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INDICATIVE PROGRAMME FOR THE INTEGRATED DEVELOPMENT OF FRUITS INDUSTRIAL SYSTEM IN ARAB REPUBLIC OF EGYPT (A.R.E.)

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1. PROGRAMME CONTEXT.

1.1 DESCRIPTION OF THE MAIN COMPONENTS AND LINKAGES OF THE FRUITS INDUSTRIAL SYSTEM IN THE ARAB REPUBLIC OF EGYPT.

Paramount importance is attached to fruit crops in Egypt since they consistute a significant source of diversity in agricultural production. Moreover, fruit crops help in the establishment of agro-food industries, and meet the actual requirements of domestic consumption thus improving the nutritional level of the people. The potential contribution of fruits to economic development has been recognised by the government and the subsector has been selected as one of the most dynamic sectors for economic expansion.

Against this background and in view of the fact that the productive agricultural land is limited to a small fertile area along the Nile Rivers, land reclamation and irrigation are critical elements in Egypt's agricultural development plans.

Fruits are produced by numerous growers on small fragmented land holdings and agrarian co-operatives. Productivity enhancers such as seeds, fertilizers and pesticides are subsidized by government in order to encourage productivity, and more areas are being allocated to fruits to increase production.

Citrus ranks first among fruits crops. The planted area for citrus was 277 thousand feddans (2.38 feddans = 1 ha), in the 1989, season. This represents about 55% of fruit production in the same year. Other fruit crops in descending order of production volumes are grapes (12%), dates (11%), bananas (8%), guavas (4.7%) and others. Oranges of different varieties rank first among citrus crops representing about 50.4% of total citrus production in 1989.

Pre and post harvest losses of fruits amount to over 30% of total fruit production most especially between orchard and retail markets. Unavailability of properly equipped storage facilities (even at the ports), transportation and distribution channels to processing and sales sites not only hinders full capacity utilization, but also results in handling and marketing losses.

Fresh fruits are either processed for export or manufactured into preserved products like jams, juices, marmalades, canned or bottled. Public sector companies, Kaha and Ed Fina produce some 85% of the preserved/manufactured foods e.g canned fruits and vegetables, juices, jams and marmalade, frozen vegetables, dehydrated fruits and vegetables. Operating at 64% installed capacity, the main problems facing these industries are financial, lack of efficient management, poor market development, lack of effective capital market, and obsolete equipment and machinery. Government policies in the field of subsidies are partly to blame. Besides public, private, joint venture and co-operative societies processing fruits and vegetables, there are numerous artisanal units which exist on major streets in the cities where freshly processed fruit juices are sold by the cup. Home made jams, jellies and marmalade are also displayed in shops. Data on these activities are hard to obtain.

The lack of an integrated marketing system is the weakest link in the Fruits Industrial System for both fresh and processed fruits. Pricing of fresh fruits at wholesale or retail markets is heavily distorted.

Specifically, economic policy in Egypt aims at expanding export of orchard crops to increase export revenue. Export indicators in 1986/87 show that fruits as a percentage of agricultural exports was 16.3% but preserved fruits and vegetables was 0.83% of manufactured exports. The quantity of fresh oranges exported in 1987 was 214,000 tons, valued at * $75 million with most activity concentrated in the public sector companies. Private sector exports encountered governmental, technical and economic limitations (1). Trade data are not available for other crops.

Domestic consumption of horticultural commodities is influenced by both the size of the population and the per capita income. Per capita consumption of oranges and limes** (two most popular fruits) rose by 100% and 230% repectively between 1987 and 1982. Because of the importance of oranges in the Egyptian diet, Government is attempting to ensure that adequate supplies are available to the consumers at reasonable prices. In order to achieve this aim, Government provides produce subsidies in an effort to stimulate production and, thereby moderate consumer prices.

* $1 = L.E. 2.55 (December 1989).

** Confusingly known as "lemuun" in Arabic.

1.2 GOVERNMENT DEVELOPMENT OBJECTIVES RELATED TO THE SYSTEM

In terms of revenue generated, fruits constitute one of the agricultural commodities principally processed for export. In order to raise the net foreign exchange contributed to the national economy., the main developemnt objectives of government are:

i. To increase agricultural exports, particularly high cash crops (mainly horticultural crops) in order to improve the balance of payments (Table1)and have financial resources to import food, increase the efficiency of the agro-industries and consequently enhance the value added to the economy.

ii. Industrialization for export, thus enhancing the capacity of Egyptian manufactured products to compete in international markets in terms of quality and cost. In particular, production of canned fruits, frozen and canned vegetables will expand to capture markets in Africa and the Arab world.

As part of planned development efforts to achieve the objectives, new areas will be developed through land reclamation, and cultivation. In particular, horticultural areas will increase to about 700,000 feddans mostly along the Mediterranean coast (Table 2) as compared to about 543,000 feddans in 1986/87 to meet domestic and foreign demand for fruits. Targeted production of fruits is expected to increase to 4.45 million tons in 1991/1992. (Table 3)

1.3 IMPORTANCE OF THE SYSTEM IN THE COUNTRY'S ECONOMY

Against the background of government development objectives, this section relates activities of the fruit processing industry to those of the processed food industry and the performance of the manufacturing sector in general.

1.3.1 The Contribution of Food Processing Industries to Industrial Product

In 1987, the public sector companies in the Food Industries Corporation had a total output of L.E. 2,005 million which accounted for 45% of the total food processing output. Available figures (Table 4) show that food processing industries contributed 28.0% of industrial

production in 1987 (Table 4), while the preserved food industry contributed 1.9% to the total food processing output (ref. Tables 4 & 16)

1.3.2 Contribucion in the Value Added

Food processing industries contributed 23.9% in the total value added, generated from the industrial sector in 1986/87 (Table 5). Available figures from the public sector companies for preserved foods (353.3 million L.E) in 1986/87 is 6.0% of value added in food processing industries and 1.45% of value added in Industry.

1.3.3 Contribution to Total Employment.

Food industries contributed in 1989, 175,000 jobs (2) out of 12.5 million jobs available to the Egyptian economy. Since the industrial sector contributed 10 -12% of total employment, this meant that food processing industries contributed 1.4% of employment in the industrial sector.

1.3.4 Contribution to Exports

Table 6 shows the export of food processing industries relative to other exports. In 1986/87, the export of food processing industries was 1.76% of total exports and 10.5% of industrial exports. The exports of processed fruits and vegetables was 0.4% of total export in 1986/87 but 0.83% of total manufactured exports (Table 7). However, the figures for total exports in Tables 6 and 7 appear contradictory as they are from two different sources.

1.3.5 Contribution to Investment

It is estimated that total investments in food processing industries in 1989 amounted to L.E. 2, 660.7 million, and that the total cost of investment for projects that had been approved and started production since 1986 in the sector amounted to L.E. 607 million. This represents approximately 10.3% of the cost of investment for projects that have been approved in the industrial sector as a whole or 4% of total investment costs for projects that have been approved in all economic sectors in Egypt since 1986 (3). Total planned investments in public sector food industries amounted to L.E. 82 million between 1987 and 1992 development plan.

1.3.6 Importance of Food Processing Industries in Terms of Imports.

Table 8 shows the development that took place in the production and importation of food processing products. Imports tended to increase as a percentage of food processing production from 2.7% in 1977 to 140.2% in 1987. This indicates that there is a potential local market for food processing industries.

1.3.7 Change in the Structure of Industrial Activity.

Table 9 demonstrates that industrial production prior to 1986/87 relied heavily on imports of foreign inputs, representing nearly 20.9% of industrial production in 1981/82. As a result of the policies and actions implemented under the first Five-Year Plan, this figure is expected to drop to 9.2% for 1986/87, showing that local material is being used in place of foreign imported material, and the structure of industrial activity is changing.

1.4 QUANTITATIVE PERFORMANCE OF THE PREESENT STATUS OF THE SYSTEM

The Fruits Industrial System in the Arab Republic of Egypt (A.R.E.) is represented by a base diagram (Fig,1) which gives an overview of the major components of the system and their linkages. Fig. 2 illustrates the major components in quantitative terms and Fig 3, the agents of production and consumption system.

1.4.1 AGRICULTURAL PRODUCTION

a. Area

Pursuant to government development objectives, cultivated areas of main fruits crops with export significance (Table 10) have been on the increase since 1952, and the expansion of the fruit area has been especially rapid since 1984.

Of the total land area available to agriculture, (5.8 million feddans), cultivated area of main fruit crops accounted for 11% in 1989. Among fruit crops, citrus and grapes account for 45% and 18% respectively of the total cultivated area. Cultivated areas of orange amounted to over 73% of total cultivated areas of citrus in the same year. The breakdown of areas of major fruits is shown in Table 11 . A major concentration occurs in lower Egypt, with the largest area devoted to oranges especially in Behera. Sahrkia, Gharbia, Menoufia and Kalubia governorates.

b. Volume of Production

The change in the total volume of production of fruits from 1985 to 1989 is 73% which reflects considerable efforts at promoting fruits of export significance (Table 12). Oranges, grapes, dates, bananas and lemons together accounted for about 65% of total fruit production in 1989 from a total output of 5.02 million tons (Table 12). The production of citrus fruits alone amounted to 2.77 million tons in 1989 representing 55% of total production of fruit crops. One specific example of the increase in fruit production is that of bananas; production rose from 203,000 tons in 1985 to 388,150 tons in 1989, an increase of 91%.

Increasing production faces numerous technical problems, which will become even more acute in the future. Egypt is facing its first major water shortage since the building of the ASWAN High Dam. The lake is far from full and will require several years of above average rains. Problems of water logging and high soil salinity resulting from poor drainage are widespread. The ecological sustainability of the lavish use of commercial fertilizers and pesticides in Egypt is being increasingly questioned (4) There is limited scope for expansion as the productive agricultural land is limited to a small fertile area along the Nile River, which is 4% of the total land area in which only 2.5% is cultivated.

c. Harvesting

Fruits are harvested all year round with each type having its harvesting season (Table 13). Unskilled labourers harvest clusters of fruits (grapes for example) by pulling or wrenching them, and this leads to high percentage of defects like shatter, bruises, and loss of button.

d. Yields

Production yields have increased for a few crops notably bananas, plums, lemons, grapes and apricots (Table 14). There has been a reduction in the yields of apples, mangoes, peaches and pears, despite increases in the areas devoted to their production. Orange yields are generally low due to poor cultivation practices resulting from the inadequate and untimely application of inputs, the use of low yielding stocks, increased salinity, disease and pests. Many of the trees in the Delta have lived past their optimal bearing age but have not been replaced.

1.4.2 PACKAGING, TRANSPORTATION AND STORAGE OF FRESH FRUITS

The means of transportation of fruits to wholesale markets, major assembly points and ports is by privately-owned vehicles, without refrigeration and sometimes with defective packaging and stacking materials. Cooling facilities to remove field heat as quickly as possible are not available. Private exporters own cold stores or rent those available on competitive basis. Fruits are stored in the open, sold in open carts and street stands.

Consequently, post harvest losses attributable to transportation and storage (from orchard to retail market) are high (20-25%). Transportation to international destinations is by air particularly for the more perishable fruits or by sea, although refrigerated trucks are used to a limited extent for shipment to Arab Countries to reduce costs. Air shipment rates (Table 15) are considered high even when Egypt Air rates are low compared to others. In all cases, air cargo space is often difficult to secure.

1.4.3 GRADES AND STANDARDS.

Fruits are subject to an official system of grading based on the number of fruits in each kilogram. However, since fruits are no longer subject to administered prices, wholesalers have essentially abandoned the grading system. Fruits used for processing are generally 30-50% lower in price than those in the fresh fruits market, indicating that lower quality fruits are generally used for processing. Higher quality fruits which are exported, attract higher prices, ranging from 90-200% above the prices of fruits sold in the domestic market.

1.4.4 INDUSTRIAL PROCESSING

a. Fresh Fruits

The process flow consists of cleaning, sorting, weighing, chemical treatment (waxing) and packing. Fruits such as guava and strawberry are precooled for 6 hrs before processing. Companies without precooling facilities sort the fruits as they are being harvested and packed before transporting them to the airport four to five hours before the plane departs.

Packing houses are owned by public and private sector companies. Available records show that El Wadi, a public sector company, operates from eleven, most advanced and highly mechanized packing houses. Its annual turnover is above $100 million with 1,580 employees exporting citrus and other fresh fruits to thirty eight countries.

The Nile Company has only one packing house. Its annual turnover is $20 million, and 1,030 employees, exporting 70% of its products to Europe and 30% to Arab countries. The company has neither precooling facilities, electronic sorters nor refrigerated trucks.

Two packing houses belong to the Union of Producers and Exporters of Horticultural Crops (annual turnover $ 12 million) and other private companies own two. Packing capacities or capacity utilization is unavailable. However, available records show that El Wadi handles about 200,000 tons of citrus plus 39,000 tons of other fruits.

Both El Wadi and Nile companies obtain raw materials from private farmers based on contracts. However, delivery price fluctuates according to local market forces. El Wadi guarantees L.E 300/ha of citrus (paid in advance) to bind farmers to the company. About L.E 30 million has been paid to farmers to guarantee citrus supply for 3 years, in addition to providing technical advise, inputs and loans.

b. Manufactured/Preserved Products

Food processing activities are carried out by public (60%), private (29%) and joint-venture companies and co-operatives (10%). The public sector companies Ed Fina and Kaha are well known for their activities in fruit processing, producing about 85% of preserved food products in Egypt. Production units of private, joint-venture companies, co-operatives and artisanal industries are numerous, small and scattered all over Egypt. It is an unorganised sector of the economy where data is hard to obtain, if not impossible.

The Nile Company for Food Industries (Dolce), is a private sector company with installed unit operations for UHT juice production, using Combibloc packaging. The cost of packaging materials has become prohibitive. The company also manufactures fruit pulp for local consumption at off-season periods. With an investment cost of L.E 5 million, the company made losses in the 1988/89 financial year, although capacity utilization was 70%. To capture export markets for fruit pulp in Europe, Dolce's technology needs updating.
Kaha and Ed Fina manufacture fruit juices, jams, jellies, marmalades and honey. Technological capacities in both companies differ. Technology at Ed Fina is up-to-date for most of the important lines:

- Can making (Soudronic, electronic copper welding for can body seam from Switzerland; 80 cans/min).
- Doypack technology (UHT); juice production in aluminium foil laminates.
- Form, fill, and seal (Formseal, France) for 35gm jam, in thermoformed polystyrene containers and aluminium foil cover.
- Continuous, automated jam jar line, technology from Spain and England.

These modern technologies were installed following a UNIDO mission on factory operations evaluation a few years ago. On the other hand, Kaha's technology is obsolete in many respects and the company needs modernization, rehabilitation and restructuring with appropriate measures for training. Although Kaha's products are sold locally and world-wide, concerted efforts are needed to sell all that is produced . About 20,000 tons of product remain unsold out of a total production of 50,000 tons in 1989.

The performance of Ed Fina and Kaha is given in Table 16 for 1985/86 and 86/87 (5). Production value increased from L.E 68.184 million to L.E 78.872 million for preserved fruits juices, syrups, jams and jellies, an increase of 15.7%. Although the quantity of jams produced decreased by 4.6%, in value terms, there was a nominal increase of 1.1% from 85/86 to 86/87. The specific fruits from which these products were made could not be ascertained.

The volume of exports of juices, syrups and preserved fruits rose by 7.2% and in value terms, 60.02%. In volume terms, jams, marmalades and cooked jelly increased by 31.7% but in value terms, decreased by 9.3% (Table 17). The value added at factor cost in 1985/86 was L.E 25.493 million and in 1986/87, L.E 35.324 million, an increase of 38.6%. In 1988, the value added rose to L.E 39.746 million (6).

The production of dehydrated dates and raisins (from grapes) in Egypt is considered a recent industry, and more efforts are required to increase their production. Dates production together with raisins in 86/87 amounted to 918 tons valued at L.E 87,300, a drop from 1,145 tons valued at L.E 961,000 in 1985/86.

Although the aggregate financial indicators for Kaha and Ed Fina (Table 18) show a positive rate of change for all parameters, all is not well. The main problems facing these industries are financial, lack of efficient management and lack of effective capital market. Government policies in the field of subsidies are partly to blame.

i. Production is below installed capacity. Total installed capacity for preserved foods is 150,000 tons but actual production is 96,000 tons or a capacity utilization of 64% (7). These companies would like to produce more but there are problems with markets.

ii. The companies rely heavily on external finance to satisfy their financial needs. The ability of public sector companies to rely on internal sources of finance to carry out innovation or replacement of depreciating capital is very small. Consequently, the public sector companies rely on the the banking sector and on the budget for their investment.

iii. The public sector is operating within a rigid inefficient management system, unable to adapt itself to changing circumstances and, in particular, is unable to fix its pricing policies so as to cope with the changes that are taking place in the costs of production and have enough profit margin. The disaggregated financial indicators (Table 19) of Kaha and Ed Fina reflect some of these problems.

1.4.5 DISTRIBUTION AND MARKETING

A combination of parastatals, co-operative marketing societies and private sector enterpirses participate in the Egyptian fruit distribution system for both domestic and external markets.

There is no formal market news system for fruits and vegetable in either domestic or international merkets. However, in major wholesale markets, these is informal communication on supply and demand conditions among large wholesalers. Wholesale prices often show wide fluctuations within a given month and season. At the retail level, prices are most times distorted and different qualities of fruits command different prices. Farm prices however, have shown a consistent upward trend (Table 20). Farm values for main fruits are shown in Table 21 .

The lack of an integrated marketing system is the weakest link in the Fruits Industrial Syster for both fresh and processed fruits. The existing production, assembly, distribution and marketing system result is losses that amount to at least 30% of total production or nearly 2 million tons of fruits annually.

1.4.6 CONSUMPTION

Egyptians consume large amounts (84%) of oranges both fresh and as fresh juice. Only small quantities (0.8%) are utilized by the processing industry (Table 22). Available records (Table 23) show per capita consumption of oranges rose 100% (10.8 to 21.7kg) and limes 230% (1.0 to 3.3kg) between 1977 and 1982 while that of watermelons dropped 19%. The latest per capita fruit consumption from the Ministry of Supply are unavailable, so also is the lack of information on relevant income elasticities for horticultural commodities to estimate the impact of income on the consumption of fruits. However, with the expected increase in population of about 2.7-3%, and the possible increase in GDP per capita reinforced by the change from 1985/86 to 1987/88 (Table 24), projected increases in consumption of fruit has been estimated at 18-32% between 1990-1995 (8). This projection requires significant increases in production from limited arable area at a time when stated government police is also to increase export of fruit commodities.

1.4.7 EXPORTS AND EXPORT VALUE

Table 7 shows Egyptian exports according to product groups, while Table 25 shows geographical destination of exports. Citrus and other fruits accounted for 3.8% and 0.3% respectively of the total value of exports in 1986/87. Of the total value of agricultural exports (Table 26), fruits accounted for 16.3% while preserved fruits and vegetables accounted for 0.83%. Information on the specific types of fruits is unavailable. The value of citrus crops grew steadily from 1980/81 to 1984/85 but experienced a sharp drop in 85/86. Citrus exports in 1986/87 more than compensated for the drop. Of all citrus crops, the most important crop of export significance is orange. Table 27 shows the destination of exports of oranges between 1987 and 1988. Total exports in 1987 was 214,000 tons as compared to 178,000 tons in 1988. At a value of USD 350.00 per MT FOB (9), these exports are valued at 74.9 and 62.3 million USD respectively (Table 28).

Egypt's reputation as a citrus exporter has suffered as a result of past government policy designed to ensure adequate domestic supplies at the expense of the export market, a lower quality product and poor handling have not helped that image. The Soviet Union continues to be a very good market for Egyptian oranges while Saudi Arabia is the second largest market (Table 27). Trade with the Soviet Union is conducted under a ten-year trade agreement in which Egypt barters oranges and other commodities in exchange for timber and other Soviet commodities. The USSR imports approximately 50 percent of all oranges exported by Egypt. The Agency for Controlling Exports and Imports is responsible for assuring exports standards.

1.5 ONGOING DEVELOPMENT ACTIVITIES RELATED TO THE SYSTEM.

A. PIPELINE PROJECT:

On June 21, 1988, a World Bank team visited Egypt to explore two concepts for Horticultural Projects.

i. Domestic marketing efficiency and post harvest losses.

ii. Export development through joint ventures with partners in consuming countries.

In March 1989, the team visited Egypt again with a view to:

i. Planning a project component for harvesting, grading, packaging, and transport and

ii. A separate component for technical assistance (TA) to include quality standards.

The expectation is that 95% of all planned activities will be for the private sector working with (for example) Union of Exporters and Egyptian Chamber of Commerce.

Project preparation was scheduled for June 1988 and appraisal, September 1989. As at December 1989, no action had been taken and project details unknown.

B. ACTIVE PROJECTS

i. Agriculture Development System Project (ADSP).

A semi commercial project and an off-shoot of a project between Egypt and the University of California, which was completed in 1985. The California/Egypt project was valued at 15 million USD. The main objective of the project was the transfer to technology from USA to Egypt on various aspects of horticultural crops, especially post harvest technology.

The new ADSP project, started in 1986, is self financing, providing general services such as:

- Selling seedlings.
- Providing cold stores on rent basis.
- Transfer of technology, and food technology activities.

Specific activities provided for a fee include:

- Chemical analysis of farmers' fertilizers.
- Propagation methodology of olives and dates using cuttings, not seeds - a transfer of technology from the state to farmers.
- New methodology for ripening porous fruits e.g. Kaky, a very solid fruit containing alkaloids.

ii. KFW Project (German)

Loan: 10 million Dutch Mark.
Technical Assistance: 3 million Dutch Mark.
Two experts (One for credit and the other in farm management) are provided. The objective is the development of horticulture in Ismailaya.

iii. Academy of Scientific Research and Technology

There is an on-going project at the Academy on the minimization of wastes during food processing. By association, processing of fruits and vegetable is part of the study.

1.6 INSTITUTIONAL FRAMEWORK FOR THE DEVELOPMENT OF THE SYSTEM.

The institutional framework for the development of the Fruits Industrial System consists of the following bodies:

1. AGRICULTURAL PRODUCTION

i The Ministry of Agriculture and Land Reclamation

Oversees all activities related to agricultural development and productivity to ensure food security. To achieve its objectives, the ministry works through various parastatals. One such objective is land reclamation, to increase land areas available to agriculture.

ii. Mechanization Research Institute:

Tests, develops, modifies and designs, if necessary, agricultural machinery for local conditions or to suit prevailing conditions, so as to reduce import costs. The institute is involved in the transfer of technology in mechanization to farmers.

iii. Horticultural Research Institute:

The institute is also active in the transfer of technology to farmers through extension services and conducts research in areas such as pre and post harvest technology, harvesting practices, process research and the development of exotic products from fruits. The institute was a focal point in the USA/Egypt joint project on horticultural crops.

iv. Irrigation and Drainage:

The Ministry of Public Works and Water Resources is actively involved in irrigation schemes.

v. Agricultural Investment Office:

Supplies investors with the necessary data and information about available agricultural investment fields, and helping them with project feasibility studies.

Guides investors on the required procedures for obtaining project approval.

Advises investors on available credit facilities through foreign and local credit institutions.

2. NATIONAL INDUSTRIAL PLANS AND POLICIES:

i. The Ministry of Planning prepares all plans and formulates prices for their implementation.

ii The Ministry of Industry formulates development and investment plans, programmes and policies for both the private and public sector.

The Food Industries Corporation (FIC) oversees activities of the Public Sector Companies within the Food Industry. The newly established Food Development Centre is a unit of the Food Industries Corporation.

The General Organization for Industrialization (GOFI) prepares industrial investment schedules to direct private investment into desired areas. Private industrial enterprises are authorized and controlled by GOFI.

3. INVESTMENT PROMOTION, FINANCING AND AGRICULTURAL DEVELOPMENT

In addition to the Ministry of Finance:

i. The National Investment Bank provides finance to industry.

ii. Industrial Development Bank, is entrusted with the finance of the private sector industries including small scale industries.

iii. The Principal Bank for Development and Agricultural Credit distributes inputs such as fertilizers, pesticides etc. to farmers, and is the unique source for providing different types of finance to the agricultural sector.

iv. Export Promotion Bank.

v. Public sector commercial banks; private foreign and local commercial and investment Banks.

4. TRAINING OF MANAGEMENT PERSONNEL, ON-THE-JOB TRAINING AND VOCATIONAL TRAINING:

i. Academy of Sadat for Management Sciences.
ii. Central organ for management.
iii. Food Developemnt Centre.
iv. Productivity and Vocational Training Department
v. Worker's centre for training under the supervision of the Ministry of Labour.

5. INDUSTRIAL RESEARCH AND DEVELOPMENT:

i. The Academy of Scientific Research and Technology.
ii. National Research Centre.
iii. Universities.
iv. Industrial research and development centres in the main industrial subsectors supervised by the Ministry of Industry.

6. PRIVATE ORGANIZATIONS:

i. The Federation of Egyptian Industries which oversees interests of the private sector industries.

ii. Chamber of Food Industries - member of (i).

iii. Private, joint venture and co-operative food processing companies.

iv. The Union of Producers and Exporters for Horticultural Crops.

7. PUBLIC ORGANIZATIONS:

i. Kaha and Ed Fina for preserved foods.

ii. El Wadi and Nile Company for the Export of Horticultural Crops.

8. EXPORTS:

The Ministry of Agriculture, the Ministry of Supply, the Ministry of Economy and Foreign Trade, and the Ministry of Finance are responsible for setting up the national plan for exports. The Ministry of Agriculture determines the size of the area which must be devoted to the production of cotton and rice and then estimates how much of the remaining area will be planted to various crops, including fruits and vegetables. The Ministry also prepares estimates of yields and total production for each agricultural commodity. The Ministry of Supply then determines domestic consumption requirements and estimates the quantity available for export. The Department of Foreign Currency oversees transactions between banks and exporters. The exporter must, for instance, have permission from the Department of Foreign Currency to access his receipts from exports.

9. QUALITY CONTROL:

The Agency for Controlling Exports and Imports inspects crops at seaports, airports, production areas or packing houses in an attempt to meet quality standards for international markets. About 150 agricultural commodities are subject to the Agency's inspection program. The Agency also provides guidelines on the packing and grading of commodities for export and functions as a referee between the producer and exporting companies in disputes involving standards and grades. Finally, the Agency monitors shipments to their destination in order to assure suitability of shipping conditions.

1.7 PREVAILING POLICIES AND THEIR EFFECT ON THE SYSTEM:

Economic policy makers responsible for the agricultural sector are well aware of the magnitude of their tasks and of the necessity to reduce price distortions, to increase the efficiency of resource use and to raise output per unit land. In addition, it is generally agreed that the dependence on external sources for economic growth must be changed and that sources of economic growth must be broadened by transforming public and private sectors and encouraging export promotion and import substitution. However, the conflict in the policy seems to be the choice between promoting high-value production for export on the one hand and increasing food grains and fruit self sufficiency on the other.

Dramatic changes in policy were effected in 1988 and this affected every sector of agriculture in Egypt. At the macroeconomic level, policy changes include:

i. a fiscal policy which monitors exchange rate to eliminate distortions, and bring down rates of inflation.

ii. Opening up the markets and setting appropriate tariffs to open up the economy and provide incentives for investors from abroad.

iii. the determination to bring down the national debt which stands at 51 billion USD.

At the microlevel, policy changes reflect injection of more liberalization into the system:

i. Individual farmers were given more freedom to produce the crops offering the highest returns and were permitted to sell the output at uncontrolled or higher controlled prices. Government will intervene only in having a "floor price" to safeguard the interest of the farmers in case market forces are against them.

ii. All acreage and production controls have been relaxed except for three crops - sugar cane, cotton and 50 percent of the rice crop which must be sold to the Government. Farmers can now produce and sell crops which maximise their incomes.

iii. Agricultural exports are now valued at the market rate and the competitive position of agricultural exporters in the private sector has been increased. The restrictions on the export of fruits by the private sector have been removed.

iv. A number of non-tariff trade barriers has been imposed. Certain commodity imports are being restricted through refusal to issue letters of credit for their importation in recognition of the need to import strategic food items (e.g wheat) and conserve foreign exchange. This raises the degree of protection and hence profitability of crops which compete with cotton, since price biases against cotton remain serious. It is believed that cotton output will stagnate and fruit production will expand both absolutely and relatively, among others.

v. Subsidies on the input costs of pesticides and fertilizers are being reduced or given at market prices. This has meant that the farmer has more management responsibility. To reduce fertilizer distribution problems and shortages, storage facilities are being built throughout Egypt.

vi Given the extremely serious foreign exchange constraint facing the economy, raising agriculture's net foreign exchange contribution to the national economy is a major policy goal for the 1990s.

2. PROGRAMME JUSTIFI .TION

2.1 BOTTLENECKS AND CONSTRAINTS HINDERING THE DEVELOPMENT OF THE SYSTEM

	COMPONENTS	CHARACTERISTICS	BOTTLENECKS
1.	Agro-Ecological Constraints	Periodic shortage of irrigation water.	Drought in the Ethiopean highlands affecting the Nile. Other natural calamities, pest infestation.
2.	Potential Land Resources	Arable land limited to 4%; 2.5% of total land area cultivated High population density Expansion into new lands limited	96% of land area is desert. Periodic sandstorm. Land holdings fragmented.
3.	Fruit Production - yields	Low yields	Poor farm management: - over irrigation - poor drainage - untimely and inadequate application of inputs - use of low-yielding stocks - pests and diseases.
	- harvesting	Mechanical damage affecting quality and saleable quantity	Faulty harvesting practices and rough handling.
	- storage - transportation	Post harvest losses as much as 30% of total production; losses greatest between orchard and retail market.	Inadequate storage and preservation facilities at orchards. Poorly developed transportation and distribution facilities, Lack of small scale industries at production source.
4.	Industrial Processing: - Fresh fruits for export	Post harvest losses	Inadequate and poorly equipped packing houses e.g. absence of precoolers and electronic sorters.
		Poor quality fruits	Grading and standards neglected.

COMPONENTS	CHARACTERISTICS	BOTTLENECKS
- Manufactured products	Surplus fruits at factory gate; losses	Inadequate infrastructure to handle excess fruits e.g. cold stores for short-term preservation and absence of aerated covered storage.
	Sometimes factories obliged to accept produce and also buy surplus crops regardless of market conditions.	Lack of small scale industries at fruit production locations.
	Capacity utilization 64%	Obsolete equipment and machinery at Kaha; low sales.
	Sometimes low quality products and products with high chemical residues	System of checks by quality control staff rather lax. Inefficient management. Lack of specialists to monitor chemical residues.
	Heavy reliance on external finance to satisfy financial needs at public sector companies	Internal sources of finance very small.
	Management unable to adapt itself to changing circumstances e.g unable to fix prices; hence little or no profits; final product price uncompetitive	Rigid inefficient management system. Lack of inovation policies. Cost of packaging materials prohibitive.
5. Distribution and Marketing:		
- Fresh fruits	Post harvest losses	Poor distribution infrastruture Lack of refrigerated trucks, storage and preservation facilities.
	Different qualities of fruit command different prices Price distortions	Uneven supplies. Highly variable quality. Marketing inefficiency.

COMPONENTS	CHARACTERISTICS	BOTTLENECKS
- Manufactured products	Drops in sales and losses in revenue at public sector companies	Low purchasing power. Uncompetitive prices. Lack of proper storage facilities for finished products.
	Existence of huge inventories at public sector companies	Lack of proper market research in domestic and external markets. Lack of integrated marketing system.
6. Exports:		
- Fresh fruits	Decrease in quantities of fruits demanded by European markets	Fruits of poor and variable quality. Lack of an agreement on fair rules for customs or lack of protection
	Products of variable quality	Unavailability of a production devoted to exports; farmers unaware of export specifications
	Deteriorated fruits, rejection at export points; increase in quantity sorted	Lack of refrigerated trucks. Lack of refrigerated storage facilities at air and sea ports. Shipping boats not arriving on time. Cargo space on air crafts difficult to secure.
	Uncompetitive prices	Differences in price paid for raw materials by public and private sector companies.
	European market penetration difficult	Poor quality fruits in terms of international standards.
	Export promotion curtailed	Lack of funds to promote Egyptian exports abroad.

COMPONENTS	CHARACTERISTICS	BOTTLENECKS
- Manufactured products	Processed fruit products sometimes rejected by importing countries	Stringent quality specifications.
7. Consumption	Preference for fresh fruits over processed fruits	Processed fruits expensive relative to fresh fruits and prices out of the reach of the common man.
	Difficult to estimate the impact of income on the consumption of fruits	Lack of published data on relevant income elasticities for horticultural commodities.

2.2 ALTERNATIVE DEVELOPMENT STRATEGIES FOR OVERCOMING BOTTLENECKS AND CONSTRAINTS.

Strategy 1.

Post harvest loss reduction

A substantial reduction in current post harvest losses is fundamental to the integrated development of the Fruits Industrial System in Egypt. A target of 50% reduction in post harvest losses would go a long way in increasing available quantities of fresh fruits without increasing the area allocated to fruit production. The focus of the strategy is the reduction of losses which take place from the orchard to retail markets where post harvest losses are estimated to be about 25%. The strategy, if implemented, will most likely reduce competition between satisfying local demand and exports, and increase available quantities of fruits for processing. However, the strategy does not address marketing problems.

a. Assumption

Available records at the National Horticultural Research Institute show an average post harvest loss of 20-25%. In general, pre and post harvest losses are believed to be more than 30%. Losses are highest between the farmgate and the consumer. However, available records do not show disaggregated post harvest losses for each type of fruit. Therefore a 25% post harvest loss is assumed across board, i.e from orchard to retail market. This assumption may overestimate post harvest losses for some fruits and underestimate losses for others.

Table 29 shows post harvest losses calculated at 25% level, and the corresponding losses in farmgate value. An estimated one million tons of fruit was lost in 1988 valued at over L.E 97 million. These values will increase in the future (Table 30) if post harvest losses remain unchecked. Therefore, in saving 50% of the losses, 500,000 tons of fruit will be recovered and a benefit of 48 million L.E returned to producer, consumer and the economy.

b. Implementation

Working with the private sector, e.g a farmer marketing union or co-operative, and Chamber of Commerce, such a strategy involves investment in the building of collection centres or country assembly points, equipped with facilities such as precooling, sizing, sorting and packing, along with appropriate on-site cooling facilities. From the collection centre, distribution will be by transporting in closed refrigerated vehicles to air-conditioned modern wholesale distribution and display centres and packing houses maintained at optimum temperature, owned and managed by the private sector. The main collection centre will be equipped with a workshop with facilities for maintenance.

Professionals in related disciplines will be employed to man the centre and provide services such as Standardisation, Disease and Pest Control, Research, Sanitation, Liason, Grade Standard Inspection Services and Packaging. Experts will be required to train these professionals as part of the technical assistance component.

Proposed collection centres will be located at Cairo, Alexandria and Assiut governorates. Cairo and Alexandria are close to areas of major fruit production in lower Egypt; they are urban centres where consumption is high, and are important ports for exports. Assiut governorate is in Upper Egypt and produces the highest quantity of fruits in that area.

Strategy 2

Integrated Market Development

The achievement of government development objectives depends on the availability of domestic and international markets. An integrated marketing strategy should consist of the following activities:

i. developing quality and pricing systems which increase returns to both consumers and producer by ensuring higher returns for characteristics that are prefered by consumers.

ii. introducing and fostering the development of a market information system to provide both buyers and sellers at all levels of the market with current market prices.

iii. increased market research, testing and dissemination of improved marketing methods and processes, including all aspects of handling, packing, storage and transportation of both fresh and processed products. Given an improved marketing environment substantial increase in Gross Total Output and Value Added to the economy could be achieved by improving the capacity utilization of installed capacities at Kaha and Ed Fina, currently at 64%.

iv. Export marketing is a rather sensitive area. Detailed market studies are required to create demand. Exporting fruits to the European Community is not a sound basis for an agricultural development strategy in view of declining access to markets, tariff and non-tariff barriers, the high cost of sales promotion, trade rules and procedures, packaging and quality. Since Egypt is a net food importer because of limited agricultural resources and high national demand, import substitution or interregional trade development may be highly important and will be a more effective development strategy. A great deal of marketing effort will be required to promote the acceptance of fruit and fruit products according to market requirements in Africa and the Arab World. Basically, pricing must be attractive in addition to products of good and consistent quality.

Strategy 3

Establishment of Small Scale Industries

In view of the problems of transportation from fruit producing areas to manufacturing plants, and the lack of storage facilities at manufacturing industries to receive excess fruit, the setting up of small scale industries in the areas of fruit production will facilitate:

(a) efficient utilization of raw material resources,

(b) reduction of waste through processing.

(c) employment creation.

(d) entrepreneural development.

(e) integrated rural development; and

(f) growth opportunities for small/medium enterprises.

Such a project will be for young graduates who are unemployed, organised into specialized fruit processing groups and trained. Technical assistance will be provided for women so as to foster their integration in the development of the Fruits Industrial System. The technology requires a modest investment and therefore, it is a cheap means of increasing employment opportunities at a small cost of investment, and reducing post harvest losses at source.

2.3 SELECTION OF PREFERED STRATEGY

The strategy on post harvest losses does not address marketing while the marketing strategy alone does not address the issue of post harvest losses. The strategy on the establishment of small scale industries helps the reduction of post harvest losses in areas of fruit production. We do not have sufficient data to assess the effect of strategies related to the development of marketing and small scale industries at macro and micro levels.

Two key components are central to the achievement of government objectives. These are:

i. Fruit production

ii. Marketing

Their key constraints are:

i. Post harvest losses

ii. Lack of an integrated market development.

At current levels of marketing, reducing post harvest losses by half will lead to a recovery of 500,000 tons of fruits and a 48 million L.E increase in revenue (based on farmgate price for 1988),a recovery of 770,000 tons and a 69 million L.E increase in revenue by 1992.

Therefore, without a drastic step to arrest post harvest losses, the targeted tonnage of fruit production planned for the end of the second five-year plan (1992) will not be achieved and in fact will result in more fruit losses (Table 30).

The policy to increase areas allocated to fruits and increase production will also result in more losses. By the same token, there will be losses in revenue to wholesalers and retailers at the micro economic level due to inefficiencies in transportation, storage, distribution and marketing.

Within the limits of available data, the best strategy that will produce the maximum positive impact on the development of the system and enhance the achievement of government objectives is that of 50% reduction in current post harvest losses. A techno-economic feasibility study should be carried out to assess the merits of the strategy.

2.4 EXPECTED END-OF-PROGRAMME SITUATION

At the end of a five-year programme, the key contributions would be:

i. Three fully equipped operational collection centres; improved storage, handling, transportation and distribution network; quality conscious wholesalers and retailers.

ii. A reduction of post harvest losses from a current level of about 25% to 12%.

iii. A contribution of about 770,000 tons of fruits recovered, which otherwise would have been lost.

iv. In value terms, the estimated revenue is 69 million L.E at 1988 farm-gate prices. less operating and capital costs.

v. An integrated marketing system; organised market news services, market intelligence, market assessment and forecast. Aggressive marketing, improved sales, increased exports, setting up of transport links between Egypt and markets in Africa and the Arab world.

vi. Products of consistent quality at affordable and competitive prices. Cost-effective appropriate packaging, capacity building through research and development.

vii Qualified specialists with improved management skills, a trained workforce - supervisory and shop floor - and a hygienic food plant.

viii Strong links between industry, research institutes and the University, and the strengthening of links between technology and education plans.

ix. Privatised and commercialised public sector companies, which are able to self finance productive assets without undue reliance on external finance.

x. Increased capacity utilization and ability to fix competitive and affordable prices so as to remain in business and grow.

xi. Rural industrialization, entrepreneural development for the youth and the integration of women in development.

3. INTEGRATED DEVELOPMENT PROGRAMME.

3.1 PROGRAMME OBJECTIVES:

The overall objective is to promote the harmonious balanced development of the fruits industrial system in the Arab Republic of Egypt; specific details are:

(1) To assess the techno-economic viability of setting up country collection centres or assembly points so as to facilitate the improvement of quality and quantity of available supplies of fruits, as well as increase the varieties of products for local consumption, processing, and exports.

(2) To introduce and foster the developemnt of an integrated approach to marketing fresh and processed fruits in domestic and international markets; to develop potentially profitable markets and enable the government of Egypt earn foreign exchange.

(3) To assess the technological and ivestment needs of Kaha, a public sector company, and assist with training and rehabilitation, programmes to improve its overall efficiency and profitability.

(4) To evolve procedures for agro-chemical application, assist with upgrading the capacity of quality assurance staff in pesticide residue analysis so that residual limits in fresh and processed fruit products are within international standards.

(5) To assist relevant authorities in assessing the techno-economic viability of establishing small scale industries and community canneries with a view to industrialising rural areas where fruits are grown, and also integrate women in industrial developemnt.

In order to realise the full impact of the programme, and achieve government development objectives, the programme must cover all fruits. Although a relatively small number of fruits represent a very high proportion of total fruit production, their farm gate values are low when compared to fruits of low production volumes but high farm gate values per tonne e.g mangoes, apricots and apples.

3.2 RECOMMENDED POLICY MEASURES.

i. In order to make the Fruits Industrial System vibrant, government regulations and controls must be relaxed to allow private sector firms compete on equal terms with public sector firms. Prices of industrial inputs and outputs should be moved toward free market levels, with banking and credit policies reformed.

ii. Given the financial standing of government, more and more responsibility should moved into private hands as part of broader reforms. Government should hands off public sector fruit processing industries, and allow management to decide the best course of action for increased productivity and profitability.

iii. In order to increase exports and penetrate international markets, quality must be of international standards. To this end, emphasis should be given to the developemnt of an innovative export organisation, dominated by the private sector to address market development and improvement of export quality.

iv. To industrialise the rural areas, encourage small and medium sized industry in fruit producing areas.

v. Government should encourage co-operation between University, research institutes and industry for the development of an indigenous technological base to accelerate economic development and foster the growth of the fruits industrial system.

3.3. TECHNICAL ASSISTANCE PROJECTS

It is not certain at this stage, the specific approach of the World Bank as far as horticultural crops are concerned. Projects 1 and 2 below, seek to solve the problems of post harvest losses and project 3 is on marketing efficiency and market potentials - domestic and international. UNIDO, The World Bank and FAO can co-operate on these projects.

Projects 4 and 8 focus on the establishment of small scale industries, to enhance employment generation and rural industrialisation, and reduce post harvest losses at source. Project 5,6 and 7 are for upgrading technical capacities at fruit processing plants. The abuse of the use of agro-chemicals is a serious environmental problem and project 8 seeks to redress the problem.

1. Feasibility studies on the techno-economic viability of establishing three fully equipped collection centres for fruits in Cairo, Alexandria and Assiut governorates.

2. Upgrading skills in harvesting, handling, packaging, storage, transportation and quality assurance of fresh fruits for domestic consumption, exports and processing.

3. Assistance on Integrated Marketing System development including inter-regional trade.

4. Feasibility studies on the establishment of small scale fruit processing industries in the fruit producing areas of Khalubia, Sharkia, Assiut, Behera and Menia.

5. Management Skills Development at Kaha - Training in Modern Management practices, technology and quality appreciation.

6. Factory Operations Audit - technical condition of the food canning p ant, the supply and quality of tin plate, its printing and varnishing, laboratory facilities and quality control, R & D, organizational shortcomings impeding the operation of the plant. Recommendations for investments if any.

7. Upgrading facilities for production and packaging fruit pulp for export at DOLCE.

8. Preparatory assistance for the study of contamination of fruits and vegetables by agro-chemicals with special reference to pesticide residues and the effect of fruit processing on such residues.

9. Establishment of a community cannery.

3.4 INVESTMENT PROJECTS

The figures provided under the various investment projects are estimates, in the absence of adequate information from suppliers. These would be verified during feasibility studies.

1. Establishment of three Collection Centres with fully equipped facilities for handling, packaging, storage, transportation distribution and quality assurance. The centres are to be built in Cairo, Alexandria and Assiut governorates - $15.00m

2. Establishment of Small to Medium scale integrated fruit processing industries in fruit growing areas - Assiut, Behera, Qualiubia, Sharkia and Menia - $1.5m

3. Upgrading and modernisation of facilities at preserved Food Industry - Kaha.

   a. Tin plate lines for printing (from England) and lines for Lacquering (from West Germany) - $2.50m

   b. Fully automated lines for bottled juice and jam - $1.75m

   c. Fully automated lines for filling juice in DoyPack - $1.00m

   d. Fully automated lines for fruit pulp production (Manzini, Italy). - $10.00m

   e. Fully automated lines for dehydrated dates - $0.75m

   $16.00m

4.	Assistance to the National Research Centre (Food Unit) with equipments for pesticide residue analysis		
	- GLC, HPLC, Amino Acid Analyser, Standard Samples, Chemicals and 2 automobiles.	-	$500,000
5.	Establishment of a community cannery	-	$250,000
6.	Fruit pulp production facilities at Dolce (300 tons fruit pulp)	-	$250,000
	Total Investments	-	$33.50m

RESUMÉ TABLE BY COMPONENTS

	SYSTEM COMPONENT	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
1.	Agro-ecological constraints	Drought Natural calamities - desertification - pest infestation	Construction of more booster stations along irrigation channels Investment in afforestation projects		
2.	Potential Land Resources	Arable land limited to 4% of total land area. Expansion into new lands limited. Land holdings are fragmented	Land reallocation Construction of servicable link roads.	Land reclamation and irrigation	
3.	Fruit production	Poor farm management-Faulty harvesting and handling practices; no legalized packing houses for fruits going to local markets-post harvest losses exacerbated	Extension services to farmers in farm management techniques	German (KFW) Project - development of horticulture in Ismailaya(13m DM) World Bank visitation on post harvest loss reduction	Upgrading skills in fruit harvesting, handling, packaging, storage, transportation, distribution and and quality assurance of fresh fruits (2).
		Inadequate storage and preservation facilities at orchards Poorly developed transportation and distribution facilities	Organization of prompt transportation to collection centres using refrigerated trucks	ADSP project on the transfer of post harvest technology (self financing)	Techno-economic feasibility study on establishing three fruit collection centres in Cairo, Alexandria and Assiut governorates (1).

SYSTEM COMPONENTS	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
	Lack of small scale industries at production source	Small scale processing at production source		Techno-economic feasibility study on establishing small scale industries in the fruits producing areas of Khalubia, Sharkia, Assiut, Behera and Menia (4) Establishment of community canneries in fruit growing areas (9).
4. Industrial processing - Fresh fruits	Inadequate and poorly equipped packing houses	Upgrading the technologies at existing packing houses		
	Grading standards neglected	Development, implementation and enforcement of grades and standards in line with international market requirements		
	Inadequate infrastructure to handle excess fruits	For storage of less than 1 day, build aerated covered storage. Otherwise build cold stores		

SYSTEM COMPONENT	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
- Manufactured products	Obsolete equipment and machinery at Kaha Capacity utilization 64%	Expanding and upgrading technologies at existing fruit processing companies.	Automation of all public sector fruit processing companies and completion of fruit drying plants at Alexandria and Matrouh by 1992.	Technical Assistance on factory operations audit at Kaha (5)
				Assistance to Dolce on upgrading fruit pulp production facilities (7)
	System of quality control rather lax	Training of quality assurance personnel.		Assistance with training in modern management practices, technology and quality assurance (6)
	Lack of specialists to monitor chemical residues	"		Preparatory assistance on the proposal for enhancing the quality of fruits and vegetables for processing and export (8)
	Rigid inefficient management system; lack of innovation policies. Internal sources of finance very small.	Making public sector companies autonomous by a commericialization/ privatization process		Ref. project # 6.
	Cost of packaging materials prohibitive	Development of cost - effective packaging using local raw materials.		

SYSTEM COMPONENT	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
5. Distribution and Marketing				
- Fresh fruits	Poor distribution infrastructure Uneven supplies Highly variable quality	Improved distribution channels Proper sorting to achieve improved quality.	World Bank visitation to appraise domestic marketing efficiency.	Technical assistance for an integrated marketing system for fresh fruits and manufactured fruit products (3).
	Marketing inefficiency	Sales promotion, advertising		
- Manufactured products	Low purchasing power Uncompetitive prices Lack of adequate storage facilities for finished products	Improving per capita income base		Ref. Project # 3.
	Lack of adequate market research in domestic and external markets	Detailed market study.		Ref. Project # 3.
	Lack of integrated marketing system			

SYSTEM COMPONENT	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
6. Exports			World Bank visitation to appraise export development through joint ventures with partners in consuming countries	Project Concepts 3 and 8.
- Fresh fruits	Fruits of poor and variable quality Unavailability of a production devoted to exports; farmers unaware of export specifications	Extension services to farmers on export specifications		
	Lack of an agreement on fair rules for customs; lack of protection.			
	Lack of refrigerated trucks	Investment in refrigerated trucks and transit		
	Lack of refrigerated storage facilities at air and sea ports	refrigerated warehouses at air and sea ports		
	Cargo space on aircrafts difficult to secure.			
	Air fare expensive			
	Shipping boats not arriving on time			

SYSTEM COMPONENT	CONSTRAINT	OPTIONS FOR SOLUTION	ONGOING/PLANNED ACTIVITIES	PROJECTS IN THE PROPOSED PROGRAMME
	Poor quality fruits in terms of international standards	Institution of a stringent grading regime		Ref. Project # 8 " " 1
	Lack of funds to promote Egyptian exports abroad	Increased government commitment to export.		
- Manufactured products	Stringent quality specifications hence products sometimes rejected.	Upgrade quality and promote inter regional trade.		Ref. Project # 3.
7. Consumption	Processed fruits expensive relative to fresh fruits	Improving per capita income base		
	Prices out of reach of the common man	Sales promotion Educative advertising for processed fruit products.		

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S T A T I S T I C A L A P P E N D I X

TABLE 1

BALANCE OF PAYMENTS
(Millions of Current Dollars)

	FISCAL YEAR (FY)		
	1985/86	1986/87	1987/88
Exports (FOB)	3,576	2,264	3,274
Petroleum	2,378	906	1,563
Non-petroleum Exports	1,198	1,358	1,563
Imports (CIF)	8,823	7,323	9,179
Trade Deficit	5,247	5,059	5,905
Services & Transfers (Net)	3,450	4,016	4,571
of which Suez Canal	1,028	1,148	1,269
Tourism	321	380	880
Remittances	2,973	3,012	3,385
Current Account Deficit	1,937	924	544

1/ Egyptian Fiscal Year is July - June.

SOURCE: Post Economic Trends Report
In: USDA Foreign Agric. Services
Annual Situation Report: Egypt (1989).

TABLE 2

Areas Targeted for most Important Crops Under the Second Five-Year Plan Compared to 1986/1987 areas (in Thousands of Feddans).

CROP	EXPECTED 1986/87	TARGET 1991/1992	CHANGE FROM 1986/87
Wheat	1,294.0	1,540.0	3.5
Barley	170.0	175.0	0.6
Maize	1,632.0	2,562.0	9.4
Fine Corn	403.0	100.0	(24.4)
Rice	1,144.0	1,139.0	(0.1)
Fava Beans	335.0	370.0	(2.0)
Lertils	27.0	105.0	31.2
Other Legumes	74.0	79.0	1.3
Cotton	1,055.0	1,180	2.2
Flax	45.0	46.0	0.4
Peanuts	38.0	55.0	7.7
Sesame	29.0	45.0	9.1
Soy Beans	115.0	160.0	6.8
Sugar Cane	280.0	267.0	(1.0)
Sugar Beet	52.0	58.0	2.2
Vegetables	1,405.0	1,177.0	(3.5)
Onions	54.0	82.0	8.7
Permanent Clover	2,102.0	1,750.0	(3.6)
Feed Clover	1,000.0	998.0	(0.4)
Other Fodder	267.0	301.0	(1.6)
Fruit	543.0	700.0	5.2
Medicinal Plants	50.0	60.0	3.7

SOURCE: ARAB REPUBLIC OF EGYPT (A.R.E.)
SECOND FIVE-YEAR DEVELOPMENT PLAN.

TABLE 3

TARGETED PRODUCTION OF MOST IMPORTANT CROPS UNDER THE SECOND FIVE-YEAR PLAN COMPARED TO EXPECTED 1986/87 (000 TONS)

CROP	EXPECTED 1986/87	TARGET 1991/92	ANNUAL GROWTH RATE
Wheat	2,188.0	3,120.0	7.3
Barley	193.0	215.0	2.2
Maize	3,206.0	6,291.0	14.4
Fine maize	639.0	161.0	3.0
Rice	2,667.0	3,257.0	4.1
Fava Beans	364.0	451.0	4.4
Lentils	19.0	77.0	32.3
Other Legumes	56.0	63.0	2.4
Cotton (Boll)	1,097.0	1,413.0	5.2
Flax (Straw)	130.0	139.0	1.3
Peanuts	26.0	50.0	14.0
Sesame	12.0	20.0	10.8
Soy Beans	137.0	198.0	7.6
Sugar Cane	10,358.0	11,161.0	1.5
Sugar Beet	835.0	1,023.0	4.1
Vegetable	11,936.0	11,625	(0.5)
Onions	744.0	1,153.0	9.3
Fruit	3,163.0	4,450.0	7.1
Dairy	2,475.0	2,820.0	2.5
Meat (Livestock)	406.0	470.0	2.9
Meat (Poultry)	223.0	281.0	4.7
Eggs	143.0	175.0	4.1
Fish	236.0	350.0	8.2
TOTAL	41,253.0	48,964.0	

SOURCE: A.R.E., SECOND FIVE-YEAR PALN.

TABLE 4

THE RELATIVE IMPORTANCE OF FOOD PROCESSING INDUSTRIES IN TERMS OF OUTPUT

In m. L.E. at Market Prices

YEAR	Total Output	Industrial Output	Food Processing Output
1974	8552.9	2001.2	433.546
1975	10276.6	2553.7	540.092
1976	12034.5	3573.8	607.960
1977	14049.5	2982.8	739.930
1978	16960.4	4047.9	803.881
1979	22131	7205	1023.805
1980	29999.2	8079	1443
1981	30113.3	7552.1	1509.2
1982	35178.3	8777.7	1515.8
1983	39839.7	10018.1	2389
1984	45009.8	11822.4	2705
1985	45000.8	11538	3491
1986	45000	15298	3391
1987		15918	4459
1988			5005
1989			4254

SOURCE: SHINDY AND ASSOCIATES, CAIRO 1989

TABLE 5

THE RELATIVE IMPORTANCE OF FOOD PROCESSING INDUSTRIES IN TERMS OF VALUE ADDED

IN THOU.. L.E.

YEAR	VALUE ADDED IN INDUSTRY (1)	VALUE ADDED IN FOOD PROCESSING INDUSTRIES (2)	% (3=2/1)
1977	546,302	84,937	15.5
1978	636,283	106,403	16.7
1979	724,447	113,344	15.6
1980/81	980,670	109,303	11.1
1981/82	1,113,570	114,061	12.9
1982/83	1,195,483	147,543	12.3
1983/84	1,378,033	147,155	10.7
1984/85	1,842,807	374,584	20.3
1985/86	2,129,019	479,469	22.5
1986/87	2,428,659	581,220	23.9

SOURCE: Shindy and Associates, CAIRO 1989.

TABLE 6

THE RELATIVE IMPORTANCE OF FOOD PROCESSING INDUSTRIES IN TERMS OF THEIR CONTRIBUTION TO EXPORTS

(In m. L.E.)

Year	Total Export (1)	Industries Export (2)	% (3=2/1)	Export of Food Processing Industries (4)	% (5=4/1)	% (6=4/1)
1974	593			28,428	4.8	
1975	548.585			34,617	6.3	
1976	595.450			25.7	3.4	
1977	668.478			32.8	4.9	
1978	679.754					
1979	1287.813					
1980/81						
1981/82	1987.7	395.6	19.3	31.866	1.6	8.1
1982/83	2250.295	394.4	17.5			
1983/84	2197.993	535.2	24.4			
1984/85	2599.941	558	21.5			
1985/86	2053.959	558	27.2			
1986/87	3046.010	507.3	16.7	53.59		
1987/88	3994.436					
1988/89						

SOURCE: Shindy and Associates, 1989.

TABLE 7 EGYPTIAN EXPORTS ACCORDING TO P UCT GROUPS

PRODUCT GROUP	1980 / 1981 V	%	1981 / 1982 V	%	1982 / 1983 V	%	1983 / 1984 V	%	1984 / 1985 V	%	1985 / 1986 V	%	1986 / 1987 V	%
I. AGRIC EXPORT														
Raw Cotton	275.5	11.5	300.8	15.1	271	12.3	366	16.7	304.7	11.3	289.1	11.8	300.4	14.6
Citrus Fruits	33.2	1.4	37.8	1.9	46.7	2.1	51.9	2.4	54.4	2.0	43.7	1.8	77.3	3.8
Other Fruits	1.0	0.0	1.3	0.1	2.6	0.1	2.4	0.1	1.8	0.1	1.8	0.1	5.8	0.3
Other Agric Exports	118.9	5.0	109.5	5.5	106.3	4.9	100.7	4.6	72.6	2.7	75	3.0	125.7	6.0
AGRIC EXPORTS TOTAL	428.6	17.9	229.4	22.6	426.6	19.4	521	23.8	433.5	16.1	409.6	16.7	509.2	24.7
II. MINERAL EXPORTS	16.3	67.3	1173	59	1448	65.7	1217	55.6	1857	69	1628	66.4	683.1	33.1
III. Manuf.Exports														
Preserved Vegetables & Fruits	7.0	0.3	6.2	0.3	6.7	0.3	6.7	0.3	2.8	0.1	1.7	0.1	7.2	0.4
Other manuf. Exports	321.5	13.4	331.0	16.7	317.6	14.4	443.1	20.2	396.6	14.7	405.4	16.5	854.9	41.4
TOTAL	328.5	13 7	337.2	17	324.3	14.7	447.8	20.5	399.4	14.8	407.1	16.6	862.1	41.8
IV. OTHER EXPORTS	25.2	1.1	28.6	1.4	5	0.2	1.8	0.1	1.8	0.1	6.3	0.3	8	0.4
GRAND TOTAL	2395	100	1988	100	2203	100	2190	100	2692	100	2451	100	2062	100

SOURCE: EGYPTIAN EXPORT PROMOTION CENTRE, CAIRO

VALUE IN MILLIONS L.E.

TABLE 9

THE RELATIVE IMPORTANCE OF FOOD PROCESSING INDUSTRIES IN TERMS OF IMPORTS

(In m. L. E. at Market Price)

Year	Imports of Food Processing Industries	Local Output of Food Processing Industries	%
1977	41,736	329.2	12. 7
1978	93,542	399.6	23. 4
1982	136,053	384.1	35.4
1983	290,087	317.7	91.3
1986	267,182	226.6	117.9
1987	308,808	271.6	140.2

SOURCE: Shindy and Associates, CAIRO 1989.

TABLE 9

DEVELOPMENT OF INDUSTRIAL PRODUCTION: FOREIGN IMPORTATION REQUIREMENTS (IN MILLIONS OF LE AT CURRENT PRICES)

Item	1981/82	1986/87
Industrial production	8777.7	20898.5
Foreign Imported Material	1836.2	1923.0
Industrial Exports	395.6	852.6
Industrial Trade Balance Deficit	1440.6	1070.4
Foreign Material as percent of Industrial Production	20.9%	9.2%
Industrial Exports as percent of Industrial Production	4.5%	4.1%
Industrial Trade Balance Deficit as percent of Industrial Production	16.4%	5.1%

SOURCE: A.R.E Second Five-Year Development Plan.

TABLE 10

CULTIVATED AREAS OF MAIN FRUIT CROPS, BY TYPE OF CROP AND YEAR. (FEDDANS)

TYPE OF CROP	YEAR				
	1985	1986	1987	1988	1989
Apples	7,000	9,849	11,192	14,933	16,100
Apricots	5,000	6,695	6,776	6,394	6,387
Bananas	23,000	28,750	34,169	36,924	37,796
Figs	4,000	19,782	20,928	26,405	32,603
Grapes	86,000	108,159	110,878	110,791	109,058
Guavas	26,000	33,169	33,901	35,149	35,125
Lemons	30,000	36,134	37,632	39,271	39,666
Mangoes	32,000	37,575	39,693	45,131	45,404
Olives	6,000	23,119	23,262	22,376	22,788
Oranges	182,000	197,085	200,941	201,794	202,258
Peaches	3,000	10,000	11,000	23,000	-
Pears	16,000	17,933	17,892	18,286	18,101
Plums	7,000	7,930	8,043	8,434	8,375
Pomegranates	4,000	4,507	4,501	4,810	4,665
Sweet Lemon	100	213	213	332	332
Tangerines	21,000	28,159	29,448	33,874	35,072
Others	5,000	27,000	25,000	20,000	-
TOTAL	457,100	596,059	615,469	647,904	613,730

SOURCE: Ministry of Agriculture (MOA)
Department of Agric. Statistics, CAIRO.

TABLE 11

AREA OF MAJOR FRUITS BY GOVERNORATE, 1986
(FEDDANS)

GOVERNORATE	APPLES	BANNANS	WATER-MELON	GRAPES	MANGOES	ORANGES	PEARS	STRAW-BERRY
Alexandria	606	27	9483	3793	7	1264	1618	-
Behera	2713	1539	39999	10854	2419	43870	9708	-
Gharbia	3922	1418	259	13488	468	12066	1492	-
Kafr-El-Sheikh	100	149	7152	1259	21	3943	808	1
Dakahlia	324	1480	7846	16822	111	6225	851	-
Sahrkai	290	21	7797	5255	11292	37968	802	162
Ismailia	66	0	12151	869	10609	4655	44	1754
Suez	7	2	62	7	200	126	3	1
Menoufia	889	5278	744	6752	392	24203	1226	33
Kalubia	103	3195	40	1279	1308	33243	298	1495
Cairo	1	-	3	20	334	160	2	-
Damiatta	22	72	1912	1417	106	134	274	-
North Sinai	-	-	-	-	-	729	-	-
South Sinai	-	-	-	-	-	81	-	-
Lower Egypt Total	9043	13181	87448	61815	27267	168667	17126	3426
Giza	224	3094	1306	6705	6450	6776	129	47
Beni Suef	5	336	3981	3111	167	3611	8	-
Faoum	97	60	6102	3104	1192	2607	171	-
Minia	61	549	24697	23221	258	2133	14	7
Middle Egypt Total	387	4039	6086	36141	8067	15127	322	54
Assiut	247	2551	1050	6287	590	9033	4	-
Sohag	16	1233	943	931	250	2198	-	-
Kena	33	6709	541	1345	729	1345	-	-
Aswan	1	1037	5763	157	597	310	-	-
New Valley	-	-	-	-	-	405	-	-
Upper Egypt Total	297	11530	8297	8722	2166	13291	4	-
National Total	9727	28750	131831	106678	37500	199085	17452	3480

SOURCE: M. O. A.

TABLE 12

PRODUCTION OF MAIN FRUIT CROPS, BY TYPE OF CROP AND YEAR

(Thousand Tons)

TYPE OF CROP	YEAR				
	1985	1986	1987	1988	1989
Apples	29	34.13	31.35	44.00	44.94
Apricots	23	21.22	29.33	32.50	41.81
Bananas	203	236.86	278.10	355.14	388.15
Dates	509	490.85	542.20	535.34	571.57
Figs	10	23.58	24.98	31.24	38.64
Grapes	395	451.98	510.04	557.19	620.58
Guavas	144	173.37	195.95	183.99	235.42
Lemons	119	206.00	207.93	234.90	277.87
Mangoes	119	111.92	106.47	98.66	129.05
Olives	9	27.26	29.01	30.61	32.30
Oranges	1,168	1,234.17	1,382.01	1,198.81	1,397.51
Pears	26	30.39	62.06	52.42	73.21
Plums	23	29.71	35.02	35.28	48.51
Pomegranates	18	15.85	20.41	17.35	23.54
Sweet Lemons	1	813	835	762	924
Tangerines	106	117.42	133.80	151.11	170.45
TOTAL	2,902	4,017.68	4,441.66	4,320.54	5,017.55

SOURCE: MOA

TABLE 13

MONTHS OF HARVEST FOR MAIN FRUIT CROPS

FRUITS	MONTHS OF HARVEST
Apples	May - June
Apricot	June - August
Bananas	November - March
Citrus (Oranges,Limes)	November - May
Dates	October - January
Grapes	June - October
Melons	June - August
Mangoes	July - October
Mandarins	January - March
Pears	August - September
Strawberries	February - March
Watermelons	April - August

SOURCE: UNION OF PRODUCERS AND EXPORTERS FOR HORTICULTURAL CROPS, CAIRO.

TABLE 14

YIELDS OF MAIN FRUIT CROPS BY TYPE AND YEAR
(TONS PER FEDDAN)

TYPE OF CROP	YEAR				
	1984	1985	1986	1987	1988
Apples	3.85	4.14	3.40	2.82	2.93
Apricots	4.8	4.6	3.0	4.14	5.5
Bananas	9.2	9.2	8.83	8.17	9.59
Figs	2.25	2.5	1.2	1.19	1.19
Grapes	4.64	4.59	4.18	4.59	5.02
Guavas	5.6	5.54	5.24	5.76	5.26
Lemons	4.14	3.97	5.72	5.47	6.02
Mangoes	4.48	3.72	2.95	2.65	2.20
Olives	1.33	1.50	1.42	1.26	1.41
Oranges	6.68	6.42	6.26	6.90	5.93
Peaches	4.33	4.33	3.1	2.91	1.43
Pears	3.27	1.62	1.67	3.44	2.89
Plums	3.83	3.28	3.75	4.37	4.37
Pomegranates	4.75	4.5	3.2	4.0	3.4
Sweet Lemons	1	1	1	1	1
Tangerines	4.95	5.05	4.18	4.62	4.44
Others	5.67	7.20	1.67	1.68	1.70

Derived from Tables 10 and 12

TABLE 15

TRANSPORTATION COSTS BY AIR FROM EGYPT
TO VARIOUS DESTINATIONS

COUNTRY OF DESTINATION	COST BY AIR ($ US/TON)
Egypt Air to	
Amsterdam	430
London	440
France	430
Saudi Arabia	250
Kuwait	370
Swiss Air	670
KLM	650
British Airways	520
UTA	550

SOURCE: Nile Company for Export of Horticultural Products. CAIRO.

TABLE 16

CANNED AGRICULTURAL PRODUCTS: KAHA & EDFINA

TYPES OF PRESERVED FOODS	1985/86		1986/87	
	QUANTITY M. T.	VALUE 000 L.E	QUANTITY M.T	VALUE 000 L.E
Preserved fruit, juices and Syrups	-	37,830	42,401	45,083
Jams	33,804	30,354	32,295	33,779
Tomato Products	8,063	7,404	7,109	7,920
Preserved vegetables	7,259	7, 373	7,238	7,545
Legumes cereals	8,246	56,191	7,430	7,161
TOTAL	--	88,653	96,473	101,488

SOURCE: Chamber of Food Industry
Food Preservation Industry, 1986/87

TABLE 17

EXPORT OF CANNED AGRICULTURAL PRODUCTS.

EXPORTED MATERIALS	1985/86 QUANTITY TONS(000)	1985/86 VALUE (000LE)	1986/87 QUANTITY TONS(000)	1986/87 VALUE (000 LE)
Juices, Syrups, & preserved fruits	372	299,402	399	479,133
Jams, marmalade, jelly cooked with sugar or without	41	41,564	54	37,677
Flavour concentrates	49	77,947	182	174,710
TOTAL	462	418,913	635	691,520

SOURCE: Chamber of Food Inudstry.
Food Preservation Industry, 1986/87

TABLE 18

AGGREGATE FINANCIAL INDICATORS: KAHA & ED FINA

INDICATOR	85/86	86/87	RATE OF CHANGE (%)
Gross total output ('000 L.E)	114,405	132,384	15.7
Number of Employees	9,074	8,814	97.1
Wages ('000 L.E.)	16,240	16,991	104.6
Productitity per Man (L.E.)	12,608	15,019.7	119.12
Productivity per L. E. Wage	7.04	7.79	110.6
Average of wages per Man	1,789.7	1,927.7	107.7

SOURCE : Chamber of Food Industry.

TABLE 19

FINANCIAL INDICATORS FOR KAHA AND ED FINA

FOR THE YEAR 1988

FINANCIAL INDICATORS	KAHA	ED FINA
Gross Total output ('000' LE.)	58,863	68,545
Total Wages Bill ('000' L.E)	8,176	4,062
Persons Employed	4,579	4,717
Productivity/LE Wage	7.2	7.6
Average of Wages/Man	1,785	1,921
Productivity/Man (L.E)	128,555	14,531.5
Value Added at Factor Cost ('000' LE)	15,034	24,712
Liquidity Ratio, %	37	-
Net Profit as a % of Capital Invested	4.45	0.8
Surplus available for distribution as a % capital invested	0.37	0.7
Self Financing, %	46.1	33.9
Long-term loans, %	23.8	17.9
Short-term Loans, %	30.5	48.2

SOURCE: Shindy and Associates
Economic, Financial and Legal Experts, CAIRO 1989.

TABLE 20

FARM PRICES FOR MAIN FRUITS (L.E/TON)

TYPE OF CROP	YEAR 1985	1986	1987	1988
Apples	117	146	155	261
Apricot	137	156	172	224
Bananas	102	104	103	120
Dates	78	106	108	112
Figs	110	117	127	151
Grapes	105	95	112	106
Guavas	44	62	58	61
Lemons	114	75	172	250
Mangoes	210	245	271	323
Olives	175	175	152	160
Oranges	42	47	51	61
Pears	110	116	127	127
Plums	133	130	141	173
Pomegranates	43	53	53	61
Sweet Lemon	-	-	-	-
Tangerines	45	45	56	62

SOURCE: M. O. A.

TABLE 21

VALUES (AT FARM PRICES) FOR MAIN FRUITS (000 L.E.)

TYPE OF CROP	YEAR			
	1985	1986	1987	1988
Apples	3,393.00	4,982.98	4,859.25	11,484.00
Apricots	3,151.00	3,310.32	5,044.76	7,280.00
Bananas	20,706.00	24,633.44	28,644.30	42,616.80
Dates	39,720.00	52,030.10	58,557.60	59,958.08
Figs	1,100.00	2,758.86	3,172.46	4,717.24
Grapes	41.475.00	42,938.10	57,124.48	59,062.14
Guavas	6,336.00	10,748.94	11,365.10	11,223.39
Lemons	13,566.00	15,450.00	35,763.96	58,725.00
Mangoes	24,990.00	27,420.40	28.853.37	31,867.18
Olives	1,575.00	4,770.50	4,409.52	4,897.60
Oranges	49,056.00	58,005.99	70,482.51	73,127.41
Pears	2,860.00	3,525.24	7,881.62	6,657.34
Plums	3,059.00	3,862.30	4,937.82	6,103.44
Pomegranates	774.00	838.46	1,081.73	1.058.35
Sweet lemon	-	-	-	-
Tangerines	4,770.00	5,238.90	7,492.80	9,368.82

SOURCE: DERIVED FROM TABLES 12 and 20

TABLE 22

ORANGES: PRODUCTION/TOTAL SUPPLY,

CONSUMPTION, EXPORT, PROCESSING

('000 MT)

	1985	%	1986	%	1987	%	1988	%
Production/Supply	1,168	100	1,235	100	1,387	100	1,199	100
Consumption	978	83.74	1,049	85.00	1,165	83.99	1,011	84.32
Exports	138	15.66	165	13.36	214	15.43	178	14.84
Processing	7	0.60	20	1.64	8	0.58	10	0.38

SOURCE: Agricultural Data Base, MOA.

TABLE 23

PER CAPITA CONSUMPTION OF SELECTED HORTICULTURAL CROPS, EGYPT, 1977 - 1982

CROPS	1977	1978	1979	1980	1981	1982
Fruits						
Citrus						
Limes	1.0	2.6	1.4	1.5	1.2	3.3
Oranges	10.8	15.2	20.7	16.5	15.7	21.7
Dates	10.6	8.4	8.7	9.3	7.6	8.8
Grapes	4.7	5.0	4.3	4.1	5.0	5.0
Melons	3.2	3.1	3.9	3.9	4.5	5.5
Strawberries	.1	*	*	*	*	.1
Watermelons	26.5	27.4	26.0	24.0	24.5	21.5

SOURCE: Food Balance Sheet, Ministry of Agriculture, Annual Sheets 1977 - 1982 (unpublished)

* Less than .05 kg/capita.

TABLE 24

SELECTED ECONOMIC INDICATORS

	FISCAL YEAR (FY)		
	1985/86	1986/87	1987/88
Population (Current 2.7 - 3%) millions	49.6	51.2	52.7
GDP/Capita (L.E. Current prices)	772	870	1,017
GDP (L.E. billion, current prices)	38.3	44.0	53.6
Urban Consumer Price Increase	20	25	16

SOURCE: "Post Economic Trends Report"

IN: USDA Foreign Agric. Service.
Annual Situation Report: Egypt.

TABLE 25

GEOGRAPHICAL DESTINATION EGYPTIAN EXPORTS (1984/85-1987/88)

(V. M. L. E.)

COUNTRIES	84/85	85/86	86/87	87/88
Eastern Europe	621.1	710.2	526	865.5
Asian Countries	614.9	395.4	386.4	644.8
African Countries	28.9	29.8	62.2	201.8
North America	90	20.5	134.5	271.6
Central America	8.5	9.6	--	--
South America	--	8.9	5.4	1.2
Oceania Countries	0.1	0.1	0.2	4.1
Other Sources	151.2	155.2	147	129
Grand Total	2,691.9	2,450.9	2,062.6	3,407 .5

SOURCE: Egyptian Export Promotion Centre.

V. M. L. E: Value in millions L.E.

TABLE 26

EXPORT INDICATORS: 1986/87

Fruits as % Agric. Exports (Value)	16.3%
Agric. Exports in Total Exports	24.7%
Manufactured/Industrial Exports in Total Exports	41.8%
Preserved Fruits & Vegetables as % of Manufactured Exports	0.83%
Processed Foodstuffs as a % of Total Exports	2.1%

SOURCE: Derived from Table 7

TABLE 27

FRESH ORANGES: EXPORTS

('000 MT')

Destination	1987	1988
USSR	125.00	86.80
Saudi Arabia	32.80	40.70
Czechoslovakia	14.00	11.30
East Germany	12.70	10.50
U. K.	2.00	5.30
Austria	5.30	5.10
Yugoslavia	2.00	2.80
Gulf States	1.50	6.96
All Others	15.85	8.54
	214.00	178.00

SOURCE: USAID, CAIRO (Unclassified).

TABLE 28

ORANGES: EXPORT VALUE

YEAR	QUANTITY (MT)	VALUE (X1000 LE)	PER TON (LE)
1979	74,593	14,410	193.20
1980	109,471	27,239	248.90
1981	113,719	32,980	290.00
1982	101,257	36,835	363.78
1987	214,000	190,995	1,073.00
1988	178,000	158,865	892.5

SOURCES : (1) Export Promotion Centre

(2) USDA, FAS.

TABLE 29

LOSS IN FARM-GATE VALUE DUE TO POST HARVEST LOSSES (1988)

Fruits	Production (000 Tons)	Post Harvest Losses (25%) (000 Tons)	Farm-Gate Value (L.E/ Ton)	Loss in Farm-Gate Value (000 L.E)
Apples	44.00	11.00	261	2871
Apricots	32.50	8.12	224	1818.88
Bananas	355.14	88.78	120	10,653.6
Dates	535.34	133.83	112	14,988.96
Figs	31.24	7.81	151	1179.31
Grapes	557.19	139.30	106	14,765.8
Guavas	183.99	46.0	61	2806.0
Lemons	234.90	58.72	250	14,680.0
Mangoes	98.66	24.66	323	7965.18
Olives	30.61	7.65	160	1224.0
Oranges	1,198.81	299.70	61	18,281.7
Pears	52.42	13.10	127	1663.7
Plums	35.28	8.82	173	1525.86
Pomegranates	17.35	4.34	61	264.74
Sweet Lemons	762.00	190.5	-	-
Tangerines	151.11	37.78	62	2342.36
T O T A L	4,320.54	1,080.11	-	97,031.09

SOURCE: From Tables 12 and 20

Average Loss in Farm-Gate value: 89.83 L.E/Ton.

Assumption: 25% post harvest loss applied to all fruits.

TABLE 30

PROJECTED PRODUCTION OF FRUITS AND POST HARVEST LOSSES. (PHL)

	1988	1989	1990	1991	1992
Production (000 MT)	4320.54	5017.55	5373.80	5755.33	6163.96
Post Harvest Losses (000 MT)	1080.11	1254.39	1343.45	1438.83	1540.99
Actual Tonnage (000 MT)	3240.43	3763.16	4030.35	4316.50	4622.97
Loss in Value Terms (average loss/ton = 89.83 L.E (000 L.E)	97,031.09	112681.85	120682.11	129250.32	138427.13

ASSUMPTION: i. 25% of Fruits Produced are Lost Post Harvest.

ii. Annual production growth rate 7.1% from 1989.

iii 25% PHL held constant each year.

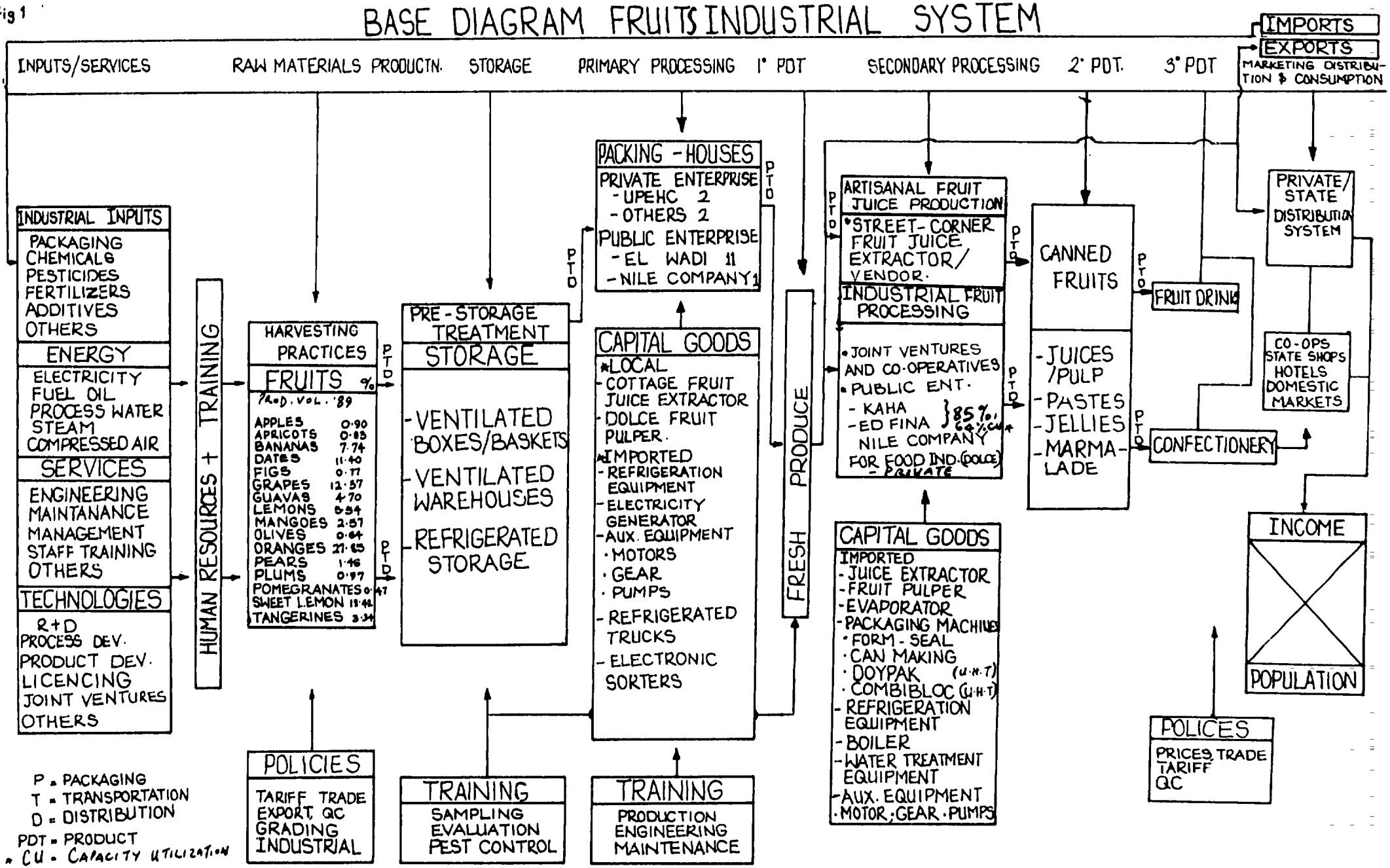
iv PHL for each fruit unknown, therefore 25% assumed accross board.

v. Values at 1988 farm-gate prices.

F I G U R E S

Fig 1

BASE DIAGRAM FRUITS INDUSTRIAL SYSTEM



BASE SCHEME OF THE ECONOMIC FLOWS OF THE PRODUCTION AND CONSUMPTION OF FRUITS. YEAR 1986 [MT AND '000 L.E]

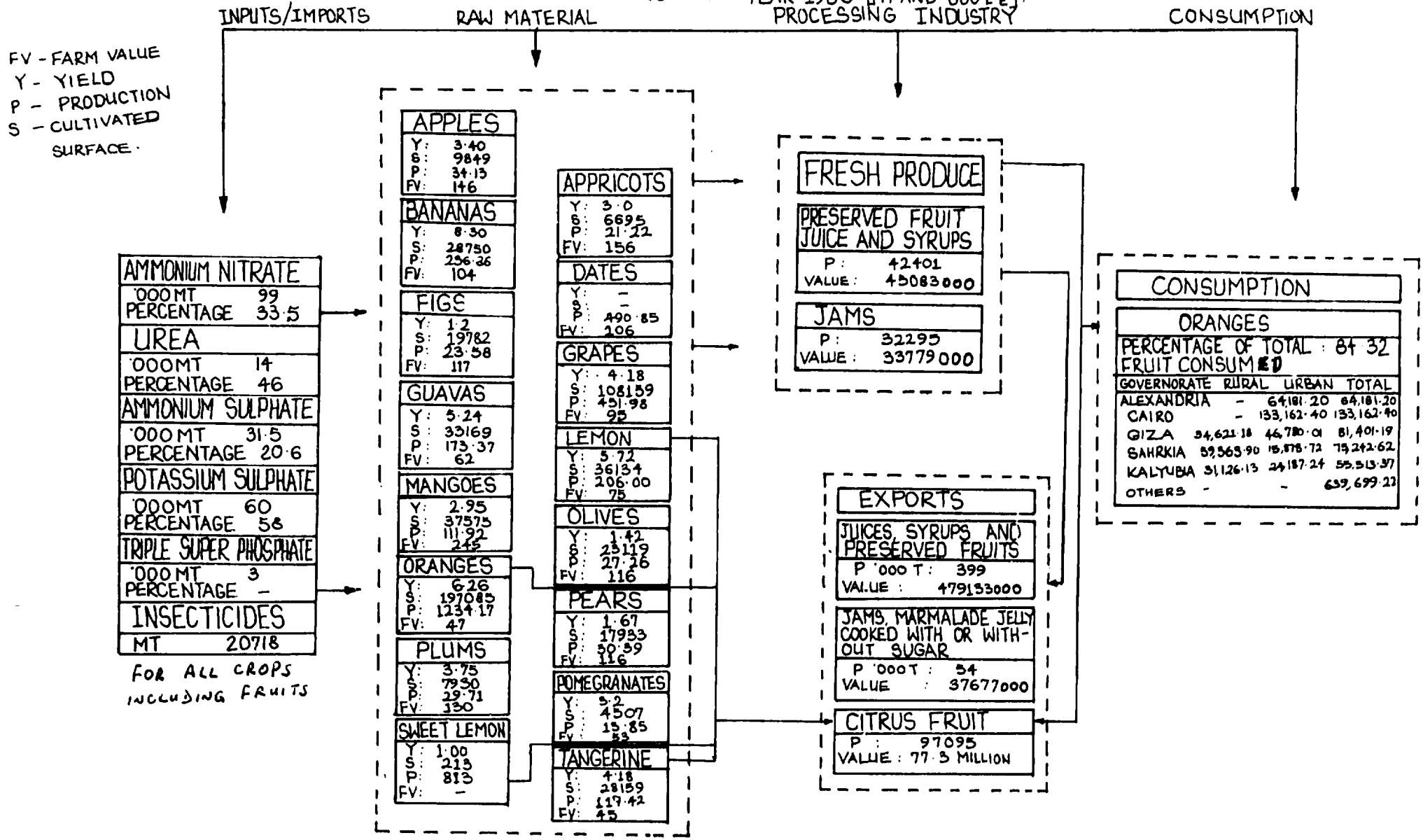


Fig 3

BASE SCHEME OF THE AGENTS OF THE PRODUCTION AND CONSUMPTION SYSTEM OF FRUITS

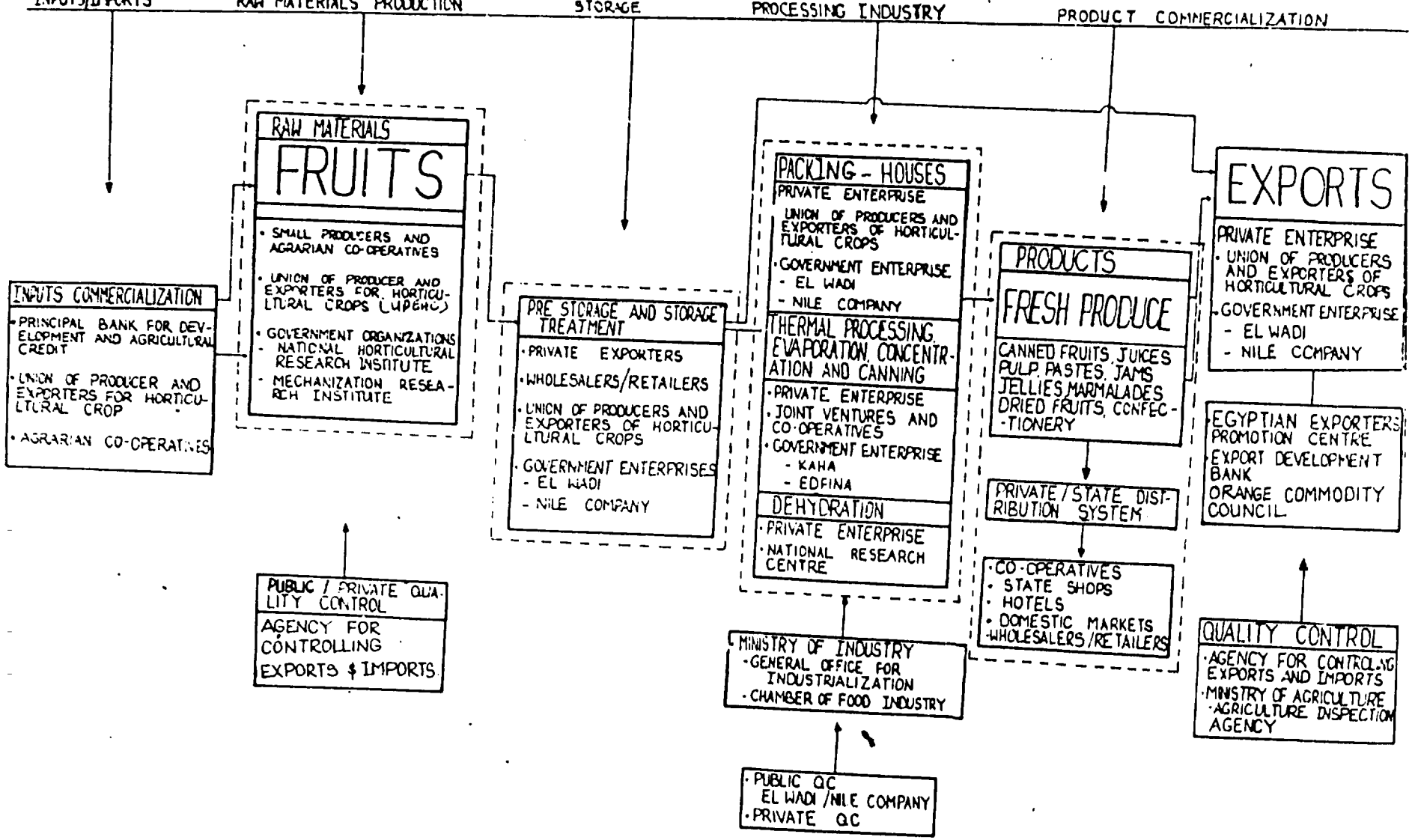
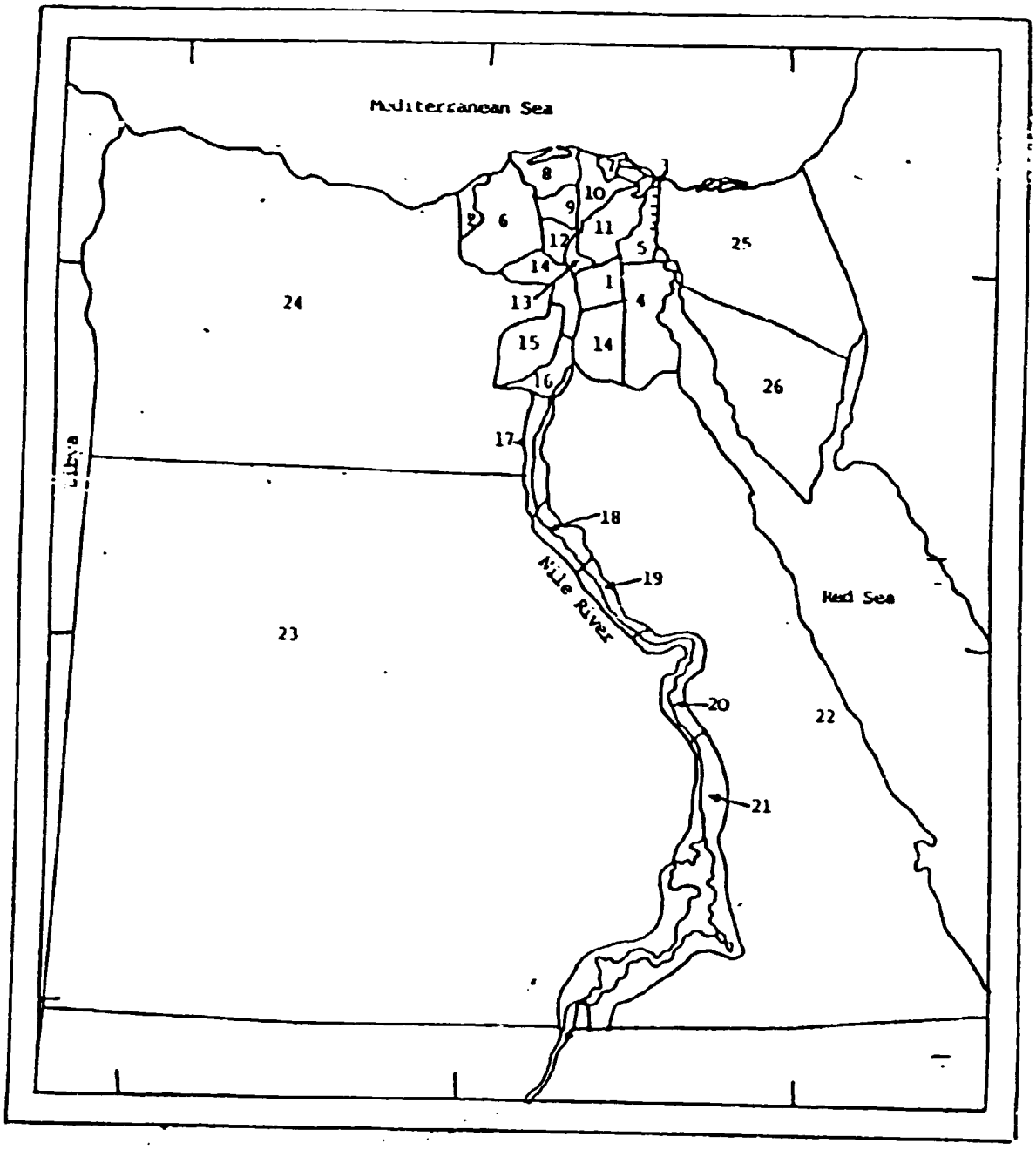


FIGURE 4 ARAB REPUBLIC OF EGYPT



URBAN GOVERNORATES
1. Cairo
▲Cairo
2. Alexandria
▲Alexandria
3. Port Said
▲Port Said
4. Suez
▲Suez

LOWER EGYPT
5. Ismailia
▲Ismailia
6. Beheira
▲Damanhour
7. Damietta
▲Damietta
8. Kafr El Sheikh
▲Kafr El Sheikh
9. Gharbia
▲Tanta
10. Dakahlia
▲Mansura
11. Sharkia
▲Zagazig
12. Menoufia
▲Shibin El-Kom
13. Qalubia
▲Banha

UPPER EGYPT
14. Giza
▲Giza
15. Fayoum
▲Fayoum
16. Beni Suef
▲Beni Suef
17. Menia
▲Menia
18. Assuit
▲Assuit
19. Suhag
▲Suhag
20. Qena
▲Qena
21. Aswan
▲Aswan

FRONTIER GOVERNORATES
22. Red Sea
▲Hurghada
23. New Valley
▲Kharja
24. Marsa Matrouh
▲Matrouh
25. North Sinai
▲El Arish
26. South Sinai
▲El Tur

▲Capital of Governorate