2014

Value Chain Analysis for Olives & Derivative Products

Olive Oil, Tapenade, Infused Oils & Soap

FAIR TRADE LEBANON

Lory Boutchakdjian
FAIR TRADE LEBANON
12/22/2014

Table of Contents

EXECUTIVE SUMMARY

The market for high quality **table olives** seems to be promising if directed towards a niche market focused on social awareness and high quality. In the domestic market, organic certification can provide this added value, while in the export market, organic and Fairtrade certifications will be highly appreciated. Abroad, markets to be focused upon for high quality olives are: Slovakia, Norway, Luxembourg, Finland, Cyprus Denmark, Ireland, Austria & the Czech Republic.

The markets for **olive oil and tapenade** seem to be wider than that of Lebanese table olives*. Even though the prices of Lebanese olive oil are higher, there are at least 2 niche markets for it. One of them is composed of Lebanese expatriates who appreciate the taste of Lebanese high quality oil and the other consists of consumers who appreciate organic and Fair Trade certifications. To target these niche markets, marketing and branding the olive oil should be focused on both Lebanese authenticity and high quality. Quality can be ensured through certifications, the most important of which is the organic certification the demand of which is increasing in a steady way. Other certifications can include the Fairtrade certification, the newly established TEQ certification and Extra Virgin branding. Markets to be focused upon for olive oil exports are: Brazil, Germany, Portugal, UK, Japan, Canada, Saudi Arabia and UAE. The tapenade's market is rather exclusive as it is considered a gourmet product. Tapenade from Aakkar can be competitive price-wise in the European market, if quality is well monitored.

In terms of leverage points, the study also found that there is a lack of cooperation between olive farmers, and thus lack of bargaining and commercial power. As farmers in Lebanon cultivate small plots of land, therefore they cannot directly export since they do not have large quantities of produce/products. The study recommends encouraging cooperation through an increased activity of cooperatives on marketing and branding. In terms of the improvement of technical practices to increase productivity and improve quality, recommendations include the use of harvesting tools (especially pneumatic poles) to minimize branch injury and focusing on higher altitude plantations that capture enough rain to ensure biannual yield. Irrigation is another leverage point for the production of table olives since supplemental irrigation of olives increases the mean fruit weight and the number of fruits per plant (while the oil quality is decreased) In terms of processing olives for the production of table olives, equipment that cause an incision on the olive can accelerate the process as opposed to doing it manually.

* The reason behind this is that Lebanese olives have a bitter taste and European consumers are more likely to buy the Kalamata sweet olives

In terms of branding and marketing, in addition to certification, the message should focus on Lebanese culture and heritage in order to attract Lebanese expatriates and Middle Eastern food gurus.

INTRODUCTION TO THE SUBSECTOR

AIM OF THE STUDY

This study provides a value chain analysis of olive cultivation in the regions of Aakkar and Donniyyeh of Northern Lebanon. It aims to identify the bottlenecks present in the value chain of olive cultivation and processing that prevent the development of the industry, and the leverage points that can be used to improve the quality of the end-product in such a way that it valorizes the peculiarity of the Lebanese Olive products and justifies its higher price compared to competitors on an international level.

The study brings to the forefront the state of olive cultivation in Aakkar and Donniyyeh, from cultivated areas to varieties present to cultivation techniques used. The supporting organizations, machinery available, processing centers and cooperatives present are also indicated. In addition, this value chain analysis suggests steps for the improvement of cultivation techniques, in addition to ways to improve the processing, packaging and storage activities in order to ensure the production of the highest quality product possible in the context of the designated area. The analysis includes an assessment of the by-products that can be reused in order to minimize waste, minimize the environmental impact and maximize the benefits and return of such endeavors.

Moreover, this study gives an overview of the marketing activities carried out in Aakkar & Donniyyeh for olives, olive oil and other products derived from olives, while showing the main actors of the industry in this area, keeping in mind the regulatory framework in which industry operates. It also pinpoints the markets available on the national, regional, and international levels, through an analysis of the evolution of imports and exports in Lebanon, the main importers and exporters of the region and internationally, in order to bring to light the opportunities of marketing the olive products of the Aakkar and Donniyyeh regions.

REASONS FOR SELECTING THE SUBSECTOR

Production

Lebanese olive production is one of the highest amongst the cultivated crops in Lebanon. In fact, in 2012, it was rated as one of the top 10 commodities both in quantity and in value. In terms of size, a large number of the largest planted areas are planted with olives in the Aakkar region. Therefore, olive production is

also one of the few sectors in agriculture that can be easily commercialized on a large scale, especially in Aakkar.

Exports

Another reason for selecting this sector is the potential for increasing exports. Exports of Lebanese olive products are still quite low: olive oil exports have not reached 4000 tons in the last couple of years. The reasons are many, including lack of cooperation therefore lack of exportable volumes, lack of quality management, and lack of marketing skills. With the increase in the number of Lebanese expatriates and the increasing popularity of Middle Eastern, and especially Lebanese food in the developed countries, the Lebanese olive oil export market has potential. The unique organoleptic qualities of Lebanese olive oil that are so nostalgically longed for by expatriates can easily open the market for Lebanese oil, granted some changes be made in terms of monitoring and marketing.

Growth Potential

As many already know, the Lebanese olive sector has ample room for improvement: better marketable yields and higher value sales can be achieved by organizing the sector in terms of production and in terms of marketing.

Export standards are not currently achieved by most olive farmers, who always complain about the lack of commercialization. The change of some activities, such as eliminating packaging and storing in plastic containers and monitoring quality during the whole value chain, can allow the acquiring of certifications that guarantee high quality. Cultivation techniques can certainly be improved upon to provide a more regular biannual yield, and cooperation between farmers can create economies of scale, thus decreasing costs without compromising on the quality provided by small scale production. Currently the average Lebanese farm size for olives is only 0.3 ha. New techniques can also adapt the production to climate change, which has affected the yield tremendously in the last couple of years.

All these improvements can enlarge both the domestic market by providing proof of quality thus competing with cheaper low quality imports and the export market.

THE MARKETS

THE DOMESTIC MARKET

The Domestic Market for Olives

The consumption of table olives has been around 25000 tons in the last couple of years. The average of table olive imports in Lebanon is 3868 tons/year.

The highest amount of imports consists of olives preserved otherwise than in vinegar or acetic acid. The average of the imports of this type of olives in the last 4 years is 2039 tons. This fact may point out to the need of pitted table olives that have a long shelf-life, however, it also shows the lack of awareness of the low-quality of these olives, which are usually treated with chemicals such as caustic soda or lye for fast commercial production.

The imports of fresh/frozen olives have seen surges since 1990; however, they are generally close to null, while there are hardly any imports of olives provisionally preserved in acetic acid or vinegar.

The Domestic Market for Olive Oil

The Lebanese production is higher than its consumption, at an estimated self-sufficiency rate of 122%. However, Lebanon imports large quantities of olive oil from abroad. In fact, the trend is a non-steady increase of imports since 2004. However, imports also vary depending on the annual local production, which dwindles quite a lot, because of bad harvesting practices.

The largest amounts of olive oil imported are of the virgin type. At an average of $2/liter, the imported virgin olive oil is around half the price of Lebanese olive oil. However, a main problem in the domestic market is the lack of knowledge about the quality of the cheaper imported oils that are often mixed with cheaper oils and colored. Non-virgin non-chemically modified olive oil is imported in much smaller quantities. Other (blended or not) oil derived from olives are also imported at negligible quantities.

The highest percentage of imported olive oil in 2012 came from Syria and Tunisia. Nowadays, the Syrian imports have decreased because of further deterioration of the security situation.

The Domestic Market for Tapenade

Tapenade, i.e. olive paste, is not widely known in the Lebanese market, and is mainly used in select restaurants, especially Italian ones. It is available in large supermarkets, however only few brands are present. For instance in Tsc, there is only one brand available, 'Al-Baidar', which has two types of tapenade: green (2500 LBP for 200g) and black (3800 LB for 200g). Other supermarkets include a few more Lebanese brands of black olive paste like Virgo (6737 LBP), Boulos (around 6000LBP for 300 g) and Zeyti (3800 LBP for 250 g)

THE EXPORT MARKET

The Olive Export Market

Overall, the average olives exported in the last 4 years is 2003 tons. Fresh or frozen olive exports have been close to null since 1990, just like the exports of

provisionally preserved olives. However, the largest exports are sent in the form of olives preserved otherwise than in acetic acid or vinegar and not frozen. These exports have seen an overall upward trend since 1990.

On the international level, the top 5 importers of fresh or provisionally preserved olives in terms of quantity are: Italy, Spain, Portugal, USA, UK. The top importers of otherwise preserved olives in terms of quantity are the USA, Russia, Brazil, Italy, France, Germany, UK, Canada and Romania.

In terms of unit value however, the top 5 importers of olives are: Slovakia, Norway, Luxembourg, Finland, Cyprus Denmark, Ireland, Austria & the Czech Republic & others. Therefore, for high quality olives, the markets in these countries are more promising than others. On the regional level, imports of fresh olives are negligible; however preserved olives are imported more widely by Saudi Arabia, UAE and Kuwait.

The Olive Oil Export Market

In the last 4 years, the average of the exports of olive oil was 4783 tons. When it comes to olive oil exports, there has been a more or less steady upward trend since 1990. In fact, in the last 4 years, exports have grown at a CAGR of 14%, reaching more than a third of domestic production.

The largest amount of olive oil exported is the non-virgin plain one. However, we see an increase of the exports of virgin olive oil, which shows an increased appreciation of the quality of the Lebanese oil in the international markets.

The main countries to which Lebanese olive oil is exported are as follows: USA, Saudi Arabia, UAE, Kuwait, Canada, Qatar, Australia and others. It is interesting to note that exports are directed towards the Lebanese Diaspora, such as those present in Australia and Brazil.

On the international level, the top olive oil importers are: Italy, USA, France and Portugal. However, it is important to know the higher quality importers. In fact the top importers of the most expensive virgin oils are Brazil, Germany, Portugal, UK, Japan and Canada. On a regional level, there is real potential for exporting Lebanese quality oil to Saudi Arabia and UAE who are the largest importers in the region.

REGIONAL COMPETITION

Regional Competition for Olives

On the regional level, the main exporters of fresh/frozen olives are few: Egypt, Oman, Morocco. The main exporters of preserved olives are: Morocco, Turkey, Egypt, Iran, Tunisia, and Syria.

Regional Competition for Olive Oil

On the regional level, the main exporters of olive oil are: Tunisia, Syria and Morocco.

Regional Competition for Fairtrade certified Olives and Olive Oil

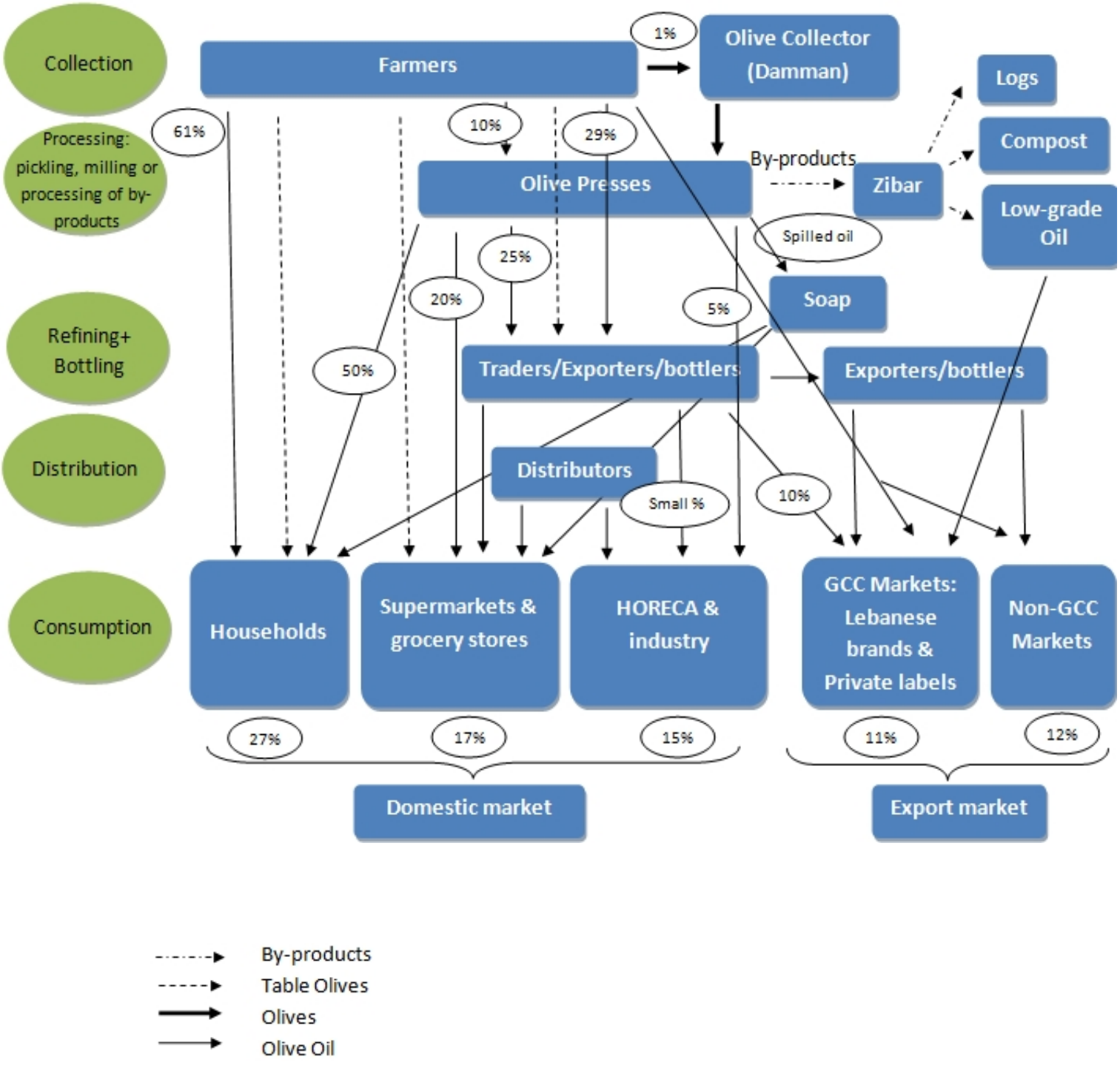
On the regional level, the biggest competition for Fairtrade certified olives and olive oil is "Zaytoun", a Palestinian initiative that provides olive products ranging from olives to soap. Their products include: organic fair-trade extra virgin olive oil, organic fair-trade nabali green olives, organic fair-trade tree-ripened black olives, olive oil soap and olive twig baskets.

This is a major competitor since it has an established market and has grown in an exponential rate in the UK, however Lebanese olive oil can also have a similar market, considering that the prices of the Palestinian oil can potentially be competed with. A bottle of 250 mL costs £7 i.e. $11 on UK websites. A website claiming to be selling at cost is selling the 500 mL bottle for $11. Lebanese can also provide more evolved products like tapenade, infused oils and stuffed olives.

Another fair-trade olive producer is "Canaan Fair Trade". Their products include: organic Nabali green olives, organic Nabali green olive tapenade, olive almond spread, and different kinds of olive oil like coop blend olive oil, raw olive oil, infused olive oils, Canaan estate olive oil, Rumi tree olive oil and Nabali tree olive oil. All are organic, cold pressed, extra virgin and fair trade USA, and Fair for Life certified. This competitor has a larger array of products, has its own shop in USA, and seems well established. However, it seems that its strength is focused on the USA market, therefore focusing on the European market for Lebanese olive products seems more fruitful.

SECTOR MAP

VALUE CHAIN MAP



The total olive cultivated area in Aakkar is 99,453 Dunums, 9,710 dunums of which are consumed in the household, while 89,743 dunums are sold. This means 90% of the yield is sold, while 10% is consumed in the household.

CHANNELS AND GOVERNANCE STRUCTURES

Channel 1—Directly Marketed Products (fresh olives)

In Aakkar, olives are not usually ensured (damn) by traders before the growing season, but may be ensured by individuals for their own consumption. Payment is only done either before harvest (if it is ensured) or after olive oil production, since olive oil is considered a luxury product, the tasting of which is crucial before buying.

Olives can be ensured before harvest however, when the trader takes over harvesting and post-harvest treatment. If the olive oil producer or trader decides to ensure the olives before harvest, the cost is estimated at $110/shoumboul in 2014, i.e. $0.88/kg. Usually the price of this insurance (daman) determines the price of the olive oil for the same year.

Channel 2—Semi-Finished Products (olive cake)

One of the by-products of the olive production process is the dry-matter, called 'zibar'. This is either used as organic compost for olive trees, or can be further processed to produce low-quality oil. However, oil is rarely extracted from dry matter in Aakkar and Donniyeh.

Channel 3—Final Products (table olives, olive oil, soap, logs, compost)

The final products can include olive oil, table olives, stuffed olives, and olive paste. Other final products include: organic compost made from olive oil by-products, soap, and logs for heating made from compressed by-products of the olive oil production process. The main markets for olives and products in Aakkar and Donniyyeh are considered the Tripoli and Beirut markets.

Around 70% of the olive trees are destined to the production of olive oil, and the remaining ones are destined to the production of table olives. Table olives are marketed to relatives and friends. In addition, olives are sold directly or through wholesalers to supermarkets, small mini-markets and shops. In most of the cases, olive oil is marketed directly from farmers to consumers (relatives and friends) in 16 kg plastic containers (18-20 liters gallons) with no indication on grade or quality but very much dependant on the farmer's reputation. Farmers supply some olive processing units that will package, label and market the products (either sell it in supermarkets or export it)

61% of the olive commercialization in Aakkar takes the form of farm commercialization. Most people prefer buying from the farmer, since they are wary of the quality of the oil purchases at the olive press (a lot of times, oils of all farmers end up mixed together). 20% is commercialized in the market, only 1% is sold to intermediaries before harvest, and another 1% is sold with the existence of a contract. The quantity that is sold through cooperatives is negligible, which shows the lack of development of these institutions. This data confirms that there is a lack of cooperation between olive farmers, and thus the

lack of bargaining and commercial power. As farmers in Lebanon cultivate small plots of land, therefore they cannot directly export since they do not have large quantities of produce/products.

Around 25% of traders buy from the olive press. They also buy directly from farmers, however only a negligible number of traders from outside the area ensure. Restaurants usually buy oil either from the olive presses or directly from the farmers.

Spilled olive oil is usually processed and turned into soap, which is traditionally sold in small shops or souks.

Most farmers sell in the local market, to households or to traders/companies/small shops, at an estimated distribution of 50%, 50% each. Most olive and olive oil exporters in the Aakkar and Donniyyeh regions are not big exporters, and do not have well-studied marketing strategies (they depend on personal connections and luck). Only a couple of small companies have logos and account for less than 10% of Aakkar's oil production.

Around 50% of the oil produced in the area is extra virgin or virgin, while 15% is olive oil called 'zeit selik', produced from olives fallen from the tree, and another 15% is industrial oil.

DISCUSSION BY FUNCTION

Production

Production Overview

Olive & Olive Oil Production in Lebanon Net Weight Tons							
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Olives	76,200	83,000	86,700	81,000	90,307	95,000	97,000
Olive Oil	7,500	11,000	11,000	10,000	11,300	13,300	14,700

Source: FAOSTAT, 2014

Table Olive Production in Lebanon (Net Weight Tons)							
Year	**2006/ 2007**	**2007/ 2008**	**2008/ 2009**	**2009/ 2010**	**2010/ 2011**	**2011/ 2012**	**2012/ 2013**
Table Olives	6,000	22,500	19,000	19,500	40,000	17,500	17,500

Source: IOC, 2013

There has been a steady decrease of olive planted areas. This trend is due to rural migration and the disinterest of the youth in agricultural production. It is also due the low profit margin of oil production, estimated to be less than 20%. Lebanon produces around 90,000 tons of olives, around 11,000 tons of olive oil and 16,200 tons of table olives.

The production of olives, olive oil and table olives has seen an increase in trend. In average, 100,000 tons of olives are produced annually. However, there was decrease of per unit value, which was $1341/ton in 2008, $1208/ton in 2009, and $800/ton in 2012.

The majority of olive oil in Lebanon, 41%, is produced in the North. Aakkar accounts for 18% of the production, which reaches around 2,000 tons. Around 60% of the cultivated areas in Aakkar are planted with olive trees. 87% of the olive cultivated land is the property of the farmer, while 8% is transitory and 4% is leased land.

Existing varieties and their pattern of distribution

In Lebanon, there are 13 cultivars, 4 used for the production of oil, 1 for the production of table olives, and 8 that have dual purpose. This number pales at the mention of the number of cultivars present elsewhere: there are 476 in Italy and 99 in France…

In Aakkar and Donniyeh, around 85% of olives are harvested green, while around 15% are harvested black. The oil productivity of olives in Lebanon ranges from 18 to 25%. However, on the ground, this number differs from one region to the other.

Input Supplies

In terms of irrigation, olives in Lebanon are mostly rain fed. In North Lebanon, 83% of trees are rain fed, while were 17% are irrigated are irrigated through a river, a water source or a well. Most farmers affirm that there is no need for irrigation, and if irrigated, the oil becomes watery.

In terms of disease prevention, the main pesticides used in Aakkar and Donniyyeh are called 'Jinzara' (in the beginning of spring) sprayed to prevent especially the common Peacocke Eye Disease ("عين الطاووس") that appears on leaves, and 'Dammit Ward'.

Subsector Functions and Participants

Cultivation:

The spacing between trees in Aakkar is between 5 to 7 meters. It's usually 5.5-6, for easy harvesting. The average yield of the olive tree in Aakkar is estimated between 30-50 kg. The yield depends on the age of the tree and water consumption.

The average age of Lebanese olive trees is 150 years. In Aakkar, there are both newer and older olive plantations. New olive plantations are concentrated in the higher regions: Akroum, Qobayet, Andkit. Older plantations, which are usually more than 100 years old, are situated in villages like Berqayel, Beqarzleh, Aindara, Ilet and Hassiyeh. Younger trees have larger fruits and ripen earlier, while older trees have a higher average yield.

The costs involved in cultivating olives and producing olive oil are: Ploughing costs, which is usually done once or twice a year. This cost is estimated to be around 100,000 LBP for 10 dunums (1 hectare). Pruning does not cost much, since this is usually done by the farmer.

Collection:

The harvesting in Aakkar stretches from mid October through November. Usually, farmers in the North wait for the first rain, since the fruit then increases its weight and then harvest 15 days after it. However, to ensure the highest quality possible, olives must be harvested green, in order to minimize the acidity level of the oil. Waiting for the first rain for an increase of weight is useless for oil production purposes, since the water in the fruit is removed anyways. For table olives however, the olives must be harvested later: black table olives should be hand-picked when two-thirds or three-fourths of the flesh is black. Green olives should be harvested when their color becomes yellowish green, but are still firm.

For collection, farmers resort to the help of their relatives and/or hire seasonal workers to help them. Conventionally, a cloth is spread on the ground surrounding the tree and the branches are beaten with a stick to shake the olives and make them fall on the cloth. In the last 2-3 years however, we have seen a rise in the number of people using harvesting tools, mainly the scissors-type harvester called 'Masht'. The cost of harvesting ranges from 480 LBP/kg to 538 LBP/kg. A scissors-type harvester costs 4000 LBP. Fewer people use shakers 'farrata', since these cost between $1000 and $3000. Usually the cooperatives have these tools. In Aakkar, there are 20 shakers, 18 of which are owned by 14 individuals and 2 of which are jointly owned. This number also shows the lack of cooperation between farmers. The scissors-type harvester is owned both by individuals or cooperatives, who both rent them out if needed. Another alternative is to use a machine that vibrates the olive tree, which costs between $5000 and $6000 and would decrease the cost of harvesting to 423 LBP/kg.

Processing Techniques

Processing of table olives:

Processing of olives in Aakkar and Donniyeh is still done through the traditional method manually which is time consuming. Olives are packaged in containers, usually plastic if they are to be sold, but glass if they are for the household. Factories in the area mainly make 3 types of table olives: wild olives, cut olives and black ones. On an international level however, there are infinite techniques of processing table olives. Commercially produced olives are treated with chemicals for fast processing and de-bittering, usually using caustic soda or lye (sodium hydroxide). Secondary processing consists of stuffing olives. This is done less often in Aakkar, as it is very time-consuming to do it manually.

Processing of Olive Oil

First, an olive shredder is used for the elimination of impurities. Then, the olives are transformed into paste until a mix of oil and water is produced. The water is then separated by centrifugation and the oil is produced. Usually, it is then filtered in ordered to give it a clear appearance, and most importantly to

increase its shelf-life, as the little particles in unfiltered oil accelerate the acidification process. Newer modern equipment use warm water during filtering.

Packaging

In most cases, olive oil is sold to relatives, friends or acquaintances in 16.5 kg plastic gallons holding around 18 liters of oil, which cost 4500-5000 LBP. The labeling is not regulated, thus there is no indication of the grade of the oil, and sales are dependent on the farmer's reputation. There are a few olive processing units that buy olive oil farmers and package, label and market the products (either sell it in supermarkets or export it). They use glasses bottles or containers with a total capacity of 0.5-5 liter. Glass bottles of 5 kg cost from 4000 to 5000 LBP. The label indicates product category and manufacturer.

Storage

Olives are stored in nylon bags. Raw olives can be preserved for 4-8 weeks at a temperature of 5-10 C°. Temperatures of less than 5 C° cause browning, while aerobic conditions increase the shelf-life, which is around 1 to 2 years. Olives meant for oil production are not stored more than 2 days before to avoid high acidity levels. It is usually either stored in the house, or at the olive press, usually in plastic gallons. A small percentage of people have stainless steel containers. The best material for storage is pottery, which is not available nowadays. The next best material is stainless steel, while plastic deteriorates the quality of the oil.

Olive Presses

There are 274 registered oil mills in North Lebanon. There are also several firms that compress the olive dry matter from the olive mills to form logs.

More than 85% of the registered mills are traditional (using stone milling) resulting in lower productivity than the newer automatic or semi-automatic, which represent 10-15% of the mills. Modern mills are more expensive than traditional ones, but they have more capacity per hour, extract more oil, and require less labor, which results in a decrease of final price of around 10%. Many of the newer equipment use heat to accelerate the extraction process and increase oil yield, while the older ones are cold pressed. Local customers usually prefer oil from the traditional presses, saying that new mills produce thinner oils.

There are 2 ways of payment to the mill: paying cash or paying by giving a share of the olive oil (around 8.5% in Aakkar). Money wise, they can ask for 10,000 LBP or 12,000 LBP for every gallon regardless of the type of press. Olive presses usually ensure the transportation of the olives to the press and the delivery of oil to the farmer.

The equipment is usually owned by mill owners. There are 75 olive shredders in Aakkar, 72 of which are owned by 72 individual cultivators, while

only 3 are jointly owned. Yet another piece of information that points to the lack of cooperation between olive growers, and the power of the olive presses. There are 23 olive sorting machines, which are very useful when picking larger olives for table olive production. These machines are few, since only few people produce table olives in quantities large enough to be marketed. However, 9 of these machine are jointly owned, which shows the potential capacity of producing larger quantities of table olives at the level of cooperatives if needed.

Growers

In Aakkar, growers' companies that have marketing activities are few and in between. They are mainly small scale, belonging to one person or a family. Cooperatives of olives and olive oil in Aakkar and Donniyyeh are rarely marketers or exporters and only distribute pesticides if provided by the ministry of agriculture or the renting of machines. The ones present in Aakkar are located in Berqayel, Qabiit, Dreib, Halba. Some processing cooperatives produce olive derived products, such as the cooperative of Tekrit that produces almond stuffed olives, pepper stuffed olives and a mix of olives, fennel, walnut and lemon in oil.

Marketers/Exporters

As mentioned above, firms that have marketing activities are very few. Lab tests are rarely done unless the oil is going to be exported, because of its cost and the lack of regulation of labeling in the domestic market.

Two companies in Aakkar are exporting tapenade. The price of table olives varies according to the variety, quality and quantity purchased. Since 2008, the prices have decreased, even though domestic consumption has increased. This indicates an insurgence of cheaper imports from abroad, mainly from Syria. However, these prices have started to increase now. According to one estimate, the price of table olives will be around 3,500 LBP/kg.

If Fairtrade certification is chosen, the prices set by Fairtrade international can easily compete with Lebanese olives. Fairtrade olive prices in Western Asia, to which Lebanon belongs to, are as follows: conventional olives need to have a minimum price of € 0.7/kg and a premium of €0.07, while organic olives need to have a minimum price of € 0.8/kg and a premium of €0.08.

In the last couple of years, the price of olive oil has ranged from 80,000 LBP to 160,000 LBP per gallon of 16.5 Liters. Prices had been decreasing since 2000 because of the increase of Syrian imports with the GAFTA full implementation, however after the conflicts in Syria, the prices have increased. Olive oil is cheaper if bought at the mill than if bought directly from the farmer, since it is perceived to be of lower quality. Prices may also vary according to the region in Aakkar itself. The price of olive oil will be higher in 2014, because of low supply. In Aakkar, the estimation ranges from 150000 to 195000 LBP/gallon.

Internationally, the price of olive oil has been on average $65/gallon in the last 4 years. The price of extra virgin oil costs $80 LBP/gallon in 2014. Syrian oil, on the other hand, ranged from 50,000 to 70,000 LBP. Fairtrade olive oil prices would set the price around 30% higher. Fairtrade olive oil prices for Western Asia are as follows: For conventional oil the minimum price of virgin olive oil should be € 2.9/kg and the premium: €0.4. For extra virgin, the minimum price should be € 3.3/kg and the premium: €0.4. For organic olive oil, the minimum price of virgin oil should be € 3.3/kg and the premium: €0.5. For extra virgin olive oil, the minimum price is € 3.8/kg and the premium is €0.5.

LEVERAGE POINTS

Cultivation

There are several leverage points that can be improved during cultivation. In terms of fertilization, the standard 17-17-17 NPK is used at all times, for all types of soil. A more careful study of the soil can determine the right amount of each nutrient needed based on the nutrient requirements of olive trees, and can even allow a decrease in costs.

Irrigation is another leverage point for the production of table olives and olive oil. This should be done only for table olive trees, since supplemental irrigation of olives increases the mean fruit weight and the number of fruits per plant, but the oil quality is decreased. For table olives, the recommended amount is an ETc of 75%. For oil, to ensure yearly bearing, it is best to concentrate on cultivations on higher altitudes that naturally receive more rain. To increase yields and build a strong skeleton necessary to support fruit load, appropriate pruning schedules should be followed. It should be done every 2 or 3 years.

It is also an important value added for Lebanese olive oil to be organic certified (See section 'Marketing' below). It is relatively easy to switch to organic agriculture for olives, since the amount of pesticides usually used is not high to begin with.

Collection

For the purpose of producing high quality olive oil, olives should be harvested in early October, rather than waiting for the first rain. Harvesting early yields oil that is lower in acidity and has a longer shelf-life.

In terms of harvesting technique, hand-harvesting with poles should be completely dropped, since it is time-consuming, , and causes a high percentage of fruit damage, in addition to damaging annual shoots necessary for the following year's crop. This is one of the main reasons for biennial bearing in Lebanon. It is advisable to use pneumatic beating poles, which should be used when the fruit is ripe and on trees destined for olive oil production.

Processing

In terms of processing olives for the production of table olives, equipment that cause an incision on the olive can accelerate the process as opposed to doing it manually. When it comes to olive oil, the processing needs to be monitored in order to ensure high quality to meet export standards.

Marketing

In terms of marketing, the export potential of Lebanese olive oil is high. Thanks to its unique organoleptic qualities, the Lebanese olive oil has a potential market in countries with high numbers of Lebanese expatriates who struggle to find olive oil from their homeland, in addition to other developed countries who are interested in the unique taste of Middle Eastern olive oil. Lebanese olive oil can increase its added value by being both organic and Fairtrade certified in order to cater to a growing niche market both locally and internationally. In the domestic market also, olive products are witnessing a growing demand for organic. Lebanese olive paste is starting to find a market in Europe because of its competitive price. The quality however must be high, since the European brands have long expertise in the area.

SUPPORTING ORGANIZATIONS AND REGULATORY FRAMEWORK

SUPPORTING ORGANIZATIONS

We have seen some government involvement in the olive oil market in the past. From time to time, the Ministry of Agriculture distributes pesticides to cooperatives, or purchases oil for the army. However, governmental purchases are neither regular, nor organized.

LIBNOR

LIBNOR is the Lebanese standards institution. It has set obligatory standards for olive oil based on the IOOC standards, which can be acquired by private companies through payment. The implementation of the control is given to the consumer protection department at the MOET. Unfortunately, as mentioned before, the control of standards is minimal at best.

IRI (Industrial Research Institute)

IRI is the only Lebanese lab accredited by ISO 17025. This lab provides the main tests required for the export of olive oil, which are: the acidity, peroxide, microbiology and fatty acid profile tests. EU countries may require other tests such as iodine, saponification, absorbance, and refractive numbers.

REGULATORY FRAMEWORK

The sheer absence of the implementation of laws regulating the labeling practices allows higher sales of cheaper low-grade oils, and the insurgence of

foreign oils. In order to justify the Lebanese oil's higher price tag, false denominations should not be allowed on labels. There needs to be a proper monitoring body that supervises labeling activities, so that customers are not deceived.

SUBSECTOR DYNAMICS

MARKET TRENDS AND DRIVERS

A main trend in the olive oil industry in Lebanon is an increasing awareness of quality and the meaning of different denominations. The production of both virgin and extra virgin oils has seen an increasing trend since 2007. Nowadays, 30% of the total production is extra virgin olive oil. In addition to the extra virgin trend, organic olive oil is increasing in popularity. The demand for organic olive products is growing at a fast pace, demonstrating itself as being even more valued than the 'extra virgin' denomination.

Aromatized oils represent a value-added, a tool of differentiation from other olive oils in the market. Examples include oils aromatized with oregano, chilli and others.

AUTHOR'S RECOMMENDATIONS

The author suggests the following actions:

- Strengthening the farmers' network by encouraging cooperation
- Improving the quality of olives, tapenades and olive oils through the monitoring agricultural practices like appropriately fighting against diseases, improving harvesting techniques and pruning
- Working on cost reduction and control
- Getting certifications, such as organic, Fairtrade and TEQ certifications to widen chances of achieving higher sales
- Improving marketing through special focus on derivative products with interesting niche markets: explore infused oils, tapenade, aromatized soap…

Income Statement (in LBP)

OLIVE OIL PRODUCTION (for 10 dunums=1 ha)/ Good Season

Yield per tree (in kg)	30
Area/tree (in m2)	30
Yield/area (in kg/m2)	1
Land Area (in ha)	1
Total yield (in kg)	10000
Total Olive Yield after olive press's commission (10%)	**9000**
Oil Conversion Rate	0.18
Sales Price of oil per gallon (16.5 kg)	127500
Sales Price of oil per kg	7727.27
Harvesting cost per kg	538
Investment Costs	
Scissors-type harvester (Masht)	4,000
Machine	8,250,000
Drip Irrigation Installation Cost	1,950,000

Revenue (LBP)/ 10 dunums		2014
	Sales revenue	12,518,182
	(Less sales returns and allowances)	-
	Service revenue	-
	Interest revenue	-
	Other revenue	-
Total Revenues		**12,518,182**

Expenses (LBP)/ 10 dunums		2014
	Ploughing (once or twice per season)	100,000
	Pruning	-
	Pesticides Appication	100,000
	Fertilizers cost	200,000
	Harvesting Cost (Manual)	5,380,000
	Irrigation	-
	Packaging - Gallons	490,909
	Labelling Expenses	-
	Advertising Expenses	-
	Rent of Land	3,500,000
Total Expenses		**9,770,909**
	Net Income Before Taxes	2,747,273
	Income tax expense (15%)	-
Income from Continuing Operations		**2,747,273**

Below-the-Line Items/ 10 dunums		2014
	Income from discontinued operations	-
	Effect of accounting changes	-
	Extraordinary items	-
Gross Profit		**2,747,273**
Gross Profit Margin		**22%**

Income Statement (in LBP)

OLIVE OIL PRODUCTION (for 10 dunums=1 ha)/ Bad Season

Yield per tree (in kg)	13
Area/tree (in m2)	30
Yield/area (in kg/m2)	0.43
Land Area (in ha)	1
Total yield (in kg)	4333.33
Total Olive Yield after olive press's commission (10%)	**3900**
Oil Conversion Rate	0.18
Price of oil per gallon (16.5 kg)	175000
Price of oil per kg	10606.06
Harvesting cost per kg	538
Investment Costs	
Scissors-type harvester (Masht)	4,000
Machine	8,250,000
Drip Irrigation Installation Cost	1,950,000

Revenue (LBP)/ 10 dunums	2014
Sales revenue	7,445,455
(Less sales returns and allowances)	
Service revenue	
Interest revenue	
Other revenue	
Total Revenues	**7,445,455**

Expenses (LBP)/ 10 dunums	2014
Ploughing (once or twice per season)	100,000
Pruning	-
Pesticides Appication	100,000
Fertilizers cost	200,000
Harvesting Cost (Manual)	2,331,333
Irrigation	-
Packaging - Gallons	212,727
Labelling Expenses	-
Advertising Expenses	-
Rent of Land	3,500,000
Total Expenses	**6,444,061**

Net Income Before Taxes	1,001,394
Income tax expense (15%)	-
Income from Continuing Operations	**1,001,394**

Below-the-Line Items/ 10 dunums	2014
Income from discontinued operations	-
Effect of accounting changes	-
Extraordinary items	-
Gross Profit	**1,001,394**
Groos Profit Margin	**13%**

Income Statement (in LBP)

OLIVE OIL income statement per gallon (تنكة)

Yield per tree (in kg)	30
Area/tree (in m2)	30
Yield/area (in kg/m2)	1
Land Area (in ha)	1
Weight of olives needed for 1 gallon of oil (kg)	101.67
Weight of Olive Oil for 1 gallon (in kg)	18.3
Weight of Olive Oil for 1 gallon after olive press's commission (10%)	**16.5**
Oil Conversion Rate	0.18
Price of oil per gallon (16.5 kg) in 2014	150000
Price of oil per kg (in LBP)	9090.91
Harvesting cost per kg	538

Investment Costs

Scissors-type harvester (Masht)	4,000
Machine	8,250,000
Drip Irrigation Installation Cost	1,950,000

Revenue		**2014**
	Sales revenue	127,500
	(Less sales returns and allowances)	-
	Service revenue	-
	Interest revenue	-
	Other revenue	-
Total Revenues		**127,500**

Expenses		**2014**
	Ploughing (once or twice per season)	1,017
	Pruning	-
	Pesticides Appication	1,017
	Fertilizers cost	2,033
	Harvesting Cost (Manual)	54,697
	Irrigation	-
	Daman	-
	Packaging- Gallons	5,000
	Labelling Expenses	-
	Advertising Expenses	-
	Rent of Land	35,583
Total Expenses		**99,347**
	Net Income Before Taxes	28,153
	Income tax expense (15%)	-
Income from Continuing Operations		**28,153**

Below-the-Line Items		**2014**
	Income from discontinued operations	-
	Effect of accounting changes	-
	Extraordinary items	-
Gross Profit		**28,153**
Gross Profit Margin		**22%**

Cost Structure Sheet (in LBP)

Product: Extra Virgin Olive Oil - bottle of 50 cL

Description	Quantity (in kg or units)	Unit Price	Total Price
Olive Oil	0.45	7727	3477
Bottle + Cap+ Label + carton	1	1200	1200
Service (bottling…)	1	525	525
Subtotal			5202
Logistics (10% of costs)	1	520.215	520.215
Cost of Goods Sold			5722
Selling Price (40% gross profit margin)			**8011.311**

Cost Structure Sheet (in LBP)

Product: Oregano Infused Olive Oil - bottle of 25 cL

Description	Quantity (in kg or units)	Unit Price	Total Price
Olive Oil	0	7727	1739
Bottle + Cap+ Label + carton	1	1200	1200
Service (bottling…)	1	525	525
Oregano	1	754	754
Subtotal			4217
Logistics (10% of costs)	1	422	422
Cost of Goods Sold			4639
Selling Price (40% gross profit margin)			**6494**