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Apples have come a long way since their beginning. Known as the king of the fruits, the Romans helped greatly in spreading the apple trees. Whenever the Romans conquered a country, they always took apple seeds along and planted them.

Around 75,000 varieties of apples are cultivated, with different colors, shapes, and tastes. One can never know what each bite of an apple could start with. An apple could begin sweet and take you to a palatable ride with every bite, or it could start sour and finish the ride with a lingering aftertaste.

In Lebanon, the traditional types produced are derivatives of varieties introduced by Jesuit Monks in the late 1800s, and by Lebanese immigrants returning home after World War II, according to USAID. These include Red Delicious, Golden Delicious and Sans Pareille (mouwachah) apple, all of which have made Lebanon distinguished as an apple producer in the region. However, these varieties have been seeing decreased demand. Hence, NGOs and donor programs introduced newer kinds, mainly Gala, Fuji, Scarlett, Super Chief, and Granny Smith.

According to FAO stats 2013, apples are planted on a total area of 13,604 hectares (ha). Lebanon produces around 153,151 tons of apples annually, which constitute 23% of total Lebanese fruits production.

Apple production in Lebanon is relatively fragmented, with landholdings being divided into smaller and smaller plots with each generation. This has resulted in the average apple farm size to be less than one hectare. Most farmers still rely on traditional techniques.

Except for harvesting, apple orchards do not need a lot of labor. Land preparation, pruning and the application of fertilizers and pesticides are usually done by the farmer and his family members. Moreover, apple orchards do not need oversight on a daily basis. It is only in the harvesting stage that the use of daily laborers is required.

The harvest season in Lebanon usually takes place between mid-September to mid-December, to take advantage of the moment when the intense heat of summer winds down and autumn – which brings rain and cool weather – begins. The fog is an important element, as it is believed that when the fog comes down the apples assume their most lustrous colors.

The polished and seemingly resistant fruits are treated with extreme care when harvested to avoid, rotten produce and spoiled future growth. To pluck an apple from the branch, it is necessary to grasp it with the palm of the hand, and not with the fingers since they inevitably leave signs and prints on the shining fruit. The apple must then be relieved from the branch through a light twist, which serves to separate the tiny stem from the branch. A stem-less apple would rot. Moreover, if the apple was hastily pulled off the tree, growth would suffer in the future.

The apples are collected and deposited in baskets. Then apples are graded and sorted, where those of the same size and color are put together in crates. Each box or crate contains approximately 20 kilograms of apples, and once full they are covered with a cardboard sheet and tied with twine. Boxed, the apples are transported to refrigerated warehouses and stores.

There are two kinds of apple farmers in Lebanon: small farmers, whose lands range between 0.3 ha and 3 ha, and big farmers with lands greater than 3 ha. The former is unlikely to invest in drip irrigation, generally farm with family members to decrease labor costs, and usually sell their produce to demmans. Demmans are intermediaries who contract with farmers to purchase all their produce at a fixed price, with add-ons for harvesting and packing if they are done by the farmer. Some demmans have cold storage facilities.

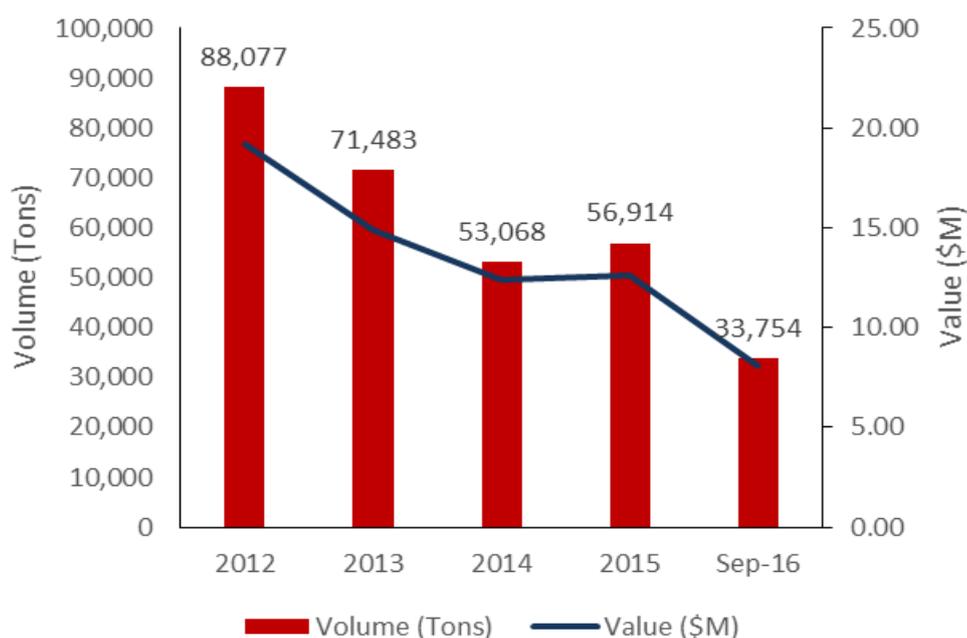
In contrast, the few existing large farmers use drip irrigation, regularly invest in orchard regeneration, and plant new varieties of apples to benefit from higher prices. Large farmers sell to the local wholesale market and directly to retailers, but only a fraction engages in export sales to the region.

There is strong domestic and regional demand for fresh apples, mostly to the high quality high-priced apples. However, Lebanon does not have sufficient production of high-quality apples to meet demand domestically or regionally. Competitiveness is further constrained by high production costs from inefficient farming and post-harvest practices, such as over-application of pesticides, inappropriate transport methods, and below-standard cold storage.

This has exacerbated the problem on apple farmers, whereby apple exports have been declining since 2012, while apple imports have been on the rise during the same time period. However, apple exports remained higher than that imported. The compounded annual decline rate of the value of Lebanese apple exports from 2012 to 2015, stood at 9.98%, where 56,914 tons with a value of \$12.60M were exported in 2015. In contrast, the value of apple imports increased at a compounded annual growth rate of 17.25% to reach 1,692 tons with a value of \$1.43M in 2015.

During the first three-quarters of 2016, Lebanon recorded a 34.96% yearly decline in exported apples to 33,754 tons, with a 13.61% year-on-year drop in value to \$8.10M. Egypt was the major destination, taking a 73.09% share of Lebanese apple exports, followed by Kuwait with a 9.13% stake, while Saudi Arabia took 9.05% of Lebanese apple exports.

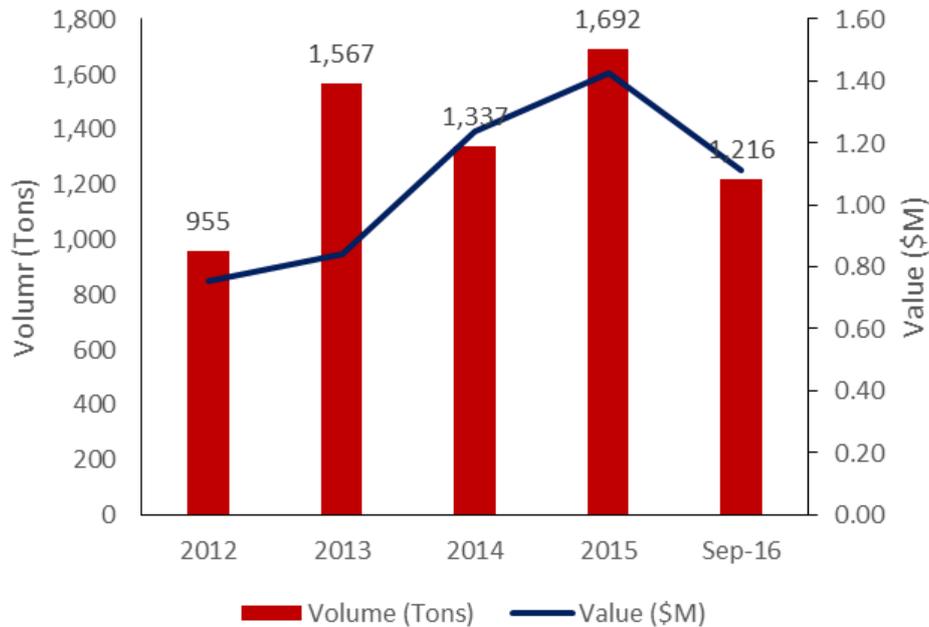
Volume and Value of Lebanese Apple Exports



Source: Lebanese Customs

During the same period, Lebanon imported 1,216 tons of apples, 14.25% less than the same period last year, with a 5.68% decline in value to \$1.13M, by September 2016. 81.40% of imported apples came from Italy, 15.09% from France, and 2.16% from Chile. Worth mentioning, Chile has surpassed Syria, by supplying premium varieties such as Gala and Fuji, instead of the traditional Golden Delicious from Syria.

Volume and Value of Apple Imports to Lebanon



Source: Lebanese Customs

Even though apple imports to Lebanon have been increasing, they are still considered low when compared to exports. This might be due to the 70% custom duty imposed on imported apples, with a minimum tariff of LL1,500/kg.

Lebanese apple farmers have been facing a crisis, forcing them to riot, and ask for government's help. First, the war in Syria in 2011 and the closure of Nassib border in 2014 caused the export market for Lebanese apples to stagnate, knowing that most Lebanese apples were exported to Syria or through Syria to other Arab countries. What aggravated the crisis is the political tensions between Lebanon and Gulf countries that led Gulf states to prevent the possibility of selling Lebanese products. Moreover, European countries are wary of importing Lebanese apples, due to the country's low standards for sorting, grading, and handling apples.

The decrease in exports coupled with an increase in imports have led to a surplus in apples in Lebanon, pushing apple prices down. According to Salem Bteich, apple farmer with orchards in Shabrouh, Faraya, and Dar Ali, the price of a crate of apples decreased in two years from an average of LL25,000 to LL5,000 now. This price cannot refund the cost of plowing, trimming, pesticides, fertilizers and storage. In this case, small farmers cannot keep their apples and prefer to sell their produce at a loss, as they do not have the financial capacity to store them in refrigerators.

According to George Wehbe, apple farmer in Tarshish, apple producers are facing many hurdles, ranging from widespread diseases, climate change, difficulty in exporting, and high labor costs. Fertilizers' and pesticides' costs have been decreasing, following the decline in oil prices, however the costs of production are still high. In previous years, Wehbe had no surplus in his apple production, as there were all sold to demmans. However, to breakeven, the price of a crate of apple should be LL20,000, while this year, the demmans will only pay LL7,000/crate. Hence, for the first time, Wehbe decided to refrigerate his produce, in expectations that the price might go up in the future. On the other hand, many farmers did not harvest their apples preferring that they rot on the trees rather than

selling them at a loss, as the price almost covers only 35% of the costs. Hence, production in 2016 is expected to be well below that of previous years.

Furthermore, since most farm sizes are small, on average less than one ha, farmers are unable to achieve economies of scale.

Seeing all these impediments, the government signed a few export agreements, to increase Lebanese apple exports, mainly with Egypt, Jordan, and Russia. Egypt agreed on increasing its apple imports from Lebanon from 38,000 tons/year to 50,000 tons/year, where Lebanon is responsible for covering costs of transportation, while Egypt will be in charge of refrigerating the fruits. On the other hand, Russia will reduce the tariffs on Lebanese apple imports from LL250/ton to \$66/ton.

Many private companies have also tried to help apple farmers sell their produce, by buying their apples and distributing them for free to their employees and clients, in an effort to entice people to buy more local products. Such companies include Air France, Alfa, Classic Burger Joint, and MEDCO. Tripoli's Abdul Rahman Hallab, one of Lebanon's sweets producers, found one of the best ways to help farmers, resulting in a win-win situation for itself and the farmers. The Lebanese sweet manufacturer added 6 new items on its menu, differentiating itself from other Lebanese sweet producers: knefe with apple and ashta, knefe with apple and cinnamon, knefe with apple jam, Arabian apple pie, and apple baklava.

However, the misery of apple farmers was a blessing on other players in the apple markets. For instance, merchants and demmans were buying apples at very low prices reaching \$250/kg and stored them in refrigerators. Apple juice producers also benefitted from higher margins due to the lower cost of raw apples. According to Ali Beydoun, Brand Manager at Balkis, the decrease in price of apples resulted in higher margins that compensate for the rising costs of other fruits, such as oranges, mawardi, and grapefruits. However, this also led household to buy apples and produce their own homemade apple juice. Moreover, Balkis is not able to hedge, by buying the apples at the lower price and storing them, since the company produces its juice fresh and all fruits are squeezed on the spot.

Finally, Lebanese apple farmers, exporters, and the government has yet to take the necessary measures and achieve the required production standards, to meet the rising demand and take advantage of good market prospects. Standards and regulations should be put in place to improve the quality of Lebanese apples to meet international standards. Lebanese standards for sorting, grading, and handling apples are keyed to the low quality export market. The government should help farmers renovate their old orchards and introduce new production techniques. Moreover, investments in modern post-harvest and cold storage facilities should be increased, and existing below-standard facilities should be upgraded. This would allow farmers to capitalize on the growing domestic and regional demand.

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