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SMALL SCALE AGRICULTURE SET MARKET ASSESSMENT

LEBANON INDUSTRY VALUE CHAIN DEVELOPMENT (LIVCD) PROJECT

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1. INTRODUCTION TO SMALL SCALE AGRICULTURE SET

Lebanon has diverse and valuable resources that can be utilized by LIVCD to target marginalized rural populations to increase their household income and raise their overall standard of living. The rural agricultural set of products being addressed in this analysis is: pine nuts, *Origanum Syriacum*, commonly referred to as Lebanese Thyme, free range eggs and capers. These products are uniquely suited to advancing the economic opportunity for poor rural populations because of low investment costs, high market demand, and the potential for production combinations within households that can provide substantial income. Pine nuts, Lebanese Thyme, free range eggs and capers each have substantially different product flows from production to retail, and differing opportunities for intervention; but a common element among the four products is their potential to benefit impoverished rural households.

Rural households are defined in Lebanon as being all households located outside of the major urban centers of Beirut, Jbeil, Saida, Tripoli, Zahle, Chtoura, Nabatiyeh, Baalbeck and Sour. The land area defined as rural represents 92.8% of Lebanon, and is home to 20-25% of the total population[1]. According to the United Nations Development Program poverty in rural Lebanon is significant, and it is especially concentrated in the Hermel, Akkar and South Lebanon regions[2].

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[1] International Fund for Agricultural Development, “Rural Poverty in Lebanon”, (http://www.ruralpovertyportal.org/country/home/tags/lebanon.

2 United Nations Development Program, “Poverty in Lebanon”, http://www.undp.org.lb/programme/pro-poor/poverty/povertyinlebanon/index.cfm.

FIGURE 1: MAP OF LEBANON DELINEATED BY REGION AND DISTRICT

The four products presented in the agriculture set are currently being produced by rural families in the poorest areas of Lebanon. There are opportunities to improve and increase production for families already actively producing, and bring new producers into the market. In addition to targeting rural populations as a whole, rural women can specialize in these products and provide a portion of family income that they were not able to provide before the profitability of these products varies widely, i.e. they can be produced profitably in smaller or larger amounts, and can be sold through a variety of marketing channels, although the level of profit will vary significantly depending on the selected marketing channel(s). There are opportunities for even more income generation if products are produced and sold together. Small producers do not have the resources to go into large scale production and capture those cost advantages, but by producing a variety of niche products with low investment requirements that are commonly sold together they can bring in larger revenues with small scale production.

2. PINE NUTS

The edible pine nut produced in Lebanon comes from the *Pinus Pinea* tree, commonly called Italian Stone Pine, Umbrella Pine or Parasol Pine. *Pinus Pinea* grows naturally in Lebanon from sea level up to elevations of 1,500 meters. The nuts of this tree are a high value crop and generate significant income for actors involved in the market. They are used in traditional Lebanese dishes and international cuisine, which creates consistent domestic demand and opportunities for export.

The largest areas of forest are found in the Mt. Lebanon, South and Nabatieh Regions. These resources have the potential to increase rural household income in Chouf, Jezzine, and Nabatieh

MARKET OVERVIEW – PINE NUTS

Currently, there are little data readily available to assess the size and scale of the global pine nut trade because the product is commonly grouped with other nuts and spices in trade data. None the less, there are sufficient data to establish that Turkey and China are the largest suppliers of pine nuts to the Middle East and North Africa region. The amount of imported pine nuts in the Lebanese market is small, in part due to domestic production and in part due to a high customs tax on imported pine nuts. The import customs tax on pine nuts is either USD 10/kg, or 70% of the unit cost, whichever is higher[3].

According to the Lebanese customs, see TABLE **1** below, Lebanon exported 200 tons of pine nuts valued at USD 1.9 million in 2009. In 2010, 510 tons were exported with a value of USD 7.8 million. No imports were reported for 2009 or 2010. For 2011, there was an unusually low level of pine nut exports - only 56 tons. In 2011, 1 ton was imported.

TABLE 1: LEBANESE IMPORTS AND EXPORTS OF PINE NUTS 2009 – 2011

	Imports		Exports	
	Value $ Thousands	Tons Net	Value $ Thousands	Tons Net
2009	0	0	1,935	202
2010	0	0	7,822	560
2011	11	1	561	20

The largest competitors for exported Lebanese pine nuts to the Middle East and North Africa Region, Gulf Countries, Europe and the United States are China and Turkey.

Bakeries account for the largest domestic consumption of pine nuts, but they are also sold in food retail establishments and to Lebanese and international restaurants. According to interviews with retailers there is currently more demand in the local market, at the current price, than can be supplied through domestic production.

PRODUCTION – PINE NUTS

Pinus Pinea trees are located on land owned by municipalities, monasteries, private owners, and natural reserves. The majority of trees are on municipal land. The harvest season of *Pinus Pinea* spans from October to April. Land owners, and those with harvest rights, hire skilled and unskilled laborers for the harvest season. Laborers are commonly Syrian. Owners provide harvest equipment to laborers for use during the season.

After harvesting the cones are dried and processed. The cones are dried until they open revealing the black nut. The time for this can vary depending on the age of the cone and weather. A minimum of two

[3]Lebanese Customs, National Tariff HS Code 08029010, http://www.customs.gov.lb/customs/tariffs/national/tariff1.asp

different machines, a de-coning machine to remove the black nuts from the cones, and a “cracking” machine to break the black nuts and sort out the white kernels, are used to extract the kernels from cones. A third machine can be used to clean the kernels for final sale.. Some time is needed to feed the cones, nuts and kernels into the machine but it is not a labor intensive process.

Nut debris from the processed pine nuts is sold for fire starter and kindling.

The majority of pine nut processing is done by families or individuals who own one or both of the machines. Processors may own land, participate in auctions or only specialize in the processing, and are commonly located in high production areas. Processors act as aggregators and wholesalers in the pine nut market and are a key leverage point because all pine nuts must flow through the processing channel. Processors either charge per kilo of cones or take a percentage of the final kernels as payment. There are also co-operatives that own processing machines.

FIGURE 2: PINE NUT CRACKING MACHINE

FIGURE 3: KERNEL CLEANING MACHINE

FIGURE 4: PINE NUT DEBRIS

COST OF PRODUCTION - PINE NUTS

Two models, the Private Land Model and the Auction Model, are presented here for the cost of production of pine nuts. The Private Land Model represents a small landowner with trees, while the Auction Model represents a single large producer who wins the municipal harvest rights auction.

The Private Land Model demonstrates strong net revenues, but actors must already have the land resource in order to participate. The processing of the cones to kernels represents the most significant cost in the model, but individual investment in the processing machinery is not cost-effective. The Auction Model demonstrates tremendous profits, but requires huge initial investments by the participants. The need for either land ownership or large monetary resources restricts actors from entering the market at the initial production stage, but there are opportunities throughout the value chain for lower-income households to engage in trading, processing, and retailing of pine nuts. The Private Land Model includes the paid cost for processing the nuts to kernels. The Auction Model internalizes these costs since a producer of this size owns the processing machinery. Another significant difference between the models is that the Private Land Model is able to collect firewood revenue for pruned tree limbs, while in the Auction Model the wood is pruned and sold directly by Municipalities.

Both types of producers are active in the market and there is potential for smaller producers to move to the higher revenue Auction Model through land leasing of larger parcels and eventually participation in the auction.

MARKET CHANNELS – PINE NUTS

Pine nut producers use kernels for their own consumption, engage in direct retail to their neighbors and friends, sell to small local traders, or aggregate with others through a cooperative. Processors act as wholesalers in their local region, engage in direct retail, sell to small traders and may link to larger traders and exporters.

Families engage in direct retail from their home, a small store front, or events. Small local traders transport from various regions to large traders in urban locations, and sometimes they deliver directly to urban retail and restaurants. Small traders are either independent of the pine nut value chain or are integrated with another actor. Independent traders usually transport multiple products and are not affiliated or employed by other actors in the market. Integrated traders are employed full or part time by co-operatives, processors or retailers to pick-up or deliver a specific product.

All pine nuts that are not directly retailed or distributed to retail and restaurants by small traders are aggregated in urban areas by large spice and nut wholesalers.. These large traders aggregate pine nuts for the urban market and sell to small shops, supermarkets, bakeries, restaurants and exporters.

Pine nuts are used by bakeries and restaurants in prepared cuisine. Raw kernels are sold through events, in small local shops, niche high end and organic retail shops, and supermarkets. Pine nuts are generally packaged in simple plastic bags or containers with no labeling. Municipalities and monasteries hire laborers to prune the trees once every three years. Pruning is typically done by independent labor not engaged in the pine nut value chain. Municipalities sell the pruned limbs for firewood. Private land owners may hire labor or prune the trees themselves. Private land owners may also sell pruned limbs for revenue or use it for their own consumption.

OPPORTUNITIES – PINE NUTS

1. There are four opportunities for LIVCD to work on pine nuts. Those opportunities are: Capitalize on high profitability of pine nuts through increasing total production.
2. Increase net revenue and improve market participation by lowering investment costs.
3. Increase the number of actors in the market and reduce costs by providing access and financing for processing investments.
4. Increase domestic sales and exports through improved branding and product differentiation.
5. Improve sales and distribution by facilitating market linkages.

Opportunity 1: The profitability of pine nuts represents an opportunity for rural families to increase their household income. For rural families with private trees, production can be improved and revenues increased through proper pruning and harvest. Incorrect pruning and harvest techniques can damage up to three years of future cone production.

On municipal lands un-skilled labor is hired to prune and harvest trees at a much lower cost than laborers trained in correct pine tree management. Training in correct pruning and harvest practices, and increased awareness of the revenue potential of properly managed trees can significantly increase the net revenue of pine nut production for large areas of forest on municipal land. The forest represented in the Auction Model is pruned by independent labor hired by the local Municipality. The Municipality hires unskilled labor to prune pine trees for firewood and sells the wood for Municipal revenue. If pruning labor is tied to harvest output there is more incentive to engage in sustainable and high yield practices. Single auction winners hire both skilled and unskilled labor for harvesting.

Opportunity 2: It is difficult for individual families in rural areas to participate in high cost auctions. As mentioned above, annual harvest rights for *Pinus Pinea* on large areas of municipal and monastic land are currently allocated through blind auctions to a single bidder. An opportunity exists to improve Lebanon's position in the export market through alterations to the auction system. The current system is not efficient and concentrates the majority of Lebanese production to only those with resources sufficient for them to participate. Auctions could be broken down into multiple units with a lower set of bid prices. This revision would allow local poorer families to participate in the value chain. The auction system can be turned into a set price lottery which would also allow lower income participants to enter the market.

Opportunity 3: There is an opportunity to involve more rural families in the market through the processing of the cones to kernels. The processing of pine nuts is currently monopolized by a few players who own the requisite machines and thereby control the flow of pine nuts into the market. These players hold significant market power and are able to dictate prices and the amount of product in the market. They will withhold black nuts from the market in anticipation of greater profits. Providing these machines, or providing financing options for the purchase of these machines, to community organizations such as cooperatives, will allow producers to capture a larger share of the product value. This may also allow rural families who are not land owners or participating in auctions to engage in the trade and processing of the nuts for a profit.. Training in the processing of pine nuts also offers the opportunity to create more consistent quality. Improved quality and consistency will also improve the competitiveness of the product if it is exported.

Opportunity 4: There is potential to differentiate Lebanese pine nuts based on quality, and increase exports to niche high end markets around the world. A large impact intervention in this market would be improved packaging and marketing. Most pine nuts are sold unmarked with no branding or information. This is an untapped potential to differentiate the pine nuts based on region, age and quality. Lebanon can market a trademarked brand of pine nuts and specify the regions where they originate. Many pine nuts are located in Nature Reserves such as the Chouf area. Improved marketing can also be linked with tourism and local cuisines.

Opportunity 5: In tandem with increasing sales through improved marketing, there is an opportunity to increase exports through linking producers with large spice and nut exporters in Lebanon. Wholesale spice and nut traders interviewed in Beirut have expressed interest in helping facilitate links to large exporters. Some producers are already exporting small amounts of product but there is an opportunity to export more pine nuts through these channels, and increase revenue through exporting a distinct Lebanese pine nut brand.

3. LEBANESE THYME

Origanum Syriacum is an aromatic flowering shrub that is a member of the *Lamiaceae* family and is native to the Mediterranean region. It grows in mountainous areas, and can survive harsh climates with little water. The herb is a common spice in traditional Lebanese dishes. In addition to being used in its pure form, Lebanese Thyme is used in making za'atar, an extremely popular Middle Eastern spice mixture generally prepared using dried ground *Origanum S*., sumac, roasted sesame seeds and salt. The traditional culinary applications of this herb create high demand for the product, both within Lebanon and in surrounding Middle Eastern countries. While *Origanum S*. is most properly referred to as Syrian Oregano, it is commonly translated to English as thyme (genus *Thymus*). These names are used interchangeably for multiple plant varieties. This analysis will only be assessing the market and opportunities for the dried form of the *Origanum S*. plant variety, referred to here as Lebanese Thyme. Lebanese Thyme is produced through two channels, wild collection and cultivation. Lebanese Thyme grows naturally throughout all regions of Lebanon. This product has strong potential to impact rural household income because anyone can engage in wild collection, and cultivation can be achieved with small investment costs.

In 2012, the Lebanese government enacted a law regulating collection of wild Lebanese Thyme because it was recognized that wild collection was having a negative effect on Lebanese Thyme populations. Lebanese Thyme was being collected too often, too early in the plant growth and reproductive cycle, and too intensively on each plant, which was retarding vigor and seed production of the plants, ultimately reducing harvest volumes.

MARKET OVERVIEW – LEBANESE THYME

The majority of production is consumed locally in dried form, either pure or in za'atar mixes. Lebanese Thyme and za'atar mixes made with Lebanese Thyme are preferred by the Lebanese, as well as people in other countries, due its uniquely strong, flavorful taste.

Lebanese Thyme is not labeled by its scientific name in international trade statistics. There are a number of species of culinary aromatic herbs all referred to as thyme or oregano. Some products may be identified as *Origanum Syriacum*, but it may also be called simply oregano, or as indicated above, may be called thyme, again with the actual genus Thymus. Thus, international volumes and value of Lebanese Thyme cannot be specifically identified in trade statistics. Additionally, oregano and thyme are commonly pooled with other spices such as bay leaves in trade data.

There is a small amount of Lebanese Thyme imported into Lebanon each year from Jordan and Syria. The majority of imports come as pre-packaged mixed za'atar. It is possible that the Lebanese Thyme that is found in za'atar mixes imported into Lebanon actually contains Lebanese product that is exported dried in bulk to those other countries. Lebanese customs has a Harmonized Commodity code for Thyme, which appears to include different species of raw green and dried thyme, as well as za'atar mixes, and is used to classify imported and exported product. According to Lebanese customs, see Table 10 below, from 2009-2012 an average of 7 tons Dry Weight product was imported each year with an estimated value of USD 18,000. In the same period an average of 48 tons Dry Weight product was exported with a value of USD 48,000. Lebanon exports Lebanese Thyme to Syria, Jordan, Iraq and other Persian Gulf countries. Some private label, packaged Lebanese Thyme products are exported to Europe and the United States. The high value per ton of imports versus exports may be attributed to the pre-packaged and mixed product that is imported versus, a raw bulk product that is exported. Lebanon has the opportunity to increase its export value significantly by moving from exporting bulk raw product to exporting packaged and branded Lebanese Thyme.

TABLE 2: LEBANESE IMPORTS AND EXPORTS OF "THYME" 2009-2011

Year	Imports		Exports	
	Value $ Thousands	Tons Net	Value $ Thousands	Tons Net
2009	24	15	101	37
2010	7	0	146	57
2011	25	6	134	50

PRODUCTION – LEBANESE THYME

Wild collection is done primarily by rural families. Families in some regions engage in a systematic gathering for larger commercial production. Commercialized gatherers transport a group of 4-5 women, either family members or friends, to an area known for wild Lebanese Thyme and gather for 4-5 hours. It is more common for rural families to gather from their local region or near their home.

Small and medium farmers cultivate Lebanese Thyme either on privately owned or leased land. Farmers source plant stock from nurseries or from wild seeds. Wild plant stock for cultivation should be harvested in the same manner as for production and the un-cleaned dried plant spread over land intended for cultivation.

Rural families and small farmers do the drying and processing of Lebanese Thyme themselves. It takes one week to properly dry Lebanese Thyme and it should be done in a shaded and clean location. After processing the product is "beaten" to break apart stems and then "cleaned" to remove the stems from the beaten product. This process can be done by hand with rudimentary sieves, or with a cleaning machine. Few families own the machinery for processing.

Once cleaned, Lebanese Thyme can be milled for a finer consistency. Some families and farmers own small milling machines, or they take the product to a local mill and pay per kilo. Cooperatives also own the processing machinery for Lebanese Thyme and provide reduced cost processing for members.

The regulation on the collection of wild Lebanese Thyme in Lebanon was published by the Lebanese government on March 3, 2012 as law number 179, titled Law for the Investment and Export of Thyme and Sage. This law was passed, in coordination with a project funded by UNDP. The law is designed to reduce or eliminate overharvesting and damage to wild Lebanese Thyme in Lebanon.

Law 179 states that Lebanese Thyme can be collected from June until October if the individual has a license from the Ministry of Agriculture. According to the law, each collector can only harvest from one area each year, and that area must be approved by the Ministry of Agriculture. Each plant can be harvested once per season and only two-thirds of a plant can be taken. One-third of the flowered stem/ branches must be left visible for inspection. The plants can be harvested only when they are 10 to 15 cm above the ground surface in order to allow young sprouts to gain vigor. The law instructs collectors to avoid harvesting plants when the weather is hot because the heat might kill plants which have been stressed by harvest. Harvesting tools are to be kept sharp in order not to pull the plant's roots out of the ground. It is strictly forbidden to harvest plants at the roots[4].

Wild collection occurs on both private land and government land. To obtain a license from the Ministry of Agriculture gatherers must apply at their regional forestry center. There they state the area, product, and volume that they would like to gather. After receiving an application, the Ministry of Agriculture must send a forest ranger to the area stated in the application and assess the ability of the area to support the harvest request. After the assessment, the request is accepted, revised, or rejected. The requirement to obtain collecting permits is not well enforced, and when permits are granted they are often not complied with. Gatherers commonly take larger volumes and different products than originally requested.

The majority of Lebanese Thyme produced in Lebanon is done through wild collection, but there are growing numbers of small farmers who cultivate the product.. Cultivated production reduces the possibility of improper wild collection that damages the resource, but it is hard for collectors to transition to farming. Many Lebanese consider the quality of cultivated Lebanese Thyme inferior to wild Lebanese Thyme. However, it appears that the perceived inferiority is due to the cultural tradition of wild collection.

Lebanese Thyme has an informal quality classification used by actors in the market but it is not institutionalized through product standards or branding in the retail market. Higher quality Lebanese Thyme goes to the direct retail market, small shops and supermarkets, while lower quality Lebanese Thyme is consumed by bakeries.

There is a consistently high demand for Lebanese Thyme and increased production can easily be absorbed by the local market and exports can be increased. The major challenge in the market is to promote the regulation of unsustainable wild harvest techniques, while maintaining and increasing the cultivation of Lebanese Thyme.

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[4] Lebanese Republic, “Resolution No. 179 Investment and Export Thyme and Sage”, http://www.agriculture.gov.lb/Arabic/LawsRegulations/pages/Decision20120303-179-1.aspx (March 3, 2012)

FIGURE 5: LEBANESE THYME CLEANING MACHINE

FIGURE 6: LEBANESE THYME MILL

MARKET CHANNELS – LEBANESE THYME

The market channels for Lebanese Thyme are not clearly defined because actors play multiple roles throughout the market. After production, Lebanese Thyme flows in many of the same channels as pine nuts. Rural families and small farmers engage in the direct retail of bundled Lebanese Thyme before cleaning, cleaned Lebanese Thyme., and milled Lebanese Thyme. They may sell directly from their home, a small store front, or to local traders. In this type of retail the product is generally sold unmarked from bulk bags. Some larger producers have private labels. They package and mix the product in smaller quantities for specialty shops, supermarket retail and sometimes export.

Independent and integrated small traders collect the product from rural families and small farmers and deliver to small retail shops, restaurants and urban wholesale traders. Urban wholesale traders distribute to urban shops, restaurants and catering, bakeries, specialty organic and high-end stores, supermarkets, and private label distributers who re-package and mix the product under their own brand.

OPPORTUNITIES – LEBANESE THYME

There are five opportunities for LIVCD to work on Lebanese Thyme. Those opportunities are:

1. Increase production and improve quality through promotion of sustainable wild collection.
2. Increase the number of actors and volume of production by providing access to cultivation investments and training.
3. Increase net revenue for producers by creating a formalized product grading system.
4. Increase domestic sales and exports through improved branding and marketing.
5. Increase net revenue for producers by facilitating organic certification of products.

Opportunity 1: There are excellent opportunities to assist with the full implementation of the new wild collection regulation through education and training along the value chain. The new regulation and the steps needed to obtain a license are relatively unknown among producers. An education and training strategy for wild collectors can emphasize the plant life cycle so that the collectors understand that proper collection practices help to maintain plant populations. Training on how to navigate the permit process would also be useful. A strategy aimed at large traders and exporters can raise their awareness of the importance of the new regulation to sustain the product, encouraging them to purchase their product from collectors who harvest according to the regulations, which will further expand proper collection practices. These strategies will allow a traditional activity to continue, while promoting environmentally sustainable practices and improving the quality of the product that is produced.

Opportunity 2: There is a large potential to increase the number of rural families and small farmers in the market by promoting cultivation. Cultivation can also be introduced to actors already active in wild collection to increase the total amount of their production. There is variability in production and revenue from wild collection due to seasonal differences. There are also time and knowledge constraints created by the new Lebanese wild collection law. This variability can be offset by cultivation to ensure a steady household income. The challenge for new actors entering the market is the initial investment costs and knowledge of proper cultivation techniques. To increase cultivation, there needs to be a program to facilitate startup financial assistance to small farmers for their initial plant and labor inputs. In addition to this startup financial assistance, these small farmers will greatly benefit from proper cultivation training as they make the switch from wild collection to cultivation. Gatherers are unaccustomed to the planting, weeding and tending that are required for cultivation.

Opportunity 3: The price of Lebanese Thyme in the domestic market varies greatly depending on the region, the quality of processing and the time of harvest. The challenge to this is that not all producers and consumers in the market are able to differentiate between product qualities. Consumers may be willing to pay a higher price if they understand the higher quality of the product. There is an opportunity to institutionalize the informal product grading system so high quality products can be differentiated in the market for higher revenues. This will also increase the value of processing investments because the equipment creates more product consistency.

Opportunity 4: Like pine nuts, the Lebanese Thyme grown in Lebanon is considered a higher quality product than what is grown in other countries. The plant is more aromatic and flavorful due to a higher concentration of essential oil. Thus a strategy to improve branding and marketing of Lebanese product and to differentiate between grades and quality has potential to increase revenue. Promoting the environmentally sustainable wild collection practices in Lebanon could increase product value in a global market which has increasing interest in offering sustainably produced product. There are recognized global organizations that are can confer sustainable status on products to assist with the sustainable branding of Lebanese product. Lebanese Thyme is being marketed by private labels as local, organic, and high quality, but a consistent and globally recognized quality standard that can be applied in the market would allow all actors to benefit from the added value of branding higher quality product.

Opportunity 5: A final niche opportunity for Lebanese Thyme is to assist farmers in obtaining organic certification for their production. Organic retail is a growing market internationally and in Lebanon. Organic Lebanese Free Range Eggs

Free range eggs are defined, for this analysis, as coming from un-caged chickens that are given at or above a required minimum amount of indoor and outdoor space. They are fed hormone and antibiotic free feed, and the feed must be free of pesticide residue. Free range egg production is done by rural families and small farmers throughout Lebanon. It is common for families to produce eggs for their own consumption, but there is a large potential to increase household incomes by moving to small scale egg production for retail markets.

Similar to Lebanese Thyme production, free range eggs offer an exciting opportunity to impact rural household income because they can be produced anywhere in Lebanon and interventions can be targeted in regions such as Hermel and Akkar. Currently, the free range egg market is difficult to define because many commercially produced eggs are re-labeled and sold as “baladi”, or natural, to increase their value. There is no standardized definition of a “baladi” egg in the market, and many commercial brands use this label and sell for higher prices.

MARKET OVERVIEW – FREE RANGE EGGS

Free ranges eggs are a unique product because they are an exclusively local commodity that can generate significant family income with a high retail value. Free range eggs are considered higher quality than commercial eggs because they are fresh, are tastier, and they have no harmful chemical additives.

Total free range egg production in Lebanon is not known because a large amount of production is consumed directly by families or sold through informal channels to neighbors and friends.

There is a large potential for free range eggs to capture more of the egg market as consumers are increasingly aware of the health benefits and taste of free range eggs. Large commercial producers are also interested in creating a branch of free range production to diversify their products. Most retail establishments note that they can sell much more than they are currently able to procure.

PRODUCTION – FREE RANGE EGGS

The acquisition of laying stock is an annual cost. Hy-line brown chickens are high production egg layers suited to high elevation climates[5]. There are additional varieties of chickens that can be raised in warmer climates and lower elevations. Warmer climate chickens are less expensive than the Hy-line brown chicken. The chicks need to be vaccinated three times before they are 120 days old. It is recommended that producers purchase 135 days old chicks so no additional vaccinations will be needed and they have a greater survivability rate.

To meet the definition of free range chickens established for the analysis 5 chickens must have at least 1 sq. m. of indoor space and 2 sq. m. of outdoor space. The outdoor space does not need to be fenced. Egg producing stock will start to lay eggs after approximately 160 days, or one month after the birds are purchased (as noted above it is recommended that farmers purchase hens at age 135 days). Hens can produce eggs for up to 16 months.

Lay boxes are used to keep eggs off of the ground and away from predators, as well as prevent accidental crushing by the flock. One lay box has 16 compartments and can be used by 100 chickens.

Flocks of chickens over 100 require technical supervision by a specialist to ensure the health of the flock and maintain hygienic standards for egg production. A specialist should visit once per week.

FIGURE 7: 100 CHICKEN FEEDER

FIGURE 8: 150 CHICKEN WATER DISPENSER

[5] Hy-Line, Products Hy-Line Brown, http://www.hyline.com/aspx/productsandservices/products.aspx

MARKET CHANNELS – FREE RANGE EGGS

Rural families and small farmers are engaged in the production of free range eggs. Large commercial brands that have free range eggs do not produce the eggs themselves, but source the product from small producers.

Rural families and small producers use eggs for their own family consumption and engage in direct retail from their home. These producers may also sell from their own small store front or sell the product to small regional shops.

Free range eggs that are not sold locally are aggregated by co-operatives and private label companies. These two stakeholders act in similar ways. They collect from families and farmers and do their own labeling and branding of the eggs. The cooperatives and private labels also have their own distribution system and take the product to urban retail locations. The traders used to collect free range eggs are usually integrated with co-operatives and private labels to collect the eggs.

Free range eggs are a niche commodity demanded mainly by medium to high income consumers. In urban locations they are commonly sold in niche organic and high-end stores and supermarkets. Small local shops do have "baladi" eggs sold out of a basket or bucket, but consumers cannot validate these as free range.

OPPORTUNITIES – FREE RANGE EGGS

There are three opportunities for LIVCD to work on free range eggs. Those opportunities are:

1. Increase the number of producers in the market by providing access to flock investments and training.
2. Improve the net revenue of producers by providing access to higher quality inputs and enable flock expansion.
3. Increase market size by facilitating linkages with large private label egg producers.

Opportunity 1: As demonstrated in the 50 Chicken Model producers can generate a strong secondary source of income, or even a primary income through small free range egg production. The challenge for many farmers who are not currently engaged in egg production is the financing for the initial inputs that are required. If financial assistance is provided for a small producer for installation of the initial coop, equipment and flock inputs, the profit earned in the first year can be reinvested for flock renewal and feed for the next year.

Opportunity 2: There are many rural families in Lebanon that are currently engaged in egg production for household consumption and small retail. There is considerable opportunity to increase the commercial potential of these producers by providing access to higher-quality inputs such as specialized laying stock like the Hy-line chicken and technical assistance for the care of large flocks

Opportunity 3: There are currently only two private labels aggregating free range eggs, as defined in this analysis. This limits the volume of free range eggs that can flow to supermarket and high-end niche retail. There is an opportunity to facilitate linkages between farmers and large commercial actors in the market who are interested in integrating a free range product into their brand. These partnerships would enable large brands to target both mass market and niche consumers and would provide a large channel for free range eggs to flow through.

4. CAPERS

Capers are the unopened green flower buds of the *Capparis spinosa*, a wild and cultivated bush that is grown mainly in Mediterranean countries (southern France, Italy, and Algeria) and also in California. Similar to Lebanese Thyme., *Capparis s*. is an especially hardy plant that grows well in harsh climates with little water. The edible buds are picked frequently just as they reach the proper size. After the buds are picked, they are usually sun-dried, and then pickled in a vinegar brine. Capers are used in many international cuisines, but are not common in traditional Lebanese dishes. Due to small domestic demand, there is little active wild collection and no known cultivation of capers in Lebanon.

The cost of inputs to produce capers is mainly for labor. Capers grow wild in rocky and mountainous terrain. The plant is very prickly making it difficult to pick. . Capers are also valued based on their size and consistency.

After collection, capers are prepared for consumption by jarring them in a solution of vinegar, water and salt. Processed capers in Lebanon are sold primarily to international restaurants. Jarred and pickled Lebanese capers are also sold to specialty organic and high end retail stores. There are a number of imported caper brands in Lebanese supermarkets, but the annual volume of imported caper sales in the Lebanese market is not known. The Lebanese caper producer currently has more local demand from international restaurants and niche retail locations than can be supplied, but the market for this product still remains very small. Currently Lebanese caper production is too low, and processing costs are too high, to engage in export of the product.

The main constraint for capers is the intensive labor needed to pick the plant in the wild. Cultivation of capers could bring the total amount produced per plant to 5 kgs per year.

5. NEW PRODUCTS

There is an opportunity to introduce entirely new products to the agricultural set that are not commonly cultivated in Lebanon. These include *Capparis spinosa*, or capers, analyzed above, sumac, part of the *Rhus* genus for flowering plant that is dried and ground into a spice, and Molokhiah, which is the leaf of the *corchorus* genus of flowering plant. Before production of these three products can be fully integrated into the agricultural set, there is a need for more research into the potential for cultivation and more market analysis, but all three are well suited to the climate of Lebanon and the production capacity of rural families.

Sumac is a shrub, or small tree, that grows wild in subtropical and temperate regions. It is most common in Africa and North America. Sumac grows wild in Lebanon but is not currently cultivated. The fruit of the shrub is called a Sumac bob and grows in small clusters. The Sumac bob is dried and ground to produce the tangy Sumac spice. In Lebanon, some small farmers collect Sumac bobs from wild plants; however, the majority of Sumac used in Lebanon is imported from Turkey, Syria and Iraq. This product represents significant potential because there is high demand for it in the za'atar mix, along with Lebanese Thyme. The Sumac spice is considered the highest valued spice in the za'atar mix, and citric acid is often substituted in its place to mimic the Sumac taste at a lower cost. If Lebanon can enter into the market for Sumac, there is an opportunity to displace large volumes of imports and add a product to the agricultural basket that is already available in the wild to small farmers. Molokiah is a flowering plant found wild and cultivated in subtropical and tropical regions of the world. The leaves of the plant are bitter but very nutrient rich, and are used in a variety of cuisines from Africa, the Mediterranean and Asia. The leaves of the plant are commonly cooked down to a slimy consistency and eaten as a soup or with rice. Currently, there is no known commercial production of Molokiah in Lebanon, but the large amount that is being imported, and the demand for the product throughout the Middle East and North Africa region, represents an opportunity for trial cultivation in Lebanon.

6. KEY LEVERAGE POINTS AND LINKAGES FOR SMALL-SCALE PRODUCTION

The greatest opportunity that the small scale agricultural set offers is through a combination of products and their ability to be produced and sold together by the same households or by a cooperative. Pine nuts, Lebanese Thyme and free range eggs all have income generating potential and by effectively combining their production, families can move from using individual products as a secondary source of revenue to specializing in sets of products.

These products can also be combined with other complimentary products such as olive oil, honey and traditional processed dried foods, called Mouneh. Olive trees grow well in the same climate and are generally found on the same lands as Lebanese Thyme. Honey is a common product for rural families, and small scale beehives and production will integrate well into the agricultural set. Mouneh is traditional preserved Lebanese foods such as jams, pickled vegetables, dried fruits and cheeses. Rural families, particularly women, have an opportunity to contribute to family income through Mouneh production. The agricultural products produced by the family can be used as inputs for the Mouneh, and original and processed products can be sold together.

The labor inputs needed for families to engage in combinations of these products is also complimentary. Cultivated Lebanese Thyme and Free Range Eggs can be produced year round with very small but constant labor inputs, and larger inputs during planting, harvesting and building of coops. Wild collection of Lebanese Thyme, and pine nut production are seasonal and require one-time labor inputs. Households can stagger the large time investment of coop building around planting and harvests. Additionally, planting and harvesting is usually seasonal so can be accomplished within ranges of months and the family can allocate time between multiple products. Time investments for the processing of the agriculture products can also be staggered because pine cones, the black pine nuts, and dried Lebanese Thyme can be stored for months at a time before final processing and packaging for retail. An opportunity for rural households to increase their income and work at combining these opportunities is to participate in, and form cooperatives. Cooperatives, municipalities, and other community organizations can serve as a resource for multiple producers in one area and can invest in production equipment, help supply production inputs and serve as a market for products.

Cooperatives operate with a business model that aggregates small scale production and sales to achieve economies of scale. Individuals have a financial and participatory stake in the organization and economic returns are divided based on the contribution of each member. Cooperative work in Lebanon is oriented towards community development, including employment, more equitable distribution of services, and improved income. There are currently around 1,400 registered cooperatives in Lebanon with different foci. In general, farmers' cooperatives tend to be dominated by men, but agro-processing cooperatives tend to have female membership. Most of agricultural and food processing cooperatives are located in South, North, Bekaa and Mount Lebanon.

Cooperatives differ in size, structure and operation. Some cooperatives have an advanced set-up and apply technology in their production. Other cooperatives have more elementary production facilities. Most cooperatives sell their products to their local markets, although some distribute through other markets in the capital Beirut or through exhibitions, while others distribute their products through friends and relatives in GCC, Europe, USA, Canada and Australia.

The agro-processing cooperatives transform raw agricultural product into increased valued products for the market, including many popular Lebanese foods. They also help farmers sell products such as honey, eggs, and dried Lebanese Thyme. Cooperatives can help members to produce their products either at their own houses or in the cooperative premises using its equipment. They also help members market their products regionally and throughout Lebanon.

An especially promising opportunity for these products is to integrate them into the tourism sector of Lebanon through hotels, restaurants, nature preserves, and special events. Hotels and restaurants can offer fresh local products; both prepared and pre-packaged, and integrate these specialties into their marketing strategy. Special events such as regional food festivals can be organized to increase awareness of regional food specialties, and offer an opportunity for local producers to advertise their products. Festivals can attract domestic tourism and also be promoted internationally through high-end dining magazines. This would capitalize on current global trends promoting traditional and regional cuisines, and organic and locally produced products. There is also an increasing global gourmet market with these same preferences.

7. STRATEGY FOR SUPPORTING KEY LEVERAGE POINTS AND LINKAGES

There are four axes for LIVCD to promote combinations and intersections.

Axis 1: Find Sources of Investment Financing. A challenge facing families and small farmers, who would like to start producing sets of products, is the investment cost and training needed to enter a new line of production. Even producers already engaged in an agricultural product market will often not make enough profit annually to invest it in a new line of production. Low interest loans and training would allow rural families and small farmers to diversify their products and enter new markets.

Axis 2: Provide Institutional and Technical Training for Cooperatives. Cooperatives have received significant funding from various organizations But many are still unable to reach their full potential. They are facing challenges in administration, sales, marketing and distribution. Cooperatives struggle with financial management and business strategy. Capacity building for cooperatives on financial management and access to investment financing can address these challenges. An opportunity to improve sales and marketing for groups of products produced by individual cooperatives is to help create an association for cooperatives who are working on similar products, and market all of their products under a common brand with differentiated local identities. This strategy will allow cooperatives to specialize in one or two products in larger quantities to capture economies of scale, but continue to produce additional products from the rural agricultural set because there will be a consolidated brand to market them under.

Axis 3: Strengthen market linkages. Another current revenue constraint for the agricultural set is the limited marketing of these products beyond local neighborhood retail. There is an opportunity to bring naturally produced, traditional products to the high-end and niche retail market in urban locations, and to export these products internationally. Farmers’ markets, hotels and restaurants, and regional culinary events where products can be marketed together, represent a direct retail avenue that provides access to the high-end consumer market. Farmers' markets and culinary events will spread awareness about natural regional Lebanese production. The Lebanese organization Souk al Tayeb is already engaging in these types of events. For example, farmers can be supported in understanding the application process and complying with the regulations needed to participate in the Souk al Tayeb's Saturday market. Souk al Tayeb has already begun hosting regional culinary events around Lebanon but has encountered difficulties in financing and marketing.

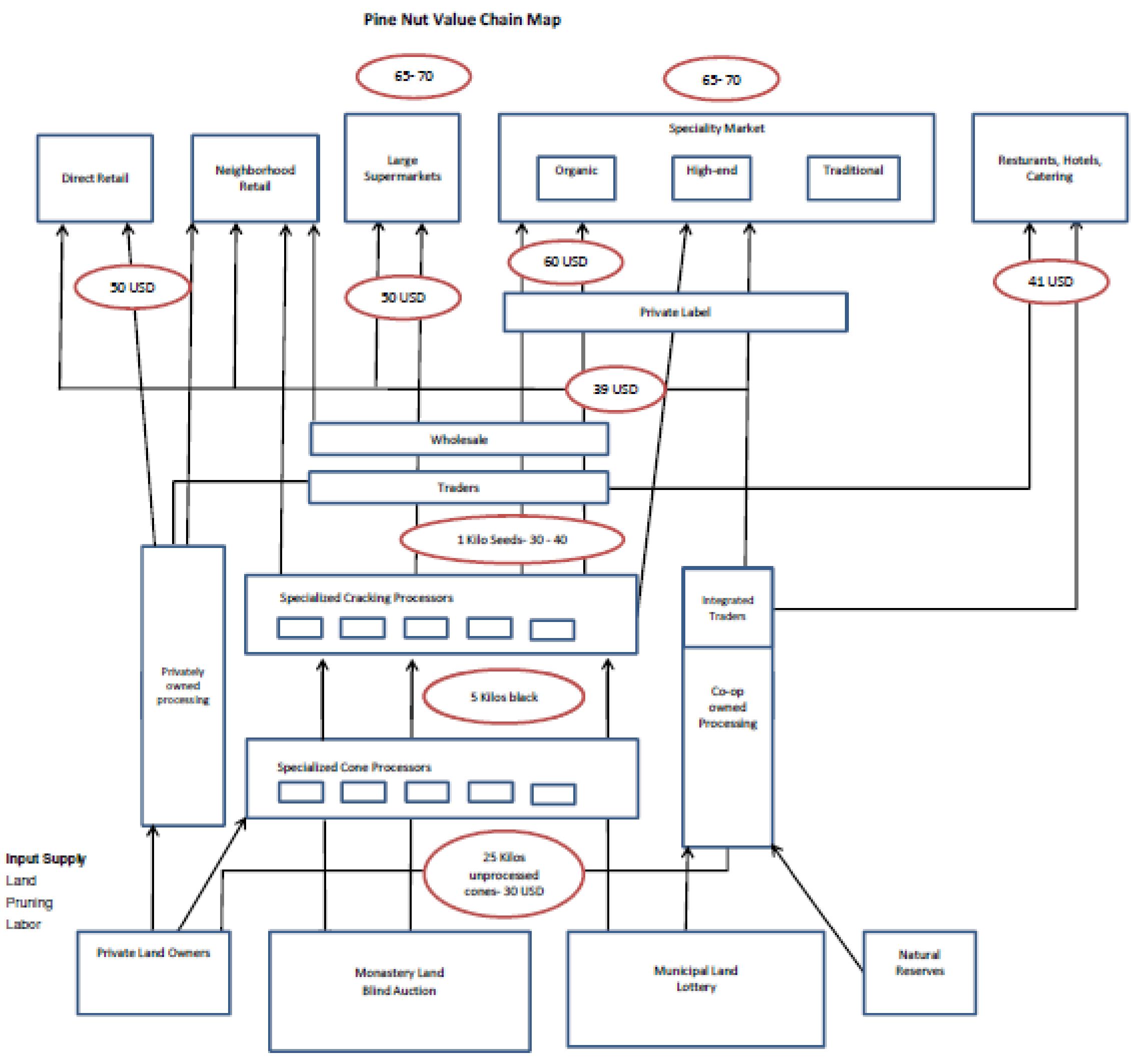
Axis 4: Promote Organic certification. There is an opportunity to add value to Lebanese products through organic certification. There are currently two certifying bodies in Lebanon, LibanCert and IMC. The certifying bodies struggle with consumer trust because regulations are not consistent or well enforced. There is an opportunity to assist these bodies in improving the regulations and their application, and increase consumer trust in organic certification. There is also an opportunity to assist producers through training in the production standards for organic certification, and with their annual cost of certification. Expanding the use of organic certification would allow producers to capture the increased value of organic certification in the growing domestic market for these products, and in the global export market.

8. CONCLUSION

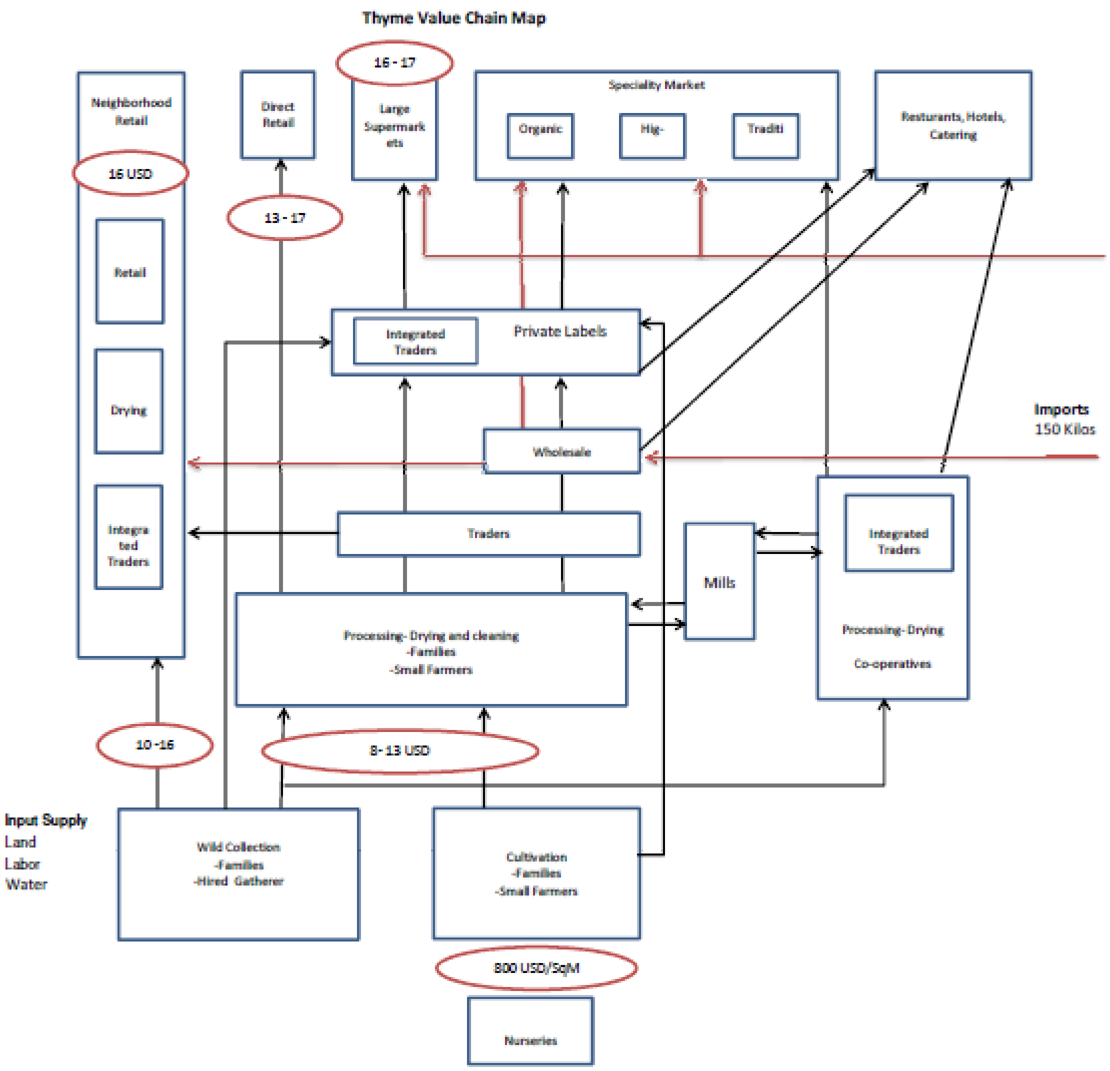
LIVCD interventions in the rural agricultural set must be adapted to regional needs and the unique potential of each product. Rural families and small farmers face significant challenges in maximizing economic revenue from agricultural products, and these can be addressed through improved production techniques, and larger engagement in local and international markets. The rural agricultural set has extremely strong production potential in the poorest areas of Hermel, Akkar and South Lebanon. Strategic interventions with the largest net profit opportunities will increase rural household income, and create community infrastructure that will promote and sustain rural development and agricultural production in Lebanon far into the future.

ANNEX - VALUE CHAIN MAPS

PINE NUTS:



LEBANESE THYME:



FREE RANGE EGGS: