



John Paul II Foundation
Dialogue, Cooperation and Development - ONLUS

SUPPORT TO THE PRODUCTIVE, MANAGERIAL AND COMMERCIAL REORGANIZATION OF THE LEBANESE CHERRY COOPERATIVES AND PRODUCERS

results
systematization



CHERRY
Lebanon



SUPPORT TO THE PRODUCTIVE,
MANAGERIAL AND COMMERCIAL
REORGANIZATION OF THE LEBANESE
CHERRY COOPERATIVES AND
PRODUCERS

results

systematization

RESULTS SYSTEMATIZATION

SUPPORT TO THE PRODUCTIVE, MANAGERIAL AND COMMERCIAL REORGANIZATION OF THE LEBANESE CHERRY COOPERATIVES AND PRODUCERS

by: JOHN PAUL II FOUNDATION - Firenze 2021

The Small Farmers Reports is a series of publications produced by the John Paul II Foundation Projects department, whose aim is to contribute to the awareness and circulation of the results obtained by its scientific and technical partners on technical assistance activities in the economic development programmes of rural areas.

The series aims to systematise theoretical and methodological aspects to promote their replicability and is intended for small farmers, cooperatives, agricultural enterprises and other public and private stakeholders.

The Reports share valuable scientific and technical know-how and promote human, social and economic development in the most disadvantaged communities worldwide, thus supporting the fight against poverty.

SYSTEMATISATION OF DOCUMENTS

This series summarises the strategy implemented with the project, reporting the methodology and the primary outcomes and outputs obtained. It is a summary of the documents produced by all the experts involved in each of the activities. The purpose of the document is to make the John Paul II Foundation strategy known and to give clear indications for its replicability and circulation of the results to all interested stakeholders. At the same time, it intends to offer a comprehensive summary document to systematise the information and make it user friendly to all beneficiaries who have participated in the activities.

The other series:

- Practical Guides
- Reports
- Product promotional brochure



SMALL FARMERS Quality Management System

The Quality Management System (QMS) is a system of quality standards applied to agricultural production from plant cultivation to post-harvest management. The QMS is part of an overall framework to promote synergies among different products, such as dates, cherries, apricots and aloe vera, and to encourage networking and co-operation between smallholder farmers involved in implementing a reorganisation strategy.

The QMS is based on:

- An agroecological production approach promoting the QMS, focusing on improving product quality in response to international market demand whilst protecting the delicate balance between plants and surrounding ecosystem.
- The promotion of cultivation respecting traditions and local varieties whilst ensuring sustainable, high-quality product delivery.
- Ethical principles promoting efficient and inclusive agricultural systems for farmers and workers involved in the supply chain, aiming to support access to more profitable markets by fostering economic and social development in the most disadvantaged communities.

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THE CHERRY CHAIN

PRODUCTION

QUALITY MANAGEMENT SYSTEM

AGRO ECOLOGY



POST-HARVEST PROCESSING

SUSTAINABLE MANAGEMENT OF:

- PLANT
- SOIL
- IRRIGATION
- FERTILIZATION
- ANTIPATHOGENS
- VEGETAL ECOSYSTEM

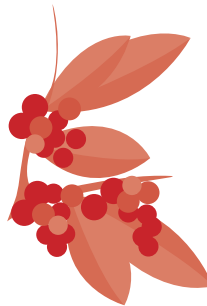
RECEPTION AND PRELIMINARY
SELECTION OF THE PRODUCT

OTHER PHASES:

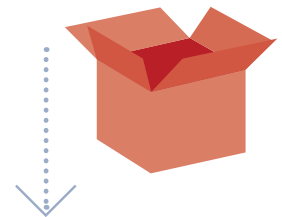
- WASHING
- SELECTION (ACCORDING TO
DIMENSION AND SKIN LOSE)
- FRIDGE STORAGE
- PACKAGING
- SHIPPING



CHERRY CULTIVATION



CHERRY PRODUCT



PROCESSING

PARTNER



CHAMBER OF COMMERCE
INDUSTRY & AGRICULTURE
ZAHLE & BEKAA



الجامعة اللبنانية
UNIVERSITE LIBANAISE



Consiglio
Nazionale delle
Ricerche

PROJECT COORDINATOR





MANAGEMENT

MARKET

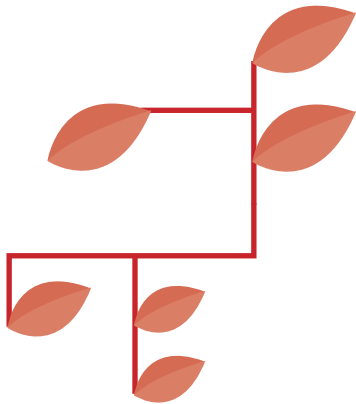
RETRAINING OF THE MANAGEMENT MODEL CHANNELS



OPENING OF NEW COMMERCIAL

- STRATEGIC POSITIONING OBJECTIVE
- ROLES AND RESPONSABILITIES
- DEVELOPMENT AND SUSTAINABILITY OPERATIONAL PLAN

- MARKET ANALYSIS
- PROMOTION AND MARKETING
- INTERNATIONAL FAIRS
- SALES
 - INTERNATIONAL MARKET (GDO AND IMPORTERS)
 - NATIONAL MARKET (GDO AND EXPORTERS)



DEVELOPMENT OF THE MANAGEMENT MODEL

COMMERCIAL STRATEGY

BUSINESS PLAN



arco | SUSTAINABLE FOOD COMMODITIES

CONFCOOPERATIVE
Brescia



Associazione
Botteghe
Mondo





INTRODUCTION

01

- COORDINATION AND MANAGEMENT OF THE AGRIBUSINESS PROGRAMME
- STRATEGY OWNERSHIP AS A RESULT OF A PARTICIPATORY PROCESS OF SHARING A NEEDS ANALYSIS TO THE PROJECT MANAGEMENT AND IMPACT ASSESSMENT WITH BENEFICIARIES AND STAKEHOLDERS
- THE ACTION PLAN

1.1 THE JOHN PAUL II FOUNDATION AND ITS MISSION

The John Paul II Foundation for Dialogue, Cooperation and Development, was founded in 2007 from the decennial work and commitment of the Dioceses of Fiesole, Montepulciano, Chiusi, Pienza and several other Dioceses, in co-operation with other lay and Catholic institutions, in favour of Middle Eastern countries and similarly disadvantaged areas of the world.

The Foundation works to benefit those living in difficult conditions in the Holy Land, the Middle East and its own country,

especially supporting young people and the most vulnerable of all faiths, to help them conquer their future through interventions in the social, education, health service, local economic development and vocational training areas. Furthermore, in 2015 the organisation was granted consultative status to the United Nations Economic and Social Council and is recognised by the Italian Ministry of Foreign Affairs as suitable to operate in international co-operation.



To date, the Foundation's Projects Office has coordinated and actively participated in projects in different areas of intervention: professional training, business development and rural development, development of agricultural value chains, educational and health sectors. It still does so by making use of an ever more comprehensive range of partners of national and international importance, coming from the academic world, public institutions, chambers of commerce, large-scale distribution and training agencies. Partners who are able to can support the work of the project office through field research or the sharing of best practices with local institutions and associations.

The involvement of thematic experts, not only for research but also for the exchange and dissemination of experience, is of fundamental importance in programmes, such as Small Farmers, coordinated by the Foundation, which aims to provide tools for the managerial, productive and commercial re-organisation of smallholder farmer entrepreneurs, who live in different areas of the Middle East to promote inclusive and sustainable economic growth. The recipients are disadvantaged farmers who do not have access to the value chain, coming from marginal and economically disadvantaged areas and areas more vulnerable to climate change. The entrepreneurial redevelopment proposed with the agribusiness strategy allows the creation of a more market-oriented product, with superior quality and added value, the result of optimising the use of resources in an agroecological context that is sustainable and harmonious, combined with the introduction of innovative techniques, for quality and ecologically sustainable production in water, soil and fertiliser usage. To achieve this, it is important at the same time to strengthen the co-operation between individual farmers aiming for an affiliated use of productive inputs, enabling the sale of a product that is no longer 'raw' but finished, therefore processed, packaged and labelled in compliance with quality standards.

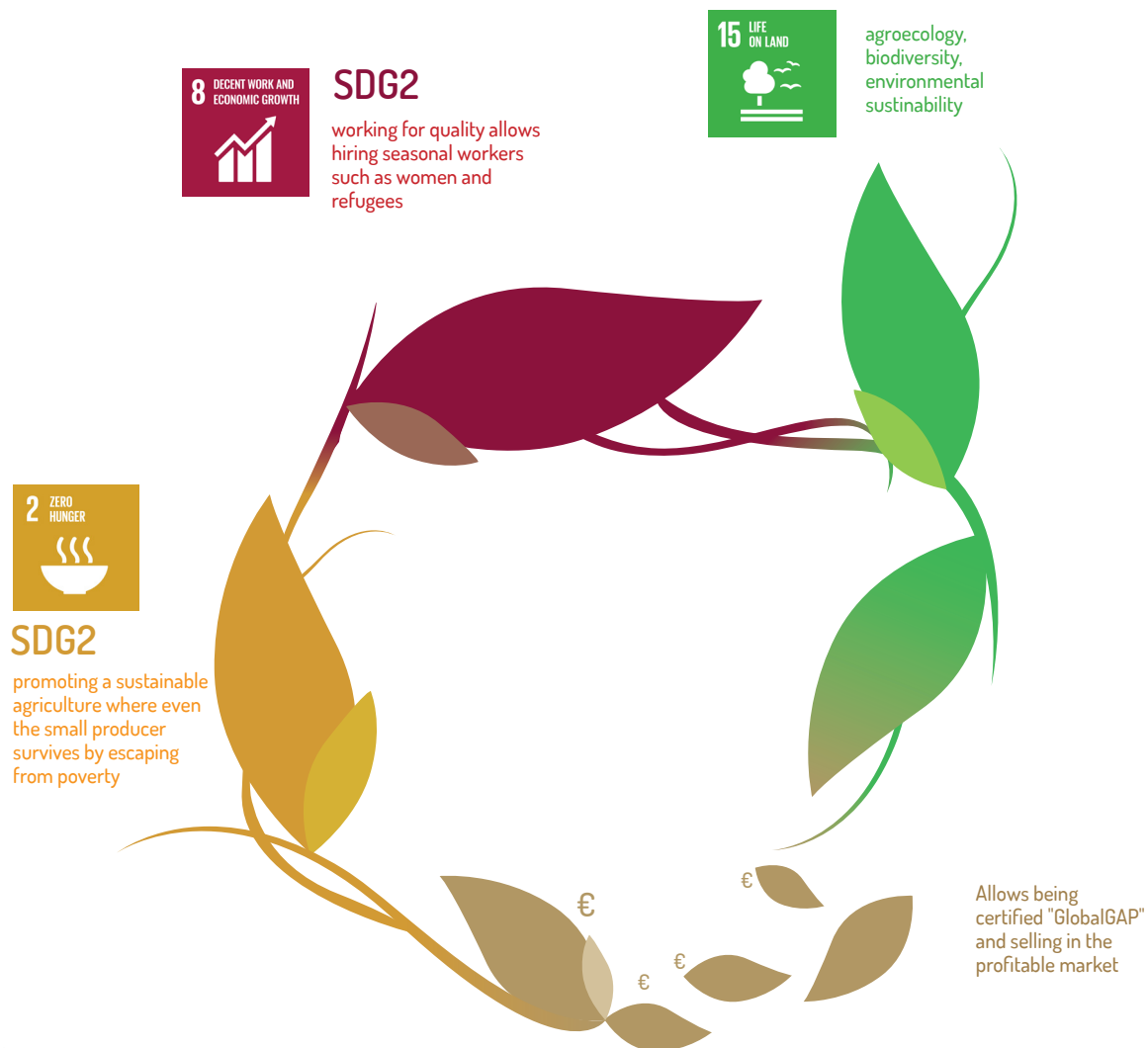
This leads to an increase in negotiating power towards buyers, who are no longer just large oligopolists, but also national and international trading partners willing to pay more for a quality product. Only joint efforts between farmers can increase their revenues by selling a product at significantly higher prices than before. Hence, including beneficiaries as an active part of the programme can help develop the local economy, thus reducing the propensity to emigrate in future generations, who will enjoy more job opportunities without having to seek their fortune in urban areas.

The Foundation's mission, therefore, is to improve the living conditions of the recipients of its projects, fostering social and economic growth of the rural communities, and aiming to break the vicious circle characterised by high unemployment, low and low-middle income and seasonal incomes, managerial disorganisation and unfavourable environmental conditions worsened by climate change.

In this way the Foundation helps to build a more equitable, resilient and inclusive rural economy, favouring smallholder farmers and workers in the supply chain.

In the coming years, the John Paul II Foundation will endeavour to guide smallholder farmers, the workers in the supply chain and their communities in a process that promotes quality of work and respect for biocultural heritage. In compliance with quality standards to enable the product to be marketed even outside the domestic market with differentiated networks. This is done via promoting the local biodiversity, social relations, and the role of local institutions and multi-level partnerships in supporting small-scale food producers to improve their internal organisation and develop skills that will guarantee greater efficiency and autonomy

of production trade and management. This must be based on the involvement of the beneficiaries as an active part at every stage of the programme, to understand the critical issues that affect their preferences, and to involve every one of them in the purpose of the activities that are implemented to solve problems encountered. The participatory approach is of fundamental importance not only for the transmission of cooperative models and democratic principles but also for enhancing the sense of belonging, resilience and inclusion of the most vulnerable, including unemployed women and young people with low levels of professional qualifications.



VALUES

The values that the Foundation intends to pursue in its interventions can therefore be summarised into the following macro-areas:

- 1. RESPECT OF THE PRODUCTION STANDARDS:** promoting innovative rural development strategies based on a quality control system for a production process that respects consumer needs and the standards of the main international certifications.
- 2. NO ONE EXCLUDED:** believing that trust links aggregation and empowerment of small-scale food producers, young people and women towards an associated, efficient and autonomous management in sustained production methods, which finds its most significant democratic and participatory expression in the cooperative system.
- 3. BALANCE AND SYNERGY WITH THE ECOSYSTEM OF THE TERRITORY:** enhancing agroecological production systems that are balanced and in symbiosis with local biodiversity leads to an improvement in quality and productivity.
- 4. ACCOMPANIMENT TOWARDS CHANGE AND THE STRATEGY'S IMPACT:** believing in a shared plan based on shared objectives and reciprocal concrete commitments to strengthen cohesion of the beneficiaries towards a real process of change with a long-term impact in rural communities.

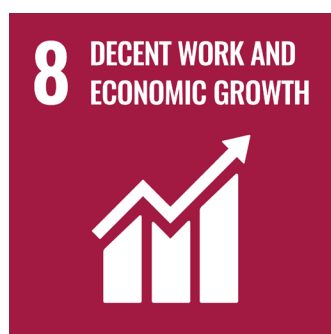
1.2 THE AGRIBUSINESS STRATEGIC VISION OF CHANGE



The term “business”, too often confused in everyday language with the attitude towards an excessive gain, not attentive to ethical principles and mainly oriented towards maximising profits, may seem in contrast with the values that the Foundation intends to promote by implementing its strategy. In fact, for the John Paul II Foundation, business means much more: it implies economic and environmental sustainability, cooperativism and social inclusion of small-scale food producers and workers who come together, beyond ethnic groups and religious creeds to improve not only their profits but also the quality of a complete production chain that is more attentive to the sustainable use of the territory’s natural resources.

The sustainable and inclusive agribusiness strategy implemented with the dates in Palestine, aloe vera in Jordan and the apricots and cherries in Lebanon aims to provide small-scale food producers and agricultural entrepreneurs, without access to profitable markets, with technical tools that are capable of reversing decreasing harvest and turnover process which they often face, and which would make them lose interest in practising a risky activity such as agriculture. In addition to

these, there are representatives of local institutions, such as chambers of commerce, municipalities, universities, agricultural cooperatives, already a participant or created during the projects, involved in a process aimed at increasing abilities, tangible and know-how, for the improvement of productive, commercial and managerial skills of the organisations involved.





THE PROGRAMMES:

The agribusiness programmes, with a duration of 36-48 months, are therefore based on a continuous technical assistance strategy, with best practice exchange on successful cooperative experiences of Italian agribusinesses, which is known worldwide for their innovative and sustainable organisational models, and a market-oriented production based on a solid quality control system.

The intervention logic of the programmes is based on a vision of change focused on Sustainable Development Goals (or SDG) set by the United Nations for 2030, as indicators of the impact of the strategy itself in giving sustainability to agricultural activity and farmers' life. In its application, the programme generally refers to specific SDG indicators, and more precisely for the SDG 2, 8 and 15; which are directed to end poverty and hunger, promoting economic growth and decent working conditions and respecting life on land.

SDG2

TARGET 2-3	TARGET 2-4
	
DOUBLE THE PRODUCTIVITY AND INCOMES OF SMALL-SCALE FOOD PRODUCERS	SUSTAINABLE FOOD PRODUCTION AND RESILIENT AGRICULTURAL PRACTICES



More specifically, **target 3 of SDG2** aims to double the agricultural productivity and incomes of small-scale food producers by 2030 through secure and fair access to land, other productive resources and inputs, knowledge, financial services, markets, and value-adding opportunities. The selected indicators measure the increase in smallholder cooperatives income, allowing for direct quantification of the contribution of the strategy's implementation, which aims to promote self-sufficient and more productive agriculture. This is achieved through the involvement of beneficiary farmers in the joint management of the production process, as leaders of cooperatives or consortia, of the post-harvest process, and of handling, packing and sale; this enables farmers to obtain higher prices for the product from the market while respecting previously unreachable requirements.

Target 4 of that goal ensures sustainable food production systems to be achieved by the same date, implements resilient agricultural practices that increase productivity and production, helps maintain ecosystems and strengthen capacity for adaptation to climate change and extreme weather conditions. The intervention strategy contribution for this target is achieved by promoting the restructuring of the production phases and implementing the pertinent agricultural parcels, a Quality Management System that expects compliance with quality standards in the production and post-harvesting stages by smallholder farmers allowing for the adoption of eco-sustainable techniques and practices.

SDG8



Moving on to **SDG8, Target 2** aims to achieve higher levels of economic productivity¹ through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors. At the same time, Target 3 aims at promoting development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, encouraging the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services. In achieving these two targets, the strategy intends to produce organisational models and better skills dedicated to managing the production process, product packaging and sale, through upgrading of the post-harvest production processing plants. The use of quality control procedures to obtain the certifications required by the national and foreign organised markets, on the one hand, leads to an increase in the demand for labour to be used in new production processes and, on the other improves the economic results of producers who join cooperatives or consortia which are evaluated in terms of increase in quantity and selling price

SDG15



Last but not least, these targets are pursued in line with **indicator 3 of SDG15**, which aims to combat desertification, restore land affected by desertification, drought and floods, and strive to achieve a world without soil degradation. In this sense, by acknowledging that agriculture is considered one of the main factors responsible for soil degradation, the strategy aims to apply more sustainable production practices aimed at combating land degradation, thus reducing the negative impact of the activity and contributing to protect and restore the ecosystems of the target areas. To give a practical example, the use of techniques practices such as integrated pest control enables the reduction of chemical pesticides and the integrated management of plant varieties with multiple cropping enriches biodiversity by reducing the use of chemical fertilisers, directly contributing to the conservation of ecosystems and reduction of soil degradation .

¹ Like the concept of business, the idea of Economic productivity could also be misunderstood, risking a referral to the concept of agricultural production characterised by overexploitation of the soil and plants to obtain the maximum possible amount of cherries. On the other hand, in projects for the rural development and agricultural value chains carried out by the Foundation, "improving productivity" means choosing the cultivar species that best suits the specific soil conditions. Adopting a pruning system (called "pyramidal" in the case of cherries) allows the fruits to grow in a homogeneous and greater way, receiving the right amount of light from the sun. Therefore, although the quantity of fruit harvested decreases, it is compensated by producing fruit with higher quality, circumference and unit weight, sold at a much higher price on the market in compliance with internationally recognised requirements. We are talking about "relative productivity".

These indicators are linked by IFAD to its three key objectives set out in the Results and Impact Management System (RIMS), developed by the international organisation and also considered by the Foundation in adapting its intervention strategy to specific contexts.

The three objectives are as follows:

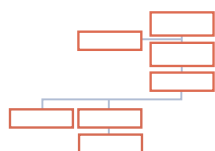
1. Increase poor rural people's productive capacities: SDGs 2.3, 2.4 and 8.3 are naturally related to this objective.
2. Increase poor rural people's income through participation in national and international markets, objective linked to SDGs 2.3, 8.2 and 8.3
3. Strengthen the environmental sustainability and climate resilience of poor rural population's economic activities, related to targets 2.4 and 15.3 (IFAD, 2017).

The beneficiaries of an agribusiness programme thus become an active part of a retraining process that pays particular attention to future generations. The process takes place at following three levels:



■ PRODUCTIVE

focusing on quality, eco-sustainability and targeting production to market demands through the definition of quality standards and Quality Management System (QMS).



■ MANAGERIAL

identifying a clear business objective and pursuing it through a Business Plan, which consists of the redevelopment of governance, identifying clear roles and responsibilities to govern every aspect of the company and investment in innovative facilities and training for the development new skills.



■ COMMERCIAL

developing a market strategy that applies continuous monitoring of the competitors and of the market and defines new target products and marketing objectives. This must be accompanied by a promotion and marketing strategy that facilitates direct sales in the organised market with brand redevelopment and participation in international trade shows.

1.2.1 Coordination and management of the Agribusiness Programme

At an **organisational** level, the strategy was implemented under the direction of the John Paul II Foundation, which uses an expatriate coordinator to manage the activities in sync with international partnership thanks to a staff of economists in Italy, working groups made up of agronomists and local economists (whose number varies according to the extent of the project) and financial manager.

At an **operational** level, a management committee was set up consisting of the expatriate coordinator and a contact person for each partner who took part in the project operational planning and coordinated the planned activities. Together with the counterpart and in liaison with the partners, the expatriate coordinator has worked on an annual operational plan, which has been monitored with quarterly reviews to implement corrective actions to manage unforeseen events and achieve results on schedule. In the administrative area, the local office operated under the coordination of the administrative office in Italy. Under the responsibility of its legal representative, each partner has signed financial and organisational commitments throughout the project, actively participating in the planning of objectives, results and activities.

In the **strategic** field, a steering committee of the programme was set up, comprised of representatives of the partners, the donor and the government and municipal institutions involved. The committee met biannually, thus ensuring compliance with the interventional objectives and policies and promoting the creation of synergies between various areas of work.

In the **technical** area, a scientific committee of the programme was set up, comprised of experts in various fields (agronomy, marketing, quality control, agroecology, and business planning), which met at the request of the management committee and intervened in support of the project technicians.

In order to verify progress in achieving the expected impact objectives, the Foundation delegated the **monitoring and evaluation** activities to an external economist from the Cattolica University of Milan, who carried out annual field missions with the support of local staff, students and researchers, using a **quasi-experimental approach** by collecting socio-economic data. The data collected were qualitative and quantitative to have a complete picture of production and management capacity and on the active participation of individual producers. Those not involved in the programme were defined as the “counterfactual” population.

By comparing the performances of the beneficiary group and of the counterfactual population (i.e. the control group) in terms of annual business performance, we draw considerations to improve the effectiveness and replicability of the intervention strategy.

1.2.2 Strategy ownership as a result of a participatory process with beneficiaries sharing, starting from a needs analysis to the management and evaluation of the project impact

To ensure the sustainability of the development strategy over time, the John Paul II Foundation involved the beneficiaries of the intervention and local actors at every stage of the programme.

THE OBJECTIVE:

The aim was to ensure broad active participation of target beneficiaries, individual producers and local actors such as public and private institutions at the various stages of intervention to guarantee the gradual consolidation of the ownership of the involved community (by measuring it during its progress) with respect to the implemented intervention and with it, the gradual taking over of the structures created and/or upgraded through the investments of the programme.

We, therefore, distinguish three different phases in which the accompaniment of the beneficiaries towards the implementation of the strategy was promoted:

01. SITUATION AND RISK ANALYSIS:

dynamic work has been carried out to collect quantitative and qualitative data and comparison with beneficiaries, reference associations and key local actors in order to know the environmental, cultural, productive resources and market access conditions of farmers. This phase aimed to involve the beneficiaries concerned, initially by disseminating information on the programme and then, once the data on the degree of interest in developing associative forms were collected, by establishing the first groups of farmers who also kept in touch through WhatsApp.

02. strategy planning:

at this stage, the beneficiaries were involved in the analysis of possible development scenarios in their reorganisation, therefore in that of objectives resulting from the scenarios, with particular reference to the production stages in joint forms with other producers for the completion of the production cycle. Furthermore, producers were involved in identifying and sharing a development strategy with particular reference to the contribution each of them would have made in terms of active participation and economic resources.

03. Strategy management:

has planned for continuous verification by the project staff towards the producers to monitor their active participation in the cooperative's life and comply with product quality standards set by the QMS. At the same time, contribution methods of producers and stakeholders to the sustainability of the cooperative were identified in terms of:

- **acceptance and compliance with the reference regulations and management model for product delivery, processing, storage, preparation for sale and sale;**
- **compliance with the business risk-sharing commitments through financial support from the members to cover the management costs of the plants and structures built with the project support;**
- **role of the public institution of the territory, either for the direct interest in the economic development of the community or in response to requests made by producers benefiting from the strategy, made land or public structures available on which to make investments for transformation and conservation of the product.**

This accompanying approach has been key to promoting the inclusion of beneficiaries and, even in the coming years, the programme impact.



1.2.3 The Action plan

The Small Farmers programmes consist of activities that combine several production chains with a systemic approach based on four general principles. Each of them creates an intervention module with its specific work packages.

This approach has also been applied in the case of the programme to reorganise the cherry value chain in Lebanon, which will be dealt with in the next chapter. In particular, the Action Plan of this programme, launched in 2017, was based on the following objectives of action:

1 IMPROVING THE MANAGERIAL SKILLS OF SMALL RURAL ENTERPRISES AND INVOLVED COOPERATIVES

to promote an economic and financial management that favours joint resource management, the development of a clear business plan, and an expansion of credit access opportunities. Companies and cooperatives were initially accompanied to analyse internal constraints and the external context of the market and competitors. Subsequently, companies and cooperatives were supported to identify functional business development opportunities, the definition of a clear business objective with a development plan. This was achieved through training and exchanging best practices in business planning, analysis and management evaluation and cooperative culture.

2 INCREASING THE QUALITY AND SUSTAINABILITY OF THE AGRICULTURAL PRODUCT THROUGH THE IMPLEMENTATION OF A QUALITY MANAGEMENT SYSTEM (QMS),

improving technical and production skills and allowing optimum conservation and processing of the main product and of other considered crops for the achievement of a quality production that meets market needs in an ecological and sustainable way. This was achieved through workshops directed at the beneficiaries, exchange of best practices, equipment with appropriate machinery and technical assistance throughout the duration of the programme with the purpose of upgrading the production system with the introduction of multiple cropping and the implementation of the “quality control” procedures provided for in the QMS.

3 IMPROVING STRATEGIC BUSINESS AND SALES MANAGEMENT SKILLS TO FACILITATE BENEFICIARIES' ACCESS TO MORE PROFITABLE MARKETS WITH A STRATEGIC PROMOTION AND MARKETING PLAN.

In achieving this objective, a production reorganisation strategy was defined based on a national and international market analysis geared to the needs of the identified target buyers. Therefore, a communication and marketing plan was developed to promote the product to potential buyers. To this end, the key elements were participation in international fairs and the development of a brand.

4 PROMOTING GOOD GOVERNANCE BY IMPROVING THE PROFESSIONAL SKILLS OF THE PUBLIC ADMINISTRATIONS INVOLVED

in providing innovative services to businesses and cooperatives. Similarly, the aim was to develop models of democratic governance inspired by cooperative principles, including through exchanges of best practices with Italian institutions on business services, business incubator management and administrative simplification.





THE CONTEXT OF INTERVENTION 02

- LEBANON AND THE CHERRY
- THE SMALL FARMERS OF THE BEKAA VALLEY

Using the technical support of several partners, including Fair Trade Lebanon, and the financial support of AICS (Italian Agency for Development and Cooperation), the John Paul II Foundation has coordinated a project of agricultural reorganisation, where small Lebanese cherry producers in the Bekaa Valley were the main project beneficiaries. Based on the values and agribusiness strategy described above, the project started in May 2017 and lasted 46 months. The objective was to increase quality of life and economical and environmental sustainability of small farmers and workers involved in the value chain, increasing quality and profitability of products by creating a network of services at national and international levels to support the productive, commercial and managerial re-training of agricultural entrepreneurs.

To understand why the programme is relevant in the specific context, however, it is important to consider a general overview of the Lebanese context and the Bekaa Valley, in agricultural production and, more specifically, of cherry production, both politically and economically. A summary analysis of the beneficiaries and the area of intervention will be described in Chap-

ter 2.2 below, with particular attention to the workforce and the techniques used by farmers to produce different cherry varieties available in the area.

2.1 LEBANON AND THE CHERRY

2.1.1 The socio-economic conditions



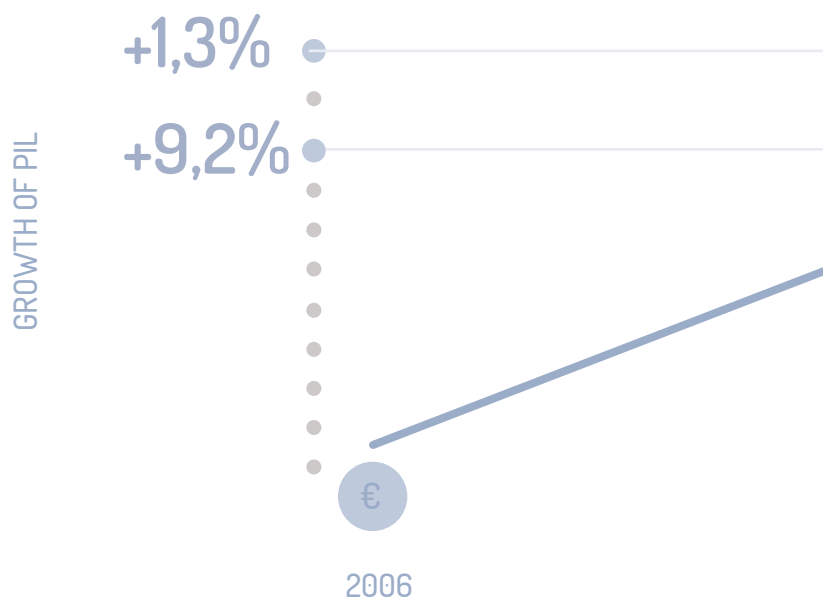
Lebanon is a low- to middle-income country with a Human Development Index value of 0.730, ranking the country 93rd out of 188 countries globally.

Poverty and income inequality are high, with significant regional differences. Gender inequalities, which translate into disadvantages and discrimination against women in large sectors of society, remain significant obstacles to the country's socio-economic development. In particular, women's labour force participation is substantially lower than for men. Many Lebanese communities' main form of employment is in the agricultural field (with peaks of 80% of the total workforce employed in the sector), especially in the Bekaa valley, followed by the public and the tertiary sectors (Balestri, 2019).

The country experienced high economic growth between 2006 and 2010, corresponding to an average GDP annual growth of 9.2%. A stagnant

phase followed, with an annual positive growth rate of around 1.3% between 2010 and 2015 and a downward phase, with an annual reduction of 0.8% of GDP between 2015 and 2018 (FAO, 2020). Although the government has recognised the need to diversify the economy through the production of new goods and the redevelopment of water supply and agricultural infrastructure, this has not

ECONOMIC GROWTH:
2006 TO 2017

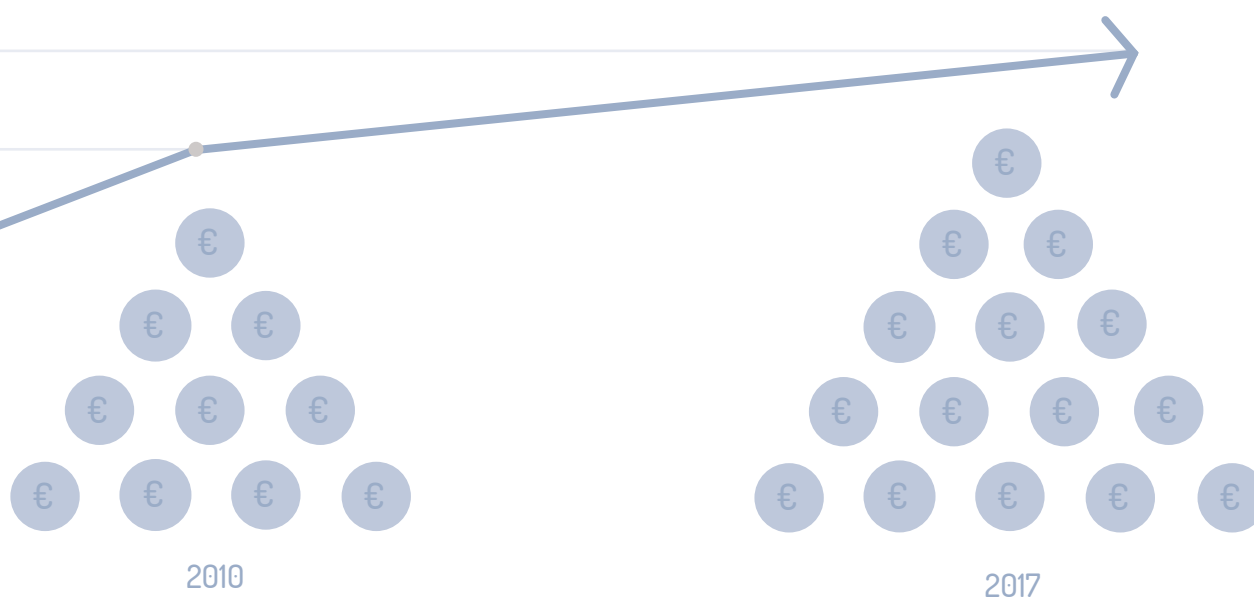


happened in practice. The consequence is that Lebanon remains heavily dependent on humanitarian aid and donations, especially after the recent outbreak of the economic, social and internal political crisis, which has led the country to suffer a 4% contraction in GDP in 2019 and even around 20% in 2020 compared to the previous year.

The progressive rise in popular uprisings for the stagnant economy, the continued increase in unemployment, the poor quality of public services and corruption contributed to plunging the nation into a severe financial and economic crisis, which led to a dramatic rise in the inflation rate. The crisis, quantifiable in an increase in the average price of a basket of goods equal to 28% occurring only in the interval between mid-October and December 2020, has caused the exchange rate to drop to 10,500 Lebanese pound/US dollar on the black market, while the official exchange rate is 1,518 LBP/USD. However, no dollar withdrawal is possible at the official exchange rate. Also, the crisis has halved the real income of the population. Fifty percent of the working population work in small and medium-sized enterprises, however, but over half (55%) receive cash in hand due to a lack of trust placed in banking institutions (FAO, 2020).

The Beirut port blast that took place the 4th August 2020, leaving 200 dead and over 6000 injured, should also not be underestimated for the Lebanese economy. The blast destroyed parts of the port, including the food terminal, nearby neighbourhoods and caused extensive material damage in the Beirut area. The effects of the explosion added to the multidimensional crisis that Lebanon was already facing, aggravated by the impact of the COVID-19 pandemic that exacerbated the deterioration of social and economic conditions. The multiple shocks the country has faced have deteriorated unemployment and poverty rates and have caused a high rise in the **inflation rate**.

In July 2020, consumer prices increased by more than 112% compared to July 2019, while food price inflation reached over 330% compared to the previous year. (Balestri, 2019).



Nine years after the Syrian conflict began, Lebanon remains at the forefront of one of the worst humanitarian crises of recent times. As of early 2020, approximately 910,000 Syrian refugees were officially registered with the United Nations High Commissioner for Refugees (UNHCR), but an estimated 1.5 million evacuees still live on its territory (Balestri, 2019). Lebanon hosts one of the world's highest per capita refugee populations, accounting for 20% of its population (FAO, 2020).

The massive influx of refugees has placed enormous pressure on the country's physical and social infrastructure. It has led to growing tensions between refugees and host communities in the face of rising rates of internal unemployment and the progressive deterioration of subsistence means. This is relevant for the rural context because many members of Syrian communities find employment as unskilled labourers in agricultural activities and reside in areas with a robust agrarian vocation (Balestri, 2019). However, the described conditions are amplified by an already low level of among the rural population. The arrival of migrants is therefore only one of the causes of saturation in terms of "low skilled labour" and the lack of matching between supply and demand observable in the labour market. This translates into a general unemployment rate of 25% and 35% for those under 35.

Although the influx of refugees has undoubtedly influenced competition in the low-cost labour market, contributing to a reduction in agricultural wages of around 60%, the problem suffered by Lebanon in terms of mismatches of labour demand and supply has mainly structural and educational origins, which does not provide the necessary connection services and job placements for young graduates or university graduates, thus pushing them to move from the countryside to the cities. On the one hand this can be a further source of frustration as competitors born and raised in the city, coming from more well-known



schools or universities, almost always prevail in the contest for a workplace. On the other hand, those who find work often fail to find a source of support to learn how to work and specialise in the field of competence in the company that hired them, due to the low investments made by employers in training services for employees. As a result, the workforce does not specialise. It prefers jobs in the public sector because it is more secure in income, and where recruitment is based on knowledge, family ties, and nepotism.

The micro and small enterprises sector reflects the problems described so far: lack of product diversification (and consequent saturation of the market in terms of supply) and low added value resulting from the sale of the product on national and international markets due to the limited skills of producers in terms of production, processing, marketing and market sales techniques. In the agricultural sector this is exacerbated by a lack of management skills for the correct use of water and by a limited access to credit due to the greater risk inherent in agricultural activity. In addressing these problems entrepreneurs do not often find the right support from local institutions such as trade unions and municipalities, which in turn suffer from technical shortcomings in responding to citizens' needs and fostering local development, and from a lack of coordination that encourages the spread of political instability also at a district level.



2.1.2 Agricultural production

Recent FAO evaluations (2020) recognise that the Lebanese agricultural sector faces several challenges, including the change of trade flows and the nearby continuing Syrian conflict.

As already mentioned, agriculture remains one of the primary sources of livelihood for the Lebanese population, with 25% of the rural workforce employed in this sector. Despite the important contribution of the sector for employment generation, agriculture plays a minor role in the country's economy, contributing only 5% of the National GDP (FAO, 2020). However, 64% per cent of the country's territory is intended for agricultural use (with a clear predominance of uncultivated and grazing areas), and the activity as a whole is quite diversified (Balestri, 2019).

For example, a study conducted by McKinsey (2018) highlighted the widespread cultivation of many different fruits in the northern area of the Bekaa Valley, one of the Foundation's major areas of intervention, such as cherry (1755 hectares): apricot (2200 hectares), grapes, peach, apples and smaller areas of pumpkin, fig and pear; vegetables (almost 1000 hectares) and wheat (100 hectares). Thus, in rural areas of poor regions such as the north of Bekaa, Akkar or Dinnyeh, activities attributed to agriculture make up to 80% of the local GDP (FAO, 2020).

It should be noted that agricultural production in Lebanon is managed half by large companies and half by family farms, who live in rural mountain areas with less than four dollars a day.

Lebanese rural populations, representing 12% of the national population (FAO, 2020), live in conditions of poverty mainly due to the various problems they face in agricultural production, such as the small extension of their agricultural holdings (in 70% of cases below 1 hectare), low managerial skills and poor level of cooperatives' activities (thus limiting the development of economies of scale); the mountainous nature of the agricultural land,

inefficient irrigation and fertilisation practices (with overuse of pesticides, around 3.5 times the OECD average) and high production costs (Balestri, 2019). To give an idea, it has been estimated that out of 1,200 registered agricultural cooperatives, only 20 are active. Out of 232,000 hectares of farmed area, not even half (113,000 hectares) are subjected to irrigation systems (FAO, 2020).

In addition, there is a lack of adequate national and regional agricultural policies (only 0.35% of the public budget in 2019 was allocated to agriculture), which are unable to respond to the needs of small farmers in rural areas. Related government institutions also have a very limited capacity to collect relevant information to agricultural policies. The development of specialised credit institutions and a limited domestic market also represent an important constraint for the development of the sector

Consequently, the Lebanese agricultural value chain shows marked weaknesses; with an intense fragmentation of the agribusiness chains: small farmers are not well connected to local markets and lack financial support and commercial capacity to overcome these limitations. The logistical barriers and transport costs remain high (Balestri, 2019).

Discrimination against women, who account for approximately one-third of the workforce in the sector, is favoured here by the lack of programmes to support them. This diminishes their role in every aspect of agricultural production, with negative consequences for their socio-economic status and for their families.



The precariousness of the agricultural production usually leads farmers to work in both on agricultural and non-agricultural activities, although poorer rural families tend to rely on agriculture more. Most of the country food needs are met by imports, which is also due to the lack of a complete and sufficient production chain to meet internal needs.

The most common negative features of the Lebanese agricultural sector to be remembered are the following:

1- THE LOW TECHNICAL-PRODUCTION LEVEL

LACKS CERTIFICATIONS (SUCH AS THE GLOBAL GAP), AND SUFFERS FROM WEAKNESSES IN THE PROCESSING AND POST-HARVEST PHASES WITH CONSEQUENT LOSS OF PRODUCTION, DESPITE TRAINING COURSES FOR THIS PURPOSE BEING FAIRLY WIDESPREAD.

2- THE EXCESSIVE AND INCORRECT USE OF

AGROCHEMICAL PRODUCTS, WHICH LACKS CERTIFICATION (SUCH AS THE GLOBAL GAP), DESPITE TRAINING COURSES FOR THIS PURPOSE BEING FAIRLY WIDESPREAD, SUFFERS FROM WEAKNESSES IN THE PROCESSING AND POST-HARVEST PHASES WITH CONSEQUENT LOSS OF PRODUCTION;

3- THE WEAKNESS OF THE COOPERATIVE MANAGEMENT SYSTEMS AND THE REPRESENTATION OF SMALL PRODUCERS

4- THE LACK OF MARKETING AND DEVELOPMENT PLANS

TO PROMOTE THE PRODUCT WITH A CLEAR VISION OF ITS POTENTIAL;

5- LACK OF ACCESS TO CREDIT , DUE TO BUREAUCRATIC, CULTURAL AND ECONOMIC BARRIERS.

However, it is widely recognised that there are opportunities to increase the productivity and availability of agricultural products by developing local value chains, linking small farmers to markets, reducing gender inequalities, and improving the capacity of the retail sector. The Ministry of Agriculture, in its four-year strategy 2015-2019, has recognised several challenges for Lebanese producers, including:

- 1 Modernising agriculture and increasing its productivity, efficiency and specialisation** thus ensuring the competitiveness of the main value chains in light of the fragmentation of small-scale production, weak agricultural and marketing infrastructures;
- 2 Improve health and phytosanitary standards following international standards** to access to foreign markets;
- 3 Ensure the availability of adequate and safe food supplies and improve food security** by reducing the vulnerability to food price volatility;
- 4 Encouraging young people to engage in agricultural investments, increasing employment opportunities in rural areas** thereby reducing rural-urban migration as part of an integrated approach to rural development;
- 5 Ensuring a sustainable management and use of natural resources** in response to the impacts of climate change, soil degradation, inadequate cultivation patterns and an excessive exploitation of commons (Balestri, 2019).

In this context, the John Paul II Foundation has decided to intervene in favour of cherry producers.

2.1.3 Cherry production

The cherry is the most cultivated stone fruit in Lebanese territory:

thanks to suitable climatic conditions

ABOUT

6000

hectares are planted with cherry trees

20000

tons of fruit are harvested each year

This data places the country in the 25th world place for cherry production. The fruit is considered an agro-product of excellence for Lebanon, which can suffer from competition from cheaper cherries of neighbouring countries, such as Syria (Lautieri and Russo, 2017).

From a geographical point of view, cherry orchards mainly extend to areas above 1300 meters of altitude on average and are mostly made up of traditional varieties such as Telyani, Ferawni, Baskintawi, Banny, Mkahhal and Rainbow. The plants are produced locally and widely grown in the Bekaa Valley. The cherries are grown in sizeable rain-fed cultivation systems or irrigated orchards on mountainsides, where the abundance of flowing water from above makes it possible agricultural production on terraced systems.



According to the Zhale District Chamber of Commerce, several varieties have been introduced in Lebanon in the past. For the market, farmers still have to find the right balance between the old varieties and the local ones to meet market demand. The local market may diversify itself due to demand and prices vary according to the area, with differences of up to 4 dollars per kilo offered for the same product (ARCO, 2018).

From a commercial point of view, Lebanese cherries have both domestic and foreign demand (about 40% of the total product goes to the Arab countries). Still, fluctuating trends in export have been observed in recent years due to more variable demand, which is also affected by the quality of the product offered and is reflected by changes in market prices. Through its expert economists, the Foundation has identified a good market potential for cherry but is threatened by factors such as:

- ➡ **TRADITIONAL AND SMALL-SCALE PRODUCTION METHODS** that often do not meet good quality standards and result in low levels of profitability;
- ➡ **POOR CONNECTION** with local markets, wholesalers and commercial intermediaries exacerbated by the lack of structures and equipment that would allow better processing of the product and communication routes for its transport ;
- ➡ **LOW MARKET ACCESS FOR SMALL PRODUCERS FOR BOTH SALE OF PRODUCTS AND PURCHASE OF INPUTS** which, combined with their high-risk aversion, contributes to reducing their investments in agriculture and consequently reducing potential profit gains;
- ➡ Climatic events such as a **WATER SHORTAGE OR DROUGHT** with their increasingly severe impact on the quantity and quality of the product.

This resulted in a progressive decrease in the cultivated and produced volume of cherry from 2000 to 2016, as shown in Figure 1 (Balestri, 2018).

However, Lebanese cherry producers have a good level of experience in the field and good literacy rates, which facilitates the provision of technical assistance and agricultural extension. In this regard, there are four agricultural universities in Lebanon. In addition, Lebanon enjoys a good reputation on the international market for the production of tasty fruits and potential sale channels in all the Gulf countries, especially where certain quality criteria are required. The monitoring carried out by the Foundation in 2015 found that the possibility of substantially increasing the price of the product

exported to the Gulf (up to about four times) is a concrete option for the cooperatives, producers and small enterprises involved by the programme through processes aimed at remedying the producers' shortcomings, thus ensuring a positive return on medium-term investments and long-term economic sustainability (Fair Trade Lebanon, 2016).

The John Paul II Foundation has decided to promote and coordinate an intervention project for small cherry producers in the Bekaa Valley with these intentions.

CHERRY PRODUCTION 2000-2016

FIGURE 1:
source, FAOSTAT 2018

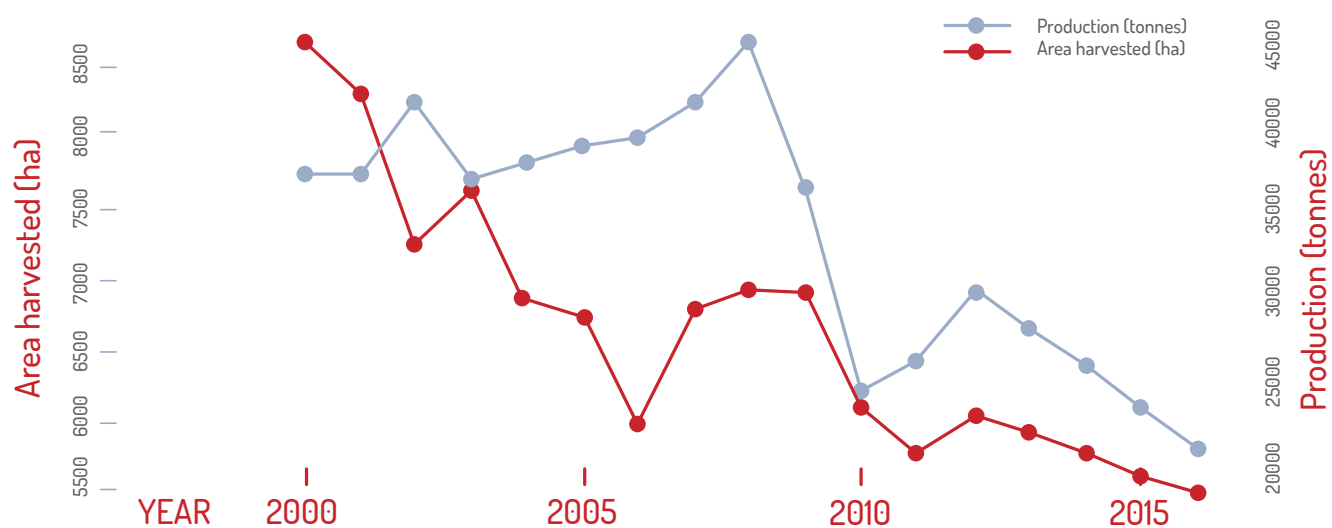


Figure 1. Cherry production in Lebanon from 2000 to 2016 (Source: FAOSTAT, 2018).

2.2 THE SMALL FARMERS OF THE BEKAA VALLEY

The Foundation's project took place in the districts of Zhale, Baalbek, Metn and Rachaya and aimed at strengthening human capital, the quality of the product and the coordination between the public and private actors. This zone is ;, located near the Bekaa Valley, where much of the Lebanese area is used for this cultivation is and where much of the national harvest is concentrated: about 50% (Fair Trade Lebanon, 2016).

A more specific description of the intervention area follows.

(Fair Trade Lebanon, 2016).

2.2.1 Intervention area: the beneficiary communities and the varieties produced

As anticipated, the intervention area identified by the Foundation's Projects Office in collaboration with its partners includes the areas of the districts of Zahle, in the centre-south of the country and consists of the heart of the Bekaa valley, Baalbek, in the north-east; and Metn, located to the west. A fourth area has been added from the second year of the project, which is the district of Rachaya, located in the southeast and within the Bekaa Governorate and about 1350 meters high.

Different varieties of cherries are grown in each intervention site, including:

FERAWNI	MKAHHAL	TELYANI	BANNY
widespread in all district locations	variety also grown in all districts, excluding the villages of Neha and Ferzol;	grown in the districts of Zahle and Rachaya	reasonably widespread in the areas of Ainata and Baskinta

Project partners such as ARCO, CNR and the Arboreal Archeology Foundation contributed to the study of these varieties and their genetic heritage to identify which of them more adapted to the area considered, thus taking into account the climatic characteristics and the properties of the corresponding soil.

FERAWNI

In particular, Ferawni ripens between the last ten days of June and the first days of July. It weighs between nine and ten grams, it has a dark red colour, it has a good level of productivity (with an index of 4 on a scale ranging from a minimum of 1 to a maximum of 5) and a rather average firmness index and equal to 3 to 5. This results in a cultivar producing a high-quality fruit for which there is high demand in the market because of its colour and taste. Its cultivation is recommended for all areas for its high productivity and the ease of harvesting.



9-10 gr



last 10 days of June
first of July
dark red

COLOR

4/5

PRODUCTIVITY

3/5

FIRMNESS

MKAHHAL

The Mkahhal (in Figure 2) has the same weight as the Ferawni but the ripening period is different (about 15 days later, between the first and tenth days of July) and has a particular pink colour. It has a productivity index equal to 4, which, combined with its good resistance in the post-harvest phases, makes it convenient to be cultivated. Given its good reputation on the market this variety is also suitable for export.



9-10 gr



between the first and
the tenth day of July

COLOR

rosaceous

PRODUCTIVITY

4/5

TELYANI

Telyani is the earliest ripening in the last week of May. It is also among the lightest varieties produced in the area, weighing about 8-8,5 grams. It has a red colour and tends to be darker as it matures. It has a goof productivity index (3 out of 5) but it can easily be damaged during harvest and post-harvest phases. Therefore, it is generally recommended only for its precocity and for areas under 1200 meters, which are suitable for the year's first harvests.



8-8,5 gr



last week of May

red

COLOR

3/5

PRODUCTIVITY

BANNY

The Banny variety (Figure 3) matures in the first week of July, has a weight that settles around 9-10 grams and acquires a dark purple colour that, associated with a high firmness index (4 out of 5), makes it a top-rated product on the international market. The absence of a virus-resistant clone has dramatically reduced its productivity, which has an index equal to 2. Therefore, it would be advisable to create a late harvest Banny clone for late harvest and to be planted in areas more than 1400-metre above sea level.

Very similar to it, but with greater weight (about 11 grams), is the Baskintawi variety, whose cultivation is typical of the Baskinta area suggested by its name.



9-10 gr



first week of July

dark purple

COLOR

2/5

PRODUCTIVITY

4/5

FIRMNESS



Figure 2: Fruits from Mkahhal (or Moukahal)



Figure 3: A Banny tree

The graphical representation of the sample analysis carried out by economist Balestri (2018) of 105 programme beneficiary producers and another 105 non-beneficiaries showed that the varieties most harvested in the intervention area by respondents were Telyani (almost half of the total harvest) and Ferawni (26% of total):

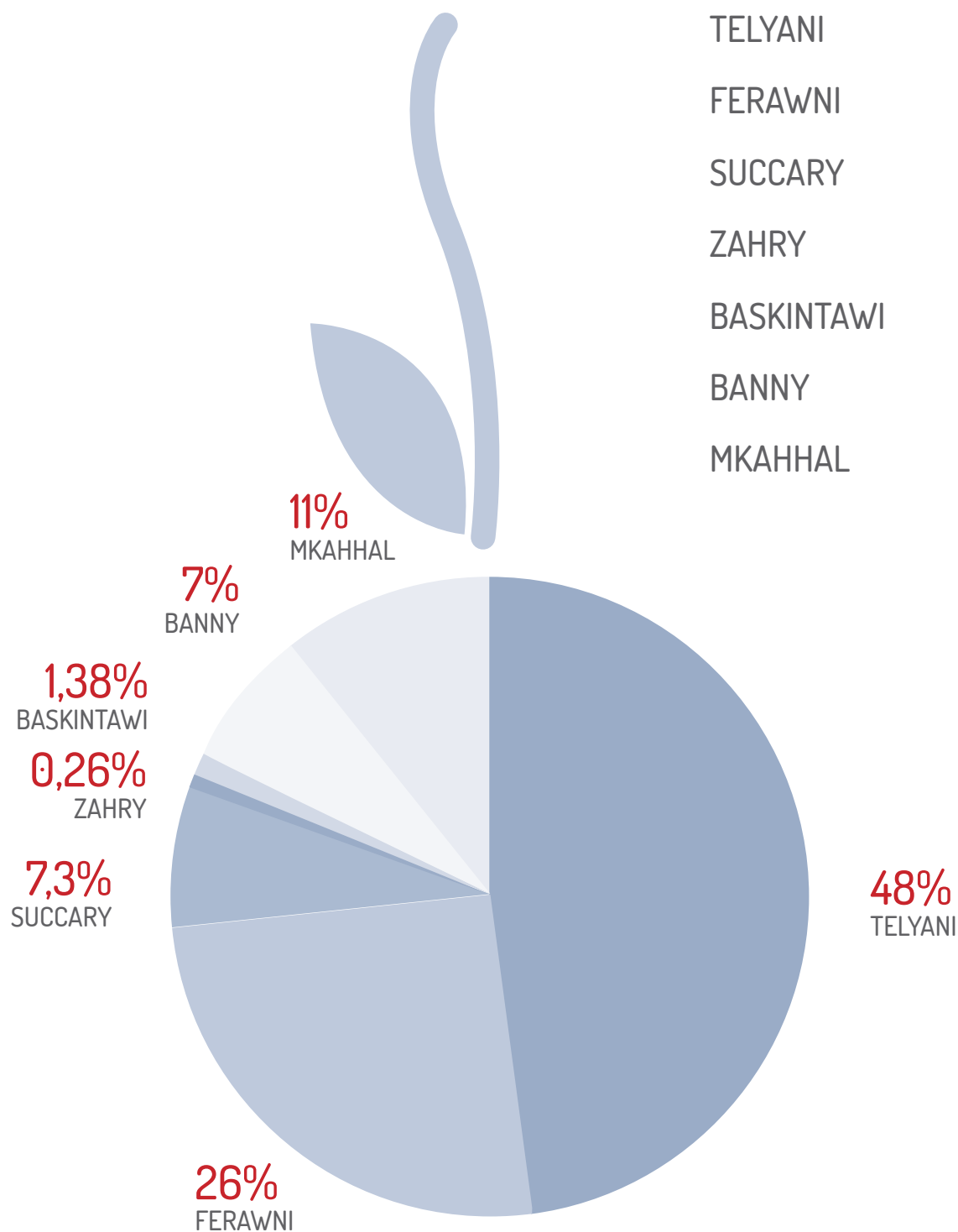


Figure 4: Distribution of varieties produced in the intervention area in percentage terms (Balestri, 2018)

In terms of agricultural land, the same survey carried out in the intervention areas shows that the territory of Zahle contributes to raising the average (equal to just over one hectare) in terms of the size of the area used to grow cherries, with plots of land that can also reach an extent of six hectares when, especially in other areas, most farmers arrive at about 0.5 hectares and are isolated from the surrounding economic and productive context (Balestri, 2018). Some producers are part of cooperatives, such as Ainata and Ein El Kabou, which were set up to facilitate access to public contributions and international donations but they have been unable to generate economies of scale and to support farmers in completing post-harvest phases, such as grading, packaging and direct sale of the finished product.



THIS IS ALSO THE CAUSE OF THE ISOLATION OF SMALL PRODUCERS FROM THE LOCAL ECONOMY, WHICH INVOLVES SELLING THE PRODUCTS, STILL RAW, TO THE LARGE OLIGOPOLISTIC COMPANIES THAT BUY CHERRIES IN LARGE QUANTITIES AND AT A LOWER PRICE COMPARED TO THE NATIONAL AND INTERNATIONAL AVERAGE PRICE.

This condition, characterised by low bargaining power, is also favoured by the lack of refrigeration, of storage facilities and of transport means to take the product to cities (Fair Trade Lebanon, 2016). In the specific case of Ainata, however, the ConfCooperative partner in Brescia has identified good potential, both in terms of production and management: the area enjoys a fertile soil and a climate suitable for the cultivation of cherry. The Ainata cooperative, with its 56 partner farmers, has a good internal organization. It is led by the mayor of the town, who is also the undisputed leader of the cooperative who seems genuinely interested in improving services and enhancing the value chain (Dossena and Spinoni, 2018-2019).

2.2.2 Small Lebanese producers and their workforce: generational turnover, gender gap and migrant contribution

Within the aforementioned intervention sites, the Foundation has identified :



Through analyses such as the above and interviews conducted on site by partners and researchers involved in the project, the Foundation can better capture the progress of the results of its strategic programme, which involves many producers living below the poverty line. The poverty conditions characterizing farmers in the area may also explain the particular reluctance of the youngest to engage in this activity: only 13% of the sample of farmers considered by Balestri (2018) is less than 40 years old, for an average age of around 59 years, a rather important figure if one considers that the average age of the national population is 30.5 years and that only 7% are over 65 years (World Bank, 2019). Ainata is the youngest cluster, with an average age

of 49.3 years and therefore intuitively more open to introducing new production techniques than the scepticism that older farmers may have towards the "different from what has always been done". The youngest are also the most educated: those who have attended university have an average age of about 52 years, while those who have a level of education that does not exceed that of primary school have an average of 66.5 years. This data shows the need to accompany small producers with technical assistance and training services since they tend to be risk-averse and resistant to change. Figure 5 reports the the age distribution of respondents.

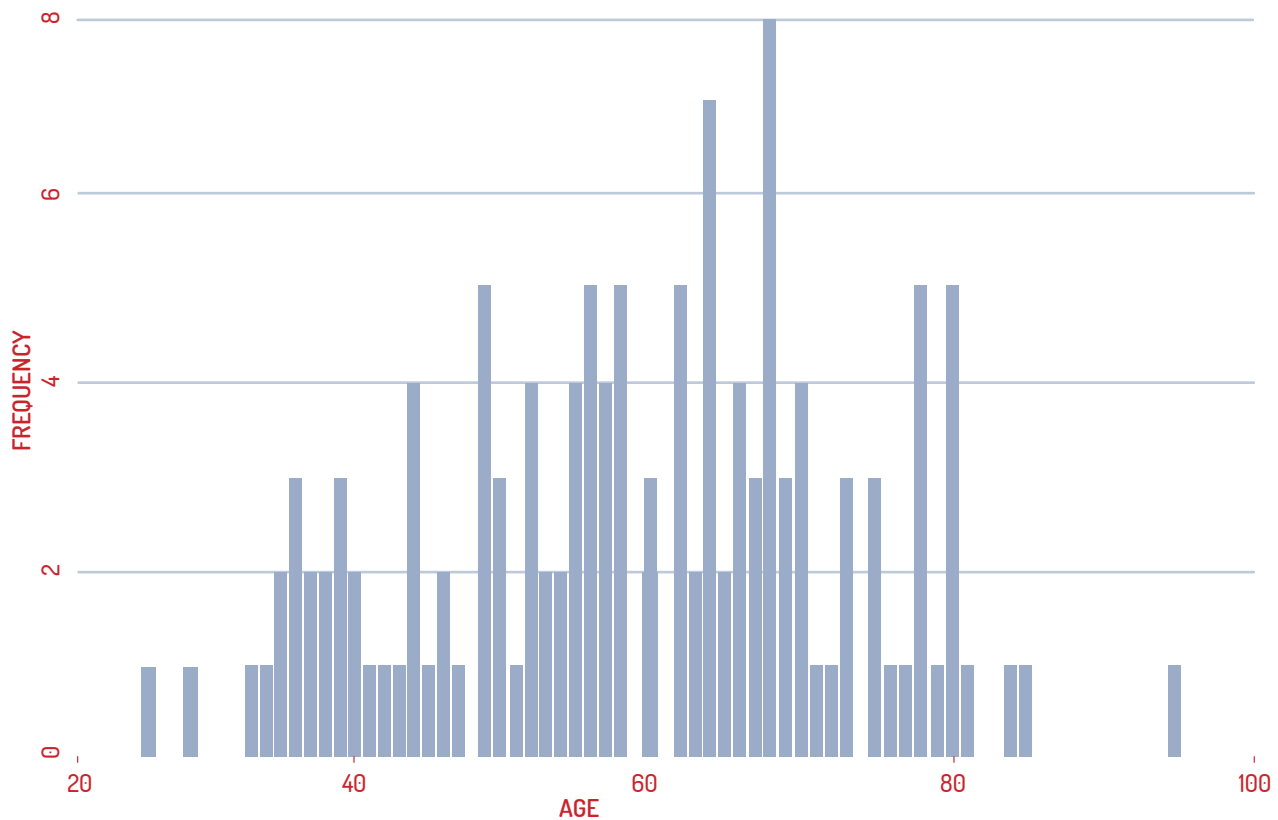


Figure 5: Age distribution of 134 farmers interviewed (including 62 direct beneficiaries) (Balestri, 2018).

It is worth remembering that around 68% of the producers interviewed carry out a second activity: many of them (more than a quarter) work as labourers for larger farms, 14% are in the army, while about 20% work in other public sector activities (primarily as teachers or as employees in administrative offices). Furthermore, only 20.7% of interviewed farmers keep written records of their activities and about 20% access credit institutions to finance their business. This all suggests that cherry production is, for many, only a traditional family business and not the primary source of income.

A woman manages the farming business only in 1.5% of cases. At the same time, the man is still considered the head of the family and, therefore, in charge of the activity, although he is involved in other work activities more than the female counterpart.

Farmers carry on the business making use of the contribution of their family members (on average four people). Especially in the harvest season, external labour is often used: if 44% of the producers in the sample regularly hire workforce, 32% do so occasionally, while the rest rarely or never do. Depending on the season, the small entrepreneurs in the supply chain who decide to hire can thus reach a maximum of 100 people employed, with a minimum of two people.



THERE IS ALSO A SIGNIFICANT GENDER GAP IN THE WORKFORCE.

Starting with permanent workers (those working all year round), 33 producers interviewed reported that they had hired men permanently, while only 15 declared they had done so for women. The difference was reduced during the harvest season: out of 95 producers who hired seasonal workforce, 86 also hired women, thus suggesting the existence of a genderisation of work duties also in the Lebanese cherry production chain (Balestri, 2018). This phenomenon involves assigning only specific tasks, such as the collection or grading (selection) of the fruit, to the female gender and is typically due to the vision of the woman as unsuitable to perform other tasks that are considered more complicated, as in the case of sowing or fertilisation. Furthermore, the higher the number of family members, the more domestic tasks entrusted to the woman increase, making it more difficult to separate her personal needs from those of the family or community to which she belongs. When women are asked what their aspirations or dreams were, the answers tended to revolve around the needs of the community

or village where they lived rather than their own (Fair Trade Lebanon, 2016). The effects of this gender discrimination are also felt on wages. If male workers hired permanently could earn up to 45,000 Lebanese pounds per month, female workers reached a maximum of 30,000 pounds, for an average difference of about 6,000 pounds per month. The average difference rises to 7,000 pounds for seasonal workers, where the highest-paid workers earns twice as much (50,000 LBP) as the highest-paid female workers (25,000 LBP).

Respondents were also asked to judge the most common stress factors compared to the past, i.e. whether they think they have worsened or improved. These include crop yields and profits (those most worsened), government services, road conditions, labour cost and availability. This last figure seems slightly in contrast with the others (see Figure 6): compared to almost 80 producers who declare the same level of availability, over 30 respondents believe that there has been an improvement compared to the past, and this can be explained from the arrival of Syrian refugees, who find more significant employment precisely in the agricultural sector, including in cherry production.

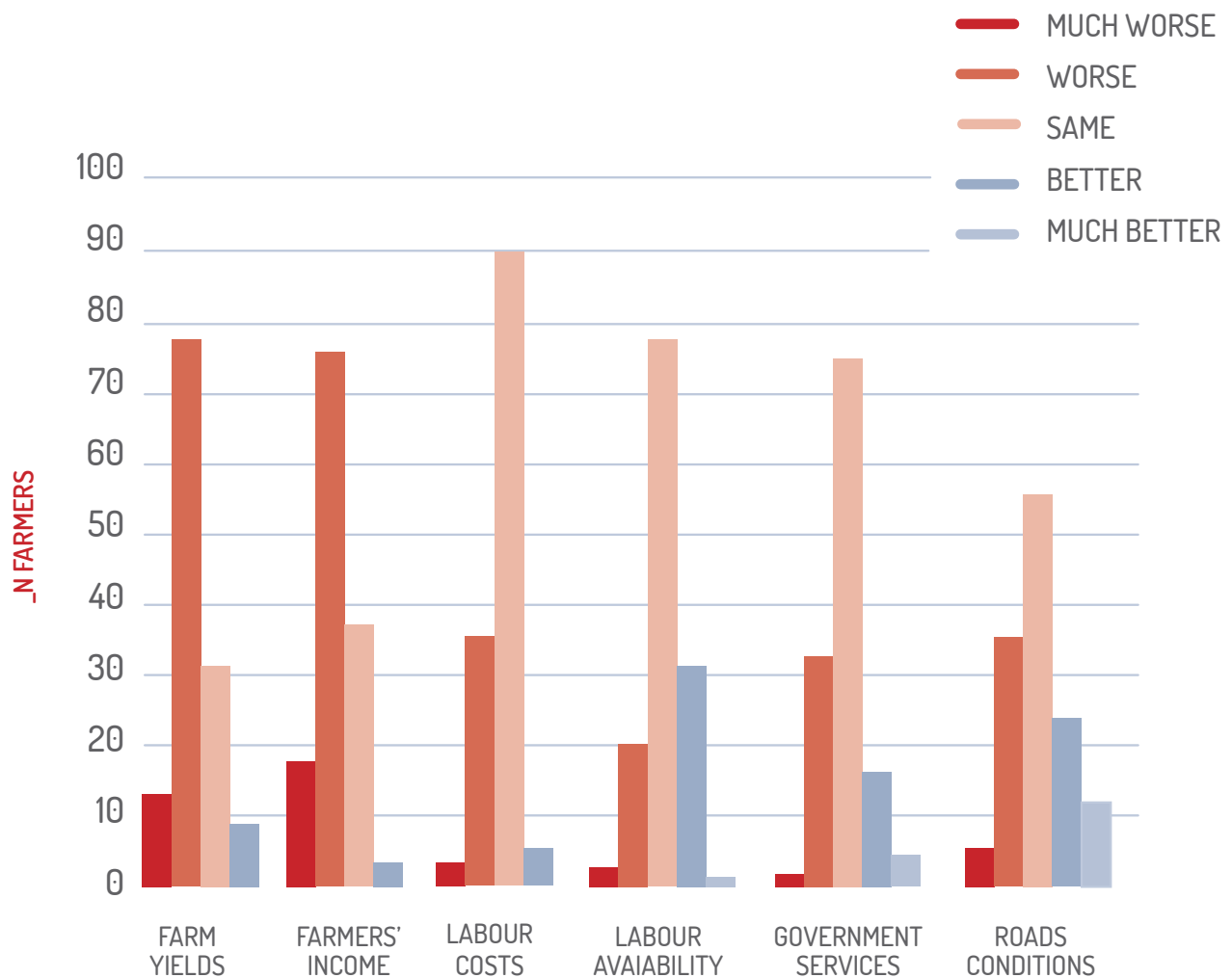


Figure 6: Producers point of view concerning perceived changes in harvesting, income, labour costs and availability, government services and road conditions, with classification from much worse to much better (Balestri, 2018).

The Syrian workforce, though poorly qualified, generally enjoys agronomic skills that are suitable for the cherry supply chain even if statistical surveys conducted on the field by the CNR reveal that this part of the workforce is in support of a more unsustainable agro-economic system that is spreading more and more into the areas of interest also thanks to the national political instability of recent times. The general tendency of many producers is to move towards an intensification of production with the increase of cultivated plants, rented hectares and quantity of pesticides and fertilisers used to increase yields. This is accompanied by an excessive homogenisation of agricultural production systems, which do not have sufficient stratification measures and that can easily become incubators of pest attacks (Lauteri and Russo, 2018). The following paragraph will discuss the limits of these systems and other agricultural techniques adopted by local producers.

2.2.3 Agricultural techniques adopted by small farmers and their limits



The tradition linked to cherry production is confirmed by looking at how small producers have taken over their land:

- 75%** of the interviewees inherited it
- 9,7%** bought or rented it
- 16%** declared a mix between inheritance and purchase or rental.

One of the main objectives that the Foundation intends to bring with its project is to avoid the possibility that farmers allocate all the agricultural land to cultivate a single fruit, including cherry, since mono-crop would undermine the sustainability of the value chain.

It is important to note that 81.3% of farmers allocate about 1.4 hectares on average for the production of other fruits or vegetables besides cherries, such as apples, olives, wheat, grapes and almonds; cherry tree are the main cultivation plant only in only 52.2% of cases (Balestri, 2018). A special mention for multiple cropping is needed

for chickpeas and thyme. In addition to being traditionally popular in Lebanese dishes and side dishes, the cultivation of thyme and chickpea among cherry trees maintains the health of the cherry orchard. In particular, thyme attracts bees, thus speeding up the pollination process, while chickpea absorbs nitrogen and is consequently important for the nutrition of the soil (Fair Trade Lebanon, 2016). These conditions represent an important basis for pursuing objectives of the strategy, such as enhancing local biodiversity in the creation of production systems in balance with the ecosystem. The agricultural biodiversity of the area has been eroded over time by over-exploitation and reclamation phenomena favoured by privatisation processes. Among autochthon crops, various herbaceous and tree species are affected, which are an important support to the agricultural ecosystem as a whole.

The intervention sites are distinguished by their altitude and, consequently, by the cultivated varieties, and by the irrigation technique: drip, flooding or simply rainfed, the latter technique is much more widespread (about half of those interviewed in the sample analysis use rainfed cultivation without using others irrigation techniques¹). Different irrigation techniques usually correspond to varying results in plant nutrition, with particular reference to nitrogen (N) and carbon (C). In the context of interest, CNR (2017) analyses showed better results of drip irrigation in increasing the presence of N in the soil and C in the leaves². But at the same time, the optimisation in the use of the water resource resulting from this technique can balance yield losses with a reduction of economic and environmental costs (Balestri, 2018).

Relying on meteorological phenomena is one of the main reasons why farmers are highly vulnerable to exogenous shocks.

In 2018, the percentage of cherry producers interviewed claiming to have suffered a crop reduction due to climatic factors in the last three years was 64.1% in the case of spring frosts, 59.7% due to high temperatures, and 74.6% in the case of parasitic diseases, which were categorized as an “important” event in 55, 56 and 65 per cent of the cases and as “very important” in 24, 16 and 25 per cent respectively examining each of the factors considered. Moreover, 90.3% of respondents claimed to have suffered water shortages or drought problems.

Regarding agricultural technique, tree pruning was the most common (93%) practice along with pesticide use (in 82% of producers) (Balestri, 2018), although in-depth research on the subject by the ARCO partner (2018) suggests that many of them do not make proper use of pesticides or use them in a way that is not in line with the rules of potential markets such as the European one. This is also because farmers do not find sufficient support in this respect from the Ministry of Agriculture. For example, while aware of the risk, Walid, a farmer from Wadi Al Kabem, located in the Baskinta area, reported that he applies fungicides that cause the leaves falling from cherry plants.

Another significant problem is the poor soil analysis commissioned by farmers: **only 5% did it regularly, and more than two thirds (68%) had never done it³.**

Again, 61% used fertilisers regularly or occasionally. Moreover, fertilizers are used upon instructions from local suppliers and the choice of fertilizer and of the quantity is done in an approximate way.. In comparison, only 47% of respondents used foliar feeding while 46% had never done so. The use of organic modifications against pathogens and soil nutrition were regularly applied in 49% of cases instead.

1 See: Balestri (2018), “International network for sustainable development and production, managerial and commercial innovation of small producers in the agribusiness cherry chain in Lebanon” (pg. 28).

2 The first characteristic is associated with increased soil fertility, while the second could reduce plant yield, reducing photosynthesis activity.

3 This data suggests a lot about limits farmers suffer in terms of technical skills: knowledge of the composition of the agricultural land is essential to understand characteristics such as its nutrients and therefore to understand the right irrigation and fertilisation techniques to be adopted but also which varieties of cherry are best suited to it, maximising productivity while respecting local environmental heritage.

An important aspect of the project's objective is more related to information and knowledge:

generally, those who regularly applied one of the above mentioned agricultural techniques and, in particular, the use of pesticides, was more likely than other producers also to practice pruning and fertilisation regularly, thus suggesting the existence of two main types of farmers: those more linked to traditional practices and those more open to innovation. Again, 69.2% of producers who did not use these techniques regularly justified their decision by saying that there was no need to do so (Balestri, 2018). However, the implementation of agricultural techniques is not associated with more information in the field: farmers often apply fertilisers following advice suggested by their local suppliers (ARCO, 2018), and it can be assumed that this is one of the leading causes of the excessive

use of fertilizers together with the farmers' willingness to increase production. These data confirm the importance of adopting specific agricultural techniques to comply with internationally recognised quality standards, which can promote a much higher improvement in profits than that brought about by a simple but harmful intensification of production systems.

The importance of Cooperativism

Another area of improvement is undoubtedly that of cooperativism, also to encourage the sharing of important agricultural inputs in the supply chain. The Foundation, using its experts, has identified the most relevant machinery and tools for improving the productivity of orchards, such as the motor tractor, weeding tools, the electric shears for pruning plants, the mixing tank for fertilisation and irrigation pipe systems. Although about a third of the sampled producers owned a tractor or owned irrigation equipment, it was found that about 36.5% of respondents had none of the six inputs considered. This percentage rose to 59% for the Rachaya cluster.

There is clearly a need to improve the equipment of small farmers based on the cooperative use of inputs, which not only make it possible a more efficient use of the investments, this but also facilitate the dissemination of certain production techniques. In contrast, it has been found that the adoption of practices such as foliar feeding is significantly linked to sharing those related inputs,

like fertilisation systems and irrigation systems, in this specific case. To promote the spread of positive mechanisms such as this, a decisive change of direction is needed: excluding the exception represented by Ainata and its well-established cooperative (operating for more than thirty years), it turns out that at least 80% of the farmers interviewed had never shared with other resources or sales channels, irrigation or fertilisation systems (87%), costs related to agricultural techniques (88%), the costs of purchasing products (92%) or transport costs. 62% of farmers justified the decision not to share inputs with the lack of interest in doing so, while 18% considered this mechanism as "not useful", and 6% admitted to not being aware of this practice. Data such as this have highlighted the need to accompany the Small Farmers project in Lebanon, starting from awareness-raising work and correct information to challenge the beneficiaries' common thinking. One starting point is the existence of good relations among farmers, as 81% of the interviewees considered relations excellent

despite a large discrepancy in judging the degree of co-operation (Figure 7): on a scale from 1 ('very bad') to 10 ('very good'), most of those who assigned a "10" to the level of co-operation came from the Baskinta cluster, while the farmers of Rachaya reported answers mainly between 1 and 3 (Balestri, 2018).

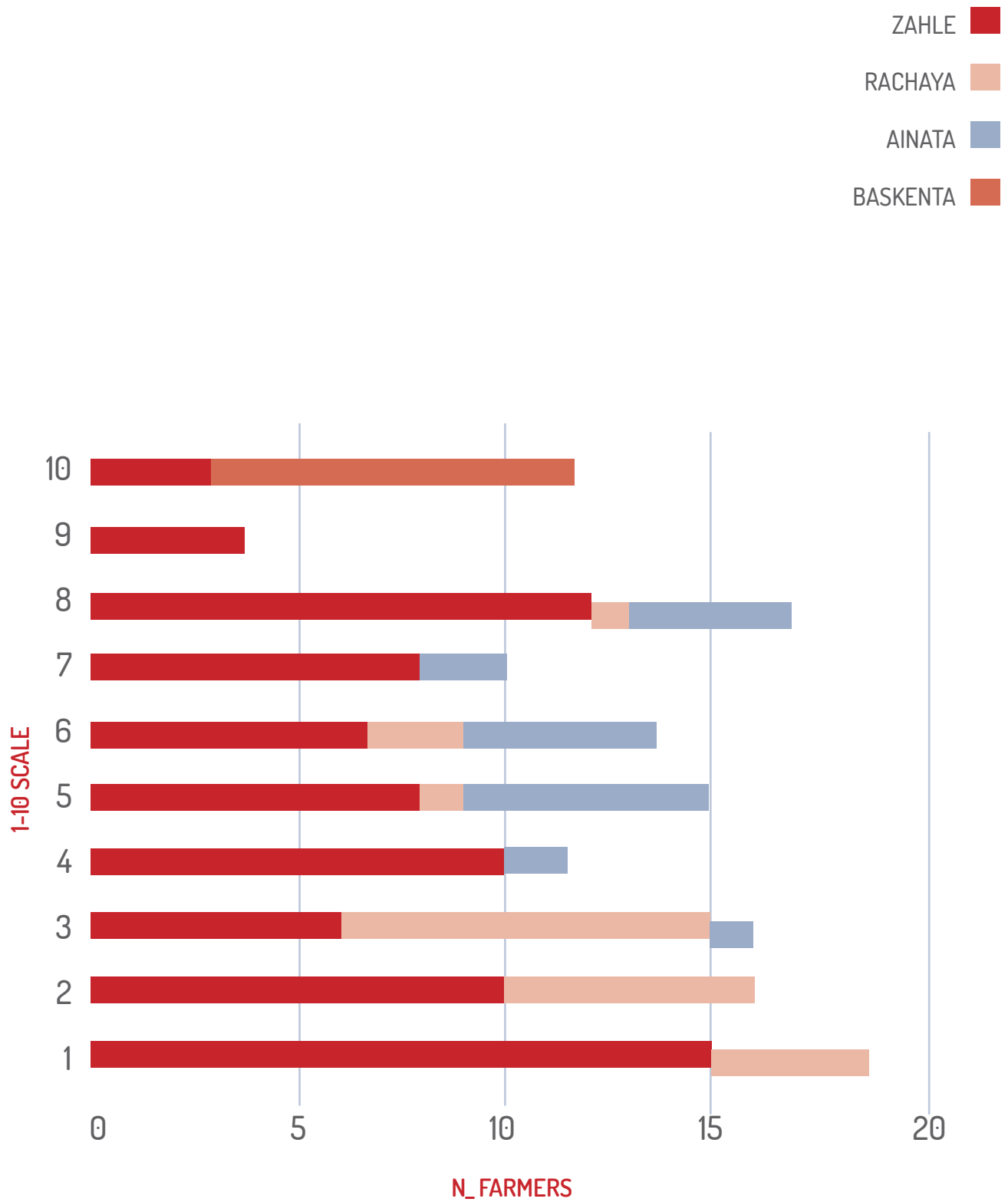


Figure 7: Number of farmers divided by cluster that judge the level of co-operation on a scale from 1 to 10 (Balestri, 2018)

The creation of agricultural cooperatives allows farmers to access inputs and services that are necessary to improve production and that are often inaccessible if they are alone. Also, cooperatives can promote products, improve marketing and selling price, and improve the bargaining power of small producers towards buyers. Specifically, in the Lebanese context, with its national political instability, Cooperatives are an important driver for local development, since they offer protection to small producers in the event of a shock. In this respect, the Lebanese cooperative movement has also played an essential role in supporting rural development and women's empowerment. Cooperatives as can often redistribute resources and political power, even on a small scale, to the less powerful groups, thus impacting daily life, habits, and social norms in rural areas (ILO, 2018).



THE SMALL MANUFACTURER
BY JOINING THE OTHERS IN
COOPERATIVE BENEFITS OF
COUNTLESS OPPORTUNITIES



- MARKETING
- PROVIDE SUPPORT TO FARMERS PRODUCERS
- WOMEN EMPOWERMENT
- ACCESS TO FUNDS (AID)
- LOCAL COMMUNITY DEVELOPMENT
- IMPROVE INCOME OF MEMBERS
- IMPROVE AGRICULTURAL PHYSICAL CAPITAL
- IMPROVE BARGAINING POWER





THE ROLE OF THE AGRIBUSINESS PROGRAMME IN RESOLVING THE CRITICAL ISSUES ENCOUNTERED

03

■ MANAGERIAL DUTIES

■ PRODUCTIVE SKILLS

■ COMMERCIAL SKILLS

■ RESPONSABILITIES OF THE OFFICIALS

■ PROBLEMS ENCOUNTERED DURING
THE PROJECT AND MITIGATION
MEASURES UNDERTAKEN BY THE
JPIIF

To implement this Small Farmers project, the John Paul II Foundation developed an eco-sustainable and inclusive agribusiness strategy, which is in line with AICS programme guidelines in contributing to sustainable agricultural development. It has supported small farmers through an integrated territorial approach using innovative agricultural techniques to improve the socio-economic conditions of rural communities in the Bekaa valley.

This has been done by providing support for private entrepreneurship, which includes women, facilitate market access, promote food security and a sustainable agricultural development, with a specific focus on small producers and workers, including seasonal workers, involved in the value chain. In particular, creating employment opportunities in the Bekaa Valley promotes co-operation and co-development and the conditions for the permanence of the “Syrian Migrants” in their countries of origin. Indeed, the Bekaa Valley is a border area with Syria that seasonally hosts over 200.000 Syrian seasonal agricultural workers. The increase in labour demand resulting from the reorganisation of the supply chain discourages Syrian neighbours from moving elsewhere, if not temporarily during the harvest season.

The low farmers’ incomes depended on organisational deficiencies at these levels:

A management:

the administrative management of producers and their cooperatives was carried out without management control, thus causing diseconomies that hindered the development of enterprises.

B production:

there were no quality control procedures, and the product did not reach its qualitative potential, a problem exacerbated by the lack of sustainable water, soil and fertiliser management systems that prevented an optimal production yield. Furthermore, the lack of post-harvest processing facilities and storage in cold rooms prevented the process from being completed up to the finished product and forced producers to sell most of the product at low prices before it deteriorated.

C commercial:

the lack of skills for direct access to commercial channels that are alternative to local market outlets led to a loss of economic opportunities along with a lack of market analysis tools, promotion activities at national and international fairs. This was particularly relevant since the market price of cherries in the Gulf markets was five times higher.

D institutional:

using innovative methods, the capacity building of local institutions (Chamber of Commerce and Ministry of Agriculture) was important to restructure and improve services that were non-existent for small producers.

The project thus supported the development of agricultural enterprises with actions aimed at improving the skills of small agricultural entrepreneurs, facilitating access to financial services and the market, and supporting management, production, and commercial innovation. The involvement of public authorities has also been aimed at avoiding duplication and overlapping of action with government policies.

Regarding the relation of the project's objectives with the Sustainable Development Goals of the United Nations, the agribusiness strategy has contributed to pursue SDG8 in promoting economic development and employment growth and SDG1 in improving the socio-economic conditions of the population. Equally important, the increase in employment opportunities for women and the development of sustainable production techniques contribute to goals 2, 5, 13 and 15.



PARTNERS

In carrying out the project activities, the Foundation has used support from Lebanese and Italian partners belonging to the institutional, academic, research, profit, and non-profit world. At international fairs, partners provided training services and facilitated exchange experiences for the entire cherry supply chain, mainly locally in Italy and abroad. Below is a description of the leading partners and their roles within the project.

Fair Trade Lebanon

It is a non-governmental organisation representing the local counterpart of the project, specialising in agricultural and economic development for the marketing of fair-trade products. In chronological order, its main tasks were the analysis of needs; therefore, planning, coordination, management, and supervision of the business plan components in agreement with the Foundation, which remained the proposing project entity.



Chamber of Commerce, Industry and Agriculture Zahleh and Bekaa (CCIAZ)

The local Chamber of Commerce is experienced in providing services and training to local agricultural enterprises. It participated in needs analysis and has benefited from workshops and exchanges of experience on good governance in business services. It then transferred this new knowledge to businesses through training activities and services such as the entrepreneurial social incubator and start-up funds.



Lebanese Agricultural Research Institute (LARI)

The Lebanese research institute for agricultural development accompanies farmers in applying innovative systems and to solve problems in production. It participated in analysing needs and exchanging good practices on innovative agricultural production techniques, transferring the acquired knowledge to cooperatives and producers to improve and innovate production processes.



Lebanese University – Facoltà di Agraria

The department of agriculture of the Lebanese University has years of experience in research activities on issues related to the development of agriculture and the provision of services in the field of agronomy. The university made students available for the analysis of needs and to benefit from training and exchanges of know-how on quality control systems. Also with the collaboration of students the Faculty of Agriculture took on the role of trainer to transfer knowledge and to support beneficiaries in re-qualifying the quality control system and business plans of individual farmers.



The Lebanese Ministry of Agriculture

It was involved in the provision of incubation activities and start-up funds. It also participated in developing the brand as an institutional partner for product promotion and representation in trade fairs.



CNR – Department of Earth systems science and environmental technologies

This is the largest Italian research institute in agronomic sciences and is committed to the development of eco-sustainable production systems. It carried out bio-cultural and socio-ecological analyses of the project area, as well as training activities and exchange of good practices for the innovation of agricultural techniques for an eco-sustainable management of natural resources (including land and water) of fertilisers, pests control, with the ultimate purpose of improving quality, productivity, and farmers' safety.



Arboreal Archeology Foundation (FAA)

It is a research body for the rediscovery of native plants and the enhancement of local biodiversity. It carried out the varietal analysis and plant genetics to enhance local biodiversity. In order to guarantee quality and sustainability of production, for each variety it provided guidance on production techniques, use of fertilisers and irrigation.



ARCO Action research for co-development

It is a research laboratory of the University of Florence, offering research, consulting, and training services; it carried out a needs analysis through field research characterised by semi-structured interviews to local stakeholders. In collaboration with other bodies such as the LARI and the FAA it conducted research on the varieties produced and the main target markets.



ConfCooperative Brescia

It is an expert institution in providing support services to cooperatives including those for the internationalisation of markets and for improving management and production. It took part in the project by carrying out training and exchanges of experience in the field of co-operation and management of cooperatives' services, including the supply of products, processing and preservation the internationalisation of markets and the support of local institutions for the provision of services to businesses.



University of San Marino (UNISMR)

It took part in consultancy activities to create the marketing image of local cooperatives for sales, brand design, packaging, and developing communication tools and products for product promotion.



Associazione Italiana Botteghe del Mondo del Commercio Equo e Solidale

It is the association of the Italian Fair Trade Network and has experience in product development and marketing at European level and with previous experiences in Lebanon. It developed packaging materials together with UNISMR and alternative products made of cherries which are also attractive for the international Fair Trade.



Municipality of San Giovanni Valdarno

It is a public entity representing one of the main Italian economic districts with high-profile experience on innovative models for services and bureaucratic simplification for business activities. It participated in exchanging experiences with local Lebanese public institutions for good governance on the one-stop business centre (SUAP) to manage innovative business services and bureaucratic simplification in accounting requirements and tax compliance.



3.1 MANAGERIAL DUTIES

Intending to make the results of its projects sustainable over time, the Foundation considers it essential to strengthen the human capital of beneficiaries through the transfer of critical management skills to develop and manage organisational, associated, and inclusive models. In this sense, confidence-building, aggregation, and democratic participation go beyond mere profit.

Therefore, the agribusiness strategy also involves knowing how to optimise the use of natural and productive resources through shared, conscious, and cooperative management, reflecting the territory's identity and historical and cultural heritage. In the case of cherry producers, Lebanese and Italian partners involved in the needs analysis found a low or inefficient level of co-operation which, combined with the poor management knowledge of the farmers, led them to sell a raw and low value-added product. This was due to the lack of sharing of expensive but necessary inputs to complete the value chain, especially in storage, calibration, and packaging.

During 2015, John Paul II Foundation staff monitored the price trend of cherries showing that small farmers in mountainous regions sold their harvest at an average price of 0.5 € / kg to large farms, while the better-organised cherry producers managed to sell their processed and finished products to Beirut wholesalers at 1.5 € / kg. More structured producers that were able to export to the Gulf countries sold cherries at 2.5 € / kg. Therefore, the analysis showed that the organisational and management weaknesses outlined hindered the development potential of small owners and rural communities. The price differential has been and will continue to be an important goal to achieve

through a reorganisational process also at the management level.

A good level of literacy among producers countered the shortcomings suffered in terms of managerial know-how and co-operation in the associated use of inputs and services. Farmers could thus be more easily trained on the importance of cooperative practices; the existence of an efficient financial system with credit plans in favour of the agricultural sector and universities and national research centres specialising in agriculture, which could have facilitated the accompaniment of farmers also in the adoption of quality certifications such as the Global GAP or ISO that are also needed for sale in international markets.

In Lebanon, there is a low willingness of farmers to join a cooperative, and generally, there is not much co-operation among farmers. The creation of producer cooperatives have thus been a central element of the project for small cherry farmers. Cooperatives, using qualified managers, made refrigerators and machinery available to members to improve the value of the product to be placed on the market. It has therefore been decided to create two new cooperatives in the Wadi El Aarayesh and Qaa El Rim areas and to review the management arrangements of two additional cooperatives that existed before the project. These are Ainata and

Ain El Qaboue. This was carried out during the second year by the Foundation in collaboration with the Brescian partner of ConfCooperative who, with an on-site mission carried out in the second year, gave suggestions on cooperative management and organisation. In the third year the John Paul II Foundation conducted trainings to involve the members of the cooperatives (both existing and in the process of being set up) to strengthen the cooperatives both on the organisational-management side and on governance and institutional side. With a view to the international marketing of the product, the Foundation promote supported cooperatives so that they could also take a financial role to advance the sum of the export payments to the member producers, who can thus bear their costs of production and consumption better.

For individual producers the Foundation focused on strengthening administrative and accounting capacities to plan production and investment in productive assets through a based on a cost-benefit analysis, and on improving the quality and promotion of fruits to gain competitiveness on the international market.

In this context, the Foundation found it useful to create 11 Business Plans for individual farmers and four business plans for cooperatives, which were developed by students of the Faculty of Agriculture of the Lebanese University, and subsequently they were refined in the last year of the project by the researchers of PIN, a branch of the ARCO research centre. The Business Plans are the result of fieldwork. Starting from market analysis and SWOT analysis the business plans made it possible to identify the main management shortcomings of the farmers and find the main lines of action to be implemented to resolve them.

Thanks to the data collection carried out by the same students, it was then possible to set up the business registration system and to prepare the documentation for certifications with the involvement of Zahle's Chamber of Commerce. The broader nature of this activity has allowed producers to start applying a system of registration and monitoring of their production activity, which is necessary for obtaining the certification (such as ICM² and Global Gap) required to access foreign markets.

Numerous field visits and informal meetings with managers and members of the various territories and with the representatives of the municipalities involved were carried out for both monitoring and supporting the development of infrastructures

created or upgraded by the project and to strengthen the level of co-operation between producers and the public and private institutions.

Another important activity involved exchanging best practices in business planning, analysis, and management evaluation, which took place locally and in Italy and involved issues related to sales and production and post-harvest systems.

The following paragraphs will give details of the main activities carried out in terms of managerial competence, business management, restructuring and creation of cooperatives, and the establishment of a monetary fund for producers, without forgetting, however, the centrality of the role of workshops and exchange of experiences locally and in Italy.

1 Regarding individual Business Plans, given the high number of students involved (23 in total), it was decided to organise the work in groups, assigning each group a specific producer. The selected locations were Qaa El Rim, Wadi El Aarayesh, Rashaya, Baskinta and Ainata, with the final selection of 11 producers.

2 ICM is an independent certification, inspection, testing and training internationally recognized-body offering certification services in the areas of quality, environment, occupational safety and food safety.

3.1.1 Development of small enterprise and cooperative management in Ainata and Ain El Qaboue

Small businesses

Looking at individual producers, the project started from a needs analysis conducted by the Fair-Trade partner and the ARCO research centre with semi-structured on-site interviews. The study, aimed at identifying the main shortcomings farmers face on management aspects, suggested to train the 350-beneficiaries in production, financial and risk management, product marketing and co-operation.



The taste of nature



In particular, the needs identified for small farmers are:

- strengthening the ability to plan production, investments in productive assets and related costs;
- increasing the level of administrative accounting management to monitor cost-benefit ratios and better target investment choices during the succession of productive seasons;
- working to increase the quantity of quality fruit to benefit from further investments made during post-harvest and to arrive at a product that repays the efforts made, differentiating itself on the local market and gaining competitiveness on the international one;
- strengthening the promotion of their products, to be carried out not only as a group but also as individual producers, to increase consumer awareness in Lebanon of a product such as cherry, which is considered excellent in the project areas.

Asking student groups to create a personal business plan for 11 producers

The allocation of was also important to set the main goals of the agricultural producer. For example, in the case of Zahia, a producer of Qaa el Rim with 15 years of experience, the short-term objective was to apply the know-how acquired in terms of agricultural practices and to join the emerging cooperative in the area, while in the long term (after the end of the project) the main objective was to increase profits. Box 1 provides an in-depth analysis of the structure and contents of the individual Business Plans.

BOX 1

BUSINESS PLANS FOR SMALL BUSINESSES

The Business Plan for small entrepreneurs often addressed to coordinators of family-run farms, generally included a first chapter summarising the structure of the business, including organisation of the workforce and finances; a second chapter focusing on the characteristics of agricultural production; a third chapter on the market and its strengths and weaknesses; Finally, the last part was on the future business strategy, and includes an action plan and economic and financial objectives. It is worth specifying that the Business Plan consists predominantly of a series of questions, followed by answers from the beneficiary, thus demonstrating how the same document is the result of close synergy between the producer and field experts.

The first chapter starts with a general description of the company, focusing on the characteristics and personal experience of the coordinator, the type of product and its sales channels. In addition, the entrepreneur's vision is reported by setting the main short- and long-term goals (e.g., "planting new cherry trees improving quality and productivity"). The description then proceeds with a financial forecast of the funds needed to pursue the enterprise's objective and possible funding sources. Lastly, it ends with a description of the organisation of the farm, the activities, and persons responsible (often the same).

The second chapter describes the business activity regarding the variety and quantity produced, the market strategy and the price adopted, and any future growth/innovation prospects identified. A further paragraph summarises the risks (e.g., "Woodworms") and the mitigation measures used against them so far. The following text includes the pre- and post-harvest production phases (such as pruning, irrigation, fertilisation, grading, and packaging) generally adopted by the company, the technologies used (including those for quality control) and the tasks of each employee (owner, family, seasonal or permanent workers).

The third chapter contains a market analysis of the farm and a SWOT analysis to identify strengths and weaknesses for the future.

The business objectives and goals are specified in a **fourth chapter** which, starting from the previous SWOT analysis, represents a summary of the strategic business plan, including an action plan that describes goals, activities, resources used, outcomes, timeframe and human capital envisaged as shown in the following table:

GOAL	ACTIVITY	RESOURCES	OUTCOME	TIMEFRAME	STAFF RESPONSIBLE
Plant new trees and increase production by 100% in 3 years	Buy new trees And Pruning including technical training	750 \$ for trees(about 250 trees) -about 1000\$ for digging -1000 \$ for irrigation network -workers, fertilizers, and other agricultural practices	After several years, it is expected to give production that covers the costs and make a good profit.	Starting from 2020 (cherry trees need about 5 years to begin producing fruits)	The farmer house and the worker George tannoury and other temporal workers.

Lastly, a **fifth chapter** identifies the financial plan for pursuing the strategy, including the budget forecast for the time specified for the implementation time.

The Cooperatives of Ainata and Ain El Qaboue

In the context of cooperativism, the Foundation's activities were delivered in a heterogeneous way over the project's time span. Regarding pre-existing cooperatives, Ainata's was identified much earlier than Ain El Qaboue's, which was only involved in the third year.

It was understood the importance of the following aspects, considering the producers together at the level of Cooperatives or groups of farmers, the needs analysis, which was carried out in advance on the field with the Fair-Trade partner,:

■ ENSURE SUFFICIENT FRUIT VOLUME

to cover fixed costs and keep the cooling and storage centre economically sustainable.

■ STRENGTHEN THE COOPERATIVE'S "GOVERNANCE"

and ensure a gradual and controlled increase in the number of producers associated with it to improve its capacity to respond to market needs. Ensure experienced staff in the management and control bodies of the cooperative.

■ ensuring an accurate, transparent, and constant flow of information on all the most sensitive aspects of cooperatives, whether financial or institutional, technical, or commercial, to **INCREASE THE LEVEL OF CREDIBILITY AND TRUST BETWEEN MEMBERS** and in the territory in which the cooperative operates.

■ ESTABLISH CLEAR RULES BETWEEN COOPERATIVES AND THEIR MEMBERS

on all aspects, both on the delivery of fruit and on payments, market positioning and dividend distribution. This increases the chances of the cooperative growing successfully.

■ PROVIDE THE COOPERATIVE WITH MANAGERS

and technicians with proper sectoral experience, where possible with managers working at the level of several cooperative consortia (which is the recommended scheme to promote the export of products).



The taste of nature

During the project's duration, the Cooperative partner carried out training activities (partly described in paragraph 3.1.3) starting from the needs listed above and from a preliminary study of the communities involved. In particular, in the mountain community of Ainata, the undisputed leader of the cooperative is the mayor of the country Michael Rhame, who has demonstrated his commitment to the development of the area. The cooperative, already consisting of 56 members, was founded in the early eighties and is therefore an established organization, with its internal balances. Exciting opportunities have been identified for the com-

mercial development of the product: a better supply of services for the marketing and enhancement of cultivars with a more significant market appeal that could have brought added value to the products of the members who, for the most part, do not practise agriculture as their primary occupation, but who were nevertheless interested in improving the quality of their product, thus respecting certifications such as the Global GAP. The fertile soil and the temperate climate also meant ample room for efficiency in using productive resources (Dessena and Imberti, 2018).

Based on these results, the second year of the project focused on strengthening the cooperative's managerial capacity, with representatives involved in the presentation of the market study to raise awareness of improvement of product quality for the international market. Improve-



The community of Ain El Qaboue, located in the Baskinta area of the Metn district, started instead from a more backward situation than the “consolidated” reality of Ainata. It had 19 members and it was difficult to associate others, also due to the cultural divisions among the producers of the area. Therefore, the first objective was to improve the appeal of the Cooperative, attracting new members who, with their skills and experience, would have brought added value and would have in return received a higher profit from the sale of a processed, sorted, and packaged product. Furthermore, the sharing of production tools would have contributed to reducing the costs faced by producers, especially in the post-harvest phase. At the

ments were made during April 2018, in the sorting, packaging, refrigeration cell management, promotion and trade agreements stages. For example, a fourth pre-cooling chamber was created to reduce the temperature of the product to zero degrees Celsius in 2-3 hours to extend the expiry date of the cherries and store them longer before putting them on sale. For the administrative component, a manual of administrative procedures has been drawn up that includes both the procedures and formats for warehouse management and for the more purely administrative-financial and accounting management.

end of 2020 the project contributed to increasing the number of new members (15). This was an important step because the cooperative was almost inactive, due to the presence of older and less active partners, while the new entrances brought greater operations and dynamism. The plan for this cooperative also envisaged a series of instrumental improvements and investments like those undertaken in Ainata and aimed at increasing the added value of cherry. The dissemination of the production specification (QMS) among members, combined with training activities and strengthening relations with local public authorities and international buyers, is expected to progressively improve the quality of the product in the coming years and, therefore, its selling price at both national and international level. For 2024, it is estimated that this intervention will increase the average net price per kilogram earned by shareholders from the current 1.20 dollars to 1.92 dollars.

Box 2 also summarises the “stages” that led to the preparation of the Business Plans for these two pre-existing cooperatives.

BOX 2

BUSINESS PLANS FOR AINATA AND AIN EL QABOUE COOPERATIVES

Business Plans developed for cooperatives are generally richer in content than those of individual agricultural enterprises. Compared to individual enterprises, the social impact identified in terms of inclusion, job creation and dissemination of cooperative culture is added to the environmental and financial implications. A description of the structure of the Business Plans implemented for Ainata and El Qaa is below, including a final focus on the importance of the accompaniment, carried out by John Paul II Foundation and project partners to involve and bring together the future members of the cooperatives at each stage of the development plan that was prepared for them.

The Structure

The document consists of two main chapters, the first containing a description of the cooperative and the second containing a description of the project envisaged for it.

The first chapter provides details of the history and location of the cooperative and its organisational and associative structure.

In describing the project, the second chapter initially specifies its objectives and activities to achieve them. It then focuses on products and market standards to be achieved on the basis of the requirements of different buyers (consumers, small local traders, local and national wholesalers, and international buyers). The various management activities and their intended employees are then described, followed by a paragraph on the rights and duties of the members. For a paragraph describing the financial impact of the project and one on its success factors, another follows on all the expected risks in the different activities of the cooperative (from cultivation to sale), including idiosyncratic risks (affecting only aspect), or covariant risks (affecting all farms) and their anticipated mitigation strategies.

Lastly, attachments such as those concerning the logo (Ainata's shown below) and the results of the SWOT analysis carried out for the cooperative are provided.



The taste of nature

Support work

The identification and restructuring of the two cooperatives concerned, as in the case of those created during the project, took place at different times.

Starting from the first year, the support, carried out in collaboration with Fair Trade, ConfCooperative and two expert consultants, was necessary to identify the socio-cultural characteristics of the cooperatives and affiliated members and take actions to achieve the improvement goals set following the SWOT analysis.

From a social point of view, bringing people together to pursue a common goal has been identified as a tool to reduce tensions and offer a “platform” to develop future common interests, promoting equal opportunities for anyone who wants to use this platform to improve their business by completing the supply chain of their product. At the same time, the strengthening of the cooperative culture contributes to the development of capacities for members and workers as they all work together and share knowledge and experiences. More broadly, cooperatives help establish a link between the community and local authorities, government institutions and international bodies.

To pursue these objectives, since 2020 the Foundation has accompanied, through training meetings and fieldwork, the representatives, and members of the Cooperatives in the post-harvesting, sale and marketing phases of the products supplied to members. The underlying idea was that the representatives and technicians of the cooperatives most directly involved would have echoed the other members on the advice received. The cooperative’s post-harvest activities are carried out to prepare the products for the market, both local and export. These include pre-cooling, sorting, packaging, labelling, and cooling. The cooperative thus becomes responsible for the harvests from the moment the fruits are delivered to its facility by the farmers until the farmers are paid with the money for the products sold. This leaves the farmer members with only one task: to produce quality cherries in compliance with the standards required by the market.

It is a real challenge to create and maintain a successful agricultural cooperative project in Lebanon, considering all the forces adversely affecting cooperative work and agriculture and the environmental effects of climate, economic or political change.

Nevertheless, three aspects have been identified to overcome these obstacles: first, strong leadership, then the unity of members and, finally, continued exploration of collaboration and support provided by development agencies or government counterparts who have contributed to cooperative productivity so far through technology, field research and the sharing of good practices as well as with financial support.

In particular, the partnership agreement between the Municipality of Ainata and the cooperative where the municipality provides the cooling system has allowed the cooperative to use the cooling system free of charge for all post-harvest work except storage.

3.1.2 The creation and development of the Wadi El Aarayech and Qaa El Rim Cooperatives

During the second and third years, project managers identified two new areas with the potential to accompany producers towards creating a new cooperative. The creation of an inclusive business characterised by the associated sale of the product had as its first intervention area Qaa El Rim, where preparatory work of the Foundation started from the second year of the project (2018) in collaboration with the local institutional partners and ConfCo-operative. The Community of Wadi El Arayesh, on the other hand, has been involved since 2019.

The Qaa el Rim Cooperative

The mountain village of Qaa el Rim is in the Zahle District, on the eastern side of Mount Sannine and the northern part of the Berdawni River. Among the 2,000 inhabitants of the area, the presence of a very close-knit and proactive group of women was identified. The group also had experience of associated work for the transformation of products in an informal way (Dossena and Imberti, 2018).

With an eye to the future, Fair Trade has identified challenges to address to sustain farm business. Among these:



The gazelle's fruits

- 1) HIGH PRODUCTION COSTS AND POST-HARVEST ACTIVITIES.;
- 2) INAPPROPRIATE AND HARMFUL AGRICULTURAL PRACTICES FOR BOTH THE ENVIRONMENT AND HUMAN HEALTH;
- 3) INSUFFICIENT INFORMATION FOR FARMERS WHO DO NOT RECEIVE SUPPORT SERVICES IN THEIR ACTIVITIES;
- 4) LACK OF APPROPRIATE POST-HARVEST ACTIVITIES, WHICH ARE ALSO HARMFUL FOR PRODUCT QUALITY.
- 5) UNFAIR COMPETITION WITH UNFAIR PRICES ON THE LOCAL MARKET.

Following a preliminary study, the ConfCooperative partner suggested starting with the establishment of a cold room for producers in the area to better store cherries and plan delayed sales as a starting point for the cooperative's set-up and paying attention to possible internal conflicts. Therefore, a group of producers was identified who would become the core of the founder members of the new cooperative set up around a cooling and storage facility in the third year.

Through a series of meetings animated by Fair Trade Lebanon, the operational plan of preparation for the 2019 production season was elaborated in a participatory manner with groups of producers. The plan was developed based on an analysis of all production and management processes and an of weaknesses and needs. It aimed to improve the organisational and management structure of the cooperative and identify the actions to be undertaken concerning the strengthening and organisation of production, post-harvest, and marketing.

The planning developed in the first half of the year was followed by the implementation phase involving the John Paul II Foundation and Fair-Trade Lebanon staff and the technicians of the General Directorate of Cooperatives for the necessary documentation for the constitution and management of a cooperative.

Like the rest of the cooperatives, work has been facilitated by creating WhatsApp groups for each cluster of producers. This tool has proved highly effective in coordinating and communicating activities. In the case of Qaa el Rim, all five workshops stopped in April 2020 to allow the 30 producers involved to focus on the upcoming production season. The activities were aimed not only at explaining the documents necessary for the management of the cooperative, but also at raising awareness among beneficiaries of the importance of cooperativism for an inclusive and higher value-added business. Also, during workshops the results of the market study were presented along with the market strategy.

The series of meetings with the producers of the Qaa el Rim area (organised by the John Paul II Foundation staff and the local partner Fair Trade Lebanon, in coordination with the Directorate of Cooperative) were resumed in October and in

November with a weekly basis and resulted in the presentation of documents needed for the creation and formalisation of the cooperative.

The cooperative was also equipped with a cherry grading machine with a sorting capacity from 800 to 1000 kg/h of product, approximately 50 times more than the manual sorting, thus ensuring excellent precision in sorting by grading.

Fair Trade has also played an essential role in establishing a Business Plan with a 25-year time projection, setting medium- and long-term objectives to improve the quality and marketing of the products for the benefit of Small Farmers members through the supply of services and inputs to complete the supply chain.

Box 3 provides an insight into the Business Plan created for this new cooperative and derived from an elaboration that took place on the field.

The Wadi El Aarayesh Cooperative

Wadi El Aarayesh village is located in the Zahle district, at an altitude ranging from 1,250 to 1,500 meters above sea level and counting 1,663 inhabitants as of 2019. There are good climatic conditions and abundance of fertile agricultural land, so that almost every household work on an agricultural family business, which, in some cases, is the primary source of income, whilst in many others the household cultivate a small plot of land while having other sources of income. The farmers of this community are also facing problems for the sustainability of their activities, which are also common to those of the producers in Qaa el Rim.

The Foundation has therefore set itself three main objectives in its participation in the creation of a new cooperative:

Wadi Al Aarayech Cooperative

- 1) IMPROVE THE QUALITY AND VALUE OF THE CHERRY PRODUCED;
- 2) IMPROVE WADI EL AARAYESH'S PRODUCT PROMOTION ON THE MARKET;
- 3) ENHANCE THE INCOME OF LOCAL PRODUCERS BY REDUCING COSTS AND INCREASING SALES REVENUES.

Starting from at least fifteen members who produced no less than 40 tonnes of product, the project developed for the cooperative's constitution aimed at implementing the post-harvest, sale and marketing activities of the fruits provided by the members. Post-harvest activities are understood as all activities carried out by the cooperative to prepare products for the local market or export market. Thereby

including pre-cooling, sorting, packaging, labelling, and cooling. In this context, the created cooperative is responsible for the produce from the moment it is delivered to its facility by the farmers until the farmers are paid in cash. This left the member farmers with only one task: to produce quality products in line with market standards and requirements.

The new-born cooperative, which has 25 members to date, has already given its first results in the first season of sale, that was summer 2019. Over 1,800 kg of fruit were sold to new sales channels, of which 730 kg broad, to Bahrain.

From 2022, in addition to providing all the necessary inputs of production useful for pre- and post-harvest cost reduction, other important activities in the cooperative are expected to be deployed, such as:

- **Technical advisory services to farmers.**
- **Provision of post-harvest services for other agricultural products;**
- **Promoting an increase in the number of members through the continuous opening of the cooperative's doors to new members.**

In addition to the Foundation, the Directorate of Cooperatives, and the City of Zahle, in support of these intervention objectives, have been and will be important in identifying possible gaps and promoting citizen-oriented awareness activities on the importance of co-operation.

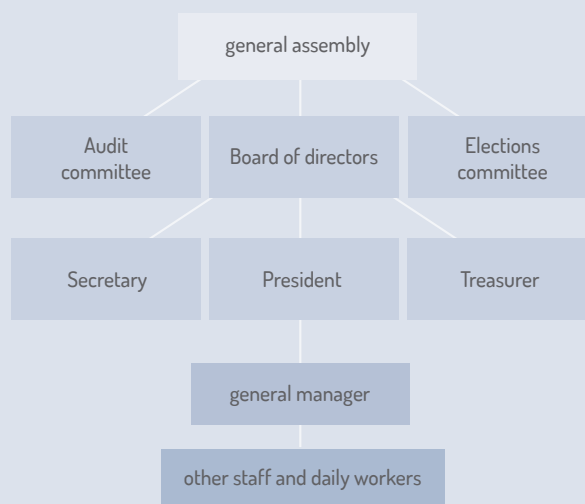
BOX 3

THE BUSINESS PLAN FOR THE COOPERATIVE OF QAA EL RIM

The plan developed for Qaa el Rim presents a first chapter that briefly describes the community from a historical, cultural, and socio-economic point of view. The second describes the Cooperative and its organisation. The third chapter describes the project, the feasibility study, including objectives, planned operations and the actors/assets to be involved for the implementation.

The short-term objective of the plan aimed to accompany the cooperative during its gradual growth, following the production and commercial cycle, to bring about improvements that immediately affect production and marketing results.

From an administrative point of view, as for Wadi El Aarayesh, the business plan provides a precise organisational structure for the Cooperative (shown in the figure below) which must be constituted by a General Assembly charged with electing five members to the composition of the Board of Directors and an Audit Committee to control the activities of the former.



The Board of Directors appoints a General Manager who is in charge of managing the daily activities of the cooperative by ensuring the sale of the products. The staff also includes a supervisor and cashier who can temporarily replace the manager, a lorry driver, an accountant and two employees paid with daily vouchers.

The rights and obligations of the members are provided for in the Business Plan along with the conditions of treatment of non-members who rely on the cooperative to receive post-harvest, marketing or sales services. The estimated impacts of the project from a social and environmental point of view are presented in the final part. It also includes an estimate of the economic effects that the producers will benefit from once associated, due to the sales of an end product, that has a higher added value and that is packaged and labelled with the cooperative logo (in the photo).



3.1.3 The centrality of training and exchange of good practices in the management retraining plan

John Paul II Foundation considers the involvement of expert partners to be fundamental in promoting an inclusive Agri-business with whom local stakeholders can confront past experiences and draw training opportunities.

Training activities

From a training point of view, the representatives of the Cooperatives and the local institutions receive information to be transferred to the partners and citizens interested in the project and are involved in workshops and focus groups that are opportunities for management exercise and training, on cost analysis, cooperative management of services in the production, management, and trade, and for discussion, and participatory decision-making processes.

An assessment system has also been set up for each working session, with an initial test for each topic and an equivalent final test to verify the level of learning.

Numerous field visits and informal meetings have been held with leaders and members of the different areas and with representatives of the municipalities involved for monitoring and supporting the use infrastructure and for strengthening the level of co-operation between producers and public and private institutions (such as the Zahle Chamber of Commerce, LARI, the Directorate of Cooperatives and the Departments of MoA).

From April 29th to May 4th, 2019, ConfCoop led an important mission organised by Giampietro Dossena and Cesare Spinoni as Managers of the Agriortocom Cooperative, which deals with the supply and sale of fruit and vegetable products.

Producers connected to the Ainata and Qaa el Rim refrigeration and conservation centres have been met during these days, and the representatives of the cooperatives have been trained on the principles and characteristics of the Co-operation for sharing technical means, on the rules of product delivery and on the services offered to members. Agriortocom's experience was presented along with the partners' characteristics, the regulation on fruit delivery, and a description of production planning. On this occasion, the meeting of the experts with the various groups also allowed to experiment with a model of supply and management of the warehouse that could well adapt to the reality of each centre. During the cherry picking and selling season, suggestions given during the mission were put into

practice leading to a fruitful and continuous remote collaboration with the Italian partners. With specific reference to the territories of Qaa el Rim, during the same year, five focus groups were established with an initial core of 22 producers to identify the name and create the emerging cooperative and develop the brand in a participatory way. An activity that has also been replicated in the Ainata cooperative to improve the existing brand.

The exchange of good practices

Besides the opportunity for further training, the Foundation sees the exchange of good practices as a tool for the creation of an international network of services to support the agro-business cherry value chain and to promote a transfer of knowledge and agricultural practices on an ongoing basis, still involving highly qualified Italian partners and representatives of cooperatives and institutions.

Hence the aim was to improve available information about:

- ANALYSIS OF INNOVATIVE ORGANISATIONAL MODELS AND BUSINESS REORGANISATION PATHWAYS.
- START-UPS AND BUSINESS INCUBATORS;
- PLANNING AND MANAGEMENT CONTROL SYSTEMS FOR AGRIBUSINESS SUPPLY CHAINS;
- MEDIUM AND LONG-TERM PLANNING;
- COOPERATIVES AND ASSOCIATED MANAGEMENT OF PRODUCTION, MANAGERIAL AND COMMERCIAL SERVICES.

During the second year of the project and a study tour in Italy from May 7th to May 12th, 2018, it was possible to know and enhance interesting exchanges of experiences. The mission provided opportunities to learn about productive reality cases that allowed participants of the study tour to know organisational methods, management regulations, and operational procedures for managing their agricultural and cooperative activities. This experience has enabled the representatives of cooperatives and clusters of "aspiring" cooperative producers to learn about concrete case studies and share their knowledge through the narrative and analysis of the critical aspects, moments of crisis and failure and how these were addressed. In-depth meetings have provided vital advice to be conveyed to local partners and beneficiaries to improve the future management of their businesses and establish contacts to ensure continuous and constant distance support over time between Italian participants and local beneficiaries.

3.1.4 Advance payment services for international sales

One of the most severe aspects highlighted in the ILO report (2018) on Lebanese cooperatives is their dependence on state funds or donations to support expenditures on new investments or sustainable productive assets, from machinery to fertilisers. This is exacerbated by the lack of support from local institutions in improving the investment skills of cooperatives to optimise the use of their funds. Looking at the cooperatives directly involved in the related investigation, the result is that in 2018 80.8% of the credit used to finance their usual expenses did not come from the producer members' "pockets", but from international donors (66.7%) or public funds (in Figure 8).

Thus, the Lebanese cooperative sector has yet to align itself with the cooperative principles (summarised in Box 4) in moving from an aid-dependent sector to being economically sustainable, managed autonomously by the private sector.

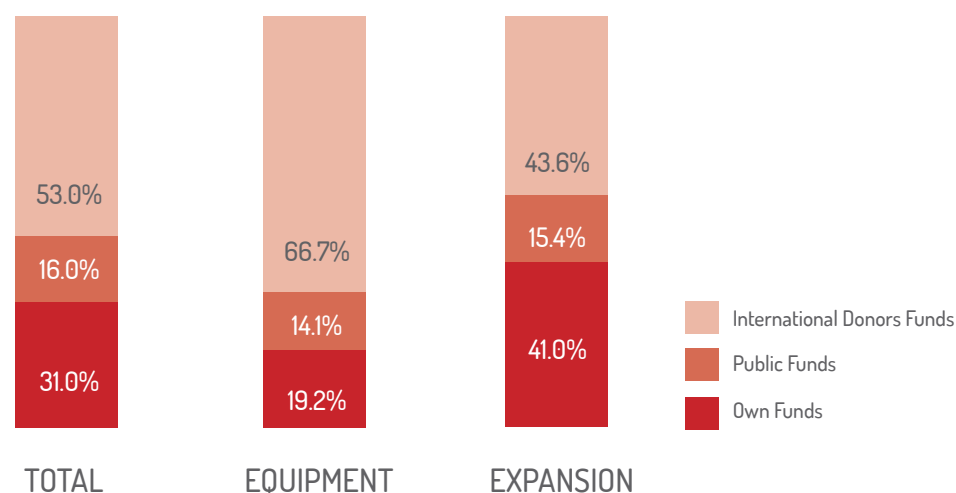


Figure 8: The three sources of credit (distinguished by "own funds", "public funds", "international donor funds") of the Lebanese Cooperatives interviewed by the International Labour Organization (ILO) have a different distribution depending on the type of investment (for "equipment" or for "expansion")

In addition to the structural difficulties faced by small producers who, often do not have access to loans from traditional credit institutions, due to the lack of collateral, difficulties are exacerbated by the inefficient policies by the national government. Following the economic and financial crisis, which between 2018 and 2020 led to a 40% reduction in GDP per capita (World Bank, 2021), the high devaluation of the Lebanese pounds led to de-dollarization of the national economy. Although the official pounds/dollar exchange rate remained formally equal to 1,508 pounds per US dollar, the much more widespread one in parallel markets already exceeded 20,000 pounds per dollar when this report was written, thus causing a constant reduction in the circulation of the dollar as a strong currency.

This has also resulted in a reduction in imports of agricultural inputs such as fertilisers and pesticides by traders due to the increasingly demand for financial guarantees, with a consequent increase in the product's price by up to 50%. Hence 2020 saw a 70% drop in sales to producers of agricultural inputs compared to the previous year and, at times, a substitution of products such as chemical fertilisers with organic alternatives that are less effective (FAO, 2020).

European governments, within the EU's Trust Fund program (2017), contributed around 40 million Euros to help countries, such as Lebanon, which were

more likely to welcome Syrian refugees, to manage the migration crisis by improving economic opportunities for businesses, especially agricultural ones, where refugees would have found more job opportunities, through the provision of funds for advance payments. Due to administrative and cultural barriers, many recipients have not had access to these funds despite their actual availability.

Once these problems were understood through a market study, the Foundation's Project Office decided to expand the role of the Cooperatives to advance payments. Cooperatives were provided with a fund that allowed them to advance export payments to their members in whole or in part, when the product is delivered to meet production costs. Once the payment of the exports is obtained, the fund is replenished by creating an automated mechanism that makes the investments of the small farmer members in productive inputs economically sustainable. The creation of funds within the cooperatives has thus simplified beneficiaries' access to real money through exports paid in dollars, counteracting the effects of the growing Lebanese financial crisis.

BOX 4

THE COOPERATIVE PRINCIPLES (ILO, 2018)

PRINCIPLE 1 – VOLUNTARY AND OPEN MEMBERSHIP

Cooperatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender and social, racial, political, or religious discrimination.

PRINCIPLE 2 – DEMOCRATIC MEMBER CONTROL

Cooperatives are democratic organisations controlled by their members, who actively set their policies and make decisions. In cooperatives, members have equal voting rights (one member, one vote).

PRINCIPLE 3 – MEMBER ECONOMIC PARTICIPATION

Members contribute equitably to and democratically control the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members usually receive limited compensation, eventually on capital subscribed as a condition of membership. Members allocate surpluses for any or all the following purposes: developing their cooperative, possibly by setting up reserves, benefiting members in proportion to their transactions with the cooperative, supporting other activities approved by the association.

PRINCIPLE 4 – AUTONOMY AND INDEPENDENCE

Cooperatives are autonomous, self-help organisations controlled by their members.

PRINCIPLE 5 – EDUCATION, TRAINING, AND INFORMATION

Cooperatives provide education and training for their members, elected representatives, managers, and employees to contribute effectively to the development of their cooperatives.

PRINCIPLE 6 – CO-OPERATION AMONG COOPERATIVES

Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional, and international structures.

PRINCIPLE 7 – CONCERN FOR COMMUNITY'

Cooperatives work for the sustainable development of their communities through policies approved by their members.

3.2 PRODUCTIVE SKILLS

Cherry is a traditional cultivation in Lebanon, which is a country has suitable agro-climatic conditions suitable for cherry production. The intervention area represents approximately 50% of the cherry production in Lebanon:

in 2016, the national output was around 25,000 tonnes per year, of which 10,000 tonnes were from the Bekaa Valley. Around 350 small, mainly family-run rural businesses, beneficiaries of the project, are in the mountainous regions (between 900 and 1,800 mt. altitude) and produce about 1,500 tonnes per year. The estimated average annual output for a single smallholder is about 4 tonnes per hectare (T/ha), which is slightly below the national average of 4.5 (T/Ha) but still much further behind the Italian one, which totals around 12-15 (T/Ha).

Farmers suffer from low productivity and high production costs due to various challenges, including poor management, poor agricultural practices in production and post-harvest, and difficulties in marketing. Most production has a clear problems with quality standards control. As underlined by the Fair-Trade partner, the lack of quality of Lebanese cherries is caused by different cultural practices and wrong post-harvest interventions: the need to increase experience with new technologies and skills has emerged by introducing more sustainable agricultural practices and improving product quality.



A key element in the pursuit of the Foundation's agribusiness strategy was, therefore, the application of an agroecological model for high-quality, eco-sustainable production with a guaranteed mark to improve farmers profits by working on their technical and production skills, as well as on processing and storage facilities and on multi-cropping.

This objective is also in line with the vision of the Foundation's Change (set out in Chapter 1.2) and with some of the 17 Sustainable Development Goals set by the United Nations for 2030, whose indicators have been used to measure the effects of the project.

Target 4 of Goal 2 on ending hunger, achieving food security for all, and promoting sustainable agriculture aims to ensure sustainable food production systems and to implement resilient agricultural practices that increase relative productivity and quality production.



END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

Practices that help maintain ecosystems and strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters by improving soil quality.

In a case like cherry production, a fruit that does not find a precise origin in Lebanon, it appeared essential to try to enhance ecosystem services to promote sustainable agriculture to achieve this goal. As stated in the previous chapter, in the context of intervention, the intensification of agriculture has led the system to lose its ability to withstand external stress. Proceeding with monocultural and obsolete production techniques has not only influenced producers in the choice of varieties but has also made the soil progressively more infertile, with limited quantity of organic substance and subject to erosion. The low biodiversity of these fruit production systems ultimately makes them extremely vulnerable to parasites, pathogens and other stresses of abiotic nature like drought.

Goal 15 for the fight against Climate Change and, more specifically, Goal 15.3 on Life on Land, which aims to combat desertification, restore degraded soils, including land affected by desertification, drought and floods, are linked to this problem and to strive for a neutral world concerning soil degradation. One of the significant causes of degradation in the intervention areas was the presence of parasites favoured by the growing monocultural systems and the loss of organic matter due to frequent and unnecessary soil treatment and widespread and excessive use of herbicides such as glyphosate and inorganic fertilisers such as mineral nitrogen.



PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

At the same time, agronomic knowledge was identified on-site. The necessary promotion of local agronomic knowledge could contribute to reversing production processes towards a more sustainable system in respect of the environment and a more stable and equitable society.

For this purpose, it was understood that the product specifications should be disseminated to cooperative producers and managers, or the Quality Management Systems project that view the quality of the product as something necessarily tied not only to the eco-systemic balance of the plants but that are also useful from an administrative point of view as regards the post-harvest phases. These documents transpose product specification information and offer a more significant number of technical details which can be consulted in a technical manual. The rigour and specification control are thus combined with practical and understandable information, even by farmers with a low level of education, who can easily follow qualitative parameters for the sale of multiple value-added products which are also more sustainable.

In collaboration with the project partners, the Foundation has thus sought to pursue the goals set by enhancing the local ecosystem to create well-being and enable the farmer to survive in his environment, through an increase in plant productivity, intended in qualitative terms and measured by the size of the products, which was also sustainable over time and in equilibrium with the agro-economic and social system of the place.

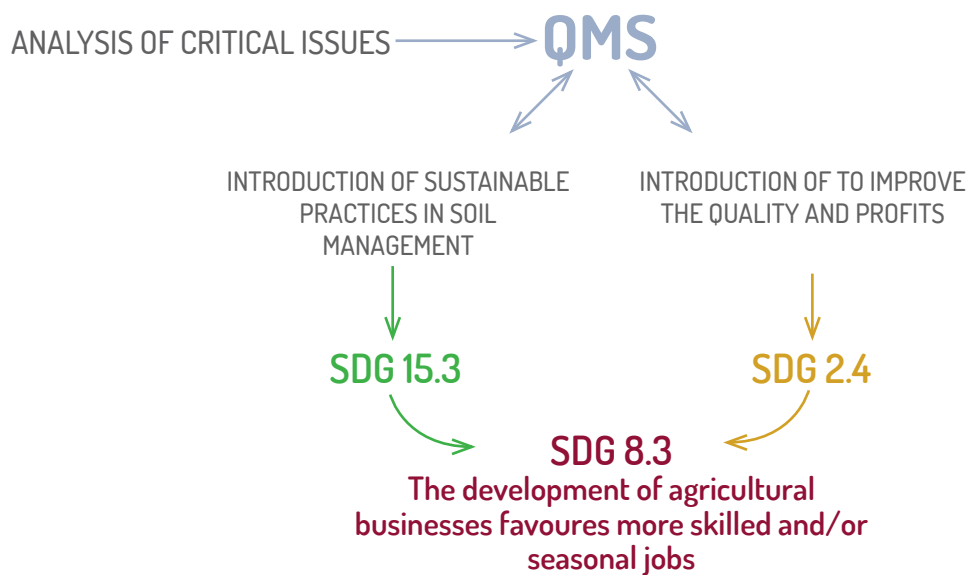
In this respect, the implementation of the QMS not only allows to pursue SDG 2.4 and 15.3, but also SDG 8.3, which aims to develop the activities of small businesses and create new job opportunities, both in terms of skilled and seasonal labour demand.

In the Foundation's view, job creation also limits the depopulation of rural areas, particularly young people, increasing the cost-opportunity of moving to the city.

8 DECENT WORK AND ECONOMIC GROWTH

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

The Foundation's productivity enhancement proposal started from an initial phase of study and research into the main critical issues agricultural production faces in the context of intervention, focusing on the shortcomings faced by producers in soil management. Below, the creation and implementation of a QMS designed ad hoc for the area was accompanied by the introduction of sustainable land management practices (in line with SDG 15.3) to improve product quality by reducing production costs, thereby targeting SDG 2.4.



Biological, biocultural and socio-ecological analyses created, opportunities for meetings, on-site and in Italy involving local producers and important partners such as ARCO, the CNR and the Arboreal Archaeology Foundation (FAA). These meetings were also useful for setting up training activities, equipment and exchanges of relevant experience to accompany small producers towards agribusiness models based on new eco-sustainable methodologies and technological innovations, ensuring compliance with QMS and quality. Finally, implementing an incubation programme to accompany particularly innovative agricultural start-ups has been important for disseminating environmentally sustainable production practices while fostering aggregation and co-operation between beneficiaries.

3.2.1 Analysis of critical areas

One of the main steps taken by the Foundation in proposing its agroecological model was to carry out careful soil analyses as well as ecophysiology and biocultural analyses of the context to obtain general information on the ecological status of the agronomic systems under consideration and to protect local heritage.

This occurred also through a research into the varieties best suited to the different areas depending on the climate and soil characteristics.

The analyses carried out by the CNR, and FAA partners highlighted four main problems:

- 1) **risk of severe soil erosion** which seriously threatens the sustainability of mountain orchards;
- 2) **incorrect fertilisation practices**, contributing to the depletion of the organic substance in the soil and and put drinking water in the mountains at risk;
- 3) **incorrect mechanical and chemical weeding practices**;
- 4) **excessive use of plant protection products**, which also reduce the presence of insect pollinators, with devastating effects on natural biodiversity.

Since the beginning of the third year, the two expert partners carried out missions to evaluate the quality and composition of the soil, the effect that water resource management has on plants and fruit, the quality of applied agronomic techniques. Aspects of pollination, biodiversity, and grassing were also dealt with.

The purpose of these researches was to extrapolate results from an agroecological and socio-anthropological perspective. Results and agroecological indications were shared with the actors involved. The main objective identified for farmers was to produce fresh cherries and make a varietal choice. This was fundamental since it depends on the climatic characteristics of the place and on potential window markets.

A rather confusing agronomic situation was identified in the case of cherries due to the lack of knowledge of the producers making a non-strategic varietal choice¹.

The picture that emerged in the consultants' mission report highlights evident gaps in the entire supply chain regarding agronomic practices, organisational systems, and tools. Still, it is also hopeful that the project in question may be a valuable tool to reverse negative trends, with good prospects of commercial outlets, especially in the Persian Gulf.

This is combined with a growing threat caused by monoculture, which is increasingly widespread, increasing the socio-economic and ecological vulnerability of rural systems (see Box 5 for further information). Cherry producers need a fall-back income in addition to and their primary production and should not rely on just one production.

The work of analysing the different challenges faced by farmers was important to design and implement the procedures for improving the agroecological system, as well as the quality and productivity of agricultural activities. Therefore, the research outputs submitted by the partner experts were the basis for the application of the QMS in achieving the set objectives.

Further details on the isotope and bio-cultural analyses carried out by the partners in the intervention area are provided below.

¹ In this sense, the mission conducted in Lebanon by ARCO and the Arboreal Archeology Foundation was necessary for a study that allowed to catalogue the various cherry growers present and assess their relative relevance and adaptability in the geographical areas of intervention to give an opinion on the actual ability to extract productivity and consequently the potential economic return.

BOX 5

THE INSIDIOUS ORDEAL OF MONOCULTURE (BY MARCO LAUTERI, CNR)

Mono-cultivation is a very intensive and relatively recent model of agronomic management, particularly of industrialised rural areas, which are heavily dependent on agrochemicals and are highly mechanized. Its spread in the world is closely linked to colonialism, representing an effective strategy of maximum exploitation and subjugation of the socio-ecological systems overseas. Entire communities have thus been forced to cultivate one or a few species on a very large scale, with complete loss of social and ecological resilience and complete dependence on colonization policies and economies. Unfortunately, the aim of maximising profit has allowed the extension of this agrotechnology, which is also severely contested in its foundations by the scientific discipline of agroecology. The illusion of monoculture declines as an extreme simplification of the agro-ecosystem. This becomes a mere physical support for the planting of agricultural species with minimal or zero genetic variability (highly selected and hybrid cultivar) and for artificial and massive flows of fertilisers and plant protection products. The damage of ecological holism in these systems leads to a rapid loss of soil fertility and to the compromise of ecosystem services with often irreversible results (forced erosion, desertification, socio-ecological collapse, migration or deportation of communities).

CNR Analysis of isotopic ecophysiology

With the contribution of **Marco Lauteri**, Consiglio Nazionale delle Ricerche (CNR), Istituto di Ricerca sugli Ecosistemi Terrestri (IRET) – Porano, Italy

Analyses carried out by the **CNR** from 2017 on the intervention areas focused on **isotopes**, therefore on atoms of the same element (in this case carbon and nitrogen), sharing the same chemical properties but with different neutrons. This distinguishes them from each other in terms of atomic mass, thus influencing a different chemical and physical composition of **molecules** that will consequently have **different effects** in chemical and physical processes such as photosynthesis. From the analyses of carbon ($\times^{13}\text{C}$) and nitrogen isotopes ($\times^{15}\text{N}$) aspects have emerged related to plant-soil, particularly in three different study clusters: Baskinta, Zahle and Balbeek. The primary objective of the isotopic analysis was to focus **on the state of soil fertility** and to infer the state of the relationship between orchards and their agro-ecological habitats.

In particular, this analysis sought to understand the efficiency of fundamental use of resources for the plant such as **water and humus**, which indispensable elements for agricultural productivity. The interpretation given by the CNR experts has given rise to recommendations on interventions to be made in terms of agricultural practices such as irrigation, fertilisation, soil and plant management. Analyses of the isotopic composition of carbon (C) and nitrogen (N) in soil have been distinguished by areas (Figure 9), by type of irrigation (drip or flood, Figure 10) and by reference to different types of cultivar (Rainbow, Sukkari, Ferawni and others).



Plant-to-soil relationships with particular reference to organic matter content – The importance of grass cover

From the point of view of the cherry production areas (Fig. 9), the data regarding isotopic composition for both the soil and the leaf, indicate likely microbiological activity (such as nitrogen-fixing) the effectiveness of which is suggested by differences around 4% between N in the soil and in the leaves. More positive N values in the plant and soil organic mineral, indicate increasing degrees of nitrogen recycling, which is caused by the reuse of organic fertilisers and animal manure on the farm. In more agrotechnical terms, while the Baskinta site appears to have the most mild environmental conditions for orchards, Zahle's site shows the most vibrant soil microbiome that is commonly associated with the humidification of the organic substance of the soil and, therefore, to more fertile soil for farmers. In fact, soil rich in humus enjoys intrinsic fertility and slow release of nutrients for plants. This reduces the risk of nutrient losses due to deep percolation (leaching) of soluble forms during rainy periods or too abundant irrigation.

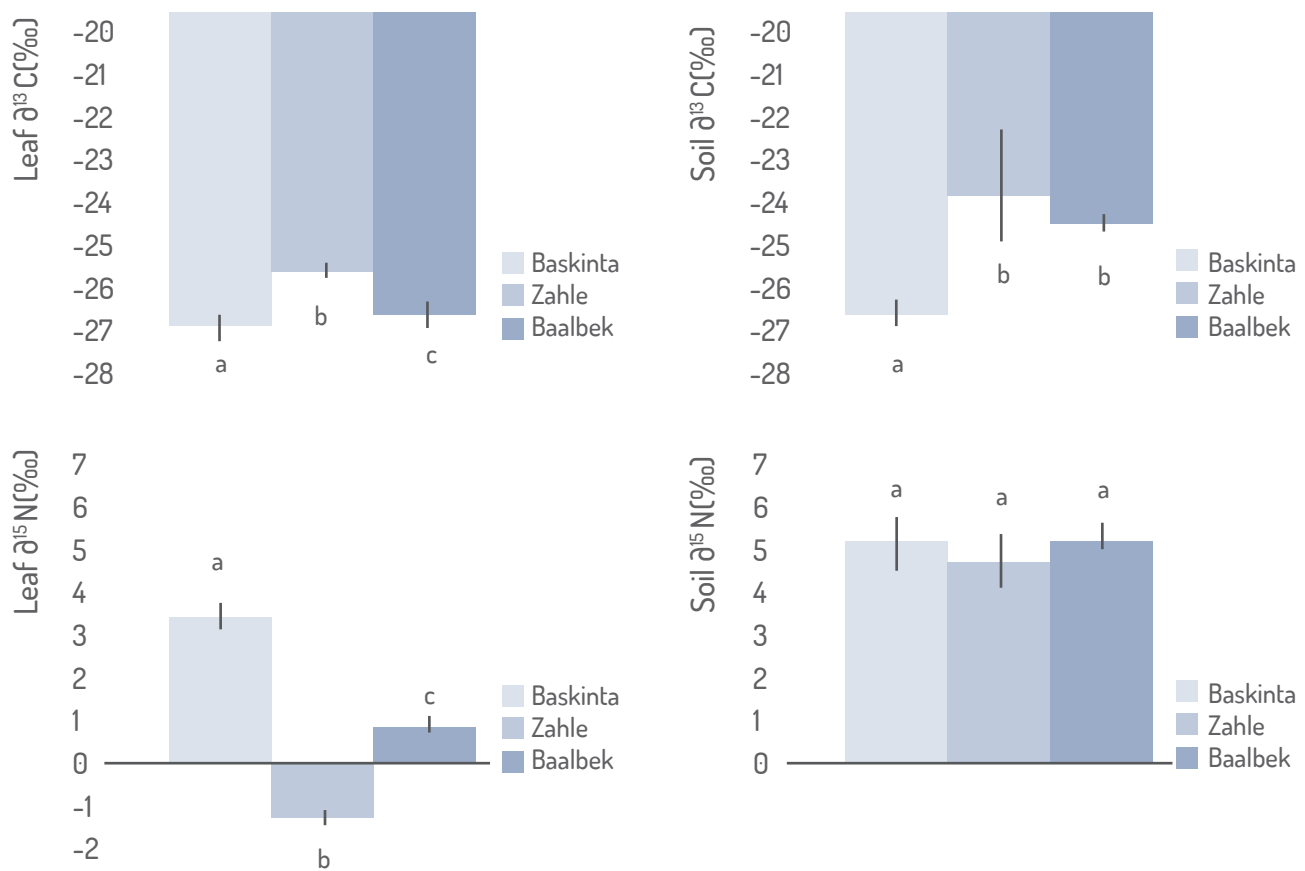


Figure 9: Analysis of carbon and nitrogen isotopic ratios in leaves (left-hand graphs) and soil (right-hand graphs) sampled during the mission and organized according to areas of origin. Histogram bars indicate a standard error, while different letters indicate significant differences.

The accumulation of humus must therefore be considered a fertility capital that the farmer promotes in the soil, administering it with a deep awareness of the agro-environmental context in which he operates. The isotopic data found in the soil indicated, in the first analysis, the presence or contribution of organic substance (such as mature manure) microbiologically well elaborated, therefore at least partially humidified and suggested grass covering as good practice to increase the presence of humus. In fact, the inclusion of herbaceous species in orchards not only improves pollination processes, but leakage and therefore improves water use efficiency. The grass stratum, often mistakenly removed with herbicides such as glyphosate, has in fact a slowing down effect on the rainwater, favouring its permanence in the soil profile explored by the plant roots and its deep filtration to recharge the aquifers.

Looking at the clay soils, particularly present in the Bekaa valley, grass covering also reduces the rate of deep water flow along the cracks that expand during the drought periods, favouring clay humi-

dification, thus improving environmental stability, with a much richer plant community established underground compared to the beginning.

The added value of grass covering takes on further relevance by looking at the analysis of the isotopic results of the CNR with regard to the presence of organic substance in soil and nitrogen content in soil and leaves, which led to a less favourable interpretation of the ecophysiological status of Lebanese orchards. In particular, relatively lower values of $\delta^{15}N$ were found in the soil compared to those of foliar material, typical characteristic of dry environments such as Bekaa where abundant rainfall is concentrated after drought. In this case, high $\delta^{15}N$ values in the plant section reflect low nitrogen and water availability, indicating an increased residual N recycle in the system and are associated with very low organic C percentages in the soil compared to other soils (an index of low fertility).

As a result of the analysis of these data, an excessive depletion in the nitrogen leaf content was evident compared to the normal values, which

was caused by a strong and prolonged anthropic disturbance, based on long-term intensive and unbalanced agronomic management, oriented to eradicate herbaceous species, which is typical of the Lebanese context¹.

As a confirmation of a rather critical picture of the fertility of Lebanese soils intended for the cultivation of cherries the isotopic analyses found significantly low values measured in the study areas in terms of soil C/N ratio. These indicate a worrying imbalance in the flows of new organic material entering the soil that render microorganisms increasingly inactive, causing very rapid and low humidification rates of mineralisation of organic material. This is often due to the abuse of inorganic fertilisers which, in fact, leads to unbalanced and aggressive

fertilisation, causing only apparent fertility for the soil and with a low duration. The non-adoption of cultivation practices and intercropping that favour microbiological conversion of carbon, also observed in these areas, leads to excessive N losses from the soil and accelerated oxidation of organic substance, thereby accelerating the microbiological desertification of the soils too.

Implications on irrigation infested by stable isotopes C and N

While the values of $\delta^{13}\text{C}$ in the soil are not statistically different when comparing drip irrigation with flow irrigation, those of $\delta^{15}\text{N}$ are significantly higher when drip irrigation is applied (Fig. 10).

Despite lacking statistical significance, the average $\delta^{13}\text{C}$ leaf value enhanced in the drip-irrigated areas suggests that the use of drip irrigation tools are capable of rationing the precious water resource in a more balanced and sustainable way. This value tends to indicate a higher efficiency of water use by the plant, therefore more photosynthesis per unit of water transpired by the leaf.\

Technically, drip irrigation stimulates two major physiological mechanisms to improve the water efficiency of the plant:

1) stomata closure, whose adjustment is relevant when there is limited water

2) photosynthesis, better when nitrogen nutrition of the leaf is adequate, through better allocation of nitrogen towards photosynthetic enzymes.²

As described in Box 6, drip irrigation is not only more efficient but also ensures greater soil nutrition than other irrigation techniques.

1 From the point of view of isotopic analysis, foliar material is typically used as a physiological indicator of the state of a plant. The results obtained from the analysis of $\delta^{15}\text{N}$ and the concentration of N in orchards with low organic content in the soil, in fact, indicate an intense impoverishment of the nitrogen leaf content, demonstrating the thesis of an intense N recycling in the soil with consequent nutritional restrictions for the cherry sector.

2 Droplet irrigation can stimulate both mechanisms by maintaining a slight soil humidity in deficit compared to that obtained by flooding and by favouring better microbiological activity with gradual release of fertility (more regular N availability for the plant and better isotopic composition, usually indicating greater presence of humus in the soil).

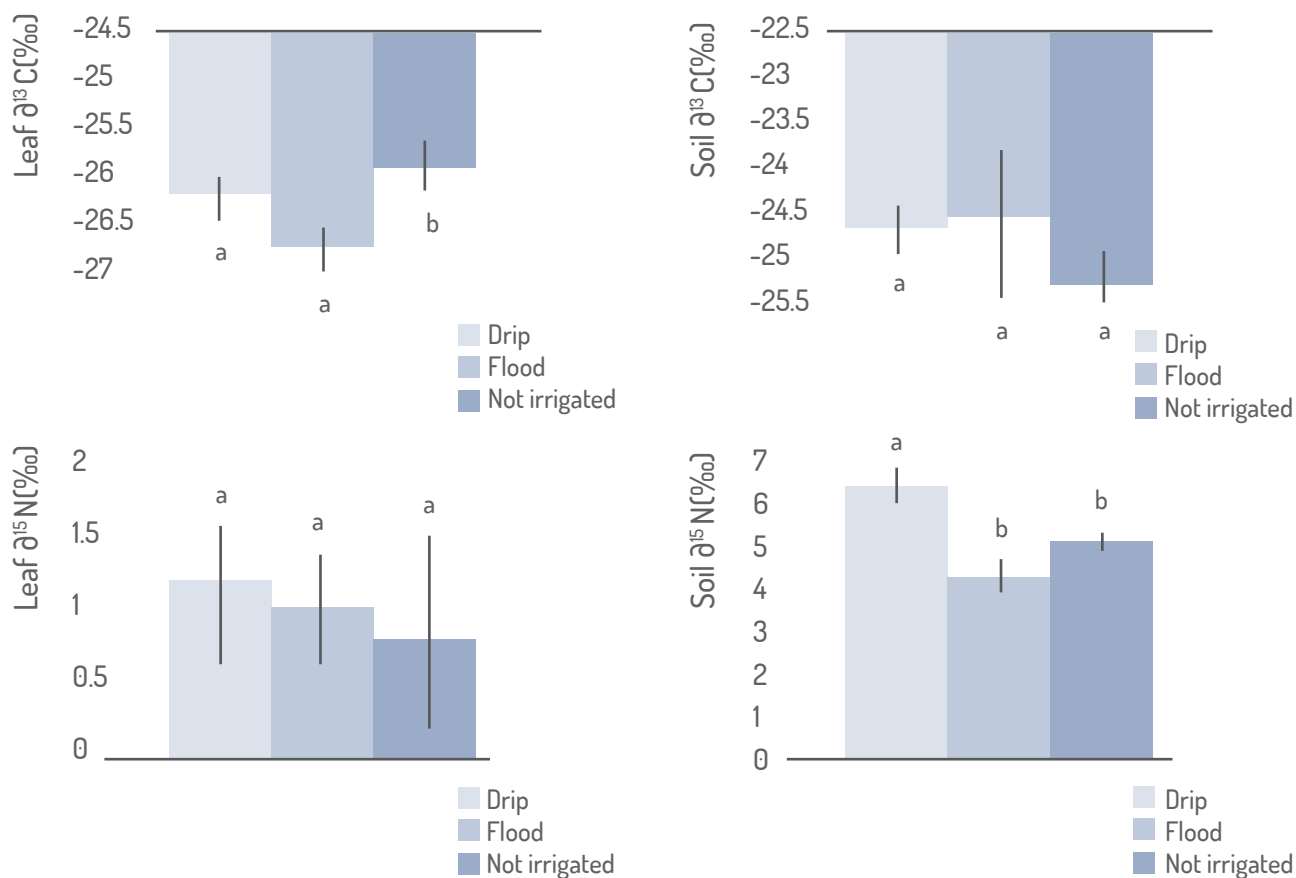


Figure 10: Analysis of carbon and nitrogen isotopic ratios in leaves (left-hand graphs) and soil (right-hand graphs) sampled during the mission and divided by irrigation type.

Furthermore the calculation of a xerothermic index³ on the degree of aridity of the three areas examined (in Table 1) suggested the opportunity of in deficit drip irrigation techniques. It is called in deficit since these types of techniques provide about 20-30% less water than the total water the plant could transpire. These techniques, are usually developed for arid areas, where water has a high cost and can optimise the use of the water resource by balancing the yield losses with the lower economic and environmental costs associated with irrigation.

Cluster	Site/village	T ^{med} (°C)	Rainfall (mm)2016	Xerothermic Index (X=2T _{med} -P)	Latitude (DD)	Longitude (DD)	Distance from the sea (km)	Altitude (m a.s.l.)
Baskinta	1	min 0	850.00	-822.00	33.92	35.72	40.0	1210.0
	2	Max 28						
	3							
Zahle	Kaa el R m	Min 0.5	686.00	-654.00	33.9	35.9	58.0	1250.0
	Wadi el Arayech	Max 31						
Baalbek (Ainata el Arz)	I	Min 0	500.00	-658.00	34.2	36.1	115.0	1700.0
	II							
	III							
	IV							
	V							
	VI							

Table 1: Diagram of the climatic and geographical data of the three areas concerned. The xerothermic index, calculated and having a negative value, is assumed to be zero.

³ The index takes into account average temperature and precipitation (in Table 1): the higher it is, the higher the level of water stress to which crops incur. The index confirms a milder pedoclimatic situation in the Baskinta cluster than in Zahle and Baalbek.

As for the soil, the analysis of the samples taken from some orchard clusters studied reveals an interesting positive relationship between the organic carbon content (as a direct index of organic matter) and nitrogen content (Figure 11). In particular, the range of organic carbon values appeared to be very broad and associated with a wide variation in terms of nitrogen availability, hence nutritional fertility for plants.

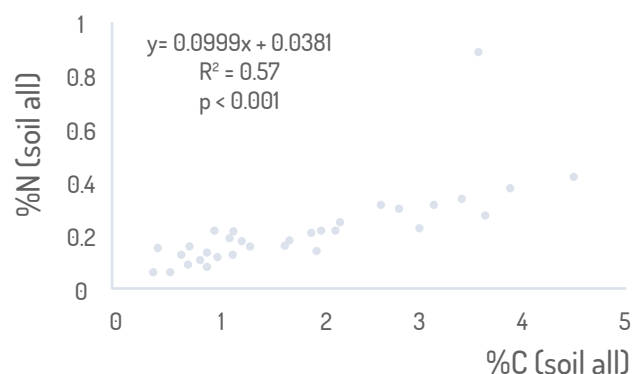


Figure 11: The linear regression between the organic carbon and nitrogen content of the soil of the sampled clusters was particularly significant.

The “high N-ratio, high C-ratio” condition is associated with high C values as a parameter of plant physiological efficiency in the use of water resources, therefore high water efficiency for high photosynthetic capacity. It, therefore, emerged that that the portion of soil rich in organic matter in the area under examination, proving to be fertile, supports an efficient conversion of water transpiration unit into photo-assimilates and, inevitably, into the production of cherries. This mechanism seems complex but in reality is only a simple process of the global biogeochemical cycles of C, N and H₂O, focuses on the objective of good agro-ecological management of a farm or rural area: increasing the complexity of the agricultural ecosystem in order to obtain more self-generated fertility, more microbiological activity and humidified organic matter in the soil, more efficient water use at plant and production system level, more resistance to pathogens and parasites, and ultimately, greater agro-ecological and socio-economic resilience.

BOX 6

THE BENEFITS OF DRIP IRRIGATION ON THE SOIL (BY MARCO LAUTERI, CNR)

Water intakes although reduced but more constant over time may result in a more favourable condition for continuous microbiological activity, with positive effects on humidification and the slow release of nutrients available for the plant. On the other hand, furrows and flooding irrigation in the fruit parcels implies great water availability with irrigated rotation extended over time. This results in a poor efficiency in the use of the water resource, a part of which eventually infiltrates deeply and gets lost at the bottom of the groundwater, perhaps by leaching soluble nutrients. Between one irrigation and another, the soil may dehydrate in the surface profile. The first 20-30 cm of soil is richer in organic matter with manure or crop residues. Exposure of the organic substance of the soil to a cycle with alternate degrees of irrigation-dehydration (typical of furrows and flooding irrigation) will tend to slow down microbiological processes of humidification. As a result, the plant will have momentary impulses to release the nutrients (wet phase of the soil) at intervals of low availability of nutrients (dehydration phase).

Biocultural and varietal analysis

From a biocultural point of view (Maffi, 2007), meant as the set of coevolutionary connections between man and the environment over time, it was difficult for the CNR and FAA partners to identify diversity and typicity between clusters because the cultivar was introduced only recently and because of the lack of genetic data on the same varieties, which would clarify its origin.

We know that the cherry tree is a plant native to Asia, belonging to the Rosaceae family and the genus *Prunus*. Its presence was first reported in Egypt in the 7th century BC, then in Greece in the 3rd century BC and finally in Europe in the 1st century AD (Valli, 2001).

According to experts, some clues about the origin of this plant in Lebanon can be provided by the Swiss high-quality cultivator Schauenburger, whose origin is Lebanese. There is, however, no genetic study of the varieties that can shed definitive light on the issue, even if the CNR believes that more in-depth elements may lead the Bekaa cherry to be considered a “traditional agro-food product” or “typical local”. In this sense, labelling has been seen as an element that could prove very important in the medium-long term for the development of crops in Lebanon, combining aspects of eco-sustainability with other socio-economic

factors and with possible product marketing strategies. This is in line with the results of the statistical reports and on-site interviews, which show that sales and harvesting are the main economic drivers for farmers of the Bekaa Valley (Lauteri and Russo, 2018).

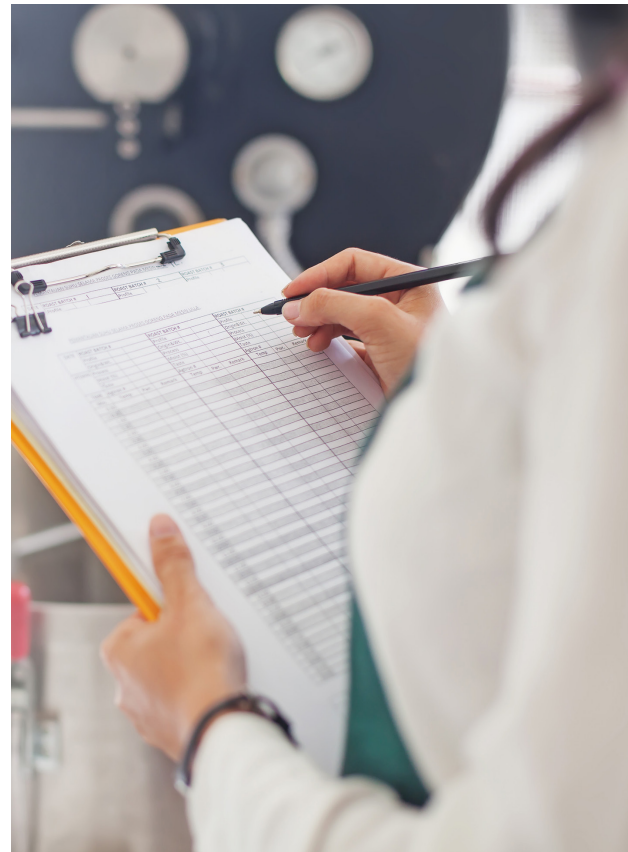
From a more varietal perspective, the farmers met by the FAA very often asked for information about the diseases that were widespread and which varieties they attacked. It proved necessary to inform them about the characteristics of the varieties, on which areas were most suitable or which was the best climate for their cultivation. This knowledge is important to increase plant productivity by reducing the number of chemicals used. Another essential information that farmers needed, especially for pruning and the agronomic strategy to be adopted, was related to the parts and branches of the plant where, depending on the variety, there were more shoots (Dalla Ragione, 2018). These aspects proved to be important elements for the elaboration of the QMS conceived for the farmers of the northern Bekaa.



3.2.2 The John Paul II Foundation Enhancement Proposal: implementation of the QMS

Starting from analysing the critical issues and its vision of change, John Paul II Foundation assisted local producers intending to meet quality standards that go hand in hand with a more efficient and sustainable agricultural production.

The creation and implementation of a Quality Management System that favoured actions to increase the sustainability of soil management and soil use and to improve the economic performance of the product required strategic coordination between all participants involved at a production, commercial and governance level for the setting up of an inclusive quality system of multiple interests to be translated into a single objective. Three hundred and fifty producers, cooperative technicians and representatives of local institutions have been involved in a retraining process linked to the facilities and machinery to be used and, above all, to technical knowledge. The manuals are derived from following compliance with quality standards and the environment. In this respect, the QMS is needed in pre-harvesting to improve the sustainability of agricultural practices and quality yield of orchards and, in post-harvesting, to increase the added value of the product by meeting the standards required by the market in terms of conservation, packaging and transport.



Implementing QMS in pre-harvest: the introduction of eco-sustainable and more profitable practices

The results of the field analyses carried out by the expert partners CNR and FAA were significant in influencing the intervention activities and introducing practices that were more compatible with the ecosystem and local biodiversity and that could also mitigate the lack of organic substance in soils. The development and implementation of a part of the Quality Management System (dedicated to cultivation for Lebanese farmers) took place with training activities that directly involved 187 local beneficiaries through the use of staff coordinated by the expert Charbel Hobeika, who held several training days on various topics related to cultivation. Collaboration with the LARI research centre was used to monitor plant diseases and introduce pest-resistant traps such as the Mediterranean fly.

The activities were carried out with a specific focus on the two main objectives of the John Paul II Foundation's vision: **SDG 15.3** introducing practices to combat soil erosion and **SDG 2.4** improving agricultural production and harvesting practices together with their sustainability. In this programmatic framework, objectives 15.3 and 2.4 are complementary to each other, but in order to give a more narrative timeline to the activities carried out and also planned by the QMS, below is proposed a summary of the main lines of intervention adopted, from those most closely related to the 15.3, therefore for soil management, and 2.4 following immediately, more closely linked to the preparation and management of the harvest.

Towards SDG 15.3.

The introduction of more sustainable soil management practices took place through an agricultural approach based on the results of the analysis carried out by the CNR on the organic content of the soil, and of leaves of orchards.

One main critical element is the low capacity of mountain soils to retain nutrients because of excessive erosion.

The analysis made clear the need to create a more suitable environment for strengthening the roots growth and for attracting key microfauna to enrich the soil with nutrients. This is to be achieved by limiting ploughing during the winter period, when the soil is most subject to erosion.

Another important point is related to the practice of green manuring, which, given the difficulty of finding seeds, will be specialised further.

With regards to fertilisation, in a context where it was not practised by a good proportion of beneficiaries, the importance of spreading a new management system was understood, with a calculation of fertilization quantities that considered the specific orchard's soil composition, which is generally

more calcareous and, therefore, less fertile as elevation increases.

In optimising irrigation activities, the CNR study instead highlighted that giving water "all at once", especially to orchards that in certain seasons suffer from drought, can cause excessive water stress in plants. Even in the QMS, it was considered necessary to use tensiometers for each farmer to manage the use of water and draw up a specific irrigation plan.

In enhancing Lebanese environmental heritage, the aim was then to introduce integrated and multi-cropping cherry cultivation, which was promoted to reduce the risk of monoculture by contributing to the improvement of the resilience to economic and environmental shocks and, at the same time, to promote a higher qualitative yield of cherry plants.

In particular, the integration into the cherry plantations of other crops has a positive impact as with the natural release of nitrogen into the soil, which nourishes the plant and creates an organic matter in the soil that is useful for retaining moisture,

thus having a concrete impact on the productivity, improving organoleptic quality of the cherry and determining economic benefits for producers. Already in the first year of the project, 66 farmers received 660 almond seedlings, monitored, through periodic field inspections and during the project period, by the project's technical staff, who ascertained a good state of health, with minimum percentages of loss due to a rather marked dry season.

From the second half of 2019, based on the recommendations of the market analysis carried out for the associated crops and the requests of the beneficiaries, provision was made for the purchase and introduction into the field of 7,540 thyme plants for 145 farmers involved in the project (52 plants per farmer).



Towards SDG 2.4.

Improving soil management goes hand in hand with improving the productivity and sustainability of agricultural practices.

From an agro-ecological point of view, one of the most important points concerning disinfection techniques in favouring the second aspect: as anticipated in Chapter 3.2.1, the reckless use of low-quality chemical pesticides was one of the most problematic aspects to the detriment not only of parasites but also of “beneficial” insects, such as pollinators and natural antagonists. The latter are useful in fighting other insects prepared to attack the cherry tree. In this specific case, there are ladybirds and bugs capable of hindering aphids (for example, woodworms), as actual “natural” pesticides.

It was, therefore, necessary to review these practices by promoting the use of traps for the capture and monitoring of parasites and, area by area, develop ad hoc disinfection practices, thus optimising the use of chemical products and, consequently, reducing the impact on the environment. Starting from the end of March 2019, the on-site training

activities on pest management were also followed by the immediate application of traps against the Mediterranean fruit fly, involving the LARI research centre and the Ministry of Agriculture (Box 7). Still, with this in mind, the grass covering was carried out following analysis conducted on-site, with the support of the Fondazione Archeologia Arborea and was based on planting herbaceous species and bushes, between one cherry tree and another, since they are important for attracting pollinating insects and antagonist insects. In this respect, the first edition of the QMS also stressed the importance of maintaining at least 5% of wild plants in the area to ensure natural micro areas presence and renewed development.

BOX 7

THE FIGHT AGAINST THE MEDITERRANEAN FRUIT FLY

This activity was carried out in collaboration with the Ministry of Agriculture, which provided 3,000 free traps for controlling the Mediterranean fruit fly.

The project thus organised the first phytopathology monitoring campaign in coordination with LARI. Monitoring began with the implementation of traps and systematic monitoring by LARI technicians and the agronomists of the project and with the participation of 12 reference farmers. Once the disease outbreak was identified, LARI was promptly informed. Through a smartphone app (called LARI LEB), an alert to all farmers and institutions associated with the application was launched, informing them of the identification, tracing, and treatment modalities.

Two main phytopathologies were monitored: the Mediterranean fruit fly (*Ceratitis Capitata*), one of the most widespread and destructive pathologies for cherry, and woodworms (*Cerambyx Dux* and *Capnodis Tenebrionis*).

The following table shows the details of the first integrated pest control strategy, which involved a total of 75 farmers grouped in 10 extended demo plots, for a total area of 51.68 hectares (or 516.8 dunam):

Località	N° agricoltori	Superficie totale coperta (Dunum)	N° trappole	Demo area
Ainata	29	60,5	305	7
Qaa El Rim	18	115,3	578	2
Wadi El Araish	28	341	1685	1
Totale	75	516,8	2568	10

The involvement of the partner FAA was also crucial for identifying the cherry varieties that best suited the characteristics of the soil and climate of the specific area, improving their qualitative and productive yield. To this effect, however, it was also important to regulate the harvesting and pruning times of the fruit, which vary according to the variety and altitude.

For pruning, the technique applied and regulated by the QMS influenced two specific aspects of the harvest:

QUALITATIVE.

Before the project, tree management generally led to a large production of cherries with a small and diversified sizes. Some cherries were exposed to the sun excessively less than others and thus faced much longer ripening times.

QUANTITATIVE.

Reducing the quantities produced per tree was favoured by introducing a shape “pyramid” pruning, preferring a uniformity of size that saw a more mature fruit with a larger diameter. The result, therefore, was a higher quality fruit, which was paid up to three times more than the small-sized product (i.e. below 25mm diameter).

The combination of these practices has thus improved the quality and yields of the fields, contributing to increase the price per kilogram of cherry from 2.6 to 6 Euros and to reduce production costs by optimising the use of agricultural inputs.

Also, as previously mentioned, the activities carried out for SDG 2.4 will help achieve SDG 15.3 and vice versa.

For example, the grass covering sing technique contributed to increase local biodiversity and reduced soil degradation, which is often the victim of monoculture. On the other hand, in addition to enriching the soils, the introduction of other crops in combination with the production of cherries has had the effect of supplementing and diversifying incomes by increasing the quality yield of cherry trees. This is a key result in ensuring that agricultural production is sustainable not only for the project's beneficiaries but also for future genera-

tions, who will find a land rich in organic matter and more efficient in using these resources than in the past.

Important information, advice and improvements to be integrated into the Quality Management System or QMS were extracted from the data collected from analysis and fieldwork activities. This constitutes a practical summary of the material and information gathered on soil preparation, fertilisation, irrigation and use of pesticides through the experience gained, the knowledge gained from the training carried out, and the collaboration with local and Italian partners to meet the required standards by the market. In other words, a handbook to promoting local agricultural development by pursuing sustainable development objectives. Box 8 presents a summary of the QMS guidelines for these first steps of production for agricultural businesses.

BOX 8

THE QMS GUIDELINES FOR CULTIVATION

The document called the "Integrated Production Regulation for fruit trees in the North of Bekaa" aims to promote an agri-food production system that minimises the use of chemicals and rationalises fertilisation in the target area, following ecological, economic and toxicological principles. The aim of Integrated Production is, therefore, to combine production techniques compatible with the protection of the local natural environment (predominantly mountain) with the technical and economic needs of modern production systems and to increase the level of health protection of operators and consumers, providing rules to be respected by producers in pursuing agro-ecological production.

The document is therefore also intended to raise awareness of the application of ecological agriculture, which makes it possible to guarantee healthy agriculture by protecting the soil, water and climate, but also to promote biodiversity and protect the environment from contamination due to chemical inputs or genetic engineering, and improving the professional skills of producers.

As for the post-harvest specification, it consists of a general part valid for the cultivation of all the fruit trees found in the northern Bekaa, followed by a specification addressed to the two fruits concerned by the projects carried out so far by the Foundation: apricot and cherry. Therefore, the document was also important for the Foundation's apricot project, which covered much of the area of the Lebanese cherry project during the same period. The general and the specific parts consist of paragraphs relating to choice of site and variety, soil preparation and management, irrigation, pesticide use and pruning.

Detailed regulations of each of these production stages for the cherry is provided below.

CHOICE OF PLACE AND VARIETY

The choice of the orchard location is based on assessing the pedoclimatic characteristics of the cultivation area concerning cultivation needs. Cherry trees adapt well to the pedoclimatic conditions of the Beqaa, not subject to frost, with loose soils, without water stagnation, offering excellent sun exposure, ventilation, and cooling requirements.

The most suitable soils for the cultivation of the Cherry are those with loose soils, well-drained, fertile, rich in calcium and with sufficient soil depth (80-100 cm). Soils with poor drainage or major defects related to texture, pH level, excessive active limestone and salinity should be avoided.

The Beqaa area has sufficient rainfall to cultivate cherries with an annual average rainfall between 400 and 600 millimetres. Furthermore, cherry trees need between 400 and 900 hours of chilling, depending on the variety. In this respect, the areas of Beqaa, located at an altitude of 800 meters, ensure these minimum conditions. However, there may be climate-related damage such as late frosts or double fruit due to the high temperature during flower bud differentiation.

The Beqaa area is also characterised by intense winds that can cause flowers and fruits to fall at any vegetative stage. In this respect, it is recommended to intervene both through appropriate pruning, to contain the development of the crown and the risk of breaking branches, and by the creation of windbreaks.

The selected varieties and plant material must be resistant, chosen according to market trends and adapted to the pedo-climatic conditions of the orchard. To preserve biodiversity and maintain the typical character of regional agricultural areas, local varieties are recommended, considering the resistant and/or tolerant varieties to the main pests and market needs.

For local ecotypes not included in the national register, self-propagated seeds are allowed, while using material from genetically modified organisms is not allowed (GMO).

The selection of the cherry variety in the valley's Integrated Production system must take into account important factors such as:

- **THE GRAFTING COMPATIBILITY** OF THE VARIETY WITH THE MOST COMMON ROOTSTOCKS USED, WHICH SHOULD ALSO BE AND ADAPTABLE TO THE TYPE OF SOIL .
- **THE FLOWERING PHASE** MUST TAKE PLACE IN A GIVEN PERIOD TO AVOID POSSIBLE LATE SPRING FROSTS AND PERIODS OF HIGH PRECIPITATION.
- **POLLINATION**, FOR WHICH IT IS PREFERABLE TO USE VARIETIES WITH SELF-POLLINATION CAPABILITIES OR COMPATIBLE CROSS-POLLINATORS FOR NON SELF-FERTILE VARIETIES.
- **THE COMMERCIAL APPRECIATION** OF EACH VARIETY, INCLUDING APPRECIATION BY THE LOCAL MARKET AND CONSUMER DEMANDS. THE VARIETY OF CHERRIES SHOULD ALSO MEET LEBANESE FARMERS' NEEDS, SUCH AS THE FIRMNESS AND CONSISTENCY OF THE PULP OR LOW PERISHABILITY AFTER HARVESTING.

SOIL PREPARATION AND MANAGEMENT

Soil preparation practices vary depending on the type and slope of the soil, the risks of erosion and the climatic conditions of the area and aim to preserve the microbiologically active layer (rich in bacteria, fungi and beneficial insects) to promote water-saving, maintain and improve fertility, reduce compaction phenomena and encourage drainage.

In the case of remedial actions and base fertilisation, corrections shall be reasoned, quantified and carried out according to the soil analysis. If necessary, fertility corrections should concern the increase in organic matter, which improves soil structure, aeration, good water retention, and soil fertility recovery through base fertilisation.

Soil management and related agricultural techniques should improve the conditions for crop adaptation to maximise long-term productivity results and reduce production costs.

In particular, soil management aim at:

IMPROVING CROP ADAPTATION TO MAXIMISE PRODUCTION RESULTS.

PROMOTING WEED CONTROL.

IMPROVING NUTRIENT EFFICIENCY BY REDUCING LOSSES DUE TO LEACHING, RUNOFF AND EVAPORATION.

MAINTAINING THE SOIL STRUCTURE TO PREVENT EROSION AND LANDSLIDES.

PRESERVING THE ORGANIC MATTER CONTENT.

FACILITATING THE INFILTRATION OF RAINS AND OF IRRIGATION WATER..

In all cases, it is recommended to protect the orchard soil with cover crops that can be spontaneous or intentionally sown during the winter season. Cover crops, especially in sloping plots, help effectively reduce erosion and improve soil structure and biological activity, so they should be planned taking into account competition for water and for mineral elements. From 15 October to 15 January, chemical or mechanical weeding between the rows is prohibited. This promotes the development of a herbaceous cover reducing nutrient loss and soil erosion.

Although herbicides are permitted during the spring and summer months, it is strongly recommended to replace them with alternative practices such as harrowing, which is allowed in the spring/summer period at a maximum depth of 10cm.

In plots with an average slope of more than 10%, soil ploughing is allowed to a maximum depth of 30 cm. In areas with insufficient rainfall (less than 500 mm/year) and rainfed orchards, tillage should be done before the rainy season at a depth of 20-25cm to enable the clay soils to better absorb water. For replanting orchards, it is necessary to:

- LEAVE THE SOIL TO REST FOR AT LEAST THREE YEARS BY PRACTISING EXTENSIVE AGRICULTURE OR GREEN MANURE..
- REMOVE THE ROOT RESIDUES OF THE PREVIOUS ORCHARD.
- FERTILISE WITH THE ORGANIC MATTER BASED ON THE RESULTS OF THE SOIL ANALYSIS.
- PLACE THE NEW PLANTS IN A DIFFERENT POSITION FROM THE PREVIOUS ONE OCCUPIED.
- USE ROOTSTOCKS SUITABLE FOR THE SPECIFIC CULTIVATION ENVIRONMENT.

The new orchards should have adequate space between the plants to ensure good lighting and ventilation even of the inner parts of the crown, taking into account the fertility and characteristics of the soil, rootstock and variety.

Soil fertility management has an important influence on the health, yield and quality of apricot fruits. Proper soil fertility management should meet the tree's nutritional needs, improve fertility and, at the same time, avoid impoverishment and contamination.

Soil fertility and plant nutrition can be managed in orchards through three different practices: fertilisation, plant cover, foliar fertilisation. For fruit crops in general, the strategy should first be based on plant cover, then on pruning residues, then on manure, and finally on permitted slow-release fertilisers.

For each of these practices, the specification provides precise rules to be followed. In particular, specific fertilisation parameters are provided for cherries that respect each variety's ripening period and consider the effect that the rains have on the release of nutrients such as nitrogen between the months of November and February.

Fertilisation

One of the aspects dealt with in more detail by QMS is fertilisation, which was often practised with superficiality by producers. This is an excellent opportunity to educate the QMS recipients about fertilisers' characteristics and effects and promote their correct use. In particular, the QMS provides a detailed explanation of how to understand the composition of fertiliser packages from the labels and how to calculate the amount of fertiliser needed for a correct and sustainable production based on the nutrient characteristics of the soil, which is influenced by the presence of nitrogen, phosphorus and potassium.

Irrigation

Paying the utmost attention to water use is essential for all those who manage this important, renewable, natural resource. Savings, rational use, qualitative safeguarding, use of technical and scientific supports, use of meteorological forecasts are all actions that should be activated synergically in the area to achieve the goal of maximum efficiency in water use, maintaining high quantitative and qualitative levels of agricultural production.

The cherries resist the drought and can thus produce under the climate of Beqaa. Water should be administered at the critical interval from April to October, as long periods of stress during this period reduce photosynthesis and nutrient intake. Before flowering, water stress can cause anomalies in flower formation during this period, and buds' cell multiplication and differentiation can occur.

The water requirement also varies according to the age of the cherry, as shown in the table below.

age (years)	Water Requirements year/hectare (m ³)
1-5	1000-2000
6-10	2000-3000
>10	3000-4000

Use of pesticides

Implementing an integrated protection strategy in the orchard requires field experience in plant pathology by farmers and their technical assistants. The development of skills is essential for the success of this approach. In this respect, the Integrated Production Regulation aims to reduce the plant pest populations below the economic threshold and at the same time to minimise the use of plant protection products to an extent strictly necessary to maintain the harvest with an acceptable level of damage.

The decision to intervene for integrated protection is based on essential parameters such as:

- THE ASSESSMENT OF THE DISEASE OR PARASITE PRESSURE AND THE POTENTIAL RISK THEY REPRESENT BASED ON THE MONITORING STRATEGY.
- THE DEFINITION OF INTERVENTION THRESHOLDS FOR PREVENTION OR CONTROL.
- THE CLIMATIC FACTORS WHICH MAY CONTRIBUTE TO THE DEVELOPMENT OF THE PARASITE OR DISEASE.
- THE PECULIARITY OF THE PLOT (IN TERMS OF VIGOUR, VARIETAL SENSITIVITY, ETC...).

The choice of plant protection chemicals (fungicides, insecticides or acaricides) must consider the companies' recommendations (doses, pre-harvest interval and other regulatory requirements established in the plant protection form). Growers should:

- ASSESS THE RISK OF PARASITE AND DISEASE RESISTANCE.
- CHOOSE THE LEAST HARMFUL PRODUCT FOR THE TREE, THE ENVIRONMENT, AUXILIARY WILDLIFE AND POLLINATING INSECTS.
- SUPPLEMENT THE TECHNICAL SERVICE RECOMMENDATIONS TAKING INTO ACCOUNT LOCAL CONDITIONS.

Fruit orchards must be monitored for diseases, parasites and beneficial organisms in the critical phenological stages at least three times a year (post and pre-flowering, fruit set and growing season) and once a year for beneficial organisms.

Pruning

The pruning of fruit trees aims to regulate and balance the plant's vegetative and reproductive activity and ensure constant production and quality over the years. In addition, proper pruning keeps the trees healthy by allowing sufficient sunlight and air circulation. Correct ventilation and homogeneous lighting reduce infestation by parasites and fungi and promote the natural shape of trees and fruits and healthy growth.

A single technique is applied in Beqaa for all the varieties, allowing cherry trees to obtain the correct height (no more than 2.5 meters) and a pyramidal shape. The principles of the technique are listed in the Regulation, such as the fact that the fruit shoots must be renewed every 3-4 years by cutting the branches with old wood as this does not contain productive shoots.

Applying the QMS in the harvest and post-harvest stages: the equipment of Cooperatives and companies for the management of harvest, supply, sorting and preparation for sale

Following the Foundation's agribusiness strategy, the adoption of good agricultural practices and operational and management procedures complying with internationally recognised standards constitutes, on the one hand, support for farmers and workers of the supply chain to improve the quality of their production, but on the other hand, a prerequisite for access to certain international markets. In this context, the standardised quality procedures are structured to ensure not only environmental sustainability during cultivation but also:

- **ECONOMIC SUSTAINABILITY AND IMPROVEMENT OF MANAGEMENT PRACTICES.**
- **ETHICAL BEHAVIOUR, PROMOTING THE HEALTH AND SAFETY OF THE WORKERS AND THE GENERAL WELL-BEING OF THE LOCAL COMMUNITY.**

Regarding this, the provision of equipment and facilities by Cooperatives (such as refrigeration stores) represents an important step in supporting small member producers in implementing business plans and specifications for the completion of the chain.

To this effect, the project's second year devoted a substantial part of resources and time to equipping two refrigeration centres, storage and packaging of the products, now operating in Ainata and Qaa El Rim. According to the Fair Trade report (2016), the supply of a refrigerated warehouse enable producers to obtain an important economic advantage:

a) Facilitating the preservation and storage of the product to enable the sale on the market after the harvest period, when prices fall due to the increase in supply.

b) Minimising losses due to deterioration in production due to the absence of adequate cold rooms (loss rate was between 10% and 20% in recent years).

A series of verifications carried out also thanks to the support of the Italian technical partners (PIN and Confcooperative in particular) and local consultants thus made it possible to identify the necessary interventions to optimise the various phases of the post-harvest supply chain as:

- **The purchase of fieldwork equipment**, such as manual shears and irrigation systems.

- **The delineation of the cherry selection method:** in addition to the provision of penetrometers and refractometers to identify the right times for harvesting, guidelines were set up for the sorting and selecting of the cherries. A fair compromise was identified in this respect, between the need to speed up the selection process in the different categories of cherries (sorting and elimination of defects) and the need to provide a professional job opportunity for seasonal workers, who work in production and post-harvest processes chain, nowadays mainly in the collection phase. Each centre was equipped with 19 stations for sorting and weighing (stainless steel tables, callipers, scales).

- **The introduction of equipment needed for the storage of cherries under modified atmospheric conditions** (based on reduced oxygen and increased CO₂ concentration) both for export and to prolong the availability of cherries on the domestic market for late varieties.

- **The humidification of the pre-cooling room** during the fast air cooling phase to avoid a non-negligible drying of the cherry peel. Each of the new and existing Cooperatives was equipped with a pre-cooling chamber with a humidifier and a cold room for this purpose.

- **The acquisition of the necessary equipment for the handling of cherries** within the centres, taking into account the actual needs, such as electric and

manual fork lift trucks.

- **The purchase of quality control equipment** such as those useful for determining the fruit's state of ripeness, including the penetrometer, refractometer and laser thermometer.

- **The purchase of equipment and tools for crop selection:** among these, tables with callipers for a total of 36 workstations, 40kg and 300 kg digital scales.

- **The identification of the materials** (such as pallets, cherry crates, final packaging) **and tools necessary during the packing phase** (packaging, multi-capacity scales, labelling machine). In 2019, in particular, 1 kg and 250 g plastic containers for cherries and other plastic crates were purchased equivalent to the requirements requested by the Bahraini importer.

- **The purchase, for the transport, of a truck with a refrigerator cell** for each of the four cooperatives. Like the rest of the equipment available, the cold chain (consisting of the pre-cooling unit, cooling unit, and refrigerator truck) proved necessary to ensure the quality of the entire process and represents a real added value.

The results in terms of preserving the fruit were excellent, even better than thought. It was found that the equipment available makes it possible to keep the cherries in good condition up to a maximum of 20-25 days.

As in all the redevelopment phases, an important moment is represented by exchanging best practices in the production phase. In addition to continuous meetings during training and field visits between producers, John Paul II Foundation staff, Fair Trade Lebanon, local institutions, local and non-local collaborators, beginning from the third year, moments of debates were organised at least monthly between the different project beneficiaries. Through these meetings, it was possible to have feedback and create an important moment of exchange¹.

During the harvest season and product sale, a fruitful collaboration between the centre of Ainata and that of Qaa el Rim was created, leading to the definition of a common shared sales strategy.

As for cultivation, the information and data deri-

ving from training and field analysis activities were collected in a QMS specification for the harvesting and post-harvesting phases (Box 9), which has permitted the assignment of specific procedural rules (to producers and managers of Cooperatives) to be complied with in terms of control quality, refrigeration, selection, packaging and transport of cherries.

1. A study tour was also conducted in Italy in May 2018. The beneficiaries Rawad Rahme (representative of Ainata) and Walid El Haiby (for Baskinta) visited cherry cooperatives that covered the entire production chain, from harvest to market placement along with other entities. This experience generated ideas and references from which to address challenges in the Lebanese reality. It was then reported to the other local beneficiaries, generating awareness of the potential and existing opportunities that can translate into meaningful benefits for the local production system with appropriate adjustments.

BOX 9

HARVEST AND POST HARVEST QMS GUIDELINES

The specification, conceived by the John Paul II Foundation with the support of national and international experts and with the participation of producers and cooperatives benefiting from the harvest and post-harvest of fruit and vegetables, identify the practices and standards to be followed by farmers and by the cooling and storage centres in Lebanon for the correct management of fresh fruit and vegetable production, up to the harvest to the post-harvest stage, to the sales. As for the Integrated Production Regulation (Box 6), it consists of a section dedicated to the general principles and two “special” sections focused on the production of cherries and apricots (a summary for the cherry specification will be provided here). Another difference is a short post-harvest specification designed just for Cooperatives and that is different from that intended for individual producers when dealing with the stages from selection to transport.

Harvest

The time of harvest is a fundamental stage in the production chain because it characterises the overall quality and the preservability of the product, especially in the case of cherries, a crop that has a very variable maturity period. Early harvested cherry can suffer from a bitter taste and discolouration, while those harvested too late will not be suitable for storage or long-distance transportation. The colour indicates the ripeness of the fruit. When using fruit colour as a determining factor for maturity, the farmer should be familiar with the development stages of his particular variety.

The size and shape also help to assess cherry maturity. The fruit is generally considered ripe when the edges are fully developed. Sizing rings can be used to confirm the fruit’s maturity level and the harvest timing.

To assess the maturity of the product, the sugar level (measured in Brix) is also an important characteristic to be measured. The sugar content must be no less than 13 Brix for some cherry varieties and 19 for others.

The consistency of the pulp, measured with the penetrometer, should be between 0 and 1 kg.

The following table is an example, given in the specification, on the parameters to be followed for picking the Telyani, Ferawni, Banny and Irani varieties; in terms of harvest time, shape, colour, optimal size, average weight and sugar content.

Variety	Harvest time	Shape/ color/Taste	Average Weight (gram)	Sugar Content (*Brix)
Teliani	21 th of May	Heart shape, red color, sweet taste	8.5	13-15
Ferouni	16 th of June	Heart shape, dark red, Delicious taste and special acidic flavor	9-10	19-23
Irani (noir de meched)	23 th of June	Round, Black, normal non acid flavor	9	21-24
Benni	27 th of June	Heart shape, dark red color, sweet and delicious taste	10	21-24

Harvesting with simple but suitable plastic buckets is highly recommended in the case of fruit trees and cherry to reduce the risk of damage and free both hands for harvesting and good positioning of the fruit inside the container. It is strongly recommended never to leave low-quality products in the orchard. They may cause fungal infections and other pathogens to spread during the winter, causing new infections in the following season.

Post-harvest

It is a procedure that consists of different phases: from reception to storage, from sorting to packaging and labelling, through to the transport.



In post-harvest, cherries can be properly stored up to 3-4 weeks at 0 degrees centigrade and 90% relative humidity before decay and quickly pass from maturity to overripening. In particular, one of the major problems with cherries is the blackening of the stalk and the softening of the pulp, which limits its marketability.

Due to the high perishable nature of the fruit, combined with the high environmental temperatures to which it is subjected, it is, therefore, necessary to reduce the time between harvest and delivery to the processing units to a maximum of 6 to 8 hours after harvest. It is also necessary to use means of transport equipped with refrigeration cells when the distances between the farm and the processing unit take more than four-six hours.

Pre-cooling

This is the first step towards good temperature management. The heat of a freshly harvested product, especially during the summer season, is generally high and must be lowered as quickly as possible before processing or storage to delay the maturation and development of parasites. For cherries, it is necessary to pre-cool the fruit at a temperature of 4-5 ° C. The period between harvest and pre-cooling should not exceed 8-10 hours.

Pre-cooling systems to be used are forced air-cooling with a humidifier or hydro cooling to cool cherries in 2-4 hours.

In Cooperatives, products moved to the pre-cooling unit is recorded by the warehouse manager in the warehouse record and on the copy of the delivery receipt. This recording is important to confirm that this step has occurred, even if a service is charged to the centre's farmer/product supplier.

Refrigeration

Cherries can be stored at a temperature between -0.5°C and 0°C and relative humidity of 90-95% for 2-3 weeks (up to 4 weeks for some varieties). The susceptibility of the varieties at freezing depends on the soluble sugar content (measured in Brix) which may vary from 10 to 14%, the highest freezing point being -1°C.

Specific tasks are foreseen for the manager of the storage centre who should:

- MANAGE THE FACILITIES USING THE FIST-IN-FIST-OUT (FIFO) STORING METHOD.
- CHECK THE STORAGE CONDITIONS (TEMPERATURE AND HUMIDITY) EVERY HOUR.
- ENSURE ADEQUATE STORAGE CONDITIONS.
- PREPARE PRODUCT ORDERS RECEIVED BY THE MANAGER.

Sorting

Once pre-cooled, most products must be sorted in a refrigerated environment to avoid moisture production on their surface due to condensation.

The cherries' sorting, grading, and packaging should be carried out in a cool environment (4-5 ° C). Only in exceptional cases can fruit be placed directly on a transport mean.

Correct selection and sorting are essential to ensure that the product meets the following minimum requirements

INTACT
NON DEVE ESSERE FESSURATO O DANNEGGIATO DA LESIONI
MECCANICHE;

SOUND:
SHOWS NO SIGNS OF ROTTING OR DETERIORATION SUCH AS TO
MAKE IT UNFIT FOR CONSUMPTION;

CLEAN:
FREE OF ANY VISIBLE IMPURITIES.

HUMIDITY:
WITHOUT ABNORMAL EXTERNAL MOISTURE.

FREE FROM DAMAGE CAUSED BY PARASITES
AFFECTING THE PULP.

FREE OF NOT CHERRY RELATED SMELL AND/OR TASTE.

For the Cooperatives, at the time of sorting, the warehouse manager shall ensure that the weight of the products belonging to each specific lot is recorded according to the degree of sorting determined based on weight, quality and variety.

This registration will make it possible to know the quantity of product for each lot of different quality delivered, which is essential when payment to farmers is made based on each specific quality selected or where profits are distributed. The specification provides the parameters for dividing the cherries according to 3 different quality levels, thus also facilitating a categorization of the same partner producers according to the quality of the product offered and to raise awareness of the impact that could lead improvements.

GRADE	Requirements	Tolerances
Extra grade	Cherry must be of superior quality. Size: 28 mm + The pulp must be perfectly sound. They must be free from defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, the quality and presentation in the package. Uniformity in the size is requested.	- 5 % by number or weight of cherry not satisfying the requirements of the class but meeting those of Class I -Not more than 0.5 % produce satisfying the requirements of Class II
Class I	Cherry of this class must be of good quality. Size: 26 mm + The pulp must be perfectly sound. Slight defects may be allowed, provided they do not affect the general appearance of the produce, the quality and the presentation in the package: -slight defect in development -slight pressure marks not more than 1 cm ² of total surface - uniformity in the size is requested	A total tolerance of 10 % by number or weight of cherries not satisfying the requirements of the class but meeting those of Class II is allowed. Within this tolerance not more than 1 % in total satisfying neither the requirements of Class II quality nor the minimum requirements.
Class II	This class includes cherries that do not qualify for inclusion in the higher classes but satisfy the minimum requirements. The pulp must be free from major defects. Size: 24 mm + The following defects may be allowed: -Bruising not more than 1 cm ² of the total surface area -uniformity in the size is requested	10 % by number or weight of cherries satisfying neither the requirements of the class nor the minimum requirements. Not more than 2 % in total may consist of produce affected by decay. Within this tolerance

Packaging and labelling

Each product packaging is based on the specific request of the customer. It is highly recommended, for pre-cooled cherries, to pack and label the products in a cool environment (such as a refrigerated warehouse) to keep the temperature constant at the optimal level.

Note that products must be handled with care and caution to avoid damage. It is also important to ensure a correct choice of pallets concerning the crates' size to maximise spaces and reduce empty spaces, thereby ensuring good air circulation. If there is an empty space, it is recommended to keep it in the centre of the pallet.

Labelling is important to add information for the traceability system, such as product type, variety, size, origin, traceability code, minimum net weight, and shipping company name (as shown in the figure below).

Product type:	Country:
Variety:	Village:
Size or grade:	Exporter:
Traceability code:	



Transport

Loading of the products in the truck must be carried out as quickly as possible to limit the exposure of the products to the outside temperature, especially during the hot season and when fresh cherries are handled, avoiding empty spaces between the crates or whole pallets to reduce damage to the packaging. Refrigerator trucks must be used for cooled cherries, and the temperature must be that applied in the cooling system, between 0 and 4 °C.

In the case of cooperatives and of the individual enterprises, before loading, the manager or supervisor shall:

SEND ORDERS TO THE HEAD OF THE COOLING TEAM.

CHECK THE COMPATIBILITY OF PRODUCTS WITH ORDERS.

FILE THE INVOICES AND PROVIDE A COPY TO THE DRIVER, SAVING A COPY FOR THE SALES MANAGER.

WRITE ALL SALES DETAILS IN THE SALES BOOK.

ENSURE GOOD AIR CIRCULATION, CORRECT TEMPERATURE AND STABILITY OF THE CRATES IN THE TRUCK;

MAKE SURE THE DRIVER HAS THE NECESSARY RECEIPTS AND INVOICE RECORDS.

A section on payments and an export section is also provided for Cooperatives, which shall be filled along with all documents needed for sea or air transport.

3.2.3 Startup to support the use of innovative practices and innovative machinery

With the initial aim of improving the skills of officials of the Zahle Chamber of Commerce and the Lebanese Ministry of Agriculture's district departments in their role as business service officers, the John Paul II Foundation involved them in the implementation of an innovative start-up programme in the agricultural sector by jointly developing a methodology involving potential small entrepreneurs and existing production cooperatives in the area.

In particular, the supported initiatives were aimed at:

- IMPLEMENTING AND DISSEMINATING THE BEST AGRONOMIC AND AGRO-ECOLOGICAL PRACTICES.
- DEVELOP POST-HARVEST PRACTICES.
- IMPROVE THE PROVISION OF COLLECTIVE SERVICES.
- STRENGTHEN COMMUNICATION AND PROMOTION STRATEGIES.
- FACILITATE MARKET ACCESS.
- IMPROVING ACCESS TO CREDIT FOR INVESTMENT EXPENDITURE AND PRODUCTION INPUTS, WITH PARTICULAR REFERENCE TO COOPERATIVES, WHICH UNTIL THEN ENCOUNTERED SIGNIFICANT OBSTACLES.
- PROMOTE FEMALE EMPOWERMENT AND EMPOWERMENT OF YOUNG PEOPLE.

In pursuing these goals, the beneficiaries and organisers involved had to deal with the socio-economic crisis that broke out in Lebanon at the end of 2019. This had an important impact, especially when in light of the value of the Lebanese pound-dollar exchange rate, the latter with which producers commonly financed themselves. One of the start-ups even had to forego participation in the ongoing programme due to financial challenges.

However, in other start-ups, much progress has been made in terms of qualitative improvement of the product and production practices: in one, consisting of a group of producers, the purchase of a tractor was achieved, while in another, added recently and consisting of a group of cooperatives, an advance fund was created (described in Chapter 3.1.4), mitigating the effects of the current financial crisis: producers have been, in fact, able to pay the input to the sellers immediately.

The programme aimed to create an additional means for disseminating environmentally sustainable and qualitatively better practices for expanding product sales channels and promoting the inclusion and empowerment of recipients.

Looking at the credit aspects, the start-ups were also used to access the Trust Fund for financial advance offered by the European Union, since individual producers could not access on their own due to a lack of economic and administrative means. The incubation programme was an essential investment for the individual beneficiaries. Still, in the end, it yielded important results in terms of an ample participation of the producers and promotion of the cooperative culture, also thanks to the locally published tender. One of the anticipated selection criterion was on aggregation of the produce to facilitate capacity building, organisation and purchase of durable inputs such as machinery that could not be purchased individually.

3.3 COMMERCIAL SKILLS

In the three years of the project, the Foundation also aimed to reorganise companies from a commercial point of view to ensure that the product was no longer sold to the big oligopolists but directly on the local, national and international market and also with a higher added value resulting from the completion of the value chain and from compliance with quality standards.

At a national level, average productivity and prices on local markets show high variability depending on the variety of cherries. Often 100% of the harvest were sold to local markets without activities that increase its value, such as differentiation by product quality, storage and packaging.

As for the small producers of the Bekaa Valley, the Fair Trade Lebanon partner (2016) identified several critical points. Among the most important is the lack of skills and knowledge in terms of analysis and market strategies, which contribute to not optimising business decisions (for example, in exploring possible new market channels) and thus do not foster connections with high-quality buyers of high-quality products and other strategic stakeholders. By not selecting and classifying the product based on quality, the Lebanese middlemen or traders foster a poor reputation of the fruits. Cherries are thus known to be poorly sorted and highly variable in size and colour, leading to high levels of consumer rejection and a significant reduction in the income of small and medium-sized farmers.

At an international level, this resulted in a high dependence on markets less interested in meeting quality standards such as the Egyptian one, which often takes a share higher than 80% of the total product exported by the individual producer (Balestri, 2018).

However, in partially offsetting these negative aspects, the Fair Trade SWOT analysis identified strengths and opportunities for the Lebanese cherry trade, including:

A GOOD REPUTATION OF LEBANESE FRUITS IN TERMS OF TASTE.

THE GROWING DEMAND ON THE LOCAL AND REGIONAL MARKETS FOR MEDIUM-HIGH QUALITY FRUITS.

GOOD OPPORTUNITIES TO ESTABLISH MARKET CONNECTIONS WITH CUSTOMERS ATTRACTED BY HIGH-QUALITY PRODUCTS.

GEOGRAPHICAL PROXIMITY TO THE GULF MARKETS.

Another problem identified by the ARCO partner (2018) and related to exports is the lack of producers adhering to traceability systems linked to certificates of origin. Local markets do not require traceable products, creating distrust among foreign consumers towards organic products made in Lebanon. For international shipments, the Chamber of Commerce issues the certificate of origin and all the documents needed for export, even though Lebanese producers do not use it and, more generally, are not members of the Chamber and consequently they do not benefit from the services it offers as they do not recognise its usefulness for improving sales on the local market.

But the introduction of integrated agriculture could change the farmer's mind. Furthermore, in the Gulf countries, the market is changing, and in the very near future, it will probably be the customers themselves who will demand full traceability of the product (ARCO, 2018).

Additionally, looking at consumption habits of agricultural products in Europe in recent years, there has been a growing diffusion of niche and quality products rather than industrial agricultural products. The average per capita expenditure on organic products in the European Union is about 60 dollars per month.

Over the last decade, European buyers have developed an important understanding of socially responsible products, which have also been progressively made available in large-scale distributions and not only in "alternative" food distribution structures. To this effect, introducing a quality control system such as QMS is a key reinforcement to meet these new requirements. Starting with these ideas and following its Agribusiness Strategy, the commercial reorganization of those involved originated from two market analyses, the first at a local level, the second at an international level.

The analyses included interviews with the leading distribution chains, buyers and regional agri-food markets at a local level, an analysis of the demand for the product with this different varieties and its qualitative and quantitative characteristics. The study analysed global demand at an international level to identify the most attractive target markets regarding profitability and access conditions.

The research led to a proposal not only based on macro data collected on the main local and international buyers but also on the commercial

peculiarities of the individual varieties of cherries produced, on possible alternative uses and relating to derived products, the characteristics of the destination markets and the expected requirements for participating and achieving good competitiveness. These data are essential for developing a functional marketing strategy for the product and the contexts involved.

In collaboration with the project partners involved, this resulted in an intervention that led to the labelling and packaging of the product, on completion of the production cycle, intending to improve the positioning and profits on the national and international market. This led to the creation of a brand and a Consortium grouping together the four cooperatives involved in the project and the participation of representatives of cooperatives and producers, at international trade fairs, identified for the strategic promotion of the product, in addition to creating new distribution channels with interested new buyers, while encouraging the exchange of experiences with colleagues from other realities.

The following paragraphs will provide further details as appropriate, starting with research on the nutritional and commercial characteristics of the Lebanese cherry.

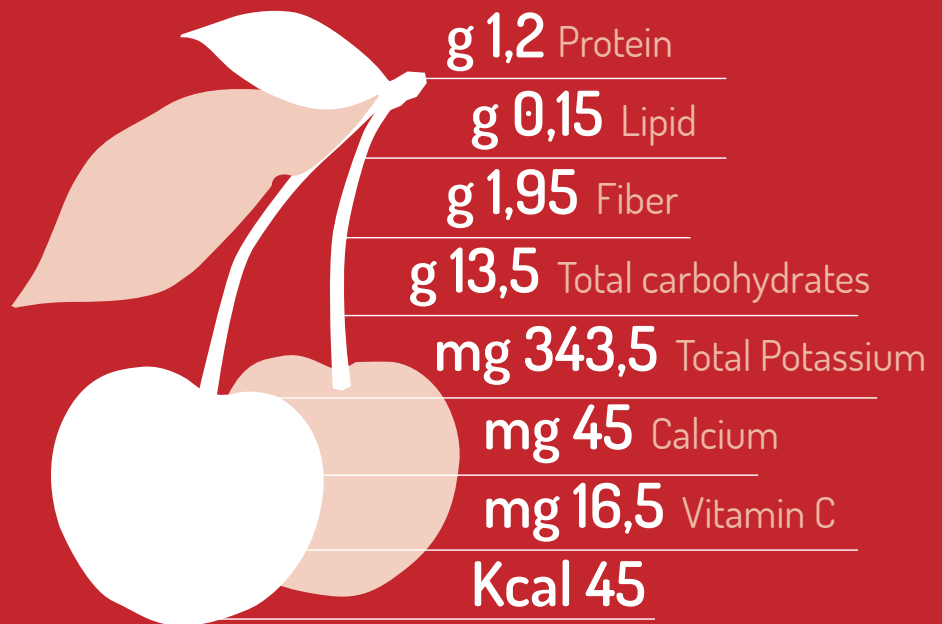


®

Cherry:

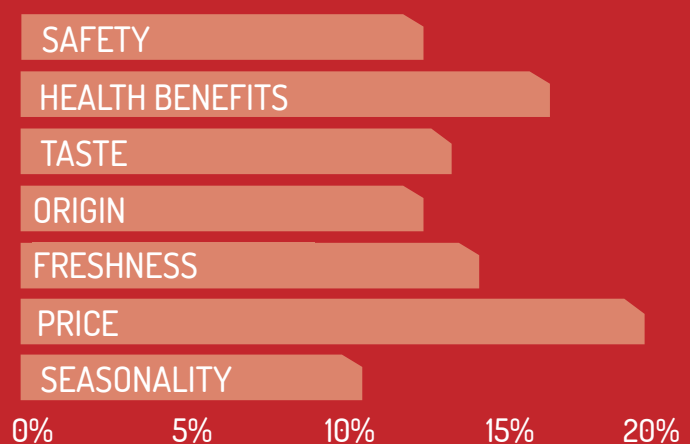
features and market characteristics

Cherries are a rich source of phytonutrients essential for our health: they are very rich in vitamins important for enhancing vision and boosting the immune system. They contain calcium, potassium, magnesium, phosphorus, folates, and flavonoids with powerful antioxidant properties (Figure 12). They also have diuretic, detoxifying, depurative and anti-rheumatic properties. They are intended for immediate consumption but also derivative products such as jams.



In Figure 12: Cherry nutritional values per 100 g of product

As the cherry is a delicate fruit with seasonal ripening, their market window is limited to a few weeks. For this reason, they are immediately kept cool once harvested. This allows the producer to keep the fruit fresh for a month before selling it to national and international markets, thus negotiating over the price for a longer time. The latter may depend on the seasonality and characteristics of the variety, such as size, freshness (verifiable by looking at how green the stem is) and ripeness, which is visible by the gradual dark skin colour. On the European markets, food products are classified by consumers according to variety, quality and certification. In the specific case of cherry, price, health benefits, and freshness weigh heavily on the choice and safety given by a traced and certified product.



3.3.2 The Lebanese cherry market



The international market

Cherry production in Lebanon has declined in recent years, also in terms of yield of cultivated fields (see Figure 14), which has also led to a reduction in tonnage exported from 4,000 to 2,600 between 2016 and 2017. However, according to FAO data, during the same period the price offered by international buyers increased by 9%, possibly indicating interest from important markets such as Saudi Arabia, Jordan, Kuwait, the Arab Emirates and Qatar; and even Europe.

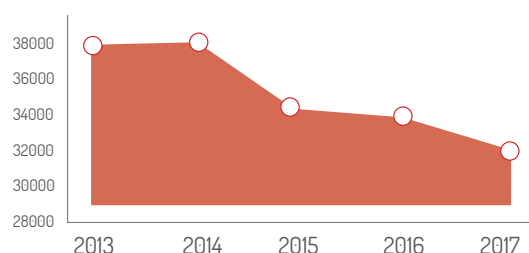


Figure 14: The reduction of Lebanese cherry production in terms of field yield, measured in hectogrammes per hectare (FAO, 2017).

Lebanon has adopted a policy of trade liberalisation and has signed trade agreements with the Arab countries, the European Union and EFTA (European Free Trade Association acronym). It is also a member of GAFTA (Greater Arab Free Trade Area) and the World Trade Organisation and has signed bilateral free trade agreements with Egypt, Iraq, Kuwait, Syria and the UAE.

It should be noted that countries such as the United Arab Emirates imported 1,700 tons of cherries alone in 2016 from producing countries for a value of 5.3 million dollars. Currently, the Gulf countries prefer Lebanese produce, but these markets are changing rapidly, increasingly demanding products with high qualitative standards.

Lebanon exported fresh cherries for 2.5 million dollars, equal to 0.1% of world cherry exports in 2017 (ARCO, 2018). To give an idea, in the case of Turkey, the world's main cherry producer (with 627,132 tons produced) and one of the biggest exporters (with about 65,000 tonnes) in 2017, the

percentage of worldwide exports was equal to 7.2%, while for Italy, the sixth world producer (with 118,250 tonnes), the share of world export was equal to 2.3%. These figures place Lebanon well below the world's top 15 exporters, where in 2019 saw Chile dominating with 34.7% of world exports for a value of 1.1 billion dollars, followed by Hong Kong and the United States (Figure 15).

1 FAO, 2017.

1. Chile: US\$1.1 billion (34.7% of exported sweet cherries)
2. Hong Kong: \$764.7 million (24.8%)
3. United States: \$477.7 million (15.5%)
4. Turkey: \$183.8 million (6%)
5. Spain: \$95.2 million (3.1%)
6. Australia: \$60 million (1.9%)
7. Austria: \$54.3 million (1.8%)
8. Canada: \$51 million (1.7%)
9. Greece: \$45.5 million (1.5%)
10. New Zealand: \$44.5 million (1.4%)
11. Azerbaijan: \$42.2 million (1.4%)
12. Netherlands: \$28.8 million (0.9%)
13. Uzbekistan: \$24.3 million (0.8%)
14. Argentina: \$24 million (0.8%)
15. Germany: \$17.4 million (0.6%)

Data on the import and export flows of temporary preserved cherries are also interesting, i.e. edible cherries unsuitable for immediate consumption are therefore destined for the production of derived products. According to World Top Exports² Lebanese exports of this type of product in 2016 were equal to 1.23% of the total. Bulgaria (accounting for 18.63% of world exports) and Turkey (with 16.36% of the world total) appeared much more specialised.

On the other hand, Italy proved to be a good destination market for preserved cherries, having purchased 17.23% of world imports in the same year, for a value of 20.3 million dollars. An exciting prospect is represented by China, which is constantly growing demand.

Figure 15: Ranking of top exporters in 2019 (World Top Exports)

² [Http://www.worldstopexports.com/](http://www.worldstopexports.com/)

The Bekaa market

The Foundation's international market study in 2018 with expert Lara Pistocchi also highlighted how despite Lebanon's contribution to the global market in terms of exports is extremely limited compared with the giants of the sector, Chile, Turkey, China and the United States of America. However, cherry production in Lebanon still has an important role to meet local needs and improve internationally for the benefit of producers in the Beqaa Valley.

In collaboration with local consultant Charbel Hobeika, the national market study was developed through preliminary research of the existing material and subsequent data collection with direct visits and compilation of 120 questionnaires addressed to cherry buyers. These were mainly represented by retailers (89 in total and mostly from supermarkets and grocery shops), but also by exporters (7),

wholesalers (9), agro-food industries and caterers, with specific reference to the Beirut market and the surrounding areas, representing the leading consumers.

Besides explaining the objectives of the project, information was collected during each visit, such as:

- **Variety, quality, quantity and sale period for each type of cherry.**
- **Type of product packaging required and the possibility of displaying one's own brand.**
- **Supply method and payment conditions.**
- **Methods for identifying the purchase price.**
- **Possible interest in purchasing from new suppliers.**

On the supply side, the primary post-harvest use of all cherry varieties is for sale in local markets. In rarer cases, some farmers can sell their product to regional buyers, but this does not seem to be a frequent case. Only a few farmers are involved in the production of derivatives such as jams, dried or packed cherries. In addition, there was limited capacity for refrigeration and storage which led to the sale of primarily raw products. However, it is interesting to note that the final market segment is different depending on the variety: as shown in Table 2, Ferawni and Mkahhal were best suited to the regional market, while Zahri and Baskintawi were sold entirely to the local market (Balestri, 2018).

Cherry variety	_n farmers	% farmers	primary post-harvest use	% yield (min-max)
Telyani	13	13,1 %	consumption	60 % - 100 %
	67	67,7 %	sell in local markets	70 % - 100 %
	6	6,1 %	sold to local buyer	100 %
	12	12,1 %	sold to regional buyer	90 % - 100 %
	1	1,0 %	processing	90 %
Ferawni	5	7,9 %	consumption	60 % - 100 %
	40	63,5 %	sell in local markets	70 % - 100 %
	2	3,2 %	sold to local buyer	100 %
	16	25,4 %	sold to regional buyer	90 % - 100 %
Succary	1	6,7 %	consumption	100 %
	11	73,3 %	sell in local markets	95 % - 100 %
	1	6,7 %	sold to local buyer	100 %
	1	6,7 %	sold to regional buyer	100 %
	1	6,7 %	processing	100 %
Zahri	2	100 %	sell in local markets	100 %
Baskinlawi	4	100 %	sell in local markets	98 % - 100 %
Banny	1	6,7 %	consumption	100 %
	12	80 %	sell in local markets	95 % - 100 %
	1	6,7 %	sold to local buyer	100 %
	1	6,7 %	sold to regional buyer	100 %
Mkahhal	1	4,0 %	consumption	100 %
	14	56,0 %	sell in local markets	95 % - 100 %
	1	4,0 %	sold to local buyer	100 %
	7	28,0 %	sold to regional buyer	90% - 100 %
	1	4,0 %	bartering	100 %
	1	4,0 %	processing	100 %

Table 2: Destination and use of the cherries according to the variety in the sample of farmers considered (Balestri, 2018)

3.3.3 The John Paul II Foundation Enhancement Proposal: a quality product

The two market studies enabled the Foundation to identify the main target markets, the requirements to provide competitive product and thereby develop an ad hoc strategy to promote good positioning, and to improve the commercial skills of the producers.



In addition to these, the study of the local partner Fair Trade was carried out, which proved useful in providing valid indications in the choice of other crops to be introduced in cherry orchards, and for identifying potential buyers of the product, as in the case of cherries. In agreement with the beneficiaries, the final choice was based on thyme. This crop, in addition to having an excellent market and being easily to process, it also has repellent effects for various cherry parasites.

The equipment of the Cooperatives and the diffusion of the Quality Management System among the producers were important for the completion of the production and supply chain and compliance with quality standards required mainly by the exporters (Box 10). Product sorting was also essential to reach different markets, both local and international, along with and adequate promotion. The marketing of the cherry produced in the Bekaa Valley started with the development of four brands, one for each cooperative, which were subsequently joined by that of the Fruit and

Vegetables Consortium (or FAV), whose structure was identified as an extra boost for the international marketing of the product together with the four cooperatives. One of the main requirements specified by local and international buyers was the possibility to buy large quantities of a good quality product from a single seller.

With this approach, the partners give their product to the Cooperatives who add value it by packaging and labelling it. The development of the brands assumed a thorough analysis of the identity of the member producers, the territory and the process of change underway, led by Foundation experts informed about the objectives of the project and the market needs of the locals.

In strengthening the trade channels and expertise of the producers involved in its project, the Foundation considered it important to apply other modules of its integrated agribusiness strategy: the participation in strategically identified events not only to promote the product but also to learn the strategies used by competitors and the exchange of good practices with Italian companies in the sector.

The following sub-paragraphs will provide all the details.

BOX 10

MAIN REQUIREMENTS FOR ENTERING THE INTERNATIONAL MARKETS

Quality requirements

Characteristics required for a specific product, provided by the General Marketing Standards, are established by each market entry.

Dimension

The standards laid down by UNECE (United Nations Economic Commission for Europe) establish guidelines on the minimum dimension of the product and the size uniformity depending on their quality class. In the case of cherries, for example, it is fixed at >27 mm for class “A”, 25 <mm<27 for those in class B and <25 mm for cherries in class C.

Labelling

The label must disclose consumer protection information, identification, product description and product variety, country of origin, trading specifications (class code, size or, if applicable, number of units), traceability code, official control’s mark (optional). If a Global Gap Certificate is requested, the GGN number is also required, and a 13-digit number identifying each producer and member of a producer group in the Global Gap database.

Shipping documents

For the Asian and European markets, a customs declaration, commercial invoice, certificate of origin, phytosanitary certificate, food quality and safety certification are required. The HACCP (“Hazard Analysis of Critical Control Points”) protocol is followed to prevent possible food contamination.

Administratively the food imports in China are regulated by EEIQB (“Entry-Exit Inspection and Quarantine Bureau”), which ensures compliance of products with Chinese regulations and customs clearance.

From 4 brands to “FAV”

The four Cooperatives involved in the project all had a particular name and territory. Still, the need for an identity card providing a clear image of recognition and distinction was highlighted.

For the brand creation of each Cooperative, Raffaele Quadri and Sonia Lunardelli, design experts of the Foundation, conducted a mission on-site to involve the beneficiaries to seek those intrinsic values of the territory to be transmitted through the brand of each cooperative. A “workshop” was established and was continued with a long-distance dialogue in the company of the producers who were involved in understanding what was more important for them by identifying keywords and based on personal and human empathy with the producers involved. The interpretation of desire, the identification of the emotional experience transmitted from the ground to the producers, are all factors that have influenced the final elaboration of the four brands. For example, in contexts such as El Qaa, the aim was to highlight the robust female presence within the cooperative.

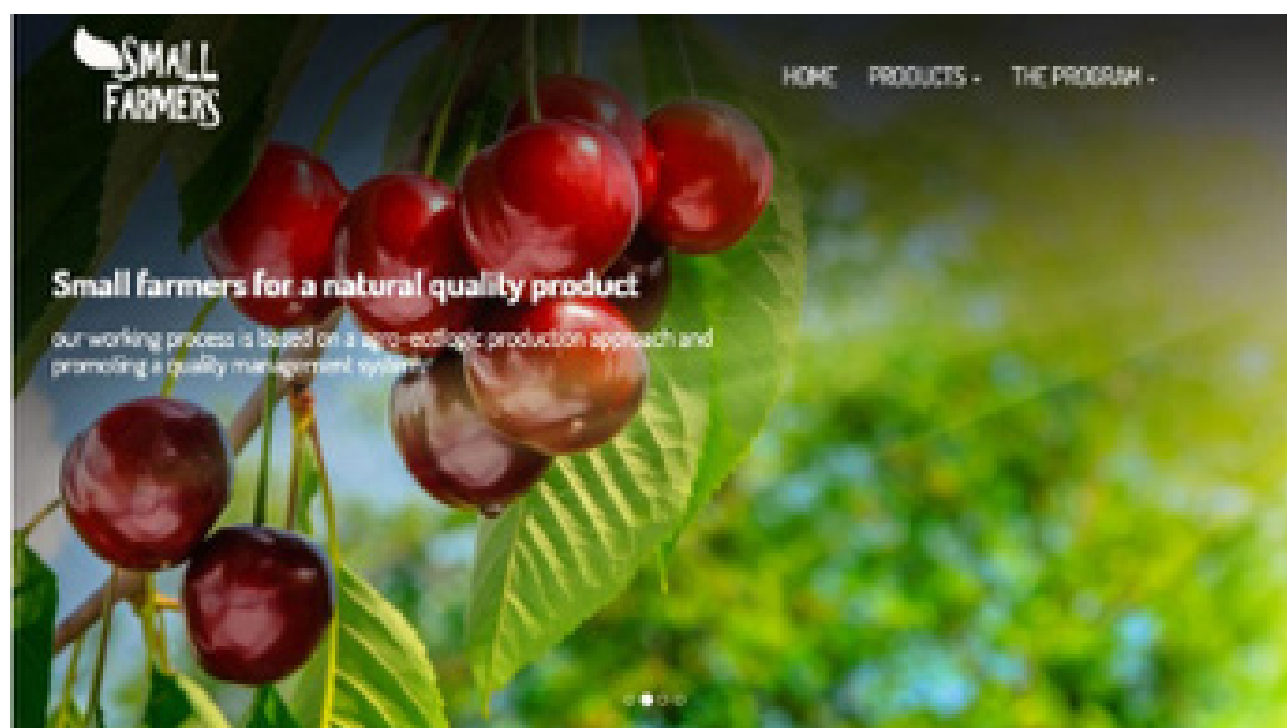
The brand image influenced the construction of the headquarters and warehouses of each cooperative and the packaging of the product.

While for the local market, the image transmitted by the brand of the product was not very relevant for reaching customers, in the case of the inter-

national market, it was understood that the four cooperatives had to be given a single identity. As a consequence, a unified trademark representing a Consortium called FAV was developed to coordinate cooperatives in the establishment of an international network to export the product.

The development of the FAV brand was based on the same identification principles as for the individual cooperatives. Following due market trials, it was decided to give the consortium brand more visibility than that of their individual members.

As for online marketing, a landing page was created on the site <https://www.smallfarmers.trade/cherry>. The information on the site has an informative and documentary significance that, supported by actions to promote the product and the quality of the information contained, gives potential customers a clear concept of the project, strategy, and involvement of the producers. A commercial strategy that aims for customer loyalty that is able to assign values such as territoriality of the product, specificity and quality assurance to brands produced on the market, such as the Lebanese one, where there is often a tendency to offer a product that does not consistently meet the required quality standards.



Participation in international events and exchange of good practices

Overseeing the work of individual producers, representatives of cooperatives, and local institutions carried out during the three years of the project for the improvement of commercial skills, was also based on an increase in the beneficiaries' awareness of market opportunities for their product and knowledge of good practices for the international marketing of the product in compliance with quality standards.

The final goal was to continuously improve competitiveness in the sector, improve sales planning and management, and market-oriented operational and strategic direction.

On the one hand, cooperatives and agricultural businesses aimed to identify suitable tools to market themselves through quality standards and commercial proposals in line with European distribution needs.

On the other hand, for institutions (such as Lebanese University, Ministry of Agriculture and Zahle Chamber of Commerce), the aim was to increase

knowledge regarding innovation and new business services, networking with Italian institutions to upgrade services for ongoing market monitoring and to support the opening up of trade channels.

Therefore, the Foundation committed itself to create growth opportunities for the representatives of these different stakeholder groups, who would then disseminate the knowledge acquired to their colleagues.

Within this framework, participation in international fairs and events, which took place as a necessity during the pre-pandemic period, therefore between the first and second year of the project, was not only functional in expanding contacts with exporters and input suppliers, but also to increase the skills of the people involved, among representatives of producers, cooperatives and institutions of the Bekaa Valley. The events where the project supported the participation of the consortium's representatives were, in chronological order, the "Fruit Attraction" fair in Madrid, the "Food Africa and Mac Fruit Attraction" fair in Cairo, the "International Cherry Symposium" held in Vignole and the agri-food fair "Dubai-WOP" held in Dubai (see Box 11 for more details).

BOX 11

THE ROLE OF INTERNATIONAL EVENTS TO ENRICH KNOWLEDGE

"Fruit Attraction" fair – Madrid

Participation in this fair, which took place on 22nd-25th October 2018, was due to the interest in important topics such as machinery for processing finished products and potential commercial outlets. Samer Dagher, a local agronomist of the John Paul II Foundation, and a beneficiary from Baskinta Walid El Haiby were coordinated by Dr Lara Pistocchi, who was sent from the headquarter. The Lebanese delegation met the Lebanese Ambassador to Spain during their days in Madrid, presenting her with a summary of the programme and expectations of the mission: to identify possible international trade outlets and input and equipment supplier contacts to improve the production and post-harvest phase. The exchange of experiences with the professionals (mainly Spanish and Italian) and the participation in the conferences organised within the fair were numerous over the days and essential to draw on development opportunities and to encourage the emergence of new collaborations: the brochure produced

for the presentation of the Lebanese cherry chain was disseminated.

The added value of sharing best practices by the representatives of agricultural producers was also appreciated who were able to experience moments of exchange, with the promise to implement them in Lebanon through reciprocal visits.

“Food Africa and Mac Fruit Attraction” fair – Cairo

The fair in the Egyptian capital is dedicated to food, agro-food industries, fruit and vegetables, with a particular focus on the African market.

The project representatives set up their stand here that saw cherry producers and those of the project related to the apricot chain gathered under a single group identified by the “Small Farmers, Fruits Producers, Beqaa-Lebanon” name. The Lebanese delegation of the cherry component consisted of 3 representatives of producers from the villages of Kaa el Rim, Ainata and Rachaya.

The objectives of participating in the fair were various:

Meet new potential buyers and stakeholders.

Present Lebanese fruit to the African market: during the exhibition, the stand offered samples of cherries and other dry fruits from the Rashaya cluster, distributed brochures, business cards and showed a digital presentation including the characteristics of the fruits.

Facilitate the exchange of experience and opportunities for the management of marketing events at international level.

“International Cherry Symposium” – Vignole

Participation in the event from the 22nd to the 23rd of May 2019 took place with two agronomists of the project team and a consultant. The aim of participating in this world-class event was to obtain new perspectives and ideas to be given to the technicians, who take care of the production phase of the cherry chain to improve its agro-ecological and economic quality and sustainability.

“Dubai – WOP” – Dubai

Participation in this event of the agri-food sector took place between the 12th and the 14th of November 2019, with a stand to present the products of the project production clusters. The Dubai Fair is one of the main events for the fruit trade, especially fresh fruits, in the Gulf Market.

During this event, production related to the areas of interest of the project was promoted with a particular focus on cherries. In addition to the John Paul II Foundation staff, the event also included the participation of the Zahle Chamber of Commerce as a strategic-institutional representation and the president of the Ainata cooperative.



The Study Tour held in Italy from the 7th to the 12th of May 2018 was an even more important opportunity for growth aimed at strengthening the technicians' skills of the organizations that actively participated in the exchange of experiences. A particular focus of the tour was on good Italian agro-ecological practices.

The scheduled workshops were held from Lazio to Aldo Adige to get in touch with various agricultural organizations, companies, fruit and vegetable consortia and research institutes in Italy (see Box 12 for more specific details).

There were many areas where it was possible for the mission participants to observe good practices: from the design of a production process to the organisation of a working method, from the preparation of a policy to an operational partnership, from the collection and organisation of information and data to the development of infrastructures and services.

There have been several moments of comparison between project beneficiaries and training technicians, agronomists and farmers.

During the five days of the mission, participants could clarify any doubts that arose during the exchange. They understood the importance of adopting new **agro-economic methodologies** during the training sessions and the importance and benefits of the various forms of association and **cooperatives** for market access.

Participating in a mission where good agro-ecological practices were shown was an excellent opportunity for the direct beneficiaries of the project to acquire replicable skills in their local

agricultural/production conditions on topics such as:

Fertilisation and weeding practices.

Sustainable water management.

Plant protection.

The use of innovative techniques to improve the quality and efficiency of the production cycle and increase competitiveness in the market.

The advantages of cooperativism.

The importance of family farming in ensuring greater food security.

Exchanges also enabled the beneficiaries to acquire skills for management structures and relationships with institutions. This resulted in acquiring know-how and technical skills to be adapted to the Lebanese context and to be transferred to agricultural businesses, thus improving strategic and commercial promotional skills to facilitate access to new markets.

During these busy days, participation had, as its main purpose, to induce the Chamber of Commerce and the Ministry of Agriculture to improve business services in terms of support to the internationalisation of the markets to favour a positive outcome for all the Bekaa Valley economic activities.

THE STUDY TOUR AGENDA HELD IN ITALY AND THE COUNTRIES INVOLVED

07/05/2018 – Tour of the Fruit Farm “Luca di Piero – Dalla terra alla tavola” (From the field to the table)

The Azienda Agricola Luca di Piero, located in Civita Castellana (VT) in Fabrecce, has vineyards, olive and hazelnut groves, and processes the hazelnuts into the production of numerous high-quality chocolate products. It is also a producer of high-quality oil.

The tour programme included:

- WELCOME AT THE FARM AND PRESENTATION OF THE ACTIVITIES.
- VISIT TO THE HAZELNUT ORCHARDS, THE PROCESSING PLANT AND POINT-OF-SALE.
- ILLUSTRATION OF THE INNOVATIVE METHODS USED FOR CULTIVATION.

This visit had the organisational and scientific support of CNR researchers Marco Lauteri and Giuseppe Russo, who are also external consultants of the John Paul II Foundation.

08/05/2018 – Tour of the Organic Farm – Farm school “Cupidi”

The farm school of Alessio Cupidi and Roberta Leonardi is an organic farm located in Gallese, in northern Lazio, in the province of Viterbo. Although different in characteristics compared to Middle Eastern crops, this shows an integrated approach and another example of organic management. The agricultural association consists of the interaction of the poultry farm, consisting of about 8,000 birds, with a hazelnut orchard located within the company and whose fruits are used to feed the chickens. The Cupidi Farm not only represented a model of agroforestry association for the mission but also an arrival point of synergy and multi-agricultural production for different stakeholders.

The tour programme was developed as follows:

- WELCOME FROM THE COMPANY AND PRESENTATION OF THE BIO-DISTRICT.
- OBSERVING AND LEARNING THE PRINCIPLES OF A HEALTHY AND SUSTAINABLE DIET FROM PRODUCTION TO CONSUMPTION.
- TOUR OF THE FARM, THEIR CHARACTERISTICS, THE FEEDING AND PRODUCTIVE CAPACITIES OF EXTENSIVE REARED LAYING HENS.
- ILLUSTRATION AND EXPLANATION OF TECHNOLOGIES USED FOR ENERGY PRODUCTION AND RENEWABLE SOURCES.
- ILLUSTRATION OF THE SURROUNDING ENVIRONMENT AND HOW TO USE IT SUSTAINABLY.
- DESCRIPTION OF THE USE OF TRADITIONAL AGRICULTURAL TECHNIQUES IN CONJUNCTION WITH INNOVATIVE TECHNIQUES.

09/05/2018 – Tour of Consorzio Ciliegia “IGP Vignola”

Consorzio della Ciliegia Tipica di Vignola (Typical Vignola Cherry Consortium) was founded on the 16th of December 1965, the first in Italy in the fruit sector to protect the cherry production, which since the post-war period, had experienced a continuous expansion in the Vignola area. It has been active for fifty years, supporting its producers and guaranteeing high quality to consumers.

The visit to the consortium took place with the following steps:

- WELCOMING AT THE CONSORTIUM HEADQUARTERS, DESCRIPTION OF THE CONSORTIUM AND PRESENTATION OF THE ACTIVITIES.
- ILLUSTRATION AND EXPLANATION OF THE TECHNOLOGY USED FOR PRODUCTION.
- DESCRIPTION AND EXPLANATION OF THE TECHNOLOGY USED FOR THE CONSERVATION OF THE FRESH PRODUCT.
- ILLUSTRATION AND EXPLANATION OF THE TECHNOLOGY USED FOR PACKAGING.
- DESCRIPTION BY THE AGRONOMIST ON THE USE OF TRADITIONAL AGRICULTURAL TECHNIQUES AND OF INNOVATIVE TECHNIQUES.
- FIELD VISITS TO CHERRY-PRODUCING FARMS.
- VISIT TO THE CONSORTIUM “PODERE DIAMANTE DANTE” WHERE THE MISSION PARTICIPANTS OBSERVED COVERS AGAINST ANTI-CRACKING, FERTILISATION AND IRRIGATION TECHNIQUES.

10/05/2018 – Visit of the Department of Research and Technology Services of the “Edmund Mach Foundation”

The Edmund Mach Foundation (the “Mach Foundation” or “FEM”), located in Trentino Alto Adige, is an organisation that pursues the aims of education and scientific research in the agricultural field of the Istituto Agrario (Institute of Agriculture) of San Michele all’Adige. The institute aimed at increasing agricultural production in Tyrol. Edmund Mach was its first director.

It was established as a provincial body in the 1990s. From 2002 onwards, it was structured into a school (from high school to university), a research centre (with objectives such as the genetic improvement of apples or grapevines) and a technical assistance centre. Since 2008, it has become a private foundation with public capital.

The stages of the visit in chronological order were:

- WELCOMING AT THE EDMUND MACH FOUNDATION (FEM) AND PRESENTATION OF THE ACTIVITIES.
- MEETING WITH TECHNICAL ADVISORS OF THE FEM CTT AT THE COBA MELINDA CONSORTIUM.
- VISIT TO THE COBA PURCHASING GROUP OF AGRICULTURAL PRODUCTS: PESTICIDES, FERTILISERS, PLANT MATERIALS, ETC.
- TRANSFER TO VIGO DI TON AND VISIT TO THE BASIN IRRIGATION AND THE WEATHER STATION OF VIGO DI TON.
- TRANSFER TO DENNO.
- VISIT TO CHERRY FIELDS.
- VISIT TO BUSINESS CENTRES.

3.3.4 Grading and transfer of cherries

The promotion of a quality product, meeting minimum requirements in terms of firmness, size and packaging, could not be without the improvement of activities such as grading and product delivery, i.e., the transfer of fruits from individual member producers to cooperatives, packaging, and labelling, before selling the cherries, per post-harvest specifications.

Grading

Following post-harvest QMS guidelines, selecting cherries based on size and quality is important to meet market standards and sell a higher added value product. In this respect, the cooperatives involved in the project were equipped with refrigerated cells, packaging machinery, or refrigerator trucks for transportation and grading equipment. The creation of real processing centres within the Cooperatives also led to the recruitment of 28 paid workers during the working season of 2019.

Two training days were carried out by a local expert consultant, one in the centre of Qaa el Rim and another in the centre of Ainata, to pass on the necessary knowledge to the members of the cooperatives in the correct use of these of the facilities and equipment provided, with particular attention to the practice of selecting and grading the fruit manually and to the implementation and management of controlled atmosphere preservation techniques of fruits.

Transfer

As anticipated, the sale of the product by the farmers to the Cooperatives has been identified as fundamental for market access, for the sale of a higher qualitative product, as well as in dealing with local and international buyers, the latter also acknowledged in the Business Plans in placing much higher quantities of orders (see Box 13).

The Business Plans also provide for specific steps of transfer from the producers to the Cooperative. Specifically:

- 1) Members should manage the harvest according to the qualitative standards set by the Cooperative (QMS), then deliver their products to the Cooperative Post-Harvest Centres. The quality of the harvest will be checked first in the orchards, then in the post-harvest centres.**
- 2) The cherries will be pre-cooled and cooled when received from post-harvest centres to extend their expiry date if necessary.**
- 3) The packaging and labelling will be the services that the Cooperative will provide before placing the products on the market, reflecting the identity of the assigned brand and representing the community of member producers.**

- 4) At the same time, the Cooperative will be looking for potential markets and buyers.
- 5) The price paid to the farmers will be calculated after deducting a fixed sum for funds announced in advance by the Cooperative. In the case of Qaa el Rim, the expected price was initially 500 Lebanese pound per kilo, while Ainata's price was 800 Lebanese pound per kilo. These fees are used to cover expenditures and to replenish the cooperatives' savings accounts. Any other surplus generated may be redistributed to the members in proportion to their members' delivered quantity.
- 6) Partners obtain their proceeds once the Cooperative has received the money from the clients. Payment may also be made in instalments during the season to avoid excessive imbalances in the farmers' income statements.

The creation of a Consortium to which the individual cooperatives deliver their products has also led to a revision of the packaging to join the cooperatives giving more importance to the identity of the "FAV" than that of the individual cooperatives.

BOX 13

THE CATEGORIES OF BUYERS

Different categories of buyers were identified in the business plans for cooperatives. In particular, for Ainata the following categories of buyers were identified:

1. International buyers:

importers require large quantities with precise criteria. Individual farmers are often unable to respond to their requests, but the cooperative could do provide the required quantity and quality since it has the necessary infrastructure and capacity.

2. Large retailers or local retailers:

the advantage of this type of trader is that they buy daily and in large quantities. The prices they pay depend on the market price. Another important advantage of dealing with these traders is that the produce can reach many end consumers in a short period of time, including market chains or large-scale distribution.

3. Small retailers or local retailers:

they buy daily, in small or medium quantities, and with different degrees of variety..

4. Specialised shops:

These retailers require high-quality products and are ready to pay a slightly higher price than the market price to supply first quality products to their customers continually..

5. Final consumers:

ideally, the cooperative would only sell directly to final consumers to maximise profits, but this is only possible in the case of small quantities. This is made possible by regular participation in farmers' markets by local farmers.

3.3.5 Marketing, Cooperatives and the FAV Consortium role in reaching the markets



In reaching the strategically identified target markets following market analysis, the trade fairs that the Foundation considered important to participate with some local stakeholders to promote the Bekaa Cherries proved to be useful in meeting new potential customers, who are attracted by a product that reflects the identity of the Lebanese rural territory and met the quality standards required by the international market.

During events, contacts were established to potentially sale products to buyers from countries such as Egypt, Jordan, Uganda, Iraq, and Vietnam, interested in fresh and dried fruit and derived products such as jams.

Those who took part in the trade fair had the opportunity to promote the work carried out by their Cooperatives also through interviews on tv broadcasts. Notably, the Chairman of the Ainata Cooperative, Michel Rhame, promoted Bekaa's stand to two local TV channels during the Cairo Fair.

The use of social media has also made it possible to raise awareness of the products and brand values of the cooperatives involved in the site <https://www.smallfarmers.trade/cherry>.

The Foundation's work on the cherry promotion involved developing a brand that group those of individual cooperatives. This is a result of the

creation of the FAV Consortium to which the Cooperative relied on to export a large part of their fruits. The creation of the FAV Consortium was functional in reaching important markets such as those of Bahrain in the second year of the project and Dubai starting from the third year. In 2020, in Dubai, the FAV consortium alone made about 97,000 dollars in revenue and almost 8,000 dollars in profits through the sale of 36-tons of fruit and vegetables. At the time of writing this report, the export of at least three to four tons a week of cherries was expected to be exported, in Dubai alone. A new outlet was launched in Hong Kong during the same period to sell more quantities of high-quality calibre 28-centimetre cherries. The sale of non-typical Bekaa fruit and vegetables, such as Annona, was equally fundamental to consolidate international trade relations and thus continue exports until early December and extend the consortium's range of activities.

A summary of the sales results is given below, highlighting the key role Cooperatives played in improving farmers' economic condition.

3.3.6 The sales results achieved during the project and the repercussions on the farmers

The project's economic impact on the cherry producers has certainly been positive. It also has good prospect to create further positive effects. Indeed, the data available on the sales results confirm the important role of cooperativism in reducing farmers' vulnerability: the application of a Quality Management System as a natural consequence of the choice to join a cooperative allows the beneficiary producers from the project to access more profitable markets, through the sale of a product that gradually improves in quality and therefore in price. The bargaining power of the joint producer cooperatives members towards national and international buyers increase to the point of selling to large-scale retailers, which were for the most part previously inaccessible. BY THE END OF THE 2019 HARVEST AND SALE SEASON, THERE WAS AN INCREASE IN THE QUANTITY OF PRODUCT SOLD THROUGH THE COOPERATIVE BY 175% COMPARED TO THE PREVIOUS SEASON.

The increase in the quality of the product placed on the market also has a significant effect on the wage conditions of workers employed in the sector and on reducing gender gaps.

The importance of affiliation in a Cooperative and Export impacts on the membership portfolio

Becoming a cooperative member allows the farmer to participate in the sale of a product packed in 1-kilogram packs, labelled and with a specific brand. These are all aspects of primary importance for entering the organised market.

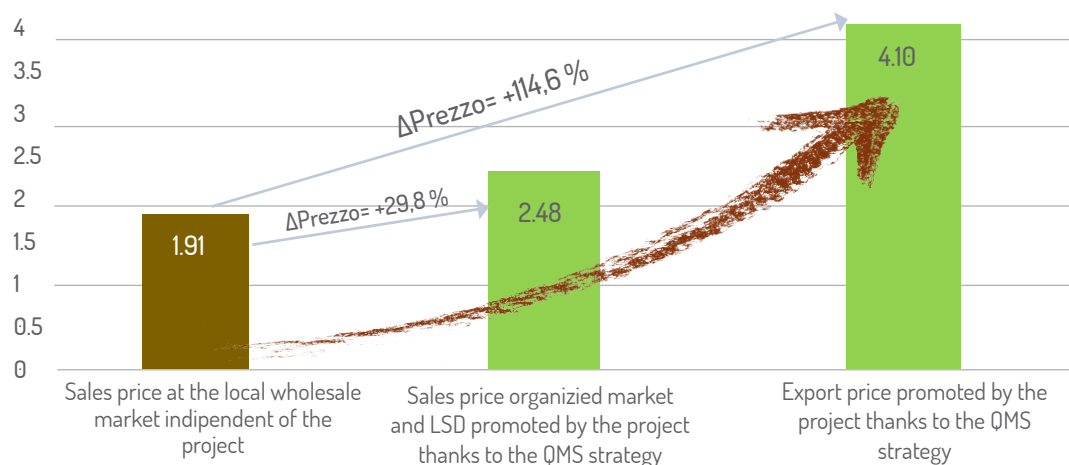
Three new national trade channels with supermarkets and fruit and vegetables had already been developed in Beirut at the end of 2018, thanks to a market study, for the benefit of both the Ainata Cooperative and the newly formed Qaa el Rim cooperative. By the end of the following year, an additional 12 market channels were added, again concentrated in the Lebanese capital, of which 5 for Ainata and 7 for Qaa el Rim. Also Spinneys, a well-known supermar-

ket chain based in Beirut was also involved.

The benefits of being part of a cooperative for a small producer is also addressed by the difference between the prices obtained between the different sales channels: diagram 1 shows the differences in average price expressed in dollars on average in kilograms between the local wholesale market (1.91 USD), the organised domestic market (2.48 USD) and the export market (4.1 USD) for 2019. In this regard, it is essential to specify that the price of the local market obtained from the producers is independent of the project, while the remaining two are to be considered as the effect of the project.

Diagram 1: In 2019, the price per kilogram (in dollars) obtained from the organised market was almost 30% higher than the average price obtained from the local market, while the price obtained from the export market was more than twice than the local market price.

Price analysis cherry season 2019 (US \$)



The management control carried out in 2020 made it possible to compare the average price or profit obtained on the local organised market net of post-harvest costs (including that of Ferzol village) from the sale of the cherry with that obtained on the international market in that same year. From this comparison, shown in Diagram 2, it is possible to understand the importance of the export for cooperatives supported in this operation by the FAV Consortium. In terms of sales revenue, the price increased of more than 220% with respect to the year when the project started. In contrast, the profit (operational margin net of any direct post-harvest costs) that goes to the farmer benefiting from the project is 56% higher than the price he would have obtained in the local rural market.

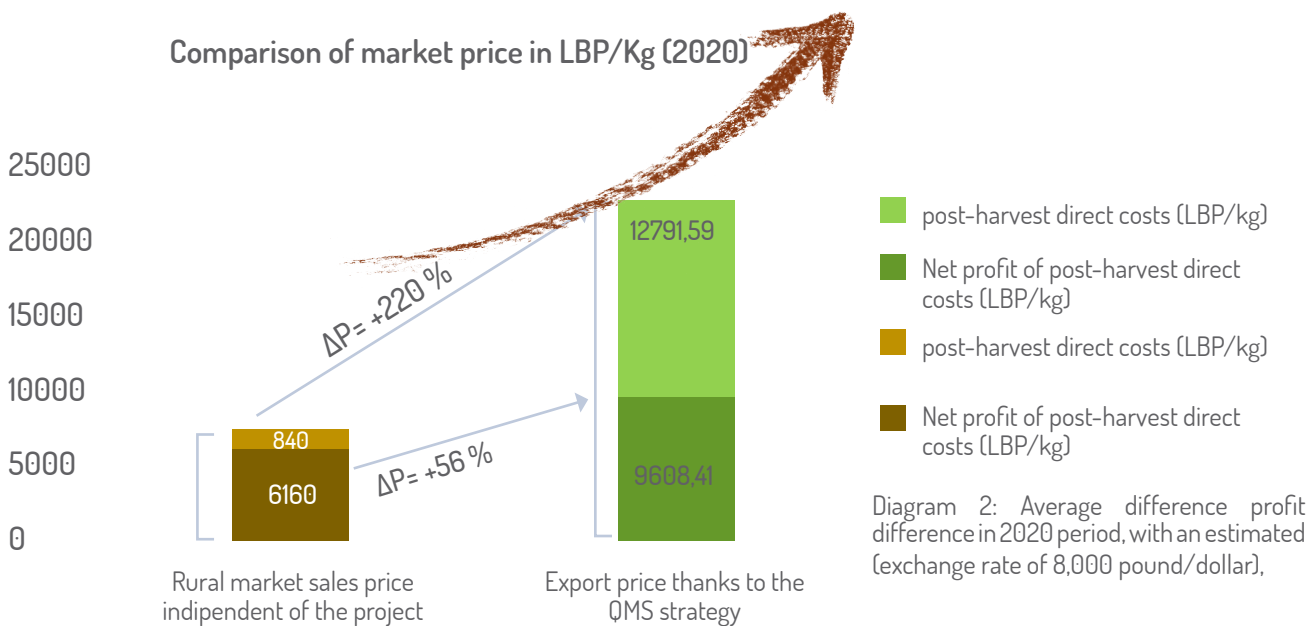
This is a very important result both farmers and for all those who participate in the production process as seasonal workers in the field and warehouses, where the fruit is prepared for sale. The additional benefit in sales prices is distributed to two different targets to significantly impact rural communities in terms of economic return.

Benefits for the agricultural entrepreneur (SGD 2.4)

The producer, benefiting from an increase of 56% of its operating margin net of any direct post-harvest costs will have a more favourable outlook for the development of its business, which will enable the ongoing reorganisation to be consolidated in terms of innovative investments and techniques used, generating a surplus that will make agriculture more sustainable and more attractive for young generations. The increase in price net margins will probably further rise in the future as a result of the effects on relative productivity.

Benefits for agricultural workers (SDG 8.3)

While part of the 220% increase in sale price is transferred farmers (56%), a remaining part (164%) relates to the increase in the production costs needed to achieve the quality of the product required by the market. It is estimated that most of these costs relate to labour costs used seasonally for production both in the field and in warehouses, where the product is prepared for sale and stored in cold rooms. This means that the impact of the strategy in terms of employment and therefore income for seasonal workers is significant in response to the principle of Inclusive Social Business, which characterises the strategy, guiding it to respond to the needs of the poorest. Women, young people, and Syrian refugee workers will also benefit from the surplus generated by the sale of the quality product in the most profitable markets.



Securing strong money, thus dollars is another benefit that access to international channels makes it possible. While the official exchange rate remains approximately 1,508 pound per dollar, with the outbreak of the inflationary crisis, the exchange rate applied in the parallel markets already exceeded the 10,000 pound at the time this report was written. Therefore, the exchange rate for the sale of the 2020 harvest was estimated at 8,000 pound/dollar. The difference in the dollar exchange rates have severe repercussions on the purchasing power of farmers and cooperatives, as described in paragraph 3.5.1, who, having to buy fertilisers, pesticides and materials for the packaging of products abroad, would have found themselves in great difficulty without exporting their product. International sales, therefore, makes it possible the use of hard currency and at least offset the adverse effects of the financial crisis. Putting hard currency in producers' pockets to buy

those essential agricultural inputs allow farmers to pay higher wages than market wages and employ more labourers.

For the value chain promoted by the project, direct post-harvest costs are more than 15 times higher than those generally faced by farmers not affiliated with beneficiary cooperatives. They include the shipping costs (estimated in 8,000 pound/kg) and a 12% commission fee that the cooperatives retain to support the selection and packaging processes and, therefore, hire and pay new workers responsible for these phases.

At the same time, part of the profit after costs described above is reinvested by the farmer to buy fertilisers, hire permanent or seasonal workers and maintain all other inputs necessary to ensure sustainable and profitable production.



*NB: il profitto considerato è al netto dei costi diretti post-raccolta

Overall, this more significant differentiation of target markets contributes to progressively improving producers' resilience to possible commercial shocks, offering alternatives in the event of a crisis or a decrease in the absorptive capacity of the product by specific sales channels.

Direct and indirect impacts of the QMS

Preliminary market analysis on the market had highlighted the benefits of selling selected products by size and, specifically, of producing cherries of a size greater than 27 mm (“Extra grade” or “Class A” quality). In the past, not selecting by size, small producers sold everything together, losing considerable economic benefits and often sold to avoid product deterioration. Today, however, with the implementation of the QMS since the “pyramid” shape pruning of the plant (which facilitates a reasonable distribution of sunlight to the fruits) small producers manage to obtain cherries with an increasingly wider diameter and, therefore, and that are consequently more profitable¹. In practical terms, and looking at the direct effects of sorting the farmer used to sell the product without making distinctions by size, in 2019 the sorting operation conducted by the cooperative enabled farmers to obtain an average price of 6.60 USD/kg from the sale of class “A” cherries, an average of 3.30 USD/kg from those of Class “B” (with thickness 25<mm<27) and 1.54 dollars per kilo from those with thickness less than 25 mm. This produced an average revenue that in 2019 was already almost 30% higher (2.48 USD) than that obtained before joining the cooperative (Diagram 3).

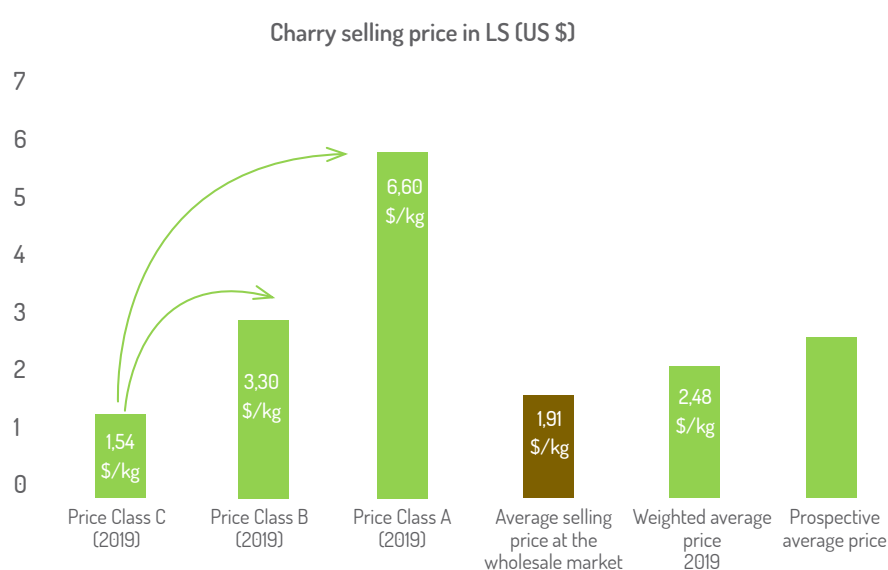


Diagram 3: The prices of cherry per kilo per caliber in 2019.

Even though no Lebanese producer still sells by grading, this selection, carried out through the cooperatives participating in the project, enable farmers to fetch a higher price per kilo thanks to a higher qualitative evaluation obtained on the single box of cherries. Considering the effects of increasing the size of the product, which, thanks to the implementation of the QMS, will gradually take placemanifest over the coming years, the increase in the percentage of Class A and B cherries will produce a gradual increase in the weighted average selling price (2.48 USD in 2019) over time. This will increase the gap well beyond 30% with sales prices in the local rural market of the non-qualified product due to the implementation of the QMS.

By shifting attention to the more “indirect” impacts, in the post-harvest implementation of QMS

to regulate the conservation and packaging of the product allows for selling a more quantity thanks to the significant reduction in the percentage of product deterioration in addition to selling a higher quality product.

The increase in total marketable production

The strategy implemented does not cause an increase in the “absolute” productivity of the plant, as agro-ecological management is preferred to a bombardment of chemical fertilisers (harmful to the plant and the environment) since it aims to restore the balance and quality of life of the plant in the surrounding ecosystem. If optimal plant and

¹ The concept of relative productivity set out in the previous paragraphs that implementing the QMS based on eco-sustainable agronomic techniques does not increase total plant productivity. The total kg does not increase, but the size of the fruit increases, generating a significant economic benefit.

animal biodiversity conditions are reached, conditions for efficient and quality products are received in return. Although the strategy does not aim to increase plant production, we can undoubtedly state and demonstrate that the quantity of product marketed increases due to a decrease of damaged or spoiled product losses thanks to the implementation of the QMS.

It has therefore been noted:

a) There is a reduction in product deterioration thanks to the availability of cold rooms where the unsold product can be stored daily. Thanks to the cooperative, farmers have a processing system (washing, sorting and packaging) and storage of the product in cold rooms to keep the product for an extended time.

b) Reduction of damaged products during harvesting and transport. The damage to the fruit is further reduced by a different packaging system

provided by the QMS, which includes the use of boxes that replaces the much more harmful system represented by bags, which were previously used the most and that caused an excessive pressure among cherries, thus increasing the risk of spoiling the fruit. Instead, by placing the cherries in a 7 kg box, the weight is more evenly distributed, and the possibility of crushing and rotting is therefore reduced.

All this makes it possible to avoid throwing away the rotten or damaged part of the product, which can now be sold thanks to the QMS and the cold rooms.

In general terms, the implementation of the QMS and the affiliation to the cooperative thus lead to a reduction in average losses, which is now estimated to be around 3% of the total production, and an average increase in the quantity sold by farmers equal to about 10% compared to the start of the project.

WITHOUT QMS

- cherries with a more variable size
- Lack of refrigeration and lack of product selection per size (or grading)
- cherries packed directly in plastic bags

Average price obtained in Lebanon
1,91 \$/ Kg

More cherries to be discarded or unsold

WITH QMS

- cherries with a more uniform size that are on average larger
- refrigeration and grading of the product
- Cherries packed in 1 Kg containers and packed in 7 Kg boxes

Average price obtained from national LSD chains=
2,48 \$/ Kg

10% quantity (in kg) sold more than in 2019

From a social point of view, the sale of a qualitatively better product with an international appeal has the effect of improving the wages of workers employed in the supply chain and that of contributing positively to female employment conditions and, therefore, to the empowerment of women. For example, despite the imposition by an intermediary of the workers in July 2020 resulted in a lower increase in women's wages (3,000 pound more per day than the market wage resulting in a total of 15,000 pound) compared to the male wage (8000 pound more resulting in a total of 20000 pound per day), the processing of the cherry sold through the FAV contributed to the work of 10 women against no men employed in the supply chain. For each man working in the harvesting and processing of other crops such as Annona, there

were 7,8 or 9 women employed. The wage gap was eliminated and equal to 30,000 pound a day offered to both women and men. These choices would have been much more difficult to apply without implementing the Quality Management System, which requires specialised labour, which is therefore paid more for the benefit of permanent and seasonal workers, women, young people and Syrian refugees.

Finally, with a long-term view, the export sales as a result of the "FAV" cherry, distinguished by a higher than average quality and always offered in smaller quantities to local markets such as Ferzol could lead to an increase in prices also obtained from non-beneficiary producers of the project.

3.4 RESPONSABILITIES OF THE OFFICIALS



One of the key principles for the future sustainability of Small Farmers retraining projects in support of small agricultural producers is to ensure that the process of accompaniment and support for compliance with quality standards takes place not only through the managers of cooperatives but also thanks to local institutions competent in the matter, up to date and offering innovative services to the company.

The Inclusive Social Business (ISB) work package of the integrated agribusiness strategy devised by the John Paul II Foundation includes modules oriented to:

- STRENGTHENING STAKEHOLDERS INVOLVED IN THE INSTITUTIONAL AND GOVERNANCE STRUCTURE OF THE COOPERATIVE SYSTEM AT A NATIONAL AND LOCAL LEVEL, MAKING THEM PROMOTERS OF A COOPERATIVE CULTURE.
- RAISING AWARENESS OF THE IMPORTANCE OF INCLUDING WOMEN AND OTHER VULNERABLE GROUPS AMONG INSTITUTIONS TO IMPROVE THEIR WORKING CONDITIONS WITHIN BUSINESSES AND COOPERATIVES..

Therefore, the Foundation has adapted its intervention strategy to the Bekaa cherry growers project based on evidence.

Looking at Lebanon as a whole, the report of the Ministry of Agriculture in 2015 highlighted the absence of national and local political institutions in supporting programmes for the development of cooperative work, a lack of support that can be seen at various levels: structural, operational, regulatory and legislative, but also planning, monitoring and control. There are also many inactive agricultural cooperatives. A decrease in the percentage of agricultural producers in cooperatives and the number of young members due

to a lack of motivation were also noted. For example, the Directorate General of Cooperatives, which, besides registering, supervising and issuing permits for Cooperatives, should help them financially and technically suffers from financial shortages. These limit the Directorate for the use of up to date information technology and cause a shortage of human resources, thus undermining its supportive role (65% of posts are vacant). One consequence is the lack of support services that make cooperatives autonomous in their role as educators, providing training and information services to the producer members: most of them still rely only on the help of international donors, which provide programmes for these purposes. Donors often rely on local NGOs, without involving the cooperative representatives or institutions in their support and that could be trained to provide services, leading to greater self-sufficiency in this sector respecting the core principles of cooperatives reported in Box 5. In this way, the institutions are unable to support a sector, such as the fruit and vegetable sector, which is naturally well positioned for the creation of cooperatives: the production of fruit, together with the possession of a university degree by the members, is one of the factors that most influences the expansion of a cooperative.

Although 51% of the cooperatives registered in Lebanon in 2017 are agricultural, only 4,5% of farmers are associated with one of them. This is due to a lack of information about membership benefits and also to the cooperatives' inefficiency in providing valuable services to members (ILO, 2018).

The intervention area was not without problems: the existing public sector was inefficient in supporting cooperatives in transmitting the necessary management, production and market knowledge and the benefits of joining cooperatives (Fair Trade Lebanon, 2016). In addition, there is a lack of knowledge about quality standards, the importance of traceability systems and attention to phenomena such as gender inequality in work conditions. All this hinders the socio-economic development (ARCO, 2018).

On the other hand, where local institutions offer

red quality services, the farmers were not informed. For example, the LARI research centre has long been providing support services to producers for pathogen control and field irrigation. However, few farmers were aware of them due to cultural obstacles. During fieldwork, the Foundation has understood this problem and, with the presence of four Lebanese universities specialising in agriculture, established a partnership for training purposes with one of them, in addition to the partnership established with LARI.

Therefore, the Lebanese University was identified as one of the partners, which would provide a researcher with the task of helping to train the representatives of municipalities, cooperatives, and the Zahle Chamber of Commerce on the development and management of business plans.

The work carried out in coordination with the LARI, on the other hand, concerned strengthening support for producers for pathogen control, with the introduction of traps for monitoring and combating the most harmful and widespread pests on cherries, *Ceratitis Capitata* (Mediterranean fly) and various species of woodworms (Cerambycid). LARI used its SMS alert system to connect all the beneficiaries of the various reference clusters through the project.

The Zahle Chamber of Commerce was also involved in organising and directing farmers towards compliance with certification, identifying the methodology for the business incubator programme (mentioned in chapter 3.2.3), and finally participating in events of interest in the cherry sector. To improve the services offered by the Ministry of Agriculture, the Directorate of Cooperatives has also been involved in creating new cooperatives and strengthening the others from the second year.

Therefore, strengthening institutional capacity building to meet production standards and cooperative culture was based on the involvement of partners and on moments of best practices exchange during all the project years.

3.4.1 Strengthening institutional Capacity Building and cooperative culture

The Foundation identified three areas of fundamental improvement for the Directorate of Cooperatives technicians and the Zahle Chamber of Commerce.



In particular, the aim was to strengthen the skill in the:

- Support services methods to management control and development of a Business Plan and market analysis and monitoring services to be provided transmitted to farmers.
- Business incubator system management methods, as a set of support services for the creation and development of entrepreneurial activities.
- Entrustment and management methods of start-up funds for innovative entrepreneurship initiatives.

As regards point 1, the Zahle Chamber of Commerce was identified as the future manager of business support services and business incubator management and for the participation in events of interest in the cherry sector. One of the most significant achievements of the Chamber in this respect was the organisation of a symposium at the end of October 2018 on the cherry and table grapes production chains in which fifty employees participated in a series of presentations and discussions focusing on production, logistics in the marketing sector and packaging of the product. Hence the desire to create a system to overcome critical issues and meet the market's needs by staying close to the producers. However, coordination and cooperation with the Zahle Chamber of Commerce took place, particularly regarding the participation in specific events promoting the territory and agricultural products both at the national and international level to expand trade channels and the diffusion of the best agronomic techniques to farmers.

Concerning the second and last point, the aim was to create an ad hoc service within the Chamber. Training ever-present human resources, who capable of accompanying and monitoring farmers and/or producer groups throughout the certification process related to the GlobalGAP (Box 14). Our hope is that actions such as this will promote the self-sufficiency of the Chamber in effectively supporting producers and cooperatives to meet internationally demanded production standards. The Directorate General of Cooperatives was involved in creating new cooperatives and strengthening the cooperatives of Ainata and El Qaa instead. The Directorate collaborated in the training activities in the Qaa El Rim cluster, thus accom-

panying the group of beneficiaries to prepare the necessary documentation for the establishment of the cooperative. It also screened existing cooperatives in the interested areas, offering relevant information on their effectiveness, legal status, updating of financial statements and cooperative composition, with the aim of identifying cooperatives to support.

In this respect, the participation of the director and legal assistant of the Directorate of Cooperatives of the mission in Italy to the Trentino Federation of Cooperatives held between the 10th and 14th March 2019 was an opportunity for training and exchanges focused on the system of the Trentino cooperatives. This also inspired the John Paul II Foundation to develop an educational path later on in schools to promote cooperation in the Bekaa valley, according to the model of the Trentino Federation, with the simulation of school cooperatives managed by students from primary and secondary schools. Various schools are joining this initiative, from areas both involved in other interventions of the John Paul II Foundation (as in the one carried out for apricot producers) and in neighbouring territories.

The continued involvement of the Directorate and its participation in exchange events were pursued to make it functional in setting up a medium-term programme of enhancement of the cooperative system in Lebanon, including a review of current legislation.



BOX 14

THE ACCOMPANIMENT OF SMALL PRODUCERS RELATED TO THE GLOBALGAP

The coordination and collaboration with the Zahle CoC notably take place regarding the diffusion of the best agronomic techniques, the production and circulation of valuable material to farmers, joint participation in specific events promoting the territory and agricultural products both at a national and international level, in seeking new and profitable trade channels and for the certification process and provision of services to producers. With this aim, the Foundation involved some of the Chamber's technicians as farmers' "trainers" through the first training workshops to meet the "Global Good Agricultural Practices System or GlobalGAP" standards, which led some manufacturers to obtain ICM certifications to facilitate exports in September 2019.

The workshops give detailed information for both cultivation and post-harvest phases. In particular, for proper soil, water and other nutrients management, pesticide use and post-harvest conservation and selection. They also provide information on the management of energy and waste within the company and the protection of the workers' health, welfare, and safety, providing images to clarify the meaning of specific recommendations.

AF 4 - WORKERS' HEALTH, SAFETY AND WELFARE

AF 4.4	Protective clothing/Equipment	Protective clothing/Equipment
AF 4.4.1	Are workers, visitors, subcontractors equipped with suitable protective clothing in accordance with legal requirements and/or label instructions and/or as authorized by a competent authority?	Complete sets of protective clothing, which enable label instructions and/or legal requirements and/or requirements as authorized by a competent authority to be complied which are available on the farm, utilized and in a good state of repair. To comply with label requirements and/or on-farm operations this may include some of the following: rubber boots or other appropriate footwear, waterproof clothing, protective overalls, rubber gloves, face masks, appropriate respiratory equipment (including replacement filters), ear and eye protection devices, life-jackets, etc. as required by label or on-farm operations.
AF 4.4.2	Is protective clothing cleaned after use and stored in such a way as to prevent contamination of personal clothing?	Protective clothing is kept clean according to the type of use and degree of potential contamination and in a ventilated place. Cleaning protective clothing and equipment includes separate washing from private clothing. Wash reusable gloves before removal. Dirty and damaged protective clothing and equipment and expired filter cartridges shall be disposed of appropriately. Single use items (e.g. gloves, overalls) shall be disposed of after one use. All protective clothing and equipment including replacements filters, etc. shall be stored outside of the plant protection products' storage facility and physically separated from any other chemicals that might cause contamination of the clothing or equipments No N/A.

In the past, organisations such as the FAO and the Lebanese Ministry of Agriculture had already tried to spread programmes for these purposes, but without reaching the overwhelming majority of small farmers, also due to the high costs of certification and due to excessive dependence on external advice and services located abroad. Therefore, the Foundation's medium and long-term objective is to ensure this achievement even by reducing costs through the active role of the Chamber of Commerce.

3.4.2 Improving support for cooperatives and agricultural businesses



problem suffered by these institutions was the lack of the know-how needed to establish guidelines for allocating funds such as those directed to innovative enterprises. For this reason, the start-up programme made it possible to create an ad hoc methodology, with guidelines also written in Arabic for the development of calls, full proposal formats and selection criteria.

From the first half of the second year, a collaboration between the representatives of the Zahle Chamber of Commerce (CoCz) and Agritech, a company that cooperates with universities and offers incubation services for innovative start-ups in the agricultural sector, began identifying opportunities for training and supporting the CoCz for the launch of the business incubator programme. The business incubator programme developed by Agritech was aimed at an already qualified user and hardly suited to a target such as small cooperative entities and agricultural producers specifically. Therefore, the second half of the year was also the venue of meetings with the Directorate General of Cooperatives to develop a methodology for the involvement of potential small entrepreneurs and existing production cooperatives together with

An important joint work, which saw the participation of the Directorate of Cooperatives and the Chamber of Commerce, concerned the launch of the start-up programme, whose call was launched in the second year and carried out to improve the competencies of the two public bodies on the role of incubation services and their management methods.

the CoCz. In November 2019, the first call was launched, hoping that initiatives such as this could be replicated in the future. In this regard, together with the CoCz technicians at the end of the course, the methodology developed together with the other partners for the complete management of the start-up program was also refined, which was delivered with all the documentation for the future launch of start-up initiatives by the CoCz. Initiatives such as these have an important impact on the institutional building of the Chamber of Commerce and the Directorate of Cooperatives, which will provide funds in the future and provide real support and incubation services to small entrepreneurs and cooperatives. The Directorate acquired greater capacity in mentoring, training and accompaniment to strengthen managerial skills and include cooperatives.

3.5 PROBLEMS ENCOUNTERED DURING THE PROJECT AND MITIGATION MEASURES UNDERTAKEN BY THE JPIIF



The project was carried out during one of the most challenging periods in modern Lebanese history.. From a programmatic point of view, the instability created by the protests due to the crisis first and the lockdown for the Coronavirus pandemic afterwards led to significant delays in implementing important activities for the project. With events, meetings, missions and workshops due to be attended by partners that were not carried out, or that were carried out remotely, or that were mostly postponed for a few months. However, these changes did not compromise the achievement of the objectives.

In essence, the biggest problem was the socio-economic crisis, represented by the structural influx of Syrian refugees and the financial crisis, which finally broke out with the popular uprising in October 2019. The crisis also had a significant impact on the project objectives and on the availability of means to achieve them. The following two paragraphs will try to summarise the major issues the Foundation and involved stakeholders face regarding the crisis and COVID-19, highlighting the mitigation measures taken during the project.

3.5.1 The socio-economic crises

As mentioned in the previous paragraphs, the social crisis, characterised by the emigration of many Syrian refugees to neighbouring areas, has exacerbated the over-supply of low-skilled labour. The Syrians already in Lebanon before the outbreak of the war in search of seasonal work, now are between 70,000 and 90,000 agricultural workers. For the most part concentrated in the Beqaa area (FAO, 2020) Syrian workers are often exploited under the so-called Shawish, with a form that bears many similarities to the Italian informal agricultural labour system named “caporalato”. Low wages, made even poorer by the devaluation of the Lebanese pound, mean that the quality of work is generally poor at important stages of the production cycle. It is also difficult to implement effective training courses for unskilled workers due to the high turnover of training participants. .

With the creation of jobs in Cooperatives, where seasonal workers are employed in new activities to complete the supply chain (such as sorting, refrigeration and packaging), the Foundation hopes to contribute more and more to offer alternatives to women, young people and men to humanly unsustainable employment conditions. For Syrian migrants this is achieved improving their skills and working conditions both through their projects and through the “multiplier” effect that the project may have in the long term, also on agricultural enterprises and cooperatives not involved in the project.

However, the biggest crisis is the financial one, which has led to the closure of many sales companies of agricultural inputs, the increase in imports from China of poor-quality fertilisers and pesticides and a black-market exchange rate that goes beyond 20,000 pound to the dollar.

Notably, with the country’s rating downgraded from B to CCC in November 2019, Lebanese importers must pay for the goods in advance before being placed on board the ship. Furthermore, due to the lack of a currency denominated in dollars and the restrictions imposed by the country on transfers of a hard currency, the Lebanese Central Bank ensured that imports of essential products such as gas oil and medicines were covered by an ad hoc regime in which the Central Bank guaranteed 85% of the hard currency requirements at the official exchange rate of 1508 pound/dollar. The remaining part was obtained from the parallel market (therefore at an exchange rate over seven times higher). Institutions such as the Ministry of Agriculture (MoA), chambers of commerce and representatives of agricultural importers requested that these measures also be extended to agricultural inputs because they are needed to ensure food production in the country. However, the Bank of Lebanon, lacking the necessary resources, was only able to suggest that the importers should contact the European Bank for Reconstruction and Development (ERBD), which could not offer immediate liquidity but only provide guarantees to international banks that offer credit to the applicants. All this adds up to increased distrust by the banks towards importers, with interest rates soaring from 7-10% to 15-22% and in reduced credit repayment schedules from 12 to 9 or 6 months (FAO, 2020).

As a result, many importers in the sector were forced to close, imports of inputs such as fertilisers collapsed, and as shown in Table 3, their prices increased.

	2019	2020
Diammonum phosphate DAP	550	700
Soluble 20 20 20	1800	2000
Complex 12 12 17	780	850
Complex 15 15 15	725	800
Complex 12 6 24	800	850
Magnesium sulphate	400	650
Potassium nitrate	1250	1600
Potassium sulphate	800	1000
Nitrate calcium	600	800
CalMag	640	800

Table 3: Prices of fertilisers in Lebanon in 2019 and 2020 (in terms of dollars/tons)

The same is not true of many pesticides such as fungicides or herbicides, which, however, have been increasingly imported through the black market and bought by farmers, who, having no alternative, have gone against the directives of the Ministry of Agriculture.

Finally, the few suppliers that remained open no longer gave credit to their customers, such as wholesalers, who usually supported the farmers' production in exchange for lower harvest sales prices than market prices (FAO, 2020). Farmers thus have fewer sources of funding and, therefore, even less access to the inputs needed for production. The lack of working capital and access to credit for small and medium-sized producers also limits the possibility of marketing in markets where payments are regularly deferred by 2-3 months (e.g. export, large-scale distribution). The Syrian crisis, specifically in the export market, also broke off meaningful commercial connections by land and forced communication with the Gulf markets by sea or air.

In this context, the Foundation was only able to limit the damage suffered by the beneficiaries con-

cerned, by disseminating a QMS to optimise the use of inputs and by favouring the creation of advanced financial funds within cooperatives to make the activities of their members more economically sustainable. Together to establish Cooperatives aimed at selling a quality product and meeting the standards required by new international channels (such as those in Asia and the Gulf). This proved a good way to mitigate the effects of the crisis on small producers.

Also, the purchase of inputs such as machinery and materials for integrated pest management was challenging due to the escalation of the economic crisis that made the procedures for negotiating prices and payment modalities difficult. This led to the direct import of fruit grading and sorting equipment from Italy and traps from Spain by John Paul II Foundation in collaboration with LARI.

Another undeniable consequence of the economic crisis is the profound energy crisis, which has led to a reduction in the supply of electricity and, at certain times of the year, difficulties in obtaining fuel for generators, particularly in rural areas. The project directed resources to build two photovoltaic plants in the centres of Qaa el Rim and Ainata to mitigate this challenge.

3.5.2 COVID-19



The consequences of the Coronavirus pandemic on the economy of small farmers appear, at least at the end of 2020, to be almost minimal compared to those of the socio-economic crisis. The government measures taken in mid-March 2020 resulted in a momentary closure of banks, which exacerbated the difficulty of doing business in the country. However, the agricultural sector had adverse effects only on importers of inputs operating in the official market. Whereas the worst consequences of the general lockdown fall on the poorest urban areas, the country's "rural" economy did not suffer much, relying primarily on an informal or small-scale markets (FAO, 2020).

The outbreak of the pandemic, on the other hand, influenced the implementation of the project activities that were to be carried out between March and April 2020, so in the last two months initially planned before it was postponed until February 2021.

Notably, it resulted in the closure of outbound and inbound borders, extended periods of lockdown, and

the isolation of territories affected by the project, limiting the movement of consultants and staff to Lebanon and beneficiaries to Italy. Hence the missions on the field of CNR and the Arboreal Archaeology Foundation to complete the bio-genetic analysis of the plants was not carried out. Therefore, the work was only continued remotely. The pandemic-related restrictions postponed the follow-up activities of the farmers selected for the incubation programme and the audit process for the ICM certification of one of the funded start-ups. Again, the workshops and accompanying training events for farmers and technicians of the cooperatives (and carried out in collaboration with partners such as Fair-Trade Lebanon and Zahle Chamber of Commerce) were concluded in e-learning mode. Lastly, the setting up of WhatsApp groups among producers was important to facilitate the exchange of information and technical assistance during periods of increased isolation.



RESULTS AND IMPACT OBJECTIVES ACHIEVED

04

■ OPTIMISING PRODUCTION PROCESSES FOR SUSTAINABLE AND INCLUSIVE RURAL AGRICULTURAL

■ DEVELOPING ASSOCIATED AND INCLUSIVE ORGANISATIONAL MODELS THROUGH SHARING BEST PRACTICES AND STRENGTHENING NETWORKS BETWEEN PUBLIC AND PRIVATE STAKEHOLDERS

■ TRADE STRENGTHENING AND SALES RESULTS

■ EMPOWERMENT OF LOCAL BENEFICIARIES THROUGH THE STRENGTHENING OF PRODUCTIVE, COMMERCIAL AND ADMINISTRATIVE SKILLS



Starting from the general objective of improving the quality of life and the economic and environmental sustainability of small cherry producers in the Bekaa Valley and the workers involved in the value chain, the project carried out by the Foundation had significant results. Many of them are focused on the future and well-being of younger generations, who will now have more reasons to think on the real benefits of moving from the countryside to the city.

The following paragraphs will provide summaries of the objectives achieved in terms of impact.



4.1 OPTIMISING PRODUCTION PROCESSES FOR SUSTAINABLE AND INCLUSIVE RURAL AGRICULTURAL DEVELOPMENT

The pursuit of Sustainable Development Goals 2.4 (for sustainable and resilient agricultural practices) and 15.3 (against soil degradation) was achieved through the accompaniment of the cooperative' and farmers' technicians to innovative agricultural practices, studied based on the soil characteristics on which farmer work on and characterised by the introduction of varieties that best suited the soil specificities.

The development of a Quality Management System for both cultivation and post-harvest was done to disseminate the QMS everywhere to all farmers in the area, direct beneficiaries and non-direct beneficiaries of the programme, with a multiplier effect. In addition, diversification of production and outlet markets will gradually ensure greater resilience to economic, commercial and climate shocks.

The improvement of the sustainability of agricultural practices, which could already be measured at the beginning of 2020 with 75 farmers who had applied the main QMS standards and 35 companies that had obtained ICM certification, also led to an increase in production. This caused greater seasonal labour use from the weakest sections of the population, even in the post-harvest phases.

Specifically, the Ainata and Qaa el Rim Cooperatives for the 2019 season had already hired 24 women in sorting, packaging and labelling activities. The cooperative system thus becomes an inclusive vector of development for small producers, which through good cooperation with the municipalities, can be supported with continuous awareness of farmers and young people starting with the schools even in the future.

4.2 DEVELOPING ASSOCIATED AND INCLUSIVE ORGANISATIONAL MODELS THROUGH SHARING BEST PRACTICES AND STRENGTHENING NETWORKS BETWEEN PUBLIC AND PRIVATE STAKEHOLDERS

The missions carried out on-site by the partners at different stages of the project allowed for the creation or renewal of 4 Cooperatives which have become an important reference point for small producers, including for non-associated farmers who can approach cooperatives to improve the added value of the product. The creation of Business Plans for these cooperatives also made it possible to establish clear rules and procedures for the development and operation of the cooperatives and to benefit from their services. The different moments of sharing good practice with foreign partners, through the participation of representatives of local cooperatives and public institutions in a study tour in Italy or at international events, have made it possible to understand further the benefits of joining together to promote a higher quality product that conforms to internationally recognised standards. In addition to think of the wide range of functions that a cooperative can take on, not only from a production point of view but also from a social and financial one.

One of the most significant results of the project, achieved through the establishment of good cooperative practices, is the impact on individual communities in terms of connection and social cohesion. The widespread stereotype of the “individualist” Lebanese farmer has somehow been challenged by the development of revitalised or newly established cooperatives of the four target

territories, thanks to intensive teamwork, carried out with a constant participatory approach towards farmers. To date, the four cooperatives represent an aggregating element for these territories, a reference point not only from an economic-productive point of view but also from a more socio-cultural point of view.

This growth path was accompanied and supported by local institutions playing a pivotal role in the chain. An important result was to succeed, together with the various institutions involved, in identifying the priorities for each of the bodies responsible for accompanying producers and their cooperatives, avoiding unnecessary and dispersive overlapping of roles. For example, the creation of initiatives such as the training courses for the GlobalGAP promoted by the Chamber of Commerce or phytopathology monitoring conducted by LARI was carried out precisely to improve the connection between local producers and public actors. In particular, the second activity involved 160 companies linked to the mobile application LARI pathogen alert system, 75 of which benefited from the free distribution of traps by the Ministry of Agriculture.

4.3 TRADE STRENGTHENING AND SALES RESULTS

The commercial impact assessment cannot only depend on the indicator represented by the price obtained, but on what will happen in the coming seasons: the aim must be to produce more and more top-quality cherry, therefore “Class A” (with a diameter over 27 millimetres) and “Class B” (25<mm<27) and therefore more appealing to the organised domestic market and international markets. If the product sold with a diameter between 25 and 27 mm was equal to 50% of the total in 2019 and those above 27 mm at 20%, a significant measurable improvement was already estimated for 2020 with an increase of 10% to produce “Class B” and 5% of the total for “Class A” cherries. Although no producer still sells per size, a direct consequence of selling the most selected products on the organised market will be an increase in the average price per package. Looking at the international market, on the other hand, in 2020 the sale of the product at an average price

of 22,400 Lebanese pound yielded 9,600 pound of profit per kilo in the hands of the farmer, thus already 56% higher than the average profit obtained in the domestic market (6,160 pound), without forgetting that most of the remaining 12,800 pounds are for paying the salaries of new employees employed in the supply chain.

The medium- and long-term objective of these processes is to spread cooperation among non-beneficiaries of the Small Farmers project as it is understood that non-associated producers remain vulnerable, with no centres for refrigerating, sorting, grading, packaging and labelling products, as well as sufficient differentiation of markets where to sell the product. This results in low bargaining power and low resilience on the local market, in addition to an average price obtained per kilo not exceeding 50 cents of dollars.



4.4 EMPOWERMENT OF LOCAL BENEFICIARIES THROUGH THE STRENGTHENING OF PRODUCTIVE, COMMERCIAL AND ADMINISTRATIVE SKILLS

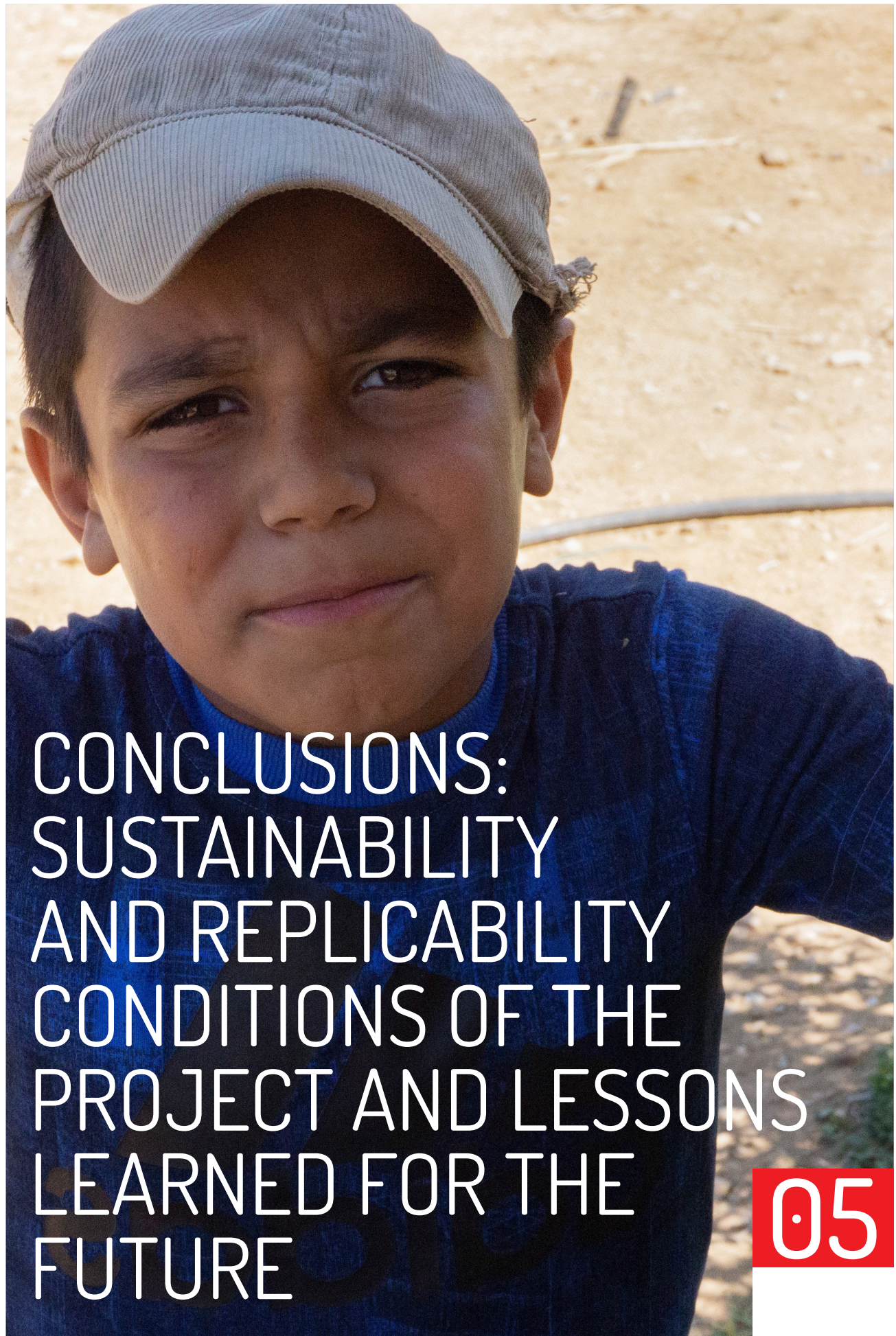


Implementation of the John Paul II Foundation's Vision of Change project has not only strengthened the bargaining power of small agricultural entrepreneurs but has also contributed to reducing the social gap between women and men, refugees and locals, the young and the old. Certified quality-oriented production retraining has fostered stable access to new markets, offering continuity to new jobs even after the project end. Training activities have ensured the development of skills that will gradually strengthen the contractual power of workers and increase their future job opportunities.

The project acted on existing agricultural enterprises by improving production, trade and management to promote a finished product that guaran-

tees compliance with internationally recognised standards and access to organised markets. Based on quality control in compliance with the Quality Management System, the strategy made it possible to reduce losses, especially for post-harvest and to increase the economic return of the product, thanks to the introduction of more productive techniques in the medium and long term by increasing quality, allowing direct sales to the most profitable markets and thus bypassing intermediaries.

In a vision of project continuity, the improvement of institutional capacity building, carried out through the direct involvement of the Chamber of Commerce technicians, Municipality and Directorate of Cooperatives, will enable the Bekaa Valley farmers to be supported by competent people who offer active, complete and more usable services than in the past. In other words, they will no longer be faced with an unfinished puzzle, but a system of services, source of training, updating and real support, thanks to a process of strengthening ownership also by partners such as the Chamber of Commerce that will provide training and commercial support services for producers.



CONCLUSIONS:
SUSTAINABILITY
AND REPLICABILITY
CONDITIONS OF THE
PROJECT AND LESSONS
LEARNED FOR THE
FUTURE

The Foundation carried out a development process in the context of intervention to promote a sustainable agricultural activity.

TECHNICAL

Starting from the technical aspects, introducing innovative and more performing practices, both in terms of know-how and physical inputs that allow farmers to access to new markets and compliance with standards guaranteeing product quality.

ECONOMIC AND FINANCIAL,

From an economic and financial point of view, the spread of a strategy based on quality control led to the reinforcement of cooperative structures also in terms of financial self-sufficiency and the supply of fit to market products. Cooperatives are now able to access both national and international diversified markets, with significant increases in both sales prices and net¹ operating margins for producers, as demonstrated in the last two years of the project. This is determined by:

- Improvement of the production phase, with the use of inputs that have less impact on natural resources and which are obtained at reduced costs.
- Strengthening the post-harvest phase, both in terms of the provision of the necessary infrastructure and technical knowledge, with a positive impact on the quality of the final products and greater diversification of the product based on packaging and size.
- Aggregation of producers, who can face the market in a cooperative and under a unified brand, with increased visibility, volumes offered, and the diversification of products and exploiting economies of scale.

INSTITUTIONAL

From an institutional point of view, sustainability has been favoured by an ownership strategy that provides for the direct involvement of local authorities from the planning stage of the project to become a valid and active point of reference in support of the farmers in the chain.

ENVIRONMENTAL

Finally, from an environmental point of view, there has been a reorganisation of production, which has allowed the adoption of innovative agro-ecological techniques to preserve the environment and to sustainably use natural resources, which is promoted by awareness and training actions for farmers.

This sustainability strategy is already being applied to beneficiaries of the services provided by the project, mainly thanks to the institutions involved. Many of the conditions for replicability of the project are already in place.

In particular, the Directorate of Cooperatives now has a new, more sustainable evaluation scheme, and the Chamber of Commerce can provide training services on GlobalGAP.

LARI is able to offer alert system services more actively, closer to individual farmers.

In this manner, these institutions present themselves as a more prepared counterpart for all types of farmers seeking support by acquiring new competencies that complement the old ones systematically.

¹ Or "net profit post-harvest direct costs"

Lessons learned for the future

Identifying the main conditions of sustainability and replicability with the project also helps us draw on the “lessons” to tackle the challenges that will arise in the future more consciously.

In fact, although significant results have already been achieved in terms of production retraining, through the introduction of eco-sustainable practices that meet a precise production specification represented by the QMS, many aspects on which this project intervened are still to be developed and examined in-depth and will have to be the subject of future studies. For example, it cannot be said that objectives such as the spread of cooperative culture, the application of certification and ownership by beneficiaries have already been sufficiently achieved.

The implementation of the agribusiness strategy has therefore caused thoughts that will influence future programmatic initiatives on four focal points:

1) OWNERSHIP OF BENEFICIARIES.

This is the most critical aspect of the project’s long-term success, both in terms of impact and sustainability. The objective is to ensure broad active participation of target beneficiaries, individual producers and local actors such as public and private institutions at the various stages of intervention, in order to ensure the gradual consolidation of the level of ownership of the community involved in relation to the action taken (“ownership”) and with it gradually taking charge of the structures created and/or upgraded through the investments of the programme. Beneficiaries should be actively involved in the analysis phase, in the planning phase and in the strategy management phase. In the analysis phase, to understand the economic, political, social and cultural dynamics of the area of intervention and therefore the main challenges for socio-economic development of the area. In the planning phase, to raise awareness of beneficiaries and their direct involvement in the programme. Finally, in the management phase, to verify the respect of the producers of the Quality Management System and to monitor the real contribution made by the different stakeholders to the development of the Cooperative. Ownership also concerns local institutions, as active components of the change aimed at improving their presence on the ground and the accessibility of producers’ services, particularly those most disadvantaged by bureaucratic or cultural obstacles.

2) TRADE BASKET.

It was understood that the export or sale to large-scale distributors requires quality certifications. Therefore, in applying a QMS, the most important part is the getting ICM certifications and, more generally, GlobalGAP. For this reason, local institutions (such as the Chamber of Commerce and the Directorate of Cooperatives) should encourage the private sector to evolve in line with the changes promoted by the development programme and provide assistance. Rather than starting from scratch, future projects should ensure the continuity of the level reached in providing producers with those goods and services easily and at fair prices, which are generally not available on the market but are necessary to comply with the QMS directives and thus apply agricultural practices that are considered an improvement.

In this context, cooperatives or consortia are a partner that in virtue of its structure is more sustainable than individual producers, both for the procurement of production inputs and to open diversified commercial channels. However, the problem remains for financial advances needed to pay for the shipments and the product given by the farmers. In the last semester, the project overcame this problem by involving the target cooperatives in a start-up programme to establish a first advance fund (Export Working Capital) to be used exclusively to anticipate the necessary costs for export. In the future, subsequent programmes should consider monetary liquidity problems, especially in countries experiencing economic crises such as Lebanon, where the banking and credit systems are unable to support the productive system, particularly in the agricultural sector.

3) THE QUALITY CONTROL SYSTEM.

It has become a truly applied approach to Cooperatives and is not just written on paper as it used to be. Exports to the Gulf countries, which led to good results, saw a phase in which quality certification was increasingly required and of primary importance. This has led to the diffusion of a systemic approach to quality control within cooperatives.

4) THE LEGISLATION ON COOPERATIVISM.

The project has favoured a new, less restrictive interpretation, particularly on management aspects. In this respect, thanks to the elaboration of the Business Plan and the work carried out together with partners such as the Trentino Cooperatives, an upgrade has been promoted that today allows leveraging the tools that drive cooperatives to develop their business without limiting their field of action. The project has transferred to the cooperatives the technical knowledge and logistic-administrative practices to cover all necessary steps from the to deliver the product by farmers to the international shipment by air, making the export volumes significantly high over the last year.





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