

APPENDIX H

AGR0-ECONOMY
AND
PROJECT EVALUATION

APPENDIX - H

AGRO-ECONOMY

AND

PROJECT EVALUATION

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II-1 Brief Description of the Egyptian Economy and the Agricultural Sector

Egypt has an estimated population of 60 million as of 1996, which is the largest among the Arab Middle East and this population has been growing at an annual rate of 2.2%. Although Egypt has a national territory of 1,002 thousand square kilometers, its population is concentrated on the Delta and Valley Regions where are endowed with fertile soils with consistent supply of water from the Nile River (it is reported that these regions which accounts for only 5% of the national territory comprise as much as 98% of the total population). As a consequence, Egypt has one of the highest population densities in the developing world. To confront this maldistributed population, the Government of Egypt has underlined in its Economic and Social Development Plan 1992-97 the redistribution of population throughout the whole Egypt through creation of new cities and development of secluded regions.

The national economy of the country is represented by services sectors including public administration, which shared more than half (50.9%) of the Gross Domestic Product (GDP) for the fiscal year 1994/95 (Ministry of Planning), meanwhile industry is identified as the leading sector among commodities sectors with 17.4% share of the GDP. Per capita GDP was estimated to be US\$ 660 in 1993, which regressed from US\$ 760 in 1987. The Ministry of Planning sets the actual rate of unemployment at 9.6%, but the open unemployment rate is presumed to be around 20% (Trends in Developing Economies 1995, World Bank). Principal socio-economic indicators are summarized in Table H-1.

The agriculture is an important sector within the context of the national economy contributing greatly to the socio-economic development in Egypt. Egyptian agricultural sector's growth was initiated by the 1952 revolution and boosted significantly by the completion of the High Aswan Dam in 1968; owing to the completion of the High Aswan Dam, the agricultural sector represented in 1974 30% of the GDP formation, contributed 25% of exports earning and accounted for 47% of the total employment. Nevertheless, the importance of the agricultural sector has been enfeebled in the 1990s; its share in GDP formation dropped to 16.8% in 1995, exports of agro-products decreased to around 11% of the total merchandise exports and the proportion of employment lowered to about 32% of the labor force (See Table H-3).

Other information relevant to the agricultural sector in Egypt is given in Table H-4 and H-5 as well as in Figure H-1 and H-2.

II-2 Farm Socio-economic Survey

Information of socio-economic and farming profile on farmers and their farming activities in and around the Study area is scarcely available, so the Study Team made an endeavor to collect them by means of direct interview survey to farmers in the course of the Stage I field works. This survey had objectives to diagnose prevailing conditions of farmers, to identify constraints on farming system and marketing of agro-products, and to make better use of these data and information in proposing farming system and marketing plans envisaged in the present feasibility study.

The Study Team prepared the draft survey form (questionnaire) in Japan and finalized it after conducting exchange of opinions with Egyptian side. The survey form consists of thirteen (13) major items, viz.:

1. General information of the interviewee
2. Family composition and their working conditions
3. Information on farmland
4. Crop production and disposal
5. Labor input by crop
6. Use of farm inputs by crop
7. Livestock farming
8. Hired labor on farm
9. Marketing of agricultural products
10. Farm property
11. Farmers' household expenditure
12. Farmers' intention about future farm operation
13. Identification of problems on farm operation and marketing of agro-products

In view of the fact that there are extremely small number of farm/farmers in and around the Study Area, the geographical territory of this survey was extended to the areas where land settlement projects have been consolidated and considerable numbers farmers have settled to cultivate crops under irrigated lands. Thus, the farm socio-economic survey comprised both western and eastern margin areas of the Suez Canal, in addition to the surrounding zone of the Study area.

Target farmers for this survey covered in principle three categories: Independent Big Farmers (with land holding 10 feddans and larger), Independent Small Farmers (with land holding smaller than 10 feddans), and settlers (graduate farmers) and farmers in the category of Independent Small Farmers included Bedouin farmers.

The number of interviewees by area and by category is summarized in the following manner:

Areas/Categories	Independent	Independent	Settlers	Total
	Small Farmers (include.Bedouin)		Big Farmers	
Around the Study Area	7	9	-	16
Western Margin of the Suez Canal	5	4	8	17
Eastern Margin of the Suez Canal	8	2	7	17
Total	20	15	15	50

Taking the complexity of the survey's contents into account as well as strengthening confidence in filling the questionnaire of the survey, the present survey was carried out with participation of the group of economist/sociologist of the Suez Canal University, who have sufficient experience in rural sociological survey in Egypt and are thoroughly familiar with local socio-economic conditions of the proposed survey areas.

General profile of the interviewed farmers together with their farming operation for respective area are explained hereinafter.

(Around the Study Area)

Within the Study area only some small villages inhabited exclusively by Bedouin people are dotted and farming practice carried by these people is nothing but to sustain their lives. There are by contrast entrepreneur farmers who holds extensive farmland alongside the national road which connects the Study area with urban area of El Arish and the latter with border line with Israel. Due to the fact that land settlement project has not been put into force in this area nor surface irrigation water has reached there, farmers have no other option but to make use of underground water to irrigate their farmlands by means of drip/sprinkler system with their own resources or realize rain-fed farming unless they are capable of investing in the irrigation system. Underground water resources available to irrigation are so limited that they are generally used to offset the deficiency of rainfall which is expected in the winter season. Under the circumstances, crops which are highly tolerant to arid conditions are preferably grown in the area. In the summer season, with an exception of permanent crop area, most of lands are left in fallow.

Generally speaking, farmers live in this area relatively longer period inheriting their lands from their farther. It is supposed that these lands were acquired and occupied without any legal ownership, but as a consequence of continuous cultivation of crops they have been given titling by the decree issued by the North Sinai Government in 1987.

(Western Margin of the Suez Canal)

The interviewed farmers in this area comprise beneficiaries of the Mubarak's National Project for New Graduates, one of the land settlement projects of the country. They were distributed land of 5 feddans and provided their living quarters; the cost for land was at LE 11,000 and that for house was at LE 1,000, which together are required to repay annually in 30 years without interest (3-4 years of grace period is granted). These farmers have been settled for 5-6 years, but due to problem associated with salinity in both irrigation water and soils, they are not in a position to cultivate their desired profitable crops; most of them cultivate only barley in a winter season and leave the lands without crop in a summer season; to make matters worse, two of them can not plant any crop even in a winter season up to date.

Independent farmers are different in farming operation in accordance with their farm size; farmers with larger holding specify their cultivation in such cash crops as cotton and paddy in a summer season and fodder crops (berseem and the like) in a winter season, meanwhile those with smaller holding grow a variety of crops (cotton, paddy, beans and vegetables) in summer and wheat, maize and fodder crops in winter to sustain their family and to feed their animals.

(Eastern Margin of the Suez Canal)

This area contemplates another land settlement project area which started more than 10 years ago. Irrigation water is supplied to the area through the branch canal of the Ismailia Canal. In the same manner with the Western Margin Area of the Suez Canal, graduate farmers benefited by the land settlement project are distributed 5 feddans of farmland at the cost of L.E 11,000. All of them allot the greater majority of their farmlands to the plantation of olive and the remainder of their farmlands are covered by cash crops represented by vegetables (tomato, potato and watermelon), beans (broad beans and green beans) and oil crops (groundnuts and sesame). Only one of these five farmers raises animals.

Interviewees in the present area included Bedouin farmers who have settled the area abandoning nomadic life to cultivate crops. They are also supplied irrigation water distributed through the branch canal of the Ismailia Canal, but field irrigation method applied to their farm is not sprinkler or drip system as is employed by graduate farmers, but is furrow or flooding system. These Bedouin farmers, although they are accessible to public irrigation water, are not beneficiaries of government land settlement project; they construct their houses by themselves and no social infrastructure is provided where they live. All of interviewed Bedouin farmers conduct both crop and animal husbandries and grow berseem in winter and maize in summer to feed their animals. Apart from berseem, they cultivate wheat in winter as a staple foodstuff to sustain their family. Their source of cash income is the sale of summer crops (sesame, groundnut, etc.) and livestock and dairy products.

Farmers with larger holding in the area have a plantation of mango and cultivate at the same time vegetables (tomato and cucumber) and oil crops (sesame and groundnut).

The present farm economic survey covering three areas cited above has disclosed that the most serious problem relevant to farming operation as a whole is high-salinity irrigation water and soils which constitutes constraint on crops to be cultivated. Another problems manifested by more interviewees are: higher cost of farm inputs, lack of technical assistance services and inadequate system of rural finance. More farmers tend to complain about inputs and credit provision services, because the government decided to phase out subsidies on these services.

More than 60% of the interviewees manifested that they opt for actual crops in the future, but the reason for it is unlike by area: in the western margin area of the Suez

Canal, farmers have no other alternative but to grow actual crops under limited condition of high-salinity irrigation water and soils, meanwhile farmers around the Study area is willing to continue planting actual crops because they are highly profitable and ask for less devoted efforts in management.

Lands among small farmers are intensively used, thus approximately 56% of farmers expressed their desire to expand the lands subject to an availability of finance for that purpose. Despite various problems confronting farming system, more than half (57%) of the interviewees answered that they are satisfied with actual farm operation. It is worth while to point out that they are satisfied with ameliorated rural life supported by higher returns in farming, but they live at any rate on crops and animal husbandries.

General features of interviewed farmers is summarized in the Table H-6 and the profile of their farming and marketing system is described in other sections.

H-3 Farm Budget Analysis

Farm budget analysis among interviewed farmers is presented in Table H-9 and the profitability analysis among major crops of the country together with north Sinai Governorate is shown in Table H-8. In addition, Table H-9 sums up farm income analysis among surveyed farmers.

H-4 Agricultural Marketing

H-4-1 Constraints and Potentials on Agricultural Marketing

Constraints on development of marketing system in the area may be summarized in the following manner:

- 1. Lack of adequate marketing infrastructure**

The wholesale market in El Arish - the only one under the influential zone of the Study area - is not adequately organized; the market's available space for trading is limited and no information system is provided. As a consequence, most of crops are forwarded outside area, which lead to higher transportation cost to farmers, if crops are transported by themselves. The wholesale market at Al Abor - the leading destination of products of the area - is situated about 400 km away from El Arish and crops transported to this market are represented by perishable crops, therefore post-harvest losses during transportation is supposed to be considerable. Furthermore, farmers without vehicle are passive in marketing and lose sometimes opportune timing to sell their crops, thus post harvest losses increase if their losses at farm are taken into account. (It is reported that the post harvest loss of tomato, potato and grape reach respectively as high as 35%, 11% and 10% of output - "POST HARVEST & MARKETING STUDY EGYPT, ACIDI April 1993).

2. Deficient information on marketing

Trade of fruits and vegetable in Egypt is conducted freely without intervention of public sector and their prices are determined according with the force of supply and demand. It is worth while to point out that in the absence of adequate and timely marketing information on price and traded volume, loss of better marketing opportunities among farmers a widely observed phenomenon and imbalance in supply of products brings out sharp fluctuation of prices accordingly.

3. Under-development of farmers' organization

Although market-oriented farmers' cooperatives are found in other regions of the country, they are not organized in the area up to date. Under the situation, farmers have to trade solely with middlemen in selling their product in most of the cases accepting the prices offered by the latter for fearing losing trading opportunity of their products. With forming cooperatives farmers will be benefited by upgrading their capacity to negotiate with traders or trading directly their products to wholesale market without intervention of middlemen. In addition, well-organized cooperative may have an opportunity to install some marketing infrastructures (collecting/grading center equipped with storage facility) to increase value-added of their commodities.

4. Crossing the Suez Canal

In this moment, agricultural products to be forwarded to domestic markets outside the Sinai Peninsula have to cross the Suez Canal by means of ferry boat. Despite the fact that in the rush harvest season in the North Sinai Region (between May and July) floating boat is installed on the canal to facilitate cargo traffic, waiting for ferry boat is not negligible loss for both traders and farmers. According to JICA's Feasibility Study on A Bridge over Northern Part of the Suez Canal (1996) the waiting time of vehicles for crossing the Suez Canal reaches 36 minutes on average.

On the other hand, the followings may be identified as major factors of potentials on development of marketing system for the project.

1. Implementation of the National Project For Development of Sinai

The Government of Egypt, with a view to mitigate concentration of population on the Nile Valley and Delta Regions, decided to implement the National Project for Development of Sinai with a target year of 2017. With implementation of this national project the whole population of the Sinai Peninsula is projected to increase drastically to 3.2 million in 2017 from actual 270 thousand. In parallel with this increase of population,

local demand of foodstuffs within the region will be expanded, which will contribute to absorb locally greater portion of produces envisaged in the project.

The said national project contemplates at the same time development of transport infrastructures such as highways, railroads, ports, airports, crossing system over the Suez Canal, etc. and development of these infrastructures will facilitate improvement of transportation system of agro-products within and outside the Sinai Region; in particular, the crossing system over the Suez Canal is expected to complete within five years.

2. Geographical Advantage for Export

Two principal destination of Egyptian agricultural exports are European and Gulf countries. The project area is endowed with geographical advantage in exporting its products to these markets; the seaport of Port Said - the second largest port of the country next to Alexandria and the marine gateway to European countries - is located near the area and that of El Arish, which is used at present exclusively for fishing, is proposed to be developed for cargo shipment purpose in the near future. In addition, Gulf countries are more accessible by land to the area than the rest of region of the country.

3. Development of Agro-industry

The National Project for the Development of Sinai proposes to promote some agro-industry development projects and demand of raw materials for these industries will grow in the future.

4. Promotion of Tourism

El Arish and surrounding Mediterranean beaches are highly potential zone for development of tourism and demand of foodstuffs to hotels and other tourism-related installations will increase.

H-4-2 Recent Transformation of Government Policy in Agricultural Marketing

Up to the mid-1980s, the marketing system in Egypt was characterized by heavy government's intervention; crop area allotments with delivery quotas at fixed procurement price had been implemented by the Government. In 1982, Ministry of Agriculture and Land Reclamation classified crops into four principal groups:

- **Group 1 (Cotton and sugarcane):** in this group, prices were set and farmers were obliged to deliver all their products to the government.

- **Group 2 (Rice, sesame and groundnuts):** in this group, prices were set for a certain quota of production that farmers were obliged to deliver to the pooling center; the balance of production was marketed freely.
- **Group 3 (Wheat and maize):** the price of this group was determined by the government indirectly because the government controlled imports and, consequently, affected domestic prices.
- **Group 4 (Vegetables, fruits, meats, dairy products, eggs, fish and fodder):** prices in this group were determined freely in line with the force of supply and demand in the market.

In that time, due to strict enforcement of delivery quota with relatively low fixed price, it was pervasive among farmers to break the law. On the other hand, non-quota production was sold to private traders or, in some instances, to government cooperatives when their procurement price was above the free market price.

To offset low procurement price the Egyptian Government was compelled to implement subsidization of inputs (fertilizer, pesticides, machinery, etc.) and agricultural credit (preferential rates were applied).

The afore-mentioned government intervention in the fields of crop production and marketing has been relaxed with the implementation of reform program since 1986. In so far as price and trade policies of agricultural sector is concerned, the said reform program contemplated, among others,:

- Removal of government control on delivery quota and farm-gate price for such crops as rice, wheat, maize, broad beans, lentils, onion, sesame and groundnut.
- Elimination of wholesale and retail price control on agricultural commodities.
- Abolishment of government constraints on private sector in marketing and import of farm inputs.
- Liberalization of exchange rate for import/export of agricultural commodities and inputs.
- Encourage cooperatives and private companies to act as intermediaries between producers and consumers/exporters and promote small-scale processing enterprises in rural area.

This reform program have sensitized Egyptian farmers to taking market induced decisions and there have been signs of increasing competition in the agricultural markets.

H-4-3 Outlook for Marketing of Agricultural Commodities

A total of 25 crops are proposed as crops to be cultivated in total net area of 111,000 feddans of newly reclaimed land and an outlook for marketing of these crops is as depicted hereinafter.

The Sinai Peninsula is a strategic region in the realm of the Egyptian governmental socio-economic policy, hence the National Project for the Development of Sinai covering the period of 1994-2017 was drawn up. This project aims to settle 3.2-million population by 2017, which is about eleven times as large as the actual population. This burgeoning population of the region shall soar without doubt the demand of foodstuffs for the local inhabitants. Table 3-10 gives a hypothesis of demand and supply of agricultural commodities with future population projection of 3.2 million (year 2017). This table implies that major portion of the agricultural output in the project may be marketed locally in that time, even though an increase of agricultural production is envisaged in other land reclamation areas within the 400,000 feddans North Sinai Agricultural Development Project. In addition to fresh consumption, crops in the project are proposed to be used as fodder (green and concentrates) for animals as well as raw materials for the agro-industry envisaged within and in the vicinity of the project area.

As stated in the section H-1 of the present Appendix, Egypt has been consistently faced with deficiency of such subsistence foodstuffs as wheat, maize, edible oil, sugar, broad beans and red meat and this deficiency has been offset by imports, apart from food aids. Under the circumstances, an encouragement of production for import substitutable crops constitutes one of the strategic agricultural policies of the Egyptian Government.

Apart from import substitution, promotion of exportation is another important agricultural policies in an attempt to improvement of country's foreign exchange situation. Tables H-11 presents major exports for the period 1991-95 and Table H-12 summarizes horticultural products which have been exported for the last two years.

Of crops proposed in this project, potato, onion, tomato, orange, grape, melon & water melon and peach are highly potential exports. Potato, onion, orange and tomato have been together with cotton and rice major agricultural exports of the country and recent performance of these commodities at international market is as described below.

Potato: Potato becomes the most important agricultural export next to cotton in 1995 and its export volume has been doubled for the last five years. The United Kingdom has been the leading and stable importer of the product and the exported volume to Germany has expanded for the last three years. UK and Germany represented 45% of the product's total export volume in 1995. Such regional neighboring countries as Morocco, Israel, Turkey, Jordan and Tunisia are competitors in terms of exportation for the EU, Egypt has overcome this competition up to date. Starting 1990s Greek becomes an important market for the crop other than said two nations.

Onion: This vegetable is constant export of the country, but its destination is focused on Gulf countries with a share of about 60% of the total exports in 1995. In 1993, about 80% of the export was transported to Saudi Arabia, but for the last two years countries to which the product was exported were diversified like UAE, Greece, France, German and Russia.

Tomato: The exported volume of this vegetable fluctuates sharply year by year declining in 1995 to almost one-quarters of the volume registered in 1992. The product has been mainly exported to Saudi Arabia and Gulf Countries. Quality of Egyptian tomato does not meet the European standard, hence exports of EU countries has been limited. The principal competitor to Saudi Arabia and Gulf Countries is Jordan.

Orange: In the 1980s the former Soviet Union was the primary importer of this fruit accounting for close to 60% of the total and, as a consequence of the collapse of the Soviet Union, export opportunity in this region becomes less and the total exports have declined sharply accordingly up to 1994. Nonetheless, a symptom of recovery was observed in 1995 developing new market in Macedonia and Netherlands as well as expanding export to Saudi Arabia, UAE and Malta. Major competitors of Egyptian orange at international market are Mediterranean counters such as Israel, Morocco, Cyprus and Tunisia.

On the other hand, grape, melon and peach show consistent exportable trend with markets in Saudi Arabia and Gulf countries. Statistics of exports for crops cited above by country are given in Table H-13 and Figure H-3.

As explained before, competitors of these exports are other Middle Eastern and Mediterranean countries like Turkey, Morocco, Israel, Jordan, Tunisia and Greece and the success for overcoming in competition with these countries depends on how high-quality and price-competitive exports can be produced. Actually, Egyptian agribusiness lacks adequate storage and processing infrastructures, which causes to deteriorate quality and price of exports. In this regards, the development of agro-industry for both marketing and processing shall be the clue to promote export of produces of the project area.

So far as domestic marketing conditions is concerned, the project area will have foreseeable advantageous future, because the Egyptian Government have decided to construct a bridge over the Suez Canal at Kantara, which shall serve greatly to relax the major constrain in terms of marketing of products in the North Sinai Region. In addition, an airport and a seaport in El Arish - the nearest urban center from the project area - are proposed to be developed for their use for shipment of cargo.

H-4-4 Recommendation for Enhancement of Agricultural Marketing System

For enhancement of the agricultural marketing system, it is strongly suggested that the public sector would render following supporting services.

- To establish adequate marketing information system
- To renovate existing wholesale market in El Arish

- To provide financial assistance for completion of the marketing center
- To give technical advise in marketing and in exporting commodities (optimum harvest time and harvest method, grading, packing, transportation, etc.)
- To give institutional advise in managerial strengthening of cooperative

H-5 Project Evaluation

H-5-1 Economic Evaluation

(1) Evaluation Methodology

The economic evaluation, which is intended to sound the project implementation from the standpoint of the national economy, is conducted in compliance with the conventional methodology that is commonly applied for evaluation of development projects in Egypt under finance of the Word Bank, USAID and other agencies concerned with technical and/or financial assistance projects. This methodology is, in sum, to identify and value the project costs and benefits that will arise "with" the project and to compare them with the situation as it would be "without" the project; at first, these costs and benefits are valued at market price and then they are converted into economic costs and benefits with adjustment of three components: 1) elimination of direct transfer items (tariffs and duties, interest on credit transaction, subsidiaries, water charges, etc.) and 2) adjustment for price distortions in traded commodities (to value them at border price), and 3) adjustment for price distortions in non-traded commodities. (to value them at "shadow price"). Once economic pricing has been made for both project costs and benefits, cash flow built up with these economic costs and benefits will be prepared to cover the whole project life and on the basis of this cash flow the Economic Internal Rate of Return (EIRR) will be calculated.

The EIRR may be defined as "the rate of discount at which the total present value of cost incurred during the life of the project is equal to the total present value of benefits accruing during the same period" On the basis of thus calculated EIRR, the economic feasibility of the project is generally judged against such indicator as the opportunity cost of capital. Apart from this EIRR, the Net Present Value (NPV) is also calculated so as to present the magnitude of project incremental benefits.

(2) Component of the Costs and Benefits

The quantifiable benefits for the present project accrue from agricultural production as well as from agro-industry and marketing system development. Crop production benefits can be expected from both main products and by-products (some crops). Meanwhile, the benefits stemmed from agro-industry and agricultural marketing system development deem to be an operational margin of agricultural commodities processing and marketing enterprises (concentrated feed factory, tomato paste

factory, olive oil press factory, slaughterhouse, milk processing factory and market-oriented cooperatives).

Meanwhile, the total cost of the project consists of the following cost required for development of the works listed below:

1) Common civil works being constructed to cover 400,000 feddans reclamation area (This cost shall be allocated to the present project in proportion with benefittable area)

- Suez Canal syphon

- Shikh Gaber Sabah Canal (Up to the length of 86.5 km from the outlet of the syphon)

- Pumping station No. 4, 5 & 6

2) Water conveyance and water management & Irrigation & drainage systems development works:

- Water conveyance system (Pumping station, water conveyance canal, etc.)

- Main and Lateral irrigation canal; on-farm irrigation works

- Drainage network

- Land reclamation works

3) Village and settler's community development works

- Living quarters for settlers, on-farm and industrial workers, etc.

- Road, electricity, water supply and sewerage system within villages

- Schools, hospitals, public offices and other community services facilities

4) Agricultural supporting and agro-based marketing and processing system

- Agricultural research and extension service office

- Agricultural cooperatives

- Marketing centers, tomato processing factory, olive oil extraction plant, dairy plant, etc.

For development of these works, the following capital and recurrent costs are required:

a. Capital cost (Initial investment cost for construction works and engineering services)

b. Recurrent cost (routine operation and maintenance cost of project office and completed works and replacement cost for obsolete equipment and works)

c. Physical and price escalation contingency

(3) Valuation of Project Benefits

1) Economic Farm-gate Price

For valuing economic farm-gate prices, the crops and livestock products envisaged in the present project are classified into traded commodities and non-traded commodities in the following manner:

Traded commodities: wheat, maize, soybean, potato, onion, tomato, grape, orange, beef & milk

Non-traded commodities: barley, sorghum, berseem, fodder beet, sesame, broad beans, cabbage, cantaloupe, water melon, squash, green pepper, olive & peach

The economic farm-gate prices of some traded commodities were estimated making reference to the World Bank's commodity price projections for the year of 2005 (long-term projections) in constant 1990 US dollars, while for traded vegetables and fruits except for orange the same economic farm-gate prices were gained based on their prevailing export prices (FOB Port Said). These economic farm-gate prices of traded commodities are further sub-divided into import parity price (wheat, maize, soybean, beef and milk) and export parity price (potato, onion, tomato, grape and orange). The calculation of economic farm-gate prices for traded commodities is shown in Table H - 15 (1) through (3).

As for the non-traded commodities, the financial farm-gate price is assumed to represent the economic farm-gate price; the farm-gate prices of non-traded commodities were obtained from Ministry of Agriculture and Land Reclamation (MALR), agricultural cooperatives, etc.

A line-up of economic and financial farm-gate price of project produces is as per attached Table H - 16.

2) Economic Pricing of Farm Inputs

Farm inputs are composed of seeds, fertilizers (chemical and manure), agro-chemicals (pesticides, fungicides & herbicide), machinery, man-power (family and hired labor), on-farm irrigation system and interest of credit. The economic production cost of farm operation per feddan of land comprising these farm inputs is estimated at first using market price and then converted to economic price with necessary adjustment by means of shadow prices and exclusion of transfer items.

The financial production cost were converted into economic cost by means of the following adjustment.

- To deduct such transfer items as subsidies, taxes and interest for agricultural credit.

- To value fertilizer at border price based on price projection of the World Bank (Refer to Table H - 17)
- To adjust market price of agro-chemicals applying conversion factor for consumable good, subject to prior deduction tariff
- To adjust market price for contractual machinery services applying conversion factor which will be obtained taking cost component of the services (imported machinery, administration cost, skilled labor, etc.)
- To adjust market price of non-traded goods applying conversion factor for capital goods
- To adjust market price of wage for skilled and unskilled labor applying shadow wage rate.

Table H-20 contains a summary of crop production cost by category.

3) Build-up of the Project Benefits

Crop production on new reclamation lands shall start in the 6th year of the project for small farmers and graduate and in the second half of the 6th year for large and small investors. On the other hand, the livestock activity which envisages use of the project's crops as fodder for animals shall begin one year later for respective case and the benefits expected from this activity are scheduled to be generated in the 2nd year (for cattle fattening farmers) and fourth year (dairy farmers) from the commencement of cattle raising.

Farmers to be engaged in crop and livestock production are settlers who are not familiar with local natural and social conditions, so crop yield at initial years have been conservatively estimated at modest level and are scheduled to reach the target yield following sigmoid curve. The time to attain the target yield is set as 4th - 9th year varying by crop. Benefits stemmed from crop by-products shall be gained in proportion with yields of main products. Milk production capacity of cows differs for respective calving; data indicate that it increases gradually from 1st calving, reaches the highest level at 4th calving, and then begins to decrease. Taking this situation into consideration, projection of milk production under the present project has been made to comply with this tendency.

Crop and livestock production benefits per year at full development stage of the project are estimated to be LE 576,832,983 (An annual flow of these benefits are given in Table H - 20).

Apart from on-farm benefits cited above, included in the project's benefits are agro-based processing and marketing benefits which are summed to be LE 84,572,000 a year at full development stage. (Refer to Table H - 21 for detailed information).

(4) Economic Pricing and of the Project Cost

1) Pricing Methodology

The cost components which build up the total cost of the project are exposed in the sub-section II-6-2 (2) of this Appendix. Of these components, only such items as are directly related with generation of project's tangible benefits (agricultural production and agro-based processing and marketing benefits) are to be identified as cost components to be involved in the base case of project evaluation (this implies that the cost forked for development of social infrastructures is to be ruled out from the base case of the project evaluation). Nevertheless, considering the importance of the component of social infrastructure within the context of new land reclamation project, a sensitivity test shall be conducted to verify how an economic profitability of the project would be affected if the total project cost encompasses cost for social infrastructures.

The project cost has been estimated being broken down into foreign currency portion and local one and the economic price of the former has been assumed to be equivalent to their financial price; the economic price of the latter has been valued pursuant to the following principles.

- Traded commodities: To adjust market price multiplying conversion factor for capital goods, subject to deduction of import tax for respective category of materials and equipment in advance
- Non-traded commodities: To adjust market price multiplying conversion factor capital goods, subject to deduction of sales tax on materials and equipment in advance
- Wage of local skilled labor: To adjust market price applying conversion factor for consumable goods
- Wage of local unskilled labor: To adjust market price applying shadow wage rate estimated by relevant agency of the Government of Egypt.
- Price escalation contingency and transfer items: To be excluded
- Cost of electricity which represents the greater majority of the O/M cost was expressed in economic price using conversion factor of 1.87

2) Build-up of the Project Cost

Table II - 22 demonstrates annual disbursement schedule of relevant cost including replacement cost.

(5) Economic Internal Rate of Return

With the annual inflow (benefits) and outflow (costs) at economic price estimated before, an annual incremental net benefits (annual benefits minus annual costs) have been incorporated as given in Table H - 23. On the basis of this cash flow, EIRR and NPV were obtained as follows:

EIRR: 11.25 %

NPV: LE 190,603,810

(6) Sensitivity Analysis

Sensitivity analysis to disclose how project's returns would be affected under change of given variations of the project was carried out as given in Table H-24 (1) thru (5).

H-5-3 Financial Analysis

(1) Establishment of Model Farm

Candidates who are supposed to undertake farm operation at new land reclamation area are classified into the following four groups, namely: large scale investor, small scale investor, graduate and small farmer and these settlers are obligatory to engage in crop production, raising cattle, or mixing of these two activities and the farming systems proposed in the agricultural development plan for respective category of settler are as follows.

Category of Settlers	Proposed Farming System			
	Crop Farming		Livestock	
	Perennial Crops	Permanent Crops	Dairy Production	Cattle Fattening
Large scale investor	☆	☆	☆	☆
Small scale investor	☆			☆
Graduate	☆	☆		☆
Small farmer	☆			☆

In line with land holding size and farming system for respective category of settlers, the following nine (9) model farms have been established for the sake of their farm income analysis.

Model Farm No.	Category of Settler	Land Size (Fed.)	Cultivable Area (Fed/year)	Proposed Farming System
1	Large Scale Investor	748	720	Fruits production
2	Large Scale Investor	748	1,156	Cattle fattening with fodder
3	Large Scale Investor	748	1,440	Dairy farming with fodder
4	Large Scale Investor	748	1,440	Perennial crops production
5	Small Scale Investor	70	1,440	Mixing of perennial crops and fruits production
6	Small Scale Investor	103	200	Cattle fattening with fodder and vegetables
7	Graduate	10	20	Mixing of perennial crops and fruits production
8	Graduate	10	20	Cattle fattening with fodder and vegetables
9	Small Farmer	10	20	Cattle fattening with fodder and vegetables

(3) Estimation of Farm Inputs and Outputs

In build-up of crop budget all prices are quoted in market price prevailed as of 1996. Cost for family labor was excluded from this crop budget, and cost of mechanical operation was estimated for all type of settlers on the basis of hours of operation and unit cost of machine hire. In livestock operation, it is proposed that fodder needed to feed cattle will be supplied by the same farm, so cost of fodder except concentrates has been neglected.

Crop and livestock yields correspond to those which have been applied for economic evaluation, meanwhile farm-gate prices are calculated in actual term.

Farmers to be engaged in crop and livestock production shall be proposed settlers who are supposed to be deficient in financial resources to realize crop and livestock production with their own fund. Thus, they shall have to depend on credit rendered by PBDAC's farm credit or other financing institutions. The prevailing interest rate of the PBDAC is set as 11%, 12% and 13% for short-term, medium-term, and long-term period, respectively.

(4) Assumptions on Land Allocation and Other Relevant Terms

The policy for recruiting settlers of the project has not been established up to date, so an assumption is made for the sake of the present financial analysis that the same procedure and terms would be put into force as the case of Tina Plain area in which recruiting procedure of settlers has just taken place in last August, 1996. An assumed procedure and terms on recruiting settlers are as follows:

1. Settlers are to be selected by means of pre-qualification (small/graduate farmers and small scale investors) and through bidding (Large scale investors). The price of land to be allocated to small/graduate farmers is fixed at LE 3,000 per feddan and the same for small scale investors is at LE 10,000 per feddan, while the land

for large scale investors is to be priced through bidding subject to a minimum price of LE10,000 per feddan.

Selected candidates for settlement are required, at first, to make a rental contract for use of the agricultural land with a validity of one year which may be renovated every year and be extended up to four years. If these candidates are proved to be serious in agricultural production at allocated land during this rental period, NSDO shall enter into contract with them for sale of land after being expired the rental contract. The rental charge of land per year shall be 2% of the price of land for respective category of settlers and shall be deducted from the price of land.

The terms of payment for land are proposed as follows:

- For both large and small investors: they have to offer their terms with a percentage of advance payment (minimum 10%); the remaining amount should be paid over 9 years (equal installment for each year) with an interest rate of 6% per annum.
 - For graduate/small farmers: An advance payment is not obligatory. The land cost should be canceled over 15 years (equal installment for each year) with an interest rate of 6% per annum.
2. NSDO does not prepare houses for settlers, but they only sell lots to be occupied by houses. The price of lot for house is set at LE 1/m² and proposed lot areas of house to be allocated to settlers together with proposed cost of houses are as follows:

Category of Settlers	Cost of Land		Proposed Cost of House (LE)
	Area (m ²)	Price (LE)	
Large Scale Investor	111.7	112	47,000
Small Scale Investor	87.5	88	32,700
Graduate & Small Farmer	65.7	66	21,300
Bedouin	42.5	43	12,700

NSDO shall take charge of supplying electricity, water, road and reclaimed land, subject to charging the cost for these services to settlers at fixed price of LE 1,500.

3. The price of land is considered to be established in an attempt to recover some portion of the capital cost for water conveyance and irrigation and drainage system except for on-farm facilities. In this context, water charge will not be imposed on beneficiaries of irrigation and drainage system. NSDO is deemed to construct lateral network for all categories of settlers, but the cost adhered to this network shall not be charged to its users. By contrast, in so far as on-farm irrigation and drainage system is concerned, both investors and small/graduate farmers have to install the required system by themselves and the cost per feddan is estimated in the following manner:

Category of Settlers	Proposed Farming Systems	Cost of On-farm Irrigation System (LE/fed.)
Large Investor	Fruits Production	3,587 (Drip)
	Cattle Fattening with Fodder Crops	3,465 (Center Pivot Sprinkler)
	Dairy Production with Fodder Crops	7,021 (Fixed Type Sprinkler)
	Perennial crops	7,965 (Sprinkler & Drip)
Small Investor	Mixing of perennial crops and fruits production	5,267 (Sprinkler & Drip)
	Cattle fattening with Fodder Crops & Vegetables	7,611 (Sprinkler & Drip)
Graduate	Mixing of perennial crops and fruits production	5,728 (Sprinkler & Drip)
	Cattle fattening with Fodder Crops & Vegetables	6,353 (Sprinkler & Drip)
Small Farmer	Cattle fattening with Fodder Crops & Vegetables	5,723 (Sprinkler & Drip)

The policy to recover operation and maintenance (O&M) cost for respective system shall comply with that for the capital cost, which may be resumed in the following manner:

- Conveyance system including pumping station and irrigation and drainage canals: no charge is imposed on neither investors nor small farmers/graduates
- On-farm system: both investors and small farmers/graduates shall bear the cost which ranges from LE 74/fed./year to LE 446/fed./year.

4. In sum, the cost of reclaimed land, house and on-farm irrigation system to be paid by settlers is as given in table below.

Cost Items	Unit: LE			
	Large Investor	Small Investor	Graduate	Small Farmer
Reclaimed land	More than 12,000	10,000	3,000	3,000
Land for house	112	88	66	66
House	47,000	32,700	21,300	21,300
Water, electricity, etc.	1,500	1,500	1,500	1,500
Capital for On-farm irrigation system	3,465/fed. - 7,965/fed.	5,267/fed. - 7,611/fed.	5,728/fed. - 6,353/fed.	5,723/fed.
O/M for on-farm system	74/fed. - 126/fed.	151/fed. - 180/fed.	201/fed. - 245/fed.	199/fed.

(5) Result of Financial Analysis on Model Farms

The result of financial analysis is resumed in Table H-26.

Table H-1 Basic Socio-economic Indicators in Egypt

Items	Indicators	Source/Remarks
National Territory	1,002,000 km ²	Statistical Year Book, CAPMAS
Total Population	48,254,000	Census 1986
Population Density	60,603,000	Estimated as of July 1996 (Ministry of Planning)
	48.2/km ²	1986
	60.5/km ²	1996
Percentage of Urban Population	44%	Census 1986
Annual Population Growth	2.3%	1986-1996
GDP per Capita	US\$ 660	In 1993; Trend in Development Economics, World Bank
Unemployment	9.60%	Ministry of Planning
Life Expectancy at birth	64.1	Trend in Development Economics, World Bank
Infant Mortality	64.4	(per 1,000 live births)
Illiterate Rate	51.6	(% of population 15 years and older)
Exchange Rate	3.39	As of October 1996
% Change in Consumer Price	7.90%	1994/95; Statistical Year Book 1990-95, CAPMAS
% Change in Wholesale Price	6.30%	ditto

Table H-2 Balance of Payment

Item	Unit: In Mill. L.E.	
	93/94	94/95
Balance of Current Account	637	2,121
Balance of Current Account (ex. transfers)	-13,015	-12,130
Receipts	39,738	50,411
Export proceeds	11,226	16,819
Transportation	9,402	11,666
(of which Suez Canal due)	(6,714.5)	(6,986.6)
Travel	6,002	7,803
Investment Income	2,870	5,507
Government Services	1,652	991
Other receipts	8,586	7,626
Payments	52,753	62,541
Import payments	35,881	43,482
Transportation	796	1,182
Travel	5,062	3,831
Investment Income	4,449	5,039
(of which interest paid)	(4,332.1)	(4,196.8)
Government Expenditure	723	1,106
Other payments	5,844	7,902
Transfers	13,652	14,251
Official (net)	2,744	3,123
Private (net)	10,908	11,129

Source: Central Bank of Egypt

H-3 Share of Agricultural Sector in GDP, Employment and Commodities Exports

Items	90/91		91/92		92/93		93/94		94/95	
	Value	%	Value	%	Value	%	Value	%	Value	%
Gross Domestic Products										
All Sectors	108,741		131,057		146,160		162,967		191,010	
All Commodities Sectors	55,261	50.8	65,373	49.9	72,767	49.8	80,880	49.6	93,750	49.1
Agriculture	19,110	17.6	21,680	16.5	24,427	16.7	27,500	16.9	32,050	16.5
Employment (Unit: x 1000)										
All sectors	13,376		13,742		14,011		14,436		14,879	
Commodity Sectors	7,187	53.7	7,332		7,566		7,766		7,968	
Agriculture	4,533	33.9	4,585	33.4	4,624	33.0	4,682	32.4	4,744	31.9
Commodity Exports (Unit: In Million L.E.)										
All exports	11,765		10,374		10,596		11,925		11,954	
Agricultural exports	1,074	9.1	1,308	12.6	1,179	11.1	1,102	9.2	1,336	11.2

Source: Statistical Year Book 1990-1995, CAPMAS

Ministry of Planning

Table H-4 Cultivated Area by Crop

Unit: Thousand feddan

Crops	1990		1991		1992		1993		1994		1995	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Wheat	1,955	15.9	2,215	17.6	2,092	16.5	2,171	17.0	2,111	16.1	2,512	18.3
Maize	1,975	16.1	2,068	16.5	1,967	15.6	1,973	15.4	2,057	15.7	2,133	15.6
Rice	1,037	8.4	1,101	8.8	1,216	9.6	1,283	10.0	1,379	10.5	1,401	10.2
Sorghum	320	2.6	324	2.6	355	2.8	348	2.7	377	2.9	363	2.7
Cotton	993	8.1	851	6.8	840	6.7	884	6.9	721	5.5	710	5.2
Berseem	2,620	21.3	2,519	20.0	2,542	20.2	2,615	20.4	2,686	20.4	2,430	17.7
Beans	345	2.8	326	2.6	425	3.4	297	2.3	374	2.8	320	2.3
Sugarcane	274	2.2	263	2.1	267	2.1	271	2.1	278	2.1	301	2.2
Tomato	371	3.0	328	2.6	362	2.9	351	2.7	339	2.6	355	2.6
Other Vegetable	732	5.9	746	5.9	696	5.5	775	6.1	807	6.1	688	5.0
Orange	237	1.9	246	2.0	235	1.9	231	1.8	243	1.8	236	1.7
Other Fruits	629	5.1	650	5.2	672	5.3	631	5.3	698	5.3	711	5.2
Others	817	6.6	929	7.4	937	7.4	927	7.2	1,071	8.2	1,534	11.2
Total	12,305	100.0	12,566	100.0	12,606	100.0	12,807	100.0	13,141	100.0	13,694	100.0

Source: Statistical Year Book 1990-1995, CAPMAS

Table H-5 Foreign Trade of Major Agricultural Commodities

Commodities	Ave. 1969-71		Ave. 1979-81		1989		1990		1991		1992		1993	
	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)	Value (US\$ x 000)	Share (%)
Exports														
Cotton	347,234	65.9	420,238	62.3	269,967	50.7	180,634	42.3	59,038	15.1	50,554	12.6	42,162	11.7
Rice	87,467	16.6	35,076	5.2	7,455	1.4	15,800	3.7	35,188	9.0	54,165	13.5	37,477	10.4
Potato	6,323	1.2	28,331	4.2	26,524	5.0	21,779	5.1	46,527	11.9	41,326	10.3	30,991	8.6
Orange	16,861	3.2	35,751	5.3	70,287	13.2	47,827	11.2	43,399	11.1	31,295	7.8	16,216	4.5
Onion	16,334	3.1	7,420	1.1	9,585	1.8	12,384	2.9	11,338	2.9	11,234	2.8	19,820	5.5
Tomato	527	0.1	1,349	0.2	4,260	0.8	4,697	1.1	6,256	1.6	10,833	2.7	6,847	1.9
Others*	52,164	9.9	146,375	21.7	144,302	27.1	143,909	33.7	189,234	48.4	201,813	50.3	206,847	57.4
Total	526,910	100.0	674,540	100.0	532,450	100.0	427,030	100.0	390,980	100.0	401,220	100.0	360,360	100.0
Imports														
Wheat	71,862	28.7	655,700	25.7	688,390	21.7	472,440	15.3	415,112	16.4	530,464	20.8	415,803	18.3
Maize	2,754	1.1	130,120	5.1	133,237	4.2	138,953	4.5	116,434	4.6	132,616	5.2	199,949	8.8
Meat	5,140	2.1	213,640	8.4	236,300	7.4	197,090	6.4	147,290	5.8	133,400	5.2	170,350	7.5
Dairy Prod	4,330	1.7	137,110	5.4	188,580	5.9	183,370	5.9	128,050	5.1	157,860	6.2	150,770	6.6
Edible Oil	36,780	15.5	220,710	8.7	325,440	10.3	319,870	10.4	307,700	12.2	320,810	12.6	282,390	12.4
Others*	127,524	50.9	1,194,120	46.8	1,600,353	50.4	1,776,117	57.5	1,416,584	56.0	1,275,160	50.0	1,052,888	46.3
Total	250,390	100.0	2,551,400	100.0	3,172,300	100.0	3,087,840	100.0	2,531,170	100.0	2,550,310	100.0	2,272,150	100.0

Note:* includes fishery and forestry commodities

Source: FAO Country Tables 1995

Table H-6 General Profile of the Interviewed Farmers

Area Around the Study Area	No.	Category	Land Size (Fecdan)	Age of Family Head			No. of Family Members	Land Use (Fecdan)			Summer Season			Permanent Crops			Livestock					
				Age	Sex	Years of Settlement		Winter Season			Vegetables (O)			Fallow	Crops	Cattle	Sheep/Goat	Horse/Donkey	Chicken/Duck			
								Grains	Vegetables	Fodder	Grains	Vegetables	Oil Crops							Fallow	Crops	Cattle
	1	Big Farmer	25	52	M	4	3	-	-	-	-	-	22	-	-	-	-	-	-			
	2	ditto	35	50	M	6	30	-	-	-	-	-	6	-	-	-	-	-	-			
	3	ditto	17	37	M	40	-	-	-	-	-	-	2.5	15	-	-	9	1	-			
	4	ditto	20	36	M	40	-	-	-	-	-	-	2.5	-	-	-	-	-	-			
	5	ditto	10	45	M	80	-	-	-	-	-	-	15	-	-	-	-	-	-			
	6	ditto	35	45	M	50	-	-	-	-	-	-	40	15	-	-	40	-	-			
	7	ditto	55	39	M	50	-	-	-	-	-	-	20	50	-	-	-	-	-			
	8	ditto	50	52	M	60	-	-	-	-	-	-	18	35	-	-	-	-	-			
	9	ditto	119	55	M	7	-	-	-	-	-	-	-	35	-	-	-	-	-			
	10	Small Farmer	3.5	40	M	9	-	-	-	-	-	-	1.5	-	-	-	-	-	-			
	11	ditto	4	40	M	9	-	-	-	-	-	-	3	2.5	-	-	-	-	-			
	12	ditto	5.5	67	M	70	-	-	-	-	-	-	7.5	-	-	-	-	-	-			
	13	ditto	7.5	63	M	60	-	-	-	-	-	-	4	-	-	-	-	-	-			
	14	ditto	4	39	M	14	-	-	-	-	-	-	4	-	-	-	-	-	-			
	15	ditto	8	48	M	7	-	-	-	-	-	-	3.5	-	-	-	-	-	-			
	16	ditto	8	70	M	4	-	-	-	-	-	-	3.5	-	-	-	-	-	-			
	17	ditto	406.5	48.6	M	31.9	0	142	0	98	0	8.5	0	221	173	0	10	2	0			
Western Margin of the Suez Canal	1	Big Farmer	40	45	M	25	-	-	-	40	-	-	-	-	-	-	12	6	-			
	2	ditto	20	55	M	70	-	-	-	20	10	-	-	-	-	13	1	4	-			
	3	ditto	23	62	M	37	8	-	-	23	9	-	-	-	13	-	-	-	-			
	4	ditto	60	45	M	24	5	-	-	-	20	-	-	40	-	-	-	-	-			
	5	Settler (Graduate)	5	30	M	5	5	-	-	-	-	-	-	-	-	-	-	-	-			
	6	ditto	5	30	M	6	3	5	-	-	-	-	-	-	-	-	-	-	-			
	7	ditto	5	33	M	6	4	5	-	-	-	-	-	-	-	-	-	-	-			
	8	ditto	5	34	M	2	4	5	-	-	-	-	-	-	-	-	-	-	-			
	9	ditto	5	35	M	4	7	2	-	-	-	-	3	-	-	-	-	-	-			
	10	ditto	5	35	M	7	5	-	-	-	-	-	-	-	-	-	-	-	-			
	11	ditto	5	35	M	6	5	-	-	-	-	-	-	-	-	-	-	-	-			
	12	ditto	6	61	M	45	5	2.5	-	3.5	-	1.5	4	0.5	-	-	2	1	2.5			
	13	Small Farmer	6	64	M	50	6	5	-	3	-	1	4	3	-	-	7	2	3			
	14	ditto	6	39	M	30	5	2	-	4	-	2	4	-	-	2	3	1	4.5			
	15	ditto	8	34	M	26	5	-	-	-	-	-	-	-	-	-	-	-	-			
	16	Fisherman	16	30	M	80	4	-	-	-	-	-	-	-	-	-	-	-	-			
	17	ditto	227	41.1	M	28.1	50	36.5	0	93.5	0	48.5	78	3.5	0	0	49	12	120			
Eastern Margin of the Suez Canal	1	Big Farmer	30	48	M	6	17	-	-	15	-	-	-	-	-	15	5	1	-			
	2	ditto	15	45	M	20	4	2	10	3	-	-	-	-	-	15	10	1	-			
	3	Settler (Graduate)	6	31	M	2	5	-	-	1.5	-	-	-	-	0.5	-	4	3	-			
	4	ditto	5	32	M	3	1	-	-	1.2	-	-	-	-	-	-	-	-	-			
	5	ditto	5.5	32	M	3	2	-	-	1.5	-	-	-	0.8	0.7	-	-	-	-			
	6	ditto	5	31	M	3	2	-	-	5	-	-	-	-	-	-	-	-	-			
	7	ditto	5	34	M	3	2	-	-	1	-	-	-	-	-	-	-	-	-			
	8	ditto	10	50	M	13	6	5	-	-	-	-	5	-	-	6	-	-	-			
	9	ditto	10	80	M	12	7	4	2	2	-	-	2	-	-	2	-	-	-			
	10	Small Farmer	6.5	40	M	5	6	4.5	-	2	-	-	-	-	-	-	3	-	-			
	11	ditto	4	51	M	2	8	1.5	2.5	-	-	-	-	-	-	-	-	-	-			
	12	ditto	4.5	71	M	25	6	1.5	0.5	3.5	1	-	-	1.5	-	-	2	2	2			
	13	Small Farmer (Bedouin)	1	55	M	35	14	-	-	-	-	-	-	-	-	-	11	5	1			
	14	ditto	6	70	M	40	4	3	3	3	-	-	-	-	-	2	20	7	1			
	15	ditto	5	47	M	8	7	3.5	3	3.5	-	-	-	-	-	14	5	-	50			
	16	ditto	5	42	M	13	8	3	0.5	1.3	-	-	-	-	-	13	5	-	10			
	17	ditto	3	43	M	6	7	0.5	-	2.5	-	-	-	-	-	3	-	-	-			
		Sub-total	126.5	40.0	M	11.7	7.0	28.5	43.7	22	8	0	29.5	63	48.7	0	127	50.3	60	28	10	300
		Sub-total	760	45.2	M	23.9	15.9	60	155.7	115.5	203	48.5	107.5	18.3	330.7	223.3	0	50	28	10	300	

Table H-7 Crop Budget Analysis

Crop Group	Crops	Area	Farm Category	Planted Area (Feddan)	Unit Yield (Ton/fed.)	Output (Ton)	Farm Gate Price (LE/Ton)	Gross Income		Production Cost		Net Return1/		Net Return2/	
								Total (LE)	Per Fed. (LE/fed.)	Total (LE)	Per Fed. (LE/fed.)	Total (LE)	Per Fed. (LE/fed.)	Total (LE)	Per Fed. (LE/fed.)
Cereals	Wheat	West of Canal	Small Farmer	2.0	2.5	4.9	533	2,612	1,306	544	272	2,068	1,034	2,268	1,134
		East of Canal	Small Farmer	2.5	1.3	3.3	538	1,749	1,438	595	261	104	735	294	
		Average	Settler	4.5	1.4	6.3	536	3,369	753	2,723	605	148	720	180	
Vegetables	Potato	West of Canal	Big Farmer	20.0	2.5	50.0	800	40,000	2,000	15,440	774	24,520	1,226	31,220	1,561
		East of Canal	Small Farmer	3.0	2.3	6.9	700	4,830	1,610	2,004	668	2,826	942	3,906	1,302
		Average	Average	11.5	2.4	28.5	750	22,415	1,805	8,742	721	13,673	1,094	17,563	1,432
Vegetables	Tomato	Around Area	Big Farmer	5.0	5.3	26.5	512	13,568	2,714	6,490	1,298	7,076	1,416	7,880	1,576
		East of Canal	Small Farmer	3.6	7.5	27.0	525	14,175	3,936	9,608	2,669	4,567	1,269	5,792	1,609
		Average	Big Farmer	7.5	10.5	78.8	400	31,500	4,200	12,203	1,627	19,298	2,573	21,848	2,913
Vegetables	Cantaloup	Around Area	Settler	1.1	8.7	9.6	582	5,378	4,889	1,786	1,624	3,592	3,265	3,969	3,608
		East of Canal	Average	4.3	8.0	35.5	500	16,165	3,935	7,522	1,805	8,634	2,131	9,872	2,427
		Average	Big Farmer	16.6	5.3	88.0	812	71,440	4,304	20,252	1,220	51,188	3,084	59,734	3,237
Oil Crops	Broad bean	West of Canal	Small Farmer	4.3	7.0	30.1	738	22,214	5,166	11,273	2,610	10,991	2,556	12,444	2,894
		East of Canal	Average	10.5	6.2	59.0	775	46,827	4,735	15,738	1,915	31,089	2,820	33,089	3,069
		Average	Big Farmer	10.0	5.0	50.0	1,000	50,000	5,000	11,000	1,100	39,000	3,900	39,500	3,950
Oil Crops	Potato	West of Canal	Small Farmer	2.7	3.8	10.3	767	7,869	2,915	2,927	1,084	4,943	1,831	7,814	2,894
		East of Canal	Average	6.4	4.4	30.1	884	28,935	3,957	6,963	1,092	21,971	2,865	23,657	3,422
		Average	Small Farmer	0.6	10.0	6.0	566	3,396	5,660	2,053	3,421	1,343	2,299	1,523	2,539
Oil Crops	Groundnut	West of Canal	Small Farmer	1.3	0.8	1.0	1,290	1,342	1,032	368	283	974	749	1,273	979
		East of Canal	Small Farmer	1.3	0.7	0.9	1,290	1,174	903	619	476	555	427	770	592
		Average	Average	1.3	0.8	1.0	1,290	1,258	968	493	380	764	588	1,021	786
Oil Crops	Sesame	West of Canal	Small Farmer	2.0	0.9	1.7	1,200	2,064	1,032	2,482	1,226	-388	-194	152	76
		East of Canal	Big Farmer	6.5	0.9	5.9	1,167	6,837	1,050	6,383	982	444	68	4,667	718
		Average	Settler	1.0	0.7	0.7	1,378	896	896	725	171	171	303	303	
Fodder-Cro	Maize	West of Canal	Average	3.2	0.8	2.7	1,248	3,262	993	3,187	978	76	15	1,707	366
		East of Canal	Small Farmer	1.6	0.3	0.5	3,333	1,600	1,000	553	533	747	467	1,323	827
		Average	Big Farmer	4.5	0.3	1.4	2,708	3,656	812	3,519	782	137	30	1,125	250
Fodder-Cro	Sorghum	West of Canal	Average	3.1	0.3	0.9	3,021	2,628	906	2,166	658	442	249	1,224	539
		East of Canal	Small Farmer	1.7	1.8	3.1	500	1,530	900	862	519	648	381	1,005	591
		Average	Small Farmer	2.6	1.6	4.2	482	2,005	771	1,617	622	368	149	1,375	529
Permanent	Barley	West of Canal	Average	2.2	1.7	3.6	481	1,768	836	1,250	571	518	265	1,180	560
		East of Canal	Big Farmer	13.0	1.8	23.4	1,100	25,740	1,980	5,525	425	20,215	1,555	23,165	1,705
		Average	Settler	5.0	0.4	2.0	542	1,064	217	1,845	369	-761	-152	90	18
Other Crop	Cotton	Around Area	Big Farmer	30.0	3.3	99.0	800	79,200	2,640	44,700	1,490	34,500	1,150	42,300	1,410
		East of Canal	Small Farmer	3.5	3.5	12.3	800	9,800	2,800	6,146	1,756	3,654	1,044	4,708	1,345
		Average	Settler	4.0	3.0	12.0	800	9,800	2,400	6,712	1,978	722	4,176	1,044	
Other Crop	Cotton	West of Canal	Average	12.5	3.3	41.1	800	32,867	2,613	19,186	1,641	13,681	972	17,061	1,266
		East of Canal	Big Farmer	14.7	0.7	10.3	3,418	35,171	2,393	14,803	1,007	20,368	1,386	22,726	1,546
		Average	Small Farmer	1.5	0.6	0.9	3,439	3,095	2,063	863	575	2,233	1,488	2,532	1,688
Other Crop	Cotton	West of Canal	Average	8.1	0.7	5.6	3,429	19,133	2,228	7,833	791	11,300	1,437	12,929	1,617

Source: Farm socio-economic survey carried out by the Study Team
 Note: Net Return1/ - includes family labor. Net Return2/ - exclude family labor

H-8 Crop Profitability Analysis

Crops	National Average					North Sinai				
	Yield (t/fed)	Farm-gate Price (LE/t)	Gross Return (LE/fed)	Production Cost (LE/fed)	Net Return (LE/fed)	Yield (t/fed)	Farm-gate Price (LE/t)	Gross Return (LE/fed)	Production Cost (LE/fed)	Net Return (LE/fed)
Alfalfa	30	50	1,500	280	1,220	18	18	324	200	124
Almond	4.0	1,500	6,000	1,600	4,400	4	1,500	5,250	1,450	3,800
Apricot	2.5	2,000	5,000	n.a.	n.a.	2	1,500	3,000	n.a.	n.a.
Barley	1.1	60	66	450	-384	4	55	220	180	40
Berseem	25.0	50	1,250	450	800	20	45	900	200	700
Broad bean	0.96	1,160	1,114	n.a.	n.a.	0.8	n.a.	n.a.	n.a.	n.a.
Cantaloupe	9.0	600	5,400	1,000	4,400	8	800	6,400	900	5,500
Citrus	9.5	400	3,800	820	2,980	7	450	3,150	720	2,430
Date palm	6.0	400	2,400	850	1,550	7	300	1,950	620	1,330
Fig	2.5	1,000	2,500	960	1,540	3	1,000	2,500	868	1,632
Grape	4.5	1,000	4,500	1,100	3,400	4	800	2,800	1,000	1,800
Groundnuts	1.13	900	1,017	500	517	n.a.	n.a.	n.a.	n.a.	n.a.
Lentil	0.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Maize	2.4	600	1,440	800	640	1	480	576	750	-174
Medical pla	1.2	2,500	3,000	600	2,400	2	2,000	4,000	600	3,400
Olive	5.0	1,000	5,000	1,500	3,500	4	900	3,600	1,300	2,300
Onion	10.0	330	3,300	775	2,525	n.a.	n.a.	n.a.	n.a.	n.a.
Peach	5.0	1,000	5,000	1,190	3,810	4	875	3,325	1,200	2,125
Sorghum	3.5	500	1,750	760	990	n.a.	n.a.	n.a.	n.a.	n.a.
Tomato	15.5	320	4,960	1,500	3,460	20	400	8,000	1,700	6,300
Water melo	10.0	500	5,000	900	4,100	16	500	8,000	600	7,400
Wheat	2.25	530	1,193	500	693	2	600	1,200	200	1,000

Source: Statistics Office of Ministry of Agriculture and Land Reclamation (MALR)
 Department of Agriculture in El Arish, MALR

Table H-9 Farm Income Analysis

Around the Study Area							
No.	Land Holding	Agricultural Income ^{1/}			Non-agricultural Income		Total Income
		Crops	Livestock	Sub-total	Amount	Activities	
1	25.0	14,439	0	14,439	7,200	Fish Coope	21,639
2	35.0	93,528	0	93,528	60,000	Trade	153,528
3	17.0	23,970	0	23,970	3,000	Engineer	26,970
4	20.0	26,525	0	26,525	0		26,525
5	3.5	4,708	0	4,708	0		4,708
6	10.0	4,380	0	4,380	0		4,380
7	35.0	28,200	0	28,200	3,000	Employee	31,200
8	55.0	150,630	0	150,630	0		150,630
9	50.0	64,740	0	64,740	0		64,740
10	119.0	162,008	0	162,008	0		162,008
11	4.0	3,362	0	3,362	1,200	Technician	4,562
12	5.5	12,062	0	12,062	1,140	Employee	13,202
13	7.5	12,068	0	12,068	2,900	Teacher	14,968
14	4.0	11,576	0	11,576	0		11,576
15	8.0	27,979	0	27,979	0		27,979
16	8.0	14,896	0	14,896	10,000	Commercia	24,896
Average	25.4	40,942	0	40,942	5,828		46,769

Western Margin of the Suez Canal							
No.	Land Holding	Agricultural Income ^{1/}			Non-agricultural Income		Total Income
		Crops	Livestock	Sub-total	Amount	Activities	
1	5.0	90	0	90	0		90
2	5.0	90	0	90	0		90
3	5.0	90	0	90	0		90
4	5.0	90	0	90	2,400	Accountant	2,490
5	5.0	6,600	0	6,600	0		6,600
6	8.0	0	0	0	66,000	Fishing	66,000
7	18.0	0	0	0	62,000	Fishing	62,000
8	40.0	65,020	11,600	76,620	0		76,620
9	20.0	32,510	5,680	38,190	0		38,190
10	5.0	1,561	0	1,561	3,250	Other Farm	4,811
11	6.0	7,169	1,940	9,109	0		9,109
12	8.0	12,570	120	12,690	0		12,690
13	6.0	8,321	2,400	10,721	0		10,721
14	5.0	0	0	0	3,240	Employees	3,240
15	5.0	0	0	0	1,200	Employee	1,200
16	23.0	36,959	1,000	37,959	0		37,959
17	60.0	31,220	0	31,220	0		31,220
Average	10.4	10,694	1,421	12,115	8,631		20,746

Eastern Margin of the Suez Canal							
No.	Land Holding	Agricultural Income ^{1/}			Non-agricultural Income		Total Income
		Crops	Livestock	Sub-total	Amount	Activities	
1	1.0	827	1,550	2,377	2,340	Public Emp	4,717
2	6.0	1,654	1,500	3,154	0		3,154
3	10.0	6,072	11,410	17,482	6,000	Commercia	23,482
4	5.0	2,363	2,650	5,023	3,000	Private Em	8,023
5	3.0	1,240	0	1,240	0		1,240
6	30.0	51,094	0	51,094	0		51,094
7	6.5	3,721	900	4,621	0		4,621
8	10.0	8,870	0	8,870	4,800	Pension	13,670
9	10.0	8,052	2,600	10,652	3,840	Pension, Pr	14,492
10	6.0	13,479	0	13,479	1,200	Public Emp	14,679
11	5.0	6,585	0	6,585	0		6,585
12	5.5	8,284	0	8,284	1,440	Teacher	9,724
13	5.0	21,812	0	21,812	0		21,812
14	5.0	5,198	0	5,198	0		5,198
15	15.0	62,479	0	62,479	0		62,479
16	4.0	8,021	0	8,021	0		8,021
17	4.5	3,381	2,400	5,781	0		5,781
Average	7.9	13,109	1,289	14,398	1,414		15,812
General Average	14.6	21,582	903	22,485	5,191		27,676

Source: Farm Socio-economic Survey conducted by the Study Team
 Note: 1/ Income for crops consumed by farmers' family and their animals is not included.
 2/ In calculating crop income, cost of family labor is not contemplated.

Table H-10 Evolution of Wholesale Price Index of Agricultural Commodities

Index: 1986/87 = 100

Commodities	1995												1996				Max	Min	Max/Min
	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.						
1. Cotton	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	331.6	1.65	
2. Vegetables	248.4	170.9	141.5	135.2	229.9	240.5	261.0	281.0	311.4	311.4	311.4	311.4	311.4	311.4	311.4	311.4	311.4	2.82	
Tomato	268.9	108.2	91.8	78.7	242.5	226.2	242.3	282.0	396.7	396.7	396.7	396.7	396.7	396.7	396.7	396.7	396.7	6.12	
Onion	204.5	163.6	131.8	131.9	136.4	136.4	136.4	145.5	122.7	122.7	122.7	122.7	122.7	122.7	122.7	122.7	122.7	1.96	
Garlic	60.4	96.0	112.0	136.9	137.8	150.2	151.1	149.3	141.3	141.3	141.3	141.3	141.3	141.3	141.3	141.3	141.3	3.34	
Potato	196.2	203.8	200.0	269.2	323.1	388.5	369.2	434.6	288.5	288.5	288.5	288.5	288.5	288.5	288.5	288.5	288.5	3.77	
Squash	178.2	195.5	196.4	221.8	229.1	336.2	341.8	287.3	232.7	232.7	232.7	232.7	232.7	232.7	232.7	232.7	232.7	1.92	
Cucumber	168.8	143.8	114.8	127.1	135.4	179.2	185.4	170.7	216.7	216.7	216.7	216.7	216.7	216.7	216.7	216.7	216.7	2.14	
Green pepper	554.5	345.5	238.6	163.6	134.1	193.2	193.2	195.5	225.0	225.0	225.0	225.0	225.0	225.0	225.0	225.0	225.0	4.13	
3. Fruits	185.3	226.3	189.5	158.5	146.5	159.6	168.2	181.7	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	183.8	1.54	
Water melon		245.7	171.4	134.3	134.3	165.7												1.83	
Cantaloupe		238.0	186.0	136.0	86.0	86.0												2.77	
Orange	185.8								171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	171.2	1.40	
Apricot		135.9	160.9	108.4	98.3	98.3												1.18	
Peach		65.7	105.0															1.26	
Mango			161.8	137.9	134.0	134.0	158.6	111.9	290.2	290.2	290.2	290.2	290.2	290.2	290.2	290.2	290.2	1.21	
Fig			148.5	136.9	128.7	128.7	169.5	169.5										2.71	
Grape			143.1	150.3	130.4	130.4	160.2	136.0										1.30	
Olive				169.0	149.0	149.0	142.0	136.0	128.0	128.0	128.0	128.0	128.0	128.0	128.0	128.0	128.0	1.32	
Date					222.2	222.2	177.2	177.5										1.25	
4. Cereals	247.6	248.0	250.5	251.4	249.4	250.8	251.1	252.1	255.8	255.8	255.8	255.8	255.8	255.8	255.8	255.8	255.8	1.06	
Wheat	245.8	240.8	248.8	240.8	238.5	239.4	249.2	246.4	254.3	254.3	254.3	254.3	254.3	254.3	254.3	254.3	254.3	1.08	
Barley	228.8	216.4	218.9	226.1	225.9	225.5	226.5	229.6	228.9	228.9	228.9	228.9	228.9	228.9	228.9	228.9	228.9	1.09	
Rice	395.0	417.2	416.0	421.8	417.8	423.4	421.8	413.6	421.5	423.7	427.1	433.0	433.0	433.0	433.0	433.0	433.0	1.10	
Maize	197.4	195.3	201.4	201.2	200.0	200.6	192.9	200.6	198.9	198.9	198.9	198.9	198.9	198.9	198.9	198.9	198.9	1.07	
5. Pulses	221.7	215.7	215.4	219.9	223.6	224.6	223.1	227.9	230.2	230.2	230.2	230.2	230.2	230.2	230.2	230.2	230.2	1.13	
Beans	225.4	216.1	217.5	221.7	226.3	227.0	228.1	230.8	232.8	232.8	232.8	232.8	232.8	232.8	232.8	232.8	232.8	1.17	
Lentil	145.1	145.3	147.8	149.1	153.7	156.6	153.0	165.5	164.4	164.4	164.4	164.4	164.4	164.4	164.4	164.4	164.4	1.19	
6. Oil Crops	380.1	376.3	376.1	378.3	377.3	377.0	374.9	375.5	375.5	375.5	375.5	375.5	375.5	375.5	375.5	375.5	375.5	1.01	
Sesame	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	1.00	
Groundnut	290.4	234.6	226.9	165.8	235.3	233.7	165.8	165.8	223.0	223.0	223.0	223.0	223.0	223.0	223.0	223.0	223.0	1.57	
Soybeans	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	1.00	
7. Fodder Crops	248.2	248.2	248.2	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	267.6	1.14	
8. Others	231.3	232.5	231.7	232.7	233.2	234.4	234.4	234.4	233.4	233.4	233.4	233.4	233.4	233.4	233.4	233.4	233.4	1.02	
Sugarcane	220.9	220.3	220.3	220.3	221.3	222.4	220.3	220.3	220.3	220.3	220.3	220.3	220.3	220.3	220.3	220.3	220.3	1.01	
Medical plants	270.9	278.9	275.0	279.9	278.0	279.9	282.3	260.8	283.1	283.1	283.1	283.1	283.1	283.1	283.1	283.1	283.1	1.08	
General Average	238.0	235.3	227.9	224.7	233.9	238.9	256.9	269.0	264.0	244.6	248.2	256.0	269.0	269.0	269.0	269.0	269.0	1.20	

Source: Wholesale Price Index May 1995 - March 1996, CAPMAS

Table H-11 Agricultural Commodities Exports and Imports

(1) Exports

Commodities	1991		1992		1993		1994		1995	
	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)
Cotton	12,980	60,687	15,541	52,546	18,304	43,566	113,160	232,343	67,295	151,884
Rice	150,950	38,710	187,470	57,313	146,771	39,240	247,142	78,501	156,786	56,710
Orange	171,540	44,481	102,995	32,544	69,041	20,955	27,956	8,163	41,945	12,978
Potato	217,832	47,817	209,365	42,649	181,179	34,264	144,618	28,884	418,821	122,617
Onion	61,402	11,514	56,935	11,632	81,659	26,206	139,312	32,684	115,579	17,323
Tomato	23,417	6,267	41,532	11,184	32,228	8,606	25,081	5,811	9,696	1,834
Water melon					10,616	3,753	1,939	850	975	309
Melon							4,599	1,383	3,248	848
Lemon					9,903	4,410	11,423	3,425	13,318	2,813
Garlic					5,671	2,799	6,418	2,949	2,669	1,245
Broad beans					8,657	2,967	3,005	687	2,842	978
Groundnut					8,038	5,972	7,334	6,241	9,716	6,792
Sweet potato					8,411	2,808	2,781	762	4,794	919

(2) Imports

Commodities	1991		1992		1993		1994		1995	
	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)	Qty (ton)	Value (US\$x1000)
Wheat	5,043,868	724,910	5,683,200	768,190	4,016,922	571,821	6,363,851	735,637	5,069,599	875,206
Maize	1,300,000	174,000	1,443,800	177,790	2,148,000	239,860	2,020,977	262,489	2,424,396	348,409
Sugar	485,000	165,760	337,620	115,690	202,410	60,640	51,350	15,384		
Potato seed					11,471	3,755	34,903	18,465	74,108	49,919
Lentil					67,025	8,606	64,305	26,566	31,648	117,835
Broad beans							120,963	37,216	127,476	40,325
Sesame					23,048	18,519	10,679	7,038	34,979	40,193
Soybeans							79,591	21,434	54,856	14,092
Coconut					4,560	4,399	7,763	6,351	6,644	5,442
Apple					1,371	645	20,375	11,607	18,665	11,341
Meat	138,110	128,539	137,170	117,694	137,280	165,485	165,950	157,278		
Dairy product	200,900	119,350	247,580	154,399	207,340	148,012	209,880	149,825		

Source: Commodities Exports & Imports, CAPMAS, Statistical Yearbook, CAPMAS Trade Yearbook, FAO

Table H-12 Horticultural Exports

Products	Volume Exported (ton)		Major Destination
	1994	1995	
Apricot	251	77	
Artichoke	4,923	5,205	
Cucumber	294	1,079	
Eggplant	472	121	
Garlic	6,418	2,869	Saudi Arabia, Italy, Lebanon, Libya, German
Grape	1,281	1,142	United Kingdom, UAE, Kuwait, Netherlands
Grapefruit	505	674	
Green pepper	978	194	France
Guava	2,024	5,535	
Lemon	11,423	13,318	Saudi Arabia, Gulf Countries
Mandarin	388	671	Saudi Arabia, Gulf Countries
Mango	1,339	1,972	Saudi Arabia, Gulf Countries, Libya, Austria
Melon	4,599	3,248	Saudi Arabia, Kuwait, Romania, Lebanon, Greece
Okra	592	583	
Onion	139,312	115,579	Saudi Arabia, UAE, Lebanon, Kuwait, UAE
Orange	27,956	41,945	Russia, United Kingdom, Saudi Arabia, Netherlands
Peach	1,494	1,137	Saudi Arabia, UAE, Lebanon, Kuwait, UAE
Peas	1,120	1,092	Saudi Arabia, UAE
Plum	375	332	
Potato	144,618	418,821	United Kingdom, Germany, Lebanon, Greece, France, Italy
Strawberry	1,369	991	Saudi Arabia, Gulf Countries
Sweet potato	2,781	4,794	Saudi Arabia, France, United Kingdom
Tomato	25,081	9,696	Saudi Arabia, Lebanon, Kuwait
Water melon	1,939	975	Saudi Arabia, Gulf Countries

Source: Commodities Exports and Imports, CAPMAS

Table-13 Exports of Agro-products by Country 1993 - 1995

(1) Potato

Countries	1993		1994		1995	
	Qty (ton)	%	Qty (ton)	%	Qty (ton)	%
United Kingdom	53,882	33.3	57,955	44.0	101,361	24.2
Greece	37,654	21.5	15,503	11.8	48,470	11.6
Germany	25,931	14.8	27,495	20.9	90,672	21.7
Lebanon	17,719	10.1	18,359	13.9	50,486	12.1
Saudi Arabia	9,799	5.6	5,714	4.3	4,165	1.0
France	6,087	3.5	668	0.5	25,615	6.1
Italy	3,923	2.2	1,653	1.3	32,170	7.7
Kuwait	1,594	0.9	3,220	2.4	3,664	0.9
Spain	3	0.0	-	0.0	30,565	7.3
Other Arab Countries	633	0.4	331	0.3	3,264	0.8
Other EU Countries	913	0.5	175	0.1	4,354	1.0
Other Countries	2,063	1.2	621	0.5	23,806	5.7
Total	175,211	100.0	131,694	100.0	418,682	100.0

(2) Tomato

Countries	1993		1994		1995	
	Qty (ton)	%	Qty (ton)	%	Qty (ton)	%
Saudi Arabia	24,563	87.7	16,212	64.7	5,349	57.2
Kuwait	1,275	4.5	2,150	8.6	419	4.3
Lebanon	1,176	4.1	5,572	22.2	3,482	35.9
United Kingdom	325	1.1	0	0.0	26	0.3
Germany	251	0.9	70	0.3	28	0.3
Other Arab Countries	377	1.3	834	3.5	105	1.1
Other EU Countries	64	0.2	20	0.1	35	0.4
Other Countries	38	0.1	155	0.6	51	0.5
Total	28,469	100.0	25,063	100.0	9,696	100.0

(3) Onion

Countries	1993		1994		1995	
	Qty (ton)	%	Qty (ton)	%	Qty (ton)	%
Saudi Arabia	108,498	79.0	69,821	53.1	37,705	32.6
Lebanon	11,591	8.4	10,201	7.8	11,482	9.9
Kuwait	6,652	4.8	7,959	6.1	11,085	9.6
Greece	3,302	2.4	4,935	3.8	8,746	7.6
United Kingdom	2,093	1.5	1,670	1.3	2,325	2.0
Germany	750	0.5	1,148	0.9	4,586	4.0
France	729	0.5	1,324	1.0	5,887	5.1
Turkey	710	0.5	506	0.4	-	0.0
Qatar	540	0.4	2,080	1.6	3,275	2.8
Russia	30	0.0	21,140	16.1	4,255	3.7
Jordan	339	0.2	3,487	2.7	573	0.5
United Arab Emirates	156	0.1	1,412	1.1	18,372	15.9
Other Arab Countries	343	0.2	447	0.3	1,615	1.4
Other EU Countries	940	0.7	880	0.7	4,808	4.2
Other Countries	665	0.5	4,375	3.3	865	0.7
Total	137,338	100.0	131,385	100.0	115,579	100.0

(4) Orange

Countries	1993		1994		1995	
	Qty (ton)	%	Qty (ton)	%	Qty (ton)	%
Russia	23,284	41.5	8,791	31.5	11,578	27.5
United Kingdom	15,874	28.3	7,234	25.9	7,907	18.9
Saudi Arabia	4,669	8.3	4,257	15.2	6,079	14.5
Macedonia	-	0.0	960	3.4	3,000	7.2
Belgium	1,746	3.1	705	2.5	563	1.3
France	1,644	2.9	140	0.5	547	1.3
Netherlands	1,127	2.0	-	0.0	4,822	11.5
Malta	517	0.9	181	0.6	799	1.9
United Arab Emirates	264	0.5	1,552	5.6	3,958	9.4
Other Arab Countries	522	0.9	1,956	7.0	193	0.5
Other EU Countries	6,356	11.3	114	0.4	359	0.9
Other Countries	3,889	6.9	2,043	7.3	2,190	5.2
Total	56,164	100.0	27,933	100.0	41,945	100.0

(5) Grape

Countries	1993		1994		1995	
	Qty (ton)	%	Qty (ton)	%	Qty (ton)	%
United Arab Emirates	574	28.7	75	5.9	350	30.6
Kuwait	522	26.1	421	33.1	202	17.7
United Kingdom	309	15.5	187	14.7	424	37.1
Netherlands	178	8.9	193	15.2	71	6.2
Qatar	149	7.5	164	12.9	4	0.4
Other Arab Countries	72	3.6	77	6.1	16	1.4
Other EU Countries	180	9.0	132	10.4	67	5.9
Other Countries	13	0.7	23	1.8	8	0.7
Total	1,997	100.0	1,272	100.0	1,142	100.0

(6) Melon

Countries	1994		1995	
	Qty (ton)	%	Qty (ton)	%
Saudi Arabia	2,087	45.5	952	29.6
Kuwait	900	19.6	914	28.1
Lebanon	485	10.6	188	5.8
Greece	452	9.9	188	5.8
Qatar	171	3.7	43	1.3
Bahrain	154	3.4	2	0.1
Germany	135	2.9	18	0.6
Romania	1	0.0	500	15.4
United Arab Emirates	13	0.3	184	5.7
Italy	14	0.3	131	4.0
Other Arab Countries	10	0.2	12	0.4
Other EU Countries	59	1.3	67	2.1
Other Countries	106	2.3	39	1.2
Total	4,587	100.0	3,248	100.0

(7) Peach

Countries	1994		1995	
	Qty (ton)	%	Qty (ton)	%
Saudi Arabia	566	37.9	526	46.3
United Arab Emirates	396	26.5	487	42.8
Kuwait	265	17.7	84	7.4
Qatar	111	7.4	21	1.8
Other Countries	156	10.4	19	1.7
Total	1,494	100.0	1,137	100.0

Source: Commodities Exports and Imports, CAPMAS

**Table H-14 Annual Crop Production
at Maturing Stage of the Project**

Crops	Area (fed.)	Yield (t/fed.)	Production (ton)
Wheat	14,080	2.49	35,059
Maize	20,660	2.70	55,782
Barley	14,450	1.48	21,386
Sorghum	24,080	18.00	433,440
Berseem (L)1/	4,130	25.00	103,250
Berseem (S)2/	14,180	16.50	233,970
Fodder beet	4,130	50.00	206,500
Soybeans	7,020	1.22	8,564
Sesame	4,990	0.70	3,493
Broad beans	6,940	1.20	8,328
Tomate (F)3/	6,920	40.00	276,800
Tomate (P)4/	2,860	25.00	71,500
Cantaloupe	6,940	10.00	69,400
Water melon	4,160	10.00	41,600
Squash	2,780	8.00	22,240
Green pepper	6,920	7.00	48,440
Cabbage	7,860	20.00	157,200
Potato	4,990	12.00	59,880
Onion	7,860	10.75	84,495
Cumin	8,970	1.10	9,867
Almond	4,160	5.00	20,800
Peach	1,390	7.27	10,105
Grape	5,870	8.10	47,547
Olive	5,830	7.00	40,810
Orange	5,830	7.40	43,142

Note: 1/(L) Long season, 2/(S) Short season
3/(F) Fresh, 4/(P) Processing

Table H-15 (1) Economic Farmgate Price based on Import Parity Price

Items	Product: Wheat		Product: Maize		Product: Soybean	
	Price in US\$1	Price in LE1	Price in US\$1	Price in LE1	Price in US\$1	Price in LE1
Projected 1996 FOB Price ^{1/}	156		116		252	
Ocean freight and insurance	20		15		32	
CIF value at Port Said	176		131		284	
Conversion to local currency ^{2/}		565		442		961
Port handling charge, etc.		32		32		32
Wastage and losses (3% of CIF)		18		13		29
Importer's overhead and fees (5% of CIF)		30		22		43
Cost ex-Port Said		675		510		1070
Transport from port to El Arish (200 km x LE 0.15/ton-km)		30		30		30
Wholesaler's cost and margin (10% of ex-Port Said price)		67		51		107
Market value in El Arish		772		591		1207
Transport from wholesaler to farmgate (30 km x LE 0.15/ton-km)		5		5		5
Middlemen's margin (10% of market value)		77		59		121
Farm-gate parity price		690		527		1081

Note: 1/ In constant 1990 price; Word Bank, International Economics Department
2/ Official exchange rate of US\$ 1 = LE 3.39 was applied

Table H-15 (2) Economic Farmgate Price based on Import Parity Price

Items	Product: Beef	
	Price in US\$1	Price in LE1
Projected 1996 FOB Price ^{1/}	1660	
Ocean freight and insurance	66	
CIF value at Port Said	1726	
Conversion to local currency ^{2/}		5852
Port handling charge, etc.		32
Importer's overhead and fees (5% of CIF)		293
Cost ex-Port Said		6177
Transport from port to El Arish (200 km x LE 0.15/ton-km)		30
Cost ex-factory		6207
Conversion ratio of live weight to meat (65%)		4035
Slaughter's processing cost and margin (10% of live weight price)		403
Transport from slaughter to farmgate (30 km x LE 0.15/ton-km)		5
Freshness premium ^{3/}		907
Farm-gate parity price of live weight cattle		4533

Note: 1/ In constant 1990 price; Word Bank, International Economics Department
2/ Official exchange rate of US\$ 1 = LE 3.39 was applied
3/ Egyptian consumers' preference for domestically produced fresh products; assumed to be 25% of the farm-gate price

Items	Product: Powder Milk	
	Price in US\$1	Price in LE1
Projected 1996 FOB Price ^{1/}	1725	
Ocean freight and insurance	69	
CIF value at Port Said	1794	
Conversion to local currency ^{2/}		6082
Port handling charge, etc.		32
Importer's overhead and fees (5% of CIF)		304
Cost ex-Port Said		6418
Transport from port to Ismailia (60 km x LE 0.15/ton-km)		9
Cost ex-factory		6427
Value of 1000 liters of milk ^{3/}		611
Reconstitution cost ^{4/}		665
Sub-total		1276
Freshness premium ^{5/}		319
Border price of fresh milk at plant		1595
Collecting and processing cost ^{6/}		287
Transport from milk plant to farm-gate (200 km x LE 0.15/ton-km)		30
Farm-gate parity price of fresh milk (1000 l)		1278

Note: 1/ In constant 1990 price; Word Bank, International Economics Department
2/ Official exchange rate of US\$ 1 = LE 3.39 was applied
3/ = 95 kg of powder milk
4/ = 10.35%
5/ Egyptian consumers' preference for domestically produced fresh products; assumed to be 25% of the farm-gate price

Table H-15 (3) Economic Farmgate Price based on Export Parity Price

Items	Product: Tomato		Product: Potato		Product: Onion		Product: Orange		Product: Grape	
	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA
Projected 1996 FOB Price ^{1/}							454			
Ocean freight and insurance							51			
CIF/FOB value at Port Said ^{2/}	268		243		145		455		409	
Conversion to local currency ^{3/}		976		824		565		1541		1387
Port handling charge, etc.		32		32		32		32		32
Importer's overhead and fees (5% of CIF)		49		41		25		77		69
Cost ex-Port Said		896		751		438		1454		1285
Transport from port to El Arish (200 km x LE 0.15/ton-km)		30		30		30		30		30
Wholesaler's cost and margin (10% of ex-Port Said price)		90		75		45		145		129
Market value in El Arish		776		646		373		1278		1127
Quality adjustment and post-harvest loss (%)		20		5		5		75		3
Transport from wholesaler to farmgate (30 km x LE 0.15/ton-km)		5		5		5		5		5
Grading & packing cost (10% of market value)		78		65		37		128		113
Farm-gate parity price		538		544		312		1050		924

Note: 1/ In constant 1990 price; World Bank, International Economics Department

2/ Estimated based on CAPMAS's agricultural commodities exports statistics

3/ Official exchange rate of US\$ 1 = LE 3.39 was applied

Table H-17 Economic Price of Fertilizers

Items	Product: Urea		Product: TSP		Product: Potassium	
	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA	Price in US\$ ^{1/}	Price in LEA
Projected 1996 FOB Price ^{1/}	181		130		105	
Ocean freight and insurance	20		14		12	
CIF value at Port Said	201		144		117	
Conversion to local currency ^{2/}		681		488		397
Port handling charge, etc.		32		32		32
Wastage and losses (3% of CIF)		20		15		12
Importer's overhead and fees (5% of CIF)		34		24		20
Bagging		0		35		35
Cost ex-Port Said		768		594		495
Transport from port to El Arish (200 km x LE 0.15/ton-km)		30		30		30
Wholesaler's cost and margin (10% of ex-Port Said price)		77		59		50
Transport from retailer to farmgate (30 km x LE 0.15/ton-km)		5		5		5
Farm-gate parity price		880		689		580
% of constituent		46		44		50
Farmgate parity price of nutrient		1913		1565		1160

Note: 1/ In constant 1990 price; World Bank, International Economics Department

2/ Official exchange rate of US\$ 1 = LE 3.39 was applied

Table H-16 Summary of Economic and Financial Farmgate Prices of Agricultural Products

(1) Main products

Commodities	Farmgate Price (LE/t)	
	Financial	Economic
Wheat	660	690
Maize	640	527
Barley	570	570
Sorghum	60	60
Berseem (Long season)	60	60
Berseem (Short season)	60	60
Fodder Beet	50	50
Soybeans	900	1081
Sesame	3300	3300
Broad beans	1150	1150
Tomato (Fresh)	400	538
Tomato (Processing)	240	322
Cantaloupe	800	800
Water melon	510	510
Squash	600	60
Green pepper	700	700
Cabbage	150	150
Potato	500	544
Onion	320	312
Cumin	2000	2000
Almond	1500	1500
Peach	940	940
Grape	1100	924
Olive	1100	1100
Orange	430	1050
Beef	6500	4533
Milk	1613	1278

(2) By-products

Commoditie	Farm-gate Price (LE/t)	
	Financial	Economic
Wheat straw	80	80
Maize stalk	20	20
Barley straw	80	80