

# Potential for Delivery of Upper Egypt Horticultural & Livestock Products to Supermarkets, Food Processors and Institutional Buyers in Egypt

Authors: Dr. Kenneth Swanberg  
Dr. Ali Assem

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USAID/Egypt

Dr. Kenneth Swanberg  
1569 Onyx Drive  
McLean, VA 22102  
Consultant  
Chemonics International, Inc.  
Tel: 916 792 7164  
[kswanbrg@aol.com](mailto:kswanbrg@aol.com)

Dr. Prof. Ali Assem  
Professor,  
Cairo University  
Staff Member, AERI Project  
Chemonics International, Inc.  
[aassem@aeriexports.net](mailto:aassem@aeriexports.net)

# Delivery of Upper Egypt Horticultural & Livestock Products to Egypt's Supermarkets, Food Processors and Institutional Buyers

**I. Introduction** The Agricultural Exports and Rural Incomes (AERI) project of USAID in Egypt is focused on increasing on-farm and agribusiness jobs and rural incomes in Upper Egypt, an area which has generally been left out of past development programs. The initial design placed priority on expanding and increasing the production of horticulture crops with export potential. Grants were offered to assist Farmer Associations in building and managing Post Harvest Centers, which would pre-cool, package and refrigerate fresh produce from the member farmers, and contract with trader-exporters to export their products to Europe or the Gulf States. However, designing a project exclusively for fresh produce exports is difficult, and fails to realize the full potential of the farmer's production.

For the most part, farm-level production, especially from smallholder farmers, only produces from 30% to 70% exportable product in any given field. What happens, then, to the remaining product? The higher the productivity of the product (tons/hectare) the greater the volume of product that must find alternative markets. To be sure, much of this product finds its way into the local markets, to be traded up to the regional wholesale markets, to the major terminal markets, and to a large group of high end retail-oriented markets. The question then becomes how to upgrade this remaining product so that it can be marketed at a "fair price", and thereby generate substantially more income for the farmer. The answer is rather simple in concept but extremely difficult to implement. Just as the "exportable" product must be carefully handled, pre-cooled, refrigerated and packaged with care and pizzaz (brands, labels, attractive containers, etc.), this "residual" product must also be treated the same way. It may be that not all of the product produced on a hectare will reach a high-end market, but by following the same principals as those being used for the export product, a substantially higher portion of the farmer's production will be able to reach these other high-end markets. This presentation will describe the nature of these "high-end" domestic markets, and suggest ways in which they may be accessed by the Upper Egypt Farmer's Associations.

**II. Domestic High-End Markets in Egypt** The *high-end* markets that we are referring to are the evolving and emerging supermarket chains, the associated market chains, the food processors, and the institutional markets – restaurants, hotels, hospitals, military, etc. Each of these markets have their own characteristics and their own special demands in terms of the quantity of product needed, the quality required, and the timing and consistency of delivery that each demands.

**II.1 Supermarkets and Other Markets** Supermarkets come in all kinds of shapes and sizes, and other types of markets exist side-by side as well. And each one functions differently. Here is what we have in Egypt:

## Types of Marketing Chains

- Corporate Foreign Owned
- Corporate Egyptian
- Independent Store Groupings
- Government Owned

## Size of Marketing Chains

- Hyper Mega Stores
- Large Supermarkets
- Small Grocery Store Chains
- Street-side Produce Stands

- Military Owned

- Wholesale Market Vendors

All of the above are present in varying numbers in Egypt. This supermarket chains are largely a recent phenomenon. The presence of the large foreign-owned supermarket chain began with Sainsbury from England in 1999. But Sainsbury eventually met with failure and was forced to withdraw. Part of their problem was the inability to source locally, and they were accused of illegally pricing some products as “loss leaders” (less than cost). Tesco from England also made an attempt to enter Egypt by marketing their processed and branded products through sales agents, but once again, not very successfully. Parallel to the attempts of the foreign-owned firms to penetrate Egypt, were the efforts of a few local chains which have been slowly evolving during this period. Alfa, Seoudi and Metro have been around for some time, and have grown in size to compete for market share. Several others have existed for some time and remain relatively small. The Government and the Military have their own chains, and these have emerged as full line small scale grocery stores, instead of outlets that just sell subsidized basic staples.

However, more recently another large foreign-owned supermarket has arrived, and this one seems to be holding its own. Carrefour arrived a few years ago with their Hyper Market in Greater Maadi, and have since opened two other stores, one in 6<sup>th</sup> of October and the other in Alexandria. In competition with Carrefour, the Egyptian-owned Hyper #1 has established itself in 6<sup>th</sup> of October, complete with their own private label processed foods, groceries and dry-goods. Shop Rite from South Africa has a handful of small stores, and there may be others just beginning to show themselves. The point is that the phenomenon of the “supermarket” is finally here to stay, presenting the Egyptian consumer with a *high end* product, both fresh and processed, at a price that is convenient for the Egyptian middle and upper class. Although it took some time for Egypt to recognize that supermarkets and chain stores can make the marketing of Egyptian produce more efficient, nonetheless, these stores appear to be making a mark and have been able to expand and increase their sales and market share of the Egyptian produce market.

## II.2. Market Structure

Our survey attempted to record the number of stores in each chain, and to determine their relative size. The following table presents these numbers.

<b>Type of Outlet (In Cairo)</b>	<b>(Number of Stores)</b>
• <b>Hyper Mega Stores</b>	
– Hyper One	(1)
– Carrefour (Greater Maadi)	(1)
– Carrefour (Alexandria)	(1)
• <b>Large Supermarkets</b>	
– Metro	(20)
– Alfa	(7)
• <b>Small Grocery Store Chains</b>	
– Seoudi	(5)
– Mahmal	(6)

- Abou Zekry (7)
- Ragab Sons (8)
- Shoprite (7)
- El Hawary (1)
- Abba (3)
- Oscar (4)
- Bedr (4)
- (In Alexandria)**
  - Carrefour (1)
  - Zahran (5)
  - Fathalla (7)
- **Government Outlets**
  - Al Ahram (Pyramids 2000) (110)
- **Military Clubs Supermarkets** (20)
- **Produce Stands**
  - **Thousands of individual and associated stands**
- **Obour Wholesale Market Purveyors**
  - Hundreds of buyers who deliver to retail outlets or institutions (restaurants, hotels, schools, etc.)
- **6th of October Wholesale Market Purveyors**
  - Hundreds of buyers who deliver to retail outlets or institutions (restaurants, hotels, schools, etc.)
- **Regional Wholesale Market Purveyors**
  - Many buyers who deliver direct to retail outlets or institutions (restaurants, hotels, schools, etc.)

In our interviews we observed how each outlet was marketing their produce. Most of them were being supplied by purveyors who would obtain the product from the farmers or other regional outlets (terminal, wholesale or local markets) and then package these products in trays with cellophane covers or in plastic bags. Sometimes this product would be pre-cooled and refrigerated but more often just at room temperature. However, the price and quality of these pre-packaged products was usually higher than the bulk unpackaged products. The presentation of these products was definitely *high end* but we were not able to determine sales figures not total value of the sales of these packaged products, compared to the sales (quantity and value) of the bulk products.

The use of refrigerated gondolas was also inconsistent. The larger stores used them more frequently but not extensively. Once again, sales volumes could not be determined (store managers were not forthcoming).

However, it was detected that the better the presentation the higher the price. We are not at liberty to disclose the difference in prices due to a pledge of confidentiality with those interviewed, but suffice it to say that the better the presentation and quality, the higher the price.

On the flip side, day-old or poor quality produce – spoiled, blemished, or produce that was not spotlessly clean, was cheaper.

**II.4. Estimated Total Volume** Given the number of stores, stands and stalls, we tried to estimate the total volume and value of the produce moving through this system, to give us an idea of the potential this could have for our Farmer Associations of Upper Egypt. The number becomes staggering, when put in this context.

## Number of Stores and Estimated Volume

	# Stores	Square Meters of Produce Section	Estimated Volume per week	Estimated Value
Hyper Mega Stores			(tons)	('000 LEs)
Hyper One (El Hawary)	1	1,000	210	
Carrefour Maadi	1	1,200	252	
6th of October	1	800	168	
Alexandria	1	1,200	252	
		4,200	882	2,205
Large Supermarkets				
Metro	20	800	168	
Alfa	7	350	74	
		1150	242	725
Small Grocery Store Chains				
Shop Rite	7	175	37	
Seoudi	5	125	26	
Mahmal	6	120	25	
Abou Zekry	7	210	44	
Ragab Sons	8	200	42	
El Hawary	1	30	6	
Abba	3	45	9	
Oscar	4	60	13	
Bedr	4	80	17	
		1,045	219	439
Government Outlets				
Military Club Supermarkets	20	400	84	
Al Ahran	110	550	116	
			200	299
Produce Stands				
	1,000s	20,000	4,200	6,300
Wholesale Market Purveyors			5,742	9,968
Obour	100s			
6th of October	100s			

The numbers estimated above show that the total potential market for produce sales through the supermarkets is over 1,000 tons per week, and at a value of almost 3.5 billion Egyptian pounds (\$600 million dollars). This is a substantial amount and any portion of this that could be supplied by the Farmers Associations of Upper Egypt would be of tremendous value and income.

**II.5. Wholesale Markets** Although the supermarkets are evolving, most produce items (fruits, vegetables, nuts, flowers, etc.) are still handled through the various wholesale or terminal market centers, six of which are of major size located around the country. The two largest wholesale markets are El Obor and 6<sup>th</sup> of October. There even appears to be a law that all produce entering the city must pass through one of these terminal markets. These markets handle fresh produce in bulk, unsophisticated packaging, un-refrigerated and at low prices. This dampens the demand for refrigerated, pre-packaged produce from Upper Egypt.

**II.6. Conclusions and Recommendations** Since the wholesale-terminal market prices are extremely low, and fail to stimulate a significant supply response from the farmers, it has been our intent to investigate the possibility of developing direct contracts with “supermarkets” or other collective purchasing groups, such as food processors and institutional buyers (restaurants, hotels, hospitals, military installation), to determine whether they would pay a premium for refrigerated and carefully packaged products. While conducting the competitiveness analysis for Upper Egypt Horticulture Products, several of these stores were visited. In discussions with managers, it was found that the shelf life for the fresh products was customarily limited to no more than a few days for many items. Asked if they would prefer chilled, cooled and handsomely packaged produce from the proposed Post Harvest Centers of Upper Egypt, (to compete with the purveyors who are now doing just that) the answer was universally an emphatic “yes”, and a premium price would be offered where merited. Here is what they said.

**Purchasing Patterns:**

- The majority of the stores purchase produce on a daily basis to maintain freshness (except Government outlets)
- Shelf life is from 1-2 days for most perishable items
- Only a few stores have refrigerated gondolas (Alfa, Metro, Carrefour, Hyper, Seoudi, Shop Rite)
- Virtually all supermarkets carry pre-packaged produce on trays or in cellophane bags, with purveyors label. (Demonstrate)
- Principal pre-package purveyors include:
  - Mafa
  - Tabarak
  - Agrofoods
  - ISIS (Sekem)
  - Tarnold
- Pre-packaged and pre-cooled produce can extend shelf-life up to 5-7 days, depending on perishability and refrigeration.
- When asked if they would entertain new supplies pre-packaged from Upper Egypt, they all answer in the affirmative – just send a sample

**Requirements:**

- Sample for each product
- List of supplier prices (Farmer Association Post Harvest Center prices)
- Receive payment in 21-30 days
- Some stores give rejects back to supplier
- Some stores sell spoiled at discount
- Some stores give spoiled to bakery (pizza, rolls) or repackage

This would give the Farmer Associations the opportunity to operate as “purveyors” with their own branded and labeled package, and there is no question but that the prices they could receive for these products would be 10% to 15% higher than the normal terminal or local wholesale market prices they now receive.

**III.1. Food Processors** All of the stores interviewed carried a substantial number of packaged produce items – canned, jarred, pickled, dried and most notably frozen vegetable and fruit items, the majority of which were processed in Egypt. At least 8 firms freeze vegetable products and export as well as distribute to domestic markets. Earlier studies of these processors showed they were very keen to obtain more quality raw materials from within Egypt.

One of the early problems of the supermarket chains that tried to penetrate Egypt – Sainsbury and Tesco – was their use of their own branded products, which they imported. These products did not appeal to a broad market. On the other hand, processed products produced locally have done well in the domestic market, are priced competitively, and are accompanied with various types of promotions. Moreover, many of these processed products reach the export markets as well.

**III.2. Types of Processing**

There are many types of processing that can be carried out on fruits and vegetables, and herbs and spices, and each of them has its own conditions and requirements for the product to make it suitable for each type of processing. The most common types of processing that are used to transform products in Egypt are:

Types of Processing

- Pastes, Purees
- Juices – Natural, Reconstituted, Concentrates, Powders
- Canned – Whole, Sliced, Diced, Chunks
- Glass Jars – Gourmet arrangements of whole, sliced, diced, chunks
- Frozen – IQF, Blocks, Pastes
- Dried – Seeds, Flakes, Ground, Diced, etc.
- Dehydrated – Cup o’ Soup, Soup Packages
- Pickled, Brined
- Hydra-cooling, Forced-Air cooling
- Oils, Essences
- Sugars – Cane, Dates
- Herbal Teas

Almost all of the products from Upper Egypt can be transformed in one way or the other. The product groups that are most suitable for processing are:

Products Suitable for Processing (sample listing, not exhaustive)

- Fruits – citrus, strawberries, tomatoes, pomegranate, pineapple, grapes, plums, other berries, etc.
- Vegetables – green beans, carrots, rutabaga, onions, peas, potatoes, broccoli, beets, okra, etc.
- Herbs, Spices, Medicinals
- Meats – beef, lamb, goat, buffalo
- Dairy Products
  - Milk – plain, sweetened
  - Yogurt
  - Cheese
  - Ghee
  - Ice Cream, Sour Cream
- Nuts – almond, peanuts, cashews
- Olives, Dates
- Oil Seeds – corn, cotton, sesame, etc.

And the types of packaging that are feasible include:

Packaging (sample listing, not exhaustive)

- Cans, Jars, Plastic Containers
- Pouches
- Stand-up Pouches
- Bottles – Glass, Plastic
- UHT
- Trays, cellophane wrapped
- Bags
- Boxes

**III.3. Market Characteristics** The conditions and characteristics that are demanded of each product are:

- Ripeness (sugar content)
- Maturity
- Quantity required for processing
- Blemishes allowed
- Color
- Texture (hardness, softness)
- Size & Shape

The markets for many processed horticulture products are not as volatile as those for fresh produce, mainly because much of the production cannot increase or decrease rapidly according

to the vicissitudes of the market. Often trends ascending or declining trends are noted. As a result, prices for products that will be processed are significantly lower than export market prices. Nonetheless, since these markets are often of higher volumes than the fresh markets, and absorb lesser quality products, they present a very attractive alternative for the farmer to dispose of a greater share the product produced. Although market windows per se are not identified for these products, their competitiveness is duly noted, and a competitiveness histogram can still reveal the degree to which local production can supply any given processed market.

**III.4. List of Processing Firms** We do not have a complete list of processed products, but we have been able to assemble a large array of firms in our list, and we have the products to demonstrate. Here is a partial listing:

- |  |   |
|--|---|
| - Nile Fruit- pastes, juices, concentrates                       | - Vitrac-pastes, juices, concentrates               |
| - Faragello-fruits, vegetables                                   | - Edfina-fruits, vegetables, fish                   |
| - Montana-frozen fruit & vegetables                              | - KAHA-canned fruit & vegetables                    |
| - Givrex-frozen fruit & vegetables                               | - Wadi Foods-gourmet canned fruit & vegetables      |
| - Cold Alex-frozen fruit & vegetables                            | - Helwan-frozen, canned fruit & vegetables          |
| - Americana-frozen fruit & vegetables, canned fruit & vegetables | - Sekim-organic canned, packaged fruit & vegetables |
| - Farm Frites- frozen potatoes &                                 | - Basma- frozen vegetables & Fruit                  |
| - Harvest- Mixed vegetables                                      | - Daltex  |
| - Sonac- fruits, vegetables                                      | - Heio  |
| - P&J- fruits, vegetables  | - Aatcoman-   |
| - #1- fruits, vegetables   | - El Sanahy-  |
| - Knorr-soups  | - Juhayna-fruit & vegetable juices                  |
| - Gokar-   | - Bisman- canned fruit, vegetables                  |
| - Hi Tadi-pastes, juices, concentrates                           | - Fresh - frozen fruit & vegetables                 |
| - Heinz-canned tomatoes, vegetables                              | - Foodico-  |
| - Unilever-canned, packaged vegetables                           | - Aga-  |
| - Fopico- canned vegetables & fruit                              | - Mano-   |
| - Nabaria Gardens-   |   |
| - Safety-  |   |

**III.5. Dairy Products** Milk production is significant in Upper Egypt, and can be processed into several products. Processing companies include:

- |              |           |
|--------------|-----------|
| - Juhayna    | - Milkana |
| - Arab Dairy | - Maxo    |

**III.6. Location in Upper Egypt** In discussions with the Chairman of the Food Processors Association, it was found that there exists an opportunity for placing several branches of these firms in Upper Egypt. Tomato paste and purees could be processed in Beni Suef, and orange concentrate could also be introduced. If tomatoes could be delivered to the factory for \$.17/kg, it would be competitive with Thailand. Upper Egypt tomato production costs are \$.12/kg. For orange concentrate, the world price has jumped to \$2,100/ton, and production costs are only \$1,600. Brazil used to flood the market with \$900/ton products, but can no longer do so. And

since the Hurricane in Florida last summer, thousands of hectares of production have been wiped out, and it takes 5 to 7 years to recover. Price shifts in recent years have increased the market price for many products to the point where Egypt is now competitive in production to a much greater extent than ever before. The AERI horticulture production program plays right into this scenario.

**IV.1. Institutional Markets – Restaurants, Hotels, Hospitals, Schools** The third component of this study is the major restaurants, hotels and institutions (military, hospitals, schools, etc.) which purchase major quantities of fresh and processed horticulture products. This component of the study was limited to a listing of the major restaurants and hotels, and field interviews were not conducted. Nevertheless, the potential for supply contracts exists to a large degree. However, the list is too long to note here.

#### **V.1. The Upper Egypt AERI Sponsored Post Harvest Centers “An example of Cluster Development”**

A principal focus of the AERI Project was the design of Post Harvest Centers for Upper Egypt, which would pre-cool, pack, cool and ship in refrigerated containers, a selected number of horticulture products for export. To determine whether this approach was feasible, an in-depth competitiveness analysis was conducted on the Sohag Farmers Association PHC.

#### **V.2. Methodology of Competitiveness Analysis**

**Step 1.** Farm production was identified by the CARE consultants, NVC (Nile Valley Consultants), and by MUCIA’s University Research Team. Five principal crops were selected for Sohag by NVC and an additional two crops were added from the MUCIA data. As a result, seven crops were selected for cooling and packing in the Sohag PHC, namely green beans, grapes, onions, garlic, melon, okra and tomatoes. Then the crop calendars were consulted in order to determine the quantity of product available from the participating farmer associations, and their availability throughout the year. This led to the development of a crop calendar with harvest times and volumes for each week of the year.

**Step 2.** MUCIA originally designed four cooling-refrigeration facilities, and the grants team asked the designer, Eng. Bedawy, to prepare plans for a facility with a capacity just in the middle of those four designs. This selection had 3 pre-cooler units, 2 cold storage holding bays, a large air-conditioned packing area, and hygienic facilities for all the workers. The cost of the facility was estimated at LE 5.8 million. The first NVC design suggested that the facility could process 100 tons of product per day, but with the specifications of the actual design as presented by Eng. Bedawy, this volume fell to 32 tons/day for fruit and 45 tons/day for vegetables.

**Step 3.** The cost of production for each crop was derived from the CARE farm-level survey for approximately 25 crops in six governorates. Ministry of Agriculture crop survey data was also consulted to develop the cost of production data set used in this analysis. The data was prepared in cost histograms per kilogram of production and per feddan or hectare of production. The per kilogram data was used in the “competitiveness histogram” when looking at the entire value chain from production to export, and the per hectare data was used to compare the productivity and earnings between selected crops, and between horticulture crops and traditional crops.

**Step 4.** Farm-gate, local and wholesale prices for each product were derived from the AERI competitiveness survey, and from the ACIDI/VOCA-MALR wholesale market price series.

**Step 5.** Estimates were made from the AERI competitiveness survey on transportation costs from Upper Egypt to Cairo and to Alexandria.

**Step 6.** Estimates were also made for packing costs for each product from the AERI survey.

**Step 7.** Inquiries were made to determine the costs of international shipping for sea, air and truck transport to Europe.

**Step 8.** The next key piece of information was the prices in Europe. We began the study using International Trade Center (ITC) data, which is currently recorded and analyzed in conjunction with the Market News Service of the USDA, through a contract with Fintrac. However, this data was not sufficient so we eventually obtained the Eurostat data base, which was more complete.

**Step 9.** Statistical analysis was then conducted on these price series to generate “smooth curves” to be used for identifying “Windows of Opportunity”. The raw data presented an accordion effect, and these figures had to be leveled out in order to conduct the windows analysis. This was done by Professor Ali Assem, by adjusting for trend and calculating variance for each monthly average over four years, in order to derive a coefficient of variance, that could be used as a proxy risk variable, subtracting this value from the mean, and the resulting value would be used as the price for that time period.

**Step 10.** There are many risks in horticulture marketing, especially in exporting. To account for these risks we made some adjustments to the price data. First, monthly average prices were reduced by the coefficient of variance for each product with respect to their prices over four years. Second, two to three containers out of ten were considered as loss, depending on the perishability of the product. Third, an arbitrary factor for uncertainty was included, deducting 10% to 20% from the price accordingly. In addition, when the product was received in the packing station, a deduction was made for sorting and grading losses.

**Step 11.** After making all adjustments to price, returns to Post Harvest Center (PHC) operations were calculated. Two models were generated, one in which a trader contracts to operate the PHC on behalf of the Farmer Association (FA), buys the product from the farmers, charges a fee and profit for cooling and packing, and then sells to exporters. In this model, the trader has to put down a LE 1 million bond, and pay depreciation and interest costs to the Farmers Association on the LE 5.8 million facility construction cost. The second model is when an exporter leases the PHC, buys products from the farmers, cools and packs, and exports product on their own account. In this model the exporter pays the same as in the trader model and also 5% of net profits.

**Step 12.** Instead of building a 3 pre-cooler facility with 2 cold stores, a 2 pre-cooler model is developed on a lease basis. In this instance, the capital costs are minimal, and the trader or exporter or FA has to pay the lease costs, \$20,000, and the loan costs for the constructions of the concrete pad and packing area, \$15,600. In the lease model the trader, exporter and farmers association stand to earn more than under the grant model.

#### Model 1 & 2 – Grant Funding from AERI

- Building & Equipment
  - 3 pre-coolers; 2 cold stores; packing area
  - Capital Required: LE 5,800,000 (\$1,000,000)
  - Annual Return \$600,000 to \$800,000
  - Fees: LE 1,000,000 bond; \$500,000 depreciation & interest fees
  - Volume: 6,000 tons/year

#### Model 1 & 2 – Equipment Leased

- Building & Equipment
  - 2 pre-coolers; 2 cold stores; packing area
  - Capital Required: LE 348,000 (\$60,000)
  - Annual Return \$700,000
  - Fees: \$20,000 lease payment & \$15,600 loan payment
  - Volume: 4,000 tons/year

## **VI.1. Developing the Cluster**

Each of the Farmer Associations that have been identified in the Governorates of the AERI Project, have production capacity well beyond what could be exported as fresh produce. It is assumed, then, that 10% to 30% would be exported fresh, another 30% would be sent to the retail outlets, and the remainder would be available for processing. Given this production scenario, consultants to AERI have suggested that four satellite semi-mobile pre-coolers be established surrounding the PHC packhouse, marketing product directly to the exporters or retailers, or by passing through the PHC and working in coordination with them. Below we have estimated the costs and volumes that could be handled, as well as the incomes that could be generated, from one semi-mobile pre-cooler and one cold store container with a small packing area on a concrete slab. These figures are presented below for four satellites to each PHC.

### **4 Satellite Pre-cooler Packing Stations**

Capacity:

- 10 tns/dy per Cooler; 40 tns/dy total - Fruit
- 24 tns/dy per Cooler; 96 tns/dy total- Vegetables

Annual Tonnage:

- Total capacity programmed, initial option = 4,000 tons/year

Annual Income:

- \$100,000 each satellite unit

In addition, the AERI project has already been promoting the production, processing and exporting of herbs, spices and medicinals. These facilities could also be located around the PHC nuclear core, and act as part of the cluster. Preliminary estimates of their operations appears below.

### **Herb, Spice & Medicinal Drying**

Capacity:

- Cost: LE 850,000 (\$146,500)
- Volume: 4,800 tns; Yield: 500 tns; 300 fdn
- Income: \$250,000 - \$400,000

To absorb the volume of production that is not destined for export and/or domestic retail fresh, a number of processing facilities could be installed around the PHCs and working in concert with them. Here is a brief listing of their possibilities.

### **Vegetable Dehydration**

Capacity:

- Cost: \$500,000; Yield; 1 container/month
- Income: \$700,000

**Canning/Gourmet Jars**

Capacity: 10,000 tons; 2,000 feddan

Possible Collaborators for Branch Operations

- KAHA                      Sekim
- Edfina                     Wadi Foods
- Vitrac                      Sonac

**IQF Freezing**

Capacity: 10,000 tons; 2,000 feddan

Possible Collaborators for Branch Operations

- Faragello                 Cold Alex
- Montana                   Givrez
- Helwan                     Basma

**Pickling**

Capacity: 2,000 tons; 500 feddan

Possible Collaborators for Branch Operations

- KAHA                      Sekim
- Edfina                     Wadi Foods
- Vitrac

**Hydra Cooling (for Melons, Mango, Vegetables)**

Capacity: 10,000 tons; 2,000 feddan

**VII.1. Financing the Cluster** Grant financing for private business operations is not the referred route. It would be possible to finance the activities listed above through the creation of a *Fundacion Chile* look-alike. A Regional Development Equity Fund could be created by the companies interested in establishing ventures in Upper Egypt in association with the PHC clusters, by issuing RDEF Bonds on the securities exchange market or privately. The Fund would generate \$6 million dollars to be used as equity and debt for financing of these ventures. Further elaboration of this concept can be found in the papers relating to the AERI Project’s “Legacy Fund”.