



**USAID**  
FROM THE AMERICAN PEOPLE

# USAID/LEBANON

**FLORICULTURE VALUE CHAIN ASSESSMENT REPORT**

**LEBANON INDUSTRY VALUE CHAIN DEVELOPMENT (LIVCD) PROJECT**

**FEBRUARY 2014**

This publication was produced for review by the United States Agency for International Development. It was prepared by DAI.



# FLORICULTURE VALUE CHAIN ASSESSMENT REPORT

## LEBANON INDUSTRY VALUE CHAIN DEVELOPMENT (LIVCD) PROJECT

**Program Title:** Lebanon Industry Value Chain Development (LIVCD)

**Sponsoring USAID Office:** USAID Lebanon

**Contract Number:** AID-268-C-12-00001

**Contractor:** DAI

**Date of Publication:** February 2014



# CONTENTS

- 1. OVERVIEW..... 1
- 2. VISION ..... 2
- 3. END MARKET ANALYSIS..... 3
- 4. PRODUCTION..... 11
- 5. STAKEHOLDER ANALYSIS..... 19
- 6. BUSINESS ENABLING ENVIRONMENT ..... 27
- 7. DYNAMIC TRENDS..... 31
- 8. OPPORTUNITIES AND CONSTRAINTS..... 35
- 9. UPGRADING STRATEGY ..... 41
- ANNEX 1: DETAILED FLORICULTURE IMPORTS TO THE MIDDLE EAST ..... 45
- ANNEX 1: FULL FLORICULTURE SWOT ANALYSIS ..... 49
- ANNEX 8: LIST OF POTENTIAL CUT FLOWER CROPS IN LEBANON..... 51

# TABLES AND FIGURES

## TABLE

TABLE 1: HS Codes for Floriculture .....	3
--	---

## FIGURE

Figure 1: World Flori Culture Trade .....	3
Figure 2: Largest Exporters and Importers of Floriculture Products by HS4 level codes .....	4
Figure 3: Floriculture Imported by the Middle East .....	5
Figure 4: Lebanese floriculture Trade flows, 2011 .....	6
Figure 5: Lebanese Floriculture Trade Balance .....	7
Figure 6: Monthly Lebanese Cut Flower imports in 2011 by HS Code: (USD thousands) .....	10
Figure 7: Cut Flower Production Best Practices and Prevalence in Lebanon .....	13
Figure 8: Post-Harvest Best Practices and Prevalence in Lebanon .....	16
Figure 9: Variability in Flower Prices .....	17
Figure 10: Floriculture Value Chain Map .....	19
Figure 11: Sample Receipt from Wholesaler .....	22
Figure 21: Lebanese Customs Duties .....	27
Figure 12: Value of Lebanese Exports of Cut Flowers USD '000 .....	33
Figure 13: Iris Lortetti    Figure 14: Tulipa Lownei .....	38
Figure 15: Imports of Bulbs and Tubers (HS 0601) to the Middle East .....	45
Figure 16: Imports of Live Plants (HS 0602) to the Middle East .....	46
Figure 17: Imports of Cut Flowers (HS 0603) to the Middle East .....	46
Figure 18: Imports of Foliage (HS 0604) to the Middle East .....	47

## 1. OVERVIEW

In 2011, although nearly all live plants and bulbs are imported from Holland. Although this is considered “small-scale” production, flower farming on any size plot of land still requires significant capital investment compared to other agricultural crops because farmers must install and maintain greenhouses.

In terms of floriculture species, Lebanon’s diverse terrain enables production of a wide variety of plants, including roses, which are one of the most common and highest valued products. Demand for floriculture products, particularly cut flowers, peaks in March for Lebanese Mother’s Day, and remains high over the summer and during the Christmas season. Demand is closely linked to rates of tourism and the summer wedding and party season, so demand for flowers was lower in 2011 and 2012 due to the crisis in Syria. As demand fluctuates in relation to regional stability and other factors, so too does producers’ profitability. Compared to other agriculture value chains, floriculture is subject to a higher level of market risk.

The Lebanese floriculture sector is characterized by a concentration of market power in the hands of a relatively small number of wholesalers - These wholesalers engage in a variety of value chain activities including production, wholesale, import, and export. Unlike other value chains in which wholesalers’ roles are confined to purchasing product from producers and selling to retailers or exporters, the pervasive market power of these few floriculture wholesalers stems from their capacity to import agricultural inputs such as seeds, cuttings, and mother plants from Holland, and distribute them to producers. In addition, these large wholesalers have extensive buyer networks, which increases turnover and reduces rates of spoilage at wholesaler facilities. According to multiple farmers interviewed by LIVCD, transactions between farmers and wholesalers are consignment based, and farmers claim that wholesalers under-compensate farmers by selling their products at low prices and claiming high loss rates that may or may not reflect actual rates of spoilage.

Small scale flower farmers are in a precarious financial position. Capital investment costs for greenhouses are substantial, flower prices are volatile, and as much as 30 percent can be lost through spoilage and wholesaler fees. Although access to working capital and larger values of investment capital are available, many small scale farmers who have used debt to finance the considerable fixed investment requirements of greenhouses risk losing their assets during market downturns. Finally, small farmers lack access to technical assistance due to the lack of public extension services and the limited impact of multiple donor-funded projects working on floriculture. Farmers have nowhere to turn for technical production and marketing assistance.

The LIVCD team has identified a few opportunities to improve strengthen the floriculture value chain in Lebanon through increasing the volume and quality of flowers produced, creating direct linkages between farmers and retailers in domestic and international markets that limit the control of wholesalers, and introducing distinct, indigenous flower species that will boost the image of the Lebanese flower industry and support price premiums.

## 2. VISION

In five years' time the floriculture value chain will have undergone a significant and deep upgrading. . These investments will allow smaller floriculture producers to become more profitable, reversing current patterns of marginal and extremely variable profitability among such actors. New markets for regional floriculture exports will have significantly expanded These new export sales will be flowing through a much expanded value chain channel consisting of direct farmer sales to retailer/exporters and to the integrated production /retail/exporting firm who will likely expand its sourcing relationships to include smaller floriculture producers adopting improved practices. With an expansion of these more vertically integrated channels, the market power of the small number of wholesaler/producer/exporters who currently dominate the market will be substantially reduced. This will result in a much more equitable value chain governance structure, with a decline in the prevalence of the consignment sales that transfer most market risk to farmers. More sales in the direct farmer to retailer/exporters will be done on a firm price cash basis. These transaction modalities will lessen the risk to farmers, and be reflective of lower loss levels throughout the value chain, driven by better production practices and a more stable export market. This will be facilitated ted by improved cold chain infrastructure at the Beirut airport. Finally, Lebanon will have developed at least one unique flower type that is indigenious to Lebanon as an export product for which Lebanese flower growers and exporters will be the only international source.



### 3. END MARKET ANALYSIS

#### GLOBAL TRADE OF FLORICULTURE:

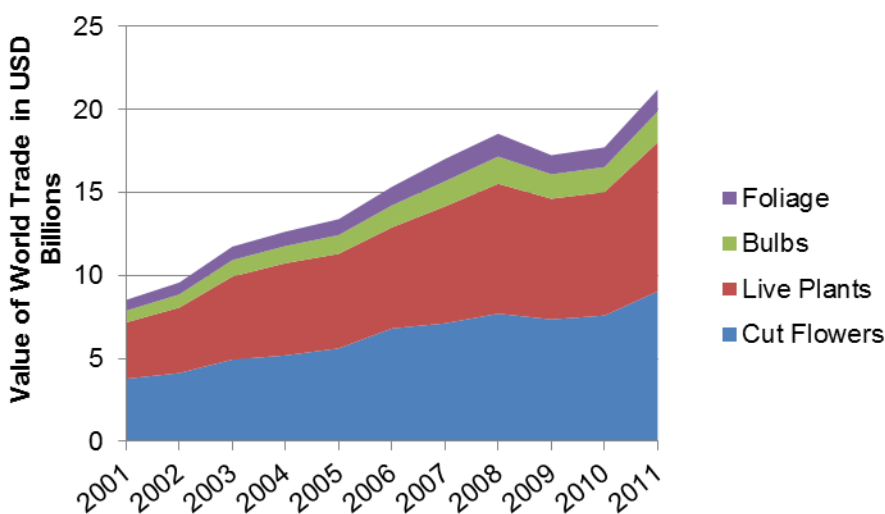
In 2011, world trade of floriculture amounted to over \$21.2 billion. To analyze international trade of floriculture, LIVCD utilized international harmonized system (HS) codes. Relevant HS codes include 0601, 0602, 0603, and 0604, which account for bulbs, live plants, cut flowers, and foliage, described in **Error! Not a valid bookmark self-reference.** below.

**TABLE 1: HS CODES FOR FLORICULTURE**

	HS Code	Specific Definition
Cut Flowers	0603	"Cut Flowers" includes all cut flowers and flower buds that are ready for bouquets. This category includes two HS6 codes that distinguish between fresh flowers from dried, dyed, or otherwise prepared flowers.
Live Plants	0602	"Live Plants" includes plant cuttings, plants with roots, and mushroom spawn that can be planted or propagated. This category includes six HS6 subcategories that separate plants based on type including fruit and berry bearing, rhododendrons, roses, herbaceous perennials, and mushroom spawn, as well as by rooted or un-rooted.
Bulbs	0601	"Bulbs" includes bulbs, tubers, tuberous roots, corms, crowns and rhizomes- all plant material used to grow a new live plant. This category includes two HS6 codes that separate bulbs and roots based on whether they are in growth or dormant.
Foliage	0604	This category includes all of the greenery such as branches and leaves, grasses, mosses, used in bouquets and for decoration. This category includes three HS6 codes that distinguish between mosses and lichens, fresh foliage, and dried or prepared foliage.

**FIGURE 1: WORLD FLORI CULTURE TRADE**

Source: Comtrade



As shown in Figure 2, the floriculture industry has been increasing steadily over the past ten years, with an average annual increase in trade of 9.8 percent per year. The value of trade decreased slightly between 2008 and 2009, but recovered between 2010 and 2011. Cut flowers and live plants each represent just over 40 percent of trade by volume while bulbs and foliage represent 8 percent and 6 percent respectively.

In general, consumption of floriculture products is highest in developed countries. The EU, United States, and Japan import the greatest value of floriculture products. Although the refrigerated air shipments have

made floriculture a global market, the majority of flowers are traded at a regional level, with large producers exporting to the closest developed country or countries with high demand for flowers. For example, Germany, which is the largest importer of floriculture by value imports over 90 percent of flowers from other European countries. The United States, which is the third largest importer, imports over 75 percent of floriculture products by value from other Western hemisphere countries. Additionally, Colombia, which is the second largest exporter of floriculture products, sends over 75 percent of its exports to the United States.

Demand for cut flowers and other floriculture products tends to peak around key national holidays. Internationally, demand is highest during the winter holiday season, Valentine’s Day, and Mother’s Day. Demand for flowers is also higher in the summer, which is peak wedding season in many countries.

Another key characteristic of the international flower market is the prevalence of highly integrated and competitive flower production clusters. To achieve efficiencies of scale and coordination, economic clusters incorporate the full value chain from breeding to retailing, and are often comprised of multiple companies that are completely vertically integrated and located within a defined geographic zone. In many cases, clusters receive support from host country government in the form of investment incentives and they have research institutions and logistics organizations available for support. Cluster development in floriculture has enabled a few countries to produce high volumes of high quality production at competitive prices. The largest clusters are in the Netherlands, Colombia, Ecuador, Zimbabwe, Ethiopia, Kenya, and China. India also has an emerging floriculture cluster, although limited infrastructure in that country constrains development.

## THE ROLE OF THE NETHERLANDS IN GLOBAL FLOWER MARKETS

The Netherlands plays a key role in international floriculture trade and is both a major producer and an international wholesale focal point. The Dutch flower auction “FloraHolland” accounts for over 60 percent of global flower sales, and sells over 43 million flowers and 4.8 million plants daily. The Netherlands established dominance in the world floriculture market by creating the first major floriculture cluster and investing in research and marketing of floriculture products. As seen in Figure 3 below, the Netherlands has the largest world market share for exports of all floriculture products, controlling over 75 percent of world trade in flower bulbs, and about half of world trade in both live plants and cut flowers. It imports products from all of the major production clusters in the world, as well as from European producers, and exports flowers to importers around the world.

The Netherlands is the second largest destination market for Middle Eastern flower exports after Belgium. Imports from the Middle East comprise just 3.5 percent of floriculture products imported by the Netherlands, and 1.6 percent of cut flower imports. The Middle East as a whole exported a total value of \$48 million of floriculture products to the Netherlands in 2010, equivalent to about 3 percent of imports. Lebanon’s contribution to this total was exceptionally small, with a value of just over \$4,000.

**FIGURE 2: LARGEST EXPORTERS AND IMPORTERS OF FLORICULTURE PRODUCTS BY HS4 LEVEL CODES**

	Country	Value in 2011 (\$)	Trade Balance in 2011 (\$)	Value	Annual growth in value 2007-2011	Share in World market
<b>Exporters</b>						
Bulbs (601)	World	\$1,854,976	\$147,956	N.A	3.0%	
	Netherlands	\$1,435,796	\$1,334,989	\$3,857	2.0%	77.4%
	Germany	\$82,039	-\$77,856	\$7,793	18.0%	4.4%

	Chile	\$37,314	\$31,297	\$3,567	9.0%	2.0%
Live Plants (602)	World	\$8,970,813	\$1,264,382	N.A	4.0%	
	Netherlands	\$4,406,545	\$3,707,561	\$3,225	7.0%	49.1%
	Germany	\$773,539	-\$931,822	\$2,079	10.0%	8.6%
	Italy	\$715,480	\$370,170	\$1,831	3.0%	8.0%
Cut Flowers (603)	World	\$9,050,145	\$1,150,501	N.A	5.0%	
	Netherlands	\$4,972,920	\$4,222,422	\$6,805	3.0%	54.9%
	Colombia	\$1,251,326	\$1,244,383	\$6,074	4.0%	13.8%
	Ecuador	\$679,902	\$679,825	\$5,760	12.0%	7.5%
Foliage (604)	World	\$1,328,486	\$135,506	\$2,888	-1.0%	
	Netherlands	\$304,147	\$75,962	\$5,236	1.0%	22.9%
	Denmark	\$183,744	\$162,334	\$2,019	9.0%	13.8%
	USA	\$122,208	-\$5,058	\$2,997	-4.0%	9.2%
<b>Importers</b>						
Bulbs (601)	World	\$1,707,020	\$147,956	N.A	3.0%	
	USA	\$188,343	-\$166,673	\$3,853	-5.0%	11.0%
	Germany	\$159,895	-\$77,856	\$3,772	11.0%	9.4%
	United Kingdom	\$148,844	-\$128,065	\$4,659	6.0%	8.7%
Live Plants (602)	World	\$7,706,431	\$1,264,382	N.A	2.0%	
	Germany	\$1,705,361	-\$931,822	\$2,922	8.0%	22.1%
	France	\$725,617	-\$587,412	\$3,479	-1.0%	9.4%
	Netherlands	\$698,984	\$3,707,561	\$1,750	5.0%	9.1%
Cut Flowers (603)	World	\$7,899,644	\$1,150,501	\$6,845	2.0%	
	Germany	\$1,207,645	-\$1,129,088	\$6,934	1.0%	15.3%
	USA	\$1,081,167	-\$1,014,030	\$6,990	1.0%	13.7%
	United Kingdom	\$1,000,338	-\$964,659	\$7,547	-4.0%	12.7%
Foliage (604)	World	\$1,192,980	\$135,506	\$3,357	-3.0%	
	Netherlands	\$228,185	\$75,962	\$3,184	-7.0%	19.1%
	Germany	\$197,977	-\$137,001	\$2,898	2.0%	16.6%
	USA	\$127,266	-\$5,058	\$4,816	-4.0%	10.7%

Source: Comtrade

## MIDDLE EAST FLORICULTURE MARKETS

The Middle East is not a major flower producing or exporting region. In 2011 only 1.6 percent of floriculture exports originated in the Middle East. In the same year, the Middle East imported \$222.4 million, or 1.2 percent of world imports. Although other regions present a strong regional preference for floriculture trade, the Middle East imports only 1 percent of floriculture products from other Middle Eastern countries.

Instead, the Middle East imports 37 percent of all floriculture products from the Netherlands, as well as 22 percent from Ethiopia, and an additional 4 percent from both Turkey and Thailand. The remaining 20 percent come from many different countries in Europe and Asia. For more information about the Middle Eastern Flower trade, see Annex 1.

**FIGURE 3: FLORICULTURE IMPORTED BY THE MIDDLE EAST**

Category of Foliage	Value of Imports (\$ thousands)	Value of Imports (\$ thousands)	% Change between 2010
---------------------	---------------------------------	---------------------------------	-----------------------

		2010	2011	and 2011
602	Live Plants	116,849	135,885	16.3%
603	Cut Flowers	69,549	58,474	-15.9%
601	Bulbs	19,525	21,257	8.9%
604	Foliage	9,550	6,780	-29.0%

Source: Comtrade

## LEBANESE FLORICULTURE MARKETS AND TRADE

The Lebanese flower industry is small compared to international and regional flower producers. Lebanon is a net importer of most floriculture products, importing a total value of \$20 million, while exporting a total \$1.4 million in 2011. As shown in Figure 6, Lebanon is a net importer of live plants, bulbs, and cut flowers, and a net exporter of foliage. Lebanon is also a net exporter of some sub-categories of Cut flowers, including “mixed flowers suitable for bouquets”, but this is not shown in Figure 6, as data are presented in aggregate.

An important characteristic of the Lebanese domestic flower market is the 70 percent tariff placed on floriculture products from all countries that are not part of GAFTA or other bilateral trade agreements with Lebanon. This significantly increases the price in Lebanese markets of flowers from the EU and all of the major production clusters such as Ethiopia, Kenya, Colombia, and China, and protects domestic producers from high levels of international competition.

Figure 5 below provides information for Lebanese imports and exports in 2011. The figure presents the total value of imports to Lebanon and exports from Lebanon for each HS 6-level category of floriculture product, as well as the largest supplying or destination country.

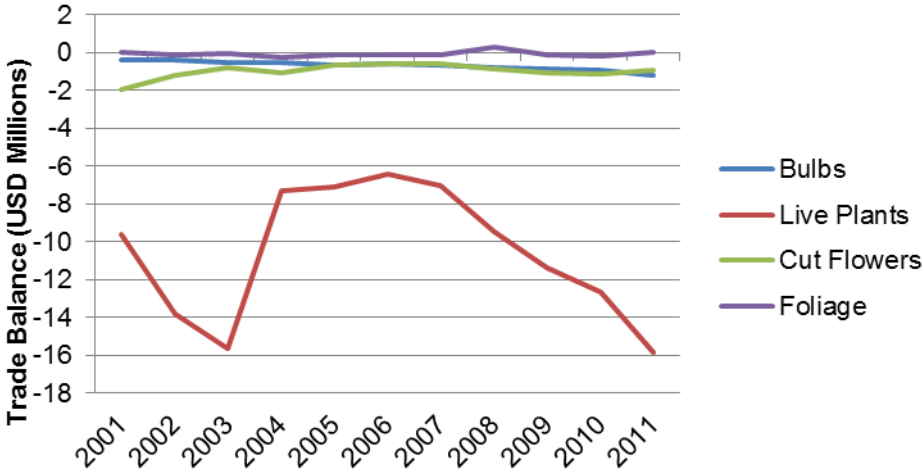
**FIGURE 4: LEBANESE FLORICULTURE TRADE FLOWS, 2011**

HS Code	Detailed description	Imported value 2011 (\$ '000)	Lebanon's leading importing source	Exported value 2011 (\$ '000)	Lebanon's leading exporting destination
<b>06 (Total)</b>	<b>Floriculture sector</b>	<b>20,000</b>	<b>Italy</b>	<b>2,108</b>	<b>Iraq</b>
<b>601</b>	<b>Bulbs, tubers, corms, etc.</b>	<b>1,169</b>	<b>Netherlands</b>	<b>11</b>	<b>Syria</b>
60110	Dormant bulbs, tubers, and roots	1,062	Netherlands	0	N/A
60120	Bulbs, tubers, and roots in bloom	107	Netherlands	11	Syria
<b>602</b>	<b>Live Plants</b>	<b>17,192</b>	<b>Italy</b>	<b>1,368</b>	<b>Iraq</b>
60290	Plants live	12,108	Italy/Netherlands.	1,219	Iraq
60220	Trees, shrubs, and bushes	3,800	Italy	111	UAE
60240	Rose Plants	966	Belgium	14	Syria
60230	Rhododendrons and azaleas	194	Belgium	22	UAE
60210	Cuttings and slips, unrooted	124	Egypt	0	N/A
<b>603</b>	<b>Cut flowers</b>	<b>1,440</b>	<b>Netherlands</b>	<b>500</b>	<b>Iraq</b>
60319	Fresh cut flowers suitable for bouquets and ornamental use	717	Netherlands	88	KSA
60311	Fresh cut roses	344	Ethiopia/Kenya	92	Qatar
60313	Fresh cut orchids	284	Thailand	0	N/A
60390	Cut flowers and buds that are dried or otherwise	79	Netherlands	320	Iraq

HS Code	Detailed description	Imported value 2011 (\$ '000)	Lebanon's leading importing source	Exported value 2011 (\$ '000)	Lebanon's leading exporting destination
	preserved, for bouquet or ornamental use				
60312	Fresh cut carnations	15	Egypt	0	N/A
<b>604</b>	<b>Foliage, branches etc.</b>	<b>199</b>	<b>Netherlands</b>	<b>229</b>	<b>Syria</b>
60491	Foliage, branch and parts of plant without flowers or buds, for ornamental use	187	Egypt/Netherland	20	KSA
60499	Foliage including grass without flowers or buds for ornamental use	13	France	208	Syria

Source: Comtrade

**FIGURE 5: LEBANESE FLORICULTURE TRADE BALANCE**



Source: Comtrade

**Bulbs:** Lebanon imported over \$1.1 million of bulbs in 2011, a 15 percent increase since 2007. Over 90 percent of Lebanese bulb imports come from the Netherlands, 5 percent from France, and the remaining from other countries such as Chile, New Zealand, and additional European countries. The average cost per ton of bulbs imported to Lebanon is \$3,142. Imports from the Netherlands are the least expensive (\$3,014 per ton), while imports from France are considerably more expensive (\$8,833 per ton). This price differential is most likely due to the large scale of production in Netherlands and the variations in species of bulbs being imported. Bulb imports are mainly used as inputs for the floriculture industry, rather than end products for consumers. Lebanese exports of bulbs totaled just \$11,000 in 2011, all of which went to Syria. It is likely that bulb exports to Syria are re-exports of European bulbs. As small and medium scale farmers are not currently producing bulbs and exports are minimal, it is unlikely that there are opportunities for expansion of bulb and tuber production in Lebanon.

**Live Plants:** Of all of Lebanese floriculture imports, the largest amount is in the category of live plants; over \$17 million in 2011, a 21 percent increase over 2007. Most of these imports, \$12 million, are categorized as generic “live plants,” \$3.8 million were fruit trees, and just under \$1 million were rose plants. Imports of live plants are split between grown plants for sale to consumers for landscaping, and planting material such as cuttings, young plants, and mother plants used for propagation that are used by

producers as agricultural inputs. As such they can be considered at least in part to be an investment expense, rather than a consumption expense. This factor provides one explanation for the dramatic rise in the trade balance (exports minus imports) for live plants between 2003 and 2006, as imports dropped dramatically during the period of rising tension before and after the Hariri assassination in 2005—possibly reflecting declining confidence among floriculture farmers and other tree farmers who stopped purchasing imported genetic material.

Imports of rose plants increased by 30 percent since 2007, a rate that is significantly higher than other live plant imports. Over 40 percent of live plants including rose plants come from Italy at an average price of \$964 per ton, and an additional 20 percent come from the Netherlands at an average price of \$2,463 per ton. Rose plants from the Netherlands are more expensive because they often include mother plants that have the highest quality rose genetics and tissues, and are used for propagation.

Although Lebanon is a net importer of live plants, it also exported a total value of \$1.7 million in 2011. It is very likely that these exports are re-exports of imported live plants that were raised in the EU. Over 95 percent of these exports went to Middle Eastern countries, with Iraq importing over 44 percent of Lebanese exports of live plants, Jordan importing an additional 24 percent, and Cyprus and UAE importing over 9 percent each. It is important to note that Iraq, which imported the largest total value of Lebanese live plant exports, had consistently increased imports of Lebanese live plants from 2007-2010, however total imports fell by over 60 percent between 2010 and 2011.

In general, live plants take between 5-10 years to reach a point where they can be sold to consumers. This timeframe makes it hard for small and medium-scale farmers to participate in the live plants segment of the floriculture value chain. For this reason, figures for live plants are not included in the remainder of the value chain assessment.

**Cut Flowers:** Lebanon is a net importer of cut flowers, importing a total value of \$1.4 million in 2011, a 6 percent increase over 2007. The largest subcategory of cut flower imports are flowers and buds for bouquets, followed by cut roses, and cut orchids. About 35 percent of these products are imported from the Netherlands at an average sales price of \$8,206 per ton, while 19 percent is imported from Thailand at an average sales price of \$5,132 per ton, and 9 percent is from Egypt at an average price of \$1,976 per ton.

Lebanon also exports two sub-categories of cut flowers: mixed cut flowers that are suitable for bouquets and fresh cut roses. In terms of mixed cut flowers (HS code 060390), Lebanon is a net exporter, and exported a total value of \$320,000 of cut flowers in 2011 at an average sales price of \$2,807 per ton. Two thirds of these flowers were exported to Iraq, and the remaining one third was exported to Syria. In the past, Lebanon has also made small, one time shipments of cut flowers to other countries including UAE, Qatar, and Saudi Arabia. Lebanon is not a net exporter of roses, but exported a total value of \$88,000 of fresh cut roses in 2011 to GCC countries including Qatar, Saudi Arabia, and the UAE.



**Foliage:** Lebanon is a net exporter of foliage, and exported a total value of \$228,000 of foliage in 2011, 14 percent more by value than in 2007. Over 83 percent of Lebanese foliage exports exported to Syria at an average price of \$866 per ton. The UAE and Saudi Arabia also imported Lebanese foliage products at a significantly higher average price of \$3,667 and \$3,000 respectively.

Lebanon also imports foliage products, and imported a total value of \$199,000 in 2011. The Netherlands, Egypt, Syria, and the U.S., each provided between 10 and 20 percent of Lebanese foliage imports, and the average price ranged from \$2,600 from Syria to \$11,500 from the U.S.

### CHARACTERISTICS OF LEBANESE DEMAND

In 2011, the main importers of floriculture products from Europe are wholesalers, particularly two Lebanese wholesalers who dominate the Lebanese floriculture value chain and play a key role in supplying producers with imported inputs. Key products for both production such as seedlings, cuttings, and other planting material and high value, specialized flowers such as orchids, which are currently in high demand by Lebanese consumers, are only available from abroad.

Demand for floriculture products in Lebanon is highly seasonal. Regional politics and security also affects sales of floriculture products. Figure 7 below shows the seasonality of flower imports in Lebanese markets. As shown in the figure, demand peaks around Mother's Day in March, and has slightly smaller peaks over the winter holidays and the summer wedding and party season. Imports are comprised of mixed cut flowers, roses, orchids, with very small total values of chrysanthemums, carnations, and other types of flowers.

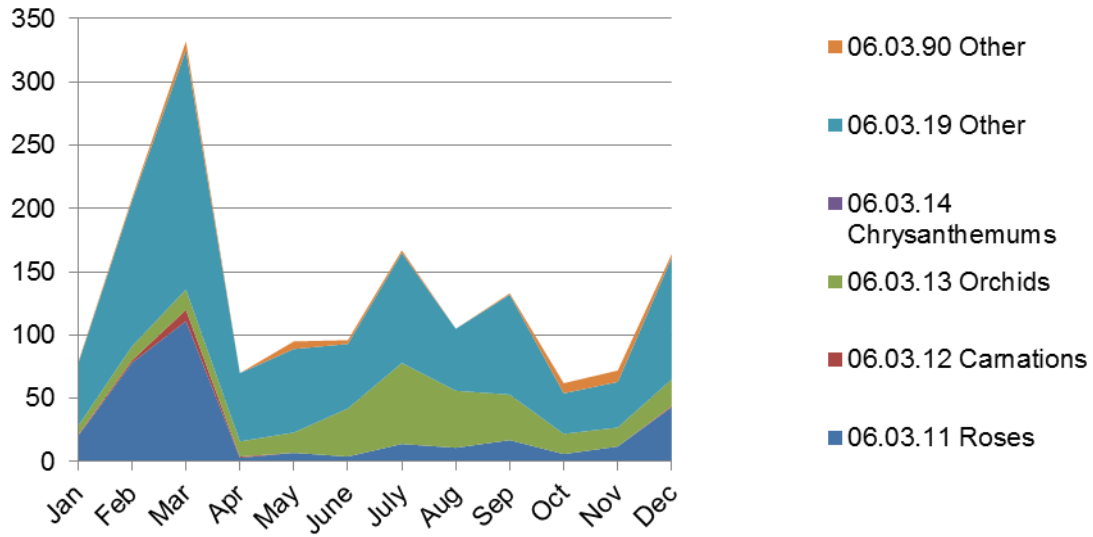
Demand in Lebanon also varies with the domestic and regional political climate and rates of tourism. For example, since the onset of the Syrian crisis and the threat that violence and war could spread into Lebanon, tourism has declined significantly. This reduces demand for flowers from restaurants and hotels and for other events and reunions attended by visitors. In the context of such geopolitical uncertainty, there were also significantly fewer weddings in 2011 and 2012.

### Key Aspects of Lebanese Floriculture Trade

- **Bulbs and Live Plants:** Lebanon imports bulbs and live plants from Europe, and uses them primarily as inputs for the domestic floriculture sector. Exports of these products are mostly re-exports of European products to Middle Eastern countries. Although the total value of live plant imports is high, the longer timeframe required for growing live plants for sale precludes small and medium scale producers from moving into live plant production.
- **Cut Flowers:** Within this category, Lebanon is a net exporter of 'Mixed cut flowers for use in bouquets', and has seen a dramatic uptick in exports to Iraq since 2010. Although Lebanon is a net importer of cut roses, some domestically produced roses are exported to GCC countries. The high value and existence of multiple trade partners for these crops presents an opportunity for Lebanon to displace imports and expand exports of roses and other flowers.
- **Foliage:** Although Lebanon is a net exporter of foliage, its major trade partner is Syria, where given the context of instability, future exports are uncertain. The low value of foliage products also reduces its viability for Lebanese producers.

**FIGURE 6: MONTHLY LEBANESE CUT FLOWER IMPORTS IN 2011 BY HS CODE: (USD THOUSANDS)**

Source: Comtrade





## 4. PRODUCTION

Lebanon grows over 35 species of flowers for commercial use, and has three major zones for flower production: the coastal zone, the mountain zone, and the Bekaa Valley. Each of these regions has distinct climatic and ecological conditions that facilitate production of many species of flowers:

- **Coastal Region:** This region has typical Mediterranean climate with hot, dry summers and mild rainy winters. It is adequate for growing roses, eustoma, gerbera, chrysanthemum, Matthiola, Lisianthus, and Marguerite flowers.
- **Mount Lebanon:** Alpine climate that is cool in the summer and cold and snow covered in the winter. This climate is adequate and desirable for growing roses, dahlias, and astromelia in greenhouses. In the winter, the mountain zone is too cold for flower production.
- **Bekaa:** The Bekaa Valley has hot dry summers and cold dry winters, with large fluctuations between daytime and nighttime temperatures. Flower production in the Bekaa is not possible in the winter due to the cold weather. The climate in the Bekaa is adequate for growing roses, gerbera, fnesia, eustoma, helianthus, and others.

The availability of water for floriculture activities varies according to ecological zone. Water is mainly supplied through rainfall catchment and streams, which are pumped through greenhouse irrigation systems. Average rainfall in Lebanon is approximately 823 mm per year, however the average tends to be higher in the coastal region and lower in the Bekaa. Climate change has been affecting rainfall patterns in Lebanon, leading to less rainfall in the winter and more sandstorms throughout the Bekaa valley, threatening to lower water availability and constrain water supply for greenhouse irrigation.

### AREAS OF PRODUCTION:

It is common in Lebanon for flower producers to be clustered together in a certain village or area. For example, in the case of roses, there are multiple villages in the North, South, and Bekaa, that have a high concentration of rose farmers and a large amount of land dedicated to flower production. The most important locations of these flower clusters are Addoussieh in the South, Ghaboun Aley in Mount Lebanon, and Niha, Chmistar, and Qsarnaba in the Bekaa. According to the Ministry of Agriculture Census of 2010, the cluster of flower producers in Niha Zahle, Chmistar, and Qsarnaba, which are all in the Bekaa, includes over 203 farms.

Flower farmers in Lebanon produce many different species of flowers, and roses are the most prevalent species., farmers in the Bekaa dedicate the most land to rose production, followed by Mt. Lebanon. The largest area planted with ornamentals are found in Mt. Lebanon and the south, and farmers in the north are focused on “other” species, which include Dahlia and Astromelia.

### FLOWER SEEDLING NURSERIES

In Lebanon, it is common for large and medium sized farmers to have small nurseries as part of their facilities. These nurseries are relatively small in scale, and the quality of the seedlings they produce is poor and unreliable. Small and medium-scale farmers with nursery facilities generally do not sell seedlings, but use them for their own production. Although quality of production at these three

2010

commercial facilities is better than at other locations, according to a DHAIM assessment in 2010, it still does not meet international standards for seedlings due to less atrophied root systems, low quality plant genetics, and high prevalence of diseases. As a result, flower growers in Lebanon rely on imported seedlings from a small number of wholesaler/importers who import from Holland. Within this structure, wholesaler/importers can charge a significant mark up on seedlings and control the species and varieties that farmers produce. Since farmers depend on these actors for access to critical planting materials, they are at a disadvantage, and lose negotiating power, when also selling their products to the same cohort of wholesalers.

## **TECHNICAL ASPECTS OF FLOWER PRODUCTION**

Production of flowers and potted plants to meet domestic and international market standards requires specialized technical practices for seedling production, growing, harvesting, and post-harvest handling.

**Seedling Production:** The majority of seeds and seedlings in Lebanon are imported from Holland and grown in the nurseries. Although by law wholesalers and farmers should pay a “propagation fee” for every new plant they generate from the imported mother plant, many farmers do not pay the full amount. The result is that the cost of new planting material generated from Dutch plants may be artificially low and that some nurseries may not be in conformity with international standard of intellectual property rights. There could be a risk associated with expansion of exports of cut flowers generated from Dutch plants without paying the full propagation fee required by the seller through the purchasing agreement, although the degree of this risk is unknown.

Seeds are planted in soilless media plugs and placed in polystyrene trays. Depending on the species, seedlings require different porosity and air flow in the growing media, irrigation, pH, fertilization, and duration of daylight, which can be either natural or artificial, and temperature controlled. Each of these conditions can be managed using mechanized equipment or manual labor. According to an assessment of the Lebanese Flower Industry in 2009, Lebanese nurseries are not using best practices for seedling cultivation

**Flower Production:** Once seedlings have established adequate root systems, they are transported to flower growers. Flower growing in Lebanon occurs mostly in greenhouses, This is indicative of an encouraging trend towards more investment into this sector to upgrade facilities and with a shift towards protected agriculture. Greenhouses can be either gutter connected poly-covered greenhouses with roll up side curtains, which allow for more temperature and humidity control, or plastic tunnels. The [Figure](#) below describes best practices for flower production and the prevalence of their implementation among typical Lebanese flower producers. In general, due to limited investment capital and technical expertise, small-scale farmers are less likely to implement best practices, where as large-scale farmers implement more, if not all, of the best practices.

As seen in the figure below, the majority of Lebanese farmers do not have access to sophisticated greenhouse infrastructure such as well designed structures, adequate airflow, uniform lighting, or heating for cold weather. Some farmers have cooling equipment, which allows them to delay the timing of flower blossoming and earn higher market prices. Although some farmers have hydroponic production, the DHAIM team reported in 2009 that these systems were often not being used according to best technical practices or maximum capacity. LIVCD identified only a handful of hydroponic production systems through fieldwork, all of which were owned and operated by large scale flower producers such as the two largest wholesalers/producers and the integrated floriculture firm Exotica. Almost all farmers planted

flowers in raised beds using drip irrigation and had some source of supplementary lighting such as fluorescent bulbs.

In terms of agricultural inputs for flower farming, the average Lebanese farmer uses fertigation. Only some farmers have access to high quality planting materials such as seeds and seedlings. This is because high quality seedlings are imported from Europe at high prices, and as described above, domestic firms do not produce high quality seedlings. The average Lebanese farmer does not utilize agricultural inputs such as foliar sprays or soil amendments that improve nutrition and growth. The average farmer also does not engage in tissue sampling and testing to ensure the quality of seedlings. This is in large part because these services are not available in many floriculture producing areas. Lack of testing means that older and diseased plants with lower yields are not replaced in a timely manner.

Proper technical flower production practices among average producers are also lacking, which leads to reduced yields. Simple best practices for planting density and uniformity of seedling size, which reduces overall costs of production and increases yields are only followed by some farmers. The practice of weeding is infrequently done inside greenhouses, and not practiced around the perimeter of greenhouses. Finally, only some farmers discard diseased plants, and this can cause the spread of disease to other plants in the greenhouse. Some farmers do not discard diseased plants especially if they are more developed bushes, or high value plants with buds because they are reluctant to lose their investment, even if the plants pose a risk to total production and yields.

**FIGURE 7: CUT FLOWER PRODUCTION BEST PRACTICES AND PREVALENCE IN LEBANON**

	Cut Flower Production Practices in Lebanon	Yes	Sometimes	No
Infrastructure	Well-designed greenhouse structures			X
	Adequate greenhouse air flow			X
	Uniform greenhouse lighting			X
	Use of greenhouse heating			X
	Use of greenhouse cooling		X	
	Use of hydroponics for flower production		X	
	Use of drip irrigation	X		
	Use of raised beds	X		
	Use of netting for cut flower crops	X		
	Use of supplementary lighting for day length control	X		
Agricultural Inputs	Use of fertilization with irrigation system	X		
	Use of high quality planting materials		X	
	Foliar application of fertilizer			X
	Routine Soil/Water/Tissue analysis			X
	Use of compost to amend soil for organic matter			X
Technical Practices	Planting only one cultivar per bed		X	
	Planting uniform sized flower plugs in same bed		X	
	Optimum plant density per crop species		X	
	Weeding inside greenhouses		X	
	Weeding outside greenhouses			X
	Discarding diseased plants		X	
	Timely replacement of old plants with low yield			X

Source: DHAIM Flower Industry Assessment 2009

**Rose Production Practices:** Roses are an important crop for Lebanese producers, and most flower growers grow at least some roses in their facilities. In general, rose production in Lebanon does not utilize best international practices, and the quality of roses produced is low. Two technical practices in particular, the use of hydroponics and the “bending technique”, are staples of international best practices but have not been adopted in Lebanon. Most modern technology for roses requires the use of hydroponics, which entails growing roses in a soilless media that allow roots to be continuously exposed to a solution of nutrients. Hydroponics systems are highly technical and require a significant capital investment; however, they produce a higher density of flower stems and higher quality flowers. The “bending technique” entails lowering the bottom branches of a rose plant in order to increase the supply of carbohydrates from the best stem to the vertical shoot. This relatively simple practice increases stem growth and like hydroponics, improves flower quality.

### **TECHNICAL ASPECTS OF HARVEST AND POST-HARVEST HANDLING**

Post-harvest handling of cut flowers has a significant impact on the shelf life of flowers.

Figure below presents best practices for flower harvesting and post-harvest handling, and the prevalence of these practices among Lebanese flower growers and wholesalers.

As noted below, the majority of farmers are not implementing basic best practices. In terms of harvesting practices, small and medium sized farmers do not use chemical treatments to improve hydration, storage, or bud opening of flowers. Only some farmers have access to cold rooms for storing flowers before they are shipped, which could lengthen shelf life and quality upon arrival at the wholesale market. Although most farmers have adopted the practice of bunching flowers together, only some farmers grade flowers according to quality or stem length. Finally, regular sanitation of harvesting tools and tables is not practiced. This can lead to contaminants such as dirt and bacteria in flower stems and packaging that reduces shelf life and quality of the flowers.

In terms of packaging, the only practice that is consistently implemented is putting flowers in sleeves that are labeled with the producer's name. Two simple practices that improve the quality and sophistication of packaged flowers are including the flower species name on the sleeve and removing lower leaves from the flower stem. The average farmer does not have specialized packaging material to suit different flower species, and many do not have proper cold storage at their facilities.

Typical transportation and wholesale handling practices are also inconsistent with best practices. Although flowers are transported in water, farmers typically use their regular cars or trucks, which do not have proper cooling facilities, to transport flowers. Upon arrival, flowers are often stacked horizontally on the wholesale market floor, rather than placed in buckets with a specialized nutrient solution, and wholesalers do not remove damaged or rotting flowers from fresh flowers on a routine basis.

**FIGURE 8: POST-HARVEST BEST PRACTICES AND PREVALENCE IN LEBANON**

	Postharvest Practices in Lebanon	Yes	Sometimes	No
Harvesting Practices	Use of chemical hydration treatments at harvest			X
	Use of chemical treatments for storage			X
	Use if chemical treatments for bud opening			X
	Immediate removal of field heat following harvest			X
	Use of cold rooms for storing flowers before sale or shipping		X	
	Grading flowers for quality or stem length		X	
	Daily sanitation of tables and harvesting tools			X
	Periodic sanitation of cold rooms			X
	Bunching flowers of same species together	X		
Packing Practices	Removing lower leaves from stems		X	
	Packing flowers in sleeves	X		
	Packing flowers in sleeves after removal of field heat			X
	Use of specialized packing materials for gerberas			X
	Labeling flower bunches with flower cultivate name		X	
	Labeling flower bunches with grower's ID (coded by sleeve design)	X		
Transport and Handling	Use of cold trucks for transporting flowers			X
	Delivering flowers in boxes			X
	Keeping flowers packed or unpacked off the ground or floor			X
	Delivering flowers in water		X	
	Delivering flowers dry		X	
Handling at wholesale	Cleaning buckets with sanitizing solution		X	
	Keeping diseased flowers away from flowers with no disease			X

Source: DHAIM Flower Industry Assessment 2009

## **COST OF ROSE PRODUCTION**

The cost of flower production varies based on the equipment and technical practices that the farmer uses. The cost modeling for this analysis of rose production is based on typical capital and operational expenses for four dunums using fairly basic infrastructure and agricultural inputs, and medium farmers on 20 dunums using more sophisticated equipment and technical practices that are considered “best practices”. The scale and technology used in floriculture farming have significant financial ramifications. It is important to note that this model uses simple average rates for flower losses at wholesale and selling prices, whereas in reality, these rates vary widely by season, by year, and by the quality of production.

Upfront capital investments required include land preparation, purchasing of rose plants, and purchasing and installation of greenhouses, drainage systems, and drip irrigation systems. The price per dunum of these items varies based on the plant density that the farmer is able to achieve and the sophistication and durability of equipment purchased.

**FIGURE 9: VARIABILITY IN FLOWER PRICES**

Type of Flower	Unit	Low Price (LBP)	High Price (LBP)	Percent Change in Price	Price of Imports (LBP)
Roses	Stem	200	1,500	650%	400-1,500
Chrysanthemums	Bundle	2,000	4,000	100%	2,500-3,000
Lilium	Stem	800	2,000	150%	2,000
Eustoma	Stem	200	1,000	400%	N/A

Source: LIVCD field work

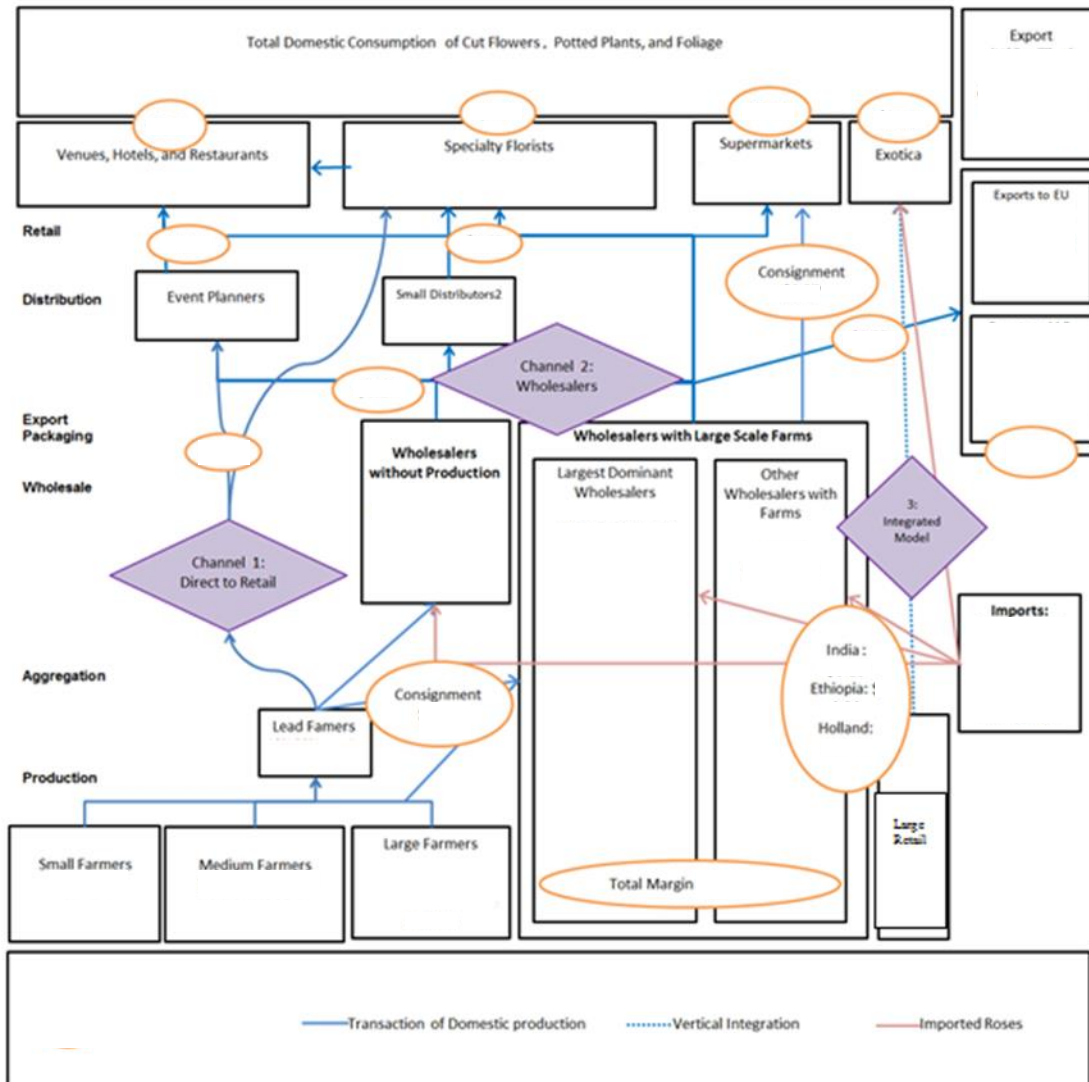




## 5. STAKEHOLDER ANALYSIS

The value chain map (Figure 17) presents the major stakeholders involved in flower production, as well as the prices for roses per stem at key points of transaction through the value chain.

**FIGURE 10: FLORICULTURE VALUE CHAIN MAP**



Source: LIVCD Assessment Team

### PRODUCERS

As presented in the previous section, flower production occurs in all regions of Lebanon, though it is concentrated in the Bekaa Valley and Mount Lebanon. Production practices and business strategies differ substantially depending on the scale of production.

## **SMALL FARMERS**

The majority of flower farmers in Lebanon, , are considered small scale and farm on five dunums of land or less. these farmers are concentrated in the Bekaa, but prevalent in all regions of Lebanon. Small farmers typically farm between four and six species of flowers and plants, and most plant at least some roses. Small scale farmers typically choose which species to plant based on perceived market demand and rudimentary analysis of yearly flower prices, yet these decisions are often based on inaccurate or incomplete market data such as copying a neighbor's decision, or a "gut feeling", which can lead to oversupply of some species resulting in lower prices.

As presented above, small scale farmers usually invest in basic greenhouse and drip irrigation systems. Although the cost model presented uses the cost of a basic plastic greenhouse with roll-up sides and vents, which is most efficient for floriculture production, many small scale farmers utilize tunnel greenhouses. Tunnel greenhouses do not allow for adequate temperature control, which can lead to a significant reduction of yields. Small scale farmers do not have access to extension services, and are unaware or do not use many technical production and post-harvest practices that could increase yields, quality, and shelf life of flowers.

Small farmers use their personal vehicles to transport production to wholesalers, one to two times per week depending on the time of year. If flower farmers operate in a village with a high density of flower farmers, they will sometimes take turns collecting production to deliver to the wholesaler. In lieu of cold storage, which would require high levels of investment, farmers transport flowers early in the morning- often between 5:00am and 7:00am- when temperatures are low. Farmers sell to wholesalers on consignment such that they bear all marketing risks. Prices for flowers vary dramatically as noted above, and losses caused by rot and deterioration of flowers at the wholesaler's facilities can be s high for some small scale farmers.

## **MEDIUM FARMERS**

Cultivate flowers on between five and 25 dunums of land. medium-scale farmers are also concentrated in the Bekaa, these farmers produce between four and 10 species of flowers and plants. Many medium-scale farmers use the same decision making process as small scale farmers when selecting species, however since they produce at a significantly larger scale, they are more likely to receive better market intelligence from wholesalers than smallscale farmers.

Similar to small scale farmers, medium scale farmers use personal vehicles to transport production to wholesalers. Because they produce larger volumes of flowers, medium scale farmers will make deliveries three to six times per week, with a higher frequency of deliveries during peak seasons. Similar to small scale farmers, medium scale farmers sell flowers to wholesalers on a consignment basis and bear the cost of unsold product. Because medium scale farmers are likely to use moderately improved production practices, their loss rates at wholesaler facilities are usually lower than small scale farmers.

## **LARGE FARMERS**

Most of these producers are concentrated in the North and Mount Lebanon. The three largest farms, which are all over 100 dunums, are all located in the north, specifically in Akkar, Tripoli, and Batroun. Although the majority of these stakeholders are both producers and wholesalers, six are specialized only in flower production. Large farmers with wholesale operations are discussed in the following section. .

Large farmers have either inherited their land and trade from their family or rent land. Compared to small and medium scale farmers, these farmers are more likely to have invested in automated machines to

facilitate planting, growing, and harvesting of flowers, and follow best practices for production. For example, many of these farmers have automated seed sowing machines that facilitate even sowing at the right plant density, sophisticated drip irrigation systems, equipment for application of foliar sprays and other fertilization, and other types of equipment.

Large farmers own their own vehicles to transport flowers to wholesalers, and during peak season they deliver flowers to the market every day, often making multiple trips. These farmers have cold storage at their farms, but not in the vehicles, so travel to wholesale markets takes place early in the morning. Of all flowers produced by large farmers, large volume of production is sold to wholesalers, and very small volume is sold to flower shops and directly from plantations to customers. Like all producers, large-scale farmers face several challenges in negotiating prices and compensation with wholesalers, although since they deliver significantly larger quantities of flowers, they have slightly more bargaining power. They are also more likely to produce higher quality flowers that receive higher prices from wholesalers. Large-scale farmers also sell flowers on a consignment basis, but can leverage their scale of production to put their flowers in the front of the sales queue, which lowers loss rates.

## **LEAD FARMERS**

A subset of farmers, mostly small and medium-scale farmers, act as flower aggregators, collecting flowers from farmers in their village or region, and bringing them to wholesalers. These “Lead farmers” are most likely located in areas that have a high concentration of small farmers who can benefit from local aggregation and consolidation of transport. These lead farmers have vans and trucks to make deliveries, and to sell any remaining flowers. These farmers charge a commission on flower sales. A small farmer who grows roses on 4.8 dunums in Mount Lebanon aggregates the production of seven other farmers in the area. He has established relationships with a number of clients in his region, and in Beirut. When he gets an order, he will fill it with his own production, in addition to the production of the other farmers, as well as supplementing purchases from wholesale markets when necessary. He also makes occasional tours to display and sell flowers when he does not have orders to fill.

Although this fee is on par with wholesaler fees, since sales through lead farmers are mostly based on pre-determined contracts, loss rates are significantly lower. Also, because they are often members of the community where they aggregate flowers, lead farmers are more likely to be an honest partner to farmers. Given these dynamics, the LIVCD upgrading strategy will work to expand the role of lead farmers in the cut flower value chain.

## **WHOLESALERS**

The vast majority of floriculture products in Lebanon pass through floriculture wholesalers, especially the two largest who control majority of the market, and have a large amount of power within the floriculture industry. In general, wholesalers engage in wholesale as well as a few other critical value chain activities such as production, importing seeds, seedlings, flowers, and plants, and exporting cut flowers and live plants. This allows wholesalers to exert a considerable amount of control over both floriculture producers and retailers. Based on interviews with key Lebanese wholesalers, the LIVCD team estimates that on average, Most of floriculture products sold by wholesalers come from local farmers, few amount are imported from abroad, and some volume is produced by the wholesalers at their own greenhouses.

Wholesalers vary in scale, infrastructure, and storage practices. All wholesalers have cold storage composed of between one and six cold rooms that are refrigerated 24 hours a day. Wholesalers store their flowers from one to 10 days depending on demand and shelf life. Although there are special nutrient washes and other technical practices that wholesalers can use to extend shelf life, only a few wholesalers are aware of and implement these practices.

Flowers are brought to wholesalers by farmers or lead farmers. Flowers are sold on a consignment basis, and wholesalers charge a fee that is on average 15 percent of total sales. Farmers are paid between 10 and 30 days after the sale, such that the sales risk is held completely by the farmer. Figure provides a sample receipt provided from a major wholesaler. As seen in the figure, the farmer delivered a total of 185 Freesia stems on three different dates. 120 Freesia stems were sold at LBP 2,500, and 30 were sold at LBP 3,000. The farmer is not compensated for Freesia stems that were not sold. The farmer also delivered roses, sending 160 roses, all of which were sold for LBP 300. Total sales amounted to \$292, from which the wholesaler took a 15 percent commission, leaving the farmer with \$248.20.

**FIGURE 11: SAMPLE RECEIPT FROM WHOLESALER**

Sales Receipt		
<b>Product: Freesia</b>		
<b>Quantity received from farmer</b>	<b>Date</b>	<b>Admin #</b>
80	1/2/2013	302
55	1/9/2013	306
50	1/20/2013	204
Sold	Sales price LBP	Total Sales LBP
120	2,500	300,000
30	3,000	90,000
<b>Product: Roses</b>		
<b>Quantity received from farmer</b>	<b>Date</b>	<b>Admin #</b>
160	2/2/2013	405
Sold	Sales price LBP	Total BP
160	300	48000
	in LBP	in \$
Total	438,000	\$292
Wholesaler commission :	65,700	\$43.8
-15%		
Net Total	372,300	\$248.2

Wholesalers service a variety of distributors, retailers, and household-level clients. These buyers focus on price, quality, services, consistency, and method of payment. The large wholesalers maintain market power by importing unique floriculture products that are in high demand, and requiring that retailers purchase these products along with a basket of other items. The effect of this strategy is that retailers are pressured to source all of their flowers from one wholesaler. Additionally, the largest wholesalers, who have higher working capital and cash available, have the flexibility to import with cash, pay with cash, and provide credit to retailers. In an industry that operates predominantly on consignment, the potential to deal in cash is a powerful tool for wholesalers to attract and retain farmers, retailers, and other stakeholders. Also, wholesalers can use cash to secure lower prices for imports, as stakeholders will accept lower prices if they are paid immediately in cash.

As presented in the Value Chain Map there are two types of flower wholesalers in Lebanon, wholesalers with large production facilities, and wholesalers without production.

**Wholesalers with Large Farms:** There are 14 large farmers with wholesale operations in Lebanon that control most of the flower sales in Lebanon. These wholesalers sell their own production, as well as floriculture products purchased from other small and medium-scale farmers. They determine the order in which flowers are sold allowing them to sell all of their own production first before selling other farmers

products. In some cases, farmers reported that wholesalers with production take better care of their own flowers than other farmer's flowers, prioritizing space in cooling rooms and display areas.

Fierce competition between wholesalers has created a tense market environment at the wholesale level that has had negative consequences throughout the floriculture value chain. The most pronounced of these consequences has been that wholesalers cut prices and give extra flowers to secure larger retail customers, depressing farmer revenue.

## **INDEPENDENT DISTRIBUTORS**

These stakeholders buy unarranged flowers and potted plants from wholesalers, paying with cash or post-dated checks. The vast majority of these products are sold to flower boutiques. Distributors are contacted by boutiques with specific orders, and they will also bring flowers and plants around to a circuit of other retail shops. They sell at wholesale prices, and make a profit by receiving discounts on purchases from wholesalers

## **RETAIL**

Floriculture retail outlets can be broken down into three major categories: venues, hotels, and restaurants; specialty boutiques; and supermarkets.

**Event venues, hotels, and restaurants:** These stakeholders buy flowers from wholesalers and distributors in large quantities for use and sale to clients. These stakeholders typically include flower arrangements and decorations as part of a package that includes use of the space, catering, and other services required for hosting an event. They will source flowers directly from the wholesaler or through a distributor, and may add a minimal markup in price to final consumers.

Demand for floriculture products from this retail category is seasonal, and is highest during the summer season when there are more tourists and weddings. The largest consumers of floriculture in this segment are wedding planners. Demand for cut flowers in this segment has shrunk with the onset of the Syrian crisis in 2010. On the other hand, some stakeholders reported an increase in the demand for white flowers.

**Specialty Flower Shops:** Shops are equipped with cold storage, and most prepare flower decorations for events including wedding arrangements, funeral bouquets, event centerpieces, and other occasions. These shops purchase most flowers from wholesalers, though some have relationships with independent distributors and lead farmers who will deliver flower shipments. Retailers purchase flowers outright, rather than using consignment purchasing arrangements, which incentivizes them to buy the highest quality flowers and to preserve quality and shelf-life. The markup on flowers at specialty florists can reach as high as 400 percent during peak holidays such as Mother's Day and Christmas. In this way, retailers capture a very high proportion of revenue derived from increased demand around the holidays, with a disproportionately small increase in price trickling down to farmers.

Small cut flower retail shops are located throughout all of the major cities in Lebanon. They sell cut flower arrangements directly to consumers and to wedding planners for events, and are equipped with cold storage. These shops vary in their flower purchasing strategies. Some purchase directly from wholesalers, while others purchase through distributors who take orders or peddle products on a regular basis.

## **Large Retailer**

One large retailer is a unique player in the Lebanese floriculture value chain, as it is vertically integrated with a small production capacity and retail shops supplied with both in-house and outsourced production,

thereby bypassing wholesalers completely. The company works constructively with farmer suppliers and is able to capture all of the revenues from retail sales.

The company maintains a sophisticated planting calendar, and times its growing operations to coincide with peak flower demand and higher prices.

### **Supermarkets**

These retailers have not traditionally dealt in floriculture; however the large wholesaler, has been working with supermarkets to establish consignment selling arrangements, charging commission. Supermarkets account for a very small percentage of floriculture retailing, They deal predominantly in potted plants; the majority of their sales are Poinsettia plants during the Christmas season, and Hydrangea plants around the Mother's Day holiday.

## **VALUE CHAIN CHANNELS AND GOVERNANCE RELATIONS**

The value chain map in Figure 17 shows the three main floriculture channels. These are described below in terms of how the internal vertical and horizontal linkages are structured, what power dynamics exist in these chains and what are the prospects for project interventions to effect beneficial changes.

### **CHANNEL 1: DIRECT SALES TO EVENT PLANNERS AND FLORISTS:**

This channel accounts for a small portion, as little as 6 percent, of floriculture sales, but represents a critical opportunity for expansion of the floriculture sector and higher income for producers. This direct sales channel exists because of a small number of enterprising lead farmers who aggregate flowers from small farmers and have established direct market linkages with wedding planners and specialty boutiques. By working around wholesalers, lead farmers are able to reclaim wholesaler fees and limit the high rates of deterioration that occur at wholesalers before flowers are sold. Although farmers provide flowers to lead farmers on a consignment basis, lead farmers mostly fill pre-set contracts and are paid upon delivery. Thus, risks of unsold product are much less than through Channel 2 (wholesalers) noted below. Additionally, lead farmers typically work with a small subset of producers in their community, and sell through their extended family or social network. Both of these factors work to reduce exposure to discriminatory practices and price risks. Expanding this channel could dramatically improve overall returns of flower production to farmers by decreasing rates of deterioration, increasing the proportion of production that is sold through fixed contracts and delivery schedules, and providing alternatives to selling through wholesalers. However, since the governance principles applying to this channel are largely relationship and social network based, the overall absorptive capacity of each individual marketing network is relatively low.

### **CHANNEL 2: SALES THROUGH WHOLESALERS:**

This channel accounts for the vast majority of all sales, and is dominated by wholesalers. In general, successful wholesalers have extensive sales networks and serve as focal points for urban flower sales, and achieve high turnover. Although farmers can choose between a number of urban wholesalers, larger wholesalers and others, who also serve as input suppliers of critical planting material, are virtually the only sources of the highest quality European planting material. The threat of cutting off farmers from access to this material is quite severe resulting in substantial market power over both retailers and suppliers.

Even with these large producer-wholesalers, governance systems still heavily favor wholesalers within this channel. Transactions between producers and wholesalers are based on consignment, and farmers

have little control or governance mechanisms to control wholesaler actions once flowers are in their possession. The way market relationships in the floriculture value chain are structured leads to a system in which farmers bear the majority of risk related to price volatility and product deterioration, both of which can be very high

### **CHANNEL 3: VERTICAL INTEGRATED PRODUCTION TO RETAIL SALES:**

This channel includes companies that have both production facilities and retail outlets, and are able to capture the entire retail markup on flower production. Sources cut roses and other flowers from producers during peak season to meet consumer demand and during the low season. Vertical integration enables fluid communication of flower specifications through market signals, so these actors are most likely to be successful in entering new markets and responding to changes in demand.

The assessment showed very little inclusion of women in the floricultural value chain. The entry barrier to this sub-sector related to the high cost of investment and establishment of production facilities rather than it being gender based.





## 6. BUSINESS ENABLING ENVIRONMENT

The business enabling environment for the floriculture sector is characterized by weak presence and support from the public sector so that market dynamics and services are provided mostly by the private sector and wholesalers.

### TRADE POLICY AND REQUIREMENTS

Lebanon imposes a variety of customs fees and value added taxes (VAT) on imports of floriculture products. These tariffs are designed for planting materials and intermediary floriculture products that are used as agricultural inputs. The rate is low. End products such as cut flowers and foliage are taxed at a prohibitively high rate.

Figure 22 below, shows tariff rates by category. Agricultural inputs, such as bulbs, tubers, roots, and live plants are taxed at the low rate of five percent (with the exception of rhododendrons and azaleas), and final products such as cut flowers and foliage for use in bouquets are taxed at 80 percent. To further illustrate this dynamic, is the fact that although live rose plants that are most likely used for grafting and propagation, they are taxed at a rate of five percent, while cut roses, which are most likely sold directly to consumers, are taxed at a rate of 80 percent. This import tax regime provides substantial protection to the Lebanese floriculture sector, where costs of production are substantially higher than in other major producing countries.

This customs regime does not apply to GAFTA countries, who can export all floriculture products to Lebanon with a five percent tariff, regardless of the type of floriculture product. These countries are not major flower producers, however, and a very small total value of floriculture products enters Lebanon from GAFTA countries.

**FIGURE 4: LEBANESE CUSTOMS DUTIES**

HS Code	Sub-Category	Description	Type of Levy	Total Rate
601	All Sub-Categories	Bulbs, tubers, roots... dormant or in growth planting material	VAT	5%
602	602.2	Trees, shrubs and bushes	VAT	5%
	602.3	Rhododendrons and Azaleas	Customs Duty and VAT	40%
	602.3	Roses, grafted or not	VAT	5%
	602.9	Other	VAT	5%
603	All Sub-Categories	Cut roses, carnations, orchids, chrysanthemums, lilies, and other cut flowers	Customs and VAT	80%
604	All Sub-Categories	Foliage, branches, and other parts of plants without flowers	Customs and VAT	80%

Source: Lebanese Customs Authority ([www.customs.gov.lb](http://www.customs.gov.lb))

Lebanese floriculture exports are subject to a number of requirements depending on their destination market. Most Lebanese flower exports are to go GAFTA countries, and smaller quantities are imported by European countries. Under GAFTA, Lebanon can export floriculture products to 17 Middle Eastern countries free of taxes.. Importing countries do not test imported flowers to verify compliance with phytosanitary requirements. Exporters must have a trade license, a commercial invoice, an international airway bill, and a Certificate of Origin from the MOA and Chambers of Commerce. European countries have significantly higher requirements for imports of floriculture products from Lebanon. These requirements are difficult for Lebanese producers to achieve, and have largely inhibited the exports of Lebanese flowers to Europe. Similar to GCC countries, European countries require certificate from the Lebanese NPPO that guarantees compliance with European phytosanitary legislation. European countries are much more likely to audit the Certificate than GCC countries; non-compliant products are disposed of and the exporter is fined. Additional requirements pertaining to flower quality must also be met before flowers can be imported to the EU. These standards include classification of flowers in terms of quality, uniformity, packaging, marking, and certification of origin/chain of custody. In the case of roses, rosebuds should be three to five days away from blossoming, and should be uniform in terms of height, size, and color.<sup>1</sup>

In addition to trade agreements, the Investment Development Authority of Lebanon (IDAL) provides tax breaks and streamlined licensing to qualifying organizations in a variety of sectors including agriculture to promote exports. This program is especially relevant to flower production, as floriculture requires substantial investment in greenhouse infrastructure and other upfront capital investments.

## AGRICULTURAL EXTENSION SERVICES AND MARKET INFORMATION

Floriculture farmers have minimal access to technical production and market information. . Although large farmers are highly educated and have close business relationships with wholesalers that provide technical assistance, small and medium-scale farmers are often not aware of best practices and have no source of information or training.

**Input Suppliers:** Input suppliers, which in the floriculture sector includes both large private companies and large wholesalers with import operations, are a major source of agriculture extension for farmers. Advice from these stakeholders, however, has been criticized as being excessively directed by commercial inputs. This is reflected in the common practice of small-scale floriculture producers applying excessive fertilizers and pesticides to their crops. In general, large scale input suppliers work with large scale farmers, and often provide an agricultural engineer/sales representative to customize large scale purchasing. Large input suppliers provide products to smaller scale input suppliers, who in turn serve small and medium-scale producers. These input suppliers often do not have the same technical capacity as the larger companies, so small and medium-scale producers do not receive the same quality technical assistance.

### GAFTA Countries

- Bahrain
- Egypt
- Iraq
- Jordan
- Kuwait
- Lebanon
- Libya
- Morocco
- Oman
- Palestine
- Qatar
- Saudi Arabia
- Sudan
- Syria
- Tunisia
- UAE
- Yemen

<sup>1</sup> Additional detail on European requirement for cut flower imports is available in "Recommendations for Cut Flower Requirements to Europe" , Available from LIVCD in separate document

**Public Extension Services:** There is not a strong public extension service.. Market information is also scattered and inconsistent. In general, farmers do not have access to information related to potential markets, demand, supply, or prices that could help them improve their selection of species, timing, and overall competitiveness and profitability. Most existing technical and market information services are provided through donor funding of cooperatives and NGOs, described below.

**Cooperatives & NGOs:** Most cooperatives in Lebanon are weak in terms of institutional structure and mission, and many are inactive. In general, cooperatives do not adhere to the general characteristics associated with cooperatives around the world including structure, governance, and function. Because of extensive donor involvement, many organizations are quickly assembled for the purpose of receiving aid and assistance, yet once the assistance is complete, they rarely remain active. When they are receiving assistance, cooperatives typically provide business support services such as trainings and bulk purchasing of chemicals, pesticides, and seeds at low prices. In some cases, particularly if there was equipment purchased, cooperatives are often dominated by one or more leaders or managers who run, and profit from, the cooperative-owned assets as if they were his own. Through past work focused on strengthening cooperatives in Lebanon, particularly through the USAID-funded ASAIL project, ACDI VOCA found that cooperatives were unable to even maintain websites for marketing purposes.

Cooperatives in the floriculture sector are not an exception to these norms, and although there are many registered flower cooperatives in Lebanon, there is only one active group, the Addoussieh Cooperative located in South Lebanon. This cooperative has about 60 member farmers.

**Chambers of Commerce, Industry, and Agriculture (CCIAs):** Lebanon has CCIAs located in Zahle, Beirut, and Tripoli that are intended to provide technical and marketing services for the agricultural sector in Lebanon. Over the last five years, USAID and the European Commission have invested in providing the CCIA with infrastructure, equipment, laboratories, technical know-how and training to producers, SMEs, cooperatives and other organizations in areas related to agro-industrial production and management, product development and testing, quality management, business development services, and market linkages.

The CCIA sites currently offer a range of services to community businesses and individuals; however technical understanding, market information systems, and other services have not yet expanded to serve the floriculture sector.

## **FLORICULTURE SYNDICATE**

The floriculture sector has a formal representative body, the Lebanese Syndicate of Decorative Plants and Flower Growers, based in Beirut. This Syndicate was initiated in 2001, and it maintains around 120 members that include only flower and live plant producers. .

## **ACCESS TO FINANCE AND KAFALAT**

Unlike many other agricultural sectors, the floriculture sector does not seem to lack access to finance. Working capital, which is used for purchasing seeds, fertilizer, and other agricultural inputs, comprises the majority of finance provided to floriculture farmers. Financing is provided mainly from input suppliers, in the form of credit to purchase agricultural inputs and supplies. Input suppliers treat credit-based purchases as receivables, and allow farmers to repay 25 percent of the loan principle during the planting season, and pay the remaining 75 percent after harvest. Input suppliers do not charge interest, but may provide discounts for cash-based purchases.

Small loans for purchasing inputs that range in size from \$300 to \$5,000 are also provided by microfinance organizations, although this is less common. Credit of this sort is provided on a seasonal basis so farmers can purchase inputs at the beginning of the season, and pay for them after harvesting, when they have cash on hand. Interest rates for this type of credit range between 8 and 18 percent depending on the loan-making institution. If at the end of the season the farmer is unable to pay, they can accumulate interest leading to unmanageable debt burdens or denial of credit to purchase inputs in the future.

Larger scale investment capital for purchase of farm machinery, irrigation equipment, and greenhouses are slightly more difficult to access, but is provided by commercial banks through subsidized lending programs such as Kafalat. These loans range in size from \$10,000 to \$100,000, and are provided under the “Kafalat Basic” program, which has a loan ceiling of up to \$200,000. Under this program, 75 percent of the loan principle and all accrued interest are insured by the Central Bank of Lebanon. Loans have a seven year term, and a grace period of six to 12 months. Between 2000 and 2012, the Kafalat program made over 2,475 loans to the agricultural sector for a total value of \$239 million, with \$184 million in repayments still outstanding.

Although the Kafalat program does not provide further disaggregation of its loan portfolio. Stakeholders also suggested that since demand and average prices of flowers have decreased since 2011 due to political instability, producers are struggling to make payments on their loans. Within the entire Kafalat lending portfolio, the balance of loans outstanding is equivalent to about 64 percent of the total amount distributed, while within the agricultural sector about 77 percent of the total loaned value is still outstanding.

## **7. DYNAMIC TRENDS**

### **TREND 1: OVERINVESTMENT IN GREENHOUSES AND DEPRESSED DEMAND LEADING TO CONDITIONS OF MARKET OVERSUPPLY AND LOW PRICES**

There has been a recent wave of investment in small improved greenhouses for floriculture, fueled mainly by loans through the Kafalat program under their “Basic Kafalat” lending window. This has spurred an increase in supply and depression of market prices, which is exacerbated by the highly seasonal nature of demand and the highly perishable nature of the flowers. As a result, many of the smaller producers who were encouraged to work in floriculture by the availability of credit to fund the needed investments are now having problems making their loan payments. Many of these producers are now seeking to use their greenhouses for other crops or mixing floriculture and vegetable production—which contributes to inefficient floriculture production and detracts from product quality. The depressing effect of oversupply on market prices has also been magnified by a drop in demand due to security concerns.

### **TREND 2: INCREASED LEVEL OF COMPETITION IN THE KEY HIGHLY-CONCENTRATED WHOLESALER LEVEL IN THE VALUE CHAIN MAP**

Because of the governance structure of the floriculture value chain, with its significant power asymmetries between farmers and major wholesalers, who are also significant producers terms for sales throughout the value chain are largely done on a consignment basis.

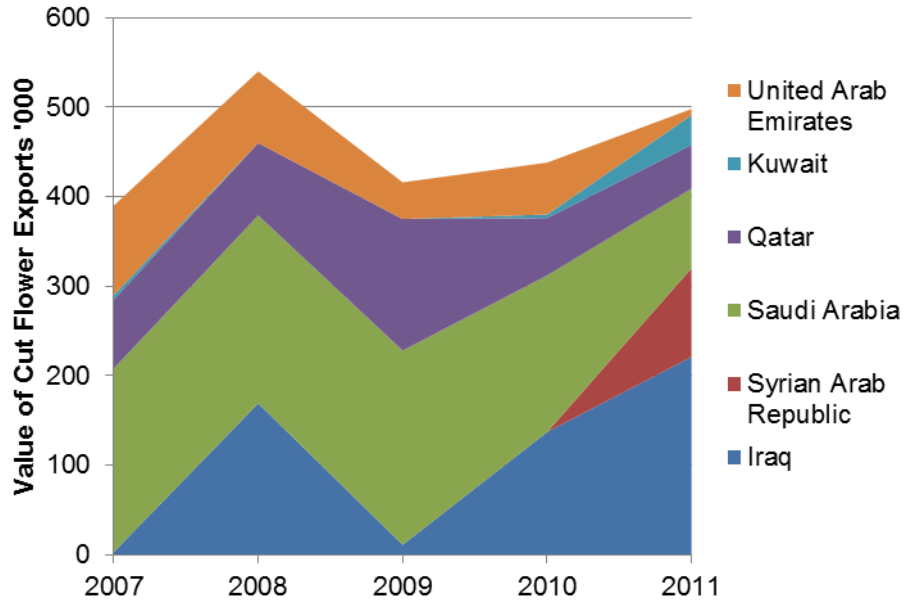
### **TREND 3: RECOVERY OF LEBANESE CUT FLOWER EXPORTS DRIVEN BY INCREASED DEMAND FROM IRAQ AND NEW TRADING PARTNERS IMPORTING FROM LEBANON**

Although the total value of cut flowers exported from Lebanon is small, exports have increased by 18 percent between 2009 and 2011. Total value of exports is poised to continue to expand with sophisticated Lebanese exporters driving expansion of international market linkages and sales, as well as multiple wholesalers reaching export markets. As seen in

Figure 5 below, the total value of exports has shrunk since 2008, which is mainly due to a reduction of exports to Saudi Arabia and Qatar. Since 2009 however, market linkages with new importing countries have fueled the recovery of Lebanese cut flower exports. Namely, exports to Iraq, which began in 2009, have expanded to nearly 40 percent of total Lebanese cut flowers. Imports of cut flowers to Iraq have grown by 88 percent in value and 22 percent by quantity since 2007, indicating a significant increase in demand and price. As of 2011, Lebanese exports accounted for 50 percent of all Iraqi imports of cut flowers. To expand shipments to Iraq, Lebanese exporters have taken advantage of a new daily flight from Beirut to Erbil. Lebanon exports many species of flowers to Iraq including Liliun, Chrysanthemum, Aroma, Gliour, Giufle, Gerbera, Roses, Freesia, and others. Lebanon also re-exports high-value flower species that are imported from Holland.

**FIGURE 5: VALUE OF LEBANESE EXPORTS OF CUT FLOWERS USD '000**

Source: Comtrade







## 8. OPPORTUNITIES AND CONSTRAINTS

The section below provides a discussion of opportunities for upgrading identified within the floriculture value chain.

### **OPPORTUNITY 1: ENLARGE THE BASE OF FLORICULTURE PRODUCERS BY IMPROVING THE MARKET TERMS FOR SMALLER FARMERS THROUGH THE ADOPTION OF A MARKET AUCTION SYSTEM THAT WOULD BY-PASS MAJOR WHOLESALERS**

The domination of the value chain by a small number of wholesalers through their ability to provide both key imported planting material and inputs, as well as crucial market outlets is universally acknowledged by value chain actors, including the wholesalers. The ability of small producers to operate profitably depends largely on the state of their relationships with the key wholesalers who they can ill-afford to alienate. The pervasiveness of sales on consignment throughout the value chain is a reflection of these asymmetries in power, as this is the major way in which wholesalers minimize their own risk and pass it on to farmers.

To promote a more-open value chain structure and allow more transparency in wholesale transactions, there have been periodic requests made for the establishment of a wholesale market auction mechanism.. It could be structured as a “Dutch auction” with descending prices and acceptance of the first bid. With such a mechanism, producers could put up lots for open bidding to wholesalers and even retailers meeting qualifications for participation based on financial, physical, and technical capacity. In this system, other smaller wholesalers and larger retailers would have improved access to farmers’ product and the terms of sale would be set under auction rules to offer a more equitable transfer of market risk from farmers to buyers. If effective, an auction system would certainly help to lower risks to all farmers and possibly also improve pricing by negating the market power held by the dominant wholesalers.

However, establishing an auction mechanism is an extremely complicated proposition that faces numerous practical constraints. These include:

**A weak regulatory and institutional environment.** In order to function, an auction requires an impartial administering body with adequate technical knowledge to determine product norms and quality specifications. The auction administrator must also have the financial capacity and the ability to enforce rules and regulations to be seen as a credible facilitator of market payments. It is unclear who in Lebanon would possess both the technical knowledge and impartiality to serve this function. . Added to this problem is the fact that an auction system would need to be supported by a clear regulatory regime with an enforceable legal contract to ensure buyers and sellers respect the rules of use determined by the auction administrator, which is also problematic in the current Lebanese commercial law environment.

**A lack of product standards.** Without a clear system of written quality standards for different products, such as those adopted by the Association of Flower Auctions Administrator in the Netherlands, buyers and sellers in Lebanon lack a clear common vocabulary governing the quality of floriculture products. This makes the presentation and comparison of grower lots in an auction system difficult, thereby removing some of the interest in creating an auction.

LIVCD will attempt to coordinate with the newly established flower syndicate and other large producers in order to lobby for a regulation or operational framework for the suggested auction system, and to develop standards for flowers of interest.

## **OPPORTUNITY 2: IMPROVE PRODUCTION METHODS IN NURSERIES AND AMONG SMALL AND MEDIUM-SIZED FARMERS TO ACHIEVE BETTER QUALITY AND HIGHER VOLUMES**

Although many farmers have invested in greenhouses, they lack the necessary understanding of the common principles of greenhouse production, and are using high-cost imported seedlings that contribute to high production costs. By increasing the capacity and technical quality of floriculture nurseries in Lebanon, it should be possible to reduce the price of seedlings for common ornamental species. This would also help to reduce the advantage that wholesalers derive through their ability to offer imported seedlings at attractive prices.

An opportunity to improve small farmer production infrastructure and technical practices to substantially increase farmer incomes also exists. Using rose production as an example, purchasing more sophisticated equipment and supplies, coupled with improved technical practices, enables farmers to work with a higher per dunum plant density, grow one additional rose per plant, and achieve lower losses to deterioration and unsold product at the wholesale level. Improved production practices will include simple adjustments in the way that fertilizers and pesticides are applied, the adoption of the “bending” practice, and improvements in greenhouse temperature and humidity controls will also function to improve production and quality.

Significant constraints to achieving Opportunity 2 include:

**Mismatches between nursery offerings and farmers’ needs.** Currently the lack of availability and variable quality of ornamental plant seedlings received from nurseries means most farmers buy imported seedlings. Improved ornamental production in nurseries implies that nurseries will need to be upgraded and are able to respond to changing farmer demand for many species of ornamental plants. However, nursery operators lack the ability to plan and order for the needs of ornamental producers in response to the various seasonal market demand and holiday surges. The lack of strong ornamental nursery specialists or cooperation between nurseries and the flower producer syndicate is a serious obstacle.

**Lack of training and extension services for floriculture.** The DHAIM project reported in 2010 that virtually zero small and medium scale farmers reported accessing technical assistance from formal sources. Large input suppliers and wholesalers who sell imported agricultural products provide some technical assistance to large scale farmers who make bulk purchases of agricultural inputs. Small and medium scale farmers, however, make input purchases from branch offices of suppliers where there is no technical assistance or from wholesalers in such small quantities that no assistance is provided. In this operating context, small scale farmer practices have become obsolete, and their yields and quality are not as high as they could be if they had access to more technical information.

*Frequent power cuts and high costs of production from expensive diesel fuel.* The intermittent nature of the power supply in Lebanon means that floriculture operators need to budget for diesel fuel to run cold storage units, provide heating in greenhouses, and pump water for irrigation. This is a cost and a logistical complication that producers in other countries do not face.

**High interest rates for short term working capital provided by input suppliers and increased risk associated with greater levels of debt from higher overall investment in infrastructure.** In order to increase productivity, farmers will have to invest to upgrade facilities and purchase rose plants for production on a 4 dunum plot. To achieve this, many farmers will have to incur

additional debt from input suppliers, microfinance programs, small Kafalat loans, and other sources. The interest rates on some of these lending facilities, especially input providers, can be very high, so farmers will face increase risks associated with high levels of debt, even if they are making significantly higher returns on rose farming.

### **OPPORTUNITY 3: DEVELOP NEW EXPORT MARKET LINKAGES IN THE MIDDLE EAST TO OFFER PEAK-PERIOD MARKET ALTERNATIVES FOR PRODUCERS ABLE TO MEET QUALITY REQUIREMENTS OF REGIONAL CONSUMERS.**

Many barriers to export exist due to the small volumes and fragmented character of Lebanese floral producers. Wholesalers selling into the export market have difficulty finding the needed volumes to fill orders, and often have to group product from different farmers. This leads to insufficient uniformity between lots in terms of stem length, color, quality, time to blossom, and other key factors. With improved production under opportunity 2, increasing numbers of individual farmers should be able to fill volumes required in export orders. This would not only provide an additional source of revenue and new market for these farmers, it would also create a new market channel that would relieve pressure on the domestic market during periods when oversupply leads to decreased wholesale prices.

Constraints to opening these new export channels include:

**A lack of appropriate cold storage at the Beirut airport.** No cold storage is available at the cargo facilities at the Beirut airport. Given the critical nature of the cold chain in maintaining product shelf life, this places Lebanese floriculture exports at a serious disadvantage in regional markets.

**An absence of market research and contacts in regional markets to help Lebanese farmers assess market needs.** Regional trends in consumption are not the same as in Lebanon. Lebanese farmers therefore require their own contacts and agents in these markets to help them plan so that they can meet changing consumer demand, as well as in developing importer contacts. Market research can also be used to identify specific product niches where Lebanon may enjoy a technical productive advantage over other major international producers.

**Generally high production costs.** Lebanon is unlikely to be a low-cost producer in any of these markets for the major floriculture products. With efforts to reduce production costs under Opportunity 2, however, some producers should be able to enter the market with superior products due to short distances and fewer logistical constraints in comparison to other more distant producing countries. This constraint could be minimized to some extent with the identification of specific products through market research, as mentioned above.

**Lack of consistent high volumes of production to guarantee fulfillment of export contracts.** Stakeholders in the floriculture value chain, especially large farmers with export operations, reported to LIVCD that they have had opportunities to engage in longer term or higher volume export contracts. These stakeholders, however, were unable to guarantee fulfillment of the orders due to inadequate production volume and quality of cut flowers available at wholesalers. For example, in other countries, a large farmer could depend on the availability of high quality flowers from a large wholesale market to compliment his own production when necessary. In Lebanon it is not certain if required species that meet production specifications will be available in a given time period, so farmers cannot commit to larger volume contracts.

#### OPPORTUNITY 4: EXPAND EXPORTS AND LOCAL SALES OF HIGH VALUE FLOWERS PRODUCED IN LEBANON ESPECIALLY INDIGENOUS SPECIES

There are over 1,185 flowering and foliage plants that are indigenous to Lebanon and the surrounding East Mediterranean Region. Only a small fraction of these plants are currently produced commercially, which presents an opportunity for Lebanon to introduce new flowers and types of foliage to the domestic and international markets. The flowers depicted in Figures 25 and 26 are both found only in Lebanon and Syria, and are representative of a number of other irises and tulips that have the potential to be commercialized.

**FIGURE 13: IRIS LORTETTI**

Source: CNRS “Illustrated Flora of Lebanon” 2007



**FIGURE 14: TULIPA LOWNEI**



Marketing these flowers will require substantial research and development from Lebanese academic and institutional partners such as the National Council for Scientific Research (CNRS), Universities, and the private sector. Additional flowers that are found in Lebanon and show some potential commercialization can be found in Annex 8. Identification of new species for commercialization is a highly complex process that will face many challenges including the following:

**Uncertain market demand for new species:** Introducing a new product to the market requires in depth marketing studies to understand consumer interest and willingness to pay. This will vary based on shelf life of the product, color, height, and popularity for weddings and events. It is also unclear if the concept of an indigenous, Lebanese flower will be desirable to domestic and international consumers, and if they will be willing to pay a price premium for such a product.

**Potential high costs and long timeline for launching new floriculture products:** In order to commercialize a new flower, a company will need to invest time and money to cultivate high quality planting material and establish production practices. In addition promotional expenses will be considerable.

#### SWOT ANALYSIS

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>Growers have acquired skills and know-how to develop production and quality of produce</li> <li>Growers in this sector are capable to invest in improved production practices if markets</li> </ul>	<ul style="list-style-type: none"> <li>Relevant infrastructural and technological upgrades are needed to produce better, export quality production</li> <li>High cost of production especially for heating and atmosphere temperature</li> </ul>

are secured	control <ul style="list-style-type: none"> <li>• Little to no export of Lebanese floricultural products</li> </ul>
<p style="text-align: center;"><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Various climatic zones in Lebanon allow for year round production and for a wide range of varieties to be grown</li> </ul>	<p style="text-align: center;"><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Floricultural sector is amongst the first to get negatively affected by the political and security situation in the country. Major outlets are wedding venues and hotels.</li> <li>• Competitive prices of imported flowers</li> <li>• Lack of governance in supply chain between producer and wholesaler</li> <li>• Cold chain- especially at the Beirut airport- is not up to standards</li> </ul>



## 9. UPGRADING STRATEGY

LIVCD has developed an upgrading strategy for the Lebanese floriculture sector that leverages two key axes of intervention. The first axis aims to expand domestic and regional sales of Lebanese flowers by strengthening market linkages, and fostering more sophisticated market intelligence. The second axis aims to increase the efficiency, volume, and quality of flower production in Lebanon so farmers produce flowers that meet high-value product specifications, and farmers receive higher prices for their production.

LIVCD concluded that, at present, it is not feasible to establish a central floriculture wholesale market or auction house within the context of the Lebanese floriculture value chain. This conclusion is due to the constraints discussed in the previous section which include a weak institutional environment, lack of consistent national production standards, and the likelihood that wholesalers would not support such an initiative. The two Axis of the LIVCD Upgrading strategy are described below:

### **AXIS 1: DEVELOP AND EXPAND UPON MARKET LINKAGES IN GCC EXPORT MARKETS AS WELL AS LINKAGES BETWEEN PRODUCERS AND RETAILERS IN THE DOMESTIC MARKET TO HELP PRODUCERS CAPTURE HIGHER PRICES**

Through Axis 1, LIVCD aims to increase Lebanese floriculture exports. This will be achieved through strengthening and expanding key market linkages between Lebanese floriculture stakeholders and domestic and international end markets to encourage longer term, higher volume contracts with existing partners in Iraq, for example, and creating new linkages between Lebanese exporters and key GCC markets. Diversification in international end markets combined with improved market intelligence will also smooth variability in flower prices, as more sophisticated market players can time production to correspond to peak holidays, and the addition of new end markets will add new peak periods of demand to the calendar. LIVCD will also strengthen market linkages in the domestic market in a way that will provide more sales options to producers who are currently dissatisfied working with the larger wholesalers on a consignment basis.

Through this axis, the LIVCD team will seek to engage large retailers. These retail players in these particular channels have already shown a propensity to work directly with producers or lead farmers, implying they could source new orders from within their producer networks or by expanding producer networks. Since many of the wholesalers active in Channel 2 are active exporters, LIVCD will also consider working with wholesalers in this channel who show an interest in moving beyond the traditional model of consignment-based purchasing from producers and are willing to co-invest with project resources to achieve improved flower supply from their own facilities as well as a network of farmers.

#### **Activity 1: Gather market intelligence and analysis of key target markets for exports:**

LIVCD will gather market intelligence including the seasonality of demand, popular species and aesthetics, quality parameters, and market prices for flowers. The most important outcome of this activity will be to development a production calendar that helps exporters time deliveries of Lebanese production to coincide with periods of high demand in target export markets. Through the cultivation of in-depth market intelligence, LIVCD can communicate specifications to exporters and producers in Lebanon. The project will also train key export partners on how to collect and analyze market intelligence to ensure sophistication of export strategies past the life of the project.



### **Activity 2: Train key exporters on market specifications and other requirements**

**demanded by key export markets:** Work with key private sector stakeholders and select wholesalers to cultivate sophisticated market analysis skills. This will include workshops, training, and visits to key target markets for information gathering and networking. Export participants must be willing to work directly with a network of improved farmers to source high value flowers.

### **Activity 3: Facilitate increased presence of Lebanese exporters at international**

**floriculture trade events:** LIVCD will facilitate increased attendance and presence of Lebanon's floriculture sector at international floriculture events, attending at least one major international trade show per year that will result in new sales-contracts and additional market intelligence.

### **Activity 4: Facilitate Upgrading of cold storage facilities at the Beirut airport:**

LIVCD will establish a network of floriculture sector actors and actors from other LIVCD value chains that have a stake in improving the cold chain infrastructure for floriculture at the Beirut airport. Working with this network, the project will help develop a viable advocacy plan to encourage investment to upgrade cold storage facilities.

### **Activity 5: Connect exporters with business opportunities in key export markets to producers with the technical capacity to supply flowers that meet required market specifications:**

This activity will link LIVCD partners in Axis 1, private sector exporters, to LIVCD partners involved in Axis 2, improved producers. Facilitating this linkage will ensure that exporters are able to fill large orders with high quality flowers, and farmers are able to claim price premiums for their production.

## **AXIS 2: IMPROVE QUANTITY AND QUALITY OF FLOWERS PRODUCED BY SMALL AND MEDIUM-SCALE FLOWER FARMERS**

The set of project activities involved in Axis 2, some of which are outlined below, will facilitate improvement of Lebanese flower production to meet the volume and product specifications required by key domestic and international end markets. Supported by clear market signals, this Axis will identify and leverage technical and financial resources to stimulate small and medium-scale producers and support them as they invest in key production upgrades. Through this series of interventions, the LIVCD team will help match exporters and retailers that require larger volumes of higher quality flowers with a network of producers equipped to provide these flowers. Key to success of these activities will be ensuring that retailers and exporters are willing to pass through some of the added margins earned from higher quality flowers to growers.

To achieve substantial upgrades in production volume and quality, LIVCD will facilitate investment in upgraded on average of a 1 dunum greenhouse technology per farmer from a combination of farmer investment, public private partnership, and project resources. This investment will help over 150 small and medium-scale farmers, , increase production by nearly 1,900 stems per dunum on an annual basis. The project will also work with key stakeholders in the business enabling environment to develop at least one new commercial flower that is indigenous to Lebanon and has the potential to claim a price premium in flower markets and raise the profile of Lebanon as a flower producing country in international markets.

### **Activity 1: Identify small scale farmers who are willing to co-invest and work with the LIVCD team to upgrade production facilities and practices:**

Based on the Cost of Production model LIVCD will work to upgrade over 150 dunums of greenhouses with around 150 farmers to improve production technology and yields. The goal of this activity will be to establish a loose network of



farmers who have long-term relationships with retailers and exporters such as Exotica that are working with the project under Axis 1. Working in partnership with retailers and exporters, LIVCD will facilitate training and investment such that farmers are equipped with the knowledge and the tools to deliver high volumes of flowers that meet product specifications required for high value international and domestic markets.

**Activity 2: Leverage Public-Private Partnerships (PPPs) to establish demonstration plots as a teaching tool to disseminate best practices for flower production.** LIVCD will work with exporters who have production to establish demonstration plots that showcase best production practices that achieve highest potential yields. These plots will be tailored to specific export market requirements, and correspond with orders that the large exporter will need extra production from farmers to fill. Farmers engaged in Activity 1 will visit demonstration plots to reinforce new skills and practices, and solidify their understanding of market specifications and requirements. Exporters will use demonstration plots to introduce new product lines, and refine production practices throughout their supplier network, creating a positive outcomes for farmers and exporters.

**Activity 3: Target large private sector nurseries and engage large scale farmers with nursery facilities to improve the quality and competitiveness of domestically produced seedlings:** Seedlings being grown in domestic nurseries are produced using rudimentary production practices, and are of low quality. This prohibits achievement of international product specifications. LIVCD will work with nurseries to improve seed stock and tissue quality of mother plants, improving the quality of domestically available seedlings while lowering the price for farmers.

**Activity 4: Work with CNRS and private sector partners to identify viable indigenous flower species that are non-perishable and possess other desirable qualities for commercialization.** LIVCD will work to leverage co-investment from private sector partners to roll-out production of new species and pursue innovative marketing tools to brand a “Lebanese” identity of the flower such as partnership Fashion Design program, Universities, and other flower marketing institutions. Finally, efforts will focus on helping private sector partners roll out production of new species in demonstration facilities and on a broader scale.



## ANNEX 1: DETAILED FLORICULTURE IMPORTS TO THE MIDDLE EAST

FIGURE 15: IMPORTS OF BULBS AND TUBERS (HS 0601) TO THE MIDDLE EAST

	Value imported in 2011 (\$ '000)	Trade balance in 2011 (\$ '000)	Unit value (\$/ton)	Annual growth in value 2007-2011 (%)	Annual growth in value 2010-2011 (%)	Share in world imports (%)
World	1,707,020	147,956		3	16	100
Middle East Aggregation	21,257	26,672	3,127			1.2
Turkey	6,081	-3,775	2,712	4	9	0.4
Israel	4,925	15,383	3,765	0	8	0.3
Iran	3,214	-3,214	3,009	28	-41	0.2
Saudi Arabia	2,368	-2,366	4,184	13	-9	0.1
Lebanon	1,169	-1,158	3,142	15	21	0.1
United Arab Emirates	865	-857	3,777	19	-21	0.1
Egypt	712	24,447	4,422	-8	-17	0
Jordan	710	-710	4,251	5	24	0
Qatar	415	-415	4,323	103	1022	0
Kuwait	319	-319	1,933	28	32	0
Iraq	240	-240	1,905	66	37	0
Yemen	85	-85	436		240	0
Syrian Arab Republic	71	64	798	-25	-14	0
Oman	50	-50	4,545	81	-65	0
Bahrain	33	-33	16,500	-50	74	0

Source: Comtrade

**FIGURE 16: IMPORTS OF LIVE PLANTS (HS 0602) TO THE MIDDLE EAST**

	Value imported in 2011 (USD '000)	Trade balance in 2011 (USD '000)	Unit value (USD/ton)	Annual growth in value 2007-2011 (%)	Annual growth in value 2010-2011 (%)	Share in world imports (%)
World	7,706,431	1,264,382		2	10	100
Middle East Aggregation	135,885	-50,242				1.8
Turkey	59,620	-19,439	1,996	3	39	0.8
Lebanon	17,192	-15,824	1,317	21	14	0.2
Iraq	14,000	-14,000	1,304	73	143	0.2
United Arab Emirates	11,055	-9,556		6	-13	0.1
Israel	9,162	25,929		5	22	0.1
Jordan	5,753	-4,937	2,475	11	2	0.1
Saudi Arabia	4,820	-3,737		11	-11	0.1
Iran	4,464	-2,433		3	18	0.1
Qatar	3,576	-3,516		18	11	0
Bahrain	2,163	-2,162	658	10	-22	0
Kuwait	2,102	-1,925		1	-31	0
Oman	827	-823	2,902	-14	0	0
Egypt	798	1,090		-12	5	0
Syrian Arab Republic	296	1,123	1,885	22	-88	0
Yemen	57	-56	57,000	-7	-54	0

Source: Comtrade

**FIGURE 17: IMPORTS OF CUT FLOWERS (HS 0603) TO THE MIDDLE EAST**

	Value imported in 2011 (USD '000)	Trade balance in 2011 (USD '000)	Unit value (USD/ton)	Annual growth in value 2007-2011 (%)	Annual growth in value 2010-2011 (%)	Share in world imports (%)
World	7,899,644	1,150,501	6,845	2	10	100
Middle East Aggregation	58,474	78,465				0.7
United Arab Emirates	18,635	-18,260	4,237	1	9	0.2
Saudi Arabia	13,757	-12,346	2,628	16	16	0.2
Qatar	5,608	-5,605	5,746	14	1	0.1
Bahrain	5,453	-5,410	5,284	19	14	0.1
Kuwait	5,240	-5,239	4,986	2	12	0.1
Oman	3,163	-3,151	6,788	9	35	0
Lebanon	1,440	-940	4,601	6	-9	0
Turkey	1,433	25,750	5,971	54	96	0
Iran	1,337	-1,173	4,741	27	67	0
Jordan	790	-760	6,752	7	-9	0
Iraq	442	-442	4,911	88	84	0
Israel	436	92,946	7,517	-7	26	0
Syrian Arab Republic	328	-308	3,685	45	-41	0
Egypt	313	11,818	7,452	112	-1	0
Yemen	99	899	3,667	31	-23	0

Source: Comtrade

**FIGURE 18: IMPORTS OF FOLIAGE (HS 0604) TO THE MIDDLE EAST**

	Value imported in 2011 (USD '000)	Trade balance in 2011 (USD '000)	Unit value (USD/ tons)	Annual growth in value 2007-2011 (%)	Annual growth in value 2010-2011 (%)	Share in world imports (%)
World	1,192,980	135,506	3,357	-3	8	100
Middle East Aggregation	6,780	38,700				0.6
United Arab Emirates	2,251	-2,234	1,818	-6	56	0.2
Saudi Arabia	1,307	-1,163	2,246	-15	-21	0.1
Kuwait	844	-722	1,792	-15	31	0.1
Qatar	467	-467	1,128	-10	1	0
Turkey	451	5,836	3,007	0	-11	0
Bahrain	330	-325	827	51	-54	0
Iraq	228	-228	797	14	11300	0
Israel	202	30,916	2,349	-19	-44	0
Syrian Arab Republic	202	-149	852	36	730	0
Lebanon	199	30	3,685	12	12	0
Jordan	135	-72	5,400	3	-25	0
Iran	92	246	10,222	9	441	0
Egypt	40	7,060	4,444	8	-11	0
Oman	32	-32	5,333	-42	-80	0

Source: Comtrade



## ANNEX 2: FULL FLORICULTURE SWOT ANALYSIS

Strengths	Weaknesses
Climate ideal for growing a wide variety of species.	Weak regulatory and institutional environment
Skilled Labor: most flower farmers are agricultural engineers	Lack of product standards
Strategic geographical location	Limited access to modern greenhouse technology
Existence of major flower retail shops with international presence and established contacts in the Netherlands (Exotica)	Dominance of Wholesalers who lack constructive business relationships with farmers
Existence of major flower input suppliers Experts with international presence and established contacts in the Netherlands (Exotica) and Debbane	Lack of training and extension services for floriculture
High number of indigenous species with market potential	Absence of a comprehensive national plan for floriculture research and development
Existence of Lebanese international fashion designers and universities	High capital investment requirements
Active CNRC for development and research in floriculture	Limited market information related to prices
High profitability for wholesalers and retailers	Absence of application of postharvest care and handling practices that aim at increasing shelf life
Potential for profitability for farmers	Limited agricultural extension services specialized in floriculture
	Lack of appropriate cold storage at the Beirut airport
	High cost of production that is not competitive with major international producers
	Lack of farmer commitment (resulting in not meeting required volumes for export)
	Absence of R&D when it comes to testing new species of flowers (planting them across Lebanon and reporting the results to all farmers through an agricultural guide.)
	No Farmer wholesale market: Exporters cannot meet export demand in term of volume and quality
	Low incentives for farmers: Farmers sell in consignment to the whole sale market
Opportunities	Threats
Enlarge the base of floriculture producers by improving market terms for smaller farmers through the adoption of a market auction system that would by- pass major wholesalers	Increasing land Rental fees and usage of lands for more profitable businesses ( real estate)
Improve production methods to yield better quality and higher volumes	Demand is greatly affected by the geopolitical situation
Develop new export market linkages	One time disruptions in shipping results in the termination of a trade relationships
Expand exports and local sales of high value flowers produced in Lebanon and indigenous varieties	New regulation: Any attempt of removing taxes on imported flowers will be reduce local production
Empower trade relationships with countries that are gradually increasing their imports from Lebanon (ex: Iraq) and countries that earlier relied on Syrian exports	Competition between wholesalers , leads to reducing selling prices of farmers goods and thus their margins
Improve farming and packaging techniques according to international exporting standards (homogeneity of products, disease free...)	
Expand to new trade channels direct to retailers: Selling cut flower bouquets in supermarkets	
Replacing part of Lebanese imports during January to March and increasing exports	
Flower exhibitions: Holland, Germany, Dubai and China.	
IDAL subsidised program for exports of flowers	
Establish programs for identifying and innovating new varieties, and for developing already existing ones	





## ANNEX 3: LIST OF POTENTIAL CUT FLOWER CROPS IN LEBANON

### List of Cut Flower Crops for Lebanon

*(Cut Flower Crops with Commercial Potential for Export Development in Lebanon)*

#### At Sea Level/South Lebanon (Tropical/Subtropical Climate):

Anthurium	Heliconia angusta
Alpinia –Ginger spp.	Heliconia bihai
Calathea	Heliconia dmitri
Costus	Heliconia orthotricha
Curcuma	Heliconia purpurea
Etlingera	Heliconia rauliniana
Globba	Heliconia rostrata
Hedychium	Heliconia stricta
Kaempferia	Heliconia wagneriana
Jasmine	Orchid-Vanda
Tuberose	Orchid-Mokara
Zantedescia	Orchid-Oncidium
Zingiber	Orchid-Phalaenopsis

#### At 300-400 meters elevation/Tripoli (Subtropical/Temperate Climate):

Allium*	Marigold*
Carthamus*	Strelitzia-Bird of Paradise
Celosia*	Anigozanthos
Cosmos*	Boronia
Dahlia*	Leucodendron
Euphorbia fulgens	Leucospermum
Gladiolas	Protea spp
Helianthus*	Waxflower
Lisianthus*	

#### At 800-1200 meters elevation/Bekka Valley (Temperate Climate):

Achillea*	Larkspur*
Agapanthus	Lathyrus odorata (Sweet Pea)*
Alstromeria	Liatris
Anemone*	Lily
Antirrhinum-Snapdragons*	Limonium
Aster	Matthiola incana*
Bouvardia*	Monarda*
Brassica –ornamental*	Narcissus
Calendula*	Nerine Lily
Campanula*	Orchid-Cymbidium
Delphinium*	Papaver nudicle*
Dianthus spp*	Peony
Echinacea purpureum*	Phlox*
Freesia	Ranunculus
Godetia*	Scabiosa*
Gypsophila	Statice spp.
Hydrangea	Trachelium*
Iris	

\* Seed Propagated flower crops

This list is not exhaustive, and some crops identified as temperate climate crops could be grown with less auxiliary heat in South Lebanon during the winter season, e.g. lisianthus.