winter), an evening shift, and chores at home in between the shifts and in the evening. Biological hazards, such as exposure to bites, stings, and plant allergens, were mentioned by workers but no worker reported exposure to noise or vibration, although these hazards are connected to the use of tractors and other machinery and tools operated by men.

Workers, as well as farmers, are not covered by health or accident insurance policies. Although UNHCR provides hospitalization coverage to Syrian refugees, workers reported out-of-pocket expenses when visiting pharmacies, primary health centers (PHC), and hospitals for health care. Furthermore, there is a restricted legal coverage under the National Social Security Fund (NSSF) in relation to the agriculture sector (farmers and workers) as well as type of work (seasonal, temporary). Workers have no written contracts and are hired on daily basis and paid per hour. Tasks and pay in the agriculture sector are gendered. Furthermore, most Syrian agriculture workers are hired through a *Shaweesh* who oversees all activities in informal tent settlements where Syrian refugees live.

Interestingly, both workers and farmers acknowledged the importance of OSH and expressed interest in receiving relevant and hands-on training. Similarly, all entities from the public sector, private sector, INGO, NGO, UN, and other believe that OSH is critical and needed in the agriculture sector in Lebanon. They all agreed that OSH is not only good for the workers but also for the business. Almost all organizations and agencies offer some kind of training or capacity building in different capacities and to different audiences. A few have their own training/curriculum development unit, others have internal capacity to train and they may conduct training alone or in collaboration with other entities, while the rest recruit specialized consultants/trainers for the purpose of a specific training program/activity. Input suppliers train their clients in relation to their products or programs. The study showed that the public sector, UN agencies, INGOs, and NGOs tend to work with each other on several programs and projects that may include training and capacity building related to the agriculture sector, including OSH. However, except for the ILO whose mandate is to promote decent work, OSH training in agriculture is not core to the activities of any of these organizations and entities. Almost all of them reported that attention to OSH (training or otherwise) is absent, weak, minimal, not enough, or not effective in the agriculture sector

In spite of the above, all entities expressed interest in developing their capacity and offering training in OSH. The opportunity exists since OSH intersects with the different thematic and population programs offered by the various entities, which can be grouped into three categories. Category I are entities where agriculture is at the core of their mission. Category II are entities whose thematic programs (e.g., community development, environmental protection, food security, gender, life skills, livelihood, protection, or decent work) could include OSH. Category III are entities whose interest in specific populations (e.g., refugees, vulnerable populations, women, child labor, and youth) allows ample space to include OSH.

Unfortunately, respondents (farmers, workers, supply entities) reported several challenges that may prevent the initiation of a sustainable OSH program (training and otherwise) in the agriculture sector in Lebanon. These challenges include the multiple political and financial crises in Lebanon, structural mismanagement and lack of trust between entities, sectarian and nationality cleavages, weak enforcement of laws and policies if and when they exist, and the need for generous funds and human resources. Hence, for an effective and sustainable OSH program in agriculture in Lebanon to succeed, this study recommends the amendment of the Lebanese Labor and Social Security Laws, developing a national OSH policy with a strategy that is sensitive to the social and political tensions and committed to transparency and accountability, the creation of a nurturing ecosystem by adopting a multi-stakeholder approach, expanding the mandate of the OSH unit at the Ministry of Labor to include the agriculture sector and strengthening it, establishing a unit at the Ministry of Agriculture for training in and raising awareness about OSH in agriculture, and promoting OSH in all economic sectors. The study shares proposals for short- and long-term activities at three levels: (1a) Exerting concentrated efforts to ratify ILO conventions relevant to OSH in general and OSH in agriculture, (1b) Supporting ongoing efforts to amend the Lebanese Labor Law and expand the NSSF coverage to include the agriculture sector, (2) Developing a comprehensive capacity building programme on OSH that includes a training of trainers for relevant institutions and training of different target populations, and (3) Building surveillance and conducting OSH surveys and research, to provide scientific evidence and accurate data on the OSH situation in Lebanon.



1. INTRODUCTION

Dismissing occupational safety and health (OSH) as a luxury, a farmer in Akkar equated his daily life struggles to eating a quince (سفرجل), “every bite comes with a sting” referring to a local proverb. In contrast, another farmer, an eco-friendly university-educated and well-to-do farmer in the Beqaa, insisted that “OSH should supersede economics and finance”. In between these two extremes identified in this study lies a spectrum of perceptions and knowledge about OSH in the agriculture sector in Lebanon and a variety of ongoing and potential OSH training activities that have been reported. Engagement in OSH activities differs between the public sector, international Non-Governmental Organizations (INGOs), national Non-Governmental Organizations (NGOs), United Nations (UN) agencies, and the private sector. However, the overall OSH picture in agriculture in Lebanon is bleak, especially under the pressure of concurrent political, economic, and financial crises in addition to the Syrian refugee crisis. Issues like OSH, in spite of their importance, tend to be neglected amidst a plethora of competing priorities in the country. Yet, there is an expressed interest in the topic of OSH and a sincere willingness to engage.

This report presents a preliminary survey of OSH hazards in selected farms in the Akkar and Beqaa regions of Lebanon, an overview of farmers’ and agricultural workers’ perception and knowledge of OSH in their work, and a mapping of public and private entities and organizations engaged or willing to engage in OSH training and capacity building in the agriculture sector.

This project is part of the partnership initiative titled ‘PROSPECTS’ (Partnership for improving Prospects for host communities and forcibly displaced persons), launched by the Government of the Netherlands, to address the considerable challenges facing forcibly displaced persons and host communities. This initiative 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. Within the framework of the PROSPECTS programme in Lebanon, the ultimate objective of ILO’s intervention is to promote access for Syrian refugees and vulnerable host communities to decent work opportunities (rights to work); and to ensure that while working, the workers from these communities have safe working conditions and social protection (rights at work), in line with International Labour Standards. In this context, the ILO, along with the partners, has identified agriculture as one of the sectors with potential for growth, retention of jobs, and possibly creation of new ones; bearing in mind that agriculture is a sector where refugees are legally allowed to work. In light of the lack of appropriate legislation and the current crises that Lebanon faces, the agriculture sector requires support to promote decent working conditions and generate employment opportunities for refugees.



2. BACKGROUND

Lebanon is an Eastern Mediterranean Arab country surrounded by Syria from the north and east. It is 10,452 km² in surface area with a narrow coastal strip, a west mountain range (up to 3,088 m above sea level), the Beqaa valley (at 1000 m above sea level), and an east mountain range shared with Syria. The country entails a climate variation from humid to semi-arid, with rich soil and relatively abundant water resources.² Approximately 64 percent of the country (6,580 km²) have been declared by the World Bank in 2018 as agricultural land³ of which 2300 km² were cultivated in 2010.⁴

Lebanon is inhabited by more than 6 million people, consisting of an estimated 4.5 million Lebanese, 1.5 million Syrian (of whom around 1 million are registered with UNHCR), and close to 300,000 Palestinian and other refugees in addition to migrant workers of different nationalities.⁵ The fact that the only population census conducted in Lebanon dates back to 1932 under the French mandate and that the UNHCR stopped registering refugees since 2015⁶ explains the inconsistency and uncertainty in the estimates for the residents in Lebanon.

► **Economy and agriculture sector in Lebanon**




Historically, Lebanon's economy thrived on the service industry, banking system, and tourism. The industrial and agricultural sectors were a distant third and fourth, respectively. The service and banking sectors accounted for more than 86% of the Gross Domestic Product (GDP) in 2020 while agriculture accounted for only 2.5%.⁷ Since 2015, the country has been facing a severe economic crisis that led to increased inflation rates, business closures, a decrease in livelihood opportunities with lower incomes and higher unemployment, and a lower access to basic services.⁸ In the past two years, political uncertainty, the COVID-19 pandemic, the August 4 2020 Beirut Blast, and a huge devaluation in the national currency exerted further pressure on the local economy resulting in nationwide hyperinflation.⁹ The Lebanese Pound (LL) to US\$ exchange rate dropped from 1,500 LL per one US\$ before October 2019 to more than 20,000 LL in November 2021. Consequently, the agriculture sector in Lebanon has been severely affected since farmers are facing high input costs and low output prices. In parallel, these crises have highlighted the importance of the sector for food security; more people are investing in agriculture and reviving their dormant lands and substitutions for food import are being considered.

In spite of its relatively low contribution to the GDP, the agricultural sector employs a sizeable proportion of the labor force. The overall employment of agriculture and the agrifood industry is estimated at 24% of total employment in Lebanon. More specifically, the agricultural crop production contributes to 12% of the full-time labor force. However, those are among the poorest of workers working in farms where 40% of farmers live below poverty line, mostly residing in the Beqaa Valley.^{8,10} Workers below the poverty line might have increased with the crises since 2019.

Syrian workers comprise the majority of waged agricultural laborers in Lebanon. At least half of those are women.¹¹ Even prior to the onset of the Syrian crisis in 2011, the agricultural sector in Lebanon heavily depended on migrant and seasonal Syrian workers. With the influx of Syrian refugees to Lebanon since 2011, more Syrians, especially women and children, joined the agricultural labor force. The employment relationship between farmers or farm owners and Syrian workers is informal. Basically, there are no written work contracts that govern that relationship. It is estimated that 17% of Syrian refugees live in informal tent settlements (ITS) where they rent space and access to facilities and basic services.¹² A *Shaweesh*, mostly a man, serves as the gatekeeper or go-between for the ITS, facilitating work opportunities and providing transportation to the field. The *shaweesh* negotiates the daily rate of the Syrian workers depending on gender, age, and task, provides the requested labor, collects the pay, and pay the workers individually after keeping a generous commission. Some Syrian refugees reside on the land of the farmer for no or minimal charge on condition they work on the farm itself for a negotiated daily rate. Such labor arrangements (be it direct or through *shaweesh*) make Syrian workers vulnerable exposing them to exploitation with limited basic rights and absence of health or accident insurance or coverage.¹³ The abundant availability of low-wage labor, provided by Syrian labor supply, encourages Lebanese farmers to rely on human capital in agricultural work, rather than investing in heavy machinery.¹¹

Agricultural products in Lebanon can be grossly grouped into six categories¹⁴: Vegetables and edible vegetables; Fruits, edible fruits and nuts; Live animal and animal products; Unmanufactured tobacco; Cereals including cereal seeds; and Coffee, tea, matte and spices. This study is focused on crop production in open fields, orchards, and greenhouses, which are the most adopted farming practices in Lebanese agriculture. Table 1 summarizes the latest statistics on vegetables, fruits, and cereals production in Lebanon.

Table 1. Distribution of production, produce, and exports in Lebanon¹⁴

Description	 Vegetables	 Fruits and Nuts	 Cereals
Total Production in 2018	1,349,443 tons	816,800 tons	170,737 tons
Top Produce in 2018	Potatoes, Tomatoes, Cucumbers, and gherkins	Oranges, Apples, Lemons, and Limes	Wheat, Barley, Maize
Total Exports in 2019	USD 41.1 million	USD 77.8 million	USD 18.1 million
Top Exports in 2019	Dried leguminous vegetables	Grapes, Bananas, Apples	Flour, powder, flakes, rice, wheat, cereal oats

The Beqaa plain followed by Akkar are the two largest regions for crop production and farming; more than 40% of the Beqaa land is cultivated.¹⁵ Both regions are among the poorest in Lebanon hosting a significant share of vulnerable Lebanese and Syrian refugees (due to geographic proximity to Syria).¹⁶ In the Beqaa, 80% of households live under the survival minimum expenditure basket and the region has among the lowest employment-to-population ratios.¹⁷ In the North, more than 36% are poor with areas of Tripoli and Akkar being some of the most vulnerable localities in Lebanon.¹⁸

► Lebanon National Agriculture Strategy (NAS) 2020 - 2025⁸

In addition to the political and economic crises mentioned above, the agricultural sector in Lebanon suffers from additional challenges that are causing continuous decline in the sector productivity. These include lack of access to information, lack of proper use of resources and water management, shortages in fuel, lack of innovative techniques, weak marketing system, inefficient supply chains and networks, and poor organization of farmers into cooperatives and associations^{19,20}. The result is heavy dependence on imported goods and commodities.^{21,22} Moreover, extreme weather events as well as long-term climate risks affect environmental stability and food security, decrease agricultural capacity, thus threatening the livelihoods of people especially the poor rural communities that are the least resilient.²³ The Lebanese agricultural sector, if developed and maintained, could be one of the most productive in the region.²⁴ These challenges and opportunities underscored the need for a national strategy to support and grow the agriculture sector in Lebanon.

With the support of the Food and Agriculture Organization (FAO), the Lebanese Ministry of Agriculture (MOA) engaged in a participatory exercise to develop a national agriculture strategy for the years 2020-2025. The strategy serves as a guiding document to the MOA and “all stakeholders involved in the agriculture, water and natural resources, food and nutrition security sector” (page 1). Its “long-term vision is to make the agrifood system a main contributor to the achievement of food security and a key driver of resilience and transformation of the Lebanese economy into a productive economy”. It is composed of “five strategic areas (pillars):

1. Restoring the livelihoods and productive capacities of farmers and producers
2. Increasing agricultural production and productivity
3. Enhancing efficiency and competitiveness of agrifood value chains
4. Improving climate change adaptation and sustainable management of agrifood systems and natural resources
5. Strengthening the enabling institutional environment”

Of relevance to this study on OSH in the agriculture sector, NAS 2020-2025 commits to the following: 1) the adoption of good agricultural practices (programme 2.2), which aims at reducing the use of pesticides and fertilizers; 2) the adoption of innovative and modern technologies (programme 2.3); 3) the improvement of the quality and safety of agricultural and food products (programme 2.4); and 4) the development of a social protection systems for vulnerable farmers and farm workers (programme 5.5), which aims at a 50% reduction in child labor in the agrifood sector. Although, OSH, workers’ health, or work hazards were not mentioned per se, promoting OSH in the agriculture is paramount to the success of these and other programmes under MOA’s new NAS.

► Occupational safety and health (OSH) in Lebanon

Providing and securing good OSH conditions is a prerequisite for sustainable business that is physically, socially, mentally, and economically healthy for workers.²⁵ Yet, OSH remains a marginalized and forgotten field globally, especially in low and middle income countries (LMIC).^{26,27} It is reported that an estimated 270 million workers, employees, and personnel around the world fall victim to different occupational risks and fatal and non-fatal injuries.²⁸ At a global level, the International Labour Organization (ILO), promotes OSH in all economic sectors by providing technical support to strengthen the national OSH systems, including by conducting and supporting research to document situation and practices, providing short-

term and advanced training, and promoting the ratification and implementation of international OSH conventions. The World Health Organization (WHO), has also published recommendations on optimal OSH services in the formal and informal sectors.

Over the years, Lebanon has adopted many ILO Conventions, Arab Labor Conventions, and national laws and decrees to provide workers and employees with safe and healthy workplaces and work conditions. These conventions, laws, and decrees cover different economic sectors and all age groups, and promote decent work and equality between men and women. Of relevance to OSH are ILO Convention 81 (1947) on Labor Inspection, ILO Convention 148 (1977) on Working Environment (Air Pollution, Noise and Vibration), ILO Convention 174 (1993) on Prevention of Major Industrial Accidents, and ILO Convention 182 (2001) on Worst Forms of Child Labor (see table AI-1 under Appendix I for complete list of ratified conventions).

In spite of Lebanon's ratification of many ILO conventions and promulgation of a number of decrees, OSH remains marginalized and of low priority in Lebanon. Lebanon did not ratify the following main conventions related to OSH in general: ILO Convention 102 (1952) on Social Security, ILO Convention 121 (1964, amended 1980) on Employment Injury Benefits, ILO Convention 155 (1981) on Occupational Safety and Health, ILO Convention 161 (1985) on Occupational Health Services, and ILO Convention 187 (2006) on Promotional Framework for Occupational Safety and Health. Furthermore, Lebanon did not ratify ILO conventions related to OSH in the agriculture sector: ILO Convention 129 (1969) on Labour Inspection (Agriculture) and ILO Convention 184 (2001) on Safety and Health in Agriculture. Of significance and on a more positive note, it is worth pointing to two decrees recently approved by the Ministry of Labour. One is Decree 3273 (2000) on Labor Inspection and the other is Decree 11802 (2004) on Occupational Prevention, Safety and Health in all enterprises subject to the Labor Law. The two decrees give a boost to OSH in Lebanon although they fall short of including the agriculture sector since it is not covered by the Lebanese Labor Law. However, currently there are active attempts to change this situation and include the agriculture sector under the Labor Law.

Except for aviation safety regulations adopted by the national airline and at the airport, construction safety standards implemented by international construction companies working in Lebanon, and a few industrial and other enterprises, OSH is absent in most economic sectors in Lebanon. Based on available information, no university in Lebanon offers an undergraduate or a graduate degree in OSH. In the late 1990's, the University of Saint Joseph-Faculty of Medicine, in collaboration with universities in France, offered a master's degree in occupational medicine to one cohort of physicians. To date, OSH is limited to a few lectures or a single course at schools of public health, health sciences, medicine, nursing, engineering, and agriculture. As for hospitals, OSH standards are part of the accreditation standards used to accredit hospitals (9 out of 593 standards, but not mandatory). A recent study revealed that although the OSH performance was better at accredited hospitals than non-accredited ones, gaps were noted which require more attention to OSH.²⁹

There are no surveillance systems in Lebanon on work exposures or work-related diseases and injuries. The Division of Labor Inspection and Occupational Safety and Health under the Ministry of Labor employs 10-15 medical doctors and engineers as OSH inspectors. In spite of limited resources, they inspect OSH conditions in major industries and enterprises, but do not produce any national or sector-based statistics. Information and data on work-related and occupational diseases and injuries in Lebanon is limited to a number of research studies conducted by researchers at different universities in Lebanon. Some of these studies are cited here for illustration: mental health and heat stress among bakery workers^{30,31}, Syrian refugee working children^{32,33}, exposure of agricultural workers to pesticides³⁴⁻³⁶, Syrian migrant agricultural workers¹³, exposure of homemakers and domestic workers to chemical and ergonomic hazards³⁷⁻³⁹, health of children working in mechanical shops⁴⁰⁻⁴², work-related injuries^{43,44}, and exposure of working men to lead.⁴⁵

► OSH hazards in agriculture

The application of health and safety in agriculture and other sectors aims to reduce injuries and illnesses, improve productivity, carry good morale and a healthier workforce, reduce financial costs of insurance, and provide longer life for equipment and machinery.⁴⁶ Therefore, managing risks develops a sustainable business, targeting the social, environmental, and economic pillars.

The agriculture sector is among the most dangerous sector in terms of hazards and accidents.⁴⁷⁻⁵⁰ The ILO estimates 170,000 fatal and 250 million non-fatal injuries a year globally among agricultural workers.⁵¹ The risk of exposure to OSH hazards (physical, chemical, biological, safety, ergonomics, physiological, and mental) is high. The most frequent hazards in agriculture are related to the use of machinery, hazardous chemicals, allergenic agents, carcinogenic substances, transmissible animal diseases, confined spaces, noise and vibration, ergonomic hazards, extreme temperatures, fire, and contact with wild/poisonous animals.^{46,51} Furthermore, living conditions, level of education, weather patterns, and health standards are added factors that affect the rate of diseases and injuries among agricultural workers. Injuries are higher in developing countries where the rural communities suffer from deficiencies in education and standards on health controls.²⁵ It is also worth noting that on average 43% of agricultural workers in developing countries are women.^{52,53} Table 2 presents a non-exhaustive list of the most common hazards in agricultural work reported globally.

Table 2. OSH hazards in agriculture (Cause, Effect, Prevention)

Hazard	Cause	Effect	Prevention
Heat/Cold Stress ^{54,55}	Long hours in the sun or in the cold weather without proper gear	Heat strokes, heat exhaustion, and rhabdomyolysis	<ul style="list-style-type: none"> ▪ PPE ▪ Temperature control ▪ Working hours
Dehydration ^{56,57}	Hot weather conditions and not having accessible water	Kidney Stones, seizures, and low blood volume shock	<ul style="list-style-type: none"> ▪ Availability of potable water ▪ Frequent drinking
Ergonomics	Carrying heavy loads in an improper manner over long periods of time	Bulging discs, hernias, back pain, and musculoskeletal issues	<ul style="list-style-type: none"> ▪ Proper manual handling and work postures ▪ Ergonomic settings
Mechanical Injury ⁵⁸	Heavy machinery operation (e.g., Tractor rollover), falls, sharp tools	Cuts, torn limbs, broken bones, fractures, and death	<ul style="list-style-type: none"> ▪ Supervision, training on operation of machinery ▪ Guards, PPE
Chemical Toxicity ^{34,59,60}	Working in close contact with pesticides	Skin diseases, cancer, respiratory complications, allergic reactions, and neurological disorders	<ul style="list-style-type: none"> ▪ Proper supervision, abiding by safety rules and regulations ▪ Less use of pesticides
Contamination and Infection ⁶¹⁻⁶³	Not having clean potable water, proper sanitation, and hygienic facilities on site	Urinary tract infections, burst bladders, and incontinence	<ul style="list-style-type: none"> ▪ Proper and easily accessible WASH facilities
Bites/Stings ⁶⁴	Reptiles, insects, and Animals	Bruises, paralysis, and even death	<ul style="list-style-type: none"> ▪ PPE
Mental Stress ⁶¹	Verbal and physical abuse, racism, and discrimination	Prolonged stress can lead to physical illness as well as mental disorders, and even suicide	<ul style="list-style-type: none"> ▪ Raising rights awareness among workers, employers, and local community

The ILO has published a code of practice on OSH in agriculture.¹ Hazards and risks can be prevented, and at times eliminated, by applying the recommended OSH guidelines and measures. Health and safety measures prevent damages, decrease risks and reduce accidents.

► OSH hazards in agriculture and related diseases and injuries in Lebanon

Diseases and injuries associated with OSH in agriculture in Lebanon are under-reported and underestimated due to inadequate recording and notifications systems. In fact, the Lebanese Labor Law of 1946 (amended several times) excludes the agriculture sector. Efforts are ongoing to amend the National Social Security Fund (NSSF) such that its associated health and social protection coverages are expanded to include all farmers and agricultural workers. In addition, the agricultural sector is not subject to Labor Inspection (Decree 3273). All OSH-related decrees in Lebanon (Table AI-1 in Appendix I) specify that they only apply to enterprises subject to the Labor Law, which excludes agriculture. This exclusion is common globally and many countries have promulgated special laws and codes for the agricultural sector. However, in Lebanon and other LMIC, resources are limited, the infrastructure is poor, regulations if present are not enforced, and OSH is not emphasized. Hence, information on OSH in agriculture in Lebanon is limited to a few cross-sectional studies on specific populations or hazards.

OSH hazards among working children in the agriculture sector

Funded by the International Development Research Center (IDRC), the ILO, FAO, and UNICEF, Habib conducted the largest epidemiological study on working children in Lebanon.⁶¹ This cross-sectional household survey, conducted in 2017 and focused on Syrian refugees living in informal tent settlements in the Beqaa region, reported that 4,592 out of 6,972 children (4-18 years) were actively working. Information was collected on 4,377 children. More than 40% of those were insulted at work, and of working children (8-18 years) 82% reported working in the sun, 30% in the cold, and 11% in the rain. A focused analysis on 4,090 working children (8-18 years) revealed that 75.8% of children (85.5% of females vs 66.3% of males) work in the agriculture sector as compared to 71% of working children globally.⁶⁵ These children work mainly in harvesting, loading/carrying, weeding, and cultivating in this order.⁶⁶ Of those, 28.4% reported injuries at work (31.0% of males, 26.4% of females) with 18.2% required hospitalization. Work and work-related injuries were clearly gendered. Usually, male children are handed more physically demanding tasks (carrying heavy loads, operating machinery), while females work in sorting, emasculation and cross pollination techniques, and fruit picking.^{61,67}

OSH hazards and living conditions of adult agricultural workers

Studies on adult agricultural workers have focused on migrant agricultural workers, both men and women, and mainly Syrian. No studies on Lebanese agricultural workers per se were identified. If included, Lebanese workers were a small group within a larger sample of migrant workers.

Habib reported on the living and health conditions of agriculture workers and members of their household (n= 290) living in camps in 2011.¹³ The study population reported multiple health problems and suboptimal living conditions with more than two-thirds living in houses with 4-6 infrastructure problems. In a systematic review on women farm workers, Habib and Fathallah presented Lebanon as a case study.⁵³ They reported that “women agricultural workers in Lebanon are exposed to a number of occupational hazards, including exposure to pesticides,” and are at an increased risk for “respiratory, infectious, and dermatological diseases” as well as musculoskeletal disorders.

Exposure to agrochemicals

Studies on exposure of agricultural workers to agrochemicals have focused on pesticides. Salameh et al. reported on interviews with 85 agricultural workers with direct contact with pesticides in 1997 and found that 47% wear special shoes, 22% wear special gloves, 16% stop working if wounded, 8% wear special clothes, and less than 3% wear a special face mask.³⁶ More than 50% did not know the names of pesticides used and more than two-thirds could not name obsolete or banned pesticides. Assessing pesticide toxicity in the same study population, Salameh and Abi Saleh reported a significantly more acute pesticide toxicity among agricultural workers as compared to the general population.³⁵ In a more recent study, Mardigian et al.³⁴ interviewed 107 farmers working in coastal agricultural farms in 2016 inquiring about their pesticide practices. It seems nothing much has changed since Salameh's publications. Farmers apply multiple pesticides and rather frequently. They are mostly dependent on friends and relatives for advice. Less than 30% knew the commercial names of the pesticides they use, 78% did not know the active ingredients, and 87% did not abide by the recommended doses. Although more than two-thirds were aware of the acute and chronic health effects of pesticides, undesirable practices of mixing and applying pesticides were reported.

Exposure to other OSH hazards

Agricultural workers in Lebanon, of both genders and different ages, have been reported to work outdoors (open fields and orchards) and in greenhouses with potential exposure to multiple OSH hazards, such as heat stress, cold weather, injuries, bites, repetitive tasks, and awkward postures. However, no studies were conducted to measure the extent of exposure and type of health outcomes. These reports remained descriptive of workers' and farmers' perceptions.



3. OBJECTIVES

The ILO has commissioned this report to provide the following information:

- ▶ Describe OSH hazards in agriculture in Lebanon
- ▶ Document the perception and knowledge of OSH among farmers and workers
- ▶ Map OSH training and capacity building activities in agriculture in Lebanon
- ▶ Assess interest in OSH training in agriculture
- ▶ Share recommendations for a potentially sustainable OSH training and capacity building program in Lebanon and for the improvement of the OSH situation in agriculture

4. METHODS

The study focused on crop production in open fields, orchards, and greenhouses at the two largest agricultural regions in Lebanon- Akkar and Beqaa. The below diagram (Figure 1) depicts the different stakeholders engaged in the agricultural sector. On the demand side stands large, medium, and small-scale farmers and their cooperatives, if they exist, and agricultural workers mostly Syrian migrant and refugee workers. On the supply side, the public sector (ministries and governmental agencies), private sector (for-profit input suppliers), international and local NGOs, and UN agencies contribute differently to the growth and development of the agriculture sector and the wellbeing of farmers and workers. Farms were visited and individuals from all entities were interviewed between August 4 and October 4, 2021.

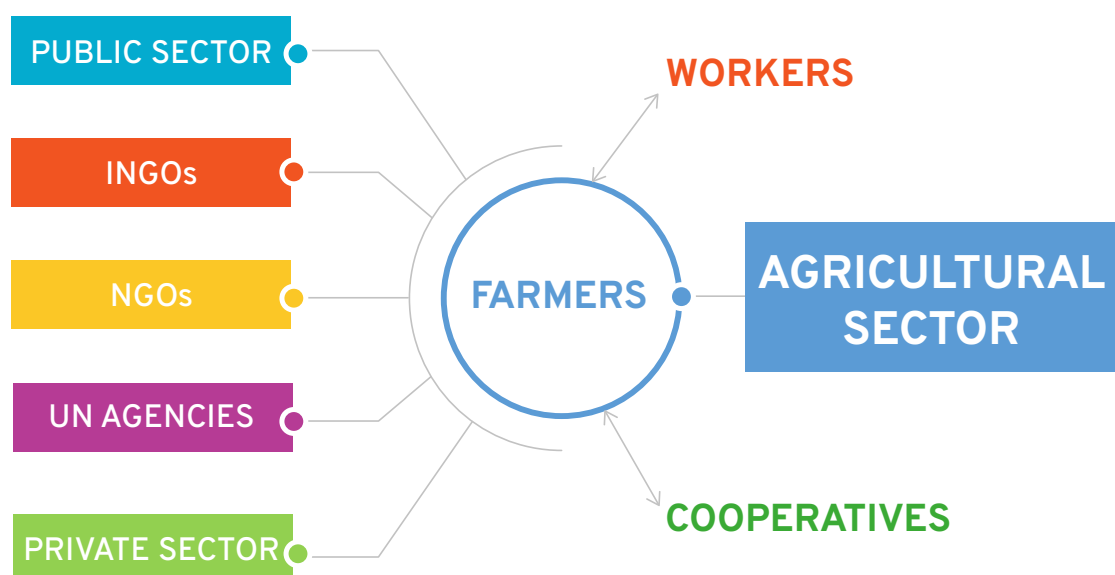


Figure 1. Different stakeholders engaged in the agricultural sector [the entities to the left include different contributors to the growth and development of the sector (supply side) and those to the right include the production stakeholders in the sector (demand side)]

► List of interviewees (demand and supply sides)

Table 3 lists the entities interviewed on the supply side: public sector (n= 5), UN agencies (n=4), INGOs (n=3), NGOs (n=4), private sector (n=3), and other (n=3). A more detailed table in appendix I (Table AI-2) presents the position/role of individual(s) interviewed in each entity.

Table 3. List of entities (supply side) interviewed.

Public Sector	Ministry of Agriculture/ Department of Agriculture in Baalbek (Beqaa)
	Ministry of Agriculture/ Department of Agriculture in Akkar
	Ministry of Agriculture/ Lebanese Agricultural Research Institute (LARI/ Beqaa)
	Ministry of Environment
	Ministry of Labor
UN Agencies	Food and Agriculture Organization (FAO)
	International Labor Organization (ILO)
	UN Development Programme (UNDP)
	World Food Programme (WFP)
INGOs	Agency for Technical Cooperation and Development (ACTED)
	AVSI-People for Development
	Concern Worldwide (Concern)
NGOs	Amel Association
	Cooperation Without Borders (CWB)
	Lebanese Organization for Studies and Training (LOST)
	Rene Moawad Foundation (RMF)
Private Sector	Debbaneh-Seikaly Agriculture
	Robinson Agriculture
	SNA-Alliance Insurance
Other	Chamber of Commerce, Industry and Agriculture (CCIA)
	Order of Engineers (Beirut)
	Trade Unions (in Agriculture)

Table 4 details those interviewed on the demand side.

In **Akkar**, a total of 15 farmers were interviewed: 5 individually who own open fields, 3 individually who own orchards, 2 individually who own greenhouses, and another 5 collectively (one interview) who own greenhouses. Of these, a total of 12 farms were visited and inspected: the farms of the 10 farmers interviewed individually, the greenhouse of one of the 5 farmers interviewed collectively, and the orchard of a farmer who could not be interviewed. In **Beqaa**, a total of 26 farmers were interviewed: 4 individually who own open fields, 2 individually who own orchards, and 2 individually who own greenhouses. Another 18 farmers were interviewed collectively (one interview) distributed into 6 open field, 7 orchard, and 5 greenhouse. Of these, one inspection checklist was filled for the 18 farmers interviewed together and another checklist for an NGO (Collaboration without Borders) that runs greenhouses. In addition, 7 farms were visited.

The heads of five cooperatives were interviewed: 3 in Akkar and 2 in Beqaa.

We also interviewed 60 workers in total (30 workers in each of Akkar and Beqaa). In Beqaa, 17 Syrian refugee workers who came from different camps were gathered in one focus group at the American University of Beirut (AUB)'s farm (AREC). The rest of the workers in the Beqaa were interviewed on the farms where they worked, either individually or in groups of 2-6 workers. All workers in Akkar were interviewed on the farms where they worked, either individually or in groups of 2-7 workers.

Table 4. List of farmers, cooperatives, and agricultural workers (demand side) interviewed

	FARMERS				
	AKKAR		BEQAA		TOTAL
	Individually	Collectively	Individually	Collectively	
Open field	5	0	4	6	9 + (6) = 15
Orchard	3	0	2	7	5 + (7) = 12
Greenhouse	2	5	2	5	4 + (10) = 14
Total	10 + (5) = 15		8 + (18) = 26		18 + (23) = 41
	FARMS CHECKED FOR OSH				TOTAL
	AKKAR		BEQAA		
Open field	5		4		9
Orchard	4		1		5
Greenhouse	3		3 (including one for CWB)		6
Mix	0		1 (18 farmers interviewed collectively)		1
Total	12		8 (+1 collective)		20 (+1 collective)
	COOPERATIVES				
	AKKAR		BEQAA		
	Cooperative for Rural Development in Majdala and vicinity		Sanad Cooperative in Irsal		
	Cooperative for Potato Farmers in Akkar		Shams Cooperative for Food Production		
Cooperative for Agricultural Development in Sahl Rmoul					
	WORKERS INTERVIEWED				
	AKKAR		BEQAA		TOTAL (workers interviewed)
	# Groups	# Workers	# Groups	# Workers	
1 worker alone		2		3	5
Group of 3 workers	3	9	2	6	15
Group of 4 workers	1	4	1	4	8
Group of 7 workers	1	7	-	-	7
Group of 8 workers	1	8	-	-	8
Group of 17 workers	-	-	1	17	17
Total	30 workers		30 workers		60 workers

► Selection of farmers and workers

Farmers were selected by the field coordinators in each of Akkar and Beqaa, in collaboration with AUB's Environment and Sustainable Development Unit (ESDU) that has more than 20 years of work experience with farmers and agricultural workers in both regions. Sampling was purposive aiming at an equal distribution in size [large-medium (at least 20 dunoms) and medium-small (2-19 dunoms)] and farming type [open field, orchard, and greenhouse] in each of Akkar and Beqaa. The target was two farms per category, for a total of 12 farms in each region. Farmers were contacted for an appointment around a certain time in a specific day to allow for delays and unseen developments. In the few cases where farmers were missed (arriving late or farmer leaving early), a neighboring or an alternative farmer was approached for an interview. In the case of Irsal, we contacted a farmer who also serves as the head of a local cooperative to set up separate meetings with him and a few other farmers. Instead, he invited 17 farmers to one large meeting (total 18 farmers). The meeting transformed into a focus group discussion.

Workers available at the time of the visit to a farm were invited to participate in the interview. Although encouraged by the farmer, participation was voluntary.

► Data collection

Farmers

A total of 41 farmers were interviewed, out of whom 18 were interviewed individually and the rest as part of two focus groups (18 in Irsal (Beqaa) and 5 in Bebnine (Akkar)). Farmers were asked (check questionnaire in Appendix II) about their experiences in farming, knowledge about OSH hazards in their farms, and whether they and/or their workers received formal short- or long-term training in farming and in OSH. They were also asked if they offer any OSH services on their farms or to their workers, and finally if they were interested in training on OSH and adopting OSH measures on their farms. Interviews lasted between 20-40 minutes.

Farm inspection

Using a standardized checklist (Appendix II), information about OSH situation was collected on a total of 20 farms, of which 17 farms were toured for direct assessment. One checklist was filled collectively by the 18 farmers interviewed together in Irsal. Incentives were not promised or requested. However, we handed a token mix of winter oil, copper, organic pesticides, or inorganic pesticides to each farmer at the end of the meeting.

Cooperatives

Four out of the 41 farmers were also interviewed in their capacity as heads of cooperatives (3 in Akkar and 1 in Beqaa). A fifth person who serve as head of a cooperative in the Beqaa was interviewed virtually. The 'supply side' questionnaire (described later) was used in these interviews.

Workers

A total of 60 agricultural workers were interviewed in person. Of these, 17 were invited to AUB's farm in Hosh Sneid- Beqaa (i.e., AREC, the 'Advance Research-Engage Communities' Center) where they were interviewed together as a focus group. The remaining 43 workers were interviewed individually (5 workers) or in groups of 3-8 workers (Table 4). After explaining what OSH hazards are, workers

were asked to list the main OSH hazards they encounter at work, share any work-related injuries and health problems they experienced in their work history, report on any OSH training they received and the provision and use of personal protective equipment (PPE) and other OSH measures and services. Interviews lasted between 20-60 minutes. No incentives were given to workers. Those who presented to AREC were given cash to cover transportation expenses.

Interviews of farmers and workers in the Beqaa were conducted on August 25, 26, and 27, 2021 and those in Akkar on August 29 and 30 and September 3, 2021. All interviews were conducted by the lead researcher in the presence of the field coordinator and a research assistant.

Supply side

Besides the five cooperatives, a total of 22 entities were interviewed in their current or potential capacity as suppliers of OSH training or services. Contact people in the Division of Agriculture (Baalbek), Division of Agriculture (Akkar), LARI (Beqaa), LOST (Beqaa), and CWB (Beqaa) were interviewed in person. The remaining 17 interviews were conducted virtually. Respondents were asked to state the mission of their organization, any training/capacity building programs in the agricultural sector, their knowledge and perception of ongoing OSH training programs in agriculture in Lebanon, their organization's engagement and provision in OSH training and services, their interest to collaborate with ILO on an OSH training/capacity building program if offered, and their views on how to ensure the sustainability of such a program (check questionnaire in Appendix II). All interviews were conducted by the lead researcher in the presence of the project manager/research assistant. Interviews extended over 30-75 minutes.

Appendix II collates the above listed questionnaires and checklist. The lead investigator developed all the survey instruments guided by multiple ILO and non-ILO references on OSH in agriculture.⁶⁸⁻⁷⁶ The questionnaires/checklist were critically reviewed by the research team and the ILO team, revised by the lead investigator, and finalized over a collective meeting. The questionnaires were translated to Arabic.

► Ethical considerations

The lead investigator conducted all the interviews in the presence of one or more research assistant or field coordinator. An informed consent was shared with the interviewees, mostly verbally, explaining the purpose of the overall study and the particular interview. Interviewed farmers and workers were assured that their identities will remain anonymous except for the research team and that their names will not be published in the report. Those interviewed on behalf of the supply side were informed that the names of their organizations will be published but not their names. No incentives were offered to any of the interviewees. The exception was paying the cost of transportation for workers who voluntarily came to AREC for a group interview.

► Data entry and analysis

Being a mixed methods study, all questionnaires were used as a guideline to conduct the interviews. The questionnaires included both close- and open-ended questions. In addition, interviewees shared many side comments, thoughts, and reflections which were recorded on the questionnaires. Answers to close-ended questions in each questionnaire were entered on Excel sheets and data was later transferred to SPSS for analysis. Results were presented quantitatively. The lead investigator reviewed answers to open-ended questions and the side comments and extracted key ideas and quotes to support and clarify the study findings.

▶ Study limitations

This study was conceived by the ILO as a preliminary overview of the OSH situation in the agriculture sector in Lebanon (hazards, preventive measures, protective equipment, and OSH training activities) to inform future in depth and detailed research studies on OSH in the sector. The purpose of this study was to better understand the magnitude of and exposure to OSH hazards on a limited number of farms and to identify who is who in the field of OSH in agriculture, gauging their interest in the field, guiding planning and potential coordination, and providing ideas for future in-depth studies. The study was limited in time (August-October 2021), and based on a convenience purposive sample from Akkar and Beqaa being the two largest agricultural regions in Lebanon and the two target governorates for PROSPECTS. Nonetheless, the recruited sample reflected the wide diversity of farmers/farms by size, type, and location and of the supply entities as well, providing a good picture of the current situation.

Other limitations of the current study could include:

- ▶ Geographic coverage was limited to the Akkar and Beqaa regions.
- ▶ The sample size was small and non-representative.
- ▶ Higher education institutions were not approached, although information about OSH training within public technical agricultural schools was collected.
- ▶ All farms were visited within six days in the month of August 2021, which is a transition time between the end of the summer season and the start of preparations for the winter season. Activities in visited farms were either absent (resting the land) or limited to the harvesting of vegetables in open fields or greenhouses. There were no activities in the visited orchards too.
- ▶ Inspection of farms was limited due to absence of farming activities. Information was collected by direct observation/inspection of the farm and by interviewing the farmer (owner) and workers.
- ▶ Field data collection overlapped with a severe shortage of fuel crisis in Lebanon, which limited the possibility of holding gatherings or wider meetings. Telecommunications were also poor and frequently interrupted.

5. FINDINGS

Information will be reported on the farmers, farms, workers, OSH in farms, and then the supply entities. The denominator may differ by variable. Where relevant, results will be compared to the 2010 ILO code of practice on safety and health in agriculture.¹

► Who are the farmers? What farms?

A total of 37 farmers were interviewed, 18 of whom in one group in Irsal. In another meeting, there were 5 farmers (Bebnine) but we will report on one. Table 5 summarizes the characteristics of those farmers. Except for one female in Akkar, all other farmers were males (97%) with a mean age of 46.7 years (SD 12.9) and 76% of age 40 and older. They were all Lebanese with 30% who joined or completed university education. Of the 20 farmers asked, only 5 (25%) reported any short or long term formal education in agriculture. Farmers mostly reported inheriting the occupation and joining it at a young age accumulating an average of 22 years in farming (SD 17.7).

Table 5. Characteristics of the 37 interviewed farmers*

Characteristics of farmers (N= 37)	N	%
Age (years)		
18-29	3	8%
30-39	6	16%
40-49	11	30%
50-59	13	35%
60 or more	4	11%

Characteristics of farmers (N= 37)	N	%
Age (years)		
Mean	46.68	
SD	12.86	
Sex		
Male	36	97%
Female	1	3%
Nationality		
Lebanese	37	100%
Level of education		
Grade 1-6	9	24%
Grade 7-9	5	14%
Grade 10-12	12	32%
University	11	30%
Region		
Akkar	11	30%
Beqaa	26	70%
Training in agriculture (Workshops or degree)		
Yes	5	14%
No	15	41%
Not reported	17	45%
Years in farming		
1-4	3	8%
5-9	3	8%
10-14	2	5%
15-19	0	0%
20-29	4	11%
30-39	3	8%
>= 40	4	11%
Not reported	18	49%
Years in farming (19 farmers)		
Mean		22.2
SD		17.7

*Information collected from one of the 5 farmers interviewed together in Akkar

Table 6 presents the types and sizes of the 37 farms. Of these, 20 farms were 20 dunoms or larger including three large open fields of 100, 1,250, and 3,500 dunoms. The farms were distributed into 15 open field (41%), 12 orchard (32%), and 10 greenhouse (27%).

Table 6. Type and size of the 37 farms

Size (dunoms)	Farm type			Total
	Open field	Orchard	Greenhouse	
2-9	4	2	3	9
10-19	3	2	3	8
20-39	1	4	1	6
40-59	2	2	2	6
60-79	1	2	1	4
80-99	1	-	-	1
100	1	-	-	1
1250	1	-	-	1
3500	1	-	-	1
Total	15	12	10	37

Farmers were asked about the number of workers at their farms, their gender distribution and other information (Table 7). An average of 23 workers (range 4-165) work at different seasons of the year. More female than male workers are employed on these farms. This finding reflects the gender distribution of farm work, where females are hired at higher numbers for a lower pay to do jobs such as weeding, harvesting, and sorting. One farmer reported hiring 165 workers, mostly females, for a short period of time to pick potatoes from his large field. Male workers are hired, in smaller numbers, to operate tractors and other machines, spray pesticides, carry heavy loads, and transport the produce. Only 14 out of the 32 farmers reported having permanent workers. Being a permanent worker however does not mean a contractual relationship or a monthly salary; it only means affiliation with the farm/farmer since the majority are only paid for the hours and days they work depending on the season. Thirteen out of the 14 farmers reported that these permanent workers live on the farm. Children were reported to work on 14 out of 19 farms (74%). Working children are members of the families living on the farm or they are brought by the *shaweesh* for specific jobs (weeding and harvesting or sorting vegetables).

**Photo 1. Children carrying baskets and picking vegetables in greenhouses**

Table 7. Information about workers on the 37 farms

Characteristics of workers	
Total number of workers per farm in different seasons (19 farms)	
Mean	23.4
SD	36.0
Min-Max	4-165
Number of male workers per farm (19 farms)	
Mean	7.1
SD	6.5
Min-Max	1-20
Number of female workers per farm (19 farms)	
Mean	16.4
SD	32.7
Min-Max	0-150
Number of permanent workers per farm (32 farms)	
Mean	5.4
SD	11.9
Min-Max	0-60
Permanent workers live on farm (14 farms)	
Yes	13 (93%)
No	1 (7%)
Children work on farm (19 farms)	
Yes	14 (74%)
No	5 (26%)

► Who are the workers?

A total of 60 agricultural workers were interviewed for this study, some individually and the majority in groups of 3-17 workers at a time. Table 8 describes the characteristics of the interviewed workers. Of these, 12 (20%) are under 18 years of age and 10 (17%) are 50 years of age or older; 40 (67%) are females and 56 (93%) are Syrians. Agricultural workers are all paid on a daily basis (paid only for the hours they work).

Thirty-one workers (52%) could be referred to as permanent workers, since they live on the farm for no or minimal rent charge and are expected to prioritize work at the farm. However, they have no work contracts and they and members of their families are paid per hour of work. The remaining workers referred to as daily or seasonal move between farms and are mostly hired through the *shaweesh*. In one setting, the farmer, who is the owner of multiple greenhouses, struck a deal with the Syrian workers/families living on his farm whereby they independently manage specific greenhouses and receive a portion of the sales of the produce. For the 59 workers with reported the level of education, 16 (27%) were illiterate, 10 (17%) only read and write, and the others had completed grades 1-6 (37%) or grades

7-9 (18%). Sixteen workers (27%) are current smokers. Compared to males, female workers were all Syrian, younger in age, less educated, more permanent, and less smokers. Although we did not meet any, it was reported that few migrant or refugee Syrians rent and manage farms independently.

Table 8. Characteristics of the 60 interviewed workers by sex

Characteristics of workers (N= 60)	Males (n= 20)	Females (n=40)	Total (n=60)
Region			
Akkar	11	19	30
Beqaa	9	21	30
Farm type			
Open field	5	13	18
Orchard	5	0	5
Greenhouse	7	10	17
Mix	3	17	20
Farm size (dunom)			
< 10	4	3	7
10-19	2	6	8
20-49	4	2	6
50-99	2	5	7
100-499	4	8	12
Different sizes	3	0	3
Not reported	1	16	17
Age (years)			
<18	4	8	12
18-29	4	11	15
30-39	3	9	12
40-49	4	7	11
50-59	4	4	8
60 or more	1	1	2
Not reported	0	1	1
Age (years)			
Mean	35.2	30.9	32.3
(SD)	(16.5)	(13.5)	(14.6)
Nationality			
Lebanese	4	0	4
Syrian	16	40	56
Level of education			
Illiterate	6	10	16
Reads and Writes	2	8	10

Characteristics of workers (N= 60)	Males (n= 20)	Females (n=40)	Total (n=60)
Grade 1-6	6	16	22
Grade 7-9	5	6	11
Not available	1	0	1
Work situation			
Permanent	10	21	31
Temporary/ Daily	10	17	27
No work now	0	2	2
Current smoker			
Yes	11	5	16
No	9	35	44

Female Syrian agricultural workers reported long and strenuous hours of work. They usually work in two shifts: a morning shift (5:00-10:00 am or 6:00-11:00 am in the summer and 3:00-8:00 am or 4:00-9:00 am in the winter) and an afternoon shift (2:00-6:00 pm or 3:00-7:00 pm in the summer and shorter and earlier in the winter). In between shifts and later in the evening, women complete their household chores. A few male workers acknowledged the hardship in women’s work and lives.

Agricultural work is also gendered. Female workers and children collect potatoes, harvest vegetables (tomato, beans, cucumber, etc.), pick fruits standing on the ground without climbing trees, till, weed and clean the ground, thread climbing vegetables (e.g., bean stalks), package produce in boxes, and carry light weight loads. Farmers consider these tasks light and proper for females and children. In contrast, male workers plough, drive tractors and other vehicles, operate machines, mix and apply pesticides, climb trees, carry heavy loads, and load and unload trucks. The pay per hour is gendered as well. Female workers and children are paid less than male workers. For females and children, the pay is usually standard but differ by farmers; it ranges between 2,000 and 7,000 LL per hour. Male workers are paid 15,000-20,000 LL per hour. Furthermore, Syrian workers live in informal tents in refugee settlements or at the edge of farms. The living conditions in these tents are suboptimal. Toilet and water service facilities, provided by UN agencies and international NGOs, are shared. These settlements are deprived of proper infrastructure.



Photo 2. Informal tents at the edge of a farm



Photo 3. Syrian female adult and adolescent workers picking vegetables in an open field

No to low farming activities were observed in the majority of visited farms, because farms were in between seasons and the land was rested or being ploughed or prepared for the new crop. None of the farms of the 18 farmers met together in Irsal were visited, as they reported no activities. There were also no activities in 12 farms. Observed activities included cleaning/preparing greenhouses (n=2), harvesting, packing, and preparing tomato, okra, or cucumber for transportation to market (n=5), and preparing land for planting (n=1). Men were involved in preparing greenhouses and lands, while women and children were involved in the other activities.

Interviewed workers were asked an open question about their main agriculture activities during the year. Answers were not comprehensive but reflected the gendered nature of agriculture work (Table 9). Most women are involved in weeding, harvesting, and other activities except applying pesticides or operating machine.

Table 9. Main agricultural activities reported by interviewed workers

Agricultural activity	Females	Males
Operating tractor/machine	0	1
Maintenance/Installation	0	1
Tilling	0	3
Weeding	21	3
Applying pesticides/ chemicals	0	8
Irrigating	0	2
Grafting	0	1
Pruning	0	3
Harvesting	26	5
Packaging	2	3
Helps husband or other workers	2	2
Supervising	0	1
All greenhouse work	1	1
All activities except pesticides and machines	12	0
All activities	0	2

► Observed and reported OSH hazards in farms

Using a standardized checklist, information was collected on OSH conditions in 20 farms (9 open field, 5 orchard, 6 greenhouse), of which 17 were physically toured. One more checklist was filled collectively by a focus group of 18 farmers in Irsal. Farmers and workers were asked to validate observations and inquire about practices not observed at the time of the visit. Table 10 presents the distribution of farms by region (Akkar, Beqaa), type (open field, orchard, greenhouse), and size (smaller than 20 dunums, 20 dunums or larger).

Table 10. Distribution of farms by region, type, and size*

Farm type	AKKAR			BEQAA			TOTAL		
	S-M	M-L	Total	S-M	M-L	Total	S-M	M-L	Total
Open field	2	3	5	3	1	4	5	4	9
Orchard	2	2	4		1	1	2	3	5
Greenhouse	1	2	3	2	1	3	3	3	6
Total	5	7	12	5	3	8	10	10	20

*S-M: Small to Medium (Up to 20 dunoms)/ M-L: Medium to Large (Over 20 dunoms)

OSH hazards observed and reported on the visited farms are similar to what is reported in the literature (see Table 2). The following hazards were observed or reported:

► Physical hazards

- Exposure to sun and ultraviolet radiation (open fields and orchards during summer): potential dehydration, sunstroke, and skin cancer
- Exposure to heat (greenhouses during summer): potential heat stroke
- Exposure to cold and rain (open fields and orchards during winter): potential respiratory problems
- Exposure to noise (tractors and power-operated machines): potential hearing loss
- Exposure to vibration (power-operated machines): potential vibration syndromes

► Chemical hazards

- Exposure to pesticides during preparing, mixing, application, and post-application re-entry: potential acute toxicity and long-term health effects
- Exposure to fertilizers: potential allergies and respiratory problems, Nitrogen seeping into water presents wider public health problems
- Exposure to chemicals, such as solvents, used to fix and clean vehicles and machines: dermatitis, neurotoxicity, genotoxicity

► Mechanical hazards

- Transportation-related: workers are transported standing or sitting on the back of trucks, with potential for injuries related to crashes or falls
- Power-operated machines and sharp tools: potential for major and minor injuries

► Biological hazards

- Exposure to vegetable dust/ pollen: potential for skin and respiratory allergies

- Exposure to snakes, insects, scorpions, bees, hornets, etc: potential for bites and stings
- Exposure to microbes due to crowding, stepping barefooted into polluted irrigation canals, drinking contaminated water: potential for different type of infections (viral, bacterial, parasitic, other)
- ▶ **Ergonomic hazards**
 - Awkward and repetitive postures (kneeling, stooping, stretching, carrying): musculoskeletal problems
 - Absence of ergonomic-friendly settings: musculoskeletal problems, injuries, stress
- ▶ **Work dynamics and environment**
 - Long hours of work over two shifts: potential for psychological and mental stress
 - Relatively low pay: potential for dissatisfaction and stress
 - Work instability and a kind of bondage through *Shaweesh* and living on the farm: potential for dissatisfaction and mental health problems
- ▶ **General safety measures**
 - Absent guards on ponds where available: potential for falls and drowning (a woman worker reported that her son drowned while playing close to one of these ponds)
 - Absent fire plans and warning signs: higher risk for fires and failure in proper response

▶ Observed and reported preventive and protective measures on farms

Facilities



Adequate washing facilities, including hot and cold or warm running water, together with soap or other cleaning materials and towels or other drying equipment, should be provided at the relevant worksites in accordance with national law. The washing facilities should be conveniently accessible. (ILO Code 2010)

Table 11 summarizes the observations and responses regarding the presence of facilities on farms. Toilet facilities were present in 70% of the farms (14/20), washing facilities in 65% (13/20), shaded rest areas in 60% (12/20), and designated eating area in 50% (10/20), while drinking water was provided in 80% (16/20) of farms. There were no striking differences by size, location, or type of farm. It is worth noting that most of the facilities reported as available were part of the living quarters of workers who resided at the edge of the farm. In other words, these facilities are not built for the purpose of serving workers not living on the farm. These are shared and suboptimal facilities and not adequate to serve the workers hired from other settlements in high seasonal activities. Moreover, water provided for drinking was not necessarily municipal or bottled drinking water but rather water from the wells used for irrigation.

Table 11. Availability of facilities on farms

Any of these facilities available?	Size of farm		Location		Type of farm			TOTAL
	S-M	M-L	Akkar	Beqaa	Open field	Orchard	Green-house	
Toilet?								
Yes	7	7	9	5	6	2	6	14
No	3	3	3	3	3	3	0	6
Washing/cleaning facility?								
Yes	7	6	8	5	6	1	6	13
No	3	4	4	3	3	4	0	7
Designated eating area?								
Yes	6	4	6	4	4	1	5	10
No	4	6	6	4	5	4	1	10
Drinking water provided?								
Yes	9	7	8	8	9	2	5	16
No	1	3	4	0	0	3	1	4
Shaded rest areas?								
Yes	6	6	7	5	5	1	6	12
No	4	4	5	3	4	4	0	8

General safety measures



Any comprehensive OSH programme must include plans for emergency response, such as in dealing with a large spillage of a hazardous chemical or as in providing first aid to lone workers who suffer serious injuries at work. (ILO Code 2010)

General safety measures are practically absent. Warning signs, fire extinguishers, and first aid kits were each present in one out of 20 farms. None of the farms had a fire containment plan, only one (a greenhouse) had an emergency exit. Electric wires at 2-4 meters height were seen in 4 farms but none presented any clear hazard. Overall, paths and walkways were clear (19/20 farms), especially that most of the farms were ploughed or cleaned up. Most of the farmers reported no storage of flammable liquids. Wells and ponds were seen in five farms but only two were guarded. When asked, only two farmers reported regular inspection of safety conditions; the inspectors were internal in one farm and external in the other for certification purposes.

Personal Protective Equipment



PPE should be selected considering the characteristics of the wearer and additional physiological load or other harmful effects caused by the PPE. It should be used, maintained, stored and replaced in accordance with the standards. Appropriate PPE should always be available. (ILO Code 2010)

PPE, when present, were mostly acquired by the workers. PPE were limited to gloves to use while picking produce, hats to protect them from sun, and face masks to protect them from inhaling dust. Gloves were used in 5 farms (3 open fields and 2 greenhouses), hats in 4 farms, and face masks in 3 farms.

Women workers wore scarves and men workers wore *kufieh* (referred to as *selk*) to cover their heads and mouths. Goggles, respirators, protective clothing, boots, hard hats, harnesses, ear protection, and reflective vests were never provided to or used by workers in any of the farms.

Tractors



Tractors should be equipped with a rollover protection structure and seat belt. All tractor operators should be trained in the safe use of tractors. (ILO Code 2010)

Tractors were reported as usually used on 16 out of the 20 farms (9/9 open fields, 2/5 orchards, and 5/6 greenhouses). Only one tractor in one farm was operating at the time of the visit. When asked, farmers reported that safety features are not factored in or required when tractors are purchased or operated. Out of 20 responses, 9 reported that tractors are equipped with rollover protection although most probably these are only cabins to protect drivers from sun exposure. All 20 reported that no tractors are equipped with seatbelts or a reverse beeper. Only 2 out of 20 reported that tractor drivers were licensed or formally trained. Drivers learn by observing and apprenticeship, and most start at a young age. One farmer reported training his 16-year old son on driving the tractor at the age of 14. Only three farmers reported insuring tractors and vehicles used on the farm and six farmers reported regular maintenance. The majority of farmers maintain tractors and vehicles, if any, at the start of a season or simply fix them only when needed.

Pesticides



PPE for pesticides includes Respiratory Protective Equipment, chemical protective clothing including gloves and footwear, and equipment to protect the eyes and face. (ILO Code 2010)



Photo 4. Spraying equipment on a wheelbarrow

No pesticides were being mixed or applied at the time of visit. In 17/20 farms, pesticides are mixed and applied on the farm by adult male workers who are usually part of pesticide application teams. Pesticides are sprayed using knapsacks, barrels on wheelbarrow, cisterns on wheels, cisterns driven by a tractor (tractor mounted), or cisterns connected to wings with nozzles (used for open fields). None of

the 17 who reported use of pesticides reported any proper training on pesticide mixing and application. Masks were reported as worn in 6/17 farms. No other PPE (gloves, goggles, boots, or protective gown) are used. Sticks were used to mix pesticides in containers, barrels, or cisterns. It was even reported that some workers mix the pesticide with water using their arms. The lancet (spray gun) is also used to mix pesticides in cisterns. In tractor-mounted cisterns, there is an automatic mixing process initiated by the transmission axis. Only in 3 cases, farmers mentioned that children could be present on the farm when pesticides are being applied. These children are not working or helping, but they are the children of the workers and mostly living with their families in the shacks on the farm. As for the empty pesticide containers, in 5 cases they are thrown at the edge of the field, in 8 they are burnt, and for the rest they are collected (including those left on the ground) by the workers, their children, or scavengers to sell for reuse or recycling. One farmer mentioned that some workers clean these containers and use them to store stuff.

Sun protection



Heat stress is exacerbated when workers wear impervious, non-venting and non-sweat-wicking clothing, work intensively, and are unable to access shade or other conditioned environments. (ILO Code 2010)

It was observed and reported that scarves/*kufieh* are worn by workers to protect themselves from exposure to sun; some also wear a cloth hat. No protective cream or sunglasses are used. Occasionally a shaded area or a makeshift cover is provided.

Fruit picking



The competent authority should establish safety standards for the manual handling and transport of agricultural products, and tool and equipment design. (ILO Code 2010)

Men were observed to climb trees or A-frame ladders to pick fruits from trees. No ropes or harnesses were used, which are not usually recommended for the type of orchards visited. Women on the other hand pick low-hanging fruits from the ground and extend to pick higher ones, occasionally stepping on a step ladder or the bottom of a turned bucket. When asked, no farmers reported any training offered to their workers on correct manual handling or work postures. Women more than men picked vegetables in open fields (squatting and bending) and greenhouses (bending and stretching).

► Knowledge of OSH hazards and reported work-related diseases and injuries

Farmers and workers were asked independently about the OSH conditions in agriculture and on their farms and their knowledge or experience with any work-related diseases and injuries.

Workers' reporting

A total of 60 workers were interviewed individually or in groups of 3 or more. Figure 2 presents the frequency each work hazard was reported. Heat, cold, and weather conditions (12 times), pesticides (10 times), and insects and reptiles (5 times) topped the list of hazards at work for the workers, followed by ergonomics, long hours of work, and tractors/machines/sharp tools (each at 4 times). One worker reported no hazards where he works because all greenhouses on the farm are temperature controlled, well ventilated, and equipped with elevated benches. This was confirmed during the tour of the farm (photo 5).

Reported work hazards in 15 interviews (60 workers) and frequency each is reported

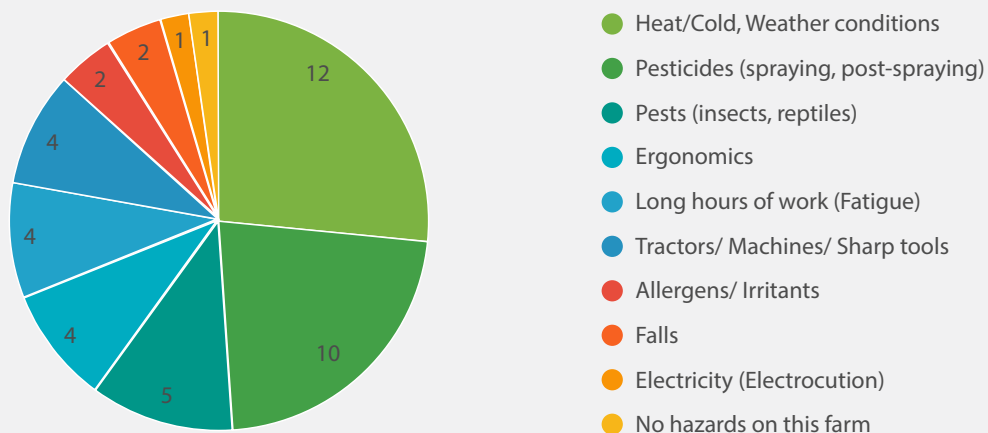


Figure 2. Reported work hazards in 15 interviews (60 workers) and frequency each is reported



Photo 5. Temperature controlled and ergonomic-friendly greenhouse



Photo 6. Back/joint pain was the most reported work-related health problem

The workers were asked if any of them has experienced one of a list of work-related injuries and health problems. In two of the interviews, each of the three workers reported individually; in the remaining 13 interviews, the answers were collective. Hence, the total sample for this question is 19. Back/joint pain (19 reports), heat/sun strokes (12 reports), and falls and bites/stings (each 9 reports) ranked highest (Figure 3).

Reported work-related injuries and health problems (19 respondents)

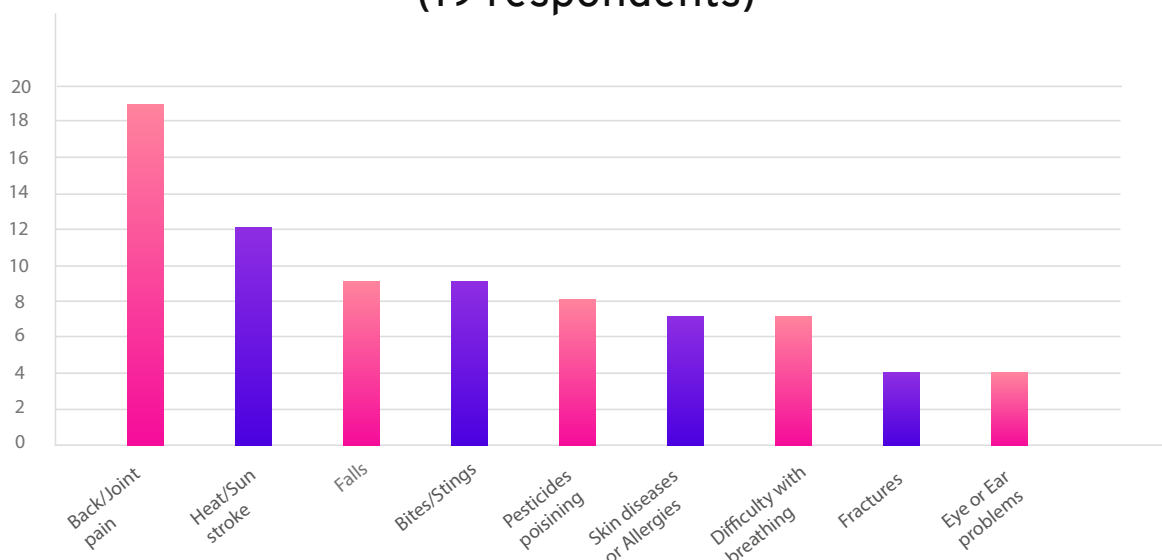


Figure 3. Reported work-related injuries and health problems (19 respondents)

Farmers' reporting

A total of 37 farmers were interviewed, 19 individually and 18 in one group. Each was asked to report top OSH hazards in agricultural activities. Figure 4 presents the frequency each work hazard was reported by the 19 farmers interviewed individually. Pesticides (13 times) and weather conditions (10 times) led the list of OSH hazards for farmers. Tractors/Machines/Sharp tools and Falls followed at 5 and 4 times, respectively. These hazards were listed by workers too. Transportation and contaminated irrigation water were mentioned as OSH hazards by farmers, while interestingly, none of the farmers reported insects and reptiles, ergonomics, fatigue, and allergens/irritants as hazards, all reported by workers. Furthermore, although not OSH hazards, farmers lumped crowding, malnutrition, and children present on the field as hazards uncovering the weak boundaries between the work and living environments for this group of agricultural workers. One farmer who is not engaged in direct farming activities reported that there are no hazards. The 18 farmers interviewed collectively only reported tractors/machines/sharp tools as OSH hazards.

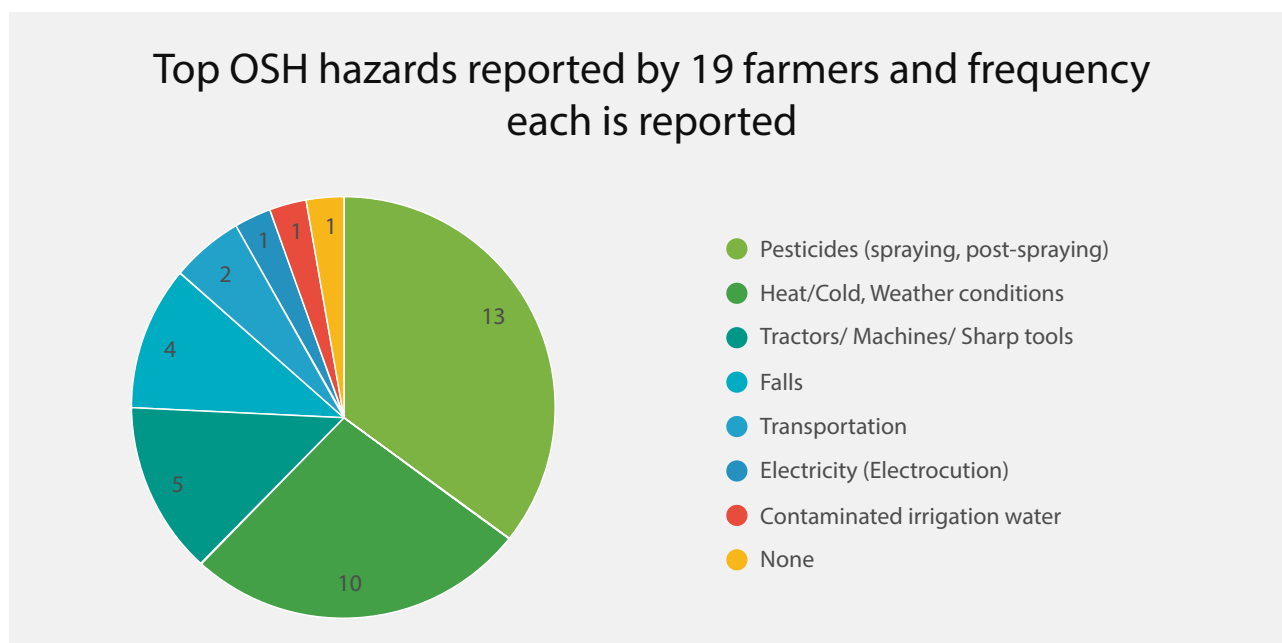


Figure 4. Top OSH hazards reported by 19 farmers and frequency each is reported

When asked about work-related diseases and injuries over the last three year, the following were reported by the 19 farmers: 5 injuries related to tractors, hand ploughing machines, and power saws, 4 sun/heat strokes, 4 minor pesticide toxicities, 3 falls, and 2 skin diseases. One case of Favism was reported. Five farmers reported no work-related diseases or injuries, as well as the 18 farmers interviewed collectively.

► Prior OSH training

Farmers and workers were also asked about prior OSH training.

Workers' reporting

Only three out of the 60 interviewed workers reported receiving prior OSH training. All three were female Syrian workers who work on the same farm (greenhouse) in Akkar. The training was offered by Concern Worldwide in 2020 and it consisted of two one-hour sessions a week for 3 months. The female workers rated the training at 5 out of 5 and although they could not remember the content of the sessions, they found it useful and made them more attentive to hazards at work.

Farmers' reporting

Five out of the 37 interviewed farmers reported receiving prior OSH training; three only once and two reported several trainings. One noted that the training focused on the use of pesticides. The five trainings were offered by NGOs (n=2), a cooperative as a host (n=1), a university (n=1), and LARI (n=1), once in the years 2003, 2014, and 2020, and twice in 2021. Sessions were 2-3 hours, one time or repeated over 1-3 days. However, not all content was OSH. The training focused on safety measures and agricultural practices (n=1), first aid and protection from pesticides (n=1), safety and organic agriculture (n=1), maintenance (n=1), and food safety (n=1). The trainings were rated 3.5 (n=1), 4 (n=2), and 5 (n=2), all out of 5. Four of the 5 farmers found the training useful, although one of the four dropped in the middle of training. PPE (gloves, masks, other) were provided only in the training course offered by LARI.

Farmers were asked if their workers have ever received OSH training. One out of 37 answered in the affirmative. Three workers at his farm were trained in 2021 over several months, as part of a Cash for Work programme funded by AVSI. The farmer reported that the workers received PPE (gloves, masks, caps, eye shields), but he noticed little change in their work practices.

► Availability/ Provision of PPE and OSH services

Workers were asked whether PPE and OSH services were provided to them and at the farms where they work. Farmer were asked if they provide such services.

Workers' and farmers' reporting

Except for the provision of PPE at three sites (where 15 workers were interviewed), the 15 individual and collective interviews with 60 workers revealed that no OSH services, equipment, or tools are provided at any of the farms. The OSH services asked about included health screening, health insurance, accident insurance, fall protection, first aid kits, training on first aid, training on driving/operating tractors and heavy machinery, training on proper work postures, and training on manual handling.

The farmers confirmed the responses of workers regarding OSH services. Three out the 37 interviewed farmers reported providing PPE to workers. One farmer, who works at an institution, reported having health and accident insurance coverage that extend to the members of his family that assist him in farm activities. Other than these, all 37 farmers reported that OSH services, equipment, or tools are not provided at any of the farms.

Insurance and healthcare

In the absence of any insurance or coverage by the National Social Security Fund (NSSF) for the vast majority of Lebanese working in the agriculture sector, Lebanese workers refer to their social networks for support and try to access nearby health centers for general healthcare; as for hospital care, they seek it at public hospitals or private hospitals where hospitalization is subsidized by the Ministry of Public Health. Syrian workers mentioned that when sick or injured, whether related or not related to work, they seek medical advice and treatment (medications or disinfectants) at nearby pharmacies where they would save on a physician's consultation fee and transportation cost to health centers or hospitals. If medical care is needed, they access nearby and affordable healthcare centers. It is worth noting that the primary health centers under the Ministry of Public Health (run by the ministry or NGOs) are open to Syrians. UN agencies would cover up to 80% of hospitalization; yet, Syrian workers reported that a 20% co-pay will deter many of them from going to hospitals except as last resort. Occasionally, farmers out of their own compassion may contribute to these medical expenses, especially if work related.

When challenged about no provision of health or medical insurance to their workers, many farmers reported that they themselves are not covered by the NSSF or any medical insurance policy. They also

noted that with the plummeting value of the Lebanese currency and the prohibitive cost of PPE and any OSH tools, such services will be provided less in the future. To illustrate, if the cost of one glove, which may serve for a couple of weeks, is \$1-2, two years ago this was equivalent to 1,500-3,000 LL whereas it is equivalent to 23,000-46,000 LL at the time of the report writing – December 2021.

► Interest in OSH training

Farmers and workers were asked if they were interested in attending training activities on OSH in agriculture and any preferences for timing and mode of delivery.

Interest and priority topics

All **workers** (15/15 interviews) believe that OSH is an important issue. They think it is important because safety, prevention, and self-preservation are very important (n=3), it is good to differentiate good from bad practices (n=2), and health comes first (n=1). Out of the 15 interviews, 14 expressed interest in OSH training in agriculture and only one expressed no interest. Having no time was reported as a hindrance to attend any workshop. All except one (the same worker who is not interested in OSH) will encourage other workers to pursue OSH training. As for priority OSH issues for training (Table 12), 4 out of 15 interviews mentioned pesticides followed by protection from weather extremes (cold/heat) and general and non-specific issues (each at 3 out of 15).

Eighteen out of the 20 **farmers** interviewed responded that OSH is an important issue. One did not believe so and the other thought it is the lowest priority. Those who believe OSH is important thought so because safety and prevention are important (n=4), health comes first (n=3), we need to reduce pesticide residues (1), and it is good knowledge (n=1). However, four farmers thought it is not feasible or practical to implement OSH when farmers and workers are worried about their daily living; one farmer asserted that OSH without strict law enforcement will not work.

When asked about their interest in OSH training in agriculture, 18 farmers were positive, one was ambivalent, and one expressed no interest. Five stated that they will attend only if they have time, 2 only if the training is practical and contextualized, 2 to gain knowledge, 1 to be able to reduce hazards, 1 to be able to support workers, and 1 because of a convincing experience with OSH in KSA farms. The remaining 6 out of 18 did not explain why they will attend OSH training.

Only one farmer stated that he will not encourage his workers to attend OSH training, because he can train them himself. The other 19 will encourage their workers to attend. Of those, one farmer reported that OSH training will improve trust between farmers and workers and another that it will make them more vigilant at work. However, other farmers were doubtful that workers will be interested (n=2), or they will have time to attend (n=2). Two farmers stressed the need for practical not theoretical training and another farmer recommended spacing training over several weeks by delivering one topic each week and offering incentives for attendance.

When asked about priority OSH issues for training (Table 12), farmers prioritized training on pesticides (n=9), machinery especially tractors (n=7), and general safety (n=4), while workers prioritized pesticides (n=4), protection from heat, cold, and weather elements (n=3), and general safety (n=3). Workers, but not farmers, mentioned training on emergency and first aid, ergonomics, and fall prevention. In contrast, farmers, but not workers, mentioned use of tools, farm management, human rights, and Corona.

Table 12. Priority OSH issues for training reported by workers and farmers

Top OSH issues for training	Number of times mentioned by workers (15 interviews, 60 workers)	Number of times mentioned by farmers (20 interviews, 37 farmers)
Pesticides	4	9
Protection from exposure to heat/cold	3	1
General safety/ Nothing in specific	3	4
Emergency and first aid	2	0
Ergonomics	2	0
Specific machinery (tractors, etc.)	1	7
Use of PPE	1	1
Fall prevention	1	0
Proper harvesting	1	1
No answer	1	1
No interest	1	0
Use of tools	0	2
Farm management (farmers and workers)	0	2
Human rights	0	1
Corona	0	1
Total	20	30

Mode of training

Workers either expressed no preference for a mode of training or reported that they have never attended a training workshop. In one interview, practical hands-on training was recommended. As for the preferred season for training, in 3 interviews winter was preferred and in one interview workers asked to avoid winter. Responses to preferred days and hours were diverse. A few workers dramatized the challenge in finding time for training by claiming they work a morning and an evening shift 7 days a week all year around with no days off.. Time allocated for OSH training, if any, is on top of the working hours and is not compensated by the farmer. Several workers mentioned that all days of the week are similar, so they recommended training between shifts (i.e., 12-2 pm) or in late afternoons. No organization was named as a preferred training entity.

Farmers recommended the following entities as their preferred training entities: NGOs (n=8), public sector like ministry of agriculture (n=5), municipalities (n=3), committed experts or agriculture engineers (n=2), private sector and input suppliers (n=3), no preference (n=1), and no answer (n=3). Seven farmers expressed their distrust in the public sector for fear of corruption and inefficiency.

In 17 out of the 20 interviews, farmers expressed their willingness to pilot model OSH farms in Lebanon. The other three were either not interested (n=2) or ambivalent (n=1). One farmer encouraged adopting the concept of model farms since farmers tend to imitate one another and they may accept to implement OSH measures in their farms if it works in other ones. Three farmers who expressed interest in joining such a model farm program did so for the following reasons: OSH principles will be put into action (practical); it will actually reduce harm on the farm; or it is an investment in the farm. However, two of those who are willing to join such a pilot program were skeptical of its success because there are many concurrent challenges (n=1) and the majority of workers are daily workers and not stable (n=1).

► Who is who in OSH training and capacity building?

Tables AI-3 and AI-4 (Appendix I) present preliminary information about the different training/capacity building activities, including on OSH, provided by the 'supply side' entities listed in table 3. Contact persons (check Table AI-2 in Appendix I) were interviewed in person or over a virtual meeting.

Which entities are interested in the agriculture sector?

Based on the interviews, the core mission and activities of these entities (Table AI-3) can be grouped into three categories as far as their engagement with the agriculture sector:

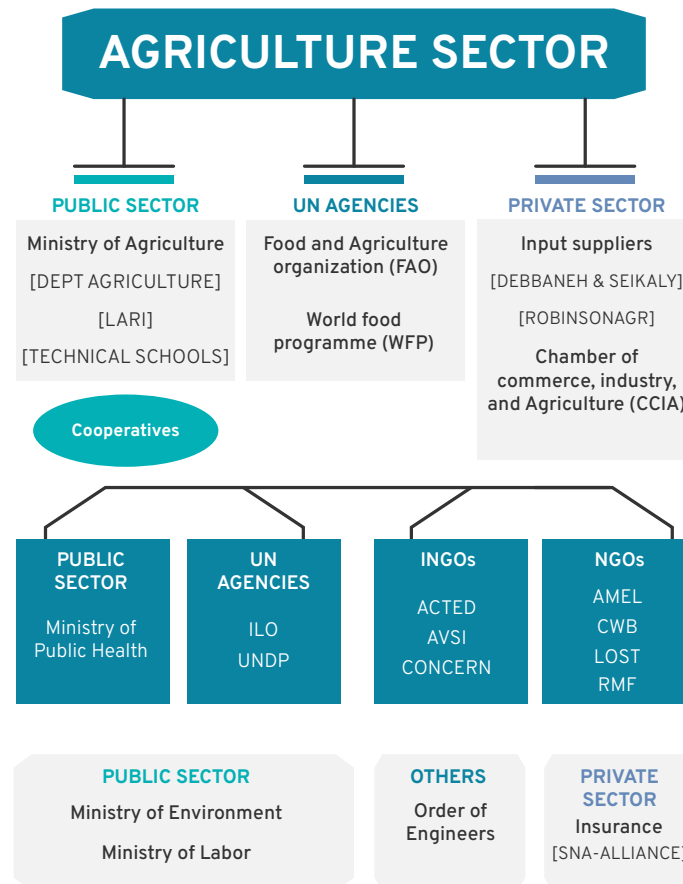


Figure 5. Extent of engagement in the agricultural sector by sectors and agencies/organizations

- **Category I:** Agriculture is at the core of the mission of these organizations, such as the Ministry of Agriculture (and its different units and departments), the Cooperatives, FAO, World Food Programme (WFP), Input suppliers, and the Chambers of Commerce, Industry, and Agriculture (CCIA). All or the majority of programs under these organizations are focused on the agriculture sector, farmers, and/or agricultural workers.
- **Category II:** Agriculture is not a core mission of these organizations but the activities and projects of these organizations intersect with the agriculture sector. This category includes the Ministry of Public Health whose primary health centers are open to all residents of Lebanon, including farmers and workers regardless of nationality. It also includes UN agencies, such as the UNDP and ILO. The ILO advocates for decent work in all sectors including the agriculture sector, while the UNDP supports development and livelihood projects across sectors and nationality. Similarly, INGOs and NGOs may carry missions that cover multiple sectors and serve different populations that include the agriculture sector. Some of the trade unions that defend the rights of farmers and workers in the agriculture sector (mainly trade unions present in the tobacco sector) fit this category too.

- **Category III:** Organizations grouped under this category offer or support programs or activities that do not cover or include the agriculture sector. The Ministry of Environment, for example, may deal with the environmental impact of some agricultural practices but is not concerned by the livelihood or safety of farmers and agricultural workers. The Ministry of Labor is restricted in its activities by the Labor Law in Lebanon, which excludes the agriculture sector. The Order of Engineers has so far not addressed the agriculture sector. Private insurance companies also have not approached the agriculture sector in a holistic way. Nonetheless, the MOL, Order of Engineers, and Insurance companies have the potential to become Category II entities if their mandate or programs are expanded to include agriculture. Figure 5 illustrates these three categories schematically.

Who is engaged in training activities?

Almost all organizations and agencies are engaged in some kind of training or capacity building (Table AI-3). A few have their own training/curriculum development unit (e.g., MOA Technical Schools, LOST), others have internal capacity to train and they may conduct training alone or in collaboration with other entities (e.g., MOA Departments of Agriculture and LARI, UN agencies, CWB, RMF, CCIA), and the rest recruit specialized consultants/trainers for the purpose of a specific training program/activity (e.g., Amel, AVSI, Cooperatives). Input suppliers have their own agricultural engineers and experts who train their clients in relation to their products or programs; they may occasionally collaborate with external experts. The MOL has competent labor inspectors whose skills are occasionally tapped into by UN, INGOs, and NGOs.

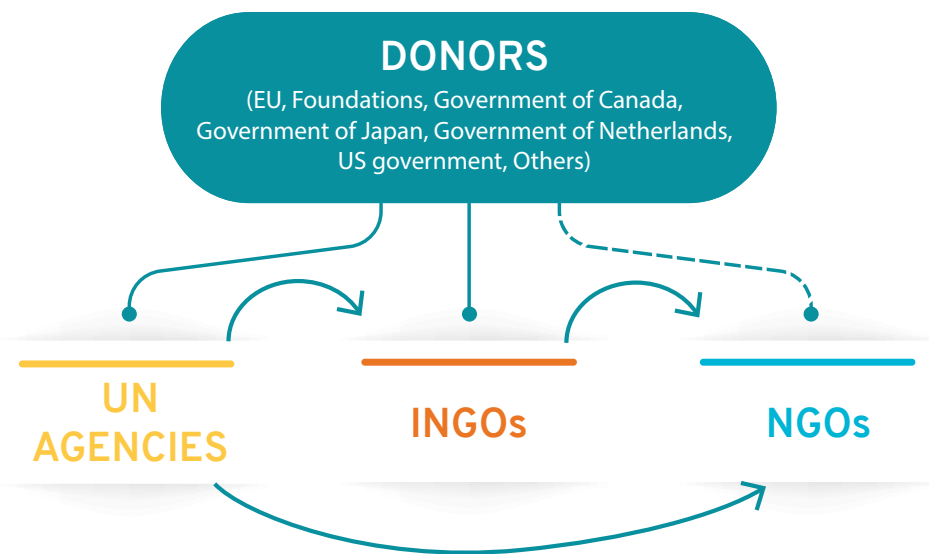


Figure 6. Flow of funds between entities

Level of collaboration between entities

The public sector, UN agencies, INGOs, and NGOs tend to work with each other on several programs and projects that may include training and capacity building related to the agriculture sector, including OSH. Figure 6 presents a schematic diagram of the flow of funding for such projects. The figure clearly shows that donors (EU, different governments and foundations) fund programs managed by the UN and INGOs and occasionally even NGOs. The UN agencies then fund INGOs and NGOs to collaborate or lead on projects. Similarly, INGOs fund NGOs to help in the operationalization of programs and projects. This means that UN agencies, INGOs, and NGOs are frequently working on the same programs/projects, which may present an opportunity to mainstream OSH in these programs.

Who is engaged in OSH training?

Unfortunately, except for the ILO whose mandate is to promote decent work, OSH training in agriculture is not core to the activities of most of the interviewed organizations and entities. Almost all of those interviewed reported that attention to OSH (training or otherwise) is absent, weak, minimal, not enough, or not effective in the agriculture sector (Table AI-4). One of the Cooperatives noted a recent interest in the topic of OSH, while WFP, AVSI and ACTED underscored that it is vital and much needed. None of the entities provide OSH services (screening, insurances, infrastructure, PPE, or other services) to farmers and workers, except as part of a specialized training session (where they usually hand out PPE) or to their own project beneficiaries and staff/workers (if they have farms or nurseries). All of them, however, expressed willingness with enthusiasm to collaborate on promoting OSH and offering OSH training in the agriculture sector. The exceptions were the Ministry of Environment because human health and safety is not part of its mandate and the Private Insurance Company because such a program can only be part of a business plan for the company.

Interestingly, the interviewees from UNDP stated that different agencies are doing a lot but still more is needed. This remark deserves more explanation, whereby the programs and initiatives of the different agencies and organizations intersect with OSH. This will be expanded in the following paragraph.

How does OSH intersect with different programs and initiatives?

Figure 7 shows how OSH intersects with the different thematic and population programs offered by the various entities. As mentioned before, agriculture is core to the mission of some entities (MOA, FAO, WFP, Cooperatives, CCIA, and Input suppliers). Their programs hence are **agriculture specific** addressing assets, education and training, input, legal issues, marketing, practices, and technology. Some INGOs and NGOs are funded to run some of these agriculture-specific activities. CCIA-Tripoli and LARI spoke of the ability of their labs to test agricultural products for pesticide residues, which links to



Figure 7. Intersection of OSH with different thematic and population programs

the proper and controlled use of pesticides on the farms and meeting ISO standards of practice and production. Other entities engage with the agriculture sector through their **thematic programs**, be it in community development, environmental protection, food security, gender, life skills, livelihood, or protection, most of which would fit under the concept of decent work. CCIA-Zahle/Beqaa, for example, reported on livelihood programs where unemployed youth are recruited into life skills and technical skills training to prepare them to join the labor force, which includes farming and agricultural work. NGOs addressing gender issues may end up addressing equality and rights issues for women working in agriculture. Trade unions in the agriculture sectors main concern is to defend the rights of farmers and workers in the sector, and provide them trainings to enhance their productivity, and indeed they view OSH in agriculture as an important topic. There is yet a third group of entities and programs that end up engaging with the agriculture sector through their interest in **specific population** groups. For example, UN agencies, INGOs, and NGOs are concerned about refugees, vulnerable populations, women, child labor, and youth, and consequently they may recruit farmers and agricultural workers into their programs. Regardless of their entry points, as UNDP indirectly alluded, these agencies and organizations raise some awareness about use of pesticides (with concern for residues and marketing), violence and abuse (with regards to working children and women), or safety practices (with women and food processing). None of these agencies and organizations adopt OSH as a main theme but some of its angles intersect with their work. This explains why almost all entities expressed willingness to collaborate on promoting OSH since it is feasible to introduce it into its programs.

► How to secure a sustainable OSH training and capacity building program in agriculture?

Table AI-5 (Appendix I) summarizes the responses of the different agencies and organizations to this question. Responses addressed who is more credible or competent to lead such an initiative, under what structure, and with what guiding principles. The question was open-ended and there was no list of options to choose from.

Out of the 27 entities interviewed, 15 respondents suggested a central role for the public sector (mainly the MOA) and two other respondents agreed to the role of the public sector but with much concern. In contrast, five respondents categorically refused a leading role for the public sector. Fourteen respondents also recommended a leading role for NGOs but one respondent expressed caution with NGOs. Eleven respondents mentioned that UN agencies, with some specifying the ILO, should lead such a program. Those who saw a critical role for the private sector were five, but two of them suggested a close monitoring and control of the private sector. Four respondents categorically rejected a role for the private sector. Cooperatives were mentioned by 4 respondents, worker's unions and representatives by 3, universities (agriculture) by 2, municipalities by 2, a legal partner by 1, primary health centers by 1, and INGOs also by one respondent.

The responses were not necessarily contradictory but reflected the lack of trust in certain institutions and the preference for a multi-stakeholder, multi-partner approach to a national OSH training program. There is a huge mistrust in the public sector and a deep concern about financial mismanagement and inefficiency even within those who insisted on their role. "We cannot absolve them of their duties and responsibilities", stated one respondent referring to the public sector. "No one replaces the government, and they ensure sustainability" said others. Mistrust in the private sector was also expressed. Several respondents warned of putting an OSH training program in the hands of for-profit entities who maybe self-serving. Respondents recognized a critical role for NGOs but more than one respondent noted that they are driven by projects and funding opportunities and cannot be depended on for a long-term and sustainable program. Local community groups and representatives, such as cooperatives, municipalities, and workers' unions, were strongly mentioned. INGOs were mentioned only once, and not even by the INGOs themselves, probably because they were confused or mixed with NGOs.

Respondents spoke of a national center, a consortium, an interagency unit, and a coordinating committee. One respondent called for the integration of OSH in all sectors. However, many respondents (including farmers and workers) noted that the political instability of Lebanon, its economic challenges, and the 'migrant/refugee' nature of the agricultural workforce present serious obstacles to the creation of a national OSH program. A few respondents said that it is all about a committed, transparent, and accountable leadership; it is about values and ethics and not structure. In addition, OSH cannot take roots in the agriculture sector in Lebanon without legal changes, such as inclusion of farmers and agriculture workers under the labor code and consequently under the NSSF, and without a policy commitment to agriculture. OSH would fare better in a well-supported agriculture sector. On the practical and implementation side, the following ideas were recommended: the need for long-term funding rather than another short-term program; transforming a few farms into Model OSH Farms; adopting field and hands-on training, such as TOT of farmers and workers, field farming schools, close coaching and follow-up, Cash for Work programs; and appointing people well trained in OSH at cooperatives or at regional centers. A role for universities and schools of agriculture was noted and the need to integrate OSH into curricula, even for K-12 classes. "We need to change the safety culture of our people and we have to start early in age", noted one NGO respondent.

6.

DISCUSSION

This study was based on a non-random convenience sample and its findings may not be generalizable. Yet, since it was diverse and inclusive of different farms and settings, we can extract a lot of information from the results as long as they are cautiously interpreted.

Ninety-three percent (93%) of the interviewed workers were Syrian and 100% of the interviewed farmers were Lebanese. Lebanese farmers were 97% male, older than the Syrian workers (46.6 years (SD 12.9) vs 32.3 years (SD 14.6)) and more educated (62% grade 10 or above vs 0%). Only one-third of the interviewed Syrian workers were males, who were older than the Syrian female workers (35.2 years (SD 16.5) vs 30.9 years (SD 13.5)) with no striking difference in educational level (each 55% with grade 1-9 education). The findings are comparable to a recent ILO study on a convenience sample of 200 greenhouses in Akkar and the Beqaa in which the farm owner/manager (i.e., 200 farmers) and one worker at every other greenhouse (i.e., 100 workers) were interviewed.⁷⁷ Only 2% of the farm owners/managers were female and 1% were Syrian, with an average age of 46.8 years. Only 30% reported an educational level of grade 10 or above as compared to 60% in this study sample. The 100 interviewed workers were 72% male and 20% Lebanese, which, as per the authors, “is not representative of greenhouse workers in terms of gender and nationality”. The farmers reported that usually 90.8% of their workers are Syrian and 69.2% are female, which is more comparable with the findings of our study (93% Syrian and 66% female) noting that this study also includes orchards and open fields. Of the 100 interviewed greenhouse workers, six workers (6%) reported attaining baccalaureate and university education as compared to 0% in this study sample.

► OSH situation

The current study revealed that the OSH situation in agricultural farms, whether open fields, greenhouses, or orchards, does not meet the code of practice for safety and health in agriculture published by the ILO in 2010. Both male and female workers are exposed to many OSH hazards with minimal protective measures:

- Those who work outdoors, especially in open fields, are exposed to the sun during the summer season. They wear hats, *kufieh*, or scarves for protection and may take a break and drink water if needed. Nonetheless, frequent incidents of fainting under the sun were reported. During the winter

season, workers are exposed to cold/rain/humidity and female workers described that their clothes will be drenched with water and their feet stuck in the mud. A higher frequency of slips and falls were reported in the winter but no increase in respiratory illnesses. Workers referred to such exposures as 'normal' and part of the job. Although focused on Syrian working children in the Beqaa, Habib⁶¹ reported that 82% of the surveyed children worked under the sun for an average of 5.9 hours/day and about 30% worked in the cold for an average of 5.8 hours/day.

- ▶ Exposure to pesticides was clearly another significant hazard. Only men mix and apply pesticides and usually without wearing respirators, goggles, gloves, protective clothing, or boots. Interviewed workers spoke of others who mix pesticides with their hands and arms. A few pesticide applicators informed us that occasionally their heads and clothes will be dripping of pesticides especially if they are spraying above their height. They do not own or use protective clothing. Instead, they wear regular clothes dedicated to work that their wives clean at home. Consequently, the risk of exposure of members of the family (adults and children) to pesticides is high. As for female workers, although they do not apply pesticides. They have reported potential exposure since they re-enter the farms (orchards, fields, or greenhouses) within less than 24 hours of pesticide application. Only a few workers, however, reported health problems related to pesticide exposure that required hospitalization. Some mentioned that nausea, vomiting, fatigue, and 'flu-like' symptoms may follow pesticide application, confirming exposure and mild acute poisoning. The workers did not report any long-term effects of pesticides, which is not surprising because they cannot make the link. These unsafe practices around pesticides concur with the findings of Mardigian et al.³⁴ where "41.4% (of 104 farmers) reported mixing different pesticides using bare hands or a stick, and only 36.5% reported wearing gloves during mixing." Similarly, another study authored by Salameh et al.³⁵ reported that less than 25% of the 85 agricultural workers with direct exposure to pesticides use PPE (special gloves, clothing face and eye masks). It is worth noting that the publication of the two studies was separated by 17 years (2004 and 2021), yet the practices have not changed as confirmed in our study.
- ▶ Back and joint pain is almost a constant for all workers, especially the women who work in awkward postures (squatting, bending, kneeling, or stretching) picking vegetables in open fields and greenhouses for many hours a day. None of the workers was aware of the possibility of adopting ergonomic-friendly practices in their work. Interestingly, one worker in a worker-friendly greenhouse stated that he never realized that his tasks could be done in a comfortable setting referring to benches at waist height. In a systematic review of the literature on migrant women farm workers and a case study from Lebanon, Habib and Fathallah⁵³ reported a high prevalence of musculoskeletal disorders due to repetitive work in awkward postures.
- ▶ Several women spoke of stress at work, mainly related to their non-stop daily work schedule that includes an early morning shift (as early as 3:00 or 4:00 am in the winter), an evening shift, and chores at home in between the shifts and in the evening. It was reported that pregnant women do not stop work until the day of delivery and that a few gave birth in the field. They also spoke of financial hardships and the challenge of simultaneously working, raising children, carrying household chores, and attending to the husband and family needs. These experiences were also reported in the horticulture study⁷⁷ and the survey of working children⁶¹.
- ▶ Biological hazards, such as stings and bites, were reported mainly by female workers. A few women also reported allergies due to exposure to vegetable dust. Not surprisingly, other biological hazards such as bacteria, viruses, or parasites, were rarely mentioned by the interviewed workers because they are not visible or felt. One farmer however referred to crowding in the homes of workers and the increase use of wastewater in irrigation. Our observations and interviews support the possibility of such exposures, since no worker was seen wearing a safety or even a regular plastic boot in the field or irrigation canal. This is important to note since the demarcations between living and working conditions are rather absent for agricultural workers..
- ▶ None of the male or female workers reported exposure to noise or vibration, although these hazards are connected to the use of tractors and other machinery and tools (power ploughs and saws) operated by men.

In spite of the multiple and recurrent exposures to OSH hazards, a small proportion of workers reported work-related diseases. Most probably, this is related to the absence of a demarcation between the workplace (farm) and the living quarters (tents) for those who live on the farm or at informal tent settlements (ITS). All workers reside in suboptimal living conditions. Practically, there are no boundaries between exposures at work or ITS, whether in potential of exposure to weather elements or safety and psychosocial hazards. This lack of distinction is also seen at the level of healthcare. Syrian refugees utilize pharmacies and primary health centers for any illness or injury and are covered by UNHCR for emergencies and hospitalization, regardless of whether the illness or injury is related to work or not. In the absence of proper surveillance and limited medical recording, it is difficult to differentiate work-from non-work-related health problems.

Although both workers and farmers were not that eloquent or specific about the types and magnitude of OSH hazards in agriculture and at their farms, we can confidently assume that both groups are aware of their existence and have either experienced, observed, or heard of an incident related to one of these hazards. The challenge is that workers and farmers have both normalized the risky work environment and accept hazards as a given, as part of the package. Several farmers and workers believe there is nothing much to change. For those who think there is room for change, such as in adopting structural changes or using protective equipment, they state that it is not affordable or sustainable especially in the current economic crisis. This was true across size, type, and location of farms and farmers. Farmers, and even workers, agreed that PPE and other protective or ergonomic measures are nowadays an unaffordable luxury. Many farmers doubted the willingness of the workers, especially the migrants, refugees, and those with low education, to change practices. Some farmers shifted the burden of responsibility to the workers and their *shaweesh*. As employers, the farmers evoked the nature of agricultural work in Lebanon where workers do not have written work contracts since they are traditionally hired on a seasonal or daily basis, paid per hour directly or through the *shaweesh*, and rotate between farms. Furthermore, farmers reported high cost of operation in all phases of farming, limited marketing opportunities, and consequently financial losses. They adamantly stated they could not provide better work environment for workers at the farm or afford purchasing health or accident insurance policies for themselves, let alone workers. Workers and farmers agreed that it will be very difficult to initiate change from within and that for change to happen support has to be external from the government or international organizations.

► OSH training

One of the most salient findings in this study is that all entities from the public sector, private sector, INGO, NGO, UN, and other believe that OSH is critical and needed in the agriculture sector in Lebanon. They all agreed that OSH is not only good for the workers but also for the business. Several respondents (cooperatives, CCIA, MOA) noted the need to meet strict criteria regarding packaging and pesticide residues to improve the reputation of agricultural products in Lebanon and open new and wider markets for export. CCIA and MOA noted that abiding by OSH guidelines is also required by certifying bodies and many international markets. Respondents however noted many obstacles in the face of developing OSH training programs.

First, Lebanon is not only hosting a refugee crisis and suffering from multiple and concurrent political and financial crises, it is itself a country at the verge of a humanitarian crisis. A policy brief recently published by ESCWA⁷⁸ reports that 82% of the population of Lebanon in 2021 are living in multidimensional poverty and of those 40% are living extreme multidimensional poverty which includes several deprivation indices (“health care, medicines, services, education, employment, housing and assets”) besides financial deprivation. The situation may further deteriorate with the dollarization of the Lebanese economy and the lifting of many subsidies including for fuel and medicines. These crises, worsened by the COVID-19 pandemic and the associated lockdowns, have raised awareness about food insecurity and the need for self-dependence in food production. Several INGOs and NGOs mentioned that a new brand of people have elected to engage in agriculture bringing experiences from other disciplines. They referred to

them as entrepreneurial farmers, a new category that is slowly growing next to the traditional farmers, who could be more receptive to change and the adoption of OSH measures.

Second, respondents at the supply side and farmers cast doubt on the ability to initiate and sustain an impactful and sustainable OSH training program in Lebanon. They stated that the country is plagued with financial mismanagement and inefficiency and that the public sector is not the only one to blame for that. Many respondents mentioned that incentives and gifts that come along with short-term projects and training workshops funded by UN agencies and INGOs have undermined farmers and workers trust in the system and diverted their attention to immediate gains. Even NGOs, assumed the closest to their communities, were accused of short-term vision and hopping between projects looking for funding. Several respondents stated that long-term commitment and close partnerships will increase trust and reduce the need for incentives.

Third, respondents reported that political cleavages, along sectarian and nationality lines, present yet another challenge to a successful OSH training program in Lebanon. Many recommended that such a program should be sensitive to and aware of these tensions. Several respondents recommended forming a coalition/ consortium that involves entities from all sectors. There was however no consensus on who could lead such a consortium, although preference tilted towards international entities in collaboration with the public sector.

Fourth, several respondents expressed a strong opinion that nothing will change without current and enforceable policies. They recommended regular inspection and monitoring of OSH on farmers. Farmers demanded as a start the recognition of the agriculture sector by the labor law and the right of farmers and agricultural workers to join the NSSF.

Fifth, a number of respondents expected a long-term commitment to OSH with generous funds and human resources. The MOA (division of agriculture and LARI), LOST, CCIA, Order of Engineers, and others requested financial support and/or training their own staff in OSH.

Acknowledging these obstacles, this study shows that there is interest and enthusiasm in OSH at all levels. Most entities are engaged in training and capacity building, even if not necessarily on OSH, and most of them already work together either on joint projects or through subcontracting. There was a strong voice, however, especially from farmers, workers, and NGOs, that OSH training should be practical, on the ground, and monitored after the conclusion of training. OSH hence could be mainstreamed into ongoing projects. Figure 7 discussed above reveals that OSH sits at the intersection of different interests and programs for all supply entities and that in fact most of them are contributing to OSH without naming it as such but tangentially and in piecemeal efforts.

7.

RECOMMENDATIONS

In spite of the multiple challenges and obstacles that face its initiation and implementation, there is a room for an effective OSH program in the agriculture sector in Lebanon. This section will be divided into two parts, the first part will focus on the ecosystem needed for the success of such a program and the second will suggest short- and long-term activities to promote and support OSH in agriculture in Lebanon.

► Ecosystem needed for an effective OSH program in agriculture

For an OSH program in the agriculture sector to take root and grow in Lebanon, there is a need to embrace the following principles and strategies:

► Adopt a **multi-stakeholder approach**

Although OSH is a core mission for the ILO and part of its goal to promote decent work, it has to be integrated into the work of other UN agencies and consequently into the work of INGOs and NGOs. OSH is not only concerned with hazards at work but also the social, economic, and political environment that affects work and the labor force.^{26,27} This was clear in the work of the different entities other than the ILO. For example, UNDP is interested in livelihood support and forest management and the safety and health of their own teams and beneficiaries can be core to their work. UNICEF, FAO, and ILO jointly supported research on child labor in the agriculture sector and that is at the heart of OSH. LOST and CWB are two NGOs in the Beqaa that work with hundreds of farmers and workers in different settings, again ensuring good OSH conditions can be integrated in their work. The different units under MOA (divisions of agriculture and LARI) can swiftly integrate OSH into their work with farmers and agricultural workers not as a tangential topic but as an entry point to their work. In other words, OSH should not be presented as a standalone issue but rather as an integral element of projects and programs that support livelihoods and build life skills.

As a start, the stakeholders involved in this assessment can organize a meeting inclusive of all entities interviewed in this project, and possibly invite other entities too, to share and discuss the findings of this

study and its recommendations. The meeting (or workshop) will gauge the commitment and interest of the different entities to OSH and initiate a candid and transparent discussion towards adopting a National Action Plan. A coordinating committee could be formed and the idea of a consortium can be explored. The coordinating committee may consist of eight members, representing the ILO, another UN agency, INGOs, NGOs, the MOA, the farmers, the workers, and academic institutions. For higher efficiency, a small committee can serve as the scientific and technical secretariat for the wider coordinating committee. The committee will periodically (every 6 months) report to the different entities.

- ▶ Develop a **national OSH policy with a strategy that is responsive to gender issues and sensitive to the social and political tensions and cleavages in Lebanon and committed to transparency and accountability**

There is a need to fully document the potential obstacles and challenges to promoting OSH in agriculture. Some of these challenges have transpired through this study, but in-depth quantitative and qualitative studies with the input of labor economists, social scientists and anthropologists, political scientists, and policy and legal experts are needed. These different perspectives should input into a national OSH policy in agriculture, translated into a strategy that is gender-sensitive and responsive to reality and focused on the welfare of farmers and agriculture workers across regions and sects maybe transformational for the country.

We have to admit that although there is interest and enthusiasm around OSH in agriculture, the odds of success are limited in the face of the multiple crises Lebanon is experiencing. Hence, besides adopting a multi-stakeholder approach and aiming at a national policy and strategy, the process has to be transparent with commitment to accountability. Expectations have to be modest and achievable over a multi-year plan and the focus should be on the process of inclusion and open debate to identify opportunities to engage.

- ▶ Promote **OSH within all sectors**

The OSH situation is suboptimal in all sectors of the economy in Lebanon and not only in the agriculture sector. It is important thus to promote OSH within all sectors. Moreover, agricultural workers, being migrants and refugees, move between occupations. In Lebanon, Syrian workers are permitted to work only in the agricultural, construction, and cleaning sectors, three of the more hazardous occupations globally. We should aim at OSH becoming mainstream. This should be part of efforts to promote the safety culture in Lebanon.

- ▶ Establish an **OSH Unit for agriculture** at the MOL and **OSH training/awareness unit** at MOA

In tandem to the promotion of a multi-stakeholder approach, it is critical to establish a reference unit for OSH in agriculture within the public sector. This should be established at the MOL if and when the Lebanese Labor law expands its coverage to include the agriculture sector. A complementary unit focused on OSH training and awareness raising in the agricultural sector could be established at the Ministry of Agriculture (MOA), ideally connecting inspection and enforcement (MOL) with training (MOA) and bringing the perspective and expertise of the two ministries closer. The sustainability of any OSH program in agriculture requires a supportive home in the government.

- ▶ Strengthen the **OSH inspectorate** at the MOL

For any OSH strategy to succeed, it has to adopt a carrot and stick approach. Farmers, workers, and all entities engaged with the agriculture sector should be educated about OSH and on an ongoing basis. Farmers, farms, workers and all engaged entities should be recognized and given incentives to stimulate their livelihood and economy in return for good practices and OSH improvements. In parallel, laws and regulations should be up-to-date and well enforced. Proper and comprehensive enforcement, however, requires a good number of well-trained OSH inspectors. Currently, the Division of Labor Inspection and Occupational Safety and Health under the Ministry of Labor employs 10-15 medical doctors and engineers as OSH inspectors, which cannot cover all economic sectors and the whole country. There is an urgent need to increase the number of OSH inspectors at the MOL, recruit people with OSH training into the Division, and elevate the status of 'Labor Inspection and OSH' organizationally from a division to a department.

Proposals for short- and long-term activities

At a more granular level, the following include short- and long-term activities to promote OSH in agriculture in Lebanon. These activities will cover three dimensions: laws and policies, training and capacity building, and local scientific evidence.

Laws and policies

Efforts to upgrade the Lebanese Labor Law to include the agriculture sector are ongoing. These efforts should be supported through advocacy and communication until this goal is achieved. It is difficult to promote OSH and decent work in the agriculture sector as long as farmers and agricultural workers are excluded from the labor law and are not given the right to join the NSSF. To improve odds of success, efforts should first mount up to advance our understanding of the principles as well as the legal and practical barriers behind the exclusion of agricultural workers from NSSF provisions. Moreover, social health protection should be provided on a mandatory basis to all, including agriculture workers and their families, through solidarity-based financing, the private insurance sector can also have a complementary role in providing what the ILO calls 'impact insurance'

Advocacy efforts from the ILO, trade unions, agricultural cooperatives, and OSH professionals should mount up on the Lebanese parliament to ratify ILO Conventions 155 (Occupational Safety and Health), 161 (Occupational Health Services), and 187 (Promotional Framework for Occupational Safety and Health), which focus on OSH in general and on OSH services, as well as Conventions 129 (Labour Inspection-Agriculture) and 184 (Safety and Health in Agriculture), which focus on OSH in agriculture.

Capacity building/ training in OSH-Agriculture

The study revealed that there are resources and experiences in training and capacity building in most of the interviewed entities, be it the public sector (particularly the MOA and its units), NGOs (LOST and CWB in the Beqaa and RMF in Akkar), and entities like CCIA. The Order of Engineers presents a potential resource since it represents agricultural engineers in Lebanon and can self-fund activities. There are two options for developing training programs, either gather the different entities in a comprehensive training program or identify specific programs for each entity. For example, LOST and CWB in the Beqaa work with hundreds of farmers and farms and offer several training programs on farm management, financial and human resource management, and new technologies. They would provide access to those farmers and sustainability to the program as they build their own OSH capacity. LOST specifically has a dedicated unit that develops and offers its own curricula. As for the public sector, the Divisions of Agriculture spread across the country and offer training sessions to farmers and workers that can be expanded to include OSH. Similarly, LARI, which although its mandate is research on agriculture, has always developed and offered training activities alone or in partnership with NGOs, UN agencies, or INGOs. The downside with the public sector is the low trust of farmers and workers in its work and efficiency. Hence, the need to ensure multi-partner approach to training. CCIA presents an interesting model and both branches in Zahle and Tripoli have been engaged in offering livelihood programs, building life skills, and providing technical support. The UN agencies and INGOs have a significant role in funding, technical support, and monitoring and evaluation. The private sector (input suppliers/ agrochemical outlets) should be involved with caution and under strict monitoring by the coordinating committee referred to before.

What can be done?

- ▶ Establish **partnership with a reputable academic institution**. It is critical to engage academic institutions in OSH training programs, as they can bring in decades of experience in teaching, training, research, and evaluation. Several academic institutions in Lebanon could serve in this role. These include the American University of Beirut, USEK, University of Balamand, and the Lebanese University to mention a few.

- ▶ Support the **OSH training within the technical schools under MOA**. The ILO, FAO, and MOA have invested generously in supporting these agriculture technical schools in different regions of the country. FAO, ILO, and MOA have published a recent report on upgrading the technical agriculture education system in Lebanon.⁷⁹ OSH is now offered as a module in the revised curriculum,⁸⁰ and FAO, ILO, and MOA are collaborating with INGOs such as AVSI and Welfare Association for Research and Development (WARD) on developing and offering OSH training within the MOA technical schools as well as directly to local communities (farmers and workers). The seeds have been planted and this presents an opportunity to grow the program. At minimum, this module should be regularly updated and diversified to include more hands-on training including students working in the field next to farmers and workers.
- ▶ Develop **multiple training curricula** (for different settings and target groups) in collaboration with workers, farmers, cooperatives, NGOs, and experts at government and other entities. Each of these curricula will address the needs of a different target population. Curricula targeting workers will be hands-on and practical, those targeting farmers and cooperatives will focus on planning and managerial issues in OSH, while those addressed to NGOs and experts will be of training-the-trainer (TOT) nature.
- ▶ Offer **short-term training** (workshops, certificates) built on hands-on, practical training, in addition to providing PPE to farmers and workers at an affordable price. These workshops could focus on the top priorities identified by both workers and farmers in this study, such as proper handling of pesticides, appropriate use of machinery and sharp tools, protection from heat, cold, and weather elements, and alternative more ergonomic agricultural practices. Workers and farmers may receive a certificate upon completion of a series of workshop and demonstration of proper application at work and the farm.
- ▶ Collaborate with academic institutions to introduce **OSH undergraduate and graduate courses** to their students, especially those training in agriculture, and to offer minors, diplomas, or even degrees in OSH.
- ▶ Adopt at least two farms in each of Akkar and the Beqaa to serve as **model OSH Farms**, where low-cost OSH technologies and measures could be piloted. Farmers should be both traditional and entrepreneurial farmers. The latter group of farmers maybe more amenable to the adoption of OSH measures because of their interest in new market inside and outside Lebanon. The inclusion of both types of farmers in such a program will serve as a controlled experiment that presents an opportunity to compare both settings and assess elements of success and failure in each.
- ▶ Integrate OSH within **Employment Intensive and Investment Programmes** (EIIP) and **Cash for Work programmes** and develop **field-farming schools**.
- ▶ Establish a **network of OSH-trained farmers and workers**. One worker suggested nurturing OSH champions among workers. Those can reach out to their fellow workers on several farms more efficiently than technical people or professionals.
- ▶ Train **agricultural engineers** working in different settings (public and private sector, INGO, NGO) on OSH. This group of professionals are in direct contact with farmers and workers. This could be done in collaboration with the Orders of Engineers.
- ▶ Train **labor inspectors** at the MOL on OSH in agriculture and **OSH trainers** at the MOA.
- ▶ Train **health personnel** (physicians, nurses, community workers) within PHC on OSH in agriculture and how to identify and manage OSH-related diseases and injuries.
- ▶ Offer **incentives** to farmers, workers, and engaged entities which provide evidence for good OSH practices and improvement in OSH situation. Depending on the expected outcome and level of achievement, these incentives may include health insurance policies at a reduced cost, low-interest loans, and free or subsidized expert consultation, facilitation of networks. Such incentives will be plausible and advocated for within a national and multi-stakeholder OSH program.
- ▶ Develop a **monitoring and evaluation** (M&E) program to assess progress and identify obstacles.

Surveillance, surveys, and research

Current knowledge reveals that the OSH situation in agriculture in Lebanon is not acceptable and does not meet standards of practice. This is based on observations, anecdotal evidence, and a number of studies and surveys. However, what is known is not enough or comprehensive. There is no or minimal data on diseases and injuries related to agricultural work, and even less data on long-term health outcomes as compared to acute diseases and injuries. There is also no surveillance. Except for the comprehensive epidemiological study of working children in agriculture conducted by Habib⁶¹, almost all published studies and reports are limited in sample size and based on convenience sampling. Research is a critical component of any strategy to improve OSH in agriculture in Lebanon. Both quantitative and qualitative studies are needed to fully document the OSH situation in agriculture in Lebanon, the magnitude and severity of OSH hazards, practices and obstacles to change, work-related health and injuries (short and long term), gender and equity issues, and other.

The following is non-exhaustive list of potential research and surveillance activities:

- ▶ Conducting studies that focus on specific subpopulations (e.g., children, women, older people, refugees), hazards (e.g., pesticides, noise, vibration), or settings (e.g., greenhouses, specific crop). Focused studies allow for more in-depth analysis of the OSH situation for each group and setting and provide the basis for context-specific recommendations and interventions.
- ▶ Adopting quantitative, qualitative, and mixed methodologies to document the burden of OSH in agriculture in numbers and provide a deeper understanding of the social and economic complexities behind these numbers.
- ▶ Supporting OSH studies with research on the legal and policy environments that influence OSH. As mentioned earlier, such studies should be conducted to understand the legal and practical barriers behind the exclusion of agricultural workers from social security.
- ▶ Building one or multiple surveillance systems to document work-related injuries and acute illnesses. These systems could be national or geographically contained, and focused on a specific working group (in this case, agricultural workers), a specific crop production, a specific OSH hazard, and/or a specific injury or health outcome. The proposed systems can tap into the more than 200 primary health care centers (PHC) in the country, including many that are managed by NGOs, such as Amel Association. These PHC can expand their primary health services including mobile services to target agricultural workers and farmers and provided customized preventive, curative, and educational services. Building good health records for enrolled workers and their families would provide strong documentation and a basis for a surveillance system.

▶ REFERENCES

1. International Labour Organization. *Code of practice on safety and health in agriculture*. Geneva: ILO, 2010.
2. Investment Development Authority of Lebanon. Agriculture: Sectors in Focus. https://investinlebanon.gov.lb/en/sectors_in_focus/agriculture. Published 2019. Accessed Aug 2021.
3. World Bank. Agricultural land (sq. km) - Lebanon. <https://data.worldbank.org/indicator/AG.LND.AGRI.K2?locations=LB>. Published 2018. Accessed Aug 2021.
4. Ministry of Agriculture. *General results of the comprehensive agricultural census 2010*. Beirut: MoA, 2012.
5. United Nations High Commissioner for Refugees: Global Focus. Lebanon. <https://reporting.unhcr.org/node/2520?y=2021>. Accessed Nov 2021.
6. United Nations High Commissioner for Refugees - Lebanon. Refugees and asylum-seekers. <https://www.unhcr.org/lb/refugees-and-asylum-seekers>. Accessed Feb 2022.
7. Statista. Lebanon: Share of economic sectors in the gross domestic product (GDP) from 2010 to 2020. <https://www.statista.com/statistics/455263/share-of-economic-sectors-in-the-gdp-in-lebanon/>. Published 2021. Accessed Aug 2021.
8. Ministry of Agriculture. *Lebanon National Agriculture Strategy - NAS 2020-2025*. Beirut: MoA, 2020.
9. Abouzeid M, Habib R, Jabbour S, Mokdad A, Nuwayhid I. Lebanon's humanitarian crisis escalates after the Beirut blast. *The Lancet*. 2020;396(10260):1380-1382.
10. European Training Foundation. *Labor Market and Employment Policy in Lebanon*. Beirut: ETF, 2015.
11. Hamade K. *Lebanon*. Beirut: Arab NGO Network for Development (ANND), 2010.
12. United Nations High Commissioner for Refugees, United Nations International Children's Emergency Fund, World Food Programme. *Vulnerability assessment of Syrian refugees in Lebanon (VASYR 2017)*. Lebanon: UNHCR, UNICEF, and WFP, 2017.
13. Habib R, Mikati D, Hojeij S, El Asmar K, Chaaya M, Zurayk R. Associations between poor living conditions and multi-morbidity among Syrian migrant agricultural workers in Lebanon. *The European Journal of Public Health*. 2016;26(6):1039-1044.
14. Investment Development Authority of Lebanon. *Agriculture Sector in Lebanon: 2020 Factbook*. Beirut: IDAL, 2020.
15. Investment Development Authority of Lebanon. *Agriculture Sector in Lebanon: 2017 Factbook*. Beirut: IDAL, 2017.
16. United Nations Economic and Social Commission for Western Asia. *Rural Context in Lebanon*. Beirut: ESCWA, 2019.
17. United Nations Office for the Coordination of Humanitarian Affairs. *Lebanon: Beqaa & Baalbek - El-Hermel Governorates Profile (October 2018)*. Beirut: OCHA, 2018.
18. Farole T, Konishi Y. *Jobs in North Lebanon-Assessment of the Potato Value Chains*. Lebanon: The World Bank, 2017.
19. International Fund for Agricultural Development. *Harmonised Actions for Livestock Enhanced Production and Processing*. Beirut: IFAD, 2017.
20. Food and Agriculture Organization. *Country Programming Framework 2012-2015*. Beirut: FAO, 2012.
21. David A, Marouani MA, Nahas C, Nilsson B. The economics of the Syrian refugee crisis in neighbouring countries: The case of Lebanon. *Economics of Transition and Institutional Change*. 2020;28(1):89-109.

22. Halabi S, Ghanem N. *Strategic Review of Food and Nutrition Security in Lebanon*. Beirut: ESCWA, 2016 (Short Version).
23. Food and Agriculture Organization. *Lebanon's agricultural sector: challenges and opportunities*. Beirut: FAO, 2021.
24. Haddad E, Chamoun N. *Developing the typical dairy products of the Beqaa and Baalbeck-Hermel: diagnosis and local strategy*. International Centre for Advanced Mediterranean Agronomic Studies; 2014.
25. Turhanoğullari Z, Ozçatalbaş O. The importance of extension for occupational health and safety in agricultural sector. *Journal of Food, Agriculture & Environment*. 2014;12(1):312-316.
26. Nuwayhid I. Occupational health research in developing countries: a partner for social justice. *American journal of public health*. 2004;94(11):1916-1921.
27. Habib R, Fathallah F, Nuwayhid I. Workers' health: a social framework beyond workplace hazards. Chapter 2. In: *Public health in the Arab world*. Cambridge University Press, Cambridge, UK; 2012:286-299.
28. Alli B. *Fundamental principles of occupational health and safety* Second edition. Geneva, International Labour Organization. 2008.
29. Habib R, Blanche G, Souha F, El-Jardali F, Nuwayhid I. Occupational health and safety in hospitals accreditation system: the case of Lebanon. *International Journal of Occupational and Environmental Health*. 2016;22(3):201-208.
30. Habib R, El-Haddad N, Halwani D, Elzein K, Hojeij S. Heat stress-related symptoms among bakery workers in Lebanon: a national cross-sectional study. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2021;58:0046958021990517.
31. Habib R, El-Haddad N, Elzein K, Hojeij S. Mental and self-rated health of bakery workers in Lebanon: a national study. *SAGE open medicine*. 2020;8:2050312120962345.
32. Habib R, El-Harakeh A, Ziadee M, Abi Younes E, El Asmar K. Social capital, social cohesion, and health of Syrian refugee working children living in informal tented settlements in Lebanon: A cross-sectional study. *PLoS medicine*. 2020;17(9):e1003283.
33. Habib R, Ziadee M, Abi Younes E, Harastani H. Syrian refugee child workers: Gender differences in ergonomic exposures and musculoskeletal health. *Applied ergonomics*. 2020;83:102983.
34. Mardigian P, Chalak A, Fares S, Parpia A, El Asmar K, Habib R. Pesticide practices in coastal agricultural farms of Lebanon. *International journal of environmental health research*. 2021;31(2):132-147.
35. Salameh P, Abi Saleh B. Symptoms and acute pesticide intoxication among agricultural workers in Lebanon. *The Lebanese Medical Journal*. 2004;52(2):64-70.
36. Salameh P, Baldi I, Brochard P, Abi Saleh B. Pesticides in Lebanon: a knowledge, attitude, and practice study. *Environmental research*. 2004;94(1):1-6.
37. Habib R, Fathallah F, Messing K. Full-time homemakers: workers who cannot "go home and relax". *International Journal of Occupational Safety and Ergonomics*. 2010;16(1):113-128.
38. Habib R, El-Masri A, Heath R. Women's strategies for handling household detergents. *Environmental Research*. 2006;101(2):184-194.
39. Habib R, Nuwayhid I, Yeretzian J. Paid work and domestic labor in disadvantaged communities on the outskirts of Beirut, Lebanon. *Sex roles*. 2006;55(5):321-329.
40. Saddik B, Williamson A, Black D, Nuwayhid I. Neurobehavioral impairment in children occupationally exposed to mixed organic solvents. *Neurotoxicology*. 2009;30(6):1166-1171.
41. Saddik B, Williamson A, Nuwayhid I, Black D. The effects of solvent exposure on memory and motor dexterity in working children. *Public health reports*. 2005;120(6):657-663.

42. Nuwayhid I, Usta J, Makarem M, Khudr A, El-Zein A. Health of children working in small urban industrial shops. *Occupational and Environmental Medicine*. 2005;62(2):86-94.
43. Fayad R, Nuwayhid I, Tamim H, Kassak K, Khogali M. Cost of work-related injuries in insured workplaces in Lebanon. *Bulletin of the World Health Organization*. 2003;81:509-516.
44. Nuwayhid I, Fayad R, Tamim H, Kassak K, Khogali M. Work-related injuries in Lebanon: Does nationality make a difference? *American journal of industrial medicine*. 2003;44(2):172-181.
45. Nuwayhid I, McPhaul K, Bu-Khuzam R, Duh S, Christenson R, Keogh J. Determinants of elevated blood lead levels among working men in Greater Beirut. *The Lebanese medical journal*. 2001;49(3):132-139.
46. Health Safety Executive in London, Health Safety Commission in London, and Agriculture Industry Advisory Committee. *Farmwise Your essential guide to health and safety in agriculture*. Sudbury: HSE Books;1999.
47. Castro CL, Hunting K. Measuring hazardous work and identifying risk factors for non-fatal injuries among children working in Philippine agriculture. *American Journal of Industrial Medicine*. 2013;56(6):709-719.
48. Rautiainen R, Lehtola M, Day L, et al. Interventions for preventing injuries in the agricultural industry. *Cochrane Database of Systematic Reviews*. 2008(1).
49. Molina-Guzmán LP, Ríos Osorio LA. Occupational health and safety in agriculture. A systematic review. *Revista de la Facultad de Medicina*. 2020;68(4):625-638.
50. World Health Organization, International Labour Organization. *WHO/ILO joint estimates of the work-related burden of disease and injury, 2000-2016: global monitoring report*. Geneva: WHO and ILO, 2021.
51. International Labour Organization. *Safety and Health in Agriculture*. Geneva: ILO, 2000.
52. Patil B, Babus VS. Role of women in agriculture. *International Journal of Applied Research*. 2018;4(12):109-114.
53. Habib R, Fathallah F. Migrant women farm workers in the occupational health literature. *Work*. 2012;41(Supplement 1):4356-4362.
54. Jackson L, Rosenberg H. Preventing heat-related illness among agricultural workers. *Journal of agromedicine*. 2010;15(3):200-215.
55. Dellinger A, Kachur P, Sternberg E, Russell J. Risk of Heat-Related Injury to Disaster Relief Workers in a Slow-Onset Flood Disaster. *Journal of Occupational and Environmental Medicine*. 1996;38(7):689-692.
56. Wagoner R, López-Gálvez N, de Zapien J, Griffin S, Canales R, Beamer P. An Occupational Heat Stress and Hydration Assessment of Agricultural Workers in North Mexico. *International Journal of Environmental Research and Public Health*. 2020;17(6):2102.
57. García-Trabanino R, Jarquín E, Wesseling C, et al. Heat stress, dehydration, and kidney function in sugarcane cutters in El Salvador – A cross-shift study of workers at risk of Mesoamerican nephropathy. *Environmental Research*. 2015;142:746-755.
58. Donham K, Thelin A. *Agricultural medicine: rural occupational and environmental health, safety, and prevention*. John Wiley & Sons; 2016.
59. Alavanja M, Hoppin J, Kamel F. Health Effects of Chronic Pesticide Exposure: Cancer and Neurotoxicity. *Annual Review of Public Health*. 2004;25(1):155-197.
60. Calvert G, Karnik J, Mehler L, et al. Acute pesticide poisoning among agricultural workers in the United States, 1998–2005. *American Journal of Industrial Medicine*. 2008;51(12):883-898.
61. Habib R. *Survey on Child Labour in Agriculture in the Beqaa Valley of Lebanon: The Case of Syrian Refugees*. Beirut, Lebanon: American University of Beirut Press, 2019.
62. Shaban A, Hamzé M, (Editors). *The Litani River, Lebanon: an assessment and current challenges*. Vol 85. Water Science and Technology Library: Springer; 2018.

63. Watson K. How Long Can You Go Without Peeing? <https://www.healthline.com/health/how-long-can-you-go-without-peeing#pee-table>. Published 2019. Accessed Oct 2021.
64. Sachin P. Manwani Vijay Kumar, Singh Bhoopendra, Sachin Pandey (2014): Study of Various Bites among Agricultural Workers at a Tertiary Care Hospital of Maharashtra. *Indian Journal of Forensic Medicine and Pathology*. 2014;7.
65. International Labour Organization. *Global estimates of child labour: Results and trends, 2012-2016*. Geneva: ILO, 2017.
66. Habib R, Mikati D, Al-Barathie J, et al. Work-related injuries among Syrian refugee child workers in the Beqaa Valley of Lebanon: A gender-sensitive analysis. *PLoS one*. 2021;16(9).
67. Makhoul J, Shayboub R, Jamal J. VIOLENCE. *Journal of Children and Poverty*. 2004;10(2):131-147.
68. Washington State Department of Labor & Industries: Division of Occupational Safety and Health. *Agriculture Safety and Health Pocket Guide. A Reference of Safety and Health Hazards and Accident Prevention Best Practices*. 2015.
69. Government of Western Australia Department of Commerce. *Agricultural safety and health checklist*. 2014.
70. Kim H, Räsänen K, Chae H, Lee K. Analysis of checklists for agricultural safety management. *Annals of Agricultural and Environmental Medicine*. 2018;25(3):494-499.
71. SafeFarms WA. *30 minute farm safety check*. Western Australia, 2021.
72. Health and Safety Authority Dublin. *Farm Safety Code of Practice Risk Assessment Document for Farms with Three or Less Employees*. 2017.
73. International Labour Organization. *Global Action Guide for WIND Work Improvement in Neighbourhood Development Practical approaches for improving safety, health and working conditions in agriculture*. Geneva: ILO, 2014.
74. The Agricultural Health and Safety Network. *The Farm Safety Audit A Management Tool for Farmers*. Canadian Centre for Health and Safety in Agriculture. 2018.
75. Borisova E, Borcan L, Borožan A, et al. Guideline for OSH practice within the Agriculture sector. *Bucharest: AGROSH+*. 2018.
76. International Labour Organization. *Decent work in agriculture sector in Jordan: Assessment of legal frameworks and operations at farm level*. 2021 (Draft).
77. International Labour Organization/PROSPECTS. *The state of covered horticulture in Lebanon*. Beirut: ILO, 2021 (Draft).
78. United Nations Economic and Social Commission for Western Asia. *Multidimensional poverty in Lebanon (2019-2021). Policy brief*. Beirut: ESCWA, 2021.
79. Food and Agriculture Organization and International Labour Organization. *Enhance the capacity of the MoA for evidence-based planning through pilot tracer studies – Upgrading the technical agriculture education system in Lebanon project*. Beirut: FAO and ILO, 2021.
80. Food and Agriculture Organization. *Accelerated vocational training in agriculture curriculum of module on occupational safety and health in agriculture*. Beirut: FAO, 2020.
81. International Labour Organization. NORMLEX-Ratifications for Lebanon. https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_INSTRUMENT_SORT,P11200_COUNTRY_ID:2,103147#Occupational_safety_and_health. Published 2020. Accessed Oct 2021.

► APPENDIX I

Table A1-1. List of ILO Conventions ratified by Lebanon⁸¹ and national OSH laws and decrees

List of ILO Conventions	Ratification Date
C001: Hours of Work (Industry), 1919	25-Jun-77
C014: Weekly Rest (Industry), 1920	22-Jun-62
C017: Work Accident Compensation, 1925	25-Jun-77
C019: Equality of Treatment (Accident Compensation), 1925	25-Jun-77
C026: Minimum Wage-Fixing Machinery, 1928	22-Jun-62
C029: Forced Labour, 1930	25-Jun-77
C030: Hours of Work (Commerce and Offices), 1930	25-Jun-77
C045: Underground Work (Women), 1935	26-Jul-62
C052: Holidays with Pay, 1936	22-Jun-62
C059: Minimum Age (Industry), 1937	25-Jun-77
C071: Seafarers' Pensions, 1946	06-Dec-93
C077: Medical Examination of Young Persons (Industry), 1946	25-Jun-77
C078: Medical Examination of Young Persons (Non-Industrial Occupations), 1946	25-Jun-77
C081: Labor Inspection Convention, 1947.	22-Jun-62
C088: Employment Service, 1948	25-Jun-77
C089: Night Work (Women), 1948	22-Jun-62
C090: Night Work of Young Persons (Industry) (Revised), 1948	22-Jun-62
C095: Protection of Wages, 1949	25-Jun-77
C098: Right to Organize and Collective Bargaining, 1949	25-Jun-77
C100: Equal Remuneration, 1951	25-Jun-77
C105: Abolition of Forced Labor, 1957	25-Jun-77
C106: Weekly Rest (Commerce and Offices), 1957	25-Jun-77
C111: Discrimination (Occupational and Employment), 1958	25-Jun-77
C115: Radiation Protection, 1960	25-Jun-77
C120: Hygiene (Commerce and Offices), 1964	25-Jun-77
C122: Employment Policy, 1964	25-Jun-77
C127: Maximum Weight, 1967	25-Jun-77
C131: Minimum Wage Fixing, 1970	25-Jun-77
C136: Benzene, 1971	23-Feb-00
C138: Minimum Age, 1973. (Ratified by law No. 400)	5-Jun-02

List of ILO Conventions	Ratification Date
C139: Occupational Cancer, 1974	23-Feb-00
C142: Human Resources Development, 1975	23-Feb-00
C148: Working Environment (Air Pollution, Noise and Vibration), 1977	4-Apr-05
C150: Labor Administration, 1978	4-Apr-05
C170: Chemicals, 1990	26-Apr-06
C172: Working Conditions (Hotels and Restaurants), 1991	23-Feb-00
C174: Prevention of Major Industrial Accidents, 1993	4-Apr-05
C176: Safety and Health in Mines, 1995	23-Feb-00
C182: Elimination of Worst Forms of Child Labor. (Ratified by law B12No. 335)	2-Aug-01
Arab Labor Conventions	
Arab Labor Convention No. 18: Minor Employment (ratified by virtue of law No. 183)	24-May-00
National Laws and Decrees	
Code of Labor (and its successive amendments)	23-Sep-46
Decree 6341: Health Protection in all enterprises subject to the Code of Labor	24-Oct-51
Decree 136: Work Accidents	16-Sep-83
Decree 700: Employment of minors under the age of 16 or 17.	25-May-99
Decree 11958: Protection, Prevention, and Safety in Construction	25-Feb-04
Decree 11802: Occupational Prevention, Safety and Health in all enterprises subject to the Code of Labor	30-Jan-04
Decree 3273: Labor Inspection	26-Jun-00
Decree 14229: Table of Occupational Diseases	26-Feb-05
Decree 5137: Establishment of a National Committee to Combat Child Labor	1-Oct-10
Decree 8987 on "Worst Forms of Child Labor"	29-Sep-12

Table A1-2. List of entities (supply side) interviewed with position/role of interviewees.

Sector	Entity	Role/position of interviewees
Public Sector	Ministry of Agriculture/ Department of Agriculture in Baalbek (Beqaa)	▪ Head of department
	Ministry of Agriculture/ Department of Agriculture in Akkar (Abdeh)	▪ Head of department
	Ministry of Agriculture/ Lebanese Agricultural Research Institute (LARI/ Beqaa)	▪ Director of Tal Al-Amara Station
	Ministry of Environment	▪ Director General
	Ministry of Labor	▪ Most experienced OSH inspector

Sector	Entity	Role/position of interviewees
UN Agencies	Food and Agriculture Organization (FAO)	<ul style="list-style-type: none"> Assistant FAO Representative for Programmes Project Manager (technical agriculture curriculum system)
	International Labor Organization (ILO)	<ul style="list-style-type: none"> Regional Advisor Labour Inspection & OSH
	UN Development Programme (UNDP)	<ul style="list-style-type: none"> Head of Livelihood Programmes Senior Technical Officer in Beqaa (forest management)
	World Food Programme (WFP)	<ul style="list-style-type: none"> Livelihood Associate / Beqaa Regional Food Security Sector Coordinator Programme Policy Officer / Food for Training (FFT) focal point Programme Policy Officer
INGOs	Agency for Technical Cooperation and Development (ACTED)	<ul style="list-style-type: none"> Regional Economic Development Technical Coordinator (supports ACTED in Livelihood and Economic Development)
	AVSI-People for Development	<ul style="list-style-type: none"> Project Coordinator and Livelihood Technical Specialist Senior Field Officer (ILO prospects)
	Concern Worldwide (Concern)	<ul style="list-style-type: none"> Project Manager Livelihood Labor Law and Decent Work Specialist
NGOs	Amel Association	<ul style="list-style-type: none"> Medical Coordinator
	Cooperation Without Borders (CWB)	<ul style="list-style-type: none"> Agriculture Manager
	Lebanese Organization for Studies and Training (LOST)	<ul style="list-style-type: none"> Coordinator of Food Technology Coordinator of Agriculture Village
	Rene Moawad Foundation (RMF)	<ul style="list-style-type: none"> Head of Education and Human Development Department
Private Sector	Debbaneh-Seikaly Agriculture	<ul style="list-style-type: none"> Central Product Manager for Seeds Central Product Manager for Pesticides
	Robinson Agriculture	<ul style="list-style-type: none"> Chief Executive Officer
	SNA-Alliance Insurance	<ul style="list-style-type: none"> Senior Insurance Consultant
Other	Chamber of Commerce, Industry and Agriculture (CCIA)	<ul style="list-style-type: none"> Director of the Center for Publication Relations and Trainings (CCIA-Zahle) Director of the Center of Commerce (CCIA-Tripoli) Director of Laboratories (CCIA-Tripoli)
	Order of Engineers (Beirut)	<ul style="list-style-type: none"> Member of the elected Order's Council (Head of Branch 7)
	Trade Unions in agriculture	<ul style="list-style-type: none"> Proposed by General Confederation of Lebanese Workers (CGTL)

Table AI-3. Mission, overall development and training activities, and OSH training in different stakeholders (supply side)

		Mission and activities related to agriculture	Training/ capacity building activities	OSH training in Agriculture
PUBLIC SECTOR				
Ministry of Agriculture (MOA)	MOA- Department of Agriculture (Baalbek)	<ul style="list-style-type: none"> Animal & Plant Health Licensing & Inspection Communication with & Support to farmers 	<ul style="list-style-type: none"> Yes, alone and with NGOs, INGOs, and UN agencies 	<ul style="list-style-type: none"> Minimal
	MOA- Department of Agriculture (Akkar)	<ul style="list-style-type: none"> Building Agricultural Capacity Awareness In-kind support Testing pesticide residues 	<ul style="list-style-type: none"> Yes, alone and with NGOs, INGOs, and UN agencies 	<ul style="list-style-type: none"> No
	MOA- LARI	<ul style="list-style-type: none"> Research to solve agricultural challenges Awareness/ Coaching (agricultural techniques) 	<ul style="list-style-type: none"> Yes, alone and with NGOs, INGOs, and UN agencies [GAP/ Plant diseases/ Insects] 	<ul style="list-style-type: none"> No
	MOA- Technical schools	<ul style="list-style-type: none"> Train agricultural technical professionals (formal technical education) 	<ul style="list-style-type: none"> Educators/ Instructors: Full training curriculum (degree) 	<ul style="list-style-type: none"> An OSH module within the curriculum
	Ministry of Environment	<ul style="list-style-type: none"> Environmental protection Sustainable environmental practices Engage with agriculture only if relevant to environment (e.g., Methyl Bromide) 	<ul style="list-style-type: none"> None relevant to human health 	<ul style="list-style-type: none"> No
	Ministry of Labor- Labor inspection and OSH Unit	<ul style="list-style-type: none"> Labor and worksite inspection No engagement with agriculture 	<ul style="list-style-type: none"> Only on Individual capacity (labor inspectors invited to talk about OSH) 	<ul style="list-style-type: none"> No (Farmers/ Workers not covered by Labor Code)
UN AGENCIES				
	UN Development Programme (UNDP)	<ul style="list-style-type: none"> Support to local communities Social and economic development Livelihood 	<ul style="list-style-type: none"> Yes, direct and through NGOs and other entities [Proper agricultural practices] 	<ul style="list-style-type: none"> Yes [Recently: Cash for Work]
	Food and Agriculture Organization (FAO)	<ul style="list-style-type: none"> Resilience of agriculture sector. Develop agriculture sector. Preserve natural resources. Food security 	<ul style="list-style-type: none"> Yes, direct and through NGOs and other entities [including training on equipment and legal and regulatory issues] 	<ul style="list-style-type: none"> Yes
	World Food Programme (WFP)	<ul style="list-style-type: none"> End hunger Support Lebanese economy and population (SDGs): livelihoods and food security 	<ul style="list-style-type: none"> Yes, with cooperating partners [Food For Assets (FFA)/ Food For Training (FFT)/ School feeding] 	<ul style="list-style-type: none"> No
	International Labour Organization (ILO)	<ul style="list-style-type: none"> Decent work to all Equality between males and females Rights (freedom, justice, security) 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> No - (Yes, in Jordan and Palestine)

	Mission and activities related to agriculture	Training/ capacity building activities	OSH training in Agriculture
INGOs			
AVSI	<ul style="list-style-type: none"> ▪ Livelihood (mainly agriculture) ▪ Education (mainly support and informal) 	<ul style="list-style-type: none"> ▪ Yes - Short-term vocational and life skills - Under Prospects: 60 hours then on the job training (7 weeks) 	<ul style="list-style-type: none"> ▪ Yes: OSH covered under Prospects [presentations on OSH in agriculture]
CONCERN	<ul style="list-style-type: none"> ▪ End hunger ▪ [Programs in Livelihood, WASH, Work opportunities] 	<ul style="list-style-type: none"> ▪ Yes - Depending on value chain addressed (last was livestock and zaatar) 	<ul style="list-style-type: none"> ▪ Yes
ACTED	<ul style="list-style-type: none"> ▪ Sovereignty ▪ Infrastructure and service development ▪ Economic development 	<ul style="list-style-type: none"> ▪ Yes - [Value chain skills, Environment] 	<ul style="list-style-type: none"> ▪ No
NGOs			
Amel Association	<ul style="list-style-type: none"> ▪ Right to health ▪ Human rights ▪ Vulnerable populations (in health, agriculture, education) 	<ul style="list-style-type: none"> ▪ Yes - [Agricultural practices] 	<ul style="list-style-type: none"> ▪ No
Cooperation Without Borders (CWB)	<ul style="list-style-type: none"> ▪ Community development ▪ Education ▪ Agriculture ▪ Environment 	<ul style="list-style-type: none"> ▪ Yes - [IPM/ CAP/ Agricultural practices - Food processing (women)] 	<ul style="list-style-type: none"> ▪ No
Lebanese Organization for Studies and Training (LOST)	<ul style="list-style-type: none"> ▪ Support people and community 	<ul style="list-style-type: none"> ▪ Yes, training department - [Agriculture (GAP, Nurseries, Greenhouses, Irrigation)/ Environment (WASH, Solar energy)/ - Cooperatives/ Entrepreneurship/ - Food technology (women)] 	<ul style="list-style-type: none"> ▪ No
Rene Mouawad Foundation	<ul style="list-style-type: none"> ▪ Development/ Livelihood/ Local governance ▪ Agriculture ▪ Protection/ Health ▪ Education/ Women empowerment 	<ul style="list-style-type: none"> ▪ Yes - [Technical and life skills training to farmers and youth] 	<ul style="list-style-type: none"> ▪ Yes
COOPERATIVE			
Sanad Cooperative-Irsal	<ul style="list-style-type: none"> ▪ Support farmers in Irsal 	<ul style="list-style-type: none"> ▪ No 	<ul style="list-style-type: none"> ▪ No
Cooperative for Rural Development in Majdala and its surrounding	<ul style="list-style-type: none"> ▪ Reduce cost of production and marketing to farmers 	<ul style="list-style-type: none"> ▪ Yes, with NGOs - [Crop production marketing] 	<ul style="list-style-type: none"> ▪ No

	Mission and activities related to agriculture	Training/ capacity building activities	OSH training in Agriculture
Cooperative for Potato Farmers in Akkar	<ul style="list-style-type: none"> Protect farmers' rights Reduce cost of production and expand local and international markets 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> No
Cooperative for Agricultural Development in Rmoul Plain	<ul style="list-style-type: none"> Develop agriculture Build marketing capacity 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> No
Al-Shams Cooperative in Baalbek	<ul style="list-style-type: none"> Find job opportunities for local agricultural engineers 	<ul style="list-style-type: none"> Yes, with FAO - [Business development] 	<ul style="list-style-type: none"> No
PRIVATE SECTOR			
Debbaneh-Seikaly	<ul style="list-style-type: none"> Improve health, environment, and life standards Experimental and production stations Research and Development 	<ul style="list-style-type: none"> Yes - [IPM/ ICM/ Agricultural practices] 	<ul style="list-style-type: none"> Yes (mainly pesticides)
Robinson Agriculture	<ul style="list-style-type: none"> Agriculture and Environmental Sustainability 	<ul style="list-style-type: none"> Yes - [Proper agricultural practices] 	<ul style="list-style-type: none"> No
SNA-Alliance Insurance	<ul style="list-style-type: none"> Insure life, property, and business 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> No
OTHER			
Chamber of Commerce, Industry, and Agriculture (CCIA)-Zahle	<ul style="list-style-type: none"> Development of economic sectors in the Beqaa 	<ul style="list-style-type: none"> Yes - [Youth (agriculture and tourism)/ Food for Training (FFT)/ Soft skills/Gender] 	<ul style="list-style-type: none"> Yes (part of FFT and other projects; provide PPE)
Chamber of Commerce, Industry, and Agriculture (CCIA)-Tripoli	<ul style="list-style-type: none"> Development of economic sectors in the Beqaa [Quality assurance (10 laboratories)/ Agrifood research/ Agrifood production/ Knowledge economy/ Other] 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> No
Order of Engineers (Beirut)-Section 7 Agricultural engineers and other specializations	<ul style="list-style-type: none"> Promote role of the agricultural engineer Promote the profession 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> No
Trade Unions in agriculture (4 TUs under Tobacco production)	<ul style="list-style-type: none"> Working for farmers and workers rights Workshops and trainings to enhance productivity 	<ul style="list-style-type: none"> Yes, attended trainings with different agencies 	<ul style="list-style-type: none"> Minimal

Table AI-4. Training capacity and interest in OSH training for different stakeholders (supply side)

		Your trainers	Your perception of OSH training in agriculture	Suggested incentives to farmers/ workers	Do you provide OSH services?	Interested in collaborating with ILO on OSH
PUBLIC SECTOR						
Ministry of Agriculture (MOA)	MOA- Department of Agriculture (Baalbek)	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> Services Less if you build connections and trust 	<ul style="list-style-type: none"> PPE Awareness material (via organizations) 	<ul style="list-style-type: none"> Yes
	MOA- Department of Agriculture (Akkar)	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> In-kind and financial support 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes
	MOA- LARI	<ul style="list-style-type: none"> Internal 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> In-kind support (tools, fertilizers) Health scare techniques do not work. 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes
	MOA- Technical schools	<ul style="list-style-type: none"> Internal 	<ul style="list-style-type: none"> More is needed 	-	-	<ul style="list-style-type: none"> Yes
Ministry of Environment	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> OSH protects workers 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Not MOE mandate 	
Ministry of Labor- Labor inspection and OSH Unit	<ul style="list-style-type: none"> Internal (as individuals) 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> OSH saves money and increase production 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes 	
UN AGENCIES						
UN Development Programme (UNDP)	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> Different agencies did a lot More is needed 	<ul style="list-style-type: none"> OSH guidelines improve product and expand markets 	<ul style="list-style-type: none"> Only to own interventions 	<ul style="list-style-type: none"> Yes 	
Food and Agriculture Organization (FAO)	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> If any, not effective 	<ul style="list-style-type: none"> In-kind support. 	<ul style="list-style-type: none"> Only to beneficiaries (accident insurance, PPE) 	<ul style="list-style-type: none"> Yes (already collaborating) 	
World Food Programme (WFP)	-	<ul style="list-style-type: none"> Vital 	<ul style="list-style-type: none"> In-kind support. Cash for Food. 	<ul style="list-style-type: none"> Only to own interventions 	<ul style="list-style-type: none"> Yes 	
International Labour Organization (ILO)	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> OSH is an investment, an obligation (legal and religious) Compensation for time/ transportation. 	<ul style="list-style-type: none"> Provides PPE/ Awareness material during training 	-	

	Your trainers	Your perception of OSH training in agriculture	Suggested incentives to farmers/ workers	Do you provide OSH services?	Interested in collaborating with ILO on OSH
INGOs					
AVSI	<ul style="list-style-type: none"> External (MOA staff) 	<ul style="list-style-type: none"> Very essential 	<ul style="list-style-type: none"> Better not. Limit to transportation and refreshment. 	<ul style="list-style-type: none"> Only to own programs 	<ul style="list-style-type: none"> Yes
CONCERN	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> Bad practices (OSH absent) 	<ul style="list-style-type: none"> Assets to farmers. Cash for Work. 	<ul style="list-style-type: none"> PPE to trainees 	<ul style="list-style-type: none"> Yes
ACTED	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Definitely needed 	<ul style="list-style-type: none"> Transportation and food. Cash for Work. 	<ul style="list-style-type: none"> Only to own programs 	<ul style="list-style-type: none"> Yes
NGOs					
Amel Association	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> Health coverage. Accessible PHCs. 	<ul style="list-style-type: none"> Health centers open to all 	<ul style="list-style-type: none"> Yes
Cooperation Without Borders (CWB)	<ul style="list-style-type: none"> Internal 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> No OSH means bad health and bad produce. Give tools. 	<ul style="list-style-type: none"> Only to own workers 	<ul style="list-style-type: none"> Yes
Lebanese Organization for Studies and Training (LOST)	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> More trust, less need for incentives. Transportation. 	<ul style="list-style-type: none"> Only to own staff and workers 	<ul style="list-style-type: none"> Yes
Rene Mouawad Foundation	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> Not enough 	<ul style="list-style-type: none"> In-kind support (PPE, transportation) Also incentives to farmers (equipment/ land improvement) 	<ul style="list-style-type: none"> As part of program/ project 	<ul style="list-style-type: none"> Yes
COOPERATIVE					
Sanad Cooperative-Irsal	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Weak to absent 	<ul style="list-style-type: none"> In-kind and financial support. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Yes
Cooperative for Rural Development in Majdala and its surrounding	<ul style="list-style-type: none"> External 	<ul style="list-style-type: none"> Recent interest 	<ul style="list-style-type: none"> In-kind support. 	<ul style="list-style-type: none"> PPEs (via organizations) 	<ul style="list-style-type: none"> Yes
Cooperative for Potato Farmers in Akkar	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Minimal 	<ul style="list-style-type: none"> In-kind and financial support. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Yes

	Your trainers	Your perception of OSH training in agriculture	Suggested incentives to farmers/ workers	Do you provide OSH services?	Interested in collaborating with ILO on OSH
Cooperative for Agricultural Development in Rmoul Plain	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Enough 	<ul style="list-style-type: none"> In-kind and financial support. [farmers prefer home visits] 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Yes
Al-Shams Cooperative in Baalbek	<ul style="list-style-type: none"> Internal 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> In-kind support. Real life stories. 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes
PRIVATE SECTOR					
Debbaneh-Seikaly	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> Missed 	<ul style="list-style-type: none"> Only if operating a farm as service 	<ul style="list-style-type: none"> Yes
Robinson Agriculture	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> Health scare messages do not work. No money. Repetition and follow-up 	<ul style="list-style-type: none"> Only to own staff and workers 	<ul style="list-style-type: none"> Yes
SNA-Alliance Insurance	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Absent 	<ul style="list-style-type: none"> No answer 	<ul style="list-style-type: none"> Only if policies are purchased 	<ul style="list-style-type: none"> No (unless a business model)
OTHER					
Chamber of Commerce, Industry, and Agriculture (CCIA)-Zahle	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Minimal 	-	-	-
Chamber of Commerce, Industry, and Agriculture (CCIA)-Tripoli	<ul style="list-style-type: none"> Internal External 	<ul style="list-style-type: none"> Minimal 	<ul style="list-style-type: none"> Cash back to farmers if follow OSH. Health insurance. 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes
Order of Engineers (Beirut)-Section 7 Agricultural engineers and other specializations	<ul style="list-style-type: none"> External (Members) 	<ul style="list-style-type: none"> Absent (not a priority to farmers and workers) 	<ul style="list-style-type: none"> Financial incentives do not work. Difficult to incentivize. 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes
Trade Unions in Agriculture	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Weak 	<ul style="list-style-type: none"> Granting PPEs or tools to participants Training location at a nearby place 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> Yes

Table AI-5. Recommended leadership for an OSH training/capacity building program in Lebanon by sectors and entities (supply side)

[Green: Yes; Red: No; No color: Not mentioned]

	Public sector	UN agencies	INGOs	NGOs	Private sector	Other	Principles to ensure sustainability
PUBLIC SECTOR							
Ministry of Agriculture (MOA)	MOA- Department of Agriculture (Baalbek)						<ul style="list-style-type: none"> 35 (going to 40) agricultural centers around Lebanon. M&E.
	MOA- Department of Agriculture (Akkar)					Cooperatives Municipalities	<ul style="list-style-type: none"> Farmers are partners.
	MOA- LARI					Schools of Agriculture	<ul style="list-style-type: none"> Public sector offers sustainability. A special unit at LARI. NGOs are temporary (facilitator). Accountability.
Ministry of Environment Ministry of Labor- Labor inspection and OSH Unit	MOA					Agriculture Labor Union	
						Cooperatives	<ul style="list-style-type: none"> Devoted people more important that entity.
UN AGENCIES							
UN Development Programme (UNDP)	With concern						<ul style="list-style-type: none"> Sustainability and standardization are difficult. Adopt a Consortium approach.
Food and Agriculture Organization (FAO)		ILO				Universities (agriculture)	<ul style="list-style-type: none"> Public sector ensures sustainability. Embed in curricula. Develop policies. Field farming schools. Pilot (model) farmers.
World Food Programme (WFP)		Interagency					<ul style="list-style-type: none"> Integrate OSH in all sectors
International Labour Organization (ILO)			Funding			Workers' representatives Cooperatives	<ul style="list-style-type: none"> National Center (governmental)

	Public sector	UN agencies	INGOs	NGOs	Private sector	Other	Principles to ensure sustainability
INGOs							
AVSI	MOA						
CONCERN	MOA	ILO					<ul style="list-style-type: none"> Recommend a national multi-partner OSH program
ACTED	MOL	ILO		Wide outreach		Legal partners	<ul style="list-style-type: none"> No OSH without enforcement (i.e., MOL)
NGOs							
Amel Association	With concern					Primary Health Centers	<ul style="list-style-type: none"> Adopt TOT approach. Long-term budgeting. M&E.
Cooperation Without Borders (CWB)				Focused on AGR and Education			<ul style="list-style-type: none"> Integrate OSH in school curricula (K-12).
Lebanese Organization for Studies and Training (LOST)	MOA MOL MOPH						<ul style="list-style-type: none"> Coaching not training (follow up and implementation)
Rene Mouawad Foundation	MOA	ILO (leads)		Focused on AGR			
COOPERATIVE							
Sanad Cooperative-Irsal							
Cooperative for Rural Development in Majdala and its surrounding							<ul style="list-style-type: none"> Fund a dedicated OSH in Coops.
Cooperative for Potato Farmers in Akkar							<ul style="list-style-type: none"> Trust building between farmers and public sector is a prerequisite.

	Public sector	UN agencies	INGOs	NGOs	Private sector	Other	Principles to ensure sustainability
Cooperative for Agricultural Development in Rmoul Plain						Municipalities	
Al-Shams Cooperative in Baalbek					Maybe	Empower workers to demand their rights.	<ul style="list-style-type: none"> Cash for Work programs (ILO and others) raise awareness of both workers and farmers, and ensure success and long-term change in practices.
PRIVATE SECTOR							
Debbaneh-Seikaly	MOA					Cooperatives	<ul style="list-style-type: none"> Private sector has the know-how.
Robinson Agriculture		ILO					<ul style="list-style-type: none"> Multi-stakeholder. Coordinating committee led by ILO. Long-term: repetition and follow-up.
SNA-Alliance Insurance							<ul style="list-style-type: none"> Critical role for private sector.
OTHER							
Chamber of Commerce, Industry, and Agriculture (CCIA)- Tripoli				Focus AGR			<ul style="list-style-type: none"> Public sector demolished. Farmers need a union to protect them: health insurance, support in transportation
Order of Engineers (Beirut)-Section 7 Agricultural engineers and other specializations				With concern	If controlled and monitored		
Trade Unions in Agriculture							

► APPENDIX II

◀ مشروع منظمة العمل الدولية: تحديد أنشطة الصحة والسلامة المهنية في القطاع الزراعي في لبنان

QUESTIONS TO GUIDE THE INTERVIEW WITH SUPPLY SIDE

Introduction

اسمي

أنا (مهندس زراعي) وأنا حاليًا عضو في فريق يعمل على مشروع بتكليف من منظمة العمل الدولية في لبنان.

تهتم منظمة العمل الدولية بتحسين ظروف السلامة والصحة المهنية في القطاع الزراعي في لبنان. ولتحقيق هذا الهدف، طلبت منظمة العمل الدولية من فريق محترف، تحت إشراف الدكتور إيمان نويهض من الجامعة الأميركية في بيروت (AUB)، تحديد أنشطة التدريب على السلامة والصحة المهنية الجارية في قطاع الزراعة في لبنان وتحديد الشركاء المحتملين المهتمين في بناء قدرات السلامة والصحة المهنية في هذا القطاع من خلال التدريب والتعليم الرسمي وغير الرسمي.

يمكن أن تمتد هذه المقابلة إلى 45-60 دقيقة على الأكثر.

خلال هذه المقابلة، سأطرح عددًا من الأسئلة التي ستوجه حديثنا. نحن مهتمون بمعرفة المزيد عن أهداف مؤسستكم وأنشطتها التدريبية العامة وفي بناء القدرات، وكذلك عن أنشطتكم فيما يخص السلامة والصحة المهنية عموماً وتحديدًا في القطاع الزراعي. كما أننا مهتمون بمعرفة قدراتكم التدريبية واهتمامكم في بناء السلامة والصحة المهنية في القطاع الزراعي ومدى استعدادكم للتعاون مع منظمة العمل الدولية وهيئات أخرى وطنية وعالمية في دعم السلامة والصحة المهنية في هذا القطاع.

يرجى ملاحظة أننا سوف ننشر اسم مؤسستكم ومعلومات الاتصال الخاصة بها في التقرير النهائي. غير أن هويتك كشخص مجيب ستبقى مجهولة إذا كنت تفضل ذلك.

هل أنت مستعد لبدء المقابلة؟ نعم / لا

إذا كانت الإجابة لا، فلماذا؟

إذا كانت الإجابة نعم، فهل توافق على تسجيل المقابلة؟ نعم / لا

إذا كانت الإجابة نعم: شكرًا. سأبدأ التسجيل الآن.

إذا كانت الإجابة لا: شكرًا، لا توجد مشكلة. سوف أقوم بتدوين ملاحظات خفية عن حديثنا.

تاريخ المقابلة: (اليوم) (التاريخ: اليوم / الشهر / السنة):

وقت البدء: صباحًا / مساءً

اسم الكيان / المؤسسة / المنظمة

اسم المحاور :

عنوان / منصب / دور المجيب:

إلى القائم بإجراء المقابلة: تذكر أن لدينا أنواعًا مختلفة من الكيانات (الوزارات ووكالات الأمم المتحدة والمنظمات غير الحكومية وموردي المدخلات (المعدات والآلات والأدوات والمبيدات والأسمدة والبذور وما إلى ذلك) والشركات. الرجاء استخدام الأسئلة / العناصر المرقمة أدناه كدليل. تأكد من التقاط النقاط المدرجة في القسم السفلي من هذا الجدول.

المجموعة المستهدفة: ما هي الممارسات الزراعية على وجه التحديد؟ المحاصيل، أشجار الفاكهة، أو الخيم الزراعية؟ حجم المزارع؟ عدد العمال؟ هل هناك سبب لاستهداف فئات معينة من المزارعين؟ مزارع على نطاق صغير أو كبير؟ ما هي حوافز المزارعين للانضمام إلى مثل هذه الدورات التدريبية؟ معلومات عن محتوى وتطوير مناهج التدريب.

1. من فضلك أخبرني في جملة أو جملتين عن المهمة أو الهدف الرئيسي لمنظمتك في لبنان.

2. هل تشارك منظمتك في أية برامج أو أنشطة تدريب، تعليم، و/أو بناء القدرات في قطاع الزراعة؟ نعم / لا. إذا كانت الإجابة لا، فلماذا؟

إذا كانت الإجابة نعم، يرجى التوضيح:

- ◀ مواضيع التدريب الرئيسية
- ◀ مدة التدريب: أيام، أسابيع، 3-9 شهور، سنة أو أكثر
- ◀ طريقة التلقين: شخصيًا، افتراضي (عبر الإنترنت)، هجين، غير ذلك.
- ◀ وتيرة الأنشطة التدريبية
- ◀ المستهدفون
- ◀ مصادر التمويل
- ◀ المدربين: موظفون دائمون أو مؤقتون/مستشارون. ما هي مؤهلاتهم؟

3. والآن بشكل أكثر تحديداً، نود أن نفهم ما إذا كانت مؤسستك تشارك في أي تدريب، تعليم، برامج، أو أنشطة لبناء القدرات تركز على السلامة والصحة المهنية.

أ. ما هو تصورك للتدريب القائم في لبنان حول السلامة والصحة المهنية في الزراعة؟

.....
.....
.....

ب. ما هو مفهومك عن تدريبات السلامة والصحة المهنية في الزراعة بشكل عام؟

.....
.....
.....

ج. من تجربتك، كيف يرى/ يقيّم المزارعون مثل هذه التدريبات؟ ماذا عن العمال الزراعيين؟

.....
.....
.....

د. هل تقدم منظمتك أي تدريب على السلامة والصحة المهنية في البيئة الزراعية؟ نعم/ لا

إذا كانت الإجابة لا، فلماذا؟

.....

إذا كانت الإجابة بنعم، يرجى التوضيح:

مواضيع التدريب الرئيسية على السلامة والصحة المهنية و المستهدفون: (أية ممارسات زراعية؟ أية مزارع: محاصيل أم أشجار مثمرة أم خيم زراعية؟ حجم هذه المزارع؟ عدد العمال؟)

.....
.....

◀ مدة التدريب: أيام، أسابيع، 3-9 شهور، سنة أو أكثر

◀ المنهج: ما هو المنهج التدريبي المعتمد على السلامة والصحة المهنية؟ من يبلور ويطور هذه المناهج؟

.....
.....

◀ طريقة التدريب: حضور شخصي، حضور افتراضي (عبر الإنترنت)، هجين، غير ذلك.

◀ وتيرة الأنشطة التدريبية على السلامة والصحة المهنية.

◀ الفئات المستهدفة.

◀ مصادر التمويل.

◀ المدربين: موظفون دائمون أو مؤقتون/مستشارون. ما هي مؤهلاتهم؟

هـ. هل تركز أكثر على المزارع الصغيرة أو المتوسطة أو الكبيرة؟ اشرح.

.....

.....

.....

و. ما هي في رأيك الحوافز للمزارعين والعاملين للانضمام إلى التدريب على السلامة والصحة المهنية؟

.....

.....

.....

ز. هل تعرف منظمات / كيانات أخرى تقدم التدريب على السلامة والصحة المهنية للمزارعين والعاملين في الزراعة؟

.....

.....

.....

ح. ما مدى مصداقية برامج التدريب الأخرى على الصحة والسلامة المهنية؟

.....

.....

.....

4. هل تقدم مؤسستك خدمات السلامة والصحة المهنية للمزارعين والعاملين في الزراعة غير التدريب والتعليم؟

نعم / لا

إذا كانت الإجابة نعم، ما هي خدمات السلامة والصحة المهنية؟ (حدد كل ما ينطبق)

<input type="checkbox"/>	فحوص صحية
<input type="checkbox"/>	تأمين صحي أو تغطية صحية
<input type="checkbox"/>	توزيع معدات الحماية الشخصية
<input type="checkbox"/>	بناء خدمات صحية في المزارع
<input type="checkbox"/>	توزيع علامات تحذيرية
<input type="checkbox"/>	توزيع كتيبات توعوية
<input type="checkbox"/>	بناء أماكن استراحة
<input type="checkbox"/>	تقديم اوسعيل الحصول على مياه للشرب أو للخدمة
أي خدمات أخرى في الصحة والسلامة المهنية:	
.....	
.....	

في حالة عدم تقديم خدمات السلامة والصحة المهنية، ما هي الخدمات التي تقدمها للمزارعين والعاملين في الزراعة؟ (ملاحظة للمحاور: سجّل كل شيء. سنقرر لاحقًا ما ينطبق على خدمة السلامة والصحة المهنية)

5. هل أنت مهتم بالمشاركة أو العمل مع منظمة العمل الدولية في برامج التدريب والخدمات أو المشاريع المتعلقة بالسلامة والصحة المهنية في القطاع الزراعي؟ نعم / لا
إذا كانت الإجابة لا، فلماذا؟

إذا كانت الإجابة نعم، فما هي العناصر والأنشطة ذات الأهمية الخاصة في هذا المجال لمنظمتك؟

لماذا تعتقد أن منظمة العمل الدولية يجب أن تجد فيكم شريكًا جيدًا في مجال السلامة والصحة المهنية في لبنان؟
(إلى المحاور، التحقيق من: البنية التحتية؟ شبكة الاتصال؟ القدرة التدريبية؟ ثقة المجتمع؟ خبرة؟ التمويل؟ آخر)

ما هي الوسائل التي تلزمكم لإجراء مثل هذا التدريب؟ (مالية ولوجستية)

كيف يمكننا الحفاظ على استمرارية مثل هذه التدريبات في المستقبل؟ (منظمات شريكة - موردو المدخلات/ تجار وبائعو الاحتياجات الزراعية -...)?

شكرا لتعاونك في هذا المشروع. سترسل لك منظمة العمل الدولية ملخصاً عن التقرير النهائي عند نشره.

أخيراً،

- ◀ هل تمانع إذا اتصلت بك مرة أخرى لتوضيح نقطة أو للاستفسار عن شيء جديد؟
- ◀ هل يمكنك اطلعنا على أية وثائق أو منشورات مكتوبة حول منظمتك (تاريخ المنظمة ورسالتها) وأنشطتها / مشاريعها الرئيسية في لبنان؟ هل هناك رابط ويب (صفحة على الإنترنت) نشط ومحدث؟
وقت الانتهاء: صباحاً / مساءً

مشروع منظمة العمل الدولية: تحديد أنشطة السلامة والصحة المهنية في القطاع الزراعي في لبنان

QUESTIONS TO GUIDE THE INTERVIEW WITH FARMERS

Introduction

اسمي

أنا (مهندس زراعي) وأنا حاليًا عضو في فريق يعمل على مشروع بتكليف من منظمة العمل الدولية في لبنان.

تهتم منظمة العمل الدولية بتحسين ظروف السلامة والصحة المهنية في القطاع الزراعي في لبنان. ولتحقيق هذا الهدف، طلبت منظمة العمل الدولية من فريق محترف، تحت إشراف الدكتور إيمان نويهض من الجامعة الأميركية في بيروت (AUB)، تحديد أنشطة التدريب على السلامة والصحة المهنية الجارية في قطاع الزراعة في لبنان وتحديد الشركاء المحتملين المهتمين في بناء قدرات السلامة والصحة المهنية في هذا القطاع من خلال التدريب والتعليم الرسمي وغير الرسمي.

يمكن أن تمتد هذه المقابلة إلى 45-60 دقيقة على الأكثر.

خلال هذه المقابلة، سأطرح عددًا من الأسئلة التي ستوجه حديثنا. نحن مهتمون بمعرفة المزيد عن مزرعتك (الحجم، لمحاصيل، العمال، المنشآت)، ظروف العمل والمخاطر التي قد يتعرض لها العمال الزراعيون، مجهدك الحالي والمستقبلي للتقليل من تعرض العمال للمخاطر المختلفة والصعوبات التي تواجهها في هذا الخصوص.

يرجى ملاحظة أن اسمك و معلومات الاتصال الخاصة بك لن تكون معروفة إلا لفريق البحث. سوف تبقى مجهول الهوية في أي من تقاريرنا والتقارير النهائي.

هل أنت مستعد لبدء المقابلة؟ نعم / لا

إذا كانت الإجابة لا، فلماذا؟

إذا كانت الإجابة نعم، فهل توافق على تسجيل المقابلة؟ نعم / لا

إذا كانت الإجابة نعم: شكرًا. سأبدأ التسجيل الآن.

إذا كانت الإجابة لا: شكرًا، لا توجد مشكلة. سوف أقوم بتدوين ملاحظات خفية عن حديثنا.

تاريخ المقابلة: (اليوم) التاريخ: (اليوم / الشهر / السنة):

وقت البدء: صباحًا / مساءً

المكان: عتار (حدّد

البقاع (حدّد

نوع / حجم المزرعة

أنواع المحاصيل	المساحة (تقدير بالدونم)	ملاحظات (عند الحاجة)
زراعة مكشوفة		
بستان / أشجار مثمرة		
زراعة محمية		

معلومات عامة عن المزارع و المزرعة

المزارع

1. الجنس: ذكر / أنثى

العمر:

المستوى التعليمي:

2. هل خضعت لتدريبات زراعية معينة؟ كلا نعم (حدّد:

3. عدد السنوات في الزراعة:

المزرعة

1. الرجاء وصف الأعمال الزراعية التي تقوم بها خلال الموسم:

.....

.....

.....

.....

2. ما هي الأعمال الزراعية خلال هذا الأسبوع؟

.....

.....

.....

.....

3. هل يمكنك تقدير عدد العمّال الزراعيين الذين تحتاجهم خلال كل موسم / نشاط زراعي؟

النشاط	عدد العمال التقديري؟	ذكور / إناث	هل هناك أطفال؟ نعم / كلا	عدد العمال الدائمين؟	هل يعيشون في المزرعة؟ نعم/كلا

المعاينة الشاملة

لقد تجولت في المزرعة وحاولت أن املأ قائمة موحدة لمعاينة معايير السلامة والصحة. هل يمكننا إكمالها سوياً؟
(للمحاور: مراجعة قائمة المراقبة)

الرجاء أن تعدد المخاطر الرئيسيّة الثلاث الأولى والمتعلّقة بسلامة وصحة العمل في هذه المزرعة؟

ملاحظات أخرى؟	ما هو الدعم الذي تحتاجه للسيطرة على هذا الخطر؟	ما هي الإجراءات التي اتخذتها لتقليل الخطر؟	هل تذكر أي إصابات أو أمراض ذات صلة بهذا الخطر؟	الخطر الرئيسي المتعلّق بسلامة وصحة العمل

الرجاء أن تذكر الحوادث والأمراض الثلاثة الأول المرتبطة بالعمل والتي حدثت في مزرعتك خلال السنوات الثلاث الأخيرة؟

ملاحظات أخرى؟	هل تم نقل أي من العمال المتضررين إلى المستشفى؟	ما هي الإجراءات التي اتخذتها لتقليل الخطر؟	عدد العمال المتضررين؟	نوع الحادث أو المرض

هل تقدّم أيّاً من خدمات السلامة و الصحة المهنيّة التالية للعمال الزراعيين؟

خدمات السلامة و الصحة المهنيّة	نعم / كلا	إذا كانت الإجابة نعم، الرجاء التوضيح بالتفصيل
الفحص الصحي		
تأمين صحيّ		
تأمين ضد الحوادث		
معدّات الحماية الشخصية		
سلالم ثابتة / حبال		
مواد إسعافات أولية سهلة المنال		
التدريب على الإسعافات الأوليّة		
التدريب على قيادة واستخدام الآلات الثقيلة		
التدريب على خلط المبيدات و رشها		
التدريب على الوضعيّات السليمة للجسد خلال العمل		
التدريب على كفيّة الرفع والحمل بطرق سليمة		

تدريبات حول السلامة والصحة المهنية

1. هل شاركت شخصياً في دورات تدريب/ أو مقررات أو ورش عمل تتعلق بالسلامة والصحة المهنية في الزراعة؟
نعم/ كلا
إذا كانت الإجابة نعم:

- ◀ كم عدد التدريبات التي تلقيتها / عدد المرّات؟
- ◀ متى تلقيت التدريب الأخير؟
- ◀ من الذي قدّم التدريب؟
- ◀ كم كانت مدّة التدريب (أيام/ساعات)؟
- ◀ ما هي المواضيع التي تمّ تناولها؟
- ◀ كيف تقيّم تجربتك من 1 «الأدنى» إلى 5 «الأعلى»
- ◀ هل أثّرت المعلومات التي حصلت عليها على ممارستك في العمل؟
- ◀ هل استلمت أي معدات للسلامة والصحة المهنية لعمالك؟ إذا كانت الإجابة بنعم، فمن قدم هذه المعدات؟

2. هل شارك أي من عمّالك في دورات تدريب أو مقررات أو ورش عمل تتعلق بالسلامة والصحة المهنية في الزراعة؟
نعم/ كلا
إذا كانت الإجابة نعم:

- ◀ ما هو عدد العمّال المشاركين؟
- ◀ كم عدد التدريبات التي تلقّوها / عدد المرّات؟
- ◀ متى كان التدريب الأخير؟
- ◀ من الذي قدّم التدريب؟
- ◀ كم كانت مدّة التدريب (أيام/ساعات)؟
- ◀ ما هي المواضيع التي تمّ تناولها؟
- ◀ كيف يقيّم العمال تجربتهم من 1 «الأدنى» إلى 5 «الأعلى»
- ◀ هل أثّرت المعلومات التي حصل عليها العمال على ممارستهم في العمل؟
- ◀ هل تلقى أي منهم معدات للوقاية الشخصية أو السلامة والصحة المهنية؟ إذا كانت الإجابة بنعم، فمن الذي قدّمها؟

نحن ندرك التحدّيات التي تواجه الزراعة والمزارع في لبنان، خاصة في هذه الأيام.

نحن مهتمّون برأيك الصريح حول واقع السلامة والصحة المهنيّة في القطاع الزراعي في لبنان.

◀ برأيك، هل هي قضية مهمّة؟ نعم / كلاً

(اشرح لماذا نعم أم كلا)

◀ هل أنت مهتمّ بحضور ورشة عمل حول السلامة والصحة المهنيّة في الزراعة؟ نعم / كلاً

(اشرح لماذا نعم أم كلا)

◀ هل ستكون مستعداً لتشجيع العمّال على حضور ورشة تدريب حول السلامة والصحة المهنيّة في الزراعة؟

نعم / كلاً (اشرح لماذا)

◀ في حال تمّ تقديم تدريب، ما هي القضايا الرئيسيّة الثلاث (في إطار السلامة والصحة المهنيّة) التي ترى ضرورة أن يعرفها عمالك ويتدربون عليها؟

	1
	2
	3

◀ من برأيك المؤسسة أو المنظمة الأنسب لإجراء مثل هذا التدريب؟ (الخيارات: المنظمات الغير حكوميّة، غرفة التجارة و الصناعة و الزراعة، مكاتب وزارة الزراعة / الشركات المستوردة للمدخلات الزراعيّة / التعاونيّات ...

للعلم لقد طوّرت منظمة العمل الدوليّة تدخّلات منخفضة الكلفة من أجل تحسين ممارسات العمل في المزارع و تخفيف مخاطر السلامة و الصحة المهنيّة، وهي تخطط للعمل مع عدد قليل من المزارع في لبنان حول هذه التدخلات كمشروع تجريبي. هل أنت مستعد للمشاركة في هذا المشروع في حال تم عرضه عليك؟
 نعم / لا (اشرح لماذا)

.....

.....

.....

.....

شكرا لتعاونك في هذا المشروع، وإن كنت مهتماً، فإن منظمة العمل الدولية سترسل لك ملخصاً عن التقرير النهائي عند صدوره.

◀ و أخيراً، هل تمانع إذا اتصلت بك مجدداً لاستيضاح نقطة معيّنّة أو استفسار عن أي شيء جديد؟

.....

وقت الانتهاء: صباحاً / مساءً

► ILO PROJECT: MAPPING OSH IN THE AGRICULTURE SECTOR IN LEBANON

QUESTIONS TO GUIDE THE FOCUS GROUP DISCUSSIONS WITH THE WORKERS

Introduction

اسمي

أنا (مهندس زراعي) وأنا حاليًا عضو في فريق يعمل على مشروع بتكليف من منظمة العمل الدولية في لبنان.

تهتم منظمة العمل الدولية بتحسين ظروف السلامة والصحة المهنية في القطاع الزراعي في لبنان. لتحقيق هذا الهدف، طلبت منظمة العمل الدولية من فريق محترف، تحت إشراف الدكتور إيمان نويهض من الجامعة الأميركية في بيروت (AUB)، تحديد أنشطة التدريب على السلامة والصحة المهنية الجارية في قطاع الزراعة في لبنان وتحديد الشركاء المحتملين المهتمين في بناء قدرات السلامة والصحة المهنية في هذا القطاع من خلال التدريب والتعليم الرسمي وغير الرسمي.

يمكن أن تمتد هذه المقابلة إلى 45-60 دقيقة على الأكثر.

خلال هذه المقابلة، سأطرح عددًا من الأسئلة التي ستوجه حديثنا. نحن مهتمون بمعرفة المزيد عن ظروف عملكم والمخاطر التي قد تتعرضون لها، واهتمامكم بمعرفة المزيد عن مخاطر العمل المتعلقة بالزراعة وتخفيف تعرضكم لهذه المخاطر لتقليل الأمراض والإصابات المرتبطة بالعمل.

يرجى ملاحظة أننا لن نسجل أسماءكم أو معلومات الاتصال الخاصة بكم. ستبقى هويتكم مجهولة في كافة تقاريرنا والتقارير النهائي.

هل أنتم مستعدون لبدء المقابلة؟ نعم / لا

إذا كانت الإجابة لا، فلماذا؟

.....
.....

إذا كانت الإجابة نعم، فهل توافق على تسجيل المقابلة؟ نعم / لا

إذا كانت الإجابة نعم: شكرًا. سأبدأ التسجيل الآن.

إذا كانت الإجابة لا: شكرًا، لا توجد مشكلة. سوف أقوم بتدوين ملاحظات خطية عن حديثنا.

تاريخ المقابلة: (اليوم) (التاريخ: اليوم / الشهر / السنة):

.....

وقت البدء: صباحًا / مساءً

المكان: عكّار (حدّد

البقاع (حدّد

نوع / حجم المزرعة

أنواع المحاصيل	الحجم (دونم)	تعليق (عند الحاجة)
زراعة مكشوفة		
بستان / أشجار مثمرة		
زراعة محميّة		

معلومات عامة عن العمّال المشاركين

أبرز المسؤوليات والوظائف	موظف دائم (أ)، موسمي (ب) أو يومي (ج)	الجنسية	مدخّن؟ (نعم/كلا)	مستوى العلم	العمر	الجنس (ذكر/انثى)
						العامل 1
						العامل 2
						العامل 3
						العامل 4
						العامل 5
						العامل 6

ما هي برأيكم المخاطر الرئيسيّة/الأساسيّة المتعلّقة بالعمل في هذه المزرعة؟ (بغض النظر عن وظيفتكم الحاليّة أو مهمّتكم المحدّدة)

.....

.....

.....

.....

.....

ما هي برأيكم المخاطر الرئيسيّة/الأساسيّة المتعلّقة بمجمل العمل الزراعي والتي ممكن أن تتعرضون لها في عملكم على مدار السنة؟

المخاطر المتصوّرة المتعلّقة بالعمل	
	العامل 1
	العامل 2
	العامل 3
	العامل 4
	العامل 5
	العامل 6

هل واجه أحدكم أيًا من الأمراض أو الإصابات التالية المتعلقة بالعمل خلال حياتك كعامل في الزراعة؟

مشاكل أخرى	مشاكل في العين أو الأذن	مرض جلدي / حساسية	الآم في الظهر أو المفاصل	مشاكل في التنفس	ضربة شمس أو عارض بسبب ارتفاع أو انخفاض الحرارة	تسمم بالمبيدات	لدغة / عقصة	كسر	سقوط / وقعة
									الموظف 1
									الموظف 2
									الموظف 3
									الموظف 4
									الموظف 5
									الموظف 6

إذا كانت الإجابة بنعم لأي من اللائحة: اسأل عن العلاج، ومن دفع ثمنه، والمكوث في المستشفى، والغياب عن العمل:

هل تتلقى أيًا من خدمات السلامة والصحة المهنية المذكورة أدناه؟

خدمات السلامة و الصحة المهنية	نعم / كلا	إذا كانت الإجابة بنعم، فقم بالتفصيل والشرح
الفحص الصحي		
تأمين طبي		
تأمين ضد الحوادث		
معدّات الحماية الشخصية		
سلام ثابتة / حبال		
مواد إسعافات أولية سهل الوصول إليها		
تدريب خاص بالإسعافات الأولية		
التدريب على قيادة واستخدام الآلات الثقيلة		
التدريب على خلط المبيدات و رشها		
التدريب على الوضعيات السليمة للجسد خلال العمل		
التدريب على كيفية الرفع والحمل بطرق سليمة		

هل شارك أي منكم في دورات تدريب أو ورش عمل تتعلّق بالسلامة والصحة المهنيّة في الزراعة؟
 نعم / كلاً

العامل #	العامل #	العامل #	
			كم عدد الدورات؟
			متى تلقيت التدريب الأخير؟
			من الذي قدّم التدريب؟
			ما هي المواضيع التي تمّ تناولها؟
			قيّم جودة التدريب من 1 "الأدنى" إلى 5 "الأعلى"
			هل كانت المعلومات مفيدة في عملك؟ كيف؟
			هل قمت بتغيير أيّ من ممارساتك بعد التدريب؟ كيف؟

نحن ندرك التحديات التي تواجه الزراعة والمزارع في لبنان، خاصة في هذه الأيام.
لذا نحن مهتمّون برأيكم الصريح حول واقع السلامة والصحة المهنيّة في القطاع الزراعي في لبنان.

◀ برأيكم، هل هي قضية مهمّة؟ نعم / كلاً (اشرح لماذا نعم ام كلا)

.....

.....

.....

◀ هل أنتم مهتمون بحضور ورشة عمل حول السلامة والصحة المهنيّة في الزراعة؟ نعم / كلاً (اشرح لماذا)

.....

.....

.....

◀ هل انتم مستعدّون لتشجيع زملائكم في العمل على حضور تدريب حول السلامة والصحة المهنيّة في الزراعة؟
 نعم / كلاً (اشرح لماذا)

.....

.....

.....

◀ في حال تمّ تقديم تدريب، ما هي القضايا الرئيسية الثلاث (في إطار السلامة والصحة المهنيّة) التي ترغبون في معرفتها والتدرب حولها؟

	1
	2
	3

- ◀ ما هي طريقة التدريب المفضّلة لديكم؟ ما نوع التدريب الذي تفضلونه؟
- ◀ أي موسم يناسبكم لتلقي التدريب وفي أيّ أيّام الأسبوع؟ في أي وقت من اليوم؟
- ◀ هل ترغبون بالحصول على التدريب من قبل منظمة تدريبية معيّنة؟ (الرجاء ذكر المنظمة)

.....

.....

.....

.....

.....

شكرا لتعاونكم في هذا المشروع. هذه نهاية الاجتماع.

هل لديكم أي أسئلة أو توضيحات؟

.....

.....

.....

.....

.....

.....

.....

وقت الانتهاء: صباحًا / مساءً

► OSH Inspection Checklist

Selected Agricultural Farms in Akkar and Beqaa, Lebanon

Day: M T W Th F Sat Sun Date (dd/mm/yyyy):/...../..... Time in:.....am/pm

Inspector's initials:.....

Location: Akkar (Specify.....)

Beqaa (Specify.....)

Type/ Size of farm:

	Types of crop	Size (est. Dunums)	Comments (if needed)
Open field			
Orchard			
Greenhouse			
If Orchard, is it Intensive (i.e., irrigated, machinery, inputs) or Less intensive (i.e., rain fed, labor intensive)?			

Type of ownership of farm:

Family-owned and run Cooperative Individual owner Other

Identification Code:

Description of ongoing activities at time of visit

.....

.....

.....

.....

.....

.....

Number of workers:.....

Females/ # Males:.....

Young workers (< 16):.....

Any permanent workers? Yes No

If yes, do they live on the farm Yes No

Also elaborate (number, gender, etc.):

.....

.....

.....

FACILITIES

- ▶ Are toilet facilities available? Yes No
- ▶ Is there a washing/ cleaning facility? Yes No
- ▶ Is there a designated eating area? Yes No
- ▶ Is drinking water provided? Yes No
- ▶ Is there a shaded area for rest? Yes No

▶ GENERAL SAFETY

- ▶ Are warning signs posted on the farm? Yes No
- ▶ Are the paths, steps, and walkways clear? Yes No
- ▶ Are there any exposed electric wires? Yes No
- ▶ Are flammable liquids stored away from ignition sources? Yes No
- ▶ Are fire extinguishers located near chemical/fuel storage areas? Yes No
- ▶ Does the farm has a fire containment plan? Yes No
- ▶ Are there clear emergency exits and plans? Yes No
- ▶ Do wells, cisterns, ponds exist on the farm? Yes No
 - If yes, are they fenced or guarded? Yes No
- ▶ Are safety conditions regularly inspected? Yes No
 - If yes, are the inspectors internal or external? Int Ext

FIRST AID

- ▶ Is there a first aid kit suitable to address the needs for first aid? Yes No
- ▶ Was anyone trained in first aid? Yes No

PPE (Personal Protective Equipment)

Type of PPE	Is any of the workers using a PPE at time of visit?	Is any of these PPE provided to the workers?
Gloves	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Goggles	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sun protective hat/ cover	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Surgical/ regular face mask	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Respirator	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Protective clothing	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Latex/ Hard boots	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Helmets/ Hard hats	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Harnesses	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Ear protection (muffs, foam)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Reflective vests	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

FARM EQUIPMENT, MACHINES, AND TOOLS

Tractors

- ▶ Is a tractor in use at the time of visit? Yes No
- ▶ Are tractors usually used on this farm? Yes No
- ▶ Are tractors equipped with rollover protection? Yes No
- ▶ Are they equipped with back-up alarm/Reverse beeper? Yes No
- ▶ Are the tractors equipped with seatbelts? Yes No
- ▶ Are the drivers well trained/ licensed to drive tractor? Yes No

Other vehicles, machines

- ▶ Is any of the following vehicles and machine used on the farm:
 - ATV Yes No
 - Pick-up truck Yes No
 - Harvester Yes No
 - Pesticide sprayer (wings) Yes No
 - Forklift Yes No
 - Lawnmower Yes No
 - Weed cutters (حشاشة) Yes No
- ▶ Are the users of these machines/tools provided with:
 - Protective gloves? Yes No
 - Noise protection? Yes No
 - Protective guards? Yes No
- ▶ Are the tractors and other vehicles insured? Yes No
- ▶ Are the tractors and other vehicles regularly maintained? Yes No
- ▶ Is there a dedicated maintenance group? Yes No
- ▶ Is there a supervisor to oversee operations? Yes No
- ▶ Is there someone to secure overall safety (no children)? Yes No

APPLICATION OF PESTICIDES AND OTHER CHEMICALS

- ▶ Are pesticides being applied at the time of visit? Yes No

If yes:

- Method(s) of application:
- Any masks worn? Yes No
- Other PPE used? Yes No
- Any wind drift? Yes No
- Is applicator or assistant:

- Smoking? Yes No
- Eating/ drinking? Yes No
- Are women helping with the spraying? Yes No
- Are children present around? Yes No
- ▶ Are pesticides usually applied on this farm? Yes No

If yes:

- Usual method(s) of application: Yes No
- Are masks usually worn? Yes No
- Are other protective equipment used? Yes No
- Are the applicators trained on spraying? Yes No
- Are children allowed in at time of spraying? Yes No

- ▶ Are pesticides being mixed at the time of visit? Yes No

If yes:

- Method(s) of mixing: Yes No
- Are containers labeled? Yes No
- Any masks worn? Yes No
- Any gloves worn? Yes No

- ▶ Are pesticides usually mixed on site at the farm? Yes No

If yes:

- Method(s) of mixing: Yes No
- Are containers labeled? Yes No
- Any masks worn? Yes No
- Any gloves worn? Yes No

- ▶ Are the processes of pesticide mixing and application supervised? Yes No

- ▶ Is there an exclusive storage area for pesticides and other chemicals? Yes No

- ▶ Where are empty pesticide containers disposed of?.....

EXPOSURE TO SUN AND HEAT

- ▶ Are there workers working outdoors with potential exposure to the sun? Yes No

- Are there working women exposed to sun? Yes No

- Are there working children (under 16) exposed to sun? Yes No

- ▶ What are they wearing to protect their heads from exposure to sun?

- Straw hat Yes No

- Cap (cloth) Yes No

- Wrapped cloth Yes No

- Other (specify):.....

- ▶ Does any of the workers use skin protective creams? Yes No
- ▶ Is any of the workers wearing sun glasses? Yes No
- ▶ Who usually provides protective measures to the workers?
 - Employer
 - Workers
 - Other

ERGONOMICS

	Total #	How many females?	How many children under 16?	Estimated # of hours of work on the day of visit
How many workers are working in an awkward posture at the time of the visit?				
Reaching?				
Bending?				
Twisting?				
Kneeling?				
Squatting?				
How many workers are engaged in hand intensive work at the time of the visit?				
Repetitive motions?				
Forceful gripping?				
Wrist bending?				
How many workers are engaged in heavy physical work at the time of the visit?				
Lifting loads?				
Carrying loads?				
Pushing loads?				
Pulling loads?				
How many workers are climbing ladders/ trees?				

- ▶ Are workers trained on correct manual handling procedures? Yes No
- ▶ Are workers trained on correct work postures and general ergonomics? Yes No
- ▶ Are workers provided with fall protection equipment when climbing vertical ladders, or working on heights? Yes No



Made possible by support from the



Kingdom of the Netherlands



International
Labour
Organization