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Despite its small size, Lebanon's sundry landscapes, from the interior terrain of the Bekaa Valley to the narrow canyons sweeping down to the sea, and its diverse microclimates endorsed the country to reap a varied number of superlative agricultural products.

This diversity affords the best prerequisite for cultivating citrus along the coastal area, apple and stone fruit trees in Mount Lebanon, while vegetables, potatoes and grapes are mainly concentrated in the plain of Bekaa.

Citrus is one of the produce that played a vital role in agriculture. Citrus fruits are grown on the coast, mainly in the southern half of the country, and accounted for as much as half of the total agricultural output, with each hectare yielding around 27.4 tons. However, the Civil War and urban sprawl destroyed many orchards with the citrus yield declining to 24.31 tons/hectare in 2013, according to FAOStat.

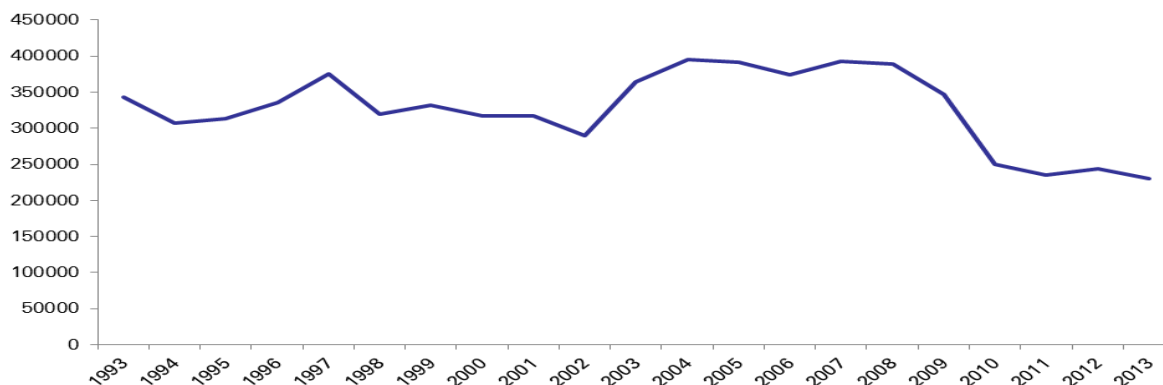
Citrus fruits are grown all over the world. Spain is the largest exporter of citrus, with a market share of 24% of total exported value, followed by Turkey and South Africa, each with a 10% share, and USA (8%). Lebanon claims a market share of just 1%, which is substantial given its small size.

Back to Lebanon, citrus orchards are located along the coastal zone of about 210 km. In the South, Citrus are mainly cultivated in Tyr, taking a share of 80% of the total area, and Sidon (73% of total area). In contrast, a smaller stake is allocated to citrus production in the North, with a share of 39% of total area in each of Akkar and Zgharta.

Worth noting that the area allotted to citrus production is shrinking in the South. This is due to farmers shifting to the cultivation of bananas and avocados, both of which are considered to be more profitable and promising than citrus. This is not the case in the North, since the climate is not suitable for these produce.

Total citrus production varied significantly throughout the years, triggered by political upheavals on the local and the regional level. Citrus production started increasing in 2001, mainly after the withdrawal of Israeli troops from the South, and peaked in 2004, reaching 395,300 tons. This number decreased to 374,200 tons due to the July War of 2006, recuperated in the couple of years to follow, then plunged significantly in 2008, as a result of the replacement of citrus groves in the South with avocado and banana. Citrus production stood at 230,497 tons in 2013.

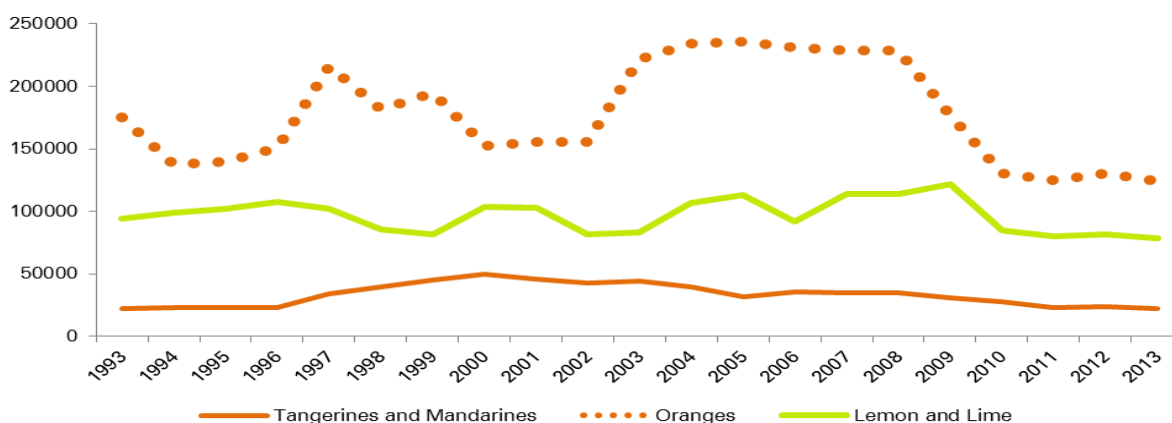
Total Citrus Production (in tons)



Source: FAO

Much of the variability in total production can be attributed to oranges, which take a 54% share of citrus crop. Lemon and lime rank second with a stake of 34%, followed by tangerine and mandarin, grasping a 10% share of total citrus.

Citrus Production by Type (in tons)



Source: FAO

Orange Varieties Grown in Lebanon

<b>Shamouti/Jaffa Orange</b>	Shamouti oranges are considered "Common Oranges". This variety was developed in the Middle East, and is known for its sweet flavour and minimal seeds. It has a deep orange peel that is "tough" and makes the Shamouti orange particularly well suited for export. Shamouti oranges are suitable for eating, not for juice production. They are in season for January to May.
<b>Navel Oranges</b>	Navel oranges are seedless, and have a thick, lighter orange peel. These oranges are sweet and tangy, and can be either eaten fresh or squeezed for juice. They are available from October through June.
<b>Valencia Orange</b>	Valencia orange have a thinner peel than the Navel orange, and is usually seeded. Valencia oranges can be eaten fresh, but are ideal for juicing. Valencia are in season from March through October, making them highly demanded through the summer when Shamouti and Navel Oranges are not in Season.
<b>Blood and Succari Oranges</b>	Blood and Succari oranges are grown in smaller volumes in both the North and the South.

Source: LARI

Lebanese farmers produce 3 main lemon varieties: Interdonato, Monachello, and Meyer. These varieties have slightly different qualities and flavours, especially Meyer lemons, which are especially sweet and fragrant. These varieties are also characterized by their resistance to Mal secco and gummosis diseases which can have negative impacts on production of other lemon varieties. Other varieties that can be found in Lebanon, though in low quantities, are Palestine lime, Mexican lime, Lemon Four Season, and Femminello.

Other important citrus varieties cultivated in Lebanon are Mandarin, Clementine, and Tangerine, which are grown mostly in Batroun with a small amount in Sidon. Production of grapefruit and pomelo are particularly low, as they are relatively new, and there is limited demand for these fruits. A few Lebanese producers have also started producing Kumquats, which are considered "fancy", and not widely popular in domestic markets.

Most Lebanese citrus producers are small-scaled and use traditional production practices that reduce the quality of these fruits and overall yields. Average annual yield is 3 tons per dunum, while it can be as high as 5 tons per dunum if best practices were utilized.

As for harvesting practices, they are considered adequate, but there is still room for improvement in harvesting infrastructure such as investment in ladders. The kind of ladder used in Lebanon is inefficient, as it is placed directly against the tree damaging the new shoots. Hand-picking is the only harvesting method currently implemented. Citrus is harvested gradually, since the fruits can stay on the tree for an average of 3 months without deteriorating in quality. However, once it is picked the fruit becomes perishable and can only be packed with cold storage, which is not readily available for citrus in Lebanon.

Inadequate and inefficient packinghouses, mechanical damage due to inappropriate packing and lack of sanitation instigate post-harvest losses in this sector of 5%-15%.

Sorting and packaging of citrus fruits destined for the local market is usually done only to eliminate fruits with serious defects or decay. Cleansing, sorting, grading and waxing are applied only to fruits intended for export.

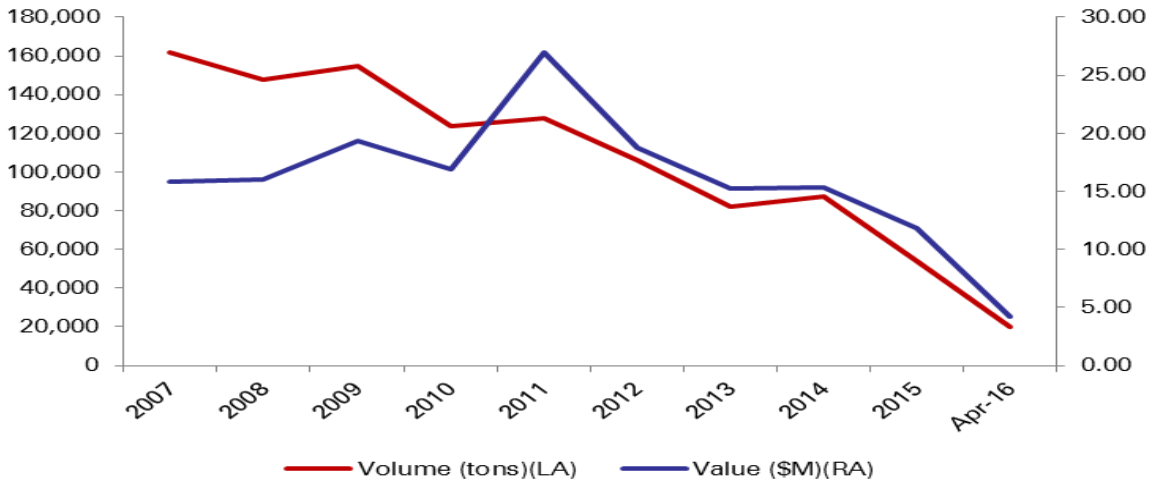
After this stage, farmers either sell their harvest domestically or export them. In general, the highest quality fruits are consumed in domestic markets, middle-quality are exported, while low-quality are sold to juice producers.

Selling in the local market is done mainly through wholesale markets. As there is only one wholesale market in each major city, farmers do not have many sales options. Therefore, bargaining power lies in the hands of the wholesale traders, who consistently pressure farmers to accept low prices and slim margins. Traders charge on average a 12% margin on sales.

On the international front, Lebanon's citrus exports have been following a declining trend since 2007, except for a one-time spike in price, in 2011. This substantial hike was triggered by the period of instability that Egypt, one of the largest citrus exporters in the Middle East, passed through that weighed heavily on the country's citrus exports.

Although demand for Lebanese agricultural products in the Gulf markets skyrocketed as the production in war-torn Syria plunged, Lebanese citrus exports remained on their downtrend. One of the main reasons for this decrease is the war in neighbouring Syria, as it is one of the major overland routes for Lebanese exports. With the closures of border crossings, traders face higher transport and insurance transportation costs.

Volume and Value of Lebanese Citrus Exports

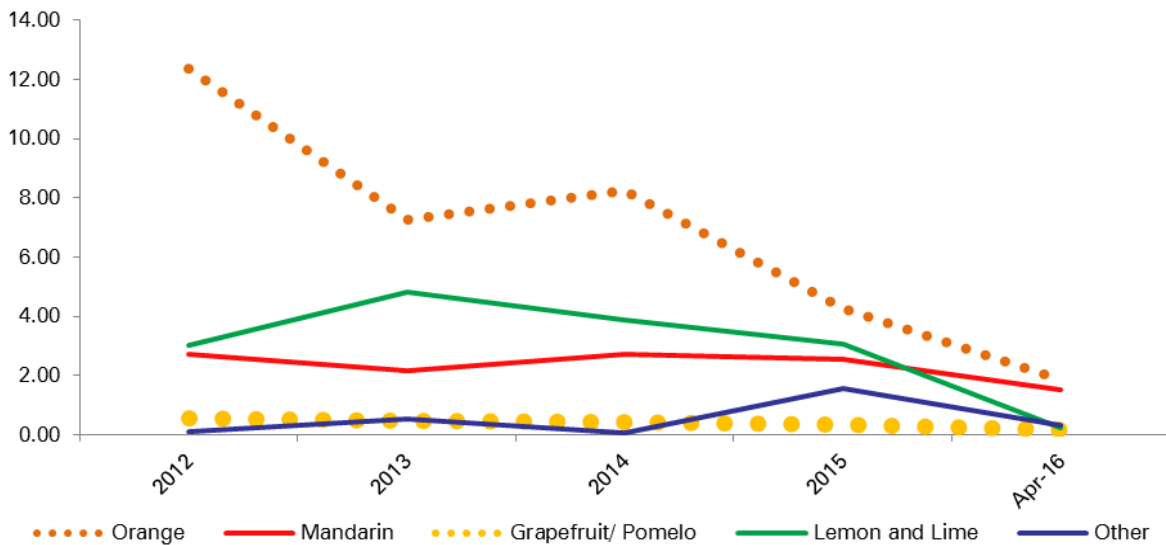


Source: Customs, Comtrade

Lebanese citrus exports amounted to 54,088 tons in 2015, with a value of \$11.78M. Oranges are the main exported citrus fruit of Lebanon, totalling 25,767 tons with a 36.33% share of citrus export value. Lemon and lime came in second (25.96%), where 8,595 tons were exported, followed by mandarin (21.79%) with a volume of 6,080 tons.

Looking at Lebanon's trade partners, Saudi Arabia is the main destination of Lebanese citrus products, with a share of 28.87% in 2015, followed by Syria (18.58%), Kuwait (14.37%), United Arab Emirates (9.9%), and Iraq (7.05%). Traditionally, Syria was the primary destination of Lebanese citrus. For instance, in 2009, Syria imported 30% of Lebanese citrus, compared to only 21% imported by Saudi Arabia. Lebanon's exports to Syria declined thereafter, due to the ongoing crisis in the latter country.

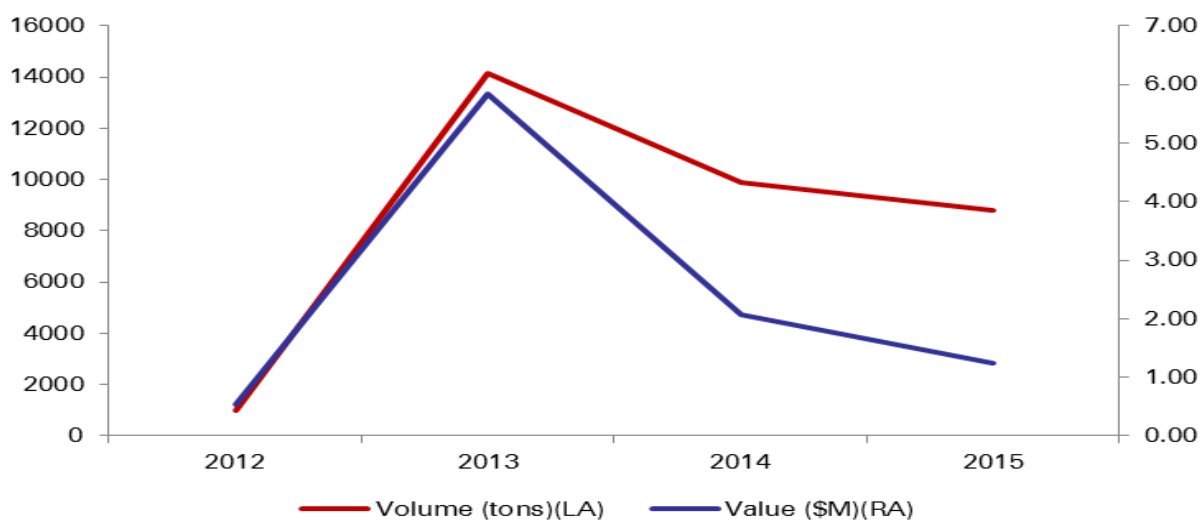
Value of Types of Lebanese Citrus Exports (\$M)



Source: Customs

As for citrus imports, they amounted to \$1.24M with a volume of 8,807 tons, in 2015. In The low volume of citrus imports can be attributed to the self-sufficiency of domestic produce to cover demand, and to the high customs imposed on citrus imports. Lebanon imposes a custom duty of 70% on citrus imports, with a minimum duty of 400 L.L./kg. Citrus is mainly imported from Syria (85.67%), Mexico (6.92%), South Africa (3.06%), and Brazil (1.05%).

### Volume and Value of Lebanese Citrus Imports



Source: Customs

A third and more guaranteed way of marketing their citrus is selling the harvest at the start of the season to a fresh juice producer, at a pre-set price.

### Juice Production

Juice production in Lebanon can be divided to two main types.

Fresh juice market is dominated by Balkis. Balkis produces bottled fresh juice that is pasteurized to preserve the flavour and vitamins. Other fresh juice producers include Juice-up, Antabli and Tam tam, which have small shops and produce on demand.

The second type is juice made from concentrate, which can be further divided into two sub categories: natural concentrate juice, with only water added to the concentrate, and concentrate juice with additives. The former is dominated by Maccaw, Libby's and Tropicana Premium, while X-tra, Tropicana Slice, and Pampa are the main players in the latter.

Only fresh juice producers utilize fruits produced in Lebanon. Meanwhile producers of juice made from concentrate import the concentrate from abroad, and reconstitute it in Lebanon. No concentrate is made in Lebanon, since there are many fruits like mangoes and pineapples that are not grown in the country. Lebanon imported 56,150 tons of concentrate worth \$78.69M, in 2015, compared to 56,875 tons with a value of \$83.44M in 2014. 75% is imported from Brazil, while 22.79% comes from Netherlands.

Fresh juice is not exported, as it has a very short shelf life. Juice made from concentrate is exported to Mexico (28.2%), Iraq (26.64%), Saudi Arabia (8.18%), and United Arab Emirates (6.14%).

Although the 2 products are different, high competition is faced between local players; however, they encounter no competition from foreign juice manufacturers. On the one hand, fresh juice is of better

quality, made from fresh fruits. On the other hand, concentrated juice is cheaper, due to lower costs of production. The price of 1 litre of fresh juice could reach up to L.L 5,000, compared to only L.L. 2,000 for the same flavour of juice made from concentrate.

As concentrate is a commodity, it is set by international markets. According to Ali Beydoun, Brand Manager at Balkis, the cost of production for fresh juice producers is higher for many reasons. First due to seasonality, supply of fruits decreases during summer while demand increases leading to a hike in the price of citrus. Second, production of citrus is declining in Lebanon due to the construction boom and farmers shifting their orchards in favour of the more profitable avocado and banana cultivation. Moreover, the fruits and the juice should be delivered in refrigerated trucks, increasing costs further. Finally, lower shelf life leads to higher costs due to three factors. The company has to transport the juice to retailers several times during the month and supply just enough quantity. The defected (due to bad storage at retailers, fresh juice should be refrigerated at a temperature between 0-4°C, some retailers store them at a higher temperature) or damaged juice is returned back to the company, which bears its cost. In addition, fresh juice producers face higher costs of packaging, to preserve the quality of the juice.

Even though costs of production are high, new entrants are still showing interest in the market due to higher mark-ups, leading to high competition. These players consist of small local manufacturers, who are more flexible to satisfy demand due to their smaller scale of production.

One of the main challenges that fresh juice producers face is shortage of supply of fruits. The government does not encourage the import of citrus, which is shown by the high custom duties levied on these fruits. Therefore, in addition to the orchards they own, juice manufacturers hedge this risk by sourcing citrus fruits from other farmers, by buying the whole crop in advance at an agreed price. This would protect manufactures from an increase in the price of citrus. However, there is no assurance that the harvest will conform to the expected quantity or standards.

Another solution would be to introduce new items. For instance, last year Balkis faced a shortage in supply of oranges. Therefore they introduced new flavours like apple and mandarin.

Fresh juice producers in Lebanon are expected to face a lucrative future. Demand for their products is growing due to changing culture and better education. However, the constraints that farmers face, triggering them to leave their orchards, would create a problem to juice producers as they would face a shortage of citrus.

Citrus farmers face numerous constraints, many of which are common in other agricultural sectors. The most crucial problems include low profitability, absence of reliable extension services and difficulties in marketing produce.

Low profitability emerges from low yields and high production costs. Yields of Lebanese citrus orchards are low due to the perseverance of traditional production practices, limited access to technical assistance, and widespread diseases and pests. On the other hand, the high costs of production are associated with the small-sized plots of many farmers, which limit the ability to take advantage of economies of scale. Farmers are not organized in any kind of cooperative that could enable bulk purchasing of key agricultural inputs and result in cost savings.

One farmer stated that there is a cooperative for Lebanese citrus producers; however, it does not provide any support. The cooperative does not offer new production methods, fertilizers, irrigation, or even market the farmers' harvest. For example, last winter, a storm and a wave of frost damaged citrus crops along the Lebanese coast, resulting in heavy losses. Nevertheless, the cooperative did not assist the farmers in any way to recover their losses.

The Citrus sector has long been a vital sector of agriculture. Therefore the government and cooperatives should provide assistance, encouraging farmers to cultivate citrus.

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