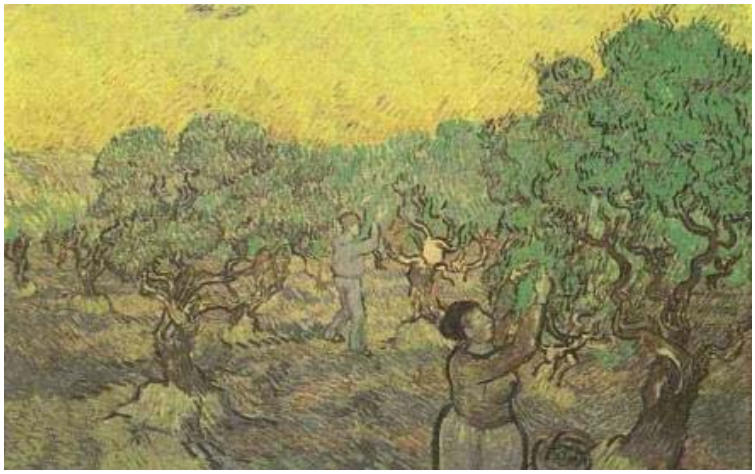
Market and Trade Policies for Mediterranean Agriculture: The case of fruit/vegetable and olive oil

MEDFROL PROJECT



Agricultural Situation Report – LEBANON

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List of Acronyms

DRC = Domestic Resource Cost
EU = European Union
FAO = Food and Agriculture Organization
GAFTA = Greater Arab Free Trade Area
GDP = Gross Domestic Product
IFAD = International Fund for Agricultural Development
INSEE = Institut National de la Statistique et des Études Économiques
LL = Lebanese Lira (1 US$ = 1505 LL)
MOA = Minister of Agriculture
UN = United Nations
UNDP = United Nations Development Program
WTO = World Trade Organization

1 - Introduction

Located on the eastern shore of the Mediterranean Sea and bounded to the north and east by Syria and to the south by Israel, Lebanon consists of a narrow strip of territory approximately 135 miles long from north to south and about 20-55 miles wide from east to west.

Thanks to its climatic diversity with more than 9 different agro-ecological and climatic zones and its relative self-sufficiency in water resources, Lebanon with an area of 4,015 square miles (10,452 km^2), has always been a major producer and exporter of a variety of agricultural products. The fertile Bekaa region was at one time the main food producer for the entire Roman Empire.

The revival in economic activity of Lebanon, which started in early 2003, continued during the fourth quarter of 2004 and involved the main economic sectors: exports, imports, tourism, industry and trade. Both imports and exports have increased significantly reflecting an increasing domestic demand on the one hand, and fruitful market diversification efforts by exporters on the other hand, especially with the opening-up of the Iraq market to Lebanese exports.

In the year 2003, GDP was estimated at US$ 19,000 million against US$ 17,339 million in the year 2002 (Appendix Table 1). The services sector still accounts for the bulk of Lebanon's economy (60-70%) whereas the industry sector is at around 18%.

No official GDP calculations have been made since 1977. To this effect, and through a technical assistance of INSEE (Institut National de la Statistique et des Etudes Economiques) provided free by the French government, GDP figures were calculated to global standards for the year 1997 (that is to be complemented to cover the years 1998-2002) and the Ministry of Economy and Trade (MET) published the "National Economic Accounts of 1997" (MET, 2003). These accounts showed that agricultural GDP contribute 6.3% of the total GDP with a value added of LL 1,513 billion (Appendix Table 2). However, and over the past years estimates of such figures revealed a range of 8-12% of the total GDP.

Agricultural and industrial exports have increased by an important 34.6% during the first quarter of 2004 relative to the corresponding quarter in 2003, reaching US$ 471 million, and ensuring a positive contribution to growth despite the weakness of their share in aggregate demand. The rise in imports of 14.5% within the context of a more important rise in exports of 34.6%, resulted in an improvement in the export-to-import coverage ratio from 21.2% during the first quarter of 2003 to 24.9% over the corresponding period in 2004, a ten-year record high. The European Union remained the main source of Lebanese imports with an aggregate share of 45.2%.

2 – Natural conditions and land use

2.1 - Land resource potential and constraints

Lebanon's agriculture offers environmental opportunities for green space, landscaped terraces and fresh and healthy produce. At the same time, improper agricultural practices lead to soil erosion and impoverishment, depletion of underground water resources, water pollution and health impacts from inappropriate use of pesticides and fertilizers, and environmental pollution from haphazard dumping of slaughter waste and animal farms. The Lebanese Government policies appear targeted to increasing the availability of irrigation water and controlling the use of pesticides, with however, little investment or incentives for water- and soil-conserving irrigation techniques. Non-governmental organizations alone and or in partnership with governmental related institutions are gradually taking advantage organic farming and high-value agricultural produce. Two of the current related projects are the Convention to Combating Desertification and the Methyl Bromide Phasing Out (Hamze & Abir Khouroud, 2004).

Eight percent of Lebanon is steep lands, of which 4% is land with very steep slopes. According to FAO estimates, around 28% of the Lebanese territory are areas with soils without major constraints. Land erosion hazards are apparent for about half of the country (46%), and shallowness for 22% of Lebanon. On the other hand, salinity and sodicity are not a major problem in Lebanon (FAO).

In Lebanon there are no deserts, but still dry lands are covering 54% of the country. The desertification risk (54%) is fairly high (FAO).

Land degradation is another serious resource constraint in Lebanon. About 25% of Lebanon is faced with very severe hazards, 6% with moderate hazards and 69% of Lebanon is faced with light hazards (FAO).

2.2 – Water resource constraints

Lebanon has been fortunate in having the greatest water flows through its river systems in the wider Middle East area compared to all other countries in the region. It has been unlucky though in the sense that international politics in which it always finds itself clogged does not allow full management of its water resources. The Lebanese Government pulled ahead and set about to create a more rational system of using its water resources with the aid of international organizations such as, the World Bank, the EU, IFAD and others. Several projects have been financed by various donors including the EU who has a major role in the development of agriculture in Lebanon.

Lebanon has a relatively favorable position as far as its rainfall and water resources are concerned, but constraints for development consist of the limited water availability during the seven dry summer months. Annual internal renewable water resources are estimated at about 4,800 million m^3. Annual surface runoff is estimated at 4,100 million m^3 and groundwater recharge at 3,200 million m^3, of which 2,500 million m^3 constitutes

the base flow of the rivers. About 1,000 million m³ of this flow comes from over 2,000 springs with about 10-15 l/s of average unit yield, sustaining a perennial flow for 17 of the total of 40 major streams in the country (AQUASTAT).

Lebanon being at a higher elevation than its neighbors has practically no incoming surface water flow. A contribution of 74 million m³/year to the El Kebir River, to the north, is estimated to be generated by the 707 km² bordering Syrian catchment areas. There might also be some groundwater inflow from these areas, but no figures on quantities are available. Surface water flow to Syria is estimated at 510 million m³/year through the El-Assi (Orontes) river and the bordering El Kebir river. An agreement between Lebanon and Syria on the Orontes River has led to a share of 80 million m³/year for Lebanon and the remainder for Syria. Surface water flow to Israel is estimated at 160 million m³/year, of which about 138 million m³ through the Hasbani river including a contribution of 30 million m³ from its tributary, the Wazzani spring. Annual groundwater outflow is estimated at 1,030 million m³, of which 130 million m³ to Syria, 180 million m³ to Israel and 720 million m³ to the sea.

The relative importance of groundwater flow to the sea and the difficulties related to its control, added to the difficult geological conditions of most of the investigated sites for storage dams, make the manageable resources of Lebanon certainly much lower than the global figure of 4,800 million m³/year. The most realistic figure recognized does not exceed 2,200-2,500 million m³ /year (CAS Bulletin No.10/2000).

2.3 – Land and water use

The 1999 census conducted by MOA and FAO revealed that 248,000 hectares of land were cultivated (24% of the Lebanese territory), of which 42% were irrigated and 2% were under greenhouse production (MOA/FAO). An additional 53,137 hectares were fallow lands abandoned for more than five years. However, according to the "agricultural census project" conducted in 2002, the total Lebanese cultivated area amounted to 261,000 hectares. Fruit trees constitute around 53,7% of the total cultivated area. Cereals, vegetables, legumes and industrial crops cover 21%, 15,7%, 3,7% and 3,9% of the total cultivated area, respectively. Almost 42% of the exploitable agricultural land is located in the Bekaa region, which also accounts for 52% of the total irrigated land (National Agricultural Census, 2000).

3 – Performance of the agricultural sector

3.1 - Introduction

More than half of the farms are small in size and less than 2% exceed 100 dunums (1 dunum ≈ 0.1 hectares) (Appendix Table 3). Almost 75% of farmers cultivate an area less than 10 dunums each and account for 20% of total cultivated land. The average farm size in Lebanon is 12,7 dunums: it ranges from 6,1 dunums in Mount Lebanon to 29,3 dunums in the Bekaa. The agricultural sector employs about 195,000 holders, up from 143,000 in 1961 (MOA/FAO, 2000).

According to the last survey conducted by MOA, the total value of the agricultural production reached around LL 1,929 billion (2002) an increase of 8% against the year 2001. Crop production represented 73% of the total value and the animal production had a 27% share. Livestock production is an important activity, particularly in the mountains and in the Baalbeck-Hermel area on the eastern mountain chain where soil fertility is relatively low. However, animal production doesn't satisfy local consumption except the poultry sector. About 26,630 farmers produce almost 10 million broilers and 4.5 million layers annually (MOA/FAO, 2000). The vast majority of these are small, backyard farming systems for local consumption only (village and households).

3.2 – Products

The Agro-food industry is the most important sector of the Lebanese industry accounting for 20% of industrial enterprises and contributing with 26% to GDP (Tmasin and Trifiro, 2002). The Lebanese Food industry sub-sector includes the traditional products such as alcoholic products (wine and Arak), confectionery, canned fruit and vegetables, bakery products and olive oil.

The most important agricultural products in terms of production are potatoes (397,110 tones), tomatoes (247,000 tones), and oranges (155,800 tones) (Appendix Table 4).

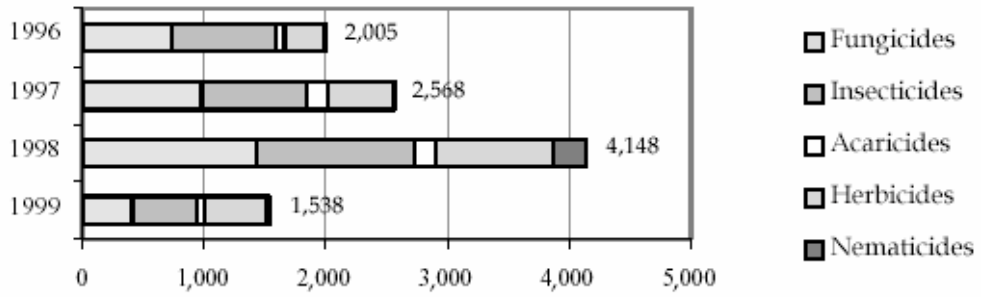
Fruit production has remained more stable in the last three years **(**Appendix Table 4**)**. Vegetable output has increased from (656,600 tones) in 2001 to (799,900 tones) in 2002, and has remained the same for 2003 (Appendix Table 4). According to Appendix Table 5 that shows the yields of certain agricultural commodities in Lebanon, none of the listed products has shown any significant change in the last few years.

3.3 – Intermediate inputs

In 1999, Lebanon imported 1,530 tones of pesticides (Data supplied to ECODIT by MOA/ Department of Export, Import, Control and Quarantine, 2001) and almost 32,000 tones of fertilizers (CAS Bulletin No.10/2000). Fungicides and insecticides represent the largest share of imported pesticides, followed by herbicides, acaricides, and nematicides (Figure 1). Although Lebanon no longer imports a whole range of persistent pesticides, Lebanese soils are potentially contaminated from persistent chemicals and residues, the

result of many years of unrestricted application of dangerous pesticides. Many pesticides that were commonly used in Lebanon contain compounds that persist in the environment for more than 20 years. While current pesticides do not contain such chemicals, they may however react in the soil to produce new persistent compounds that potentially pollute the soil and groundwater.

Figure 1
Annual Imports of Pesticides By Type (Tonnes per Year)



Source: Data supplied to ECODIT by MoA/Department of Export, Import, Control and Quarantine, 2001

3.4 – Machinery and equipment

There are 8,300 tractors used in Lebanon. According to FAO this number has remained unchanged between 2001 and 2003 (FAOSTAT). Therefore, in Lebanon there is one tractor per 31.5 hectares of cultivated land.

3.5 – Water use

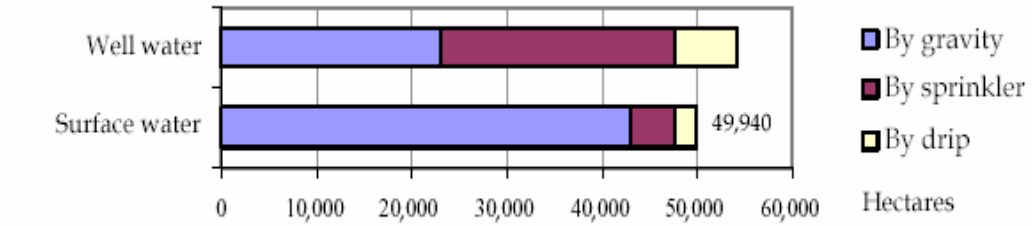
The agricultural sector is by far the largest consumer of available water resources in Lebanon. While the total land area under cultivation has remained fairly constant during the past decades, irrigated lands have more than doubled, from 40,775 hectares in 1961 to 104,009 hectares in 1999 (MOA/FAO, 2000). This reflects the intensification of agricultural practices. Moreover, the gradual substitution of traditional and wild cultivars with new crop varieties constitutes an added pressure on limited water resources. Compared to traditional crops, new imported varieties usually consume more water and are more drought sensitive.

Irrigation water is provided from both surface and groundwater. Figure 2 reveals that irrigation water is almost equally supplied from surface water and well water (48 and 52 %, respectively). The number of farms that have private water wells is believed to be increasing rapidly although there are no data on water wells to support this claim. Moreover, many farms have more than one well.

Another concern with the expansion of irrigated agriculture is the high dependence on gravity irrigation. Gravity irrigation accounts for 64 % of the total irrigated land and is the predominant method of irrigation with surface water. Compared to sprinkler and drip irrigation, gravity irrigation inherently carries high water losses, due to low system

efficiencies and high evaporation losses. While efficiency of gravity irrigation could be significantly improved using optimal water and crop management schemes, the majority of farmers in Lebanon lack basic agricultural training.

Figure 2
Distribution of Irrigated Lands By Water Source and Irrigation Method



Source: MoA/FAO, 2000

3.6 – Labor force and employment in agriculture

The agricultural sector employs about 195,000 farmers, up from 143,000 in 1961 (MOA/FAO, 2000). Twenty-nine percent of farmers are in the North, followed by Mount Lebanon (21.6 %) and the Bekaa (18 %). About 66 %of farmers have second, nonagricultural jobs. The share of cultivated land is almost equally divided between farmers fully employed in agriculture and farmers who off-farm employment.

3.7 – Price and incomes

Data for Lebanon is limited for this topic. However, Table 1 shows the major indicators of the Agro-Food industries.

Table 1. Major Indicators of Agro-Food Industries, 1998

		Total Industries	Agro-food	% of total
Number of enterprises	unit	2,2025.0	4482.0	20.35
Total workforce[1]	1000	114.1	26.4	23.13
Number of employees[2]	1000	78.6	19.9	23.32
Output[3]	US$ million	3,952.9	1,011.3	25.58
Value-added	US$ million	1,706.8	432.8	25.36
Salaries	US$ million	576.0	116.8	23.72
Investment	US$ million	373.4	148.0	39.63

Source: Ministry of Industry
According to a field survey conducted between Oct. 1999 and Feb. 2000 by Ministry of Industry with the GTZ assistance and referred to 1998 results
[1]owners, family members, and employees excluding seasonal workers
[2]Permenant workers
[3]value of production from main activities + value of production from secondary activities+ value of production that has been added to the establishment's assets

According to Table 6, about US$ 20,513 correspond to each employee in the total industrial sector, while in the agro food sector US$ 21,847 correspond per employee. The same applies for the value added (i.e. US$ 8,857 correspond to the total industry employees whereas US$ 9,350 correspond to the agro food sector employees). However, in terms of remuneration, employees in total industries sector gain on average 15.5% higher salaries than in the agro food industry ($2989 vs. $2522). It is worth also noting that enterprises that are active in the agro food sector surpass in terms of output, value added and investments per unit the enterprises engaged in the total industry.

4 – Upstream and downstream sectors

4.1 – Upstream sectors

Modern farming is dependent on the technology developed during the past centuries and involves specialized machinery, improved plant varieties and chemical and biological agents for the prevention of disease. Therefore, the market of input supplies is of considerable size since the Lebanese farmers have to import several of these supplies. Appendix Table 6 shows the price of major inputs for 2002 to 2003 in Lebanon.

Starting with the proper planting material and the right environment the farmer has to use fertilizers, fungicides, insecticides and herbicides. These farm chemicals are becoming major requirements for producing a marketable and economic crop. However, there is a general feeling that the Lebanese farmer is using excessive fertilizers and pesticides, which constitute a threat to humans and to the quality of the Lebanese environment. Nevertheless, these products have become expensive during the past decade and as a result the extent of their use is becoming more restricted.

The presence of nitrate in water pumped from drill wells is becoming an alarming issue as it indicates excessive use of nitrogen fertilizers. In sugar beet production very low levels of sugar 10-12% instead of 18% are obtained as a result of high levels of nitrogen fertilizers.

4.2 – Food processing sectors

SRI International, working with a network of local Lebanese olive cooperatives and growers, has help increase and sustain the supply of high-quality extra virgin oil and has successfully developed and marketed a brand of high quality Lebanese Extra Virgin Olive Oil under the trademark label “Traditions du Liban”. With extra virgin olive originating from seven different regions of Lebanon, the success of this initiative has resulted in a contract between the olive growers, Dove Processing S.A.L. (Wadi Al Akhdar trademark), and Rene Moawad Foundation. Dove Processing has agreed to purchase 50 tons of Traditions du Liban in the 2004/2005 season, and will market this product in Lebanon and internationally. Rene Moawad Foundation has entered into purchasing contracts with the growers and is assuming responsibility for quality control and bottling of the oil. SRI will continue to provide technical and logistical support in networking with growers and quality control, and in the marketing and promotion of the oil. With a farm purchase price of US$ 250,000 and plans for expansion in the future, this small enterprise is now under the wing of a strong and vibrant private Lebanese food company, which is helping ensure short and long term self-sustainable economic returns to olive farmers in rural Lebanon (SRI International).

Furthermore, SRI provided marketing assistance to three Lebanese herbs and spices companies and supported local producers of cultivated local herbs such as oregano ("Zaatar"), sage, lavender or rosemary in the form of dried ground plants or essential oils to find potential markets in the US or Europe through sending samples to potential buyers

and follow-up with them. They were able to identify several populations of wild oregano (Origanum syriacum) with documented, high biomass and essential oil yields. Arrangements have been made with two local non-profit nurseries to vegetative multiply these selected populations and then sell them at cost to growers, and see a large scale cultivation of wild oregano in Lebanon.

4.3 – Food consumption

Food consumption data are still lacking in Lebanon. Lebanon is a net importer of food products. The gap between domestic food production and consumption requirements is covered mainly by imports.

Food deficit is mostly manifested in cereals. The share of milk production and meat in total requirements remains low. Red meats cover only 15% of the domestic consumption, whereas milk and dairy products provide 62% of the total domestic consumption, against 56% in year 2000.

Fruits, vegetables and poultry production exceed the local market consumption and could contribute substantially to increasing exports.

5 – Trade in agri-food products

5.1 – Structure of trade in agri-food products

After being for decades a net exporter of agricultural products, Lebanon became a net importer of agricultural and processed food products where local production has stopped satisfying the domestic needs. The country is importing 80% of its food requirements namely; basic commodities like animal products, and crop products. As the country faced fifteen years of war where agriculture, as in the case of many other economic sectors, was severely affected through direct loss of structures, resources and assets. Whatever measures were in place protecting local agricultural production, i.e. tariffs, quotas, licensing procedures etc have now been mostly scrapped due to Lebanon's participation and/or association in all the international treaties and organizations advocating free trade mentioned above like the EU, GAFTA, WTO etc.

The trade balance for agricultural products and foods in Lebanon was in deficit from 1979 to 2001 (Appendix Table 7). In 1998 the deficit was 1.232,00 million US$, in 1999 reduced to 1,042.00 US$, in 2000 it was further reduced to 950.2 US$, and in 2001 increased again to 1,044.80 US$.

5.2 – Trade performance of agri-food products

According to the statistics of the Higher Customs Council, Total agro-food exports amounted to US$ 235 million in 2003. The share of food and agricultural products to total exports was 15.48% in year 2003, against 16.7% in 2002. In 2003, the largest fruit categories exported were oranges and apples (Appendix Table 8).

Main destiny for the Lebanese Agro-food export is the Gulf countries (60%), followed by Syria (21%), Jordan (10%), EU (2%) and Egypt (2%). The geographic distribution of agro-food exports shows that Lebanon main clients are Saudi Arabia, United Arab Emirates, and Kuwait. In fact, most of the vegetables and fruits industry products are exported to Saudi Arabia (16%), United Sates of America and United Kingdom.

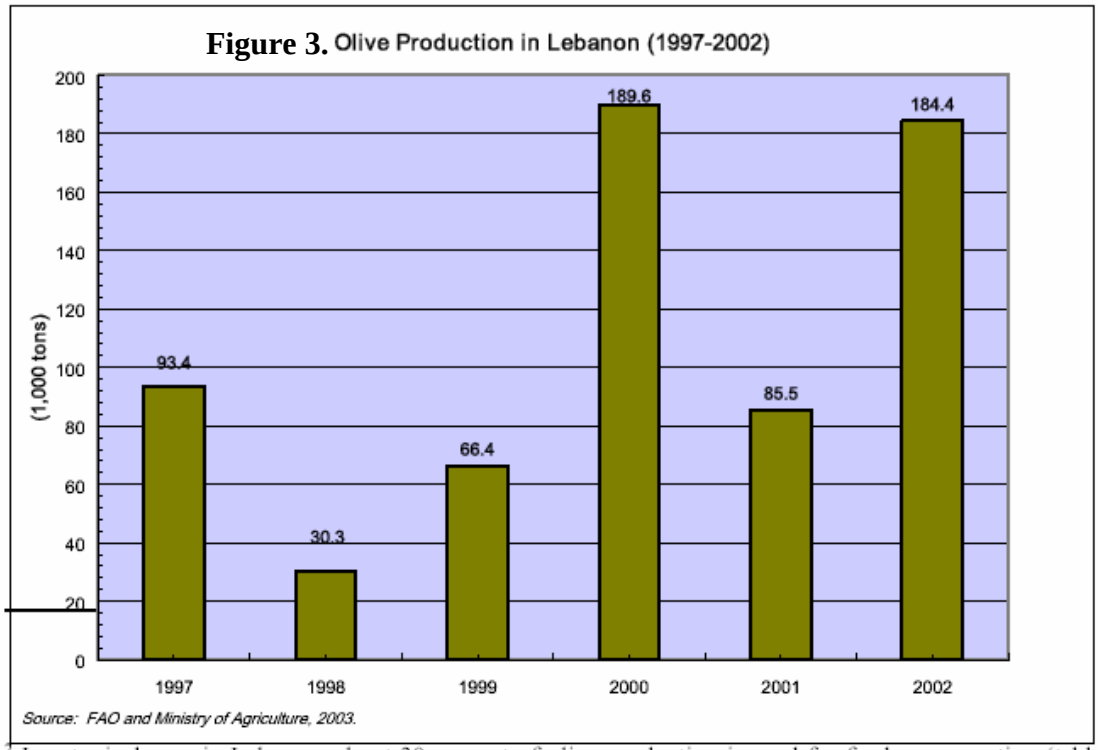
Agro-food imports, on the other hand, reached US $1,331 million for 2003 compared with US$ 1,237 million in 2002 (Appendix Table 9). Main exporting countries are Brazil, Egypt, Iran, Netherlands, and the United States of America. Cereals are imported from the United States of America (41% of the total cereals), Australia (11%) and Germany (8%). Most of the live animals and animal products are imported from France, Germany and Turkey. Lebanon is sufficient in poultry products. Exports of eggs amounted to US $ 43 million. Export destinations of these products are mainly Kuwait (65%), Bahrain (18%), and Qatar (6%).

5.3 – Trade performance: fruits, vegetable and olive oil

Over the past year or two, there has been a renewed interest in olive oil production and exporting in Lebanon (in part generated though USAID programs). The percentage of

extra virgin (higher value) olive oil extracted in Lebanon is currently very low by international standards (about 10 percent). With basic modifications in growing, milling, storage, and marketing practices extra virgin olive oil production, the category of olive oil with the highest market potential and competitive pricing, could be doubled within a few years.

Lebanese olive production and olive oil production fluctuate sharply from year to year. The typical pattern is to have a big production season (such as 2002) followed by a low production year (such as 2003) (Figure 3). For example, in 2002, total Lebanese olive oil production (including lampante oil which is not fit for human consumption) was estimated to be 25,816 metric tons. In 2003, the total dropped to about 6,961 metric tons, about 25% of the 2002 production level. In 2004, the SRI RA team forecasts that total olive oil production is projected to rise to about 25,000 to 30,000 metric tons, similar to the production level in the previous high year of 2002. The supply of extra virgin olive oil was tight for 2003 since it was a poor production year. In several Lebanese regions production of extra virgin oil was too low to cover needed export demands. The fact that in high production years, local market prices drop tremendously adds to willingness of the growers to supply oil for export at international prices in those years.



[2] In a typical year in Lebanon, about 30 percent of olive production is used for fresh consumption (table olives) while about 70 percent is transformed into olive oil.

Data on extra virgin oil exports from Lebanon are difficult to obtain, but are estimated to range from about 100 to 200 metric tons in recent years. If the Lebanese industry were to

reach international milling standards such as in Spain, extra virgin olive oil would reach 40 percent of its oil production (or about 10,326 metric tons in 2002 instead of 2582). This could significantly increase Lebanon's export potential. At US$3,500 per metric ton (or about US$3.50 per liter) this would be an additional income to the Lebanese economy of about US$ 36 million per year.

There have been recently several success stories of selling high quality Lebanese extra virgin olive oil from known regions and growers in Lebanon to the international markets at competitive prices. SRI International, working in Lebanon on a USAID-funded project is facilitating sales of extra virgin olive oil to distributors and buyers in the international marketplace and has registered "Traditions du Liban" as a brand name for Lebanese extra virgin olive oil coming from at least ten different Regions in Lebanon with clearly and differently labeled bottles for each region. The concept of "Traditions du Liban" through the stories of the regions on the bottles and enhancement of the specific tastes of their olive oil has been a big success in several international food shows. Shipments of these oils are being sent to major distributors for the East and West Coast of the USA, Australia, and the Gulf region. The Rene Moawad Foundation was able to introduce high quality Lebanese extra virgin olive oil in the collection of Oliviers & Co., one of the most prestigious and sophisticated olive oil markets worldwide. High quality extra virgin olive oil from Batroun villages is on the shelves of 60 Oliviers & Co. stores in Europe, USA, and Japan. Lebanese extra virgin olive oil is also among the most selling newly introduced oils within their collection.

6 – International Competitiveness of the Mediterranean fruits, vegetables & olive oil sector

The Domestic Resource Cost (DRC) is a measure of comparison of a country to produce a specific product with a cost advantage over others producing the same product in a different territory. It essentially compares a good's real opportunity cost with its aggregated value at international prices and constitutes thus an excellent tool of international competitiveness. The DRC of a specific product is obtained by dividing the cost of domestic factors of production (plus other considerations) by the value added in social prices. It is thus, a measure of efficiency or comparative advantage emanating through a core competence.

The calculation of the DRC for the products studied in this report (tomatoes, oranges, and olive oil) for Lebanon was not done because of the lack of relevant data. However, Muaz and collaborators reported the DRC of several agricultural products (Muaz et al., 2004). The DRC listed are for tomatoes (0.77), strawberries (0.11), sweet peppers (0.50), apples (0.22), roses (0.06), and rain fed grapes (0.28).

7 – Policy Outlook

International trade and exports may prove for Lebanon the way out of a very demanding situation where scarce resources are being pressed hard continuously. The diligent effort of the Lebanese Governments to join large and important international trade agreements and associations such as the WTO, GAFTA and the further deepening of the existing EU Association Agreement are proof of the acute awareness of the critical situation by them and the great opportunities afforded to Lebanon through their age-old art of international trade.

The agreement with the EU represents a vital cornerstone in Lebanon's trade liberalization strategy. It serves a catalyst to conduct the required adjustments to the domestic economy that will render Lebanon more competitive. It is expected that in the future Lebanon will develop its past role as being a primary trade center in the region and between the GAFTA and the Euro-Mediterranean Free Trade Area.

The main challenge for Lebanese produces remains in its ability to follow up with the EU and international standards and norms to benefit of the potential markets. This entails as being able to follow up with the capacity of the Lebanese produce in implementing the international and EU standards in quality. However, liberalizing trade with EU is expected to facilitate the transfer of new technology and know how as a result of the expected increased inflow of Foreign Direct Investment. Furthermore, the agreement will serve as catalyst to modernize and update the Lebanese trade-related legislation.

Lebanese agriculture needs an obvious improvement on physical infrastructure, and the very nature of the world economy becoming more knowledge-based than product oriented, requires Lebanon to increase its long run commitment to research, development, extension and education in a real and substantive way.

Another major issue that will define the self-sufficiency rate of Lebanon and its export potential in the coming years is water. It is estimated that by implementing the National Action Plan for combating desertification, launched in 2003, the country will maintain in a sustainable way its water resources, widening therefore its export potential. Other means to promote agricultural development may include organic farming and concerted efforts to protect coastal agricultural from urban expansion, especially along the coast.

Modern-day farmers are introducing organic farming because there is a growing demand for organic and natural produce on the local market. There is also remarkable demand for Lebanese organic products in Europe. This prospect can open tremendous possibilities for Lebanese farmers to export their produce to European markets at favorable prices and hence bypass local competition created by the import of low-value agricultural produce. The underlying difficulty is the lack of a national certification and labeling system for organic produce, which must be certified to contain no chemicals and residues (in addition to meeting other quality standards). Two national bodies, the Middle East Center for the Transfer of Appropriate Technology and the Green Line Association are working

on developing such a certification and labeling system, with technical support from the International Federation for Organic Agricultural Movement.

Finally, another important issue that will affect the competitiveness of Lebanese agricultural production is labor cost. There is a large number of Syrian agricultural workers in Lebanon and the Syrian workers are paid almost three times lower salaries than their Lebanese counterparts. Possible substitution of Syrian workers with Lebanese will drastically increase the production cost and therefore deteriorate competitiveness of Lebanese agricultural products.

8 – Conclusion

Since independence in 1946, agriculture in Lebanon has had its own tumultuous history much like the country itself. Lebanon should use international trade and exports to generate the much needed funding for its exodus from its economic problems that cannot simply be sustained anymore by its current economic configuration. International trade and exports may prove for Lebanon the way out of a very demanding situation where scarce resources are being pressed hard continuously. The diligent effort of the Lebanese Governments to join large and important international trade agreements and associations such as the WTO, GAFTA and the further deepening of the existing EU Association Agreement are proof of the acute awareness of the critical situation by them and the great opportunities afforded to Lebanon through their age-old art of international trade.

The recent withdrawal of Syrian troops from Lebanon after twenty-nine years of presence is a welcome respite for the Lebanese economy. For agriculture it means the saving of precious water resources from rivers whose flow had been diverted into Syria for the benefit of local farmers to the detriment of Lebanese farmers. A similar practice is studiously followed by Israel in Southern Lebanon where they still exercise control through a proxy local militia force. Cheap Syrian labor in Lebanese fields, so crucial for the competitiveness of Lebanese agriculture and exports, will probably continue to flow into the economy wherever its needed so the most important advantage of Syrian presence can be maintained at will. It will not be the uncontrollable influx that it has been during the last twenty-nine years. However, if exodus of cheap Syrian workers follows the withdrawal of Syrian troops, then the Lebanese agriculture will enter into serious troubles due to the threefold wages of local workers.

The total land area that can be cultivated is not desperately inadequate as elsewhere in the region and Lebanon is the only country in the region that possesses a respectable network of rivers and streams that can sustain the development of a competitive agricultural sector. Unfortunately, though, politics more than economics have proven to determine the course of the Lebanese economy and the sector of agriculture. Price and income support measures have already been reduced to a minimum with a view of selectively converting them to different and indirect and non-distorting market support schemes within specific time horizons emanating from the above-mentioned international agreements.

In terms of Lebanon's infrastructures further to the obvious need to improve on physical infrastructure, the very nature of the world economy becoming more knowledge-based than product oriented, requires of Lebanon to increase its long run commitment to research, development, extension and education in a real and substantive way.

The international market developments for olive oil are promising. Consumers in major markets are increasing their consumption of olive oil since it has been particularly promoted as offering health benefits especially with the promotion of the "healthy Mediterranean diet" and its mono-unsaturated fat content. A strong consumer segment is willing to pay relatively high prices for specialty or regional products including olive oils. There is also a growing demand in Europe and North America for bottled specialty oils

from geographic origins with novelty appeal. Special price premiums are going to specialty olive oils including organic oils, the sales of which are expected to increase, with prices that are generally double the price of conventional oil. Within that perspective, Lebanese olive oil, particularly the high-quality extra virgin olive oil with geographical regional indications has an important export potential. This potential has been actually proven by directly testing the international market (both EU and USA markets) with Lebanese extra virgin olive oil from specific areas and villages.

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Appendix

Appendix Table 1. Estimates of GDP for the years 2001-2004

	2001	2002	2003	2004
GDP (at market prices) in Million US$	16,708	17,339	19,000	NA
Growth of real GDP	1.5	2.0	2.2	2.2
Growth of nominal GDP	1.5	2.0	4.0	4.0

Source: MOF (2002) and Audi Bank (2004)

Appendix Table 2. Breakdown of GDP by Sector (LL billion), 1997

Sector of economic activity	Output	Input	Value added	% of GDP
Agriculture	1,920	407	1,513	6.3
Energy and Water	930	580	350	1.5
Manufacturing	7,002	3,740	3,262	13.5
Construction	4,596	2,340	2,256	9.4
Transport and Communication	1,854	570	1,284	5.3
Housing	2,059	0	2,059	8.5
Other market services	6,571	1,129	5,442	22.6
Trade	6,109	876	5,143	21.3
Non-Market Services	3,992	1,193	2,799	11.6
Total	34,943	10,835	24,108	100.0

Source: MET, 2003

Appendix Table 3. Distribution of Number of Agricultural Holders by Size and Area of Holdings (Dunum) (1999)

Class	Number of Holders	Area (Dunum)
<1	18,126	11,826
1-2	27,689	38,328
2-5	53,749	172,102
5-10	37,994	264,219
10-20	27,434	377,165
20-40	14,977	406,779
40-60	4,559	219,706
60-80	2,079	142,219
80-100	1,048	92,952
100-150	1,434	169,772
150-200	549	92,690
200-500	911	265,180
>500	244	226,457
Total	190,793	2,479,395

Source: Ministry of Agriculture/FAO Agricultural Census Project (1998-1999)

Appendix Table 4. Production of certain agricultural commodities in Lebanon

Product	Unit	1979-81	1989-91	1998	1999	2000	2001	2002	2003
FRESH FRUITS									
Apples	Mt	101.000	203.876	124.200	138.800	126.700	112.000	112.000	112.000
Avocados	Mt	0	0	4.400	6.200	3.000	4.400	4.400	4.400
Cantaloupes&oth Melons	Mt	12.000	20.282	40.400	43.100	21.600	14.900	14.900	14.900
Cherries	Mt	19.000	45.398	44.300	47.600	45.400	42.300	42.300	42.300
Grapefruit and Pomelos	Mt	23.333	51.539	12.100	10.600	11.800	11.500	11.500	11.500
Grapes	Mt	141.667	268.420	122.000	126.000	112.600	116.200	116.200	116.200
Lemons and Limes	Mt	60.000	78.215	85.500	81.400	103.700	103.100	103.100	103.100
Olives	Mt	36.667	50.694	100.000	66.400	189.500	85.800	92.000	92.000
Oranges	Mt	215.000	272.970	181.900	195.200	152.400	155.800	155.800	155.800
Strawberries	Mt	592	6.186	11.600	12.600	27.300	29.700	29.700	29.700
Tang.Mand.Clement.	Mt	31.667	53.877	39.600	44.700	49.800	46.100	46.100	46.100
VEGETABLES									
Beans, Dry	Mt	1.400	4.060	400	500	100	100	1.000	1.000
Chick-Peas	Mt	2.500	6.717	4.100	3.200	2.200	1.900	3.200	3.200
Chillies&Peppers, Green	Mt	0	0	7.000	6.400	6.900	5.900	5.900	5.900
Lentils	Mt	3.133	9.793	1.600	1.400	800	500	1.500	1.500
Onions, Dry	Mt	21.333	59.704	48.400	64.100	157.600	144.200	144.200	144.200
Potatoes	Mt	129.000	247.474	263.538	281.600	275.000	257.000	397.100	397.100
Tomatoes	Mt	103.333	210.520	303.900	337.300	235.000	247.000	247.000	247.000
Chillies&Peppers, Green	Mt	0	0	7.000	6.400	6.900	5.900	5.900	5.900
OTHER MAIN COMMODITIES									
Wheat	Mt	32.333	55.677	80.600	73.000	108.100	139.500	119.000	120.000
Barley	Mt	6.000	19.181	15.000	13.900	9.400	8.100	17.100	20.000
Maize	Mt	1.483	2.901	4.779	4.000	3.500	3.800	2.700	2.000
Sugar Beets	Mt	83.667	65.017	300.000	369.500	341.700	15.200	14.000	14.000
Sugar Cane	Mt	508	2.501	4.729	4.750	4.800	4.850	4.870	4.870
Cattle Meat	Mt	18.779	17.145	45.004	49.094	47.491	54.806	88.800	88.800
Chicken Meat	Mt	45.760	56.295	87500	90100	113100	117400	129000	132000
Cow Milk, Whole, Fresh	Mt	84.955	93.580	189315	149630	158400	167162	193500	193500
Hen Eggs	Mt	41.275	35.205	41400	43200	43200	44400	46200	46200

Source: CIHEAM. 2005. Annual Report. Lebanon.

Appendix Table 5. Yields of certain agricultural commodities in Lebanon

Product	Unit	1979-81	1989-91	1998	1999	2000	2001	2002	2003
FRESH FRUITS									
Apples	hg/ha	90.732	149.933	135.000	149.247	136.207	118.393	118.393	118.393
Avocados	hg/ha	0	0	146.667	206.667	103.448	153.846	153.846	153.846
Cantaloupes&oth Melons	hg/ha	103.411	116.161	448.889	478.889	309.013	32.043	32.043	32.043
Cherries	hg/ha	82.587	117.234	75.085	78.033	59.768	55.739	55.739	55.739
Grapefruit and Pomelos	hg/ha	438.552	433.422	201.667	176.667	212.230	214.953	214.953	214.953
Grapes	hg/ha	69.240	91.231	79.739	81.290	79.858	84.203	84.203	84.203
Lemons and Limes	hg/ha	359.681	298.530	225.000	208.718	285.754	285.833	285.833	285.833
Olives	hg/ha	12.389	11.829	19.398	12.994	34.055	15.097	16.140	16.140
Oranges	hg/ha	286.667	275.819	219.157	232.381	172.789	175.056	175.056	175.056
Strawberries	hg/ha	50.280	149.615	386.667	315.000	282.025	291.176	291.176	291.176
Tang.Mand.Clement	hg/ha	228.811	233.218	208.421	223.500	226.364	204.889	204.889	204.889
VEGETABLES									
Beans, Dry	hg/ha	13.333	21.107	20.000	25.000	15.873	16.667	25.000	25.000
Chick-Peas	hg/ha	11.500	15.480	17.083	13.913	8.462	9.500	12.800	12.800
Chillies&Peppers, Green	hg/ha			175.000	160.000	174.684	210.714	210.714	210.714
Lentils	hg/ha	8.696	18.191	10.000	10.000	11.679	11.111	15.000	15.000
Onions, Dry	hg/ha	141.270	159.494	193.600	228.929	345.311	350.000	350.000	350.000
Potatoes	hg/ha	169.471	186.975	201.559	190.270	213.178	215.966	294.148	294.148
Tomatoes	hg/ha	190.851	248.102	389.615	396.824	385.246	411.667	411.667	411.667
OTHER MAIN COMMODITIES									
Wheat	hg/ha	15.054	21.168	20.667	18.814	27.025	31.995	27.674	27.907
Barley	hg/ha	10.250	17.053	13.268	11.032	10.805	11.571	15.545	15.385
Maize	hg/ha	9.167	16.960	23.717	20.000	17.500	19.000	13.500	10.000
Sugar Beets	hg/ha	485.741	570.699	500.000	456.173	486.267	562.963	560.000	560.000
Sugar Cane	hg/ha	203.333	214.990	245.026	243.590	242.424	242.500	243.500	243.500
Cattle meat	Carcass Wt (Hg/An)		785	1.510	1.510	1.510	1.510	1.510	1.510
Beef and Veal	Carcass Wt (Hg/An)	1.350	1.350	2800	2800	2800	2800	2800	2800
Mutton and Lamb	Carcass Wt (Hg/An)	220	220	220	220	220	220	220	220
Chicken Meat	Carcass Wt (.1Gr/A)	11.000	11.258	14511	14509	17059	17139	17917	17838
Cow Milk, Whole, Fresh	Yield (Hg/An)	22.898	28.261	52118	38934	40720	42237	48375	48375
Hen Eggs	Yield (100 Mg)	136.445	121.000	138000	135000	135000	134545	140000	140000

Source: CIHEAM. 2005. Annual Report. Lebanon.

Appendix Table 6. **Price of Major Inputs, 2002-2003**

Seeds			
Hard wheat	L.L./kg	360 - 400	360 - 400
Soft wheat	L.L./kg	1500	1500
Sweet corn	$/kg	6-8	6-8
Field corn	$/ton	160	160
Barley	$/ton	90	90
Potatoes	$/ton	900	700
Onion	$/kg	35 - 40	35 - 40
Melons	$/1000 seeds	35	35
Watermelons	$/1000 seeds	25-30	25-30
Peppers	$/5 g	25-30	25-30
Tomatoes	$/5 g	80-85	80-85
Plants			
Citrus	$/plant	2 - 5	2 - 5
Vine	$/plant	1.5 - 2	1.5 - 2
Apples	euro/plant	5 - 5.5	5 - 5.5
Peaches	euro/plant	6 - 7	6 - 7
Pears	euro/plant	6 - 6.5	6 - 6.5
Apricots	euro/plant	6 - 7	6 - 7
Fuel	L.L/20 Liter	8000	8000
Transport	% of production cost	15 - 20	15 - 20
Azoted fertilizer			
NH_4SO_4	$/ton	170	170
NH_4NO_3	$/ton	190 - 200	190 - 200
Phosphated fertilizer			
P_2O_5	$/ton	180 - 200	180 - 200
Potassium			
K_2SO_4	$/ton	360	360

Source: CIHEAM. 2005. Annual Report. Lebanon.

Appendix Table 7. Trade balance of Agricultural Products, 1980-2001

	UNIT	1979-81	1989-91	1998	1999	2000	2001
			Foreign Trade - Exports				
Total	MLN US$	964,2	515,6	715,2	676,8	714,3	889,3
Agricultural	MLN US$	205,6	135,1	144,6	140,3	138,4	169,1
			Foreign Trade - Imports				
Total	MLN US$	3.090,20	3.046,30	7.056,30	6.206,50	6.227,90	7.291,10
Agricultural	MLN US$	587,5	778,8	1.376,60	1.182,30	1088,6	1.213,90
			Agriculture trade balance				
Exports-Imports	MLN US$	-381,9	-643,7	-1.232,00	-1.042,00	-950,2	-1.044,80

Source: CIHEAM. 2005. Annual Report. Lebanon.

Appendix Table 8. Agricultural External Trade Distribution by Product, 2001- 2003.

* including watermelon ** including quince *** NA: Not Available **** quantity in liter	2002			
	Imports		Exports	
	Quantity	Value	Quantity	Value
	1000T	1000$	1000T	1000$
Durum Wheat	372,530	48052,000	0,000	0,000
Soft Wheat	0,000	0,000	0,000	0,000
Barley	74,780	7134,000	0,000	0,000
Corn	332,630	36885,000	3,470	579,000
Rice	45,650	17345,000	2,160	1286,000
Other cereals	1,480	821,000	0,160	43,000
Total Cereals	**827,080**	**110237,000**	**5,830**	**1927,000**
Potato	73,700	20,620	130,590	13,610
Sunflower	14,400	5000,000	0,000	0,000
Forage crops	78,370	7500,000	4,400	260,000
Lettus	-	503,144	-	1000,000
Melon & watermelon	8,230	1000,000	5,420	1000,000
Tomatoes	11,320	2000,000	6,450	1000,000
pepper	3,800	2000,000	2,100	290,000
Onion	17,450	2000,000	5,180	446,780
Orange	0,220	30,910	80,790	9000,000
Mandarin, Clemantine	0,060	55,840	12,920	2000,000
Citrus	0,360	0,680	20,374	2000,000
Apple	0,770	1000,000	18,800	4000,000
Pears **	0,450	255,700	6,160	1000,000
Apricots	0,120	131,750	2,660	360,000
Almonds	6,261	11000,000	0,150	93,630
Banana	0,180	648,540	16,460	1000,000
Table Grapes	0,070	43,980	17,320	2000,000
Wine ****	1,000	3528,000	1,300	7678,000
Table olives	0,070	71,250	18,700	26,570

* including watermelon ** including quince *** NA: Not Available **** quantity in liter	2003			
	Imports		Exports	
	Quantity	Value	Quantity	Value
	1000T	1000$	1000T	1000$
Durum Wheat	228,700	45227,000	0,000	0,000
Soft Wheat	0,000	0,000	0,000	0,000
Barley	16,900	1699,000	0,000	0,000
Corn	136,550	22874,000	1,000	0,000
Rice	29,660	12422,000	0,800	445,000
Other cereals	3,640	579,000	4,270	1299,000
Total Cereals	**415,450**	**82801,000**	**6,070**	**1744,000**
Potato	75,810	14285,000	109,110	436,000
Sunflower	10,890	3840,000	0,010	9,000
Forage crops	20,600	13879,000	48,660	7307,000
Lettus	-	264,000	-	1544,000
Melon & watermelon	7,870	2330,000	4,340	480,000
Tomatoes	11,480	2530,000	6,190	782,000
pepper	4,550	1661,000	1,590	232,000
Onion	20,710	2743,000	11,170	902,000
Orange	0,140	157,000	73,860	8546,000
Mandarin, Clemantine	0,018	16,000	13,450	1620,000
Citrus	0,250	104,000	19,260	2081,000
Apple	0,630	397,000	27,880	6112,000
Pears **	0,250	119,000	8,370	1275,000
Apricots	0,580	563,000	1,700	273,000
Almonds	3,630	2554,000	0,058	17,000
Banana	0,350	122,000	17,320	1477,000
Table Grapes	0,130	68,000	32,290	4906,000
Wine ****	1,000	4615,000	1,420	8070,000
Table olives	0,435	283,000	0,010	18,000

Source: Source: CIHEAM. 2005. Annual Report. Lebanon.

Appendix Table 9. Trade of Agro-Food Products by Type, 2001-2003 (US $ Million)

	2002		2003	
	Exports	Imports	Exports	Imports
Live animals, Animal products	8.2	381.9	12.0	418.9
Plant products	57.1	336.0	65.0	383.5
Oil, Grease and Fats	7.4	44.7	9.0	52.5
Prepared Foodstuffs, Beverages and Tobacco	102.3	474.5	150.0	476.7
Total	175.0	1237.0	235.0	1331.6

Source: Higher Customs Council, 2003.