

PD-AMK-817

AGRICULTURE TECHNOLOGY UTILIZATION AND TRANSFER
PROJECT PAPER

Project No. 263-0240

May 15, 1995



CAIRO, EGYPT

UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

PROJECT AUTHORIZATION

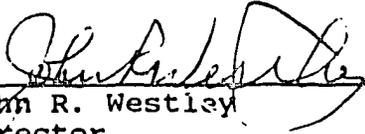
Name of Country: Arab Republic of Egypt

Name of Project: Agricultural Technology Utilization & Transfer

Number of Project: 263-0240

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended (the "Act"), I hereby authorize the Agricultural Technology Utilization and Transfer Project (the "Project") for the Arab Republic of Egypt ("Cooperating Country") involving planned obligations not to exceed Fifty Million United States Dollars (\$50,000,000) in grant funds over a five-year period from the date of authorization, subject to the availability of funds in accordance with the USAID Operating Year Budget/Allotment process, to help in financing the foreign-exchange and local-currency costs of goods and services required for the Project. The estimated life of the Project is six years from the date of initial obligation.
2. The Project will assist the Government of Egypt to improve technologies developed and adopted for the production, processing, and marketing of select agricultural commodities.
3. The Project Agreement may be negotiated and executed by the officers to whom such authority is delegated in accordance with USAID regulations and delegations of authority. It shall be subject to the essential terms, covenants and conditions set forth herein, together with such other terms, covenants and conditions as USAID may deem appropriate.
4. Except as the USAID/Egypt Mission Director or his/her designee may otherwise agree in writing, to be eligible for USAID financing under the Project, (i) commodities shall have their source and origin in the United States; (ii) the suppliers of commodities or services (other than ocean and air shipping) shall have the United States as their place of nationality; and (iii) ocean and air shipping shall be on flag vessels of the United States; provided, however, that local procurement of commodities and services is eligible for USAID financing to the extent provided in Chapter 18 of USAID Handbook 1B, or any successor provisions.
5. Based upon the justification set forth in the Project Paper, I hereby determine, in accordance with Section 612(b) of the Act, that the expenditure of United States Dollars for the procurement of goods and services in Egypt is required to

fulfill the purposes of this Project; the purposes of this Project cannot be met effectively through the expenditure of U.S.-owned local currencies for such procurement; and the administrative official approving local cost vouchers may use this determination as the basis for the certification required by Section 612(b) of the Act.

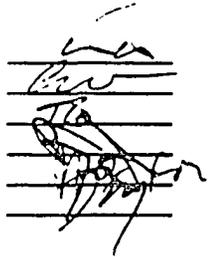


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TABLE OF CONTENTS

I.	STATEMENT OF PROBLEM, PROJECT PURPOSE, AND ASSISTANCE INTERVENTIONS	1
A.	Problems to be Addressed	1
1.	<u>Horticultural Component</u>	1
2.	<u>Food Crops Component</u>	3
3.	<u>Sustainability</u>	4
4.	<u>Maximizing Returns to Investment in Research</u>	5
B.	Project Goal and Purpose	5
C.	Assistance Interventions	6
1.	<u>Horticulture Component</u>	7
2.	<u>Food Crop Component</u>	12
3.	<u>Program Support and Project Operations</u>	14
D.	Participation in Design	16
II.	PLAN OF ACTION	17
A.	USAID Actions	18
1.	<u>Office of Agriculture (AGR/A)</u>	18
2.	<u>Relationship with Other USAID Projects</u>	19
B.	Host Country Actions	21
C.	Private Sector Actions	22
D.	Other Stakeholders and Beneficiaries	23
III.	DEFINITION OF SUCCESS	25
A.	Intended Results	25
B.	Indicators of Success	25
1.	<u>Project Purpose Achievement</u>	25
2.	<u>Project Level Progress</u>	26
C.	Monitoring	26
D.	Time Frame for Achieving Results	27
E.	Use of Information in Decision Making	28
IV.	ANALYSIS OF FEASIBILITY, KEY ASSUMPTIONS AND RELATED RISKS	29
A.	Project Feasibility	29
B.	Key Assumptions and Risks	29
1.	<u>U.S. Legislation and USAID Regulations</u>	29
2.	<u>Appropriate Agricultural Research</u>	30
3.	<u>Trade Liberalization</u>	30
4.	<u>Acts of God</u>	31
V.	FINANCIAL PLAN	32
A.	Resource Requirements	32
B.	Costs	38
1.	<u>Public Sector Recurrent Costs</u>	38
2.	<u>Private Sector Cost Sharing</u>	38
C.	USAID Management Costs	39
VI.	MANAGEMENT PROCEDURES	41
A.	Management Systems and Procedures	41
B.	Procurement Plan	41
C.	Procurement Schedule	45

ANNEXES

- A. Logical Framework
- B. Technical Analysis
- C. Social and WID Analysis
- D. Institutional and Administrative Analysis
- E. Economic Analysis
- F. Financial Plan and Analysis
- G. Customer and Partner Survey
- H. Analysis of Potential Competition between U.S. and Egyptian Agricultural Exports
- I. Statutory Checklist
- J. Grantee Request for Assistance
- K. Initial Environmental Examination
- L. Gray Amendment Certification

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ACRONYMS

ADS	Agricultural Development Services Project
AERDRI	Agricultural Extension Rural Development Research Institute
AERI	Agricultural Engineering Research Institute
AGR/A	Office of Agriculture, Agricultural Resources Directorate, USAID/Cairo
ARC	Agricultural Research Center
ARREC	Agricultural Regional Research and Extension Councils
ATUT	Agricultural Technology Utilization and Transfer
APRP	Agricultural Policy Reform Program
CAAES	Central Administration for Agricultural Extension Services
CAH	Central Administration for Horticulture and Vegetables
CARS	Central Administration for Research Stations
CAS	Central Administration for Seeds
CGIAR	Consultant Group for International Agricultural Research
CID	Consortium for International Development
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CRSP	Collaborative Research Support Program
DRC	Desert Research Center
EED	Export Enterprise Development Project
EEPC	Egyptian Export Promotion Center
ENAL	Egyptian National Agriculture Library
EU	European Union
GDP	Gross Domestic Product
GOE	Government of Egypt
GOEIC	General Organization for Export and Import Control
IARC	International Agricultural Research Center
ICARDA	International Center for Agricultural Research in the Dry Areas
IFP	Implementation and Financial Plan
INTSORMIL	International Sorghum and Millet Project
IPM	Integrated Pest Management
IPGRI	International Plant Genetic Resources Institute
IRR	Internal Rate of Return
IRRI	International Rice Research Institute
LE	Egyptian Pounds
MALR	Ministry of Agriculture and Land Reclamation
MIS	Management Information System
MPWWR	Ministry of Public Works and Water Resources
MALR	Ministry of Agriculture and Land Reclamation
NARP	National Agricultural Research Project
NOI	National Oceanographic Institute
NRC	National Research Center
LC	Local Currency
PACD	Project Assistance Completion Date
PASA	Participating Agency Service Agreement
PIL	Project Implementation Letter
POU	Project Operations Unit
PSU	Program Support Unit
TA	Technical Assistance
TDC	Trade and Development Center
TI	Directorate for Trade and Investment
TTC	Technology Transfer Component
USDA	United States Department of Agriculture
WID	Women in Development

EXECUTIVE SUMMARY

The goal of the six-year, \$50 million Agricultural Technology Utilization and Transfer Project (ATUT) mirrors the Mission's Strategic Objective No. 3, which is to increase production, productivity and incomes in the agricultural sector. The purpose of ATUT, which contributes to Program Outcome No. 3.2, is to improve technologies developed and adopted for the production, processing and marketing of select agricultural commodities. Combined with programs in agricultural policy reform and improving water and land use efficiency, ATUT completes the Mission's comprehensive agricultural development strategy. The recently approved Agricultural Policy Reform Program (APRP) will play an important role in inducing the required institutional and policy reforms in the Ministry of Agriculture and Land Reclamation (MALR) that are necessary for research to be utilized at peak efficiency.

Expected achievements resulting from ATUT assistance include: 1) adoption of new production and marketing-related technologies; 2) increased volume and value of horticulture exports; 3) increased value-added of fresh fruits and vegetables; 4) improved food crop genetic material put into production; and, 5) increased productivity of selected food crops.

The two major components of ATUT are to: 1) identify and transfer to the private sector new horticultural production, post-harvesting and marketing technologies; and, 2) develop a carefully focused, collaborative strategic research program aimed at resolving the major constraints to increased productivity of selected staple food crops such as rice, corn, wheat and fava bean. In addition, the project includes a program support and project operations component to conduct additional economic and commodity systems studies, monitor project performance and impact, and provide routine project administration.

Under the **Horticulture Component**, ATUT will directly address the lack of export-related production, processing and marketing technologies that seriously impede the generation of potentially large revenues derived from the export of horticultural products. This will be accomplished without ignoring the domestic market. The Horticulture Component includes activities in technology transfer and adaptive research.

For the technology transfer activities, ATUT will provide technical and financial assistance for activities related to the transfer (or adaptation) of existing technologies in production, harvesting, post-harvesting, packing, processing and marketing of select horticultural products. Since some of these technologies are as much related to management practices as tangible products such as new plant varieties, the information will be transferred in a variety of ways, e.g, seminars, workshops, pamphlets, the use of expert systems, and other methods. Some of the technology required to address the problems faced by the private sector may not exist in Egypt, in which case trips to the U.S. or third countries will be organized, or experts will be invited to make presentations to the Egyptian private and public sector.

For commodity systems constraints that may require adaptive research, there will be a program of collaborative research grants funded under ATUT. These adaptive research grants will be developed collaboratively with the private sector, and U.S. and Egyptian institutes and universities, either individually or in combination, to address the constraints identified. The grants will identify the problems to be addressed, establish means of verifying progress, and explain how the technology will be adopted and transferred to the end-user. When evaluating grant proposals, weighted criteria will be assigned to favor sustainable agricultural practices, e.g., reducing the inefficient use of agricultural chemicals and increasing water-use efficiency at the field level. Additional criteria, such as impact on employment and the "spread effect," as well as participation of the private sector, will be applied to select the most competitive proposals for increasing production, productivity and income.

Under the **Food Crops Component**, ATUT will work with Egyptian scientists in reviewing existing food crops research programs to identify the major constraints to increasing productivity of at least three important cereals (wheat, rice, and corn) and one or more other food crops (e.g., fava bean). Based upon this analysis, these critical problems will be rank ordered. ATUT will provide a multi-year program of short-term technical assistance to scientists within Egyptian research institutions to address these important areas.

The strategic program may include research in: integrated pest management (IPM) for cereal crops; genetic engineering for pest or disease resistance; and, traditional breeding for drought tolerance of higher grain yields. The objective of this component is to identify the most pressing constraints, develop a program of scientific interaction via short-term consultancies and site visits, and fund the exchange of information, scientists and genetic material in support of the specific project activities identified.

ATUT will be implemented through the Ministry of Agriculture and Land Reclamation (MALR) with technical assistance provided under a USAID direct contract with a U.S. consulting firm, either alone or in combination with a U.S. university or a consortium of universities. The Food Crops Component will be implemented by the USDA through a Participating Agency Service Agreement (PASA). Project operating funds will be budgeted annually against a "strategic plan" or "implementation and financial plan" as has been customary with MALR under other USAID-financed projects. The strategic plan will be jointly developed with private sector input and will be approved by USAID. The Mission's Agriculture Office in the Directorate for Agricultural Resources (AGR/A) will certify that the annual workplan has been developed with collaboration from private sector producers and exporters, both large and small, and that the document reflects their needs and concerns. Local currency costs will be approved and funding levels established by Project Implementation Letters (PILs). The U.S. technical assistance team will be responsible for jointly developing an approved funding mechanism for grants or subcontracts for adaptive research, while USDA will manage the Food Crops Component's "international linkages" activities. ATUT will also finance reasonable costs for the local support of the approved food crops program, but will not provide for generalized budget support costs of participating research, economic development or technology transfer institutions.

As indicated in the technical, economic, financial and institutional analyses described in the annexes, the project is feasible on all accounts. As noted in the economic analysis (see Annex E), even small additional investments, carefully focused on the critical constraints to increased productivity, will result in major benefits to Egypt. Considering the minimum markets for just grapes and oranges, the internal rate of return (IRR) is estimated to be 24 percent, with 66,000 jobs either created or maintained, labor incomes increased by almost \$40 million, and exporters earning \$62 million in profits. If the maximum markets are met, approximately 107,300 jobs are affected, generating \$54.8 million in labor income and approximately \$132 million in export profits, and the IRR reaches 48 per cent. The combined impact of policy reforms and the use of improved technology on wheat production has enabled Egypt to reduce its wheat imports by more than an estimated \$1.5 billion in the 1990s. With targeted research, similar gains can be made for maize, rice, corn and fava beans under the Food Crops Component of ATUT. Clearly, ATUT has the capability of generating considerable benefits that far exceed the costs of the project.

I. STATEMENT OF PROBLEM, PROJECT PURPOSE, AND ASSISTANCE INTERVENTIONS

A. Problems to be Addressed

The agricultural sector is defined as the integrated system of food and fiber production, marketing, processing and distribution. The sector thus includes not only on-farm production, but all activities related to: 1) agroindustrial food and fiber processing; 2) inputs, equipment and energy for agriculture and agroindustry; 3) agribusiness services such as transportation, storage, trade and distribution of food and fiber products; and, 4) the agricultural support sector, e.g., research and development, market information and agricultural credit.

Half of all Egyptians live in rural areas in which agriculture is the primary economic activity. Agricultural production, marketing and processing in Egypt accounts for approximately 40 percent of Egypt's Gross Domestic Product (GDP), nearly 50 percent of employment and 22 percent of total commodity exports. Egypt will be unable to meet the food needs of its growing population with a strategy of increased production alone. The appropriate strategy must also create a significant increase in the value of broad-based agricultural production for both export and domestic markets, while emphasizing Egypt's comparative advantage in certain important food crops. This requires increasing productivity and income from scarce land and water resources, and the utilization of environmentally sustainable technologies to safeguard the resource base.

This project will focus on two important areas of agriculture: (1) horticultural crops to increase their value and export potential; and, (2) selected food crops to help assure food security. For Egypt's agricultural economy to grow, technological constraints must be overcome in both of these two subsectors. Egypt's approach to development is one of "self-reliance," i.e., produce what can be produced efficiently and import the balance. Continued increases in food crop production is vital to feed the growing population and increased earnings from exports are necessary to finance food imports and increase incomes. ATUT is designed to stimulate economic growth in the agricultural sector through increased production, productivity and income, and from increased production and post-production employment.

1. Horticultural Component

Economic and policy changes, coupled with government research and extension efforts, have produced dramatic production results in Egyptian agriculture since 1987. The stage is now set for further dramatic improvements in the horticultural sector.

The recent liberalization of economic and agricultural policies has already provided increased economic incentive for farmers to produce larger quantities of horticultural products. It is important to coordinate the production capacity with the quality and quantity required for exacting export markets to avoid such costly fluctuations in quantity demanded.

To resolve problems associated with this market instability, there has been a concerted call to address those marketing constraints that are limiting further growth in horticultural exports. These constraints include the lack of: production of consistently high quality products; established grades and standards for European export; and, proper handling procedures that do not damage the product needlessly.

ATUT will directly address the limited adoption of export-related production, processing and marketing technologies that seriously impede the generation of potentially large export-derived revenues. International trade in horticultural products worldwide has expanded from \$30 billion to \$63 billion (110 per cent) over the last decade, with strong evidence that this trend will continue. Major improvements in post harvest handling and transportation technology have greatly enhanced the ability to deliver fresh produce to distant consumers.

The countries of the European Union (EU) are the world's largest importers of fresh fruits and vegetables (53 percent of world trade), with imports growing 143 percent over the last decade. Although the EU production of horticultural crops is large, there are climatic limitations that prevent economical production of most fruits and vegetables during the winter season. This is one example of a profitable window where non-EU countries, such as Egypt, can compete. Transportation costs for refrigerated fresh fruit and vegetables can be quite high and are often a higher percentage of the final market price than actual production costs. Egypt is close enough to economically move most products by ocean carrier in seven days or less, thus making its proximity to the EU market an important advantage over other exporters.

At present, horticultural crops occupy only 16 percent of agricultural land while accounting for some 40 percent of value added. A strong domestic and improving international export market exists for horticultural products. Horticultural commodities are water efficient, land saving and labor absorbing, all of which are important in increasing productivity and income in the agricultural sector. Processing of high value horticultural products can further increase value added and significantly absorb significant additional amounts of labor.

For thousands of years, Egyptian farmers, who are among the best in the world, have demonstrated their capacity to respond to intensive agriculture. These farmers can easily adapt to the

demands of technically more demanding production if it is properly introduced and there are sufficient incentives. Moreover, Egypt has an abundance of labor available for intensive production, harvesting and processing of the crops that will be addressed under the ATUT.

A recent World Bank study suggests that Egypt's greatest comparative advantage lies in agricultural-based exports, including processed foods and textiles. Results of that study and other commodity systems studies under the National Agricultural Research Project (NARP) confirm that the most important engine of growth for Egypt in the next decade will be agricultural exports.

NARP-funded studies indicate that the most dramatic potential market opportunity is for seedless grapes in EU markets, which have an unsatisfied profitable demand for as much as 144,000 metric tons. This could generate an annual export value of over \$150 million. The annual labor requirements for a single acre of grapes has been estimated at 125 person days for production-related activities alone. Thinning the grapes and pruning the bunches, harvesting, packing and other post-harvest related activities add considerably to the employment generated from a single commodity. It is clear that a dramatic surge in exports could lead not only to a substantial increase in employment but a doubling of farm incomes.

A NARP-funded study of horticultural commodities states that the employment increase as a result of production and distribution of improved seeds and seedlings, fertilizers, drip and sprinkler irrigation equipment, pesticides, horticultural and post-harvest consulting services and farming equipment are very significant and politically important. This employment, coupled with a dramatic increase in export packing houses, packaging materials production and distribution, transportation and port handling operations gives an idea of the growth potential from increasing export of high value horticultural crops. A major economic and political benefit of that process is that much of the employment would be outside Cairo, in or around secondary cities.

2. Food Crops Component

Wheat, rice and maize are Egypt's major cereal crops, which are cultivated on over 4 million feddans by almost every farmer, particularly the smallest farmers. These crops are the most important in the Egyptian diet and in the rural economy. Egypt has a comparative advantage in the production of these cereal and food crops and has made important gains in their yields. For example, total wheat production more than doubled from 1986 to 1992 as a result of a 38 percent increase in yields as well as an increase in acreage. In addition, rice production

has almost doubled since 1980. Already high rice yields increased dramatically beginning in 1988 from 5,830 to 7,710 kg/ha in 1993, an annual average increase of 313 kg/ha/year. This phenomenal rate is the highest rate of growth in the world for that period.

These remarkable annual yield increases can only be sustained through a continuation of agricultural research support in basic food crops. Thus, ATUT will develop and implement a program to link Egyptian and international scientists in the U.S. or at international centers such as the International Rice Research Institute (IRRI), the International Center for the Improvement of Corn and Wheat (CIMMYT) and the International Center for Agricultural Research in the Dry Areas (ICARDA). A carefully targeted exchange program among international and Egyptian scientists will ensure that Egypt continues to access research undertaken worldwide. Without continuing international collaboration, Egypt risks losing important research linkages, some of which are directly credited for increases Egypt has made recently in food crop yields. ATUT's support for strategic research will build upon the currently established network, providing opportunities to build upon these important annual gains in food crop yields.

It should be noted, however, that historically high yields of cereals may have been due in part to subsidized inputs. Thus, production may decline in the short term as farmers adjust to higher input prices. Given the reduction in input subsidies, research support that identifies high yielding varieties of food crops, especially those varieties that rely less upon chemical inputs or contain resistance to common diseases and pests, is crucial if Egypt is to maintain the productivity gains that have been registered over the past decade. Furthermore, new varieties of wheats, for example, are required each 5-6 years simply to retain resistance to common pests and diseases. International research centers allocate no less than forty percent of their annual budgets to breeding programs merely to maintain the yields they presently get from the varieties under cultivation. It is vital for Egypt's agricultural economy to continue to access international experts for increasing productivity and income of their major food crops.

3. Sustainability

An important cross-cutting theme of this project is the emphasis on technologies that will improve water-use efficiency and reduce the uneconomical use of agro-chemicals, especially those having potentially serious long-term environmental effects. For example, development of drought and saline tolerant cereals and improvements in water-use technologies could increase returns

from the most limited factors of production, i.e., water and land.

Reducing the unnecessary and uneconomical use of chemical inputs will be increasingly important, especially for horticultural products destined for export, as market requirements increasingly call for reductions in chemical use and pesticide residue for entry. The extent of employment generation, water-use efficiency, and the inefficient use of chemical inputs will be considered in the final selection of either adaptive research or technology transfer grants for the horticulture and food crops linkages programs under ATUT.

4. Maximizing Returns to Investment in Research

ATUT will build upon NARP, and other predecessor agricultural research projects, under which a broad agricultural technology development and transfer foundation was established. NARP was a broad "program of support" designed to develop the overall agricultural research capacity within Egypt. A large number of scientists were trained under NARP as well as under its predecessor projects. Research facilities (laboratories and research stations) were significantly up-graded and equipped with scientific research equipment.

The capacity and capability of public sector research is solid. ATUT, following previous investments in research that totals more than \$300 million since 1979, will focus its efforts on the two areas that offer the most promise for sustaining agricultural growth: (1) high value horticultural products; and, (2) selected food grains. ATUT will further build upon management systems developed under NARP to select, monitor and evaluate a competitive, collaborative research grants project. Most importantly, and a significant departure from previous efforts, ATUT will work closely with the private sector in identifying specific research activities and export opportunities.

B. Project Goal and Purpose

ATUT's goal mirrors, and its activities respond to, the Mission's Strategic Objective No. 3, "increased production, productivity and income in the agriculture sector." The project's purpose, which will contribute to Program Outcome 3.2, is to improve technologies developed and adopted for the production, processing, and marketing of selected agricultural commodities.

USAID/Cairo's Program Strategy recognizes that agriculture can provide significant impetus to and help sustain economic growth, expand employment opportunities and increase income from the

sector and for the national economy. The strategy calls for USAID funded research and technology transfer activities to disseminate new methods and varieties for growing basic food crops, but with an increasing emphasis upon higher value fruits and vegetables for export. The Mission's Program Strategy highlights the need to adapt and disseminate technologies to agribusiness to improve post-harvest handling, marketing and processing of agricultural commodities. It should be noted that ATUT will not be working to improve technologies developed and adopted for all agricultural commodities, but only those selected crops showing the most potential. Thus, it is in this context that ATUT will contribute to Program Outcome 3.2.

Furthermore, ATUT responds directly to USAID's economic growth initiative; "AID will continue to support agricultural research Work that has had a global impact and is indispensable to developing new methods and technologies that enhance growth and food security." ATUT will also directly respond to the Agency's growing concern over environmental protection, emphasizing soil and water conservation, integrated pest management, and reduction in the use of pesticides. The selection of specific grants under ATUT will include criteria to address not only increased income, production and productivity, but also such environmental concerns as water use, water quality and reduction in pesticides leading to sustainable growth in the agricultural sector.

ATUT is consistent with the Government of Egypt's (GOE) strategy as described in the World Bank/GOE review of agricultural needs and options. The GOE's objectives are to increase agricultural productivity per unit of land and water through more efficient use of limited resources and to reduce unit costs of production, thereby increasing national output and farmers' incomes. The GOE strategy emphasizes ecological sustainability and the importance of agriculture's contribution to overall food security needs of Egypt directly through increased production of food grains and indirectly through increased export earnings.

C. Assistance Interventions

ATUT will provide support for flexible, private sector-oriented, demand-driven investment in the development and utilization of technology to raise the productivity of selected horticulture and food crops and the income derived from production, processing, marketing and exportation of these commodities. Because of the need to sustain the resource base of Egyptian agriculture, the project will also, to the extent feasible, transfer or adapt technologies aimed at reducing the uneconomical use of chemicals and increasing water-use efficiency (e.g., integrated pest management, genetic resistance to plant pests, and salt tolerant varieties). Grant funds for technology transfer and adaptive research in horticulture and the strategic

research program under the food crops component will allow ATUT to respond efficiently to problems and opportunities that may arise.

The two major components of the ATUT project will be to: 1) identify and transfer new horticultural production, post-harvesting and marketing technologies to the private sector; and, 2) develop a carefully focused, collaborative strategic research program aimed at resolving the major constraints to increased productivity of selected staple food crops (rice, corn, wheat and fava bean). In addition, the project will include a program support unit and a project operations unit. The program support unit is designed to undertake impact and performance measurement, additional studies and analyses, while the project operations unit will perform financial and personnel administration, routine project reporting, and audit coordination.

1. Horticulture Component

The Horticulture Component of ATUT will utilize a "commodity systems" (subsector) approach in developing its technology transfer and adaptive research grant activities. "Commodity systems" is an approach that highlights all aspects of an individual crop, from production to marketing. This focus provides a framework for participation, identification and coordinated actions among public and private sector participants.

A commodity subsector is a grouping of economic activities, related both vertically and horizontally by market relationships, as a means of determining production, post-harvest and marketing constraints and to assess program needs to address these constraints. Unlike projects that concentrate on specific parts of the process, such as production or post-harvest, ATUT will address the entire process, beginning from production, through harvesting, to post-harvest handling and processing of a select number of high value horticultural commodities. A program of market related studies will complement the activities planned in the Horticulture Component to examine and identify heretofore unknown constraints.

ATUT will focus on only the most important crops in terms of market profitability, employment, income generating potential and resource use efficiency. Promising crops include table grapes, tomatoes, potatoes, melons, green beans, asparagus, green pepper, garlic, and onion. Feasibility studies of other crops may be undertaken to estimate their export potential for Egypt. Focussing on select, high value horticulture crops will allow for quick and efficient identification of the exact research, management and technology changes required.

The case of seedless grapes offers an example of how the commodity systems approach works and how the major actors participate in the establishment of an action plan. Existing "commodity councils" of growers, buyers and exporters will jointly develop, in collaboration with Egyptian researchers and the ATUT Technical Assistance Team, a list of problems or constraints faced in increasing exports and earnings from the production of grapes. Once categorized, this "demand" for technology or listing of constraints may fall into such areas as: policy and regulatory issues; technology transfer activities; management issues; and adaptive research activities. Some of the problems faced by exporters include: the high cost of air freight to Europe compared with regional competitors; the difficulty in getting genetic material into Egypt to test; the high "transaction costs" of exporting agricultural products; the quality and deterioration of the export packaging (specifically the cardboard containers used), and subsequent loss of value due to the products poor condition upon arrival in Europe; and, the need to understand how to prune grape bunches to develop the shape preferred by importers. Production-specific constraints for grapes include pesticide residue levels, and the need for early maturing varieties to reach European markets in May.

The regulatory, policy and infrastructure investment constraints identified can be studied under ATUT, but will be more easily addressed and resolved through other activities within the Mission's portfolio, e.g., the Agricultural Policy Reform Program (APRP). ATUT will simply not have the resources to resolve any such constraints. On the other hand, constraints such as the quality of packaging material requires no adaptive research, but merely the application of known technology that can be relatively easily transferred. Management-related constraints and certain technology transfer constraints could be addressed through seminars and field trips. Finally, production related constraints might be best addressed through collaborative, adaptive research.

Under a commodity systems approach, any problem related to an individual crop, such as grapes, will be eligible for examination and resolution through ATUT funding. The Horticulture Component under ATUT is divided into two approaches: 1) technology transfer, and 2) adaptive research.

a. Technology Transfer

Technology transfer under ATUT will not be limited to the traditional interpretation that technology transfer equals extension and that extension is done by extension agents exclusively to small farmers. Technology transfer also includes technology passed from business person to businessperson, from research to businessperson and vice versa, and from expatriate

consultants to conferees. Transfer takes place during international site visits, visits to research stations, farmers' fields, processing centers, the use of expert systems programs, and seminars and workshops. ATUT will devote considerable financial and human resources to this interpretation of technology transfer. The technology transfer agenda, specific to ATUT crops, will be annually developed with the active participation of farmers, agribusinesspersons, traders, exporters and processors.

ATUT will provide assistance for activities related to the transfer (or adaptation) of existing technologies in production, harvesting, post-harvesting, packing, processing and marketing of select horticultural products. Once developed, the information can be transferred in a variety of ways, e.g., seminars, workshops, pamphlets, and other methods. Some of the technology required to address the problems faced by the private sector may not exist in Egypt, in which case trips to the U.S. or third countries will be organized, or experts will be invited to make presentations to the Egyptian private and public sector. The private sector will contribute to the costs for some of these activities, as was the practice under NARP. These costs will include lodging and subsistence expenses for out-of-country travel, and registration fees for workshops and seminars to help defray the costs of publications used in the courses.

Egypt has had considerable positive experience in the transfer of technology. For example, NARP sponsored a trip to Chile to study grape production that included fourteen members of the private sector. As a result of the information gathered on the trip, the private sector participants wrote a detailed technical report that has been used extensively by other Egyptian grape growers. All of the participants adopted some technology as a result of the trip to Chile, including improvements in handling, production, and the use of incentives to improve the efficiency of packing house workers.

b. Adaptive Research Grants

For commodity systems constraints that may require adaptive research, there will be a program of collaborative research grants funded under ATUT. Grants may include activities ranging from production through marketing.

The initial identification of the need for an adaptive research grant will be undertaken by participants from the private and public sector through the development of annual strategic plans (see Section II, Plan of Action). For example, grape growers may express the need for an earlier maturing variety of seedless grapes for export to Europe in May. These varieties, adapted to Egyptian conditions, are not available. Thus, "early maturing

grapes" would be included on a list of eligible topics for adaptive research grants. The technical assistance team, along with the participating Egyptian scientists and the private sector, would then develop a competitive grant process to determine how best to achieve early maturity of grapes, as well as any other topics or needs identified. All horticultural adaptive research grants will be collaborative, i.e., they will include U.S. and Egyptian institutes and universities, along with the Egyptian private sector, to address the constraints identified. The grants will identify the problems to be addressed, establish means of verifying progress, and explain how the technology will be adopted and transferred to the end-user. The availability of these adaptive research grants would then be advertised.

A joint U.S. and Egyptian panel will be convened to review the various grant proposals. When evaluating grant proposals, weighted criteria will be assigned to favor sustainable agricultural practices, e.g., reducing the uneconomical use of agricultural chemicals and increasing water-use efficiency at the field level. Additional criteria, such as impact on employment and the "spread effect," will be applied to select the most competitive proposals for increasing production, productivity and income. The participation of small farmers in ATUT will be an important aspect of ATUT implementation and monitoring. Grant selection criteria will include an assessment of the appropriateness of the crop or the technology for small farmers to ensure their equal participation. Importantly, all grants must have some private sector participation, either in terms of transferring the technology or in providing in-kind support for the research. To maximize impact, the project will strive to select grant proposals that are limited in duration and funding requirements, although larger proposals that appear promising will not be rejected out of hand. Finally, all approved grant proposals will be carefully vetted to ensure their compliance with U.S. legislation, such as the Bumper's Amendment.

The process for selecting and managing adaptive research grants follows on USAID experience under NARP, through which 256 local grants and 28 international collaborative research grants were executed. The addition of the private sector representatives on the selection committees will be the only new feature under ATUT. Because ATUT will follow on previous NARP support to the Agricultural Research Center (ARC) for lab equipment, vehicles, and academic/professional training, additional expenditures in these areas will be minimal. In addition, NARP has developed effective management and administrative systems that can be used under ATUT.

HORTICULTURE



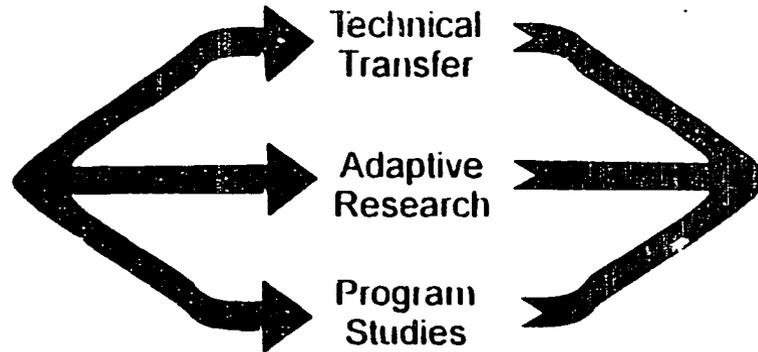
Commodity Council
(Private Sector, MALR, USAID & Technical Assistance)



Commodity Systems Approach



Joint Needs Assessment

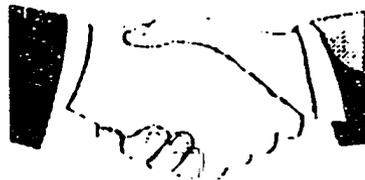


Technical Transfer

Adaptive Research

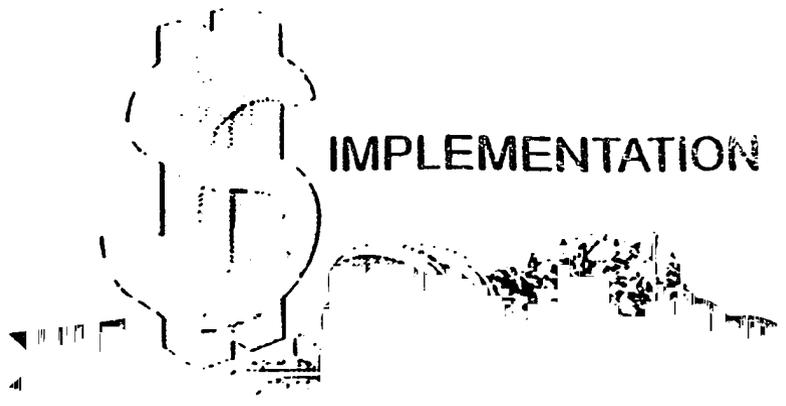
Program Studies

Joint Annual Plan Development



Plan a

IMPLEMENTATION



2. Food Crop Component

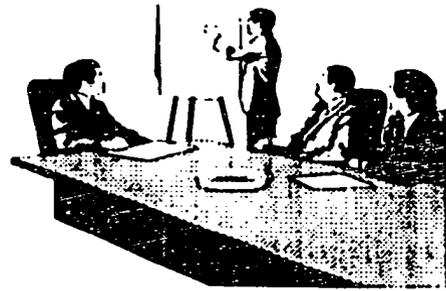
The food crops research institutions in Egypt are well equipped with a well-trained staff, due in part to previous USAID and other donor support. Therefore, there is no longer a need to provide the "traditional" agricultural research project assistance, i.e., an expensive long-term technical assistance team, full coverage of operating expenses, academic training and commodity procurement for participating laboratories. These research institutes, however, must continue to have access to the research being undertaken in the U.S. and at international centers such as IRRI, CIMMYT, and ICARDA. Without access to emerging new technologies, the progress made in important areas of research, such as breeding programs and crop management, will slow dramatically. ATUT will thus provide assistance for a strategic research program in important food crops to ensure continued access to international research and genetic material.

ATUT will work with Egyptian scientists in reviewing existing food crops research programs to identify the major constraints to increasing productivity of at least three important cereals (wheat, rice, and corn) and one or more other food crops (e.g., fava bean). Based upon this analysis, these critical problems will be rank ordered. ATUT will provide a multi-year program of short-term technical assistance to scientists within Egyptian research institutions to address these important areas.

The strategic program may include research in: integrated pest management (IPM) for cereal crops; genetic engineering for pest or disease resistance; and, traditional breeding for early maturity, drought tolerance or higher grain yields. The objective of this component is to identify the most pressing constraints, develop a program of scientific interaction via short-term consultancies and site visits, and fund the exchange of scientists and genetic material in support of the specific project activities identified.

The approved food crops "linkages program" proposals will be competitively selected to ensure that the major issues are addressed. Funds will also be provided for participating Egyptian scientists to attend international conferences in their related fields.

FOOD CROPS



Strategic Research
Planning Process



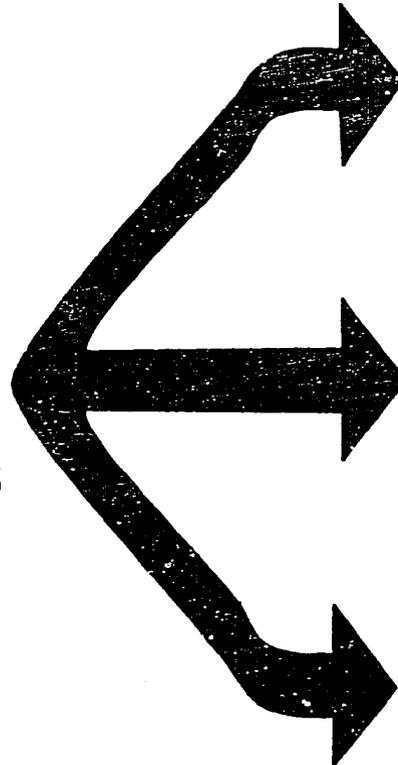
Crop Priorities
Established



Collaborative
Research



INTERNATIONAL CENTERS
MULTI-YEAR PROGRAM
COMMITMENT



Conference
Travel



Communications

3. Program Support and Project Operations

ATUT will include a Program Support Unit (PSU) and a Project Operations Unit (POU). Both units will report directly to the Project Director and be supported by U.S. technical assistance.

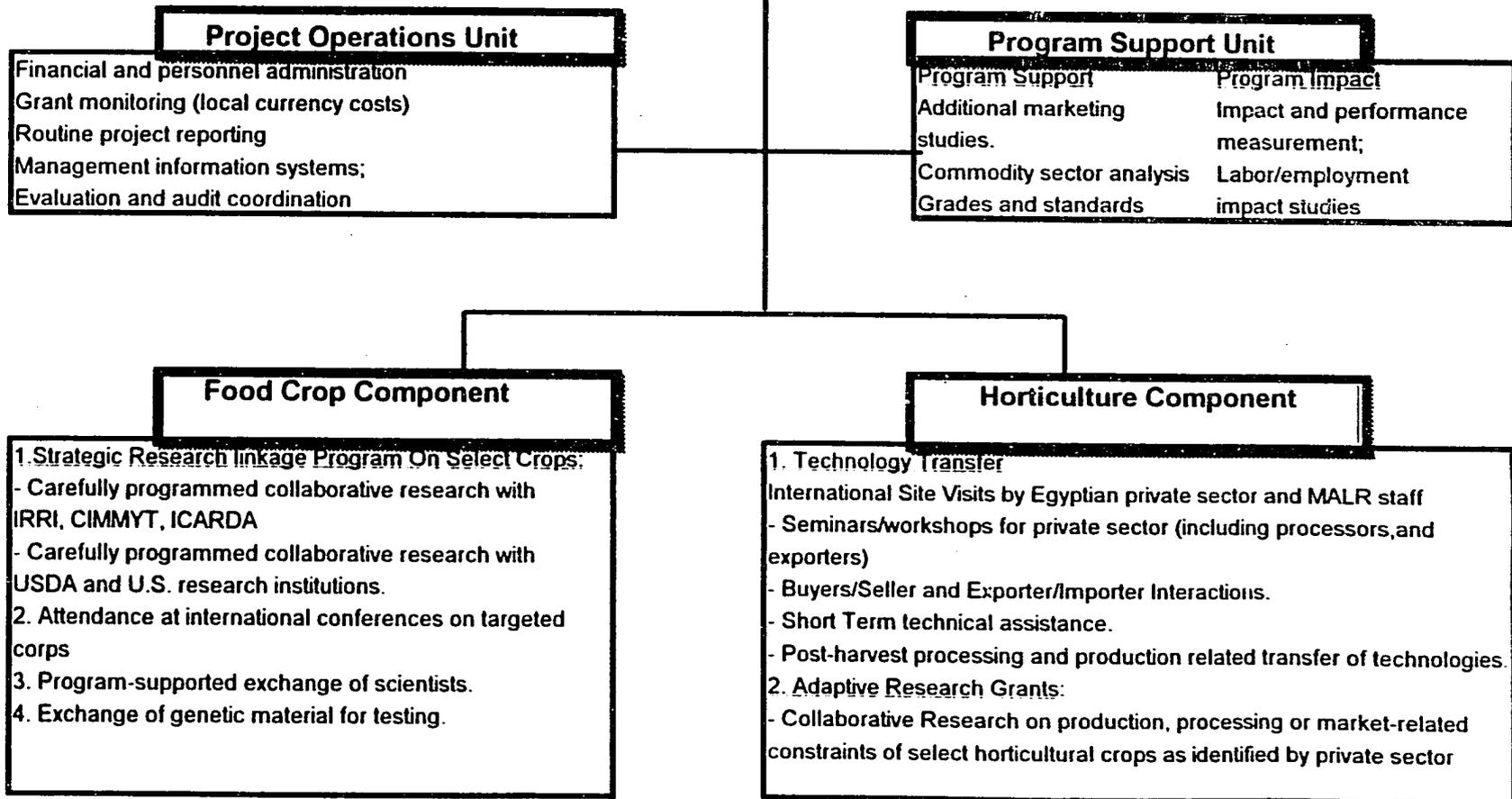
a. Program Support Unit

The function of the PSU will be to: (a) monitor and measure the impact and performance of the project; (b) conduct marketing or commodity sector assessments to identify additional horticultural crops that might be developed for export; (c) carry out assessments of marketing or management information systems; (d) introduce new initiatives such as a "grades and standards" program and pesticide residue certification program; (e) provide specific program-related studies on topics such as the detailed impact on employment of various crops, from production through export marketing; and (f) other studies as may be desired in support of ATUT's objectives. In general, the program support activities are designed to respond to unanticipated needs of the private and public sector and constraints not exclusively related to an individual crop.

b. Project Operations Unit

The POU will ensure competent financial and administrative management of the project. The POU will undertake such activities as developing and operating the Project Management Information System, processing routine financial reporting requirements and overseeing the local currency costs of the strategic research grants under the Food Crops Component. There will be an expatriate Administrative and Finance Officer associated with this unit. The unit will monitor the management and the impact of the adaptive research grants, the food crops "linkages" program and coordinate operations with the Mission's AGR/A Office.

ATUT



This Chart is illustrative only; additional tasks may be assigned.

D. Participation in Design

Throughout the design of the project, an interactive consultative process among the USAID design team and exporters, growers and government officials has been practiced. Participatory methods used include: numerous site visits and field trips to discuss with farmers and exporters the constraints to producing and exporting horticultural crops and the role of ATUT in addressing these constraints; distribution of questionnaires to horticultural farmers, exporters and researchers (see Annex G), soliciting their ideas and recommendations concerning the design and implementation of ATUT; and, inviting government officials, farmers and exporters to participate in the internal Mission review of the project. This participatory approach, which heavily involves our customers and partners, will continue throughout the life of the project.

II. PLAN OF ACTION

This section outlines a proposal to manage ATUT to ensure the full participation of the private sector without either creating a new non-public entity or overburdening an existing organization with management responsibilities. Caution was taken to not over-design how the project will work to allow the technical assistance offerors the flexibility to develop and propose their own ideas about how ATUT could best be organized to achieve its objectives. This will provide a means of distinguishing and selecting among offerors in completing the selection of the technical assistance firm.

ATUT will be implemented through the MALR with technical assistance provided under a USAID direct contract with a U.S. consulting firm, either alone or in combination with a U.S. university or a consortium of universities. The Food Crops Component will be implemented by the USDA through a PASA. The monitoring of project impact and performance may be undertaken through a separate contractor, possibly hired with non-ATUT funds.

Project operating funds will be budgeted annually, or on a multi-year basis, against a "strategic plan" or "implementation and financial plan" as has been customary with MALR under USAID-financed projects. The strategic plan will be jointly developed with private sector input and will be approved by USAID. The Mission's AGR/A Office will certify that the annual workplan has been developed with collaboration from the private sector, both large and small, and that the document reflects their needs and concerns. Local currency costs will be approved and funding levels established by Project Implementation Letters (PILs). The U.S. technical assistance team will be responsible for jointly developing an approved funding mechanism for grants or subcontracts for adaptive research, while the United States Department of Agriculture (USDA) will manage the Food Crops Component's "linkages activities." ATUT will also finance reasonable costs for the local support of the approved food crops program, but will not provide for generalized budget support costs of participating research, economic development or technology transfer institutions.

The following is a possible approach that ATUT could adopt in developing the annual strategic plan:

- A 2-3 day planning session in Cairo with the private sector, researchers, technology transfer specialists, technical assistance team members and USAID staff. The private sector would be encouraged to attend or they could send agenda items for consideration.

- A 2-3 day planning session in the field at regional research and extension centers to ensure participation of small producers. Committee composition would be similar to that for the planning session in Cairo.
- A 2-3 day synthesis workshop to develop a draft Strategic Plan. The Synthesis Workshop would categorize:
 - Technology Transfer Activities (e.g., site visits, seminars, workshops) by topics and by crops, such as the need to visit Chile during pruning season or packing season or a seminar on pre-cooling technologies.
 - Adaptive research needs by topic and by crop such as developing an earlier maturing grape variety for export to Europe or biological control of tomato yellow leaf curl virus.
 - Studies, e.g., a profitability analysis of asparagus in the European market.
 - Data base requirements to support international trade information under the MIS.

A. USAID Actions

1. Office of Agriculture (AGR/A)

USAID will be a full partner in the development, implementation and monitoring of the ATUT Project, from design through the final evaluation. The technical assistance provided under ATUT will be through a USAID direct contract. The Mission will be fully involved in the initial dialogue with the private sector concerning their role in the development of the "demand driven" agenda for establishing annual strategic plans under the Horticulture Component. The Mission will help to link the needs of the private sector with the research capability available in Egypt and the U.S. Both the adaptive research grants under the Horticulture Component and the strategic research program under the Food Crops Component will be developed jointly among the technical assistance team and Egyptian and Mission personnel to ensure that it meets the objectives of the project. The Mission's AGR/A Office will assist in developing the selection criteria for these grants, as well as approving their funding levels, duration and scope. The Mission will have particular interest in developing and monitoring various economic and people-level impact analyses, as well as marketing and employment generation studies under the project's Program Support Unit.

2. Relationship with Other USAID Projects

There are two current Mission projects that will interact with ATUT, the Export Enterprise Development (EED) Project (263-0226), an on-going project managed in the Trade and Investment Directorate, and the Agricultural Policy Reform Program (APRP), which was authorized this fiscal year and is managed in the Directorate for Agricultural Resources. ATUT will work closely with both projects to ensure complementarity.

Export Enterprise Development:

The EED is a \$10.0 million, four-year project. EED's project purpose is to promote Egyptian exports, to increase export earnings and show the benefits of an export-led development strategy. It is designed to assist Egyptian firm's to export from two non-traditional export sectors: non-citrus fruits and vegetables, and light manufacturing. EED focusses on introducing and expanding exports in these product categories to European and Middle Eastern markets. Export related business services and hands-on assistance to the Egyptian private sector are provided to ensure successful transactions. EED also develops and disseminates promotional material and has established an information data base to more efficiently assist local exporters and importers of Egyptian products.

EED is implemented by the Trade and Development Center (TDC), which was created through funding under an earlier project by USAID. The objective of TDC is to increase export generated revenues by providing marketing and training assistance to manufacturers and to processed food and agricultural exporters. Assistance provided includes development of marketing strategies, identification of potential markets and market requirements.

Specifically related to ATUT, TDC has organized agricultural producers and exporters under a new association, the New Desert Growers (NDG). The NDG consists of a federation of eleven agro-industry investors that export fresh fruit to Europe. NARP has provided technical and financial assistance to members of the NDG and to other producers and exporters. NARP assistance has included: the organization and sponsorship of a trip to Chile to study grape production; the development of a four volume commodity systems study of grapes, citrus, tomatoes and potatoes; and, a short-course on "Managing the Fresh Fruit and Vegetable Export Business." A five-commodity marketing study (green peppers, green beans, garlic, mangoes and asparagus) was also funded under NARP to respond to concerns raised by large agro-industrial investors, some of which are NDG members. This is the type of support envisioned under ATUT, i.e., demand driven technology, analysis and adaptive research for the emerging needs of the private sector producers and exporters of high value

horticultural commodities. ATUT will continue the technology transfer process through U.S. and third country site visits, seminars and workshops, as well as studies and adaptive research responding to needs expressed by growers, traders and exporters.

There is no doubt that the two projects complement each other, but there are distinct differences. TDC is specifically organized to meet the expressed export oriented needs of the private sector, including those members of the NDG that represent some of the more well-capitalized and organized producers. ATUT will provide specific, technical marketing expertise for all Egyptian growers and exporters. For example, while the TDC might send participants to an international trade fair to introduce Egyptian grapes to new buyers, the marketing expertise under ATUT would ensure that the grapes produced for the German, French, British and Dutch markets contained the specific acid/sugar ratio, size and color demanded by those markets. ATUT will provide technical expertise for marketing of horticultural crops for all growers and exporters, while TDC provides market promotion and market strategy development for their clientele exporting fresh produce (presently grapes only) and processed food products. TDC will continue to provide assistance in areas such as marketing channels and linkages directly with European Union buyers, and assist with the organization of transportation and training in market development.

The ATUT project team has met with TDC leadership and with the TI Directorate to coordinate ATUT's role in the production and transfer of market-oriented adaptive technology and technology transfer activities to meet the needs of the private sector, including the New Desert Growers membership. While no formal relationship exists, the TI/FI Office representative on the project team will help to link the two projects to expand export marketing through the private sector and promote the transfer of demand-driven horticultural technologies. ATUT, by its nature, is best prepared to develop and transfer market-oriented technology to the private sector. In contrast, TDC and similar organizations are better suited for market development and enhancement of export trade. To be successful, ATUT will need direct feedback from these organizations on the changing requirements of the market place, e.g., varietal preferences, packaging and other specifications by country of destination. Using this information, ATUT will provide the appropriate technology to the producers and exporters.

Agricultural Policy Reform Program:

The Agricultural Policy Reform Program (APRP) is a \$227 million, five year effort designed to remove the remaining policy barriers to private enterprise in agriculture, thereby creating a liberal, competitive marketing system and stimulating sustainable

agricultural growth. APRP will be implemented by the Agricultural Resources Directorate in the Office of Agricultural Credit and Economics (AGR/ACE).

It is anticipated that during ATUT project implementation, there will be concerns expressed by the private sector that will be beyond the mandate of the ATUT project. Such concerns might include issues of a policy or regulatory nature that constrain increased productivity in the sector. A case in point might be the high cost of air freight from Egypt to Europe, especially compared with rates from neighboring countries such as Israel. Other concerns expressed by the private sector include the procedures required for the registration and importation of new agricultural inputs, and the importation of new plant genetic material (e.g., seeds or seedlings).

ATUT will have the resources to study the constraints to increasing production, productivity and income among horticultural or food crops that are identified by the private sector. ATUT will not, however, have the financial resources, the technical ability or the mandate to resolve these issues alone should the problems identified by ATUT be of a policy or regulatory nature. While ATUT may prepare project studies to describe the nature of the problem, it would seek assistance from the Mission's performance-based cash transfer programs such as the APRP and possibly the Mission's Sector Policy Reform Program to resolve the issues identified. These programs are specifically designed to resolve policy-related issues, and have the managerial capability and financial resources suitable for the job.

B. Host Country Actions

The agricultural research and extension personnel of the Ministry of Agriculture and faculty from the agricultural universities in Egypt will have a critical role to play in the development, implementation and overall success of ATUT. These partners will be responsible for responding technically to the requests from the private sector to address their needs in the fields of horticulture and food crops. The GOE will appoint a selection panel of senior representatives from research and technology transfer institutes to participate with representatives of the private sector in the development of annual strategic plans for horticulture. As needs emerge from these meetings and discussions, especially related to technology transfer activities, these senior research scientists will be the initial source of information on available technology that can be transferred or adapted for transfer to the private sector. This selection committee may also serve as a review panel for monitoring of project performance. As with all professional grant programs, selection will be juried by an outside panel of

U.S. and Egyptian scientists to avoid any potential conflict of interest.

In terms of project management, GOE staff will include an overall ATUT Project Director who will be responsible for the administration and coordination of the project. As presently envisioned, the Project Director will have two Component Coordinators responsible for horticulture and food crops. The Program Support Unit will report directly to the Project Director. The Project Director and the Component Coordinators will be assisted by a small Project Operations Unit attached to the Director's office to assist in the administration of the adaptive research grants program and the food crops "linkages" program, as well as to assume overall financial management responsibilities of the project, including administration of personnel.

C. Private Sector Actions

The private sector will also be full participants in the ATUT project. As primary beneficiaries of ATUT, they will enter into informal commodity councils or advisory groups to interact with the research scientists in the development of annual strategic plans. They will be expected to provide feedback on the performance of the project as a whole and specific elements thereof, including the appropriateness of the technology transfer activities and the adaptive research work. Representatives of the private sector will review the scopes of work for proposed studies to ensure that the economic and marketing research under the Program Support Unit is responsive to their needs.

The GOE has committed to continue to work with private sector associations and councils to assist in the development of demand-driven technology transfer or adaptive research programs in horticulture. Thus, there is no need to formalize the "commodity councils." In order to ensure the objectivity of these councils, they should not be legally appointed or otherwise become entities serving under Ministerial decrees. Moreover, these councils will include the representation and full participation of smaller producers, in addition to the larger, more affluent agribusiness firms presently exporting horticultural crops to Europe. The time and location of the strategic planning sessions described above, as well as the activities of the various commodity councils, will be publicized through existing nongovernmental organizations that are in contact with small farmers to further encourage their participation.

The Mission intends that ATUT serve as a mechanism that will lead the MALR toward more demand-driven activities where, eventually, the private sector will buy the research or technology transfer product from the GOE or any other entity that can satisfy their

needs. To facilitate this process, a Board of Directors, which will include members from both the private and public sectors, will be established to focus on ensuring that the private sector's needs are being addressed and the project is moving toward increasing private sector responsibility in carrying out technology transfer and adaptive research activities. The establishment of this Board of Directors will be part of the agenda for the initial annual strategic planning sessions described above. The identification of the board members, along with their roles and responsibilities, will be included in the first strategic plan.

D. Other Stakeholders and Beneficiaries

Primary beneficiaries of the project will include horticultural producers, both small and large. Producers are expected to gain from increased productivity, access to international markets and higher prices for produce sold to the local markets. Domestic consumers should benefit from increased availability, longer seasons, improved quality and stable prices of horticultural products in the local market as a result of high production and increased productivity.

ATUT's emphasis upon high value horticultural products primarily for export will generate significant employment opportunities. Thus, project beneficiaries will also include the rural labor force. Although definitive labor requirement data is not yet available, studies conducted under NARP for four major crops gives an example of the range of labor that can be generated in the production of select horticulture commodities. For example, it is estimated that between 124 and 138 person days per year are required for the establishment and adoption of the recommended first year package of agronomic practices for one feddan of vineyard. After the initial year, a minimum average of 88 person days of labor is required for maintenance. These figures do not include the specialized work of the pruners, who trim the grape flowers to shape the bunches or who remove flowers to establish individual grape size that is required for the export market. This annual labor requirement is estimated to be an additional 100 person days minimum for well trained workers. Importantly, this work is done almost exclusively by women.

Furthermore, these figures do not take into consideration harvesting, post harvest handling, processing or shipping related employment that is also generated. Grape plantings are projected to continue to increase in response to the lucrative European market demand for seedless grapes in early summer. The additional labor requirements for export market production alone will grow significantly in the next several years.

Labor requirements for the establishment, management, harvesting and processing/shipment of strawberries is even more labor-intensive than for grapes. Again, this work is primarily done by rural women, adding an important source of income to the family budget. Given the important role of women in the production and processing of horticulture crops, a gender analysis will be a priority action of the Program Support Unit upon mobilization. Additional studies of the labor requirements for production and processing of other important horticulture crops will also be undertaken through ATUT.

III. DEFINITION OF SUCCESS

A. Intended Results

ATUT will be considered successful if, upon project termination, the target groups are more efficiently producing, processing, and marketing selected agricultural commodities due to the use of improved technologies.

B. Indicators of Success

1. Project Purpose Achievement

- 3 percent average increase in productivity of selected food crops due to the project's inputs over the life of the project.

Baseline (1992)

Rice:	7.7 metric tons/hectare (mt/ha)
Maize:	6.1 mt/ha
Wheat:	5.3 mt/ha

- 10 percent average increase in value-added of fresh fruits and vegetables due to the project's technologies over the life of the project.
- 5 percent average increase in volume of horticulture exports of selected crops due to the project's inputs over the life of the project.

Baseline (see Annex H, Table 6)

- 8 percent average increase in the value of horticulture exports (in 1994 values) due to the project's inputs over the life of the project.

Baseline: \$162,240,000 for fruits and vegetables in 1992

- 25 new production or marketing-related technologies adopted over the life of the project.
- Six strains of improved food crop genetic material successfully put into production over the life of the project.

2. Project Level Progress

- New horticultural technologies introduced to producers and exporters:
 - 25 production technologies introduced
 - 15 post-harvest technologies introduced
 - 15 export-related technologies introduced
- Linkages established with three international research centers or U.S. research institutions.
- Selected crops, biotechnically developed or improved, are tested in farmers' fields.
 - 3 genetically engineered pest resistant food crops developed for testing.
 - 4 varieties of salt or drought tolerant cereals developed.
- 6 strains of genetic material received from U.S. research organizations.
- Mechanism developed to form private sector advisory groups on higher value horticultural export crops.
- 40 grants awarded for adaptive research on selected crops.
- 4 new marketing opportunities identified.

C. Monitoring

This project will be monitored at two levels. As noted earlier, the individual research grant proposals will contain indicators to help measure progress towards a successful research goal. These indicators will be tracked to assure each research effort is on schedule and leading towards the desired result. On the macro level, the entire project will be monitored against the indicators in the logical framework to assure that the project is having the desired impact on production, productivity and exports. The indicators and the analysis of these indicators will "dovetail" with the Strategic Outcome No. 3 and Program Outcome No. 3.2 indicators that have been approved by USAID.

The necessary baseline data exists for the cereals under the food crops component. USAID recognizes, however, that ATUT will be working in a new area with limited experience in the development and refinement of indicators for high value horticultural export crops. Consequently, the performance indicators listed above and in the Logical Framework (see Annex A) are indicative only. Baseline and trend data collection will be further refined prior

to project start-up through the Contract for Analyzing Performance and Strategy (CAPS), which is financed under the Technical Cooperation and Feasibility Studies II Project (263-0225). More reliable indicators will be developed before the technical assistance team is on board. These indicators may be revised as project implementation progresses. As it is anticipated that the technical assistance will be implemented under a performance-based contract (see Section VI.B below), a specific set of ATUT project indicators for monitoring performance will be agreed upon between USAID and the technical assistance team.

Funds included in the Program Support and Project Operations Component will ensure that monitoring activities are conducted throughout the life of the project. Furthermore, measurement of impact will be disaggregated to reflect the size of beneficiaries in order to ensure that small producers are not excluded from participating in and benefiting from the project.

There are certain special monitoring concerns that may surface as a result of the analyses undertaken during project implementation or of specific agency policies that may be promulgated in the future. The social analysis highlights the need to carefully monitor the impact of increased agribusiness activities on women (see Annex C), who constitute a large share of both the rural labor force and the employees in agro-processing industries. Based on recommendation(s) of the gender analysis, additional monitoring of the impact of ATUT on women may also be included. In addition, the project monitoring plan, to be conducted under the Program Support Unit, will insure that the Project is not in violation of Agency Policy Determinations 15 and 71, which limit or restrict USAID support for activities having adverse effects on U.S. commercial agricultural interests. Monitoring efforts will also ensure that project activities are fully in line with Agency environmental regulations.

Formal evaluations will take place during the project and upon its completion. Like all projects in the Mission's portfolio, ATUT will be reviewed formally within the Mission twice a year. In the fall there will be a review of ATUT's progress toward accomplishing the Mission's strategic objectives. In the spring the Mission will review the project at the implementation level.

D. Time Frame for Achieving Results

Many of the real indicators of success under ATUT will see changes very late in the project, or even after the project is completed. That is the nature of long term investments such as research. In the U.S., research has shown that it takes about twenty years for improvements in corn yields achieved on research farms to show up in average farm yields. One cannot expect

significantly more rapid adoption in developing countries. Thus, with many of the benefits of a project occurring after the project is over, one must seek proxies or predictors for the ultimate benefits. For example, creation of new varieties with demonstrated higher yields or other desirable traits in and of itself does not achieve economic benefits, but it is a good predictor for future benefits. To monitor the progress of an ongoing project, indicators must be developed that are highly correlated with, and good predictors of, the ultimate benefits of the project investments.

Thus, the determination of appropriate indicators is somewhat difficult, albeit important. Some of the long term indicators include yield increases and increases in export growth. One of the complicating factors is that USAID and other donors have been investing in agricultural research for many years, while research dividends are often many years into the future. Consequently, in some cases yields could be expected to grow in the absence of ATUT because of prior investments. The rate of growth, however, would likely be slower without the new investments than with the project investments. ATUT investments are expected to maintain or accelerate the growth rate. In some cases, however, the increases may come very late because of the time lags involved, and we will need proxy indicators during project life.

E. Use of Information in Decision Making

The project team will make modifications to the project if either the results or the means of achieving those results are no longer valid to the project purpose.

While quarterly reporting can be provided on inputs and outputs, a major analysis and reporting effort devoted to outcomes and purpose level indicators will occur on an annual basis. Purpose and outcome indicators are not likely to change at a pace that requires more frequent data collection. The annual report will be timed to precede the Mission's annual performance review in the fall. In addition to information on performance indicators, the report will include "success stories" that give a human face to the indicators. Reporting will also include the results of problem-solving evaluations and a list of the decisions that were made on the basis of the evaluation findings and conclusions.

In addition to reporting to USAID, the Program Support Unit will produce data routinely for managers and conduct special studies as required. To ensure that the monitoring system is useful, attention will be given to whether managers are using the data generated and whether they need additional information.

IV. ANALYSIS OF FEASIBILITY, KEY ASSUMPTIONS AND RELATED RISKS

A. Project Feasibility

As indicated in the technical, economic, financial and institutional analyses described in the annexes, the project is feasible on all accounts. As noted in the economic analysis in Annex E, even small additional investments, carefully focused upon the critical constraints to increased productivity, will result in major benefits to Egypt. Considering the minimum markets for just grapes and oranges, the internal rate of return (IRR) is estimated to be 24 percent, with 66,000 jobs either created or maintained, labor incomes increased by almost \$40 million, and exporters earning \$62 million in profits. If the maximum markets are met, approximately 107,300 jobs are affected, generating \$54.8 million in labor income and approximately \$132 million in export profits, and the IRR reaches 48 per cent.

There are a large number of highly trained personnel to carry out the adaptive research and technology transfer activities proposed under ATUT within the MALR and the Ministry of Education. As indicated in the institutional analysis in Annex D, the GOE, and the MALR in particular, clearly have the institutional capacity to implement activities proposed under ATUT.

B. Key Assumptions and Risks

1. U.S. Legislation and USAID Regulations

There are several pieces of legislation and USAID regulations that may apply to projects that aim to increase exports in the recipient country. The most important of these are:

- **USAID PD-15:** This policy determination, which applies to both development assistance and ESF funds, is intended to avoid support for production of agricultural commodities for export if the commodities would directly compete with U.S. exports and would have a significant impact on those exporters. PD-15 requires USAID/W acquiescence, which will be obtained through their approval of the NAD in May 1995.
- **Bumpers Amendment (Public Law 99-349, Section 209):** This law, which applies only to Development Assistance funds, states that, "None of the funds appropriated by this or any other act ... shall be available for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference, or training in connection with the growth or production in a foreign country of an agricultural commodity for export which would

compete with a similar commodity grown or produced in the United States..."

- **USAID PD-71:** This policy determination requires that proposed projects involving production, processing, or marketing of sugar, palm oil, or citrus for export must have a special review because of potential injury to U.S. producers. It states that USAID "... should, therefore, only finance such projects when their development rationale is strong and their likely impact on U.S. producers is low."

Annex H contains an analysis of potential competition between U.S. and Egyptian agricultural exports. This study concluded that there is no significant competition between U.S. and Egyptian horticultural exports. Similar analyses will be conducted for any new crop that may be included under ATUT. Moreover, all proposed research activities under ATUT will be carefully screened to assure that they are within the parameters of U.S. legislation and USAID Regulations (see Section III.C., Monitoring). If, at any time, U.S. legislation becomes so restrictive as to seriously impede the progress of this project, ATUT would be terminated.

2. Appropriate Agricultural Research

The active participation of the private sector in establishing the technology development and transfer agenda for ATUT will ensure that the research supported will have an immediate application or impact. There is no way to be certain, however, without experience and possibly additional studies to be conducted under the Program Support Component, that those research problems identified are truly the most important constraints to increasing productivity or income. While ATUT will focus upon select horticulture and food crops, it must be assumed that the overall strength of the Egyptian agricultural research community can respond to any potential unforeseen threat to agriculture, such as a viral disease or pest, that was not anticipated when ATUT was being designed. If the project's informal structure developed to encourage full participation of the private sector does not effectively respond to technical needs and concerns expressed by small, medium and large producers, other means of implementation will be considered.

3. Trade Liberalization

An important assumption is that the GOE will continue its trend toward liberalization of its trade policies. A reverse of this trend would necessitate a careful reevaluation of this project. By maintaining close contact and dialogue with the private sector, and following the progress of the APRP policy

reforms, the Mission will become cognizant when policy conditions change that negatively affect profitability from horticultural crops production or marketing activities.

4. Acts of God

Given the dynamic and unpredictable nature of agriculture, ATUT's success will partially depend on conditions outside of the Mission's managerial interest. An assumption is that there will be no catastrophic droughts, floods or plant or pest diseases that cannot be mitigated during the life of the project. (See Item 2, above.)

V. FINANCIAL PLAN

A. Resource Requirements

ATUT is a \$50 million, six year project. The complete Financial Plan is included in Annex F, Financial Plan and Analysis. USAID inputs to the project are provided under four components: technical assistance (\$38.5 million); local support and operations (\$2.1 million); services (\$8.5 million); and audits, evaluations and assessments (\$.9 million).

The GOE will contribute the IE equivalent of \$4.6 million in the form of participants air fare tickets and medical checks. The GOE will also provide in-kind contributions, e.g., office space, utilities, and salaries of staff while at workshops and on field visits. These contributions will be monitored during project implementation.

The Egyptian private sector is expected to provide contributions to the project. Private sector contributions shall be in the form of land for adaptive research, per diem, and other costs as may be agreed upon during activity negotiations. These contributions will be monitored during implementation.

During the life of this project, non-federal/recipient audits will be performed to determine whether the recipients have properly accounted for and used USAID funds for the purposes intended in accordance with applicable laws and regulations. USAID will ensure that all commitments over \$25,000 under this project are in the Mission's audit universe. The Mission will schedule audits for those commitments over \$25,000 and ensure funds are available for audits (see budget) in accordance with USAID/W guidance dated 3/31/92 on Audit Management and Resolution Program. Not all of the planned commitments over \$25,000 under this project will require non-federal/recipient audits because of the nature of the activity.

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
USAID Project # 263-0240.00 (Exhibit 1)
SUMMARY LIFE OF PROJECT BUDGET (\$000)

INPUT	USAID	GOE**	TOTAL
TECHNOLOGY ACTIVITIES (Total)*	38,542	4,572	43,114
T/A (Expats and Locals)	19,719		
Tech. Transfer (Off-shore Seminars/Site visits)	680		
Support Studies (Research Grants-U.S. Costs)	16,721		
Commodities	283		
LOCAL SUPPORT/OPERATIONS	2,091	0	2,091
SERVICES	8,485	0	8,485
AUDITS, EVALUATIONS & ASSESSMENTS	882	0	882
TOTAL LOP	50,000	4,572	54,572

** GOE funding shall be the L.E. equivalent of \$ 4,752 from FT-800 account to pay for participants Airfare tickets and Medical Checks. (for details of GOE contribution, see respective table)

* Technical Assistance Component is broken down by sub-components for illustrative purposes only

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AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
AID Project # 263-0240.00 (Exhibit 2)
OBJECTED EXPENDITURE BY PROJECT YEAR/ELEMENT (\$000)

INPUT	Fy 95	Fy 96	Fy 97	Fy 98	Fy 99	Fy 2000	TOTAL
TECHNICAL ASSISTANCE	2,929	16,319	7,891	4,220	3,790	3,393	38,542
LOCAL SUPPORT/OPERATIONS	307	323	339	356	374	392	2,091
SERVICES	135	6,116	1,985	249	0	0	8,485
AUDITS, EVALUATIONS & ASSESSMENTS	30	32	66	324	73	357	882
TOTAL LOP	3,401	22,790	10,281	5,149	4,237	4,143	50,000

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10

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
USAID Project # 263-0240.00 (Exhibit 3)
PROJECTED OBLIGATIONS SCHEDULE (\$000)

INPUT	Fy 95	Fy 96	Fy 97	Fy 98	Fy 99	TOTAL
TECHNICAL ASSISTANCE	9,000	7,400	8,900	8,900	4,342	38,542
LOCAL SUPPORT/OPERATIONS	400	400	400	400	491	2,091
SERVICES	500	6,500	500	500	485	8,485
DITS, EVALUATIONS & ASSESSMENT	100	200	200	200	182	882
TOTAL LOP	10,000	14,500	10,000	10,000	5,500	50,000

unds are projected to be expensed within no more than Five Years from the date of obligation(s)
 _sed on a First In First Out (FIFO) approach

53

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
USAID Project # 263-0240.00 (Exhibit 4)
PROJECTED PIPELINE BY PROJECT YEAR (\$000)

INPUT	Fy 95	Fy 96	Fy 97	Fy 98	Fy 99	Fy 2000	TOTAL
TECHNICAL ASSISTANCE	2,929	16,319	7,891	4,220	3,790	3,393	38,542
LOCAL SUPPORT/OPERATIONS	307	323	339	356	374	392	2,091
SERVICES	135	6,116	1,985	249	0	0	8,485
AUDITS, EVALUATIONS & ASSESSMENTS	30	32	66	324	73	357	882
PROJECTED ANNUAL EXPENDITURE (-)	3,402	22,790	10,281	5,149	4,237	4,143	50,000
PROJECTED ANNUAL OBLIGATION (+)	10,000	15,000	10,000	10,000	5,000	0	50,000
PROJECTED ANNUAL PIPELINE	6,598	(1,191)	(1,472)	3,379	4,143	0	

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2/6

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER

AID Project # 263-0240.00

ESTIMATED HOST COUNTRY CASH CONTRIBUTION PLAN (L.E. 000)

CATEGORY	Base Yr Unit Cost	No. of Units	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
TECHNICAL TRANSFER (Off-Shore)									
U.S. Seminars (4person/seminar*25seminars)	7.15	100.00	57.20	120.12	126.13	165.54	173.82	182.51	825.31
U.S. Site Visits(20person/s.visit*25s.visits)	7.15	500.00	429.00	450.45	788.29	827.70	869.09	730.03	4,094.56
HOST COUNTRY S. Visits(20person/s.visit*25s.visits)	7.15	500.00	429.00	750.75	788.29	827.70	869.09	365.02	4,029.84
RESEARCH GRANTS									
Adaptive Research Grants Hort. (1Strip/grant*33grants)	7.15	495.00	0.00	743.24	780.40	819.42	860.40	903.42	4,106.88
Food Crop Link Grants (1Strip/grant*20grants)	7.15	300.00	0.00	450.45	472.97	496.62	521.45	547.52	2,489.02
TOTAL HOST COUNTRY CASH CONTRIBUTION	--	--	915.20	2,515.01	2,956.08	3,136.99	3,293.84	2,728.50	15,545.62

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Notes:

- ticket is L.E. 6,800 and Medical Check L.E. 350 (Total L.E. 7,150)
- is inflated by 5% annual rate
- shall provide other contributions (Office Space, Utilities ... etc),
- will be monitored during actual implementation and can not be published for the current time.

B. Costs

1. Public Sector Recurrent Costs

ATUT will not create any new institutions or construct any new buildings. NARP funded the renovation of a significant number of extension centers, research station facilities and laboratories, providing them with modern scientific research, audio-visual and office equipment. Furthermore, NARP trained a large number of research scientists and staff. These Ministry facilities and staff are available to ATUT and will not create a recurrent budget cost to the MALR upon project termination.

ATUT will work closely with the private sector to determine specific technology needs and to effectively adapt or transfer these technologies to the private sector utilizing existing public sector resources, e.g., research labs and stations, and extension agents. One or more "special" project offices will be created using ATUT funds solely for ATUT implementation. These special offices, i.e., the Program Support and the Project Operations Units, will terminate upon the completion of ATUT. Since ATUT will not create any new institutions, there will be no recurrent costs.

2. Private Sector Cost Sharing

There are no difficulties anticipated with the private sector sharing of costs, as they have done so in the past under NARP. The MALR has experience with private sector contributions to public sector resources as described in the examples below:

- Poultry producers contributed LE 50,000 for the renovation of buildings to house USAID-financed lab equipment for the development of diagnostic kits for common avian diseases.
- Small producers in Ismailiya helped cover the costs of extension agents and technologies to help with the control of white flies on tomatoes.
- Private pharmaceutical firms have made grants to universities and research institutions for analysis and pilot production of dyes and extracts from plant products.

Many of the larger private sector businesspersons consulted during project design expressed their willingness to share costs of targeted agricultural research if it is directed at the problems they are confronting. If ATUT responds to the felt needs of the private sector, particularly the larger agribusiness firms, with cost-effective, productivity-enhancing technologies

and management practices, the technologies developed and transferred will be sustained.

Private sector cost-sharing will include cash and in-kind contributions. The producers will provide land for some adaptive research work to be carried out under ATUT. The private sector members who participate in international site visits (e.g., a trip to Chile and the U.S. to observe grape production methods) will pay for their own per diem and subsistence costs.

C. USAID Management Costs

The management costs to USAID are the following:

**RICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
AID MANAGEMENT (FTE's) CHART
USAID PROJECT # 263- 0240.00**

USAID PERSONNEL	Year1	Year2	Year3	Year4	Year5	Year6
Office Director (OD) Percentage of Time Allocated to ATUT	10%	35%	35%	35%	35%	40%
Project Officer (PO-USDH FS2) Percentage of Time Allocated to ATUT	5%	50%	50%	50%	50%	80%
FSN Staff (FSN 11/12) Percentage of Time Allocated to ATUT	10%	50%	50%	50%	50%	75%
Secretary Staff (?) (FSN) Percentage of Time Allocated to ATUT	10%	50%	50%	50%	50%	75%
TOTAL AID MGT. COSTS U.S. \$						1,056,030

above chart illustrates percentage of time dedicated by FTE's to the project.
 1 USAID Management costs amounts to U.S.\$ 1,056,030 over the life of the project.
 for details of management costs, refer to the Financial Analysis section.

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9/2

VI. MANAGEMENT PROCEDURES

A. Management Systems and Procedures

The system utilized during the last several years of NARP (see Annex D) will serve as the model for the implementation of ATUT. Authority for control and monitoring of the use of funds will be shared with the MALR and USAID as had been the practice under NARP. USAID will use PILs for authorizing local currency expenses against the approved annual plans. The process of establishing the annual activities and approving specific technology transfer activities and adaptive research grants will be done in close collaboration with the private sector.

The technical assistance team will manage the Horticulture Component, as well as the Program Support and Project Operations Units. The USDA will provide technical assistance under a Participating Agency Service Agreement (PASA) for the Food Crops Component. There will be no resident USDA employee in Egypt. The grant selection process under the Food Crop Component will be done through a set of TDYs and administration of the dollar portion of the grants will be done by USDA in Washington, as was the case under NARP. USAID/Cairo has the requisite management experience and capability to monitor USDA's administration of the Food Crops Component of the ATUT.

ATUT will not support any academic training. Limited in-country training, i.e., research station field days, field site visits, seminars and workshops, will be conducted by the POU using funds allocated under ATUT (see Annex F). All in-country training will be in support of ATUT project purposes. Some third country travel will be conducted under the project using contract funded Project Implementation Orders (PIO/P) issued by the technical assistance contractor. Prior to the disbursement of any dollar funded training, the technical assistance contractor will provide USAID with a multi-year training plan for USAID's review and approval.

B. Procurement Plan

The principle item of procurement under ATUT is the expatriate technical assistance. It is anticipated that USAID will enter into a performance-based direct contract for the provision of technical assistance under ATUT. The primary TA contract may be with a U.S. consulting firm or a U.S. university (or a consortium of universities) bidding alone or in combination. The contractor will be required to provide qualified and acceptable technical assistance personnel for the management of the overall project as well as the Horticulture Component.

It is anticipated that the contract for the technical assistance team will be performance based. Therefore, an outside consultant will be procured to assist the Mission in verifying that the TA team meets or exceeds the annual performance targets. It is expected that this individual will perform this task on an annual basis.

The activities under the Food Crops Component, i.e., strategic collaborative research grants limited to four food crops and participation in international conferences and seminars, will be implemented through a PASA with the U.S. Department of Agriculture, as was the case under NARP. There are a number of reasons for this decision. The use of a PASA is cost-effective; USDA's overhead of 30 percent is much lower than that of private consulting firms. A PASA has important technical advantages as well. USDA has a large U.S. network and predominant research capacity in food crops to link Egyptian scientists with U.S. and international researchers and research institutions. Also, any agronomic practices or varietal improvements made as a result of ATUT can easily and effectively be linked to the U.S. research institutions for dissemination to producers. Finally, USDA has the requisite experience in managing strategic collaborative research grants. Under NARP, the USDA provided over \$17 million in administrative, financial and technical assistance for 28 collaborative research grants and technical support to NARP.

Representative requirements for the long-term (six years) TA team are:

Chief of Party - an agricultural economist who, in addition to serving as the team leader, will also be the senior-level advisor to the Project Director.

Horticulture Component Coordinator - an expert in agronomy, horticulture or related field, who will, among other things, develop scopes of work and coordinate the input from short-term marketing and production advisors.

Program Support Coordinator - whose functions will include carrying out studies on marketing, commodity sectors, grades and standards, and labor impact.

Management Information Systems (MIS) Specialist - will be responsible for setting up an MIS that will contain three modules: marketing and price information for ATUT horticultural commodities in European markets; agronomic and production related data; and a Geographic Information System (GIS) to monitor areas in production by crop and maturity in order to link production areas and yields with potential markets.

Financial and Administrative Advisor - a specialist in accounting and finance who will, among other things, manage the dollar funds used for collaboration with U.S. institutions. This team member will also be responsible for procurement of any office related equipment (e.g., computers, peripherals), vehicles or other items required under the contract either directly or through a Procurement Service Agent.

At the time of each procurement action, every effort will be made to encourage the participation of business concerns that qualify for Gray Amendment status and draw upon their knowledge and expertise.

Local Support to MALR will be implemented through PILs. The PILs will operate under the established mechanism of Advance Protocol with the National Investment Bank (NIB) in order to achieve the programmatic goal of leveraging the GOE capabilities to manage adaptive research grants. The Services component will also be implemented through PILs operating under the same mechanism and for the same reason as above. The Mission will extend every effort to ensure that those PILs are subject to prudent management and financial practices.

Audits, evaluations and assessments shall be implemented through direct contracts with USAID/Egypt.

The following table illustrates the proposed methods of implementation and finance:

RICULTURAL TECHNOLOGY UTILIZATION & TRANSFER

AID Project # 263-0240.00

Methods of Implementation and Financing

INPUT	Method of Implementation	Method of Financing	Amount (\$ 000)
TECHNICAL ASSISTANCE			
TA Contractor	Direct Contract	Cost Reimbursement	30,274
PASA	Direct Contract	Cost Reimbursement	8,269
LOCAL SUPPORT/OPERATIONS			
MALR	Project Imp. Letter	NIB Advance Protocol	2,090
SERVICES			
MALR	Project Imp. Letter	NIB Advance Protocol	7,500
AUDITS, EVALUATIONS & ASSESSMENTS			
	Direct Contract	Cost Reimbursement	900
			50,000

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C. Procurement Schedule

Project Agreement signed	6/30/95
Request for Proposal issued	8/1/95
Baseline and Indicators Established	10/30/95
Contract Awarded	11/30/95
PASA to USDA	11/30/95
Technical Assistance Team arrives	1/5/96

ANNEXES

ANNEX A

LOGICAL FRAMEWORK

LOGICAL FRAMEWORK

Life of Project
 FY 95 to FY 01
 Total US\$ Funding: 50 million

Project Title & Number: Agricultural Technology Utilization and Transfer (ATUT) 263-0240

NARRATIVE SUMMARY	OBJECTIVE VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: Increased production, productivity and incomes in the agricultural sector. (same as S.O.3)</p>	<p>Measures of Goal Achievements:</p> <ul style="list-style-type: none"> - Economic trends - Production and employment trends in crops supported by ATUT research 	<ul style="list-style-type: none"> - USAID evaluations - Ministry of Ag records - Ministry of Finance records 	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> - Trend towards open markets in Egypt continues. - No major political upheaval.
<p>Project Purpose: To improve technologies developed and adopted for the production, processing, and marketing of select agricultural commodities.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> 1. 3% average increase in productivity of select food crops due to the project's inputs. 2. 10% average increase in value-added of fresh fruits and vegetables due to the project's inputs. 3. 5% average increase in volume of select horticulture exports due to the project's inputs starting in Year 3. 4. 8% increase in value of horticulture exports due to the project's inputs. 5. 25 new production or marketing technologies adopted. 6. Six strains of genetic material successfully put into production. 	<ul style="list-style-type: none"> - USAID evaluations - Researchers' records and reports - Field trips - Ministry of Agriculture's records - Customs data 	<p>Assumptions to achieving purpose:</p> <ul style="list-style-type: none"> - Project activities do not violate US legislation such as Bumpers and Lautenberg. - Research targets are appropriate. - Technology has desired effect. - External markets remain profitable for Egyptian goods. - No unforeseen agronomic problem (locusts, drought, flooding etc.)

<p>Outputs:</p> <p>1. New horticultural technologies introduced to producers and exporters.</p> <p>2. Provision of low-cost, timely access to International technologies in food crops developed.</p> <p>3. Genetically Engineered selected crops developed for testing in farmers' fields.</p> <p>4. Receipt of genetic material from US research organizations.</p> <p>5. Formation of private sector advisory groups for higher value horticultural export crops.</p> <p>(Cont'd on next page)</p>	<p>Magnitude of outputs:</p> <p>1. Technologies developed for:</p> <ul style="list-style-type: none"> - 25 production technologies - 15 post harvest technologies - 15 export related technologies <p>2. Linkages established with 3 international research centers as well as with US research institutions.</p> <p>3a. 3 genetically engineered pest resistant food crops developed for testing.</p> <p>3b. 4 varieties of salt/drought tolerant cereals developed.</p> <p>4. Six strains of genetic material received.</p> <p>5. Mechanism developed.</p>	<ul style="list-style-type: none"> - Field trips - Researcher's reports - Evaluations - Discussions with producers and exporters. - Assessment of activity. - Reports from contractors and project officers 	<p>Assumptions for achieving outputs:</p> <p>Technologies introduced are appropriate and have expected impact and acceptance.</p> <p>Activities will be accessed by researchers, producers and exporters.</p> <p>Genetically engineered crops acceptable to farmers, markets and consumers.</p> <p>Genetically engineered material can be successfully replicated.</p>
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<p>Outputs: (cont'd)</p> <p>6. Adaptive research grants for selected crops awarded.</p> <p>7. identify new marketing opportunities.</p>	<p>6. 40 grants awarded.</p> <p>7. 4 opportunities identified.</p>	<p>6a. Project records b. Evaluation.</p> <p>7a. Project records. b. Evaluation.</p>	<p>6. Appropriate grant proposals received.</p> <p>7. New marketing opportunities available for Egyptian crops.</p>
<p>Inputs:</p> <p>1. Technical Assistance</p> <p>2. Local Support/Operations</p> <p>3. Services</p> <p>4. Evaluation, Audits and Assessments</p> <p>5. Contingency</p>	<p>Implementation Target: (\$ million. rounded)</p> <p>1. 38.1</p> <p>2. 2.1</p> <p>3. 7.6</p> <p>4. 0.9</p> <p>5. 1.3</p> <p>Total: \$50</p>	<p>USAID financial records</p>	<p>Assumptions for providing inputs:</p> <p>- Availability of funds</p>

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TECHNICAL ANALYSIS

I. Linkages: Egypt and the Global Agricultural Research System

In the future, expansion of agricultural output will have to be obtained almost entirely from more intensive cultivation in the areas already being used for agricultural production. Increases in food and fiber production will depend in large measure on continuous advances in agricultural technology. Therefore, it is imperative that over the next several decades Egypt completes the establishment of its agricultural research capacity for each commodity of economic importance.

Before World War II, there was little cooperation between countries in agricultural research or technology generation; hence, most countries had to go it alone in developing necessary technologies. That is no longer true. Today, we have in place some major elements of what can be described as a global agricultural research system, within which any country can link its research efforts to help solve important problems.

The global system is made up of three major players: national agricultural research systems of developing countries like Egypt, international agricultural research centers, and advanced research institutions in more developed countries. These players interact in a variety of ways, including bilateral and multilateral agreements, contracts, and research networks. The system is founded on scientific and research needs. No one has passed legislation calling for its formulation, no one has appropriated funds to ensure its establishment. With its growth and development, it has become the world's largest collaborative scientific enterprise. Almost every country is involved in some way and has invested some of its own resources, mostly at home, to participate. Many developing countries worry that science and technology advances will continue to pass them by. The global agricultural research system provides a means for developing countries to participate in solving important problems. Egypt, through NARP and now ATUT, is beginning to be a significant participant in this global system.

The global system, being informal, depends largely upon goodwill and the meshing of perceived needs of numerous research organizations. Self interest is a strong motivator, and in the work of the global systems there is something of value for almost any country. Egypt has had linkages with parts of the global system for some time. These linkages need to be expanded and strengthened in the future, especially through collaborative research.

Past linkages have been with the International Center for the Improvement of Maize and Wheat (CIMMYT) in both maize and wheat improvement, the International Rice Research Institute (IRRI) in rice improvement, the International Sorghum and Millet Project (INTSORMIL), the International Center for Agricultural Research in the Dry Areas, (ICARDA) through the Nile Valley Project in fava bean, and now the Nile Valley Regional Program for wheat, barley, and cool-season food legumes; the International Plant Genetic Resources Institute (formerly IBPGR), and with many American universities and institutions, including USDA. Of course, ICARDA, as the regional research center of the Consultant Group for International Agricultural Research (CGIAR) in the West Asia and North Africa regions, has long had ties to Egypt and today maintains an office in Cairo near the Agriculture Research Center from which the Nile Valley Regional Program is administered and where staff from IRRI and the International Plant Genetic Resources Institute (IPGRI) maintain their offices.

Linkages with the international agriculture research centers have allowed Egypt to have ready access to global germ plasm collections of important crops. The benefits to the country are increased productivity and greater stability of production. New ideas, concepts, materials, training, and other benefits accrue from the peer relationships developed between Egypt and its international agricultural research center (IARC) partners.

In the future, Egypt must find ways and means to continue its working relationship and linkages with elements of the global agricultural research system. Cut off from the larger scientific community, with little chance to share ideas, problems, or solutions, and lacking opportunities to collaborate in research on major problems, scientists will not be fully effective, nor will they be satisfied. The global system allows any scientist, any institution, and any country the chance to participate actively in the search for solutions to common pressing problems and to share the benefits of them.

II. Food Crop Yield Analysis

Annual yield improvements in major crops in Egypt are remarkably high. These gains can be attributed to directed agricultural research, and improvements in the strength of Egyptian agricultural research scientists. ATUT proposes to fund a continuation of these international linkages for selected crops and for strategic problems identified jointly among Egyptian and U.S. scientists. Below are details of the gains in productivity registered over a number of years. This information has been extracted from the NARP Assessment conducted by Dr. E. T. York.

Yield growth in major Egyptian crops can only be described as phenomenal over the past decade. Table 1 presents yield gains for 16 crops in which Egypt has achieved exceptionally high rates of yield growth over the period 1979-81 to 1990-92. To give some measure of what has been accomplished, it should be noted that the United Kingdom achieved its currently high wheat yields (nearly 7 mt/ha in 1992) by gaining an average 75 kg/ha/yr of yield annually for most of the years following World War II. Gains in wheat in Egypt are well above that figure, and climbing.

Table 1. Annual Yield Gains in Egyptian Crops, 1979-81 to 1990-92

<u>Crop</u>	<u>Kg/Ha/Yr</u>	<u>Crop</u>	<u>Kg/Ha/Yr</u>
Wheat	172	Carrots	239
Rice	159	Cucumbers	135
Maize	190	Onions, dry	1,335
Sorghum	111	Peas, green	252
Lentils	76	Tomato	980
Artichokes	562	Grapes	264
Beans, green	155	Sugar beet	1,632
Cabbage	351	Sugarcane	1,507

Figure 1 shows wheat yields in Egypt from 1939 to 1992. Yield gains have been dramatic, especially since 1980. This is impressive indeed, and it is even more impressive when one understands that total production has more than doubled since 1986.

Figure 2 depicts the remarkable increases in wheat yields since 1980. By almost any standard of productivity, Egypt's wheat research program can be considered a resounding success. The Principal Bank for Development and Agriculture Credit (PBDAC) indicates that the area in improved wheat varieties has increased from 32 percent in 1980 to 83 percent in 1991. Obviously, these varieties have contributed significantly to increased output.

Wheat Yields: 5 Year Averages 1939 - 1992

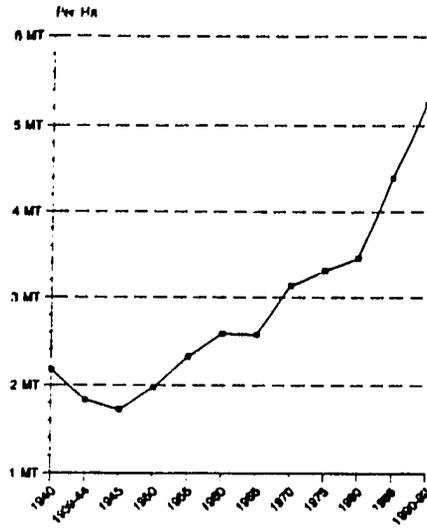


Figure 1

Wheat Yields 1960 - 1990

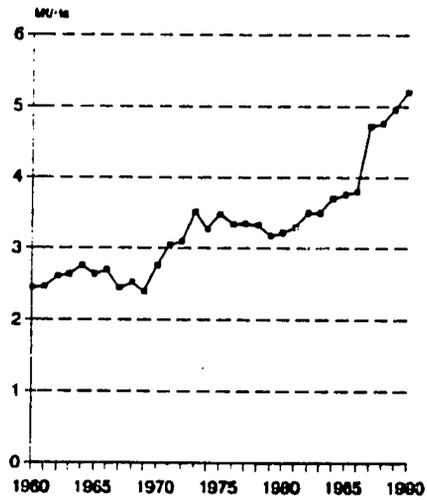


Figure 2

Table 2 presents agricultural production indices comparing Egyptian performance with that of the rest of the world. In total agricultural production, Egypt was just slightly behind the rest of the world in 1981 and 1985, but by 1990 it has moved well ahead (138 vs. 125), and even farther ahead by 1992. In per capita agricultural production, Egypt was behind the rest of the world in 1981 and 1985, but by 1990 and 1992 had moved slightly ahead. In total food production, Egypt again lagged slightly in 1981, but moved ahead in 1985, and further lengthened its lead in 1990 and 1992. In per capita food production, Egypt began slightly behind the rest of the world in 1981 but gained a slight edge in 1985, then made even further gains by 1990 and again in 1992. These data illustrate the remarkable gains in Egyptian agricultural productivity during the last decade.

Table 2. Agricultural production indices comparing Egypt's production with the rest of the world (base year 1980)

	<u>1981</u>	<u>1985</u>	<u>1990</u>	<u>1992</u>
<i>Total Agricultural Production</i>				
World	102.69	114.21	125.37	126.92
Egypt	101.36	115.66	138.08	144.11
<i>Agricultural Production Per Capita</i>				
World	100.94	104.66	105.36	103.05
Egypt	98.81	101.66	107.67	107.42
<i>Total Food Production</i>				
World	102.44	113.90	125.62	127.23
Egypt	101.80	110.89	149.90	156.22
<i>Food Production Per Capita</i>				
World	100.69	104.38	105.56	103.30
Egypt	99.23	105.38	116.89	116.45

Figure 3 shows rice yields in Egypt from 1939-92. Here again, tremendous gains in productivity are shown. Yields leveled off at a point above 5mt/ha during the period 1955 to about 1980, when they began to rise again, with explosive growth from 1985 to 1992. As in the case of wheat, rice research must also be judged a great success.

Figure 4 shows maize yields for the period 1939-92. Dramatic gains are noted with maize since about 1985. Hence, maize research must be considered a great success for research as well.

Figure 5 shows tomato yield (index) from 1980 to 1992. Tomato yields increased some 61 percent from 1980 to 1987. A severe infestation of whitefly, the vector for a serious virus disease, resulted in a dramatic drop in production for the next 2 to 3 years. Steps were taken through research and technology transfer, however, to address the problem and, from that period on, yield increases have continued their strong upward trends.

Figure 6 depicts the potential impact of this response to the whitefly problem. The lower dotted line shows what yields could have been if the trend line in tomato yields for the 1970s had continued into the 1980s. The difference in the solid and dotted lines indicates the potential impact of the introduction of the improved technology through the efforts of the University of California-Davis team in the late 1970s and early 1980s. The large improvements in tomato yields was due to the fact that tomatoes, unlike cereals and many other crops, were not subject to rigid controls.

It has been suggested that essentially all of the tomato varieties grown in Egypt were introduced through USAID projects (including the Agricultural Development Services (ADS) Project, which preceded NARP). USAID/Cairo estimates that the level of gross benefits from these introduced varieties has been between \$111 and \$250 million.

Rice Yields: 5 Year Averages
1939 - 1992

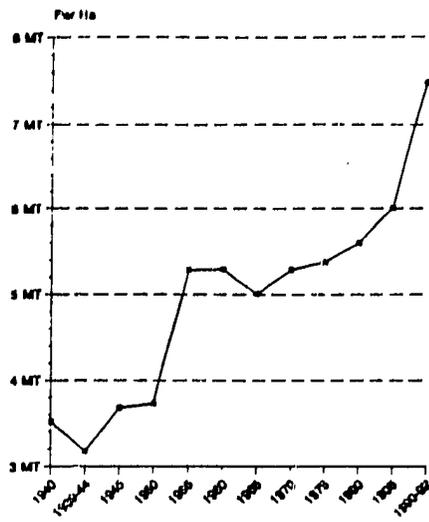


Figure 3

Maize Yields: 5 Year Averages
1939 - 1992

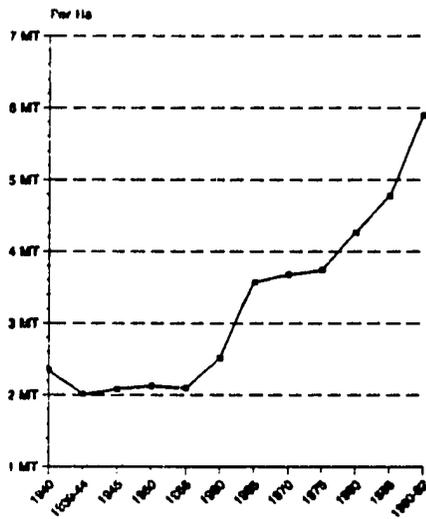


Figure 4

Index of Tomato Yields

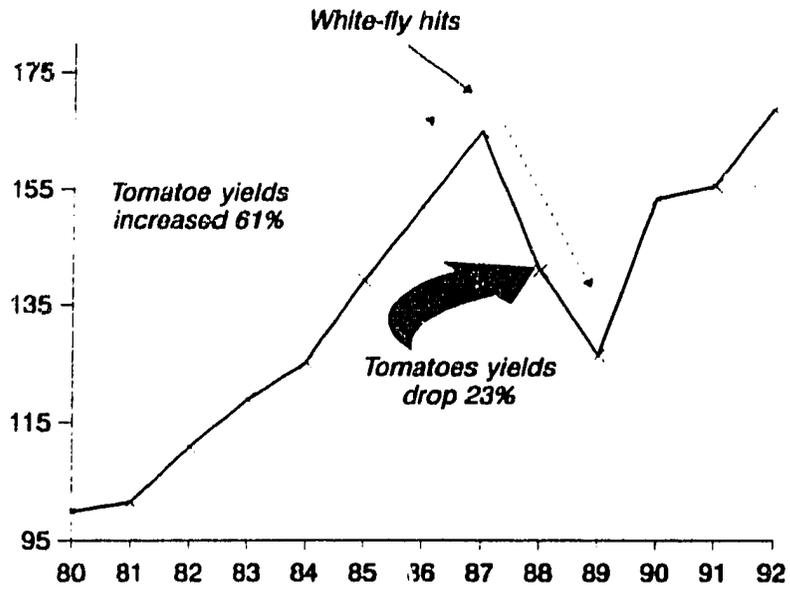


Figure 5

Tomato Yields

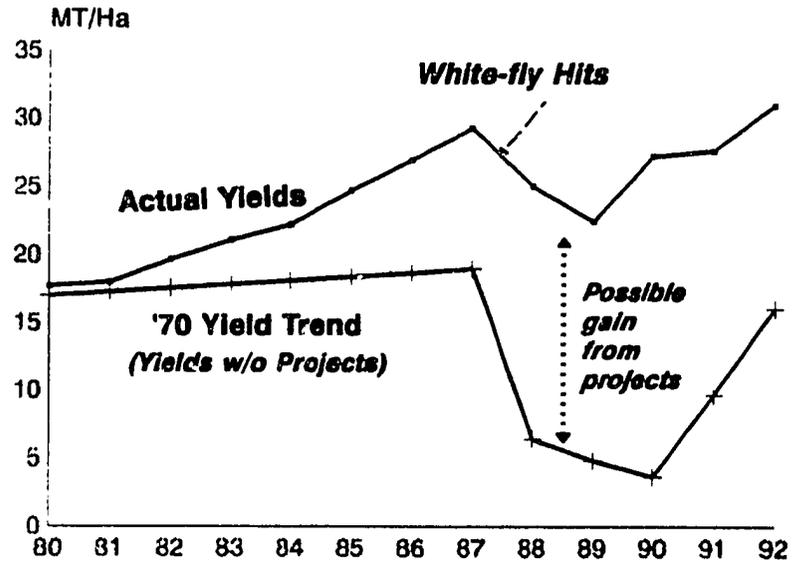


Figure 6

III. Crops To Be Addressed Under ATUT

The technical analysis below is illustrative only. It is not possible, at this stage in project development, to identify with precision the specific crops that will be targeted under the horticulture section. To do so would pre-judge and preclude the active involvement of the private sector. Furthermore, any detailed technical analysis performed now might serve to exclude future possible crops that might emerge after further analysis. Therefore, this analysis will highlight several crops that are likely to figure in the horticulture component of ATUT. Likewise, included in this analysis are selected food crops that will be among those eligible for consideration under that component. During implementation, it is possible that other crops will be added and possibly some of the crops listed below deleted from project consideration as further analyses are undertaken.

A. Horticulture Crops

Under the Horticulture Component, ATUT will develop a framework for the interaction of public and private sector personnel around a commodity system. Specific crops or technologies to be addressed will emerge as a result of this interaction. The activities selected will be confirmed and approved annually. The adaptive research grants will provide additional detail on the specific technical problems faced and the approach to be used by researchers to resolve the problems and transfer appropriate solutions to end-users.

1. Grapes

Table grapes are among the most important fruit crops in Egypt. They are the third largest fruit crop by area and value of production. Table grapes have shown a consistent increase in area and production over the last ten years. Grapes vines are among the most suitable fruit crops for sandy soils, i.e., newly reclaimed areas, as well as for old lands. Average table grape yields, however, vary from 1.29 to 12.02 tons per feddan. The wide range of yields indicates the presence of significant constraints throughout the production system in Egypt. There is considerable lack of reliable yield information on newly planted cultivars. This lack of information is due to other parameters that affect growth and productivity and influence the normal expected performance of these new cultivars.

The most important and direct impediments to table grape production in Egypt are: 1) lack of knowledge about technical

aspects and appropriate cultivation practices to manage and handle plant growth development and production; and, 2) cultivars or varieties are not adapted to particular growing conditions, planting material sources are unreliable and/or the climate is not suitable for efficient table grape production.

Pre-harvest losses are significant under table grape production circumstances in Egypt. Significantly, in all grape growing areas of Egypt, the technology available is applied randomly. In some areas, the majority of plantings in an area are well adapted traditional cultivars where even the use of low technology could reach high yields. In other cases, high technology is wrongly applied to new export cultivars, resulting in lower yields. Technology may be available, but it must be applied properly. Research specific to grapes is needed to solve this fundamentally critical situation. Such an effort will produce a positive impact on production and on the ability to produce good quality table grapes for the export market.

Post-harvest losses, i.e., the deterioration of table grapes from harvest to consumer, are induced at any stage of product handling. Evaluating postharvest losses in each step of the table grape handling system in Egypt indicates that mechanical damage, disease infection and physiological disorders are the main causes of table grape postharvest losses. A major effort to reduce the inefficiencies and losses in the marketing chain will result in increasing the marketing potential for Egyptian table grapes.

Table grapes are marketed domestically through a network of local traders, large wholesalers and traditional retailers. Demand analysis in relation to consumer income occasionally indicates that table grapes can be classified as a superior commodity. Average income elasticity of demand for table grapes is estimated at 1.2, according to the family budget survey data of 1990/91. Wholesale prices of table grapes vary greatly from one month to another, depending upon the quantity of table grapes delivered to wholesale markets. These fluctuations take nearly the same pattern over time, due to the seasonal pattern of table grape production. As expected, there is a statistically significant inverse relationship between table grape volume delivered and wholesale prices. While prices for each variety are not available, it can be generally concluded that seedless varieties have higher prices compared to seeded varieties. Consequently, the cultivated area of seedless varieties has increased over time compared to seeded varieties.

Egypt is close to large markets in Western Europe and the Gulf states. It also has a climate well-suited for growing table grapes, and has an adequate labor supply necessary for production. Moreover, analyses of delivered cost competition,

production potential, consumption trend, and surplus for export clearly indicate that Egypt has an excellent opportunity to increase its volume of table grape exports to Europe, the Gulf area and many other Arab and non-Arab countries. Market window analysis for Egyptian table grape exports to the most promising European markets (i.e., Germany, U.K., France and Switzerland) indicates that Egypt has a comparative advantage over the key non-EU supplier during a certain season of the year. This analysis, based on break even wholesale prices and the profitable demand concept, indicates that market window opportunities for Egyptian table grapes will be best during May, June and July. Total profitable demand for Egyptian grapes during that market window is about 144,000 tons in Germany, France and U.K. markets alone.

A number of actions must be taken, however, to increase table grape exports and to promote efficiency. Major actions include: 1) providing adequate and timely information on markets to existing and potential exporters; 2) improving surface transportation systems for table grape exports; 3) providing governmental support and infrastructure investments in roads and port facilities; 4) encouraging exporters to establish export quality control systems; 5) directing applied research and extension activities to resolve a number of production, postharvest and marketing problems; 6) monitoring developments in potential new markets by Egyptian table grape exporters.

2. Potatoes

Both socially and economically, potatoes are one of Egypt's leading horticultural crops. Egypt's potato sector is presently producing at a level of about 2 million tons per year. Yields have increased from 4-6 tons per feddan to 8-9 tons on a national summer and winter crop basis. Some of the better growers are achieving 10 to 14 tons per feddan, while a few claim to get 14 to 16 tons.

Traditionally, Egypt has imported large tonnages of seed potato requirements from the European Union (EU). This seed is used mainly for two purposes: 1) to export a fresh crop; and, 2) to re-multiply for the several potato crops that are grown. There are two major and three minor potato crops a year and each are grown for definite and specific purposes. Starting with the summer season, about five to ten percent are grown for export, while about 80 percent is for domestic consumption. The balance is stored as seed for future crops. Approximately 30 percent of the total seed potato requirement is imported each year to keep the cycle operating.

To understand the complete Egyptian potato situation is to understand a very complex process. There are five growing seasons with possibly 20 or more potato cultivars being grown, all with different maturities and harvest dates to capture immature, and mature qualities for both export and domestic markets. Furthermore, one must understand if the seed was certified or uncertified and whether it is being grown for future season crops. The new desert lands are now the principle potato growing regions for many exporters and are increasingly supplying the potato processing industries. The traditional lands continue to supply the majority of the domestic needs, but these lands have many problems, such as Brown Rot and the tendency of farmers to continue growing potatoes each season with no crop rotation.

Prices in today's domestic market have reached unparalleled highs. The potato prices far exceed national wholesale price indices. Per capita consumption rose from 10 kg per person to 28 kg in 1987, but has dropped 32 percent to 19 kg today. Supply shortage relative to demand has raised prices and lowered per capita consumption. The recent trend towards potato growing in the new lands for export purposes may have temporarily halted the problems with the Brown Rot in the export shipments. While this will certainly help Egypt overcome Brown Rot problems, the MALR will need to consider programs to keep uncertified potato seed from being transferred and grown in these new desert lands, otherwise in a few years the problem will surface again.

Several new agribusinesses have been started in recent years in the field of tissue culture rapid multiplication processes to supply Egypt with F3, F4, and F5 certified seed potatoes. Egypt may be in a very favorable position to supply its own certified young "F" generation seed potatoes. In addition, the country could establish a "World Class" certified seed potato export business, supplying southern hemisphere countries with young "F" generation seed potatoes. Egyptian potato yields might also be increased significantly by using domestically produced certified young seed.

The new privatized Egyptian potato industry is young and appears to be working towards having a free and open market system. The MALR should be extremely careful not to establish conflicting regulations and decrees that may destroy this positive development. New potato processing companies are looking to establish their presence with value added quality potatoes at cheaper prices, taking advantage of economies of scale. Allowing each and every farmer and company to freely interact within the industry will establish a healthy competitive situation, making it difficult for groups to establish cartels or monopolies that will reduce economic efficiency. The MALR should jointly work with the potato industry to focus on establishing minimum

grade/quality standards for the domestic table-stock potatoes for consumption.

3. Tomato

Tomatoes are the most widely grown vegetable crop in Egypt, representing approximately 40 percent of all vegetable production in the country. They also represent a very difficult commodity to market, both domestically and abroad. The marketing system functions well considering that it moves millions of tons of tomatoes to several million people each year. The problems, however, are many, mainly due to over-supply with low prices to the farmer and intermediaries.

Tomato Production: Yields in tomato production increased dramatically in the 1980s and early 1990s due, in large part, to the efforts of the Ministry of Agriculture to provide technical assistance and low-cost inputs to growers. In the mid-1980s, the Yellow Leaf Curl Virus (YLCV), vectored by the White Fly, devastated crops. Since then, tomato production has been a very risky venture. The effect of the virus makes tomatoes a very difficult crop to market, in that producers cannot reasonably guarantee that required volumes, timing and quality will be available. This problem is further complicated in that the varieties that have some tolerance to YLCV are processing varieties. No varieties of the "salad" type tomato, required for export to Europe, are commercially proven to have sufficient tolerance to the virus to allow for the development of a marketing program.

Production Technology: Tomatoes are grown year-round, with different technologies used for different seasons. They are grown in the summer, the fall (or "nili" season), and under protected cultivation in the winter. The governorate of Fayoum, one of the traditional tomato growing areas, has a large production zone that does not need protection. The "new lands" are the principal region in which winter production occurs. The technology of plastic covered, "walk-in tunnels" that is used extensively for export vegetable crops in this region, was developed principally for production of tomatoes. Today, however, almost all winter production of tomatoes is done under plastic row covers.

Postharvest Losses: In a system that moves tomatoes with no attention to environmental control, losses can be expected to be high. The problem is compounded by a rustic method of packing into crates that further damages the tomatoes. The tomatoes are then carried over unpaved roads in poorly suspended trucks. Several handlings of the tomatoes before they reach the consumer further reduces quality. The net result of the poor handling is

high losses, but more importantly, the consumer pays a high price for a poor quality tomato. The postharvest handling system needs to be improved to lower the cost of marketing a quality tomato.

Export Marketing Potential: Egypt has two traditional and potential export markets. One is the European market, where competition is high and potential returns marginal. The other is the regional market of Saudi Arabia and the Gulf states, where the markets are not freely competitive and, especially in Saudi Arabia, are dominated by exports from Jordan. Tomatoes have not been marketed anywhere to date, although opportunities do exist. These opportunities depend heavily on the ability to produce sufficient volumes of high quality tomatoes to allow the development and implementation of marketing strategies that will provide a good return to growers and exporters.

4. Other Potential Crops

Additional crops to be considered during project implementation will include: green beans, already a crop heavily exported to Europe; green peppers, for which a large, lucrative market exists; mangoes, assuming that suitable varieties can be grafted upon existing rootstock cost effectively; onions; garlic; and asparagus.

B. Food Crops Component

The Food Crops Component "international linkage" program will be finalized during ATUT project implementation. A list of indicative crops and activities and target levels is cited below to illustrate the GOE's planned national research programs for important food crops. The list is not exhaustive and the discussion deliberately not detailed at this point. The MALR's national cereals research project aims to increase production and introduce new high yielding and disease and virus resistant varieties in order to reduce the shortage of food, especially from wheat and maize crops, and increase the exports of rice and other crops.

1. Wheat

This subprogram includes the following studies: 1) Breeding varieties for resistance to aphids, rust, and viral diseases and with salinity and heat tolerance to be grown in upper Egypt and the New Valley, 2) Releasing varieties suited to rainfed areas in the Northwest Coast and Sinai, (3) Agronomic research to formulate production packages for each of the newly released cultivars to achieve optimal yield per unit area. Of

particular interest will be the work on long-spike wheat varieties.

Subprogram Objectives

- Producing new high yielding, early maturing varieties.
- Seed production for newly released varieties "Giza 163", "Giza 164", "Gemmeiza 1" and "Giza 165" will replace currently grown commercial varieties in the Delta and Upper Egypt. This will help to increase yields by up to 14 Ardab/Feddan.
- Improving production practices in the newly reclaimed lands and rainfed areas in the Northwest Coast and Sinai.
- Producing drought and salinity tolerant wheat genotypes.

In addition to the plans of the national program, ATUT will emphasize pest and disease tolerance and stress tolerance, particularly water related (e.g., salinity, drought resistance) either through traditional or genetic engineering breeding programs.

2. Maize

Maize is one of the important summer and fall (Nili) crops in Egypt. The area cultivated with maize is about 32% of the total area in summer and about 17% out of the total cropping area annually. This program includes studies on: 1) developing and improving maize in bred line and hybrids; 2) breeding for disease resistant and high yielding maize varieties; 3) breeding varieties adapted to unfavorable conditions such as drought and high salinity in order to be cultivated in new lands and rainfed areas; 4) improving cultural practices such as planting dates, plant populations, soil preparations, fertilizer and water requirements; 5) maize verification trials and demonstration fields; and, 6) maize seed production.

Subprogram Objectives

- Increase productivity from 18.8 Ardab/Feddan to 25 Ardab/Feddan through developing new varieties and hybrids of high yield, with disease resistance. This will be accomplished by single and three way crosses and improving cultural practices.
- Provide seed producing companies with foundation seed of commercial varieties and hybrids.

ATUT will be particularly interested in genetic engineering work now underway with the Agricultural Research Genetic Engineering

15

Research Institute (AGERRI) on tolerance to common pests in corn, including corn borer genetic resistance.

3. Rice

Rice is considered a main food and export crop of Egypt. It occupies annually about one million feddan with production of about 3.2 million tons. This production is enough to meet local consumption requirements with about 200,000 tons remaining for export.

Subprogram Objectives

Increase rice productivity up to 10-15 percent by:

- Developing high yielding, high quality varieties with pest and lodging resistance suitable for mechanical harvesting.
- Improving cultural practices to maximize productivity of the commercial varieties and the rational use of inputs.
- Producing enough pure seed free from red rice, off types and weed seed to be used for about 70% of the annual rice areas.
- Adapting integrated pest management for diseases, insects and weeds in farmer's rice fields.

ATUT will work with the food crops research institutes to develop strains with increased resistance to salinity, genetic resistance to common pests and diseases and management practices that require less pesticides or other chemical inputs.

4. Fava Bean

This program includes studies on breeding for resistance against major problems associated with fava bean production, including chocolate spot and rust, Orobanche, aphids, and viral diseases.

SOCIAL AND WID ANALYSIS

ATUT will develop, refine and transfer productivity-enhancing technologies for the high value horticulture crops that Egyptians now cultivate, open additional markets for their products and create both on-and off-farm employment opportunities. ATUT will provide additional possibilities and offer additional choices for farmers through the provision of agricultural production, harvesting, handling and marketing technologies for their consideration and adoption.

Unlike agricultural production projects, ATUT will not introduce new crops or major shifts in cropping patterns that would require an analysis of the impact or effect of production on the farmer, farm family or rural area. Neither will ATUT have any effect on tenure relationships. For thousands of years, Egyptian farmers have successfully cultivated a wide number of crops on small parcels of land. Food crops, cash crops and livestock are all managed on an average of two acres of land. Furthermore, no new organizations will be developed at the farm, regional or national level, upon which the success of ATUT will depend.

No project, however, can be considered "impact neutral." ATUT, as with most other projects dealing with agriculture, will introduce shifts in labor allocation, introduce changes in farming practices and, through increased employment opportunities, present transformations that will be difficult, at this point, to identify. ATUT will, therefore, initiate and complete, during the first eighteen months of the project, a study of employment possibilities and labor availability. A scope of work has been developed and a preliminary study is already underway to examine the labor requirements and employment from horticultural crop production for four major horticultural crops. To this scope will be added an examination of the employment generated from harvesting and processing of typical horticultural crops destined for export.

Women in Development

Egyptian women represent an important human resource for promoting the agriculture development process, yet very little systematic attention is paid to their needs. Close to 47 percent of the total active female population in Egypt is engaged in agricultural work. Due to male out-migration to seek urban or regional job opportunities, many are effectively Head of Households who have to make the daily decisions. Women participate in virtually all facets of agricultural activities, including planting, weeding, irrigation, harvesting and marketing. Studies have shown that in Lower Egypt 62 percent of

the women plant crops, 62 per cent irrigate, while 50 percent plough. In Upper Egypt, comparable figures for these activities are 34, 35 and 11 percent. Their participation in processing and marketing presents an opportunity to deal with issues related to post-harvest losses which are significant in Egypt. Targeting women with new techniques and methods could lead to substantial reductions in these losses. In addition, women are also engaged in handicraft activities linked to agricultural by-products such as basket and carpet weaving.

Positive development in improving the status of women has taken place in a number of areas. Various constraints remain, however, mainly arising from cultural and social factors. The more severe constraints include high fertility, high maternal and child mortality, illiteracy, and lack of access to resources (e.g., agricultural services related to extension and credit, and thereby to input supplies and marketing outlets) for increasing productivity and return in agricultural and other rural enterprises. With regard to extension, the existing extension service is geared to serve male farmers. In many governorates, there are only a handful of skilled female extension agents. In the case of credit, problems of collateral requirements, and illiteracy constrain women's access to credit. Furthermore, women's access to governmental decision making processes is limited and there are few institutional mechanisms that can ensure that their concerns are integrated into the planning and implementation process.

Since it is expected that a major source of harvesting, post-harvesting and processing labor will be provided by women, a study will be completed during the first eighteen months that will assess the anticipated impact of ATUT on women. The scope of work for this study will be developed in conjunction with the USAID/Cairo WID officer. This scope of work will be used to update the Women in Development studies conducted in 1984, 1985, 1986 and 1987 by social science staff associated with the MALR and funded by USAID (Ishak, 1985; El Ghouli and Youssef, 1984; Momtaz, 1986 and Ishak and Tobshy, 1987).

Stakeholders and Beneficiaries

Primary beneficiaries of the project will include horticultural producers, both small and large. Producers are expected to gain from increased productivity, access to international markets and higher prices for produce sold to the local markets. Domestic consumers should benefit from increased availability, longer seasons, improved quality and stable prices of horticultural products in the local market as a result of high production and increased productivity.

ATUT's emphasis upon high value horticultural products primarily for export will generate significant employment opportunities. Thus, project beneficiaries will also include the rural labor force. Although definitive labor requirement-related data is not yet available, studies conducted under NARP for four major crops gives an example of the range of labor that can be generated in the production of select horticulture commodities. For example, it is estimated that between 124 and 138 person days per year are required for the establishment and the adoption of the recommended first year package of agronomic practices for one feddan of vineyard. After the initial year, a minimum average of 88 person days of labor is required for maintenance. These figures do not include the specialized work of the pruners, who trim the grape flowers to shape the bunches or who remove flowers to establish individual grape size that is required for the export market. This annual labor requirement is estimated to be an additional 100 person days minimum for well trained workers. Importantly, this work is done almost exclusively by women.

Furthermore, these figures do not take into consideration harvesting, post harvest handling, processing or shipping related employment that is also generated. Grape plantings are projected to continue to increase in response to the lucrative European market demand for seedless grapes in early summer. The additional labor requirements for export market production alone will grow significantly in the next several years.

Labor requirements for the establishment, management, harvesting and processing/shipment of strawberries is even more labor-intensive than for grapes. Again, this work is primarily done by rural women, adding an important source of income to the family budget. Given the important role of women in the production and processing of horticulture crops, a gender analysis will be a priority action of the program support unit upon mobilization. Additional studies of the labor requirements for production and processing of other important horticulture crops will also be undertaken through ATUT.

INSTITUTIONAL AND ADMINISTRATIVE ANALYSIS

Overview: There are a significant number of GOE institutions that will conceivably have a role in the implementation of various aspects of ATUT, under both the Horticulture and Food Crop Components, in addition to the program support studies that are planned. These roles include, but are not limited to: technology development; adaptive research; technology transfer; and, regulatory functions for the import of chemicals or plant material, or the export of produce. The major role of the GOE, however, will be carried out within the Ministry of Agriculture and Land Reclamation and among the Egyptian universities that have significant capacity and capability to develop and adapt technology and transfer it to the end-user.

Sources: Information on the roles of various Ministries and the structure of the Ministry of Agriculture is taken from, A Study of Manpower in the Field of Agricultural Research, completed by the Agricultural Research Center, MALR, 1993; A Revitalized, Better Coordinated, and More Effective Agricultural Extension System for Egypt, by E.T. York, August, 1994; New Lands Development Study, Vol. 1, April 1994, by Dr. Richard Newberg; and Volume I of the Market Oriented Development for Major Horticultural Crops in Egypt, May 1994, by Dr. Kelly Harrison. The complete studies are available in USAID/Cairo's AGR/A Office. This section will highlight only the relevant sections of these studies.

I. Agricultural Research

The primary responsibility for agricultural technology development and transfer rests with the MALR and the Egyptian universities under the Ministry of Education. There are, however, other ministries that carry out limited agricultural research. Each will be highlighted briefly below.

A. Ministry of Agriculture and Land Reclamation

The Ministry of Agriculture and Land Reclamation is a large Ministry with over 435,000 employees. The Ministry is divided into line agencies under thirteen Under-Secretariats and two Research Centers. Within the MALR there are three main entities with possible roles under ATUT. These are briefly described below.

1. Agricultural Research Center

The Agricultural Research Center (ARC) was established in 1971 by Presidential Decree No. 2425 and later amended under Presidential Decree No. 19 in 1983. The ARC has two deputies; one for research and one for extension and training. ARC has 16 institutes and 5 central laboratories. There are a total of 4,559 personnel assigned to these institutes and laboratories, of which 48 percent hold doctorate degrees and 22 percent Master of Science degrees. ARC also has 38 research stations in 20 governorates throughout the country. The research stations have a total of over 32,000 feddans for research and demonstration purposes.

A complete list of each of the institutes, their specific mandates and personnel is available within the AGR/A office. A few of the most important of the institutes or central labs include: the labs for horticulture, field crops, plant pathology, plant protection, soil and water; the Agricultural Genetic Engineering Research Institutes; and the Central Labs for Agricultural Expert Systems and Agricultural Pesticides. These research units alone comprise a total of 2,242 staff, of which 1,255 hold Ph.Ds, 554 hold Master of Science degrees, and 433 hold Bachelor of Science degrees.

2. Office of the Undersecretary for Horticulture

Additional staff research and technology transfer capability for the ATUT project within the Ministry comes from the Office of the Undersecretary for Horticulture, which is divided into three departments: Vegetable Crops, Fruit Tree Crops and Medicinal and Aromatic Crops. The office includes a total staff of 231 research scientists and technicians, and over 2,000 extension agents, including 242 marketing extension agents. The Undersecretary for Horticulture reports directly to the Minister of Agriculture.

3. Desert Research Center

The Desert Research Center (DRC) was established in 1934 and consists of departments for water and land resources as well as plant and animal production. These departments have branches with inter-disciplinary work in the environment, dry areas cultivation, animal productivity, poultry, and socio-economic studies.

B. Ministry of Education

The agricultural research community includes: seventeen Faculties of Agriculture and eight Faculties of Veterinary Medicine within 13 Egyptian universities under the Ministry of Education. Forty-four percent of all Egyptian agricultural researchers with doctorate degrees work at Egyptian universities or colleges. The Faculty of Agriculture at Cairo University ranks highest with the most researchers, followed by Alexandria, Ain Shams, and Zagazig. Under NARP and predecessor agricultural research projects, grants have been provided to these faculties for collaborative research work either in conjunction with U.S. universities or with institutes under the Ministry of Agriculture. There is considerable research and technology transfer capacity and capability within the Egyptian universities to participate actively in the ATUT program.

Two additional institutes (Agricultural Institutes for Agricultural Cooperation at Ain Shams and Assiut Universities) under the Ministry of Education provide supplemental roles to existing Egyptian cooperatives. These institutions, however, will most probably not play a role in any ATUT sponsored activity.

C. Ministry of Public Works and Water Resources

The Water Research Center was established in August 1975 by Presidential Decree No. 830. The Water Research Center (WRC) has 11 separate research institutes each with a specific mandate. Three institutes, the Water Distribution and Irrigation Methods Research Institute, the Drainage Research Institute and the Groundwater Research Institute deal directly with agricultural research. Under NARP, staff from the WRC participated jointly in collaborative research with scientists from the Ministry of Agriculture and Land Reclamation and with various Egyptian university faculties.

D. Ministry of Scientific Research and Technology

There is also agricultural research capacity within the Ministry of Scientific Research being carried out at the National Research Center (NRC) and the National Institute of Oceanography (NIO). The NRC was established in 1956 as a governmental program aimed at conducting theoretical and applied research in the "natural sciences for the national welfare." NRC has 15 branches in all, of which two are relevant to agricultural research: 1) the agricultural and biological research domain, which consists of 7 departments with laboratories; and 2) the food industry research domain with three departments. The NIO works on applied

and basic research through 16 departments. No role for this institute is envisioned under ATUT.

Summary

In summary, there is a large public sector agricultural research capacity scattered among various Ministries, centers and institutions. Egyptian university staff also have significant capability to carry out adaptive agricultural research work. Therefore, a large number of well-trained agricultural research staff and a sufficient number of extension agents are available in Egypt to carry out the work planned under ATUT.

II. Technology Transfer

An important activity under the ATUT will be the transfer of technology to the end-user, i.e., small, medium and large producers, agribusiness firms, traders and exporters. USAID funded a study in August, 1994 that assesses the entire agricultural extension system in Egypt. The report, available in the AGR/A Office, is extensive and reviews the history of the extension service, the organizations involved, and the number of staff and their deployment within the country. This section highlights the findings of that report as they may apply to the institutional capability of the MALR to support the transfer of technology to farmers under ATUT.

A. MALR Structure and Capacity

The current ARC mission includes both research and extension as well as the training of researchers, extension personnel and producers. Its objectives are to: 1) generate research results to develop agricultural technology that ensures continuous development of agricultural production; and, 2) ensure the transfer and extension of such technology to achieve higher productivity and incomes.

Coordination of agricultural extension activities within the ARC is the responsibility of the deputy director for extension and training. These responsibilities, however, are poorly defined. Moreover, although each research staff member in the ARC is supposed to allocate a portion of his or her time to extension activities, there is not a sufficient number of professional staff available to be effective.

The Central Administration for Agricultural Extension Services (CAAES) has functioned as the main extension administrative unit in the Ministry since the early 1960s. The CAAES was reorganized

most recently under the provisions of Ministerial Decree No. 845 in 1988. That decree affiliated the Undersecretary of CAAES to the deputy director for extension under the ARC. The extension work of the CAAES concentrates on field crops. Other central administrations carry out extension tasks in addition to their other duties. For example, the Central Administration for Horticulture and Vegetables (CAH) and the Central Administration for Soil and Water have substantial extension responsibilities.

There is also a Central Administration for Research Stations (CARS) and On-Farm Trials within the ARC. The tasks of carrying out extension activities are assigned to researchers in each of the ARC institutes and, where appropriate, the central laboratories. CARS provides supervision of the 38 agricultural research stations. Staff at these stations carry out research work both at the stations and on-farm. These research station personnel are expected to allocate up to 30 percent of their time to extension efforts.

Although there has been change in recent years, Egyptian agricultural extension remains largely traditional. As with most extension services in developing countries, the researchers have provided the technology that serves as the basis for what the agents transfer to the producer. On-farm trials are conducted to verify the technologies that are developed. Demonstrations are conducted on-station and on-farm and producers are invited to visit sites during field days and harvest days. The feedback loop, i.e., the farmers reactions to the technology, are to be carried back to the researchers for further technology development and refinement. The time spent working with village extension workers and in visiting farms provides the opportunity for technology transfer specialists to observe problems directly at the farm and discuss them directly with the producers.

The GOE has recognized that unifying research and extension in Egypt is important. A major step taken, with financing initially provided by NARP and now continued with GOE financial resources, was the establishment of Agricultural Regional Research and Extension Councils under Ministerial Decrees No. 1523 of 1992 and 148 of 1994. The goal of these councils is to promote direct and indirect interactions, coordination and cooperation among ARC scientists and universities, extension agents, researchers and policy makers. The Regional Councils include governorate extension and research staff, members of the faculties of agriculture and veterinary medicine of the regional universities, the private sector, small farmers and personnel from the National Research Center, the Water Research Center and the Desert Research Center.

Given that the Regional Councils are relatively new, it is premature to assess their efficacy. They appear to be effective

in transferring information between scientists across disciplines and institutes. It is anticipated that the increased communication among the various partners and customers through the Regional Councils will help to break down the traditional top down approach to extension and research, increasing participation and creating accountability.

B. Private Sector Extension Capacity

At present, less than one hundred private companies provide farmers with any type of extension information or assistance. It is anticipated that in the future, there will be growing participation by agribusiness firms and other entities to help farmers make cropping decisions. In time, many of the functions now carried out by publicly funded extension agents will be assumed by agricultural input dealers, private seed companies or agricultural processing centers. Private sector participation in this area, however, is just beginning.

Agricultural cooperatives remain under some government control, although significantly less than in the past. When cooperatives truly become farmer-owned and farmer-controlled, they will be another strong link in transferring technology to small producers.

C. ATUT and Technology Transfer

Technology transfer under ATUT will not be limited to the traditional interpretation that technology transfer equals extension and that extension is done by extension agents exclusively to small farmers. Technology Transfer also includes technology passed from businessperson to businessperson, from research to businessperson and vice versa, and from expatriate consultants to conferees. Transfer takes place during international site visits, visits to research stations, farmers' fields, processing centers, and seminars and workshops. ATUT will devote considerable financial and human resources to this interpretation of technology transfer. The technology transfer agenda will be annually developed with the active participation of farmers, agribusinesspersons, traders, exporters and processors.

As stated earlier, a core concept of ATUT is the adoption of a "commodity systems approach." The GOE understands that there will be no generalized budget support to any institute or entity within the MALR or any other ministry. Instead, ATUT will focus upon a specific commodity and within that commodity seek to resolve problems identified by the producer. Therefore, selection of a commodity and the rank ordering of specific

problems within that commodity will guide ATUT's technology transfer and adaptive research agenda and overall project implementation, irrespective of institutional lines within the MALR.

For example, assume the private sector determines that they require assistance with a disease affecting the production of strawberries, and with the cooling and packing of strawberries for export. In the latter case, a simple "transfer of technology" is required, as the handling and cooling of strawberries is well known. As for the disease, an adaptive research grant may be developed. The grant could be carried out by scientists either from one of the ARC institutes (e.g., the Horticultural Research Institute or Plant Pathology Institute) or by an Egyptian university, depending upon the specific problem identified and the best possible source of expertise. In some cases, there will be collaboration from one or more ARC institutes, e.g., the soil and water research institute and the horticulture institute, and agricultural universities. There will, however, be no multi-year budget support provided to any institute, as has been the case under previous projects. Thus, the commodity, strawberries in this case, forces ATUT to focus its efforts.

This approach will be the same for the Food Crops Component's "international linkages" program. Although the majority of the work could be considered within the domain of the Rice Research Institute, or the Field Crops Research Institute, the linkages programs will be specific to the strategic work being carried out and will only support those costs directly related to this work, rather than providing generalized budget support to the institute as a whole.

Summary

This analysis is of only a selected number of units within the Government of Egypt involved in agricultural research or agricultural technology transfer. Egypt has a large but poorly coordinated extension/technology transfer service scattered among many institutes and administrations within the MALR. Many improvements to the extension system have occurred during the past decade. In addition, policy reforms have significantly improved the environment in which extension agents carry out their assignment, e.g., the number of regulatory functions they carry out have been significantly reduced. The private sector will eventually emerge as another source of technology transfer agents to serve producers. In the meantime, ATUT will utilize the personnel from existing institutions under its "commodity systems" approach.

III. Regulatory and Policy Constraints

There are numerous organizations that can identify, refine, adapt and transfer specific technologies as demanded by Egyptian producers, processors and exporters. It is also clear that despite considerable liberalization within the agricultural sector over the last ten years, there remain hurdles and constraints that may well affect ATUT's goal of increasing production, productivity and income in the sector. While ATUT is a technology utilization and transfer project, its success will be affected by the policy environment within which it works, by the market prices and market forces at play during project implementation, by competition from neighboring producers, and finally by the willingness, commitment and skill of the end-user to adopt technologies developed and offered.

In addition to the program support funds to study employment, project impact, and other related studies, the ATUT project will have funds to carry out assessment of any policy or regulatory constraints that affect income, production or productivity in the agricultural sector. The scopes of work and implementation of these studies will be carefully orchestrated with the Mission's AGR/ACE staff. An illustrative set of studies would include a review of the composition and role of various ministry regulatory functions, e.g., quarantine, plant inspection, and export certification. The studies will be carried out by project funded consultants, Egyptian and American. The purpose of these examinations will be to identify bottlenecks, propose improvements and determine legitimate roles for those regulatory functions being carried out by various ministries that are justifiable.

ATUT is not intended to resolve problems of a regulatory or policy nature that may be encountered. It is hoped that through continuous dialogue with producers, an agenda for policy and regulatory studies will be developed. The resolution of significant constraints, however, will be addressed through other programs within the USAID/Cairo Mission, e.g., APRP and the Sector Policy Reform Program.

IV. MALR and the Private Sector

As previously noted, a core concept of ATUT is the full and open participation of the private sector in all aspects of the selection of technology transfer topics and in the development of the adaptive research grants under the Horticulture Component. Given the relatively small number of rather large, well capitalized, agribusiness firms, ATUT must ensure their participation without their coopting of the research agenda to the detriment of other project beneficiaries. Moreover, ATUT

must ensure the participation of the large number of small producers scattered throughout the country. This section will provide an analysis of alternative institutions involved in marketing activities. It will also review recent MALR history in working with the private sector.

A. Alternatives to MALR as the Counterpart

Certain kinds of actions that promote marketing system efficiency are costly for individual firms to undertake, e.g., basic research, education, specialized training, information about supply, demand and price behavior, transportation and certain types of market infrastructure. Governments can impartially provide those good and services to all participants. Because of the emphasis on central government control for several decades in Egypt, however, many of the institutions created by the government were not guided by the need to provide services, but rather to control.

Ideally, USAID would have preferred to find a well-established, Egyptian NGO already in the business of assisting private sector producers to export and assisting production, technology transfer and research institutes to refine their technologies to meet those needs expressed by the private sector. In reviewing existing Egyptian institutions, no organization was found that fit this criteria.

There are some organizations that fall under the control and guidance of the Ministry of Social Affairs, but USAID has had no success to date with attempts to interest this Ministry in private sector concerns. Other entities working in this area are established by Presidential decrees and are working on other donor-funded projects. Their limited staffing levels, other responsibilities and procedures would become overly burdened with the entire range of responsibilities this project envisions. Some of the organizations examined were the Alexandria Businessmen Association, the Egyptian Businessmen Organization, the American Chamber of Commerce, the Trade Development Center, the Egyptian Center for Economic Studies and others. The design team also considered organizations that had an interest in or experience with the production, processing or marketing of horticultural crops. The groups included a U.S. not-for-profit cooperative development organization and an Egyptian organization that has had some experience in working with the private sector in the exportation of horticultural products.

The design team's analysis indicates that none of the organizations considered have the requisite independence, managerial strength, capability or credibility to implement a project of ATUT's size and complexity. The alternative of

establishing a new entity would require considerable effort and time with no assurance that the new firm would be able to capably manage, direct and account for a project such as ATUT. There is no basis to conclude that any groups reviewed has a predominant capability or capacity to administer or implement a project of ATUT's importance, complexity or size.

Some of the principal institutions that play a role in commodity marketing systems are described briefly below. None of these groups, as presently constituted, can be considered the types of organizations to independently manage, direct or influence the allocation of any ATUT resources. A review of the following will indicate the type of institutions that exist and the reasons for not including them directly in the implementation of ATUT.

1. General Union for Producers and Exporters of Horticultural Crops

This union was created by law in 1971. It is composed of public sector units working in the field of horticulture production, agricultural cooperative societies and private sector farms or producers of horticultural crops. This union was supposed to be a kind of private sector association, but in direct contradiction to its stated purpose, the law gave essential control to the Ministry of Agriculture. The objectives of the union were defined in a very broad way, and to some extent beyond the capacity of the union, but it seems more consistent with the role of the MALR rather than with the interests of the members of the union. Analyzing the performance of the union since its inception indicates that little progress was made in achieving its most important objectives. There is also suggestions that the union has colluded with the Potato Growers Cooperative to restrict the supply of potato seed as a way of keeping potato prices high. Recommendations to improve the union include a complete reformulation of its charter, giving the lead to the private sector and reducing the role of the MALR, and electing its board of directors from among the members without any allocation of representation to specific groups or institutions.

2. Egyptian Export Promotion Center (EEPC)

The EEPC was established in November 1979 under the Ministry of Economy and Foreign Trade. The main functions of the EEPC are: storing and disseminating trade information to assist exporters; carrying out studies and analysis of export potential; preparation of technical and organization recommendations required for the development and production/elimination of constraints to export; organizing training programs for the

export sector; collaboration with international and national organizations in the field of export promotion, and cooperation in studies related to export incentives.

The EEPC has fundamentally been ineffective in achieving its objectives. The reasons given are problems concerning governmental bureaucracy and limited funding.

3. General Organization for Export and Import Control

The GOEIC was established in 1961 and has operated as an integral part of the Ministry of Economy and Foreign Trade since 1975. Major responsibilities include public inspection of food import and quality control of export and import commodities to ensure that Egypt's agricultural production meet certain standards that are intended to protect and enhance the reputation of Egyptian produce. The GOEIC, however, also has various powers to intervene in the affairs of the business community engaged in international trade. These include: 1) maintenance of a register of all imports and exports for verification; 2) issuance of certificates of origin accepted by the EU; and 3) mandating the shipping, packaging and labeling methods according to Egyptian regulations.

Established exports rarely are subjected to item 3 above, but new exporters must meet the standards. Inspectors play an important role, however, in checking for brown rot infestation in potato exports and for certain infestations in onion exports.

4. Office of Plant Protection and Quarantine

The Office of Plant Protection and Quarantine is part of the Plant Protection department of the MALR. It was re-organized in 1960. Its role is to protect Egyptian agriculture from foreign pests and diseases, to perform phytosanitary inspections at the request of foreign governments and to enforce the standards established by the GOE. In 1992, the Plant Quarantine function was separated from the Plant Protection Department. The Quarantine Department reports directly to the Minister of Agriculture. The Quarantine Department has 18 posts located at sea ports, airports and at the major border areas. These quarantine points have a staff of 400 employees assigned. A team of two or three specialists is assigned to each quarantine point. Each inspector holds at least an undergraduate degree in agriculture and has a combined total of ten years of training or related inspection experience. Their primary function is to inspect the quality of unprocessed fresh agricultural products for export.

80

5. Agribusiness Investment Office

The Agribusiness Investment Office (AIO) was established by Ministerial Decree No. 506 in 1986. The AIO is administratively within the Foreign Relations Department of the Ministry. AIO's objectives are to: encourage private agribusiness investments; provide on request investment database services through AIO's information network; help in facilitating regulations, provisions and agri-export procedures; and represent the agricultural sector in the General Authority for Investment (GAFI). The AIO database, in English and Arabic, provides information on sector-by-sector and product specific information as well as foreign market information including export leads and market prices for Egyptian exports.

B. MALR and the Private Sector

The MALR has been working with the private sector with increasing efficiency over the last two years of the NARP project. For example, NARP sponsored a trip to Chile that included fourteen members of the private sector, including some of the largest horticultural producers and exporters in Egypt. NARP also funded two specific horticultural commodity studies, presented the findings to a panel of public researchers and private businessmen and incorporated the results of their discussions in the final report. Additional studies of markets, prices and profitability analysis for five important horticultural commodities was conducted under NARP directly in response to the expressed needs of the private sector. NARP also sponsored a course taught in Cairo entitled "Managing a Fresh Fruit and Vegetable Export Business." The course included a tailored two-day session specifically for and at the request of agribusiness executives and a five-day training program for their technicians and field managers. A second course was conducted in March 1995 for additional private sector businessmen. ATUT is designed to build upon the experience and momentum gained in working with the private sector in meeting their expressed needs.

The Under-Secretary for Horticulture has developed strong ties with many private-sector producers and exporters, meeting twice a month with various committees organized around specific commodities. One committee is for curcurbitaceae (i.e., melons, water melons, squash and cucumbers), another is organized around tomatoes, a third around green beans, a fourth deals with eight specific fruit crops (apples, grapes, pears, olives, mangos, plums, apricots and peaches) and the final committee deals with eight types of aromatic and medicinal crops. There is active participation of the private sector in these committees, which help to plan training sessions and workshops designed to address specific problems raised by the producer. The committee on

tomatoes was established by Ministerial Decree in December, 1990 in response to the whitefly problem affecting tomato production. It is the only horticultural committee established by decree. The other committees have been organized by the Under-Secretary to assist in guiding the work of the Ministry.

V. Administrative Analysis

A. Administration and Planning

This section outlines a proposal to manage ATUT to ensure the full participation of the private sector without either creating a new non-public entity or overburdening an existing organization with management responsibilities.

1. Background

ATUT will build upon the existing commodity-specific committees of the MALR and organize, as necessary, additional "commodity councils" that will not be formally constituted or decreed by any GOE Ministry. ATUT will seek the active participation of all private sector representatives in the development of specific technology transfer and adaptive research "needs assessments." The large agribusiness firms will be invited to attend planning sessions to work with researchers and transfer agents to refine objectives. To determine the specific needs of the smaller producers, meetings will be held with representatives of various commodity groups in the field to ensure that their interests are represented. The needs assessments will be incorporated into strategic plans and translated into annual workplans and budgets. USAID will work actively with the representatives of the GOE, the private sector and the Technical Assistance team in the development of the strategic plans. USAID will approve the annual workplan and budget when it is satisfied that the needs of all sides have been expressed and that the plan responds to these needs.

2. Annual Planning

The following is a possible approach that ATUT could adopt.

- A 2-3 day planning session in Cairo with the private sector, researchers, technology transfer specialists, Technical Assistance teams members and USAID staff. The private sector would be encouraged to attend or they could send agenda items for consideration.

- A 2-3 day planning session in the field at regional research and extension centers to ensure participation of small producers. Committee composition would be similar to that attending the planning session in Cairo.
- A 2-3 day synthesis workshop to develop a draft Strategic Plan. The Synthesis Workshop would categorize:
 - Technology Transfer Activities (e.g., site visits, seminars, workshops) by topics and by crops, such as the need to visit Chile during pruning season or packing season or a seminar on pre-cooling technologies.
 - Adaptive research needs by topic and by crop, such as developing an early maturing grape variety for export to Europe or biological control of tomato yellow leaf curl virus.
 - Studies, e.g., a profitability analysis of asparagus in the European market.
 - Data base requirements to support international trade information under the MIS.

The Strategic Plan would form the major portion of the annual Implementation and Financial Plan (IFP), which would also include administrative and other costs, and would be submitted to USAID for approval. Should concerns remain that the private sector needs could not be ensured through this process, the approval of the IFP could include a certification from the Project Officer stating that s/he has participated in the development of the plan and that it reflects the concerns of the private sector and that the private sector has been given an opportunity for input and review of the Strategic Plan, including approval of adaptive research grants. Additionally, a representative of the private sector could be a member of the selection committee for adaptive research grants.

B. Implementation and Management Plan

Because of the keen enthusiasm and interest in ATUT expressed by the private sector, the design team proposes the following as the administrative organization and process to manage ATUT, and to control the use of the funds to ensure the appropriate balance among the respective roles of the Ministry, USAID and the private sector.

Under NARP and predecessor projects, considerable time, financial resources and management effort was expended to strengthen the ARC's ability to implement bilateral projects. NARP monitored more than 250 separate grants to Egyptian universities, and 28 collaborative grants between U.S. and Egyptian research entities. Under NARP, ARC successfully managed and administered a \$198 million research program. Many lessons were learned from NARP implementation. These will be incorporated into the management of the ATUT. Furthermore, ATUT has been deliberately designed to avoid past problems. For example, ATUT will not procure large amounts of equipment or commodities and will not fund any academic training. This will greatly simplify the management burden on the MALR and USAID. The various support grants, collaborative research grants and cooperative agreements under NARP each utilized budget terms and formats that differed one from the other. Under ATUT, a single unified budget line item and control system will be used for all collaborative research grants. ATUT will utilize contracts almost exclusively, rather than rely on a combination of collaborative agreements, grants and CRSPS to implement activities under NARP. This will unify and strengthen the project's control over resources and substantially strengthen USAID management ability to account for funds and manage for results. While NARP utilized host country contracting, ATUT technical assistance contract will be a USAID-direct contract.

The NARP staff has developed a strong capability to present budget figures in a management information system that closely paralleled the USAID MACS report. This system will be incorporated into the planning of the ATUT management system from the beginning to facilitate management functions and reporting. Additional experience was gained with the complicated NARP budget, which subdivided training, technical assistance, commodity procurement and services into each of 5 separate components. This required time-consuming shifts between elements of each component throughout the life of the project. Each of these shifts required a PIL jointly signed by the implementing agency and the Ministry of International Cooperation. ATUT will avoid these problems by developing a simple and unified budget plan that will facilitate tracking of expenditures, commitment of funds and eventual shifting to new accounting reports (i.e., AWACS) as their use is phased in.

USAID proposes that the system utilized during the last several years of the NARP be accepted as the model for the implementation of the ATUT. USAID will use PILs for authorizing expenses of local currency against the approved annual plans. Adaptive research grants and international linkages programs will be either USAID-direct contracts or sub-contracts under the overall ATUT Technical Assistance contract. Authority for control and monitoring over the use of funds will be shared with the MALR and

84

USAID as had been the practice under NARP. The process of establishing the annual activities and approving specific technology transfer activities and adaptive research grants, however, will be done in close collaboration with the private sector.

Summary

There are several ministries involved in agricultural research and extension/technology transfer activities. There are a large number of highly trained personnel to carry out the adaptive research and technology transfer activities proposed under ATUT in the MALR and the Ministry of Education. A complementary program of studies can highlight operational, regulatory or policy-related constraints that might affect the success of the ATUT. The GOE, and especially the MALR, clearly have the institutional capacity to implement activities proposed under ATUT.

ATUT will adopt a "commodity systems" approach. ATUT's horticultural technology transfer and adaptive research or food crops' international linkages program will focus upon specific crops and upon only a select number of the most important issues affecting the production, harvesting, handling, processing or exportation of those crops. This "commodity" concentration will obviate the need to work directly with any specific institutes under any GOE Ministry. Agreement on this issue has been reached with the GOE.

A number of public institutions have a role to play in the importation of plant material or the quality control and export of agricultural produce. ATUT will coordinate with them, as appropriate, but no direct implementation relationship is envisioned .

ATUT targets the active participation of the private sector in all aspects of project implementation. This participation will be ensured through the private sector's involvement in the development of annual strategic plans. Administration and management of the project will be modeled after the successful management features of the ARC under NARP and upon existing USAID project management practices and systems with which the MALR is familiar.

05

ANNEX E - ECONOMIC ANALYSIS

Economic Analysis

Agricultural production, marketing and processing in Egypt accounts for around 40% of GDP, nearly 50% of employment and 22% of total commodity exports. Agricultural commodities, textiles and food industries comprise 47% (1991/92) of total non-oil commodity exports. The scope of this project includes the vertically integrated system of food and fiber production, marketing, processing, and distribution. Thus, it includes not only on-farm production (the main focus of previous USAID projects in Egypt), but all the activities related to (1) agroindustrial food and fiber processing; (2) inputs, equipment, and energy for agriculture and agroindustry; plus (3) agribusiness services, included in transportation and storage; trade and distribution of food and fiber products; and other support services--specifically research and development, market information and agricultural credit.

USAID's approach recognizes both the potential of the sector to contribute to increased economic growth, exports, incomes and food security as well as the GOE's strong commitment to agricultural policy reform. The main part of USAID's strategy to which this project applies is the alleviation of key technological constraints that both inhibit achievement of sustainable and equitable agricultural growth and inhibit increased production and exports of selected horticultural crops and increased production of specific food crops.

A major development objective in Egypt is to align production and marketing with the country's comparative advantage in growing crops. That is, Egypt should grow more of those crops which are the most efficient users of the country's scarcest resources, especially water and land. This concept is embodied in what is known as a crop's Domestic Resource Cost (DRC). A crop with a low DRC compared to 1.0 as the reference point, is considered efficient and internationally competitive. Based on 1992 data, Egypt is shown in Figure 1 to be most competitive in growing crops such as tomatoes, wheat, oranges, and cotton with low DRCs, moderately competitive in growing potatoes and maize and least competitive in growing such crops as sugarcane and the berseems with high DRCs.

Competitiveness of Major Crops
Based on DRCs Analysis in '92

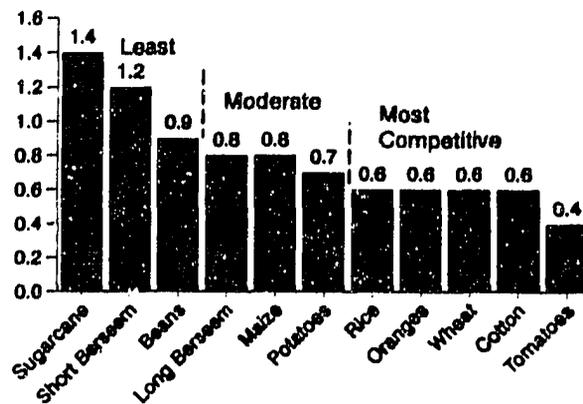


Figure 1

As another method to illustrate the appropriateness of the commodities ATUT will focus on is to examine the relative efficiency of each crop in using land and water within a group of 13 crops representing most major crops in Egypt. Each crop was evaluated in terms of what percent of total value-added (for the entire group) it generated per unit of both water and land. Figure 2 illustrates the results, showing how efficient these crops are in the use of these resources. Those crops higher up and to the right in the chart are relatively more efficient (relative to the other crops) at using water and land (i.e., they are the more competitive). For example, tomatoes, vegetables, potatoes, and cotton which are higher to the right, generate the highest value-added per unit of these two resources. Short-beseem and sugar cane, on the bottom left side, generate relatively lower value-added per unit of water and land.

Thus, the analyses presented above demonstrates that ATUT's focus on high-value horticultural crops is an economically rational choice--they are the most efficient users of Egypt's scarcest resources.

Basic food crops will be the focus of the second ATUT project component. Egypt has a total of only 3.2 million hectares of arable land. In 1993, wheat was planted on an estimated 768,000 hectares. Corn was grown on an additional 800,000 hectares and rice on 537,000. Thus, roughly one third of the arable land in Egypt is planted annually to three major cereal (food) crops. It is easy to see how, with targeted research investments on any of these three crops, economic returns can be extremely high. Egyptian agricultural research has demonstrated its capability to increase productivity of these three crops through financial and technical support from USAID and from long-term collaborative assistance from the relevant international centers. Comparing the higher average yields of major agricultural commodities achieved on demonstration farms in 1992 versus the national average illustrates this success:

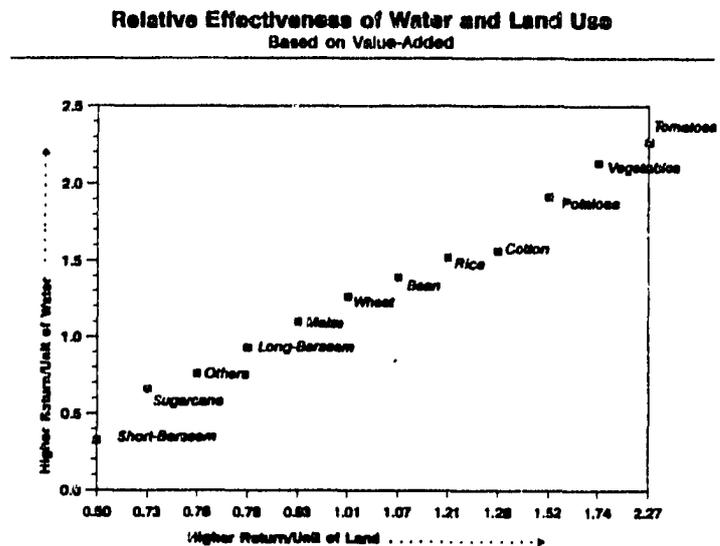


Figure 2

Cotton:	+ 25.4% (more vs national average)
Rice:	+ 39.0%
Maize:	+ 25.3%
Wheat:	+ 21.8%

Furthermore, more than 85% of land cultivated in corn is planted to varieties developed under USAID-funded research projects and 100% of the tomato varieties can be attributed to USAID-supported agricultural research projects. This is proof of the success of agricultural research in providing improved seeds and technologies to Egyptian farmers.

The recent history of tomato production in Egypt serves as an excellent example of the contribution that research can make to increased production. Tomato yields have increased dramatically: over 60% since 1980. In a 10 year span starting in 1977 (the beginning of the AID Agricultural Development Systems Project followed by NARP) yields jumped more than 84%. In 1987, yields were estimated to be as much as 50% higher than they would have been without improvements in varieties and management practices. But the next year (1988), the tomato crop was hit hard by a white-fly infestation. As a result, yields plunged 23% in two years. Fortunately, with the contribution of NARP's improved research facilities, reservoir of technology, and trained scientists, yields recovered fully in less than three years. Herein lies a clear demonstration of the importance of having a research system capable of responding rapidly to crisis.

A rough benefit:cost analysis to estimate the possible benefit from increasing tomato yields and limiting the losses from the whitefly infestation reveals that over the 11 year period from 1981 to 1992, the estimated total value of increased production and farmer income has been placed at anywhere from \$111 - \$250 million. This compares quite favorably to the \$15 million expended for the entire horticultural research program in NARP and the \$15 million for the entire ADS project. Although this is only a rough approximation to give an indication of the possible magnitude of benefits, there are perhaps few other AID investments that could have such a significant payoff.

Put aside for the moment, the argument of rate of return study methodology and specific attribution of non-research aspects such as price policy and its effects upon Egyptian agricultural productivity and production. The adoption of any agricultural technologies which reduce the use of pesticides, or which improve the efficiency of water use, shorten growing seasons, or increase even slightly the yields of major cereals, will have large and measurable returns to investments in research. This is particularly true given

that USAID has already made significant investments in this research capacity.

Investigators of returns to agricultural research have found that the total value of a crop is an important determinant of absolute social benefit from research. These studies show that, *ceteris paribus*, the payoff to research is relatively greater for commodities with a larger absolute value of output. In Egypt, cereals (maize, wheat, and rice) plus just one horticultural crop, tomatoes, represented 56% of constant total

output value in the pre-reform period (1980-86) and 64% between 1987 and 1992 (see Figure 3). Thus, small additional investments, carefully focused upon the critical constraints to increased productivity, will bring major benefits to Egyptian agriculture.

Share of Total Output Value In Constant 1980 Prices

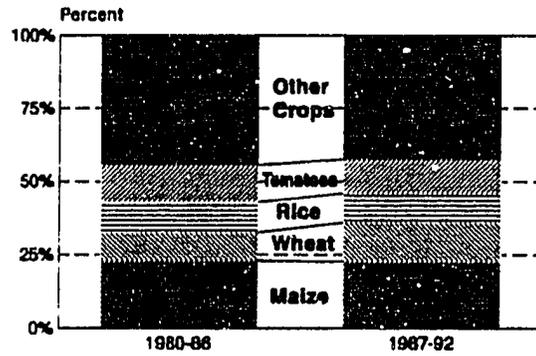


Figure 3

A 1994 report on "The National Agricultural Research Project's Contributions to Significant Advances in Egyptian Agriculture" reports that world record yields (under similar farm conditions) are indicative of the current potential yield of a crop. In the case of Egypt, a comparison is made in Figure 4 for wheat, maize, rice and cotton. As one can see, Egypt's best farmer yields are actually close to world record yields in some of these crops, particularly

Comparing Egypt to the World Avg Yields and Best Farmers vs World Records

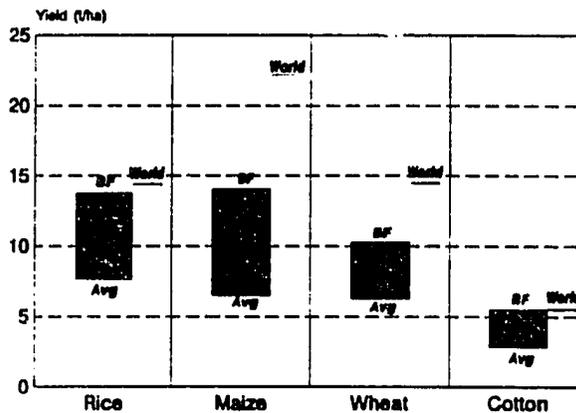


Figure 4

cotton. Thus, for the country as a whole, using best farmer yields as a benchmark, it appears that there still may be considerable scope for increased yields in maize, wheat, and potato.

The other aspect to be considered regarding the appropriateness of the focus of the project is the relative importance to farmers and consumers of the crops chosen for emphasis. A sample of farmers in Egypt has shown for example, that approximately 71% grow wheat, 65% grow maize and 40% grow fruit while 34% grow vegetables. Wheat is by far the most important food crop in Egypt. In addition to the figure for wheat mentioned above, over two-thirds of all wheat growers use all their wheat for home consumption. The smaller the farm size, the more they depend on this home consumption. Food is a very critical component of household expenditure. Among the ultra-poor in rural areas, up to 70% of their expenditure is on food, the majority of which is cereals. Among those who are considered poor, rural consumers spend 64% and urban consumers spend 57% of their household expenditure on food.

With regards to income and employment, horticultural crops are the most labor intensive and are an important source of income for a large segment of the rural labor force.

Benefit:Cost Analysis

To assess the potential impact of the project on employment and income, a benefit cost analysis was conducted for an illustrative set of crops that would be destined for the export market. Increased private sector export marketing is expected as a result of improved technology and better market information. Just three horticultural crops were considered--grapes, oranges, and potatoes. These three commodities were recently studied in great detail (see the study of Market Oriented Development for Major Horticultural Crops in Egypt, May 1994).

Based on these analyses, grapes are considered one of the horticultural crops with the greatest market potential in Europe with minimal interventions. One such intervention is the improved vine training system which has already been tested in Egypt and shown to have a significant positive impact on grape yields. The analysis estimates the impact of this technology being more widely introduced over ten years. For oranges, the project related benefit is the impact of expanding the market window of orange exports by five months from March to July through the introduction of more Valencia varieties. For potatoes, it is the impact of reaching a small

portion of the European market by simply better targeting. The general assumption is that these benefits would not take hold until the third year of the project and a ten year benefit:cost horizon was considered. A minimum and maximum size market were considered for comparison.

Analytical Approach

The analysis for grapes shall be presented as an example. The market orientation study for grapes estimated that Egypt could profitably supply the EU with 144,000 Mt of grapes over a 3 month period but the full annual market potential could be 548,000 Mt. The economic analysis for ATUT assumes that the 144,000 Mt market is the minimum market size and 30% of the total potential market is the maximum. To meet these markets, the minimum area required would be 18,000 feddans (based on 8 Mt/fd yield using medium technology) and the maximum would be 20,550 feddans. The minimum labor requirements would generate 48,700 jobs over 10 years while the maximum would be 55,600 (a large portion would be new jobs). This would generate approximately \$33.6 million of labor income in ten years or up to \$ 38.4 million if the full market is penetrated (based on labor earnings of 1,059 LE/fd).

The improved vine training system does not take hold until the 3rd year of introduction. Therefore, the analysis considered the marginal yield gain using this technology for the minimum and maximum markets starting in the 3rd year up to 10 years. This marginal gain being 0.5 Mt/fd in the third year rising gradually to 4 Mt/fd by the 7th year. The average profit per ton was estimated to be \$76/Mt in the EU market. One additional assumption is that the markets in EU are not reached until the 3rd year of the analysis (i.e., benefits are not counted until the 3rd year) and the market targets are achieved gradually over a 5 year period.

The combined labor income gain and market profits from increased grape exports amounts to \$63 million by the 10th year if Egypt meets the minimum market of 144,000 Mt and is \$72 million if the maximum market of 164,400 Mt is achieved.

For oranges, the minimum market was 73,100 Mt or only 10% of a possible 731,000 Mt market while the maximum was 30% of this potential. The minimum market for potatoes was estimated to be 10% of a 932,000 Mt market and the maximum, 280,000 Mt.

If only the minimum markets are met for just grapes and oranges, the IRR was estimated to be **24%** with **66,000** jobs either created or maintained and labor incomes increased by almost **\$40 million** while exporters earn **\$62**

million in profits. If the maximum markets are met, approximately 107,300 jobs are affected, generating \$54.8 million in labor income, generating about \$132 million in export profits and the IRR reaches 48%. With potatoes included, meeting the minimum markets generates an additional 15,400 jobs, increases labor earnings by \$5.4 million and the IRR is 39%. Attached is the analysis.

This analysis considered only three crops with conservative assumptions about market development. Clearly, based on this limited analysis, the ATUT project has the capacity of generating considerable benefits that far exceed the costs of the project.

SUMMARY OF ECONOMIC ANALYSIS

	Grapes		Oranges		Potatoes	
	Minimum Market	Maximum Market	Minimum Market	Maximum Market	Minimum Market	Maximum Market
Size of Market	144,000 Mt	164,400 Mt	73,100 Mt	219,300 Mt	93,185 Mt	279,556 Mt
Area Required	18,000 Fd	20,550 Fd	7,310 Fd	21,930 Fd	9,319 Fd	27,956 Fd
Number of Jobs	48,735	55,639	17,215	51,645	15,376	46,127
Labor Income	\$33.6 Mill	\$38.4 Mill	\$5.5 Mill	\$16.4 Mill	\$5.4 Mill	\$16.3 Mill
Market Profits	\$29.3 Mill	\$33.4 Mill	\$32.9 Mill	\$98.7 Mill	\$59.1 Mill	\$177.4 Mill
Total Benefits	\$62.9 Mill	\$71.8 Mill	\$38.4 Mill	\$115.1 Mill	\$64.5 Mill	\$193.6 Mill

IRR

	Minimum Market	Maximum Market
Grapes & Oranges	24.3%	48.0%
Grapes, Oranges & Potatoes	39.0%	75.1%

Assumptions:

- benefits start in the 3rd year.
- labor cost is achieved gradually over 5 years.
- maintenance over 10 years.

Based on Employment Generation and Profits from expanded:

- Grape production & exports to EU using new vine technology
- Orange production & expanded March to July EU market window with varietal improvement (e.g., growing more Valencia oranges)

Minimum Market Penetration

Year	Project Costs	Benefits: Min Mkt	B - C	
1	\$10.0	0	(\$10.0)	
2	\$15.0	0	(\$15.0)	
3	\$10.0	\$6.7	(\$3.3)	
4	\$10.0	\$10.9	\$0.9	
5	\$5.0	\$15.0	\$10.0	-26.6%
6		\$16.2	\$16.2	-1.1%
7		\$17.5	\$17.5	11.0%
8		\$17.5	\$17.5	17.7%
9		\$17.5	\$17.5	21.7%
10		\$17.5	\$17.5	24.3%
Total:	\$50.0	\$118.9	\$93.9	

24.3% IRR

Employment Generation

48,735 employees engaged in grape production
 17,215 employees engaged in orange production
 65,950 total

Additional Labor Income

\$33.6 million from grape production
 \$5.5 million from orange production
 \$39.1 million

Maximum Market Penetration

Year	Project Costs	Benefits: Max Mkt	B - C	
1	\$10.0	0	(\$10.0)	
2	\$15.0	0	(\$15.0)	
3	\$10.0	\$10.0	\$0.0	-99.7%
4	\$10.0	\$17.2	\$7.2	-41.2%
5	\$5.0	\$24.2	\$19.2	1.8%
6		\$28.1	\$28.1	23.1%
7		\$31.9	\$31.9	33.7%
8		\$31.9	\$31.9	39.1%
9		\$91.0	\$91.0	46.7%
10		\$31.9	\$31.9	48.0%
Total:	\$50.0	\$266.1	\$241.1	

48.0% IRR

Employment Generation

55,639 employees engaged in grape production
 51,645 employees engaged in orange production
 103,290 total

Additional Labor Income

\$38 million from grape production
 \$16.4 million from orange production
 \$54.8 million

95

EU Markets 144,000 MT min for 3 months
 164,400 MT max: 30% of market 548,000 max market potential

Area required
 at med Tech 18,000 fd - Min
 @ 8 mt/fd 20,550 fd - Max

Labor--production
 @ 90.25 person days/Fd

Labor Income--production
 390 LE/fd: man
 147 LE/fd: boys
 522 LE/fd: other
 1,059 LE/fd

Labor--Harvest & Marketing
 @ 36 person days/ton

Labor Income--Harvesting & Marketing
 316 LE/ton

Economic Impact -- Taking 3 Years for Technology to Take Hold and 5 Years to Reach Market Target

Year	Area Expansion		Employment Earnings		New Vine Training Technology--Marginal Gain				
	Min Mkt Fd	Max Mkt Fd	Min Mkt	Max Mkt	Marginal Yield Gain tons/fd	Min Mkt Mt	Max Mkt Mt	Profit Min Mkt \$76.67 per ton	Profit Max Mkt
1	--	--							
2	--	--							
3	3,600	4,110	\$1,120,765	\$1,279,540	0.5	1,800	2,055	\$138,000	\$157,550
4	7,200	8,220	\$2,241,529	\$2,559,079	2.0	14,400	16,440	\$1,104,000	\$1,280,400
5	10,800	12,330	\$3,362,294	\$3,838,619	2.5	27,000	30,825	\$2,070,000	\$2,363,250
6	14,400	16,440	\$4,483,059	\$5,118,159	3.5	50,400	57,540	\$3,864,000	\$4,411,400
7	18,000	20,550	\$5,603,824	\$6,397,699	4.0	72,000	82,200	\$5,520,000	\$6,302,000
8	18,000	20,550	\$5,603,824	\$6,397,699	4.0	72,000	82,200	\$5,520,000	\$6,302,000
9	18,000	20,550	\$5,603,824	\$6,397,699	4.0	72,000	82,200	\$5,520,000	\$6,302,000
10	18,000	20,550	\$5,603,824	\$6,397,699	4.0	72,000	82,200	\$5,520,000	\$6,302,000
Total:			\$33,622,941	\$38,386,191				\$29,256,000	\$33,400,600

**Combined Profits and Employment Gains
 from New Vine Training Technology**

Year	(mill \$)		Employment Generation	
	Min Mkt	Max Mkt	Min Mkt	Max Mkt
1	--	--	--	--
2	--	--	--	--
3	\$1.3	\$1.4	1,625	1,855
4	\$3.3	\$3.8	3,249	3,709
5	\$5.4	\$6.2	4,874	5,564
6	\$8.3	\$9.5	6,498	7,419
7	\$11.1	\$12.7	8,123	9,273
8	\$11.1	\$12.7	8,123	9,273
9	\$11.1	\$12.7	8,123	9,273
10	\$11.1	\$12.7	8,123	9,273
	\$62.9	\$71.8	48,735	55,639

from Expanded Orange Production Through Mkt Window Expansion

EU Markets 73,100 MT Min of 10% of market
219,300 MT Max of 30% of market

EU Market Potential for Oranges

Area required
at med Tech 7,310 fd - Min
@ 10 mt/fd 21,930 fd - Max

Labor
@ 78.5 person
days/fd

Labor Income
410 LE/fd: man
15 LE/fd: boys
425 LE/fd

	MT	Profit	\$/mt	Window
UK	180,000	\$9,000,000	\$50	mar-july
Germany	257,000	\$12,850,000	\$50	mar-july
France	200,000	\$5,000,000	\$25	mar-july
Belgium	19,000	\$950,000	\$50	mar-july
Netherlands	75,000	\$3,750,000	\$50	mar-july
	731,000	\$31,550,000	\$45 (avg)	
Min Mkt share	10%			
Max Mkt shar	30%			

Annual Fd in Production

Year	73,100 mt mkt	219,300 mt mkt
	14,620 mt per yr	43,860 mt per yr
	1,462 fd/y	4,386 fd/y
1		
2		
3	1,462	4,386
4	2,924	8,772
5	4,386	13,158
6	5,848	17,544
7	7,310	21,930
8	7,310	21,930
9	7,310	21,930
10	7,310	21,930
	43860	131580

Combined Market Profit and Employment Earnings

Year	Min Mkt	Max Mkt
1	-	-
2	-	-
3	\$1.3	\$3.8
4	\$2.6	\$7.7
5	\$3.8	\$11.5
6	\$5.1	\$15.4
7	\$6.4	\$19.2
8	\$6.4	\$19.2
9	\$6.4	\$19.2
10	\$6.4	\$19.2
	\$38.4	\$115.1

file: ATU

from Expanded Potato Production

EU Markets 93,185 MT Min of 10% of market
 279,556 MT Max of 30% of market

Area required
 at med Tech 9,319 fd - Min
 @ 10 mt/fd 27,956 fd - Max

Labor
 @ 55 person
 days/fd

Labor Income
 264 LE/fd: man
 66 LE/fd: boys
 330 LE/fd

Annual Fd in Production

	93,185 mt mkt	279,556 mt mkt
	18,637 mt per yr	55,911 mt per yr
	1,864 fd/yr	5,591 fd/yr
year		
1	0	
2		
3	1,864	5,591
4	3,727	11,182
5	5,591	16,773
6	7,455	22,364
7	9,319	27,956
8	9,319	27,956
9	9,319	27,956
10	<u>9,319</u>	<u>27,956</u>
	55,911	167,734

EU Market Potential

	MT	Profit	\$/mt	Window
UK	101,616	\$4,480,499	\$44	Dec - May
Germany	729,807	\$82,954,729	\$114	Jan - June
France	78,881	\$13,606,973	\$173	Jan - Feb
Netherlands	<u>21,550</u>	<u>\$1,982,600</u>	\$92	April
	931,854	\$103,024,801	\$106 (avg)	

Combined Market Profit and Employment Earnings

Year	Min Mkt	Max Mkt
1	-	-
2	-	-
3	\$2.2	\$6.5
4	\$4.3	\$12.9
5	\$6.5	\$19.4
6	\$8.6	\$25.8
7	\$10.8	\$32.3
8	\$10.8	\$32.3
9	\$10.8	\$32.3
10	<u>\$10.8</u>	<u>\$32.3</u>
	\$64.5	\$193.6

ANNEX F - FINANCIAL PLAN AND ANALYSIS

In order to achieve desired objectives, the project relies on the introduction of technology transfer methods that will vary greatly in accordance with selected crops, end-user resources, adaptability of proposed technology to local conditions, etc. The lack of reliable data at the end-user level at this early stage of the project suggests that a project economic analysis is more appropriate and indicative of estimated returns from the investment at the macro or sectoral level. Therefore, the financial analysis section of the project paper focuses on the cost structure of the project.

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
USAID Project # 263-0240.00
ILLUSTRATIVE (LOP) FINANCIAL PLAN (\$ 000)

Table 1

CALTSATUT2

CATEGORY	Base Yr Unit Cost	No. of Units	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
COMPONENT ONE (TECHNICAL ASSISTANCE)									
(II) Personnel.									
A) Long Term U.S.									
Chief of Party	180.00	6.00	180.00	189.00	198.45	208.37	218.79	229.73	1,224.3
Horticulture Advisor	180.00	6.00	180.00	189.00	198.45	208.37	218.79	229.73	1,
Program Analyst	180.00	6.00	180.00	189.00	198.45	208.37	218.79	229.73	1,
Finance/Administrative Officer	180.00	6.00	180.00	189.00	198.45	208.37	218.79	229.73	1,
B) Short Term U.S. (TDY's)									
	18.00	150.00	270.00	472.50	694.58	729.30	546.98	344.60	3,057.9
C) Short Term Egyptians									
	2.00	350.00	110.00	126.00	132.30	138.92	145.86	140.39	793.4
D) Local Staff (Long Term)									
Food Crop Technician G11/5	19.93	6.00	19.93	20.93	21.97	23.07	24.23	25.44	135.5
Horticulture Technician G11/5	19.93	6.00	19.93	20.93	21.97	23.07	24.23	25.44	135.5
MIS Specialist	19.93	6.00	19.93	20.93	21.97	23.07	24.23	25.44	135.5
Admin./Personnel Officer G10/5	18.29	6.00	18.29	19.20	20.16	21.17	22.23	23.34	124.4
Communications Officer G10/5	18.29	5.00	0.00	19.20	20.16	21.17	22.23	23.34	106.1
Executive Assistant G10/5	18.29	6.00	18.29	19.20	20.16	21.17	22.23	23.34	124.4
Clerical Staff (3) G8/5	22.54	6.00	22.54	23.67	24.85	26.09	27.40	28.77	153.3
Accountant/Personnel Admin. G8/5	11.74	6.00	11.74	12.33	12.94	13.59	14.27	14.98	79.8
Drivers (3) G4/5	17.03	6.00	17.03	17.88	18.78	19.71	20.70	21.74	115.8
SUB-TOTAL T/A Expat.'s & Locals	--	--	1,247.68	1,528.77	1,803.66	1,893.84	1,769.74	1,615.73	9,859.4
@ MULTIPLIER 100% (O/H, G&A and Fee)	--	--	1,247.68	1,528.77	1,803.66	1,893.84	1,769.74	1,615.73	9,859.4
TOTAL Burdened T/A personnel	--	--	2,495.36	3,057.54	3,607.31	3,787.68	3,539.48	3,231.47	19,718.8

(III) TECHNICAL TRANSFER (Off-Shore)										
U.S. Seminars	5.00	40.00	25.00	38.75	44.10	46.31	42.54	31.91	226.60	
U.S. Site Visits	5.00	40.00	25.00	38.75	44.10	46.31	42.54	31.91	226.60	
Third Country Site Visits	5.00	40.00	25.00	38.75	44.10	46.31	42.54	31.91	226.60	
(III) SUPPORT STUDIES	--	--	113.93	284.83	284.83	284.83	113.93	56.97	1,139.32	
(IV) RESEARCH GRANTS (U.S. Costs)										
Adaptive Research Grants (Hort.)	350.00	23.00	0.00	8,452.50	0.00	0.00	0.00	0.00	8,452.50	
Food Crop Link Grants	350.00	22.00	0.00	4,410.00	3,858.75	0.00	0.00	0.00	8,268.75	
(V) COMMODITIES (See Table 2)	--	--	245.00	3.70	8.00	8.40	8.90	9.30	283.30	
TOTAL COMP ONE (TECHNICAL ASSISTANCE)	--	--	2,929.29	16,318.82	7,891.19	4,219.82	3,789.94	3,393.46	37,542.52	
COMPONENT TWO (LOCAL SUPPORT/OPERATIONS)										
Executive Officer G12/5	25.03	6.00	25.03	26.28	27.80	28.98	30.42	31.95	170.25	
Deputy Executive Officer G11/5	19.93	6.00	19.93	20.93	21.97	23.07	24.23	25.44	135.58	
Technical Coordinators (3) G11/5 (Hortic., Food Crops & Studies)	59.78	6.00	59.78	62.77	65.91	69.20	72.66	76.30	406.62	
Manag. Information Systems (2) G10/5	54.87	6.00	54.87	57.61	60.49	63.52	66.69	70.03	373.22	
Chief Accountant G10/5	18.29	6.00	18.29	19.20	20.16	21.17	22.23	23.34	124.41	
Junior Accountants (2) G8/5	23.48	6.00	23.48	24.65	25.89	27.18	28.54	29.97	159.71	
Administrative Assistants (2) G8/5	23.48	6.00	23.48	24.65	25.89	27.18	28.54	29.97	159.71	
Clerical Staff (4) G6/5	30.05	6.00	30.05	31.55	33.13	34.79	36.53	38.35	204.40	
Drivers, Guards, Janitors (8) G4/5	45.41	6.00	45.41	47.68	50.08	52.57	55.20	57.95	308.87	
Office Supplies	7.06	6.00	7.06	7.41	7.78	8.17	8.58	9.01	48.01	
TOTAL COMPONENT TWO (LOCAL SUPPORT)	--	--	307.38	322.75	338.89	355.83	373.62	392.30	2,090.76	
COMPONENT THREE (SERVICES)										
(I) TECHNICAL TRANSFER (In-Country)										
Seminars	25.00	25.00	75.00	288.75	165.38	144.70	0.00	0.00	673.83	
Workshops/Field Trips	15.00	40.00	60.00	315.00	165.38	104.19	0.00	0.00	644.56	
(II) RESEARCH GRANTS (Local Costs in equiv. Dollars)										
Adaptive Research Grants (Hort.)	150.00	23.00	0.00	3,622.50	0.00	0.00	0.00	0.00	3,622.50	
Food Crop Link Grants	150.00	22.00	0.00	1,890.00	1,653.75	0.00	0.00	0.00	3,543.75	
TOTAL COMPONENT THREE (SERVICES)	--	--	135.00	6,116.25	1,984.50	248.89	0.00	0.00	8,484.64	

COMPONENT FOUR (AUDITS, EVAL. & ASSESSMENTS)									
AUDITS	30.00	5.00	0.00	31.50	33.08	34.73	36.47	38.29	1
EVALUATIONS	250.00	2.00	0.00	0.00	0.00	289.41	0.00	319.07	6
ASSESSMENTS	30.00	3.00	30.00	0.00	33.08	0.00	36.47	0.00	
TOTAL COMP.FOUR (AUD., EVAL. & ASSESSMENTS)	--	--	30.00	31.50	66.15	324.14	72.93	357.36	882.0
TOTAL PROJECT (ONE THROUGH FOUR)	--	--	3,401.67	22,789.31	10,280.73	5,148.68	4,236.49	4,143.12	50,000.00

Prepared by: Office of the Financial Management
Financial Analysis Division

AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER

USAID Project # 263-0XXX.XX

Table 2

PROJECT COMMODITIES ILLUSTRATIVE BUDGET (U.S. \$)

CATEGORY	Base Yr Unit Cost	No. of Units	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
I) OFFICE EQUIPMENT									
Office Desks (L.E. 1300 each)	389	4	1,557	0	0	0	0	0	1,557
Filing Cabinets (L.E. 1000 each)	299	6	1,796	0	0	0	0	0	1,796
Chairs (L.E. 350 each)	105	20	2,096	0	0	0	0	0	2,096
Conference Room Furniture (L.E. 13,000)	3,892	1	3,892	0	0	0	0	0	3,892
Xerox Machine (L.E. 100,000 per AID/PROC. estimate)	29,940	1	29,940	0	0	0	0	0	29,940
(Maintenance L.E. 1000/month starting second year AID/PROC)	N/A	N/A	0	3,706	3,891	4,086	4,290	4,505	20,477
Air Conditions (L.E. 6000 each)	1,796	6	10,778	0	0	0	0	0	10,778
Stand Fans (L.E. 1000 each)	299	8	2,395	0	0	0	0	0	2,395
Switchboard and Telephone installation (L.E. 50,000)	14,970	1	14,970	0	0	0	0	0	14,970
PC's (L.E. 12,000 each per DMS estimate)	3,593	8	28,743	0	0	0	0	0	28,743
Computer Maintenance (10% of PC's & Printers) (Free for the first 2 years per DMS practice)	N/A	N/A	0	0	4,159	4,367	4,585	4,815	17,926
Laser Printers (L.E. 15,000 each per DMS est.)	4,491	2	8,982	0	0	0	0	0	8,982
Office Finishing Costs (L.E. 6000/room)	1,796	5	8,982	0	0	0	0	0	8,982
Total Office Equipment			114,132	3,706	8,050	8,453	8,875	9,319	152,535
II) VEHICLES									
Van	30,000	1	30,000	0	0	0	0	0	30,000
Utility Vehicles	30,000	3	90,000	0	0	0	0	0	90,000
@ 9% Assuming PSA services			10,800	0	0	0	0	0	10,800
Total Vehicles			130,800	0	0	0	0	0	130,800
TOTAL COMMODITIES			244,932	3,706	8,050	8,453	8,875	9,319	283,335

Prepared by: Office of the Financial Management
Financial Analysis Division

**AGRICULTURAL TECHNOLOGY UTILIZATION & TRANSFER
AID MANAGEMENT (DIRECT & IN-DIRECT COST) CHART
USAID PROJECT # 263- 0240.00 (U.S. \$)**

USAID PERSONNEL	Year1	Year2	Year3	Year4	Year5	Year6	TOTAL	PRCNT. TO TOTAL
Office Director (OD)								
Percentage of Time Allocated to ATUT	10%	35%	35%	35%	35%	40%		
Direct Salary+Diff.+Allowances+Indirect Costs	3,980	58,504	61,429	64,591	67,726	81,271	337,411	32
Project Officer (PO-USDH FS2)								
Percentage of Time Allocated to ATUT	5%	50%	50%	50%	50%	80%		
Direct Salary+Diff.+Allowances+Indirect Costs	1,839	77,257	81,120	85,176	89,435	150,251	485,080	46
FSN Staff (FSN 11/12)								
Percentage of Time Allocated to ATUT	10%	50%	50%	50%	50%	75%		
Direct Salary+Bonus+Allowances+Indirect Costs	994	20,872	21,916	23,012	24,162	38,055	129,011	12
Secretary Staff (2) (FSN)								
Percentage of Time Allocated to ATUT	10%	50%	50%	50%	50%	75%		
Direct Salary+Bonus+Allowances+Indirect Costs	805	16,911	17,757	18,645	19,577	30,834	104,529	10
TOTAL AID MGT. COST by YEAR	7,619	173,545	182,222	191,333	200,900	300,411	1,056,030	100

Computation Notes:

- 1- Budget is inflated by 5% annual.
- 2- Indirect Costs per person/year is determined to be \$ 15,161.52 for FSN's and \$ 62,370.99 for USDH.
- 3- FSN allowances represents transportation and meals.
- 4- Additional U.S. personnel allowances represents Housing and Travel.
- 5- USDH Project officer position shall be two persons working for 40% each only during year 6. (2*40% = 80% year six).
- 6- Secretary staff salaries are computed based on two persons for the life of the project.
- 7- Year one cost is computed for the fourth quarter only.
- 8- USDH costs above represent 78% of projected total management costs.

Prepared by: Office of the Financial Management

Financial Analysis Division

ANNEX G - CUSTOMER AND PARTNER SURVEY

ANNEX G - CUSTOMER AND PARTNER SURVEY

----- : الاسم

Name -----

----- : المنظمة

Organization: -----

----- : التليفون

Tel.:-----

----- : الفاكس

FAX.:-----

1- Have you participated in any Ministry or NARP related activities in the last two years which directly related to your business activities?

yes no

- هل شاركت في اية أنشطة للوزارة او المشروع القومي للأبحاث الزراعية ذات

صلة بأنشطة منشآتكم في المنتين الأخيرتين ؟

لا نعم

2- If yes, please check which activities

- ___ Trip to Chile and the U.S. (the Grape Study Tour).
- ___ Seminar / workshop on Managing Fresh Fruit and Vegetable Export Business (Dr. Harrison, July 1994).
- ___ Forte Grande Hotel presentation of the 4 volume commodity marketing study (Citrus, tomato, potato and grapes)
- ___ Postharvest workshops or seminars.
- ___ Other Ministry sponsored activity (Specify pls.).

- في حالة الإجابة بنعم رجا، وضع علامة () أمام النشاط الذي شاركتم فيه

ا - رحلة شيلي والولايات المتحدة

ب - ندوة / ورشة عمل لكيفية إدارة عمليات تصدير الخضروات والفاكهة

(دكتور هاريسون ، يوليو ١٩٩٤)

ج - ندوة تسويق عن (هوالج ، طماطم ، بطاطس والعبب) الذي عقد في

فندق فورتني جراند

د - ندوات او محاضرات عن معاملات مابعد الحصاد

هـ - أنشطة اخري من خلال وزارة الزراعة (من فضلك حددها)

3- In terms of usefulness to you, did you find these activities important? ___ yes ___ no ___ somewhat

- هل تربي أنك استغدت من هذه الأنشطة؟

لا

نعم

4- Would you support continuing these activities in the ATUT project?
yes no depends.

- هل ترغب في استمرار مثل هذه الأنشطة من خلال المشروع القادم ال ATUT ؟

لا

نعم

5- Please rate, on a scale of 1-5 (1 being weak support and 5 meaning strong support) the following proposed ATUT activities:

- من فضلك رتب : ضع رقم ١ - ٥ أمام العبارات التالية (طبقا للأهمية)

A. ___ observational tours to U.S. or third country .

1 - رحلات تعليمية تدريبية للملاحظة والمشاهدة إلى الولايات المتحدة و بلاد العالم الثالث.

B. seminar / workshop on

- _____ postharvest handling
- _____ processing/packaging
- _____ business Management and Practices
- _____ production-related technologies

ب - حلقات دراسية وورش عمل عن:

- معاملات ما بعد الحصاد
- التجهيز و التعبئة
- التدريب على إدارة عمليات التصدير
- احدث التكنولوجيات المتعلقة بعمليات الإنتاج

C. data base for:

- _____ price information
- _____ crop technologies
- _____ business management
- _____ other

ج - إنشاء قاعدة بيانات عن:

- اسعار السوق العالمية و المحلية
- تكنولوجيا المحاصيل
- إدارة التصدير
- اخري

D. adaptive research on:

- _____ grapes
- _____ green beans
- _____ tomatoes
- _____ potatoes
- _____ garlic
- _____ onion
- _____ asparagus
- _____ citrus
- _____ other (Please specify).

د - بحوث تطبيقية عن:

- العنب

- الفاصوليا الخضراء

- البطاطم

- البطاطس

- الشوم

- البصل

- الأسبرجس

- الموالح

- اخري (اذكرها من فضلك)

- E. on site technical assistance on
____ production problems
____ postharvest
____ business management problem.

هـ - المشاكل الفنية بمواقع العمل:

- مشكلات في النواحي الانتاجية

- مشكلات في معاملات ما بعد الحصاد

- مشكلات بإدارة عمليات التصدير

6- Are there specific problems you face in production, processing, packing or exportation with any of the above crops for which you would seek Ministry of Agriculture and ATUT support

____ yes ____ no. Please specify if you wish:

.....
.....
.....
.....
.....

- هل تواجهك مشكلات في عملية التصدير (الانتاج، التغليف، التصنيع) و ان وجدت اذكر في اس حصول من المحاصيل السابق ذكرها و هل ترغب مساعدة

وزارة الزراعة او مشروع الـ ATUT ؟

لا

نعم

في حالة الإجابة بنعم حددها:

7- Are there problems of a non-technical nature which affects any aspect of your export business? Please rank them 1 - 5 (1 is low and 5 is high)

___ Transportation cost

___ Other transportation problems (Lack of facilities, bureaucracy, etc.)

___ GOE regulations / red tape on export

___ GOE regulations / red tape on import of plant material or agricultural inputs / chemicals, etc.

(Please specify which)

___ Other

- هل توجد مشاكل غير تقنية تواجهك في مجال العمل التصديري، من فضلك

رتبها حسب اهميتها من (1 - 0) .

- تكاليف النقل

- مشاكل نقل اخري (نقص الخدمات - البيروقراطية ... إلخ)

- قيود حكومية على عمليات التصدير

- قيود حكومية على إستيراد المواد والخامات اللازمة للتصدير مثل

الكيمياويات، العبوات ... إلخ

- اخري (اذكرها من فضلك)

8- Are there specific studies you would like to be conducted which would help promote exportation of high value horticultural crops?

.....
.....
.....
.....

- هل تقترح دراسات معينة يتم إجراؤها لتؤدي إلى تنمية الصادرات من الحاصلات البستانية عالية القيمة؟

.....
.....

9- Are there specific crops or crop production, handling or processing technologies which you would like to see included in the ATUT project?

.....
.....
.....

- هل هناك محاصيل معينة أو نواحي إنتاجية أو تصنيعية معينة ترغب أن يتضمنها مشروع ATUT؟

10- Are you involved in any agricultural business or processing activities other than cooling, grading, or packing of fresh fruits and vegetables for export?

.....
.....
.....
.....

- هل تشارك في اية أنشطة زراعية اخرى تتعلق بالتجهيز ، التبريد ، التصدير او
التعبئة بالنسبة للفاكهة او الخضروات الطازجة المعدة للتصدير؟

11- Are there any ideas or recommendations that you would like to share with us concerning the development and implementation of the ATUT project?.

.....
.....
.....
.....
.....

- هل لديك اية افكار او توصيات معينة ترغب في مناقشتها معنا بخصوص تطوير
وتنمية مشروع ATUT ؟

.....
.....
.....
.....

No.	Name	Organization	Tel	Fax	Participation	Activities	Usefulness	Continuing	A	B	C	D	E	Problems	
Grower and/or Exporter															
1	Abd El-Mageed Shuhdy	BICO	3404091	3412409	Yes	B,C & D	Yes	Yes	5	5	5	4	3	No	
2	Alaa Kamel Diab	BICO	215281	3412409	Yes	B,C & D	Yes	Yes	4	5	5	4	5	No	
3	M. Soliman	Allied Corp.	3496144	3496312	No	F		Yes	1	4	5	2	3	Yes	
4	Hatem M. Zaki	Int. Trading	3032599	3458520	Yes	C	Yes	Yes	4	5	3	4	3	Yes	Information
5	Safie Ekdin M. Hanafi	Grower	3834341	3842957	Yes	D & E	Yes	Yes	4	5	5	4	4	Yes	Facilities
6	Hussein El-Aguizy	Grower/Exporter	5702645	5702646	Yes	A,B,C & D	Yes	Yes	5	4	3	4	2	Yes	Qual. Stand
7	Siekm Companies	Grower/Manf.	2807994	2806959	Yes	C & G	Yes	Yes	1	3	5	2	4	Yes	Training
8	Ahmed M. Ismail	Grower	2668703	2668703	Yes	A, B & D	Yes	Yes	5	5	3	5	5	Yes	Fast Cooling
9	Saied S. Abd-El-Raouff	Grower/Exporter	2417318	2450757	No	0	No	Yes	2	1	4	3	5	Yes	Banana
10	Ali M.	Exporter	2740712	2740712	Yes	D & F	Yes	Yes	5	3	4	1	2	Yes	Cooling
11	Ahmed H. Kherazani	Exporter	666992	2916791	Yes	F	Yes	Yes	4	3	5	2	1	Yes	Tech..
12	Hani A. Mukhtar	Exporter	3913956	3912725	No	0	No	Yes	5	5	5	5	5	Yes	Processing
13	Salah El-Deen Yueseff	Grower	3490432	0	No	0	No	Yes	1	3	2	4	5	Yes	Data
14	Mohamed A. Korra	Exporter	930001	933889	Yes	A, B & C	Yes	Yes	5	5	3	5	3	Yes	Varieties
15	Fawzy Y. Zawbaa	Grower/Exporter	2909714	2908974	Yes	A & C	Yes	Yes	5	5	3	3	3	Yes	Transport
16	Hammed A. El-Shiaty	Grower/Exporter	3606128	3607453	Yes	A, B & C	Yes	Yes	5	5	5	5	5	Yes	Training
17	Alaa Aidaros	Exporter	3616253	3616255	No	0	No	Yes	5	4	2	3	5	Yes	
18	Hesham A. Rushdy	Grower	2916268	666056	No	0	No	Yes	5	3	1	2	1	No	
19	Sherif Hegazy	Grower	3474079	3027616	Yes	A, B & D	Yes	Yes	5	4	3	1	5	Yes	
20	Olfat El-Shiaty	Grower/Exporter	3487035	3607453	Yes	B, C & D	Yes	Yes	3	3	4	5	4	Yes	Processing
21	William Melka Tadrus	Exporter	5737212	5737431	No	0	Yes	Yes	5	5	5	5	5	No	
22	Safy El-Deen Baroody	Grower/Exporter	5881539	5866454	No	0	No	Yes	5	5	5	5	5	No	Grapes, Beans
23	Hazem H. Baraka	Exporter	3557325	3542890	No	0	Yes	Yes	5	3	1	5	1	Yes	Training
Researcher															
24	Adel Niazi Mostafa	NIMOS/HYDRODCAPE	392-5714	393-1101	Yes	A, B & D	Yes	Yes	5	4	5	5	5	Yes	DATA
25	Salah Y. Farag	ARC	2027919	2527919	Yes	D, E & F	Yes	Yes	5	5	5	5	5	Yes	Technology
26	Read Mohammed Allan	EDB of Egypt	5782587	774553	No	0	No	Yes	2	3	1	4	5	No	
27	Saliem A. Saliem	QUARANTINE	778280	766971	No	0	No	Yes	1	2	5	3	4	Yes	Packing
28	Abd El-Mageed A.	QUARANTINE	778280	766971	No	0	No	Yes	5	3	3	5	3	Yes	Packing
29	Hesham A. Alaam	ARC	5725033	0	Yes	F	Yes	Yes	5	4	5	5	4	No	
30	Kamla M. Mansour	ARC	3371798	0	Yes	B, C, D & F	Yes	Yes	5	1	5	5	5	Yes	

31	Diaa El-Deen El-Rayes	University	221617	0	Yes	D	Yes	Yes	5	5	5	5	5	No	
32	Safwat K. Gubrial	ARC	2605708	2916284	Yes	D, E & F	Yes	Yes	5	3	2	4	3	Yes	
33	Zeinab M. El-Tobshy	ARC	5723301	0	Yes	B,C,D & F	Yes	Yes	5	5	5	5	5	Yes	
34	Maged Abou-Hagar	World Trading	3517065	3506209	Yes	A, B, D & F	Yes	Yes	4	5	5	5	3	Yes	Handling
35	Bahia A. Fahmy	ARC	5725033	0	Yes	B, D & F	Yes	Yes	3	5	4	5	5	Yes	Fast Cooling
36	Gubrial F. Gubrial	ARC	5725033	659474	Yes	A,C,E & F	Yes	Yes	5	3	5	4	2	No	
37	Mohammed M. Helmay	MOLR	3378693	3374195	Yes	E	Yes	Yes	5	4	3	2	1	Yes	Data Base
38	Gariab El-bana	ARC	5723070	5723070	Yes	A,D,E & F	Yes	Yes	5	4	4	4	5	No	
39	Salah El-din A. Moh.	ARC	703022	3615154	Yes	C, D & F	Yes	Yes	5	5	5	5	5	Yes	Artichokes
40	Bleer Coobar	USAID	3572078	3554396	Yes	B & C	Yes	Yes	5	5	5	5	5	Yes	

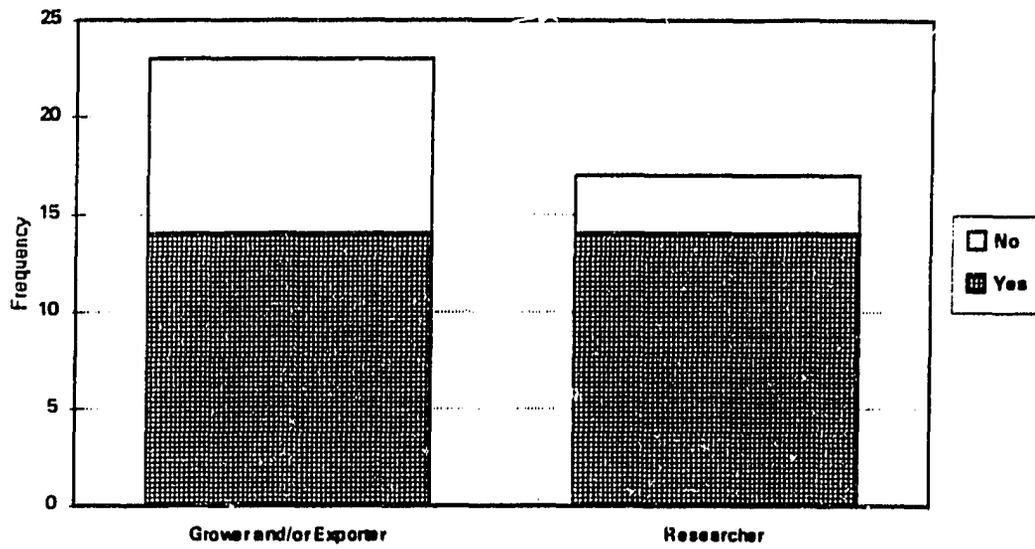
No.	Name	Non-Technical Problems			GOE /Export	GOE /Import	Other	Suggested Studies	Crops	Involved	Recommendations
		Transportation Cost	Transportation Problems								
Grower and/or Exporter											
1	Abd El-Mageed Shuhdy	5	5	1	1		0		0	No	
2	Alaa Kamel Diab	5	5	1	1	0	0		0	Yes	More Details Needed
3	M. Soliman	0	0	0	0	0	Small Farmer assoc.		0	No	
4	Hatem M. Zaki	5	4	1	2	COST	Organic Plantation		0	Yes	Packing Tech.
5	Safie Eldin M. Hanafi	5	5	0	0	0	Market News	Ornamentals		No	
6	Hussein El-Aguizy	5	4	1	2		Market News			Yes	Training
7	Siekm Companies	5	4	1	3	GOE	Market News		0	No	
8	Ahmed M. Ismail	5	0	0	0	0	Technology	Grapes		No	Commodity Study Tours
9	Saied S. Abd-El-Raouff	2	3	5	4	0	0			No	
10	Ali M.	5	0	0	0	0	Marketing		0	Yes	Production Tech.
11	Ahmed H. Kherazani	2	1	4	3	0	Market News	Strawberries		Yes	Technology Transfer
12	Hani A. Mukhtar	3	4	1	5	2	Shipping	Grapes		Yes	
13	Salah El-Deen Yueseff	1	2	4	3	5					
14	Mohamed A. Korra	5	3	3	3	2	Materials		0	Yes	New Varieties
15	Fawzy Y. Zawbaa	5	4	3	2	1	0		0	Yes	Market News
16	Hammed A. El-Shiaty	5	4	0	0	0	Grape Juice Pro.		0	Yes	Training Program.
17	Alaa Aidaros	5	2	2	5	0	Protected Pro.	Green Beans		Yes	
18	Hesham A. Rushdy	0	0	0	0	0	0		0	No	
19	Sherif Hegazy	5	0	0	5	0	Quality		0	No	Training program
20	Olfat El-Shiaty	5	5	0	5	0	Packing Tech.		0	Yes	Training program
21	William Melka Tadrus	5	0	0	0	0	Technology		0	Yes	Transportation
22	Safy El-Deen Baroody	5	5	1	1	0	0		0	No	
23	Hazem H. Baraka	1	2	3	4	0	Market News		0	Yes	
Researcher											
24	Adel Niazi Mostafa	5	2	5	3	DATA*				Yes	Grower's association
25	Salah Y. Farag	3	2	3	5		Technology	TOM, GAR, ONI		Yes	DATA Base
26	Read Mohammed Afan	0	0	0	0		Market News		0	No	
27	Saliem A. Saliem	5	3	2	2		Market News		0	Yes	
28	Abd El-Mageed A.	5	3	2	2		Market News		0	Yes	
29	Hesham A. Alaam	0	0	0	0		Market News		0	No	Post harvest Lab.
30	Kamla M. Mansour	5	5	2	2		Technology	Pomegranate		No	Subject Specialists

31	Diaa El-Deen El-Rayes	0	0	0	0	0		0	0	No	
32	Safwat K. Gubrial	5	4	2	2	Tech.	Grape in G. Horses	Garlic	No		Commodity Study Tours
33	Zeinab M. El-Tobshy	5	5	0	0		Technology		Yes		Postharvest Workshops
34	Maged Abou-Hagar	5	5	1	3	0	Market News		0	Yes	Data Bank
35	Bahia A. Fahmy	5	5	0	0	0	Market News	Mango, Guava	Yes		Post Harvest
36	Gubrial F. Gubrial	0	0	0	0	0	Technology	Grapes	Yes		Commodity Study Tours
37	Mohammed M. Heimay	0	0	0	0	0	Marketing		0	Yes	Commodity Study Tours
38	Gariab El-bana	0	0	0	0	0		0	Citrus	Yes	Production tech.
39	Salah El-din A. Moh.	0	0	0	0	0	Technology		0	No	Production technology
40	Bleer Coobar	0	0	5	0	0	Market News		0	No	Market News

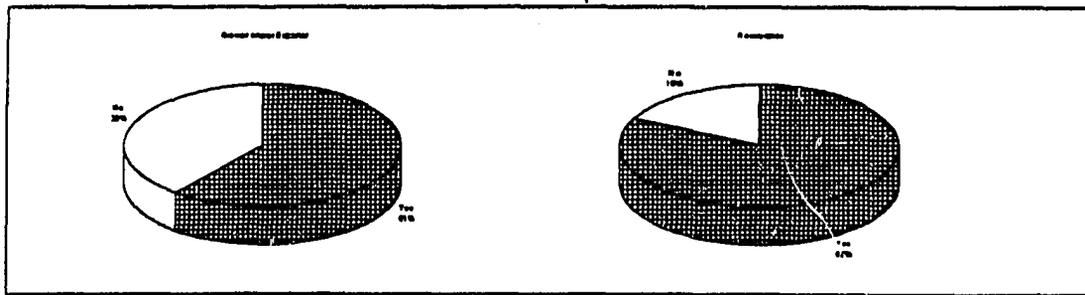
Question No. 1 : Participation in the Ministry or NARP related activities.

	Grower and/or Exporter	Researcher
Yes	14	14
No	9	3
Total	23	17

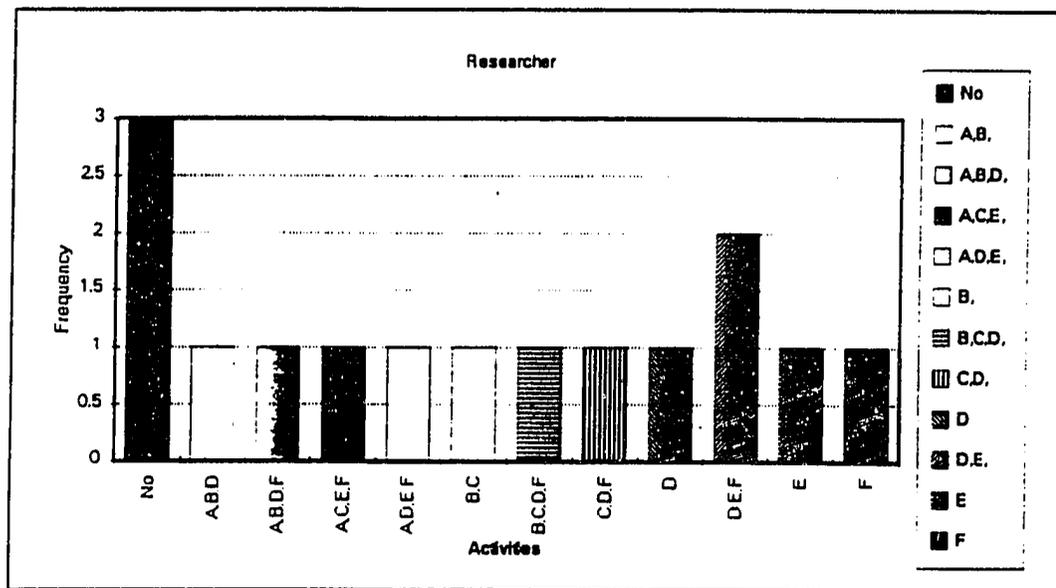
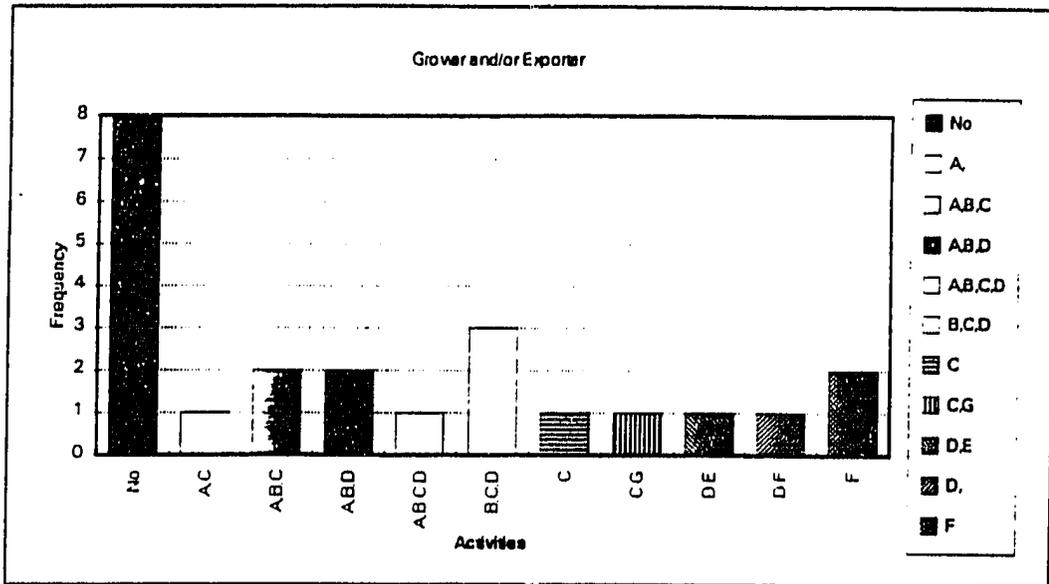
Frequency Distribution



Relative Frequencies



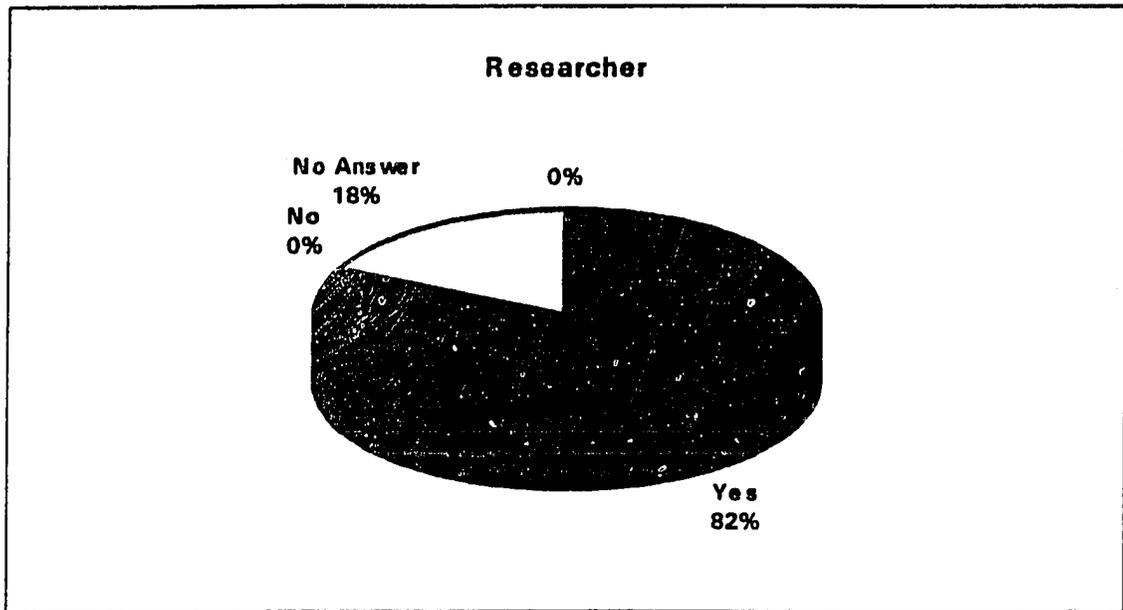
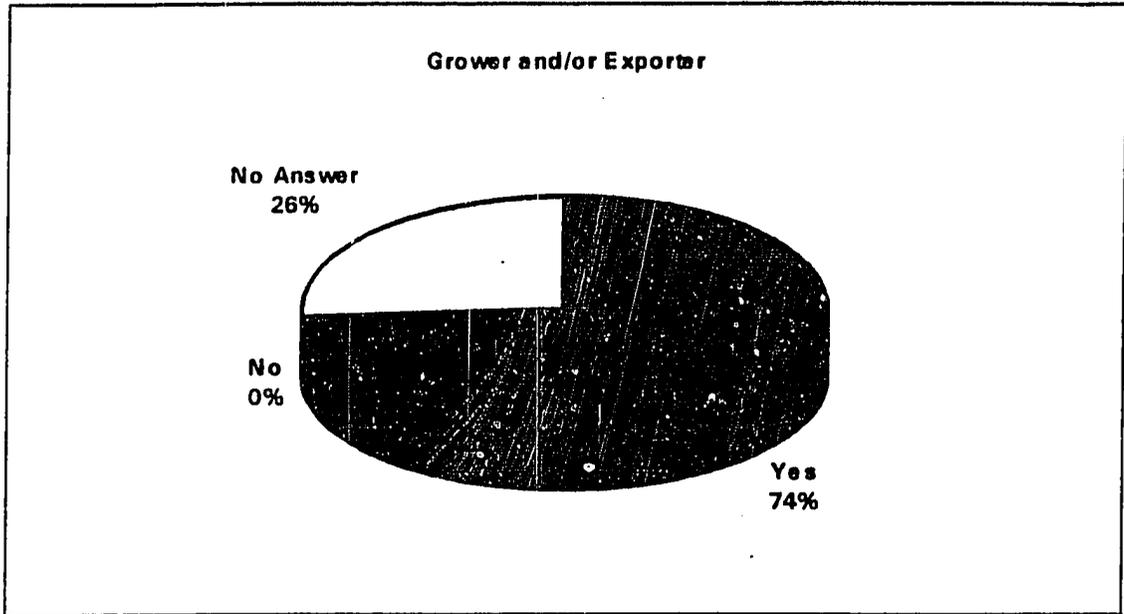
Question No. 2 : Activities*



- A - Trip to Chile and the US. (the Grape Study Tour).
- B - Seminar/workshop on Managing Fresh Fruit and Vegetable Export Business.
- C - Forte Grande Hotel presentation of the commodity marketing study.
- D - Post harvest workshops or seminars.
- E - Other :

Question No. 3 : In terms of usefulness to you, did you find these activities important

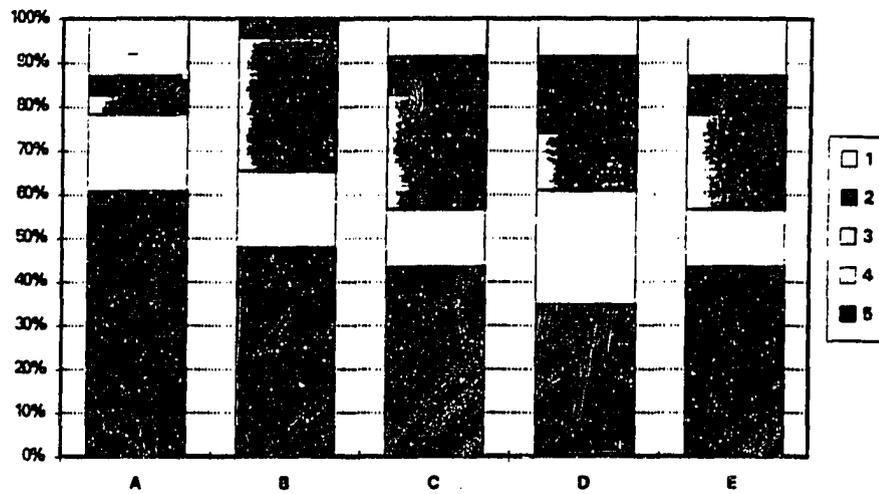
	Grower and/or Exporter	Researcher
Yes	17	14
No	0	0
Somewhat	0	0
No Answer	6	3
Total	23	17



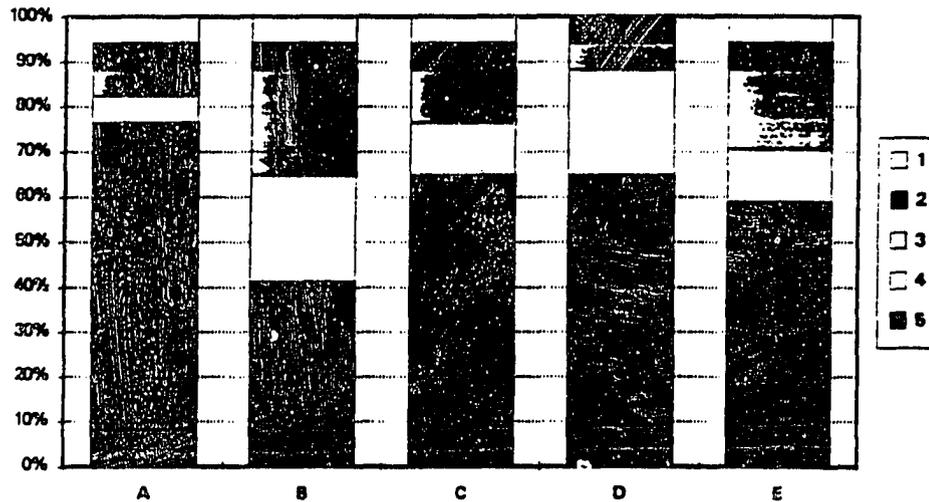
Question No. 5 : Ranking proposed ATUT activities:

Rank	Grower and/or Exporter					Researcher				
	5	4	3	2	1	5	4	3	2	1
A	14	4	1	1	3	13	1	1	1	1
B	11	4	7	1	0	7	4	4	1	1
C	10	3	6	2	2	11	2	2	1	1
D	8	6	3	4	2	11	4	1	1	0
E	10	3	5	2	3	10	2	3	1	1

Grower and/or Exporter



Researcher



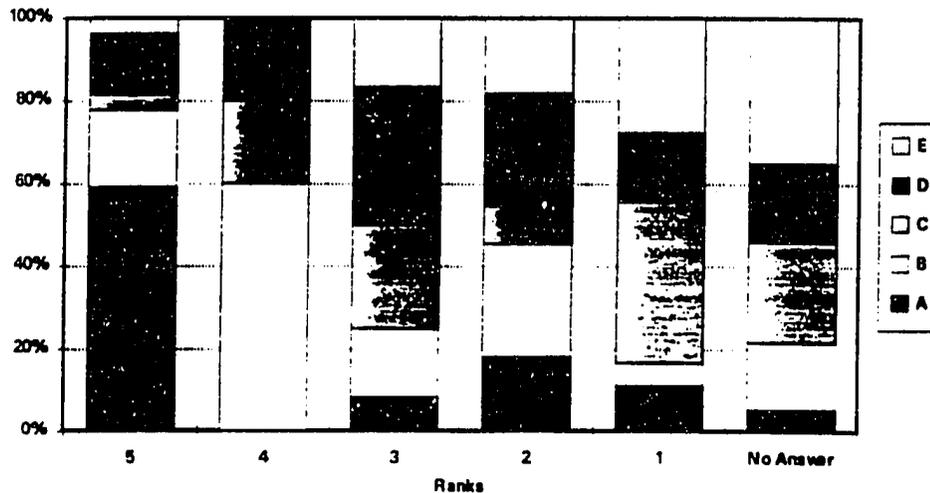
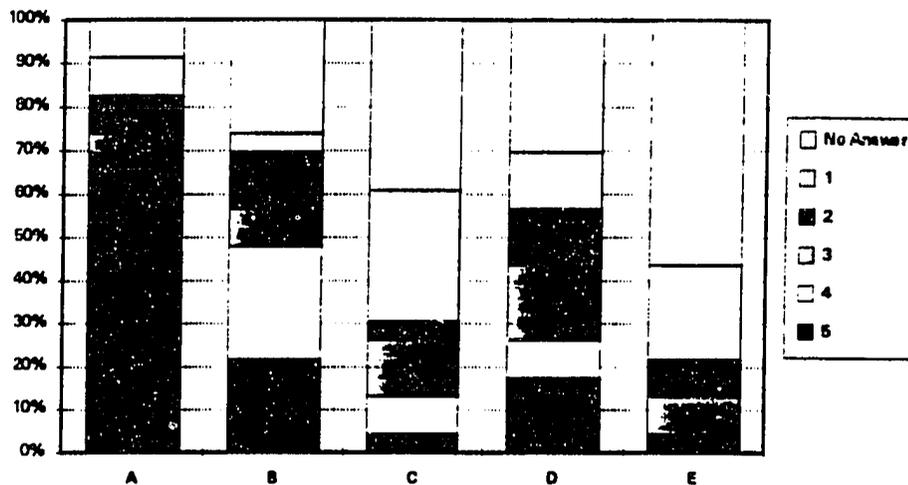
- A : Observational tours to US. or third country**
- B : Seminar /workshop**
- C : Data base.**
- D : Adaptive research**
- E On site technical assistance.**

Question No. 6 : Problems of Production, Processing, Packing or Export:

Problem	Participant
Lack of sources for each crop and latest information availability	researcher
-How to produce potatoes with export quality -How to produce seed potato -How to grow citrus -How to keep green beans fresh and healthy -How to keep garlic and onion for long term storage.	researcher
Packing materials	exporter
Lack of accurate information through the whole process	researcher
Production facilities	Grower
Problems in grape export (market news & timing of our window)	Exporter
Aggressive dumping of bad quality produce to export markets	Exporter
Need for quality standards	Exporter
Lack of training	Exporter
Lack of fast cooling facilities	Grower
Lack of information concerning post harvest handling	Grower
Lack of refrigerated cars & export information	Exporter
Lack of accurate data base concerning exporters, facilities and market information Wee need assistance for: - Net to connect with trade news centers. - training how to use and analyze these information	Exporter
Lack of efficient production management information (fertilization, varieties, harvest, etc.	grower
Lack of information concerning post harvest handling (strawberries & other vegetables)	grower
Lack of export market news and studies	Exporter
Lack of information, how to adapt new varieties	Grower
Lack of post harvest Labs.	Exporter
Production problems of artichokes, onion and tomato	Grower
Lack of trained labor, lack of market information, dire need for market window analysis for non-traditional crops.	Exporter
Lack of export market quality standards	Exporter

Question No. 7 : Problems of non-technical nature*
Grower and/or Exporter

	Ranks					No Answer
	5	4	3	2	1	
A	16	0	1	2	2	2
B	5	6	2	3	1	6
C	1	2	3	1	7	9
D	4	2	4	3	3	7
E	1	0	2	2	5	13



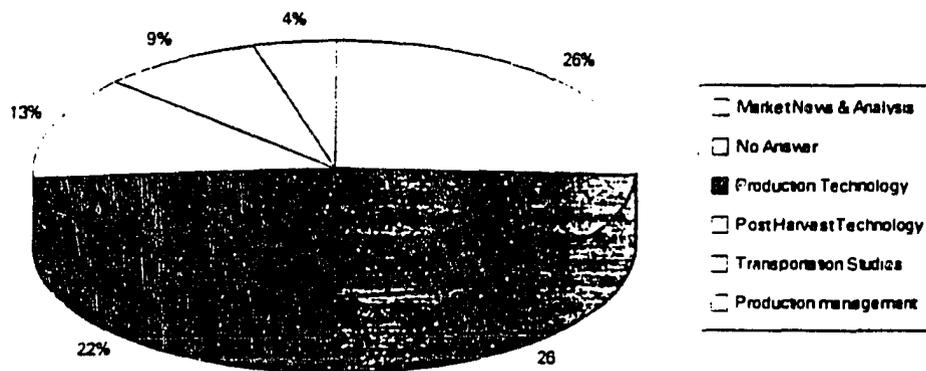
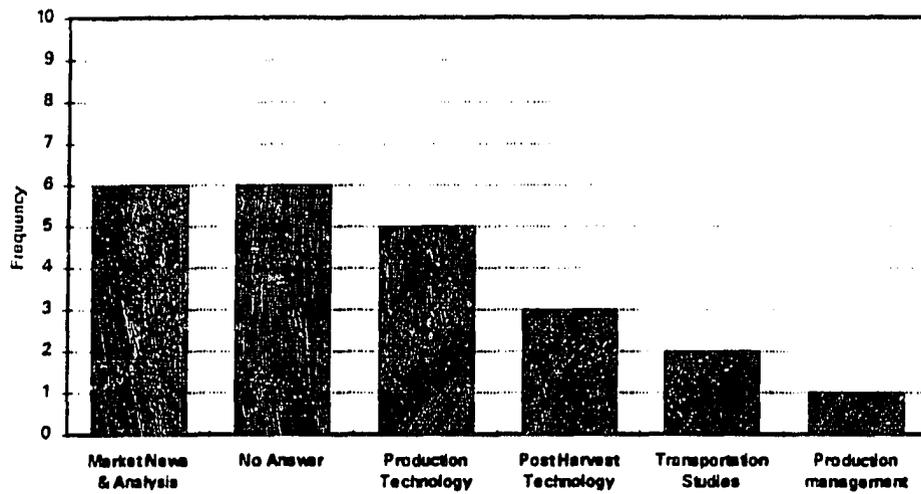
- *A : Transportation cost
- B : Other transportation problems (Lack of facilities, bureaucracy, etc.)
- C : GOE regulations / red tape on export.
- D : GOE regulations / red tape on import plant material or agricultural inputs / chemicals, etc.
- E : Other* (see the next table).

Question No. 7 : (continued):**Other non-technical problems:**

Problem	Participant
Computer data station with which we can connect to world data bases to get the update information	Researcher
High costs of packaging materials	Exporter
Development of small farmers associations to be able to produce high quality products	Grower
Studies are needed on exotic fruits and vegetables and possibilities of their export to European markets	Exporter
High cost of individual marketing	Exporter
Red tape in importation of fresh produce doesn't allow to fill the empty lag and reduce the cost of shipping	Exporter
High charges on governmental facilities and taxes	Exporter
Lack of governmental export promotion	Exporter
Lack of Governmental transportation facilities	Exporter

Question No. 8 : Specific studies to be conducted

	Frequency	Percentage
Market News & Analysis	6	26.09
Production management	1	4.35
Production Technology	5	21.74
Post Harvest Technology	3	13.04
Transportation Studies	2	8.70
No Answer	6	26.09
Total	23	100.00



**ANNEX H - ANALYSIS OF POTENTIAL COMPETITION BETWEEN
U.S. AND EGYPTIAN AGRICULTURAL EXPORTS**

**ANALYSIS OF POTENTIAL COMPETITION BETWEEN U.S. AND
EGYPTIAN AGRICULTURAL EXPORTS**

by

Wallace E. Tyner
Purdue University

Ali A EL-Saied
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February 3, 1995

ANALYSIS OF POTENTIAL COMPETITION BETWEEN U.S. AND EGYPTIAN AGRICULTURAL EXPORTS

This study has as its objective to determine if increased Egyptian horticultural exports would offer significant competition with U.S. exports of the same or similar commodities. There are several pieces of legislation or USAID regulations that may apply to projects which envision increasing exports in the recipient country. The most important of these are described below:

1)PD-15 — USAID policy of avoiding support for production of agricultural commodities for export if the commodities would directly compete with U.S. exports and would have a significant impact on those exporters.

2)The Bumpers amendment (Public law 99-349, section 209) states that "None of the funds appropriated by this or any other act ... shall be available for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference, or training in connection with the growth or production in a foreign country of an agricultural commodity for export which would compete with a similar commodity grown or produced in the United States ..."

3)PD-71 — This policy directive indicates that proposed projects involving production, processing, or marketing of sugar, palm oil, or citrus for export must have special review because of potential injury to US producers. It indicates that USAID "...should, therefore, only finance such projects when their development rationale is strong and their likely impact on US producers is low."

This study is being undertaken for the proposed USAID Agriculture Technology Utilization and Transfer (ATUT) project. The purpose of the ATUT project is "... to increase the productivity, marketing and exports of selected crops using improved agricultural technologies." Since part of the project purpose is to increase exports, it appears that an analysis of potential competition with U.S. exports would be needed to satisfy the above regulations and legislation.

The ATUT project has two proposed components: horticultural crops and food crops. The horticultural crop component is designed to take advantage of economic opportunities for export of high value horticultural crops through changes in current policies and correction of technical and managerial shortcomings. The objective of the food crops component is to help assure food security in the future for cereal crops in which Egypt has a comparative advantage. The above regulatory and legislative mandates do not appear to apply to the food crops component, so the remainder of this paper will focus on the horticultural crops component.

The basic question that must be answered is, "Is there or would there be significant competition between increased Egyptian exports and U.S. exports?" The word significant is used because there would almost always be minor or potential competition from any increase in exports. However, our view is that the intent of the regulations and legislation is to avoid supporting with USAID funds competition that would be injurious to U.S. producers and exporters. To cause injury, the competition would have to displace enough U.S. exports to cause a significant change in the prices received and/or incomes generated for U.S. exporters and producers.

Before performing the analysis, it will be useful to provide a general description of world horticultural crop markets and U.S. and Egyptian agricultural exports so that this analysis can be placed in context of the overall agricultural and horticultural crop export pictures. Following this introduction is a general description of the world market for horticultural products. The next section provides an overview of U.S. agricultural exports, and the following section provides that background for Egyptian agricultural exports. The fourth section contains the analysis of potential competition in horticultural export markets, and the final part provides the conclusions of the analysis.

World Horticultural Crop Markets

Figure 1 provides a general depiction of world trade in horticultural products.¹ Exporters are depicted by rectangles and importers by oval symbols. Western European countries are by far the world's largest importers of fresh fruits and vegetables. They account for approximately two thirds of all world imports (Figures 2 and 3). North American countries account for about 15 percent. The Pacific Rim, including Japan, Hong Kong and Singapore is the other significant market. A large part of the total European and North American imports are intra-regional trade between US/Canada and among European countries. Figures 4 and 5 show the fraction of European fruit (Figure 4) and vegetable (Figure 5) imports that are internal and external trade. The Pacific Rim has a somewhat larger share in extra-regional world imports because most of its trade is with countries outside the region.

EU Market major suppliers

The European Union is a large world market for fruits and vegetables. However, the EU market is well-supplied with fresh fruits and vegetables in the aggregate because of large EU production and global sourcing.

It is clear from the data in Tables 1 and 2 that neither Egypt nor the USA can be considered as a major supplier to EU markets. The USA accounted for only 3.2 and

¹All the figures are included in Annex A.

2.0 percent of total EU fresh fruit and vegetable imports respectively during the period 1988-1992, while Egypt accounted for only 0.25% and 2.1 percent of fruit and vegetable imports respectively during the same period.

The major non-EU off-season fresh fruit suppliers are South Africa, Costa Rica, Ecuador, Panama and Morocco. The major non-EU off-season suppliers of fresh vegetables are the Canary Islands, Morocco, and Poland.

Potential growth in EU imports

Total European imports of fresh fruits and vegetables have been growing rapidly for the past two decades. With rising incomes and increased concern for proper nutrition, consumers have steadily increased their per capita consumption of fresh fruits and vegetables.

Europe has become the fastest growing of all regional markets in the world. Most of the growth in consumption has come from tapping the vast reservoir of off-season demand for fresh fruits and vegetables. A significant part of the European increase was due to the incorporation of Spain and Portugal into the EU in 1986. The result was lower tariffs and greater ease to entry of fresh produce from those Mediterranean producers of fruits and vegetables with longer growing seasons than most other EU members.

TABLE 1
EU IMPORT OF FRESH FRUIT BY COUNTRY OF ORIGIN
(1000 tons)

SOURCE	1988	1989	1990	1991	1992	Average	%
South Africa	545.322	574.358	356.560	601.174	642.095	543.901	8.01
Costa Rica	366.515	479.435	581.720	609.080	624.991	532.348	7.84
Ecuador	320.048	274.932	353.860	601.654	767.631	463.624	6.82
Panama	340.161	400.476	527.490	484.574	540.132	458.567	6.75
Colombia	344.518	331.440	403.590	515.101	596.084	438.147	6.45
Morocco	396.162	406.092	330.200	445.737	370.982	389.834	5.74
Canary Isl.	347.458	346.123	354.710	342.754	350.111	348.230	5.12
Chile	265.302	273.604	301.130	407.275	473.291	344.120	5.06
Argentina	250.586	263.973	338.350	342.071	347.495	308.494	4.54
Israel	341.667	268.073	343.290	293.273	286.801	306.620	4.51
Ivory coast	221.936	220.632	237.450	252.929	281.180	242.826	3.57
New Zealand	212.360	181.202	240.110	250.114	238.057	224.369	3.30
USA	221.390	227.443	196.270	224.193	222.771	216.414	3.21
Martinique	186.631	200.730	221.800	183.023	199.971	198.431	2.92
Honduras	202.761	168.535	154.520	170.820	237.588	186.844	2.75
Cyprus	150.278	140.552	139.290	120.629	132.376	136.624	2.01
Brazil	94.848	119.724	107.320	140.350	170.655	126.578	1.86
St. Lucia	117.929	116.491	128.160	103.899	125.226	118.341	1.74
Guadeloupe	126.281	93.117	77.254	118.635	117.726	106.603	1.57
Turkey	64.524	72.933	80.682	134.722	130.637	96.700	1.42
Cameroon	36.781	56.809	78.269	116.251	111.288	79.880	1.18
St. Vincent	61.918	67.590	81.557	63.069	73.360	69.499	1.02
Jamaica	38.831	43.374	72.426	79.735	85.178	63.909	0.94
Hungry	13.700	42.856	35.763	145.029	51.331	57.736	0.85
Dominica	70.807	51.571	52.708	55.169	56.182	57.287	0.84
Poland	23.108	29.242	25.995	116.545	60.350	51.048	0.75
Uruguay	30.279	16.855	43.464	52.272	70.508	42.676	0.63
Nicaragua	34.990	29.859	48.329	65.934	28.692	41.561	0.61
Guatemala	34.995	62.192	9.469	14.048	65.561	37.253	0.55
Surinam	33.011	30.056	27.747	27.759	30.085	29.732	0.44
Tunisia	31.617	28.856	25.286	24.033	21.868	26.332	0.39
Belize	25.840	26.591	24.056	20.058	28.534	25.016	0.37
Swaziland	28.765	19.384	24.682	20.603	21.204	22.928	0.34
Cuba	21.821	14.847	14.412	28.390	31.193	22.133	0.33
Dominican R.	1.611	3.733	7.845	25.048	67.673	21.182	0.31
Mexico	15.243	16.669	16.136	15.876	36.637	20.112	0.30
Egypt	10.222	8.864	15.916	21.601	26.757	16.672	0.25
Total	5937.450	6004.880	6554.000	7553.010	7921.710	6794.202	100.00

Source: Eurostat

TABLE 2
EU FRESH VEGETABLE IMPORTS BY COUNTRY OF ORIGIN
(1000 tons)

Country	1988	1989	1990	1991	1992	Average	%
Canary Isl.	226.347	191.585	203.490	249.871	250.000	224.258	26.33
Morocco	94.671	105.475	122.040	154.961	149.539	125.337	14.71
Poland	85.542	79.338	143.360	113.801	78.719	100.152	11.76
Hungary	73.224	63.065	39.073	37.490	40.732	50.717	5.95
Turkey	27.166	25.568	44.652	55.338	44.772	43.499	5.11
Australia	39.971	42.040	48.307	40.326	43.703	42.869	5.03
Chile	27.932	35.620	36.374	47.034	15.061	32.404	3.80
Israel	28.198	28.989	36.562	33.229	25.432	30.482	3.58
New Zealand	12.470	14.141	26.266	24.410	48.706	25.199	2.96
Argentina	8.075	9.996	25.831	23.975	33.853	20.346	2.39
Egypt	21.371	23.568	21.274	13.011	11.948	18.234	2.14
Kenya	15.453	17.033	18.294	17.862	19.721	17.673	2.07
USA	10.729	9.522	17.794	23.936	21.443	16.685	1.96
Bulgaria	4.821	2.219	6.954	21.467	10.408	9.174	1.08
China	0.862	1.564	5.578	4.316	11.346	4.733	0.56
Total	779.868	754.344	896.780	953.310	874.741	851.808	100.00

Source: Eurostat

U.S. Agricultural Exports

Table 3 provides U.S. agricultural export figures for 1992 and 1993. Total exports for both years amounted to almost \$43 billion. Bulk commodities constitute the largest fraction of U.S. agricultural exports representing about 45 percent of the total. Fresh fruits and vegetables together totaled 6.0 and 6.3 percent of total agricultural exports in 1992 and 1993 respectively. Table 4 provides the regional breakdown for U.S. agricultural exports for fiscal years 1993 and 1994. The most important region for U.S. exports is Asia representing 37.4 and 40.7 percent of total exports in FY1993 and FY1994 respectively. Table 5 provides the three most important countries for 1993 total U.S. agricultural exports and for each major commodity area. For fruits and vegetables and products, the most important countries are Canada, Japan, Mexico, and Hong Kong. However, the European Union as a group follow Canada and Japan in importance for horticultural exports.

These data suggest that bulk commodities are still the most important component of U.S. agricultural exports. Fresh fruits and vegetables amount to about 6 percent of the total. Asia is the most important destination, with our NAFTA partners, Canada and Mexico, also being quite important.

TABLE 3
U.S. AGRICULTURAL EXPORTS FOR 1992 AND 1993
(1000 dollars)

Product	1992	1993
Bulk commodities		
Wheat	4,449,324	4,664,582
Coarse grains	5,736,599	5,000,598
Rice	726,072	771,312
Soybeans	4,380,402	4,598,746
Cotton	2,010,338	1,540,678
Tobacco	1,650,559	1,306,067
Other bulk commodities	733,953	711,475
Intermediate goods		
Soybean meal	1,294,722	1,132,041
Vegetable oils	878,934	907,794
Feeds & fodders	1,722,327	1,744,163
Live animals	607,891	518,927
Hides & skins	1,326,054	1,268,658
Animal fats	515,214	501,702
Planting seeds	675,011	619,359
Sugars & sweeteners	573,921	567,807
Other intermediate goods	1,637,061	1,713,017
Consumer goods		
Snack foods	829,679	1,024,643
Red meats	3,293,923	3,275,260
Poultry meat	928,464	1,100,613
Dairy products	793,754	857,487
Fresh fruit	1,683,344	1,707,147
Fresh vegetables	899,624	985,953
Processed fruit & vegetables	1,558,121	1,639,583
Fruit & vegetable juices	461,017	469,517
Tree nuts	928,531	998,246
Other consumer products	2,519,538	2,852,866
Total agricultural products	42,814,376	42,478,240

Source: USDA/FAS, Trade and Marketing Analysis Branch.

TABLE 4
U.S. AGRICULTURAL EXPORTS BY REGION AND COUNTRY FOR FY1993-94
(billion \$)

Region/country	FY 1993	FY 1994
Western Europe	7.439	7.013
European Union	6.964	6.497
Other Western Europe	0.475	0.516
Central & Eastern Europe	0.465	0.311
Former Soviet Union	1.435	1.474
Asia	15.866	17.671
Japan	8.430	9.193
China	0.317	0.877
Other East Asia	4.932	5.261
Taiwan	1.998	2.103
South Korea	2.041	2.055
Hong Kong	0.878	1.101
Other Asia	2.187	2.340
Pakistan	0.236	0.212
Philippines	0.511	0.554
Middle East	1.856	1.650
Israel	0.363	0.346
Saudi Arabia	0.429	0.470
Africa	2.593	2.159
North Africa	1.587	1.438
Egypt	0.727	0.598
Algeria	0.428	0.592
Sub Saharan Africa	1.006	0.721
Latin America	6.813	7.228
Mexico	3.621	4.126
Other Latin America	3.192	3.103
Brazil	0.231	0.227
Venezuela	0.498	0.401
Canada	5.202	5.248
Oceania	0.453	0.497
World Total	42.454	43.474

Source: USDA/FAS, Trade and Marketing Analysis Branch

TABLE 5
 IMPORTANT EXPORT MARKETS FOR U.S. AGRICULTURAL PRODUCTS - 1993

	1st	2nd	3rd
All ag commodities	Japan	Canada	Mexico
Feed grains	Japan	Taiwan	F.S.U.
Soybeans	Japan	Taiwan	Netherlands
Wheat	Japan	F.S.U.	China
Live animals & meat	Japan	Mexico	Canada
Cotton & products	South Korea	Japan	Mexico
Fruits and products	Canada	Japan	Hong Kong
Vegetables and products	Canada	Japan	Mexico

Egyptian Agricultural Exports

Table 6 contains the structure of Egyptian agricultural exports for 1992-93. The Gulf states clearly are still important markets for Egyptian agricultural exports. However, the growth potential in that market is considered limited. Germany, France and the UK stand out as primary market targets for Egypt, with the Netherlands, Belgium and Switzerland close behind. Egypt is at a significant transport disadvantage against Latin American competitors in North American markets. The Middle East Gulf market for Egypt experienced an early "boom" in the 70's and early 80's, but decreased thereafter. In addition to a disappointing growth history, the Gulf is relatively unpromising as a long term market for Egypt because of its relatively small size.

Close geographic proximity to the affluent markets of Western Europe and the Gulf States, as well as the emerging economies of Eastern Europe and the FSU, gives Egypt enormous horticultural export potential. Egyptian horticulture exports are likely to be sold in EU markets. Since transportation costs represent a significant part (up to 75 percent) of the delivered cost of fresh produce, Egyptian suppliers have a significant comparative advantage over more distant producers such as the U.S.A., South Africa, Chile, Mexico, Kenya and Brazil.

Table 6
Structure of The Egyptian Agricultural Exports (1992-1993)

	Export quantity (Ton)			Major export markets				Export share			
	FY1992	FY1993	Average	Gulf	EU	FSU	Other	Gulf	EU	FSU	Other
Oranges	219296	267467	243382	146029	48676	24349	24338	60.0	20.0	10.0	10.0
Potatoes	139555	212447	176001	35200	105601	0	35200	20.0	60.0	0.0	20.0
Rice	68292	154410	111351	100216	0	0	11135	90.0	0.0	0.0	10.0
Onion	79883	64921	72402	43441	14480	7250	7230	60.0	20.0	10.0	10.0
Other veg.	45450	54407	49929	34950	14979	0	0	70.0	30.0	0.0	0.0
Tomatoes	16320	29487	22904	13742	4591	0	4571	60.0	20.0	0.0	20.0
Banana	34013	6385	20199	10100	2020	0	8080	50.0	10.0	0.0	40.0
Green beans	15764	22061	18913	13239	3783	0	1891	70.0	20.0	0.0	10.0
Cotton	26472	6501	16487	0	16487	0	0	0.0	100.0	0.0	0.0
Ornamental plants	16593	13537	15065	12052	1510	0	1504	80.0	10.0	0.0	10.0
Artichoke	2635	23310	12973	1297	10378	0	1297	10.0	80.0	0.0	10.0
Alfa Alfa (seed)	14017	9961	11989	0	0	0	11989	0.0	0.0	0.0	100.0
Lemons	8312	13912	11112	4645	3145	2522	0	67.0	33.0	20.0	0.0
Other	7013	5514	6264	6264	0	0	0	100.0	0.0	0.0	0.0
Garlic	6594	5315	5955	2382	2382	0	1191	40.0	40.0	0.0	20.0
W. Melon	6292	4885	5589	1677	2794	0	1118	30.0	50.0	0.0	20.0
Peanuts	6022	3580	4801	3361	960	0	480	70.0	20.0	0.0	10.0
Frozen vegetables	3950	4851	4401	3080	0	880	440	70.0	0.0	20.0	10.0
Other fruit	2782	3907	3345	1338	1003	334	669	40.0	30.0	10.0	20.0
Melon	1493	2380	1937	775	581	0	581	40.0	30.0	0.0	30.0
Horse beans	2758	885	1822	1093	363	0	365	60.0	19.9	0.0	20.0
Guava	2302	1183	1743	1046	174	0	523	60.0	10.0	0.0	30.0
Wheat (seed)		1407	1407	0	0	0	1407	0.0	0.0	0.0	100.0
Date	1053	1707	1380	966	276	0	138	70.0	20.0	0.0	10.0
Grapes	516	1697	1107	553	553	0	0	50.0	50.0	0.0	0.0
Mango	903	1031	967	774	90	0	104	80.0	9.3	0.0	10.8
Cut flowers	1556	152	854	427	427	0	0	50.0	50.0	0.0	0.0

Analysis of Potential Export Competition

The major components of the analysis are as follows:

- 1) Determine the market(s) where Egyptian horticultural exports are likely to be sold.²
- 2) Determine the share of U.S. horticultural products (by product) going to the target market(s).
- 3) Determine the total size of U.S. and Egyptian exports to the target market(s). Also, compare the U.S. and Egyptian exports to the target markets with the total imports in those markets.
- 4) Determine the timing of both U.S. and Egyptian horticultural exports to the target markets. That is, during what months are deliveries made (or expected to be made for Egyptian products) to the target market(s).
- 5) If, based on the above analyses, there appears to be one or more commodities with significant competition, then estimate potential growth in the import demand in target market(s) and project the potential growth in Egyptian exports that might be brought about by the USAID project(s).

Target markets

While neither the U.S. nor Egypt are large players in the EU markets (Tables 1 and 2), that is the region where any competition that might emerge would exist. Asian and North American markets that are very important for the U.S. are virtually non-existent for Egypt. Similarly, the Middle East and FSU and Eastern European countries that are important for Egypt are not important for the U.S. Hence, it is clear that our analysis must focus on the extent to which there would be significant competition in the markets of Western Europe.

Given that our focus is on Western Europe, the next step in the analysis is to determine the fraction of U.S. horticultural exports by commodity that go to major European markets. Table 7 provides the fraction of U.S. exports that go to these markets for nineteen important commodities on both an average monthly and average annual basis. From Table 7, it is clear that Western Europe makes up a very small

²In this analysis, we apply the methods to Egyptian horticultural products. Clearly, however, the methods could be used for any type of exports for any country.

TABLE 7
 SHARE OF US HORTICULTURAL EXPORTS GOING TO THE MAJOR EU COUNTRIES
 (1989-91)
 (percent)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Oranges	0.5	0.0	3.8	3.9	0.9	0.4	0.1	0.4	0.2	1.2	0.0	0.0	0.4
Grapefruit	34.5	24.4	20.6	17.3	13.9	8.2	7.4	12.7	47.4	40.3	32.6	32.0	24.9
Lemons	6.6	2.8	2.4	7.9	8.3	7.2	11.9	9.2	21.6	16.8	11.1	7.6	9.6
Limes	6.6	2.8	2.4	7.9	8.3	7.2	11.9	9.2	21.6	16.8	11.1	7.6	9.6
Grapes	1.7	0.0	1.6	1.7	6.9	13.2	6.7	4.9	2.5	4.2	6.9	2.1	4.6
Melons	1.2	11.2	1.7	1.2	0.5	0.2	0.1	0.1	0.3	1.8	2.2	0.8	0.7
Strawberries	6.9	4.6	1.3	0.9	0.6	1.1	3.2	6.8	11.8	12.3	6.4	2.5	3.7
Dates	51.3	69.5	70.3	70.3	70.2	51.2	24.6	32.0	31.5	28.8	31.8	15.4	48.4
Pears/quince	8.8	11.6	3.0	3.6	2.9	2.7	1.6	1.1	2.7	11.2	11.2	14.9	8.2
Peaches	0.5	0.0	3.8	3.9	0.9	0.4	0.1	0.4	0.2	1.2	0.0	0.0	0.4
Apples	7.5	19.1	16.6	9.0	7.7	22.2	14.2	5.7	6.6	13.9	8.5	8.4	11.2
Tomatoes	2.1	2.1	1.2	0.9	0.0	0.3	0.0	0.0	0.3	0.9	0.6	1.7	0.8
Onions	2.4	3.9	3.6	6.7	2.5	0.1	0.0	0.2	0.0	0.1	0.4	1.2	1.4
Potatoes	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Cucumbers	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.8	0.8
Eggplant	2.2	0.0	1.3	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.5
Asparagus	8.7	6.4	6.4	5.2	8.4	11.5	25.8	23.5	11.2	6.9	5.9	10.2	7.3
Peppers	0.2	0.5	0.7	0.5	0.3	0.2	0.2	0.5	0.2	1.1	0.8	0.5	0.5
Green beans	0.0	0.4	2.3	1.3	0.3	0.6	0.0	4.4	0.0	0.0	0.0	0.0	0.7

fraction of our horticultural crop markets for most of the vegetables and many of the fruits. Of the fruit, the European markets clearly are important for grapefruit and dates constituting 25 and 48 percent respectively of average total U.S. exports. Also, the major European markets account for from 5 to 11 percent of the total average exports for lemons, limes, grapes, pears/quince, and apples. The major European markets are less than 4 percent of the total for oranges, melons, strawberries, and peaches. All of the vegetables fall below 2 percent on average except for asparagus. However, in peak months the percentages can be considerably higher, and it will be useful to compare the crops with seasonal deliveries of Egyptian exports.

US and Egyptian exports to major European markets

Tables 8 and 9 provide the 1989-91 average monthly and annual level of exports for the eleven fruit crops from both the U.S. and Egypt plus the total average imports for these markets during the same periods.³ Table 10 provides that same information for vegetables. These tables will be the reference point for the commodity by commodity discussion which follows.

There are three different ways to examine the data from these tables:

- 1) Comparison of the total levels of U.S. and Egyptian exports to the major European markets
- 2) Analysis of the monthly distribution of exports by Egypt and the U.S.
- 3) Comparison of the Egyptian and U.S. export levels with the total volume of imports of these European markets.

Each of these perspectives will be important in the analysis that follows. It may be useful to illustrate the analysis with an example, the case of table grapes. From Table 7 we see that 4.6 percent of U.S. grape exports go to these major European markets. From Table 7 we get the relative size of U.S. and Egyptian exports and the total level of imports in these markets. Egypt averaged 180 tons per year, and the U.S. averaged 7,620 tons. The total imports averaged 149,496 tons. Egyptian exports averaged 2.4 percent of U.S. exports and 0.1 percent of total imports. Examination of the seasonal pattern reveals that the U.S. is in the market year-round, with most of the exports concentrated in the June-January period, whereas Egyptian exports are heavily concentrated in the months of June and July.

³Data in these tables on U.S. and Egyptian exports to the four major countries in the European market (Germany, France, United Kingdom, and the Netherlands) were obtained from *Analysis of Horticultural Trade in the European Market — Implications for the Near East*, USDA/ERS, October 1993. Total imports for these countries by commodity and month for the same time period were obtained from Eurostat and USDA TS-View data.

What would be the impact of a doubling of Egyptian exports to these markets? The U.S. share of these markets is 5.1 percent. If we assume no growth in imports in these markets (not the historic pattern), the U.S. might absorb its market share of the increase in Egyptian exports. That is, U.S. exports might fall by 5.1 percent of 180 tons, or 9 tons. That reduction represents 0.1 percent of U.S. exports to these European markets and 0.005 percent of total U.S. exports, hardly levels that could be considered injurious to U.S. producers or exporters. If, instead, we use the more realistic assumption that European imports will continue to grow, U.S. exports to this region would continue to grow as in the past with no measurable impact from the increase in Egyptian exports. From either perspective, there would be no significant competition for U.S. exports from even a large increase in Egyptian exports.

This type of analysis is conducted for each of the commodities below. All of the detailed calculations are not reported in the text in most cases because the numbers are often so small as to make the conclusion obvious without presenting all the details. For cases in which more detail is warranted, however, it is provided in the text.

Oranges

The U.S. is a very small player in the European orange market. Figure 6 shows the major exporters for these markets by month. Only 0.4 percent of U.S. orange exports are to the major European markets. Egyptian exports to Europe are much larger than the U.S., but the timing of Egyptian exports is mostly different (Figure 7). U.S. exports to Europe concentrate on the summer months while Egyptian exports are mainly between December and May. The varieties and types (table/juice) also differ somewhat between the two countries. There is no significant competition between U.S. and Egyptian orange exports to Europe.

Grapefruit

From Table 7 we see that 24.9 percent of U.S. grapefruit exports go to these major European markets, so the European markets are important for the U.S. Egyptian exports averaged 151 tons per year, and the U.S. averaged 104,779 tons. Total imports averaged 326,281 tons. Egyptian exports averaged 0.1 percent of U.S. exports and 0.05 percent of total imports. Examination of the seasonal pattern indicates that both the U.S. and Egypt are in the markets in similar periods. What would be the impact of a doubling of Egyptian exports to these markets? The U.S. share of these markets is 32.1 percent. If we assume no growth in total imports in these markets (not the historic pattern), the U.S. might absorb its market share of the increase in Egyptian exports. That is, U.S. exports might fall by 32.1 percent of 151

TABLE 8
U.S. AND EGYPTIAN HORTICULTURAL EXPORTS TO THE MAJOR EU COUNTRIES (Part 1)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Oranges													
Egypt	2345	2128	2263	2005	1038	669	170	16	0	0	0	2980	13614
U.S.	52	14	128	215	349	477	528	485	131	139	40	9	2567
Total	42099	34379	64707	105159	98981	73475	64810	53330	78121	87766	13456	18851	735144
Grapefruit													
Egypt	38	11	17	0	0	0	0	0	0	2	0	82	151
U.S.	13540	15217	13817	13182	7766	2796	421	717	2799	11551	14510	8463	104779
Total	39590	35435	25050	30614	32307	27242	24669	12245	10808	28738	40751	18832	326281
Lemons													
Egypt	1	0	0	0	0	0	0	6	4	17	4	4	55
U.S.	103	150	59	14	35	45	0	34	206	10	47	51	754
Total	3836	3352	1085	655	5729	8728	14305	12325	15227	17619	12147	7417	102425
Limes													
Egypt	0	1	0	0	0	0	0	0	0	2	1	1	5
U.S.	29	11	10	29	62	75	101	106	108	113	102	64	811
Total	531	605	249	419	781	632	457	479	478	416	455	653	6155
Grapes													
Egypt	0	0	0	7	0	64	99	10	0	0	0	0	180
U.S.	277	22	20	27	143	1085	715	565	993	1228	1826	719	7620
Total	6670	15988	23790	32567	27557	12719	11581	6221	3773	2593	3300	2737	149496

TABLE 9
U.S. AND EGYPTIAN HORTICULTURAL EXPORTS TO THE MAJOR EU COUNTRIES (Part 2)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Melons													
Egypt	1	0	27	41	51	19	7	7	0	3	4	3	163
U.S.	19	24	26	22	64	29	0	0	22	7	27	29	269
Total	6768	5110	7537	6026	3202	2270	9653	5484	6383	8554	8120	9268	883571
Strawberries													
Egypt	15	10	9	0	0	0	0	0	0	0	0	3	37
U.S.	43	52	34	46	45	38	99	195	291	299	66	27	1235
Total	1152	1302	741	949	1128	1594	17810	3415	560	991	745	1085	31472
Dates													
Egypt	2	0	19	1	0	1	0	1	10	22	12	13	82
U.S.	129	167	419	667	431	297	107	67	93	250	172	159	2958
Total	2696	3255	4858	2601	1900	1207	850	716	1241	2040	4615	5971	31960
Pears													
Egypt	2	0	2	2	89	1	0	0	0	0	0	0	95
U.S.	2057	864	371	205	51	0	3	7	64	406	1248	1185	6481
Total	3287	17992	25509	37919	33919	20435	5189	2009	5741	3566	2446	2749	160851
Peaches													
Egypt	0	0	0	0	3	1	0	0	0	0	0	0	4
U.S.	0	2	1	5	24	20	9	14	19	15	0	2	112
Total	1059	2007	2490	1628	883	482	300	848	1058	126	291	683	11855
Apples													
Egypt	0	0	0	0	107	0	0	0	0	1	0	0	108
U.S.	4371	5031	5702	3770	1799	2452	4498	1130	1064	4492	6299	4273	44881
Total	7597	9885	19615	89842	123909	93018	71267	24521	15393	39951	31402	18353	544753

1/2

TABLE 10
U.S. AND EGYPTIAN VEGETABLE EXPORTS TO THE MAJOR EU COUNTRIES

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tomatoes													
Egypt	24	64	43	24	4	1	1	0	0	1	2	15	179
U.S.	136	51	99	21	18	1	0	4	2	4	45	78	459
Total	57339	55242	52311	36635	22995	5915	2975	1109	427	1042	29084	74058	339142
Onions													
Egypt	8	9	2	1763	3432	1024	120	12	0	2	4	8	6384
U.S.	131	363	435	174	309	8	8	2	0	2	36	68	1536
Total	13530	10885	21049	47430	29476	23481	6976	2758	9613	24821	20112	17209	227245
Potatoes													
Egypt	25974	33726	13778	11009	3973	384	218	0	0	0	0	3842	92904
U.S.	0	3	0	0	0	0	0	0	0	1	0	0	4
Total	48031	53786	68776	69759	80378	37114	1227	69	1	71	50	11047	370309
Cucumbers													
Egypt	8	9	12	6	1	0	0	0	0	2	7	6	51
U.S.	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	8374	6381	4241	1895	3702	3514	14866	15987	5104	2719	3675	7949	78407
Eggplant													
Egypt	4	1	0	1	0	0	0	0	0	1	0	2	9
U.S.	23	14	0	1	0	0	0	1	0	0	1	0	40
Total	860	428	434	324	246	159	72	126	182	205	474	396	3906
Asparagus													
Egypt	0	22	0	0	0	0	0	0	2	2	1	1	28
U.S.	37	92	181	170	235	214	64	34	23	3	1	8	1062
Total	186	200	398	248	554	633	251	127	227	455	429	274	3982
Peppers													
Egypt	24	12	6	3	2	1	1	0	0	0	4	12	65
U.S.	4	1	28	23	18	3	2	0	0	1	2	8	90
Total	2974	2090	2703	2040	2516	1435	1376	2451	6487	8225	3046	1828	37171
Green beans													
Egypt	1011	373	270	1641	2426	588	132	27	6	569	1083	1238	9364
U.S.	45	28	66	33	7	10	1	0	0	0	7	10	207
Total	4850	3591	2832	4397	5621	2846	969	772	987	1715	2428	3966	34984

tons, or 48 tons. That reduction represents 0.05 percent of U.S. exports to Europe and 0.01 percent of total U.S. exports — levels that could not be considered injurious to U.S. producers or exporters. If, instead, we use the more realistic assumption that European imports will continue to grow, U.S. exports would be expected to grow with no measurable impact from a large increase in Egyptian exports. Consequently, there is no significant competition.

Lemons and limes

Europe accounts for 10 percent of total U.S. exports of lemons and limes. Egyptian exports to Europe amount to only 3.8 percent of U.S. exports and 0.06 percent of total imports. The U.S. market share is 1.4 percent. So while U.S. exports are small, Egyptian exports are minuscule, and there is no significant competition.

Grapes

The grape analysis was provided in the example above and will only be summarized here. Figure 8 illustrates the EU imports of grapes by country of origin for the important exporters, and Figure 9 shows the market windows for the U.S. and Egypt. About 5 percent of U.S. table grape exports were destined for the major European markets. The U.S. market share in the major European markets was 5.1 percent, compared to a 0.1 percent market share for Egypt. Even if Egypt's market share were to double, it would have a negligible impact of the U.S. market share and an even smaller effect on total U.S. exports. Hence, there is no significant competition in grapes.

Melons

Only 0.7 percent of U.S. melons are exported to the major European markets. Neither the U.S. nor Egypt are major players in the European markets with respective market shares being 0.03 and 0.02 percent. Figure 9 provides the EU melon imports by country of origin for the major exporters, and Figure 10 illustrates the EU market windows for the U.S. and Egypt. From neither the Europe export share in U.S. exports nor the U.S. European market share perspective could one deem that there is significant competition.

Strawberries

The major European markets accounted for 3.7 percent of U.S. strawberry exports. Egypt exported very small quantities of strawberries with the average being 37 tons, which amounted to 3 percent of U.S. exports. Also, U.S. exports are concentrated in the July - October period whereas Egyptian exports center around January and February. Thus, even with considerable increases in Egyptian strawberry exports to Europe, there still would not be significant competition with the U.S.

However, neither Egypt nor the U.S. have a significant share of the major European markets. The Egyptian share is 2.8 percent, and the U.S. share is 0.7 percent. Egyptian exports are concentrated in the April - July time period, and U.S. exports occur mainly during January - May (Figure 12). While Egyptian and U.S. exports do overlap in the months of April and May, increases in Egyptian exports would have very little impact on U.S. exports given the size of the total market. There is no significant competition.

Potatoes

U.S. potato exports to major European markets were negligible, with the European markets amounting to less than 0.1 percent of total U.S. exports. Egypt is an important exporter of potatoes to Europe, but there is no significant competition.

Cucumbers

Major European markets absorbed only 0.8 percent of total U.S. cucumber exports. In fact, total U.S. exports to major European markets averaged only 1 ton per year. Egyptian exports are much larger, but clearly there is no significant competition.

Eggplant

U.S. eggplant exports to major European markets amounted to 0.5 percent of total U.S. exports. Most of those exports are concentrated in January and February. Egyptian exports to Europe during those two months averaged only 5 tons. There is no significant competition.

Asparagus

Major European markets accounted for 7.3 percent of total U.S. asparagus exports over this 1989-91 time period. In 1993, Japan and Canada together accounted for 82 percent of total U.S. asparagus exports, while Switzerland, Germany, Italy, and the United Kingdom accounted for 16 percent.⁴ Although there is potential for further growth in European markets, the major growth markets for the U.S. have been Japan and Canada with export values increasing 26 and 14 percent

⁴Asparagus export patterns in Europe are somewhat different from those for other horticultural commodities. Switzerland is a much more important market for the U.S. Thus, the 1993 export share figure of 16 percent for Switzerland, Germany, Italy, and the United Kingdom is not comparable with the 1989-91 average for the four major EU markets (Germany, France, United Kingdom, and Netherlands).

Dates

The major European markets are very important for U.S. exporters taking almost half of total exports. However, Egyptian exports to Europe are very small (82 tons compared with 2,958 for the U.S.). The major exporter of dates to European markets is Tunisia, which averages over ten thousand tons. With Egyptian exports to major European markets averaging only 2.8 percent of U.S. exports and a tiny fraction of total European date imports, there is no significant competition between Egypt and the U.S.

Pears

The major European markets absorbed 8 percent of U.S. pear/quince exports. Egyptian pear exports were only 95 tons with 89 tons concentrated in the month of May. U.S. pear/quince exports were concentrated in the October-April period. Total Egyptian exports amounted to only 1.5 percent of U.S. exports, and the timing is different. Hence, there is no significant competition.

Peaches

The European markets accounted for only 0.4 percent of U.S. peach exports. Thus, the European markets are not important for the U.S. Also, Egypt averaged only 4 tons of peach exports to major European markets. Therefore, there is no significant competition.

Apples

Major European markets received 11 percent of U.S. apple exports, and total U.S. apple exports averaged 44,881 tons. Egyptian exports, on the other hand, were quite small, averaging only 0.2 percent of U.S. exports. Hence, there is no significant competition.

Tomatoes

European markets for U.S. tomatoes are not important, with the total share of U.S. exports to major European markets being only 0.8 percent. Neither Egypt nor the U.S. are important players in European markets with their combined market share being only 0.2 percent. Figure 11 shows the U.S. and Egyptian market windows in the EU markets. There is no significant competition.

Onions

Major European markets accounted for 1.4 percent of U.S. onion exports. Egyptian onion exports to major European markets are about four times U.S. exports.

respectively in 1993 alone.⁵ Egypt has a negligible market share (0.7 percent) with exports having averaged only 28 tons per year. The U.S. market share averaged 26.7 percent. Even if Egypt were able to achieve large increases in exports, it would not have a significant impact on U.S. exports. Hence, there is no significant competition.⁶

Peppers

Pepper exports to major European markets were only 0.5 percent of total U.S. exports. Both the U.S. and Egypt have a tiny fraction of the European market. Hence, there is no significant competition.

Green beans

U.S. green bean exports to major European markets were only 0.7 percent of total exports. Egyptian exports to major European markets were substantially larger. Because European imports account for such a tiny fraction of total U.S. exports, there is no significant competition.

Conclusion

As is clear from the above commodity by commodity discussion, there is no significant competition between U.S. and Egyptian horticultural exports, at least for the products examined in this analysis. The major caveat to this conclusion is that the available data was limited mainly to the 1989-91 time period. It would be desirable to have data for 1992-94 to assure that the conclusions remain valid. However, for almost all the commodities, the evidence of lack of significant competition is very strong, and we would not expect the conclusions to change with more recent data. In fact, the one crop with the potential for significant competition from the 1989-91 data was asparagus, and we were able to obtain data through 1993 for that product. The 1993 data demonstrated growth in U.S. exports to Europe, but no significant competition from Egypt.

⁵*World Horticultural Trade & U.S. Export Opportunities*, USDA/FAS, September 1994.

⁶Using Eurostat data for the EU12 countries, we performed the same analysis using 1993 data to text for any significant changes. The Egyptian exports, U.S. exports, and total market size were 30, 1344, and 5931 respectively. U.S. market share in this market (not the same as the major markets classification we have used in this study) was 22.7 percent, and the Egyptian share was 0.5 percent (or 2.2 percent of U.S. exports). If Egyptian exports to this market were to double to 60, the U.S. "share" assuming no import growth would be 7 tons, which represents 0.5 percent of U.S. exports to the EU12 and 0.04 percent of total U.S. exports. Thus, the 1993 data confirm that there is still no significant competition.

ANNEX A

Fig. (1)

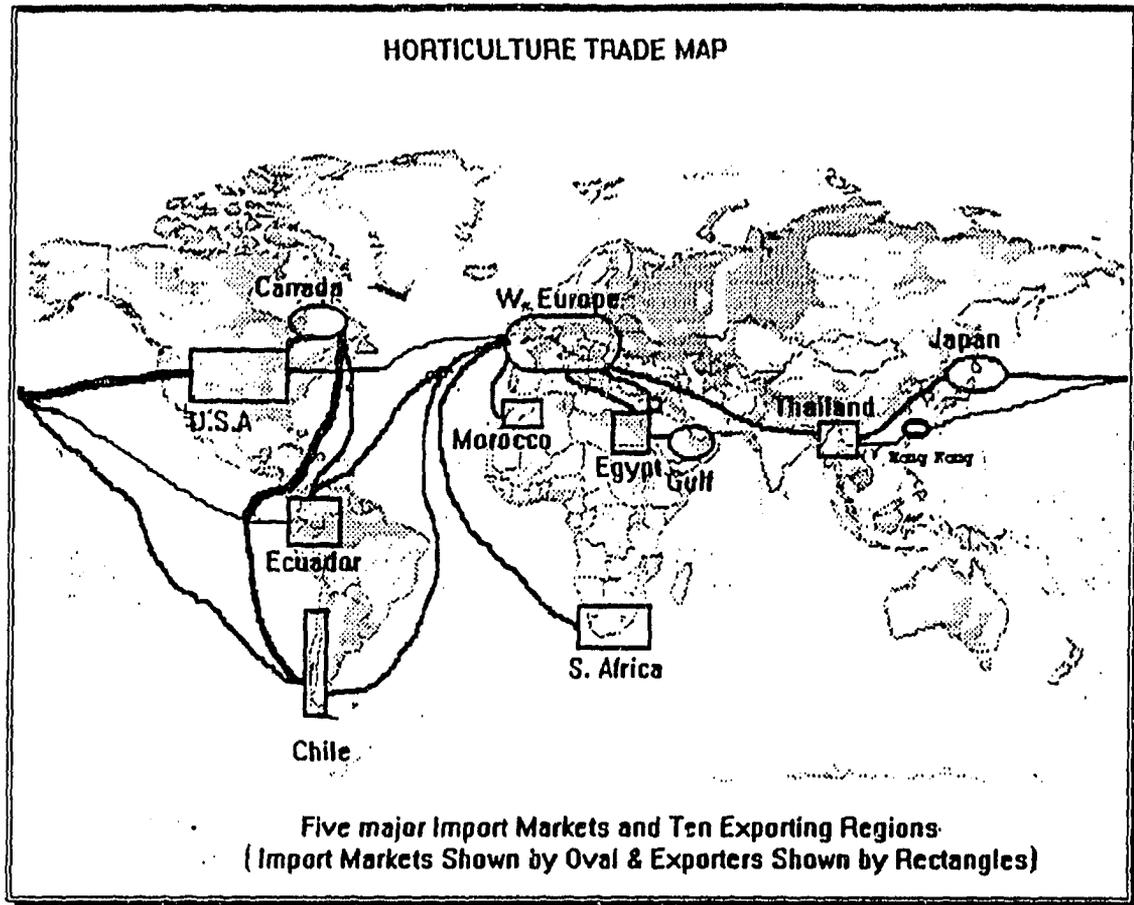


Fig. (2)

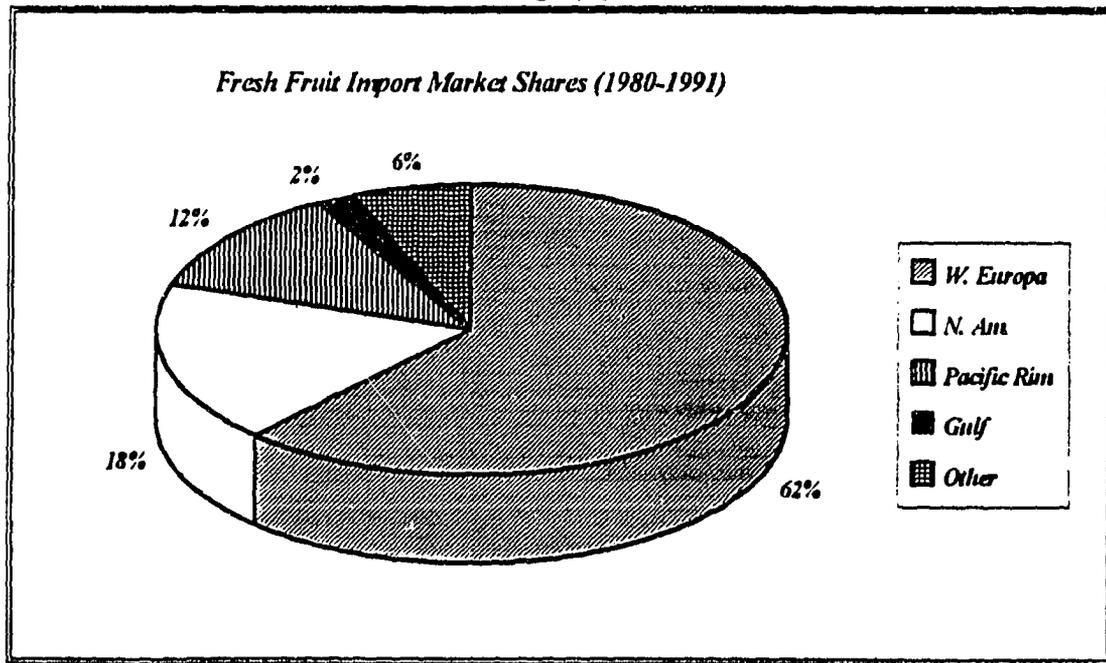


Fig. (3)

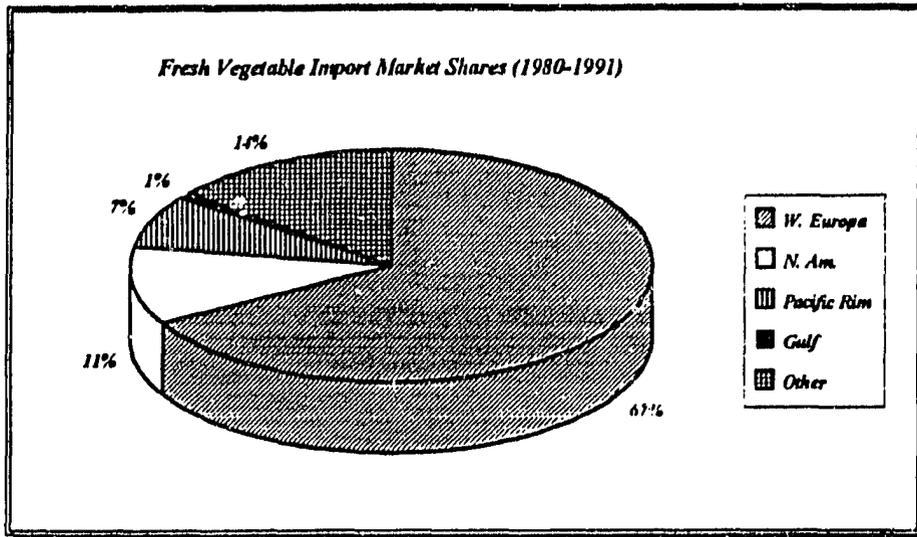


Fig. (4)

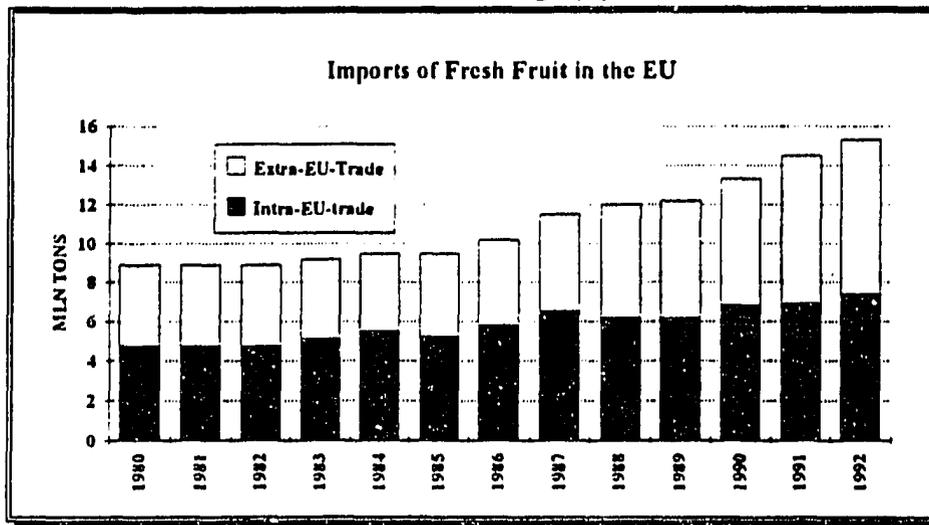


Fig. (5)

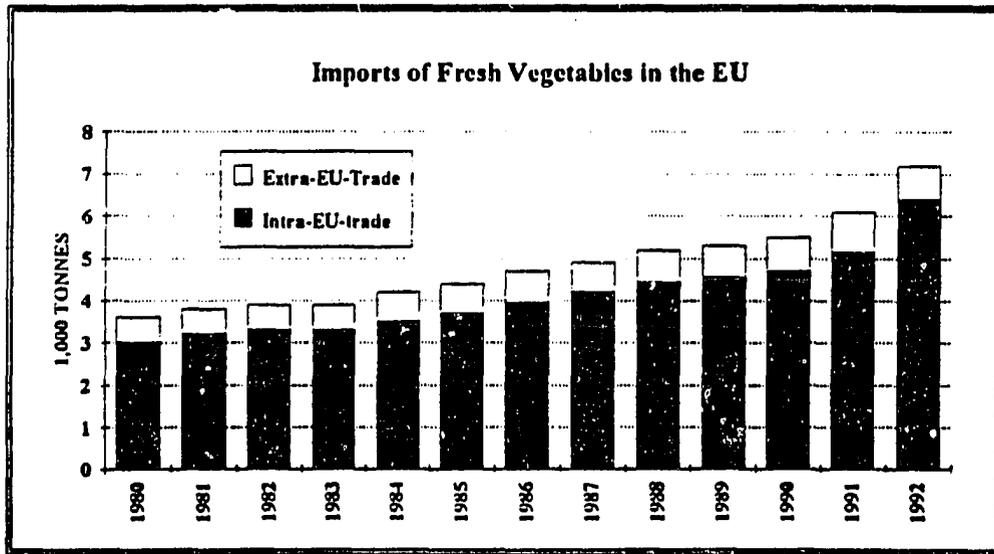


Fig. (6)

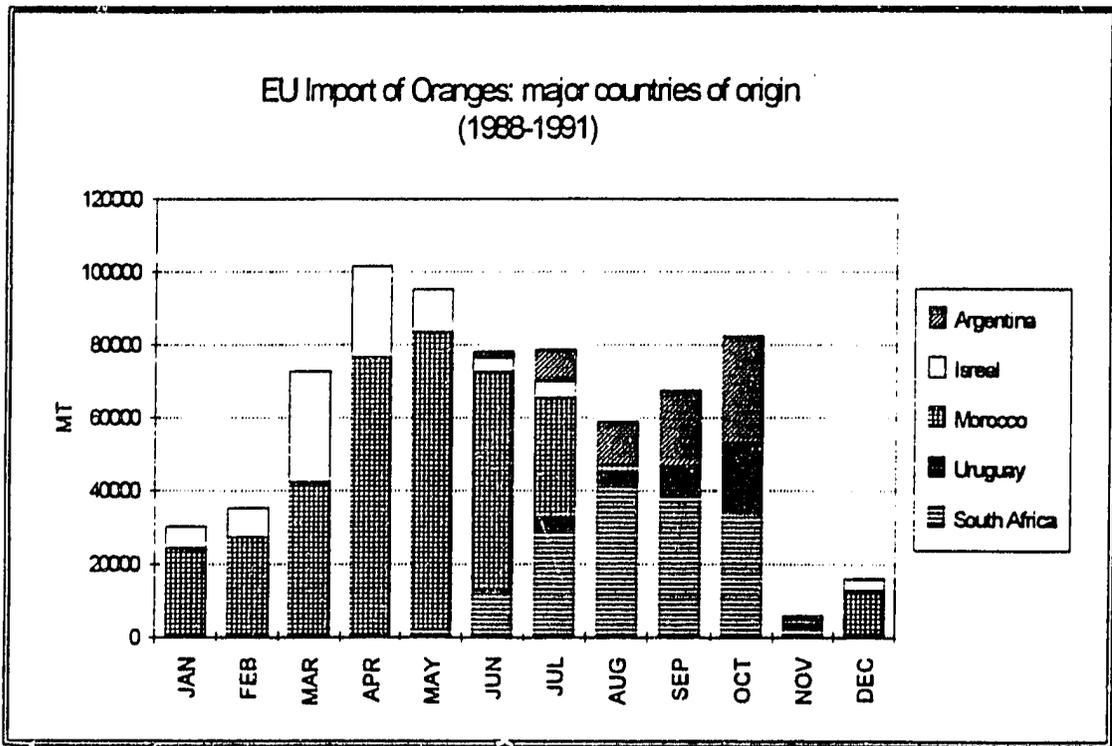


Fig. (7)

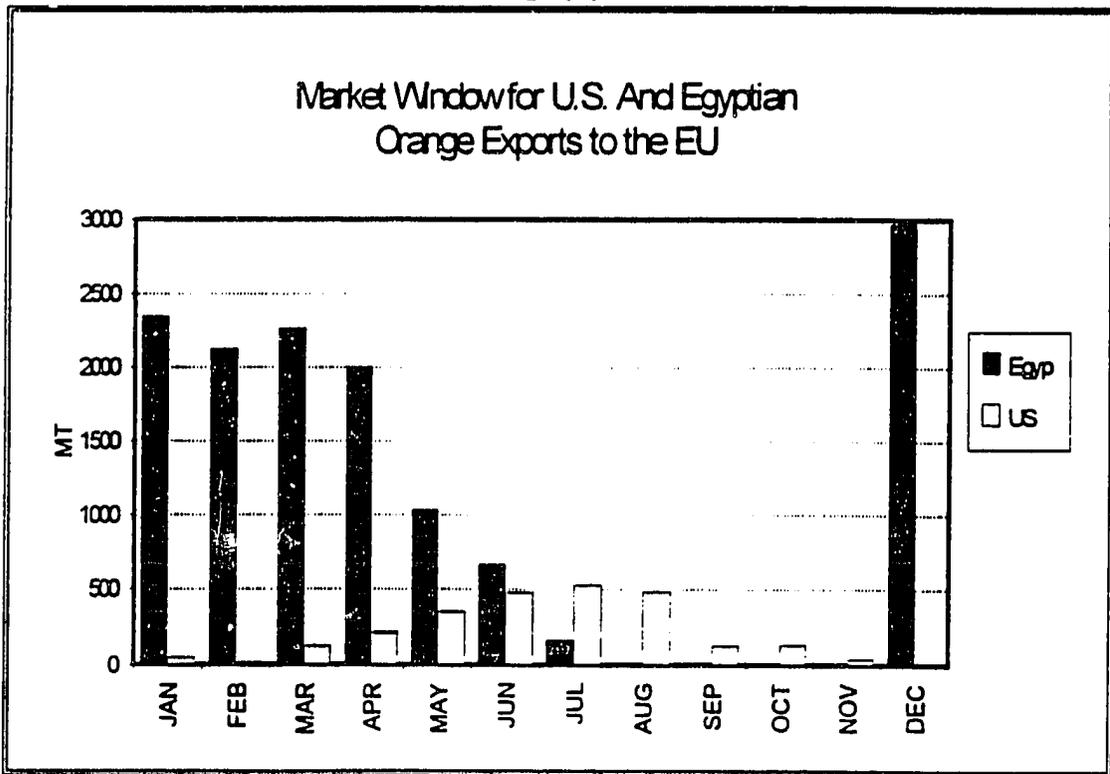


Fig. (8)

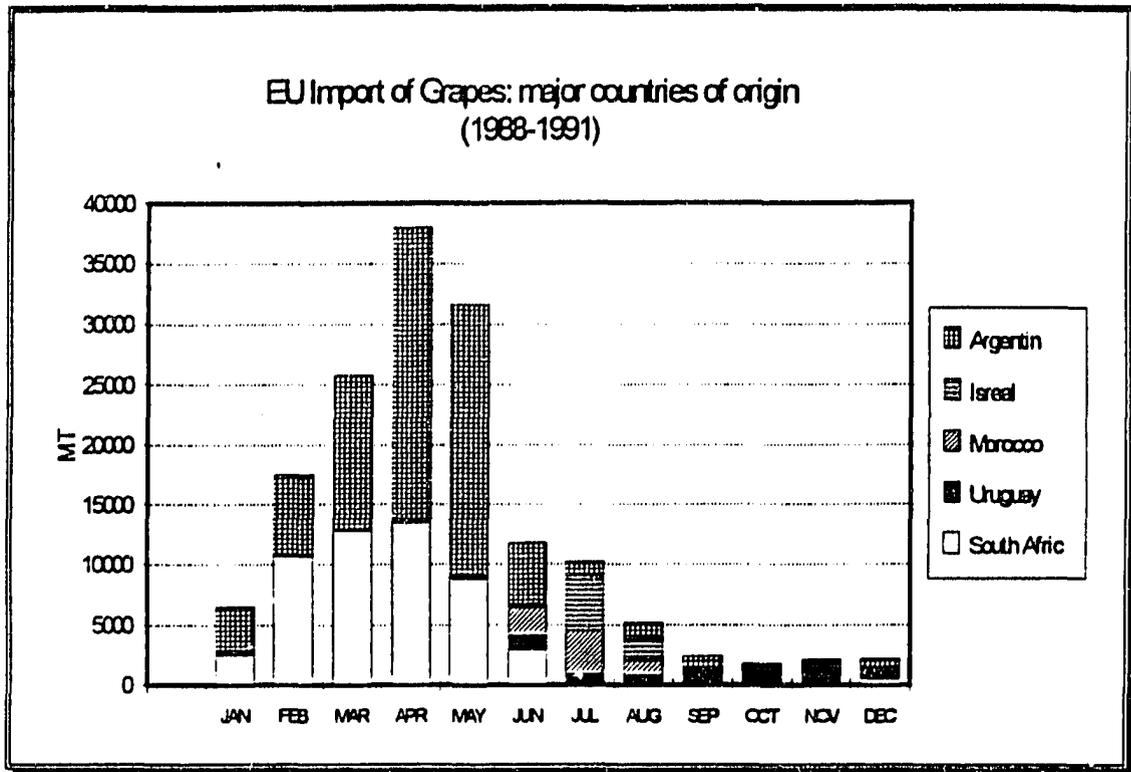


Fig. (9)

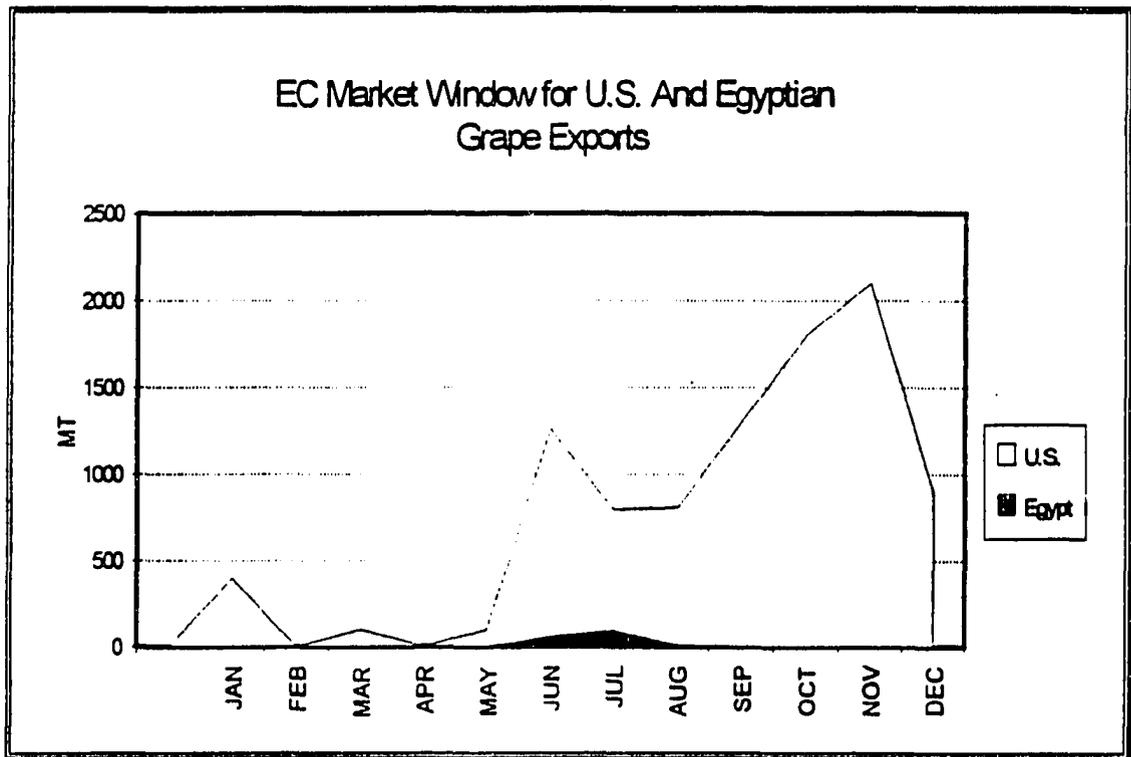


Fig. (9)

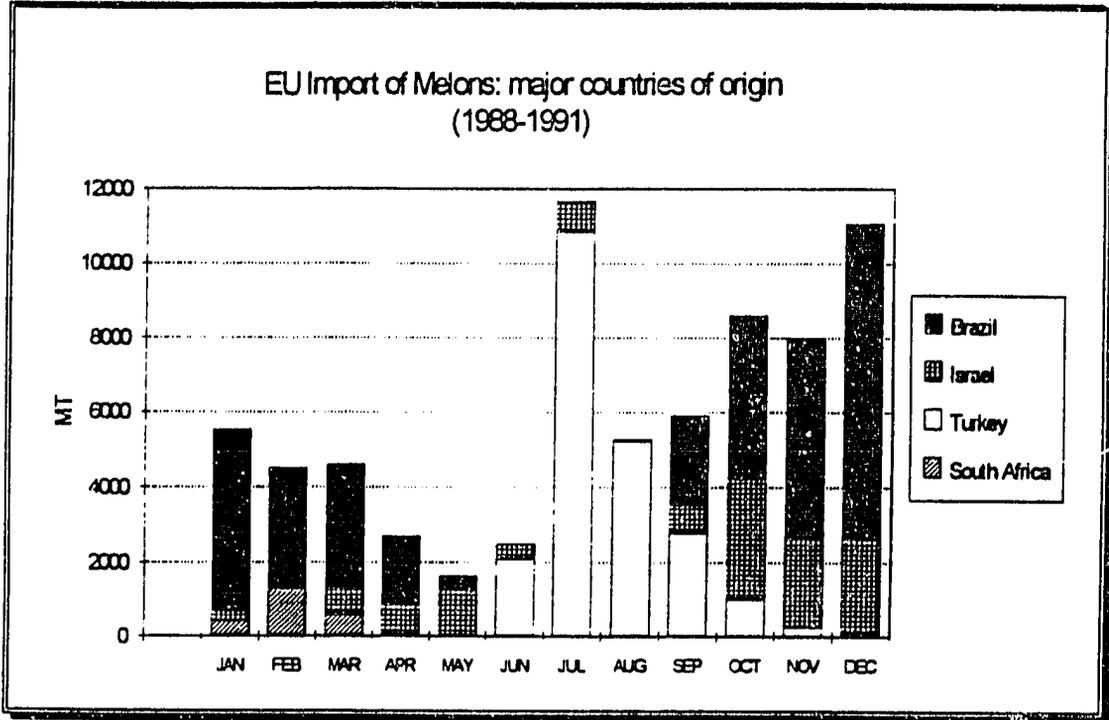


Fig. (10)

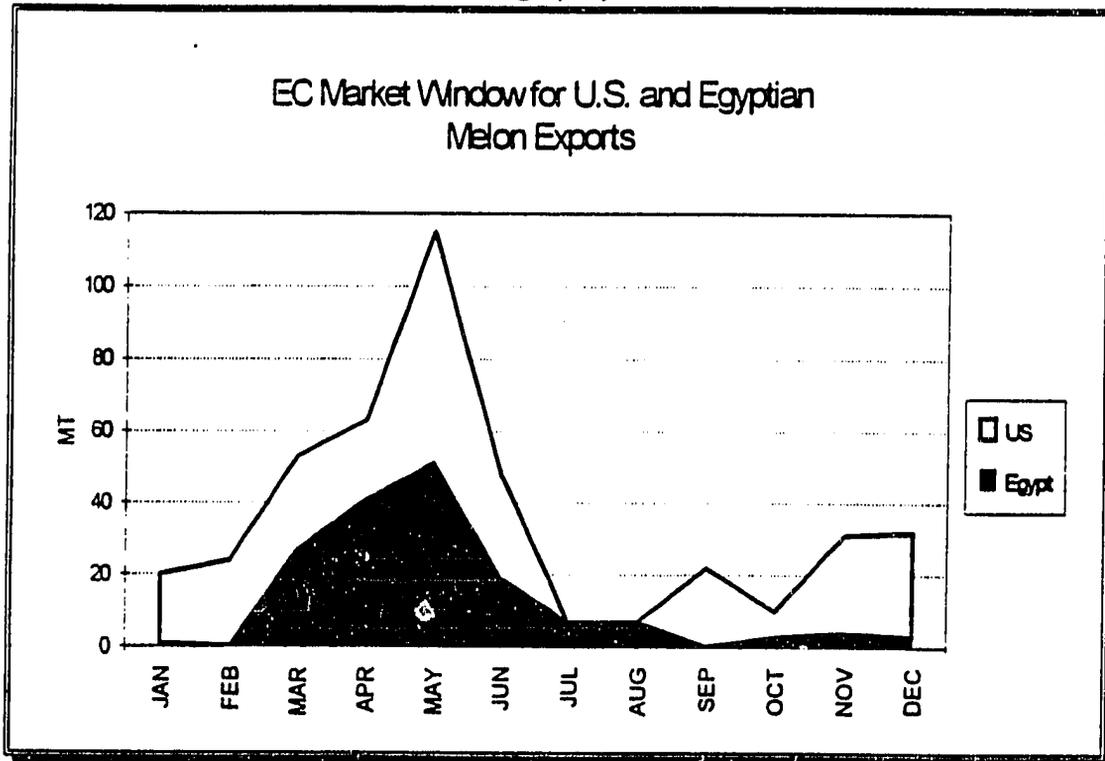


Fig. (11)

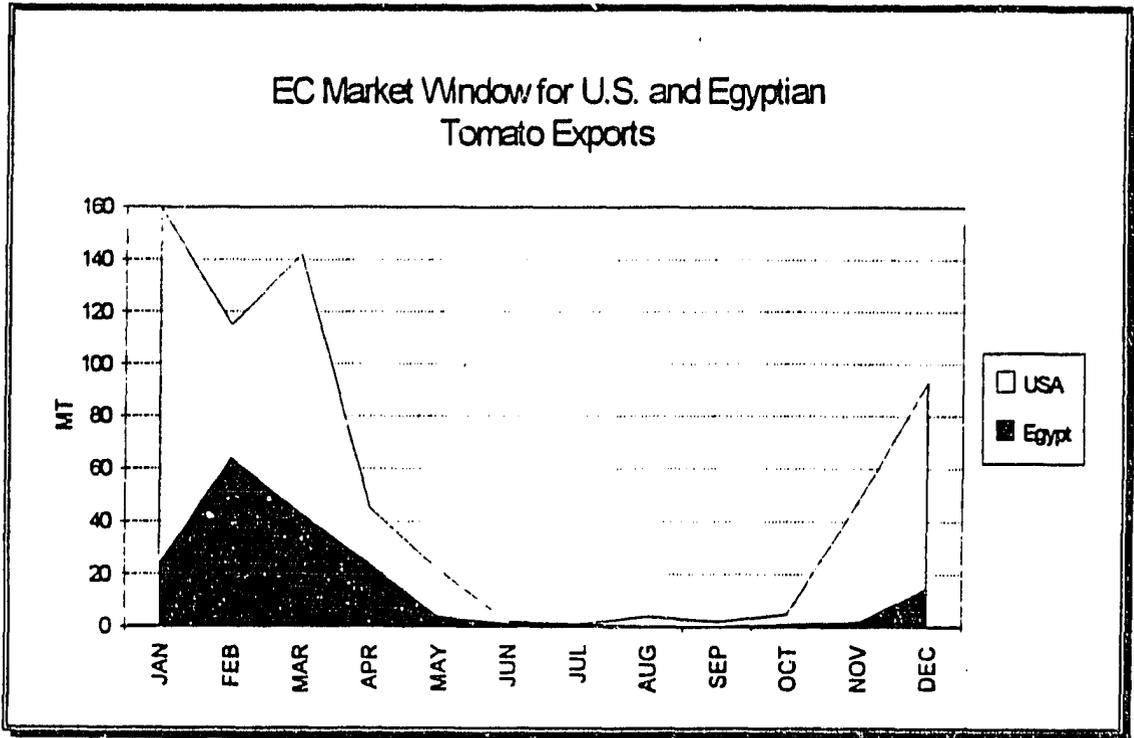
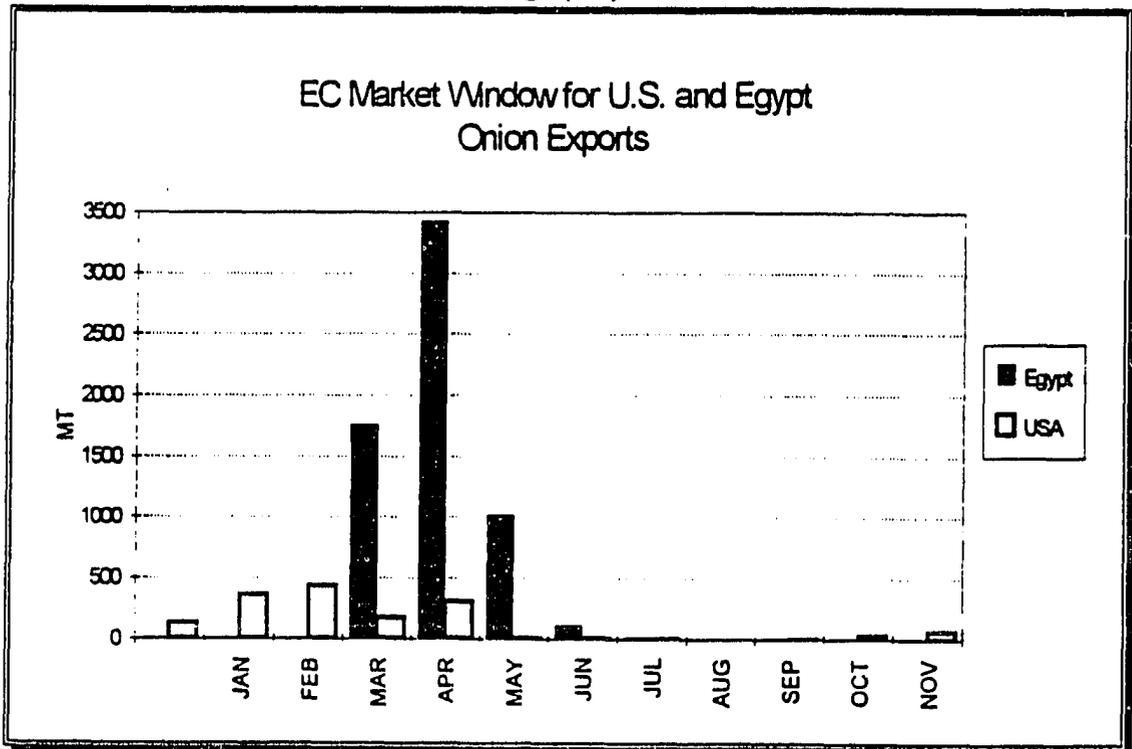


Fig. (12)



**ANNEX I
STATUTORY CHECKLIST**

135

AGRICULTURAL TECHNOLOGY UTILIZATION AND TRANSFER PROJECT

PROGRAM NO. 263-K-0240

STATUTORY CHECKLIST

The Country Checklist for FY 1995 is contained in the Project Paper for Agricultural Policy Reform, Project No. 263-0219.

5C(2) - ASSISTANCE CHECKLIST

Listed below are statutory criteria applicable to the assistance resources, rather than to the eligibility of a country to receive assistance. This section is divided into three parts. Part A includes criteria applicable to both Development Assistance and Economic Support Fund resources. Part B includes criteria applicable only to Development Assistance resources. Part C includes criteria applicable only to Economic Support Funds. All answers are given in bold.

CROSS REFERENCE: IS COUNTRY CHECKLIST UP TO DATE? **Yes**

A. CRITERIA APPLICABLE TO BOTH DEVELOPMENT ASSISTANCE AND ECONOMIC SUPPORT FUNDS

1. Host Country Development Efforts (FAA Sec. 601(a)):
Information and conclusions on whether assistance will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions.

**(a)-(b) Yes (c) No perceptible impact (d) Yes (e) Yes
(f) No perceptible impact**

2. U.S. Private Trade and Investment (FAA Sec. 601(b)):
Information and conclusions on how assistance will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

The development of horticultural technologies will provide significant export opportunities for U.S. manufacturers of products used in producing, processing and storing fruits and vegetables.

3. Congressional Notification

a. General Requirement (FY 1995 Appropriations Act Sec. 515; FAA Sec. 634A): If money is to be obligated for an activity not previously justified to Congress, or for an amount in excess of amount previously justified to Congress, has Congress been properly notified (unless the Appropriations Act notification requirement has been waived because of substantial risk to human health or welfare)?

Congressional committees will be notified in accordance with regular Agency procedures. The Congressional notice will include all information required.

b. Special Notification Requirement (FY 1995 Appropriations Act Sec. 520): Are all activities proposed for obligation subject to prior congressional notification?

N/A. See the answer to item 3.a. above.

c. Notice of Account Transfer (FY 1995 Appropriations Act Sec. 509): If funds are being obligated under an appropriation account to which they were not appropriated, has the President consulted with and provided a written justification to the House and Senate Appropriations Committees and has such obligation been subject to regular notification procedures?

N/A

d. Cash Transfers and Nonproject Sector Assistance (FY 1995 Appropriations Act Sec. 536(b)(3)): If funds are to be made available in the form of cash transfer or nonproject sector assistance, has the Congressional notice included a detailed description of how the funds will be used, with a discussion of U.S. interests to be served and a description of any economic policy reforms to be promoted?

N/A

4. Engineering and Financial Plans (FAA Sec. 611(a)): Prior to an obligation in excess of \$500,000, will there be: (a) engineering, financial or other plans necessary to carry out the assistance; and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

Yes

5. Legislative Action (FAA Sec. 611(a)(2)): If legislative action is required within recipient country with respect to an obligation in excess of \$500,000, what is the basis for a reasonable expectation that such action will be completed in time

to permit orderly accomplishment of the purpose of the assistance?

All international agreements must be ratified by the People's Assembly. In the past, the Assembly has ratified all grant agreements in a timely manner.

6. Water Resources (FAA Sec. 611(b)): If project is for water or water-related land resource construction, have benefits and costs been computed to the extent practicable in accordance with the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)?

N/A

7. Cash Transfer/Nonproject Sector Assistance Requirements (FY 1995 Appropriations Act Sec. 536). If assistance is in the form of a cash transfer or nonproject sector assistance:

a. Separate Account: Are all such cash payments to be maintained by the country in a separate account and not commingled with any other funds (unless such requirements are waived by Congressional notice for nonproject sector assistance)?

N/A

b. Local Currencies: If assistance is furnished to a foreign government under arrangements which result in the generation of local currencies:

(1) Has A.I.D. (a) required that local currencies be deposited in a separate account established by the recipient government, (b) entered into an agreement with that government providing the amount of local currencies to be generated and the terms and conditions under which the currencies so deposited may be utilized, and (c) established by agreement the responsibilities of A.I.D. and that government to monitor and account for deposits into and disbursements from the separate account?

N/A

(2) Will such local currencies, or an equivalent amount of local currencies, be used only to carry out the purposes of the DA or ESF chapters of the FAA (depending on which chapter is the source of the assistance) or for the administrative requirements of the United States Government?

N/A

(3) Has A.I.D. taken all appropriate steps to ensure that the equivalent of local currencies disbursed from the separate account are used for the agreed purposes? N/A

(4) If assistance is terminated to a country, will any unencumbered balances of funds remaining in a separate account be disposed of for purposes agreed to by the recipient government and the United States Government?

N/A

8. **Capital Assistance (FAA Sec. 611(e)):** If project is capital assistance (e.g., construction), and total U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability to maintain and utilize the project effectively?

N/A

9. **Local Currencies**

a. **Recipient Contributions (FAA Secs. 612(b) & 636(h)):** Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

The Project Agreement will require the GOE to contribute not less than L.E. 15,545,620 in cash to the Project. The GOE will also provide in-kind contributions in the form of office space, utilities and similar items, which will be monitored during actual implementation but the amount of which cannot be established at this time. In addition, there will be contributions in cash and in-kind from the private sector in Egypt which also cannot be quantified at this time.

b. **U.S.-Owned Currency. (FAA Sec. 612 (d)):** Does the U.S. own excess foreign currency of the country? If so, what arrangements have been made for its release?

No

10. **Trade Restrictions**

a. **Surplus Commodities (FY 1995 Appropriations Act Sec. 513(a)):** If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing

commodity?

No. The horticultural crops produced as a result of the Project are not likely to be in surplus on world markets. In addition, an economic study of the Project by Dr. Wallace Tyner of Purdue University has established that under any foreseeable circumstances, American exporters of these crops will not be competitively injured by crops produced as a result of the Project.

b. Textiles (Lautenberg Amendment) (FY 1995 Appropriations Act Sec. 513(c)): Will the assistance (except for programs in Caribbean Basin Initiative countries under U.S. Tariff Schedule "Section 807," which allows reduced tariffs on articles assembled abroad from U.S.-made components) be used directly to procure feasibility studies, prefeasibility studies, or project profiles of potential investment in, or to assist the establishment of facilities specifically designed for, the manufacture for export to the United States or to third country markets in direct competition with U.S. exports, of textiles, apparel, footwear, handbags, flat goods (such as wallets or coin purses worn on the person), work gloves or leather wearing apparel?

No

11. Tropical Forests (FY 1991 Appropriations Act Sec. 533(c)(3) (as referenced in section 532(d) of the FY 1993 Appropriations Act): Will funds be used for any program, project or activity which would (a) result in any significant loss of tropical forests, or (b) involve industrial timber extraction in primary tropical forest areas?

No

12. PVO Assistance

a. Auditing and Registration (FY 1995 Appropriations Act Sec. 560): If assistance is being made available to a PVO, has that organization provided upon timely request any document, file, or record necessary to the auditing requirements of A.I.D., and is the PVO registered with A.I.D.?

N/A

b. Funding Sources (FY 1995 Appropriations Act, Title II, under heading "Private and Voluntary Organizations"): If assistance is to be made to a United States PVO (other than a cooperative development organization), does it obtain at least 20 percent of its total annual funding for international activities from sources other than the United States Government?

N/A

140

13. **Project Agreement Documentation (State Authorization Sec. 139 (as interpreted by conference report)):** Has confirmation of the date of signing of the project agreement, including the amount involved, been cabled to State L/T and A.I.D. LEG within 60 days of the agreement's entry into force with respect to the United States, and has the full text of the agreement been pouched to those same offices? (See Handbook 3, Appendix 6G for agreements covered by this provision).

Case-Zabocki Act reporting procedures will be followed with respect to this Project.

14. **Metric System (Omnibus Trade and Competitiveness Act of 1980 Sec. 5164, as interpreted by conference report, amending Metric Conversion Act of 1975 Sec. 2, and as implemented through A.I.D. policy):** Does the assistance activity use the metric system of measurement in its procurements, grants, and other business-related activities, except to the extent that such use is impractical or is likely to cause significant inefficiencies or loss of markets to United States firms? Are bulk purchases usually to be made in metric, and are components, subassemblies, and semi-fabricated materials to be specified in metric units when economically available and technically adequate? A.I.D. specifications use metric units of measure from the earliest programmatic stages, and from the earliest documentation of the assistance processes (for example, project papers) involving quantifiable measurements (length, area, volume, capacity, mass and weight), through the implementation stage.

Yes to both questions.

15. **Abortions (FAA Sec. 104(f); FY 1995 Appropriations Act, Title II, under heading "Population, DA," and Sec. 518):**

a. Are any of the funds to be used for the performance of abortions as a method of family planning or to motivate or coerce any person to practice abortions? (Note that the term "motivate" does not include the provision, consistent with local law, of information or counseling about all pregnancy options including abortion.)

N/A

b. Are any of the funds to be used to pay for the performance of involuntary sterilization as a method of family planning or to coerce or provide any financial incentive to any person to undergo sterilizations?

N/A

c. Are any of the funds to be made available to any organization or program which, as determined by the President,

supports or participates in the management of a program of coercive abortion or involuntary sterilization?

N/A

d. Will funds be made available only to voluntary family planning projects which offer, either directly or through referral to, or information about access to, a broad range of family planning methods and services? (As a legal matter, DA only.)

N/A

e. In awarding grants for natural family planning, will any applicant be discriminated against because of such applicant's religious or conscientious commitment to offer only natural family planning? (As a legal matter, DA only.)

N/A

f. Are any of the funds to be used to pay for any biomedical research which relates, in whole or in part, to methods of, or the performance of, abortions or involuntary sterilization as a means of family planning?

N/A

g. Are any of the funds to be made available to any organization if the President certifies that the use of these funds by such organization would violate any of the above provisions related to abortions and involuntary sterilization?

N/A

16. **Cooperatives (FAA Sec. 111):** Will assistance help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward a better life?

No

17. **U.S.-Owned Foreign Currencies**

a. **Use of Currencies (FAA Secs. 612(b) & 636(h); FY 1995 Appropriations Act Secs. 503 & 505):** Are steps being taken to assure that, to the maximum extent possible, foreign currencies owned by the U.S. are utilized in lieu of dollars to meet the cost of contractual and other services.

N/A

b. **Release of Currencies (FAA Sec. 612(d)):** Does the U.S. own excess foreign currency of the country? If so, what arrangements have been made for its release? N/A

18. Procurement

a. **Small Business (FAA Sec. 602(a)):** Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?

Yes

b. **U.S. Procurement (FAA Sec. 604(a)):** Will all procurement be from the U.S., the recipient country, or developing countries except as otherwise determined in accordance with the criteria of this section?

Yes

c. **Marine Insurance (FAA Sec. 604(d)):** If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?

Egypt does not so discriminate.

d. **Insurance (FY 1995 Appropriations Act Sec. 531):** Will any A.I.D. contract and solicitation, and subcontract entered into under such contract, include a clause requiring that U.S. insurance companies have a fair opportunity to bid for insurance when such insurance is necessary or appropriate?

Yes

e. **Non-U.S. Agricultural Procurement (FAA Sec. 604(e)):** If non-U.S. procurement of agricultural commodities or products thereof is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.)

N/A

f. **Construction or Engineering Services (FAA Sec. 604(g)):** Will construction or engineering services be procured from firms of advanced developing countries which are otherwise eligible under Code 941 and which have attained a competitive capability in international markets in one of these areas? (Exception for those countries which receive direct economic assistance under the FAA and permit United States firms to compete for construction or engineering services financed from assistance

programs of these countries.)

N/A

g. Cargo Preference Shipping (FAA Sec. 603): Is the shipping excluded from compliance with the requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 percent of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent such vessels are available at fair and reasonable rates?

All applicable shipping rules and procedures will be followed.

h. Technical Assistance (FAA Sec. 621(a)): If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? Federal agencies may be utilized, when they are particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs.

Yes

i. U.S. Air Carriers (International Air Transportation Fair Competitive Practices Act, 1974): If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available?

All applicable air carrier rules and procedures will be followed.

j. Consulting Services (FY 1995 Appropriations Act Sec. 559): If assistance is for consulting service through procurement contract pursuant to 5 U.S.C. 3109, are contract expenditures a matter of public record and available for public inspection (unless otherwise provided by law or Executive order)?

N/A

k. Competitive Selection Procedures (FAA Sec. 601(e)): Will the assistance utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

Yes

l. Notice Requirement (FY 1995 Appropriations Act Sec. 568): Will project agreements or contracts contain notices consistent with FAA section 604(a) and with the sense of Congress

that to the greatest extent practicable equipment and products purchased with appropriated funds should be American-made?

Yes

19. Construction

a. Capital Project (FAA Sec. 601(d)): If a capital (e.g., construction) project, will U.S. engineering and professional services be used?

N/A

b. Construction Contract (FAA Sec. 611(c)): If contracts for construction are to be financed, will they be let on a competitive basis to the maximum extent practicable?

N/A

c. Large Projects, Congressional Approval (FAA Sec. 620(k)): If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million (except for productive enterprises in Egypt that were described in the Congressional Presentation), or does assistance have the express approval of Congress?

N/A

20. U.S. Audit Rights (FAA Sec. 301(d)): If a fund is established solely by U.S. contributions and administered by an international organization, does the Comptroller General have audit rights?

N/A

21. Communist Assistance (FAA Sec. 620(h)). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?

Yes

22. Narcotics

a. Cash Reimbursements (FAA Sec. 483): Will arrangements preclude use of financing to make reimbursements, in the form of cash payments, to persons whose illicit drug crops are eradicated?

Yes

15

b. Assistance to Narcotics Traffickers (FAA Sec. 487): Will arrangements take "all reasonable steps" to preclude use of financing to or through individuals or entities which we know or have reason to believe have either: (1) been convicted of a violation of any law or regulation of the United States or a foreign country relating to narcotics (or other controlled substances); or (2) been an illicit trafficker in, or otherwise involved in the illicit trafficking of, any such controlled substance?

Yes

23. Expropriation and Land Reform (FAA Sec. 620(g)): Will assistance preclude use of financing to compensate owners for expropriated or nationalized property, except to compensate foreign nationals in accordance with a land reform program certified by the President?

Yes

24. Police and Prisons (FAA Sec. 660): Will assistance preclude use of financing to provide training, advice, or any financial support for police, prisons, or other law enforcement forces, except for narcotics programs?

Yes

25. CIA Activities (FAA Sec. 662): Will assistance preclude use of financing for CIA activities?

Yes

26. Motor Vehicles (FAA Sec. 636(i)): Will assistance preclude use of financing for purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained?

Yes

27. Export of Nuclear Resources (FY 1995 Appropriations Act Sec. 506): Will assistance preclude use of financing to finance --except for purposes of nuclear safety--the export of nuclear equipment, fuel, or technology?

Yes

28. Publicity or Propaganda (FY 1995 Appropriations Act Sec. 554): Will assistance be used for publicity or propaganda purposes designed to support or defeat legislation pending before Congress, to influence in any way the outcome of a political election in the United States, or for any publicity or propaganda purposes not authorized by Congress? **No**

29. **Exchange for Prohibited Act (FY 1995 Appropriations Act Sec. 533):** Will any assistance be provided to any foreign government (including any instrumentality or agency thereof), foreign person, or United States person in exchange for that foreign government or person undertaking any action which is, if carried out by the United States Government, a United States official or employee, expressly prohibited by a provision of United States law?

No

30. **Commitment of Funds (FAA Sec. 635(h)):** Does a contract or agreement entail a commitment for the expenditure of funds during a period in excess of 5 years from the date of the contract or agreement?

No

31. **Impact on U.S. Jobs (FY 1995 Appropriations Act Sec. 545):**

a. Will any financial incentive be provided to a business located in the U.S. for the purpose of inducing that business to relocate outside the U.S. in a manner that would likely reduce the number of U.S. employees of that business?

No

b. Will assistance be provided for the purpose of establishing or developing an export processing zone or designated area in which the country's tax, tariff, labor, environment, and safety laws do not apply? If so, has the President determined and certified that such assistance is not likely to cause a loss of jobs within the U.S.?

No

c. Will assistance be provided for a project or activity that contributes to the violation of internationally recognized workers rights, as defined in section 502(a)(4) of the Trade Act of 1974, of workers in the recipient country, or will assistance be for the informal sector, micro or small-scale enterprise, or smallholder agriculture?

No

B. **CRITERIA APPLICABLE TO DEVELOPMENT ASSISTANCE ONLY:**

N/A. PART B OF THE ASSISTANCE CHECKLIST, WHICH IS APPLICABLE TO DEVELOPMENT ASSISTANCE ONLY, HAS BEEN OMITTED BECAUSE IT IS INAPPLICABLE TO THIS ESF FUNDED PROJECT.

157

C. CRITERIA APPLICABLE TO ECONOMIC SUPPORT FUNDS ONLY

1. Economic and Political Stability (FAA Sec. 531(a)): Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes and progress of Part I of the FAA?

Yes

2. Military Purposes. (FAA Sec. 531(e)): Will this assistance be used for military or paramilitary purposes?

No

3. Commodity Grants/Separate Accounts (FAA Sec. 609): If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? (For FY 1995, this provision is superseded by the separate account requirements of FY 1995 Appropriations Act Sec. 536(a), see Sec. 536(a)(5).)

N/A

4. Generation and Use of Local Currencies (FAA Sec. 531(d)): Will ESF funds made available for commodity import programs and other program assistance be used to generate local currencies? If so, will at least 50 percent of such local currencies be available to support activities consistent with the objectives of FAA sections 103 through 106? (For FY 1995, this provision is superseded by the separate account requirements of FY 1995 Appropriations Act Sec. 536(a), see Sec 536(a)(5).)

N/A

5. Capital Projects (Jobs Through Exports Act of 1992, Sec. 306, FY 1993 Appropriations Act, Sec. 595): If assistance is being provided for a capital project, will the project be developmentally-sound and sustainable, i.e., one that is (a) environmentally sustainable, (b) within the financial capacity of the government or recipient to maintain from its own resources, and (c) responsive to a significant development priority initiated by the country to which assistance is being provided. (Please note the definition of capital project" contained in section 595 of the FY 1993 Appropriations Act. Note, as well, that although a comparable provision does not appear in the FY 94 Appropriations Act, the FY 93 provision applies to, among other things, 2-year ESF funds which could be obligated in FY 94.)

N/A

DRAFTER: LEG: JDOYLE: 4/16/95

ANNEX J
GRANTEE REQUEST FOR ASSISTANCE

169

ARAB REPUBLIC OF EGYPT
MINISTRY OF AGRICULTURE
AND LAND RECLAMATION
AGRICULTURAL RESEARCH CENTRE
CHAIRMAN



Dr. John Westly
Mission Director
USAID - Cairo

)
19 January, 1995

Dear Dr. Westly,

As you are aware, senior staff from the Ministry under my guidance, and a design group from USAID have been collaborating extensively on the design of the new project (ATUT) since September, 1994. This project responds to our request for assistance in the development and transfer of technologies to increase production, productivity and income in the agricultural sector. Specifically, this project addresses the Ministry's continuing interest in increasing the exportation of high value horticultural crops and in increasing the productivity gains of key food crops such as rice, wheat, corn and faba beans.

The Ministry is pleased with the crop approach (targeted, specific, problem-driven technology development and transfer) which has been jointly developed and we are pleased with the range of activities included in the design (Technology Transfer, biotechnological disciplines, expert systems, food consumption pattern and on-farm water management around specific crops). (Table)

As a core concept, the new project will seek to involve the private sector to the maximum degrees possible and truly be "demand driven".

We will jointly explore the best means of ensuring the active participation of both large, medium and small farmers in establishing a research agenda or a program of technology transfer activities to support the goals of the horticulture component of the project.

ARAB REPUBLIC OF EGYPT
MINISTRY OF AGRICULTURE
AND LAND RECLAMATION
AGRICULTURAL RESEARCH CENTRE
CHAIRMAN

As for the food crops strategic research program which will link our scientists with US. and international scientific centers through collaborative arrangements and participation in international conferences and seminars. The strategic research will target only the most urgent needs of the food crops selected for emphasis.

We support that ATUT will adopt a "commodity systems approach" as a core concept on a national level. We also support the need for active project impact monitoring to measure performance of the project throughout its life-of-project.

We support the ATUT plans to implement the project around specific needs of specific commodities and to utilize disciplines (not institutes) and personnel from appropriate institutes or faculties to address adaptive research needs through collaboration with US scientists. As another core concept, the ATUT has been designed for results and has benefited from the management system put in place during the last several years of the predecessor NARP so that project implementation will be smooth.

The ministry of Agriculture is pleased to request funding, in the amount of about \$ 60.0 million for the Agricultural Technology Utilization and Transfer Project (ATUT) (263-0240). We expect that initial obligation of funding of \$10.0 million can be made by no later than the end of June, 1995.

Sincerely

Prof. Dr. Youssuf Wally



Deputy Prime Minister ,
Minister of Agriculture &
Land Reclamation

ANNEX K
INITIAL ENVIRONMENTAL EXAMINATION



UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

CAIRO EGYPT

RECORD OF CATEGORICAL EXCLUSION
FROM USAID ENVIRONMENTAL PROCEDURES

Project Location: Egypt

Project Title/ID: Agricultural Technology Utilization and
Transfer Project (263-0240)

Funding (Fiscal Year and Amount): FY 95 - FY 00
\$50,000,000

Prepared By:

Date:

Ejadia Washington
Ejadia Washington
Mission Environmental Coordinator

4-10-95

Environmental Action Recommended: Categorical Exclusion as per
22 CFR 216.2(c)(1) and (iii)
and/or 216.2 (c) (2) (ii)

Associate Mission Director's Concurrence:

Date:

Clemence Weber
Clemence Weber
Associate Director, AGR

April 10, 1995

Decision of Environmental
Coordinator, Bureau for
Asia and the Near East:

Approved: [Signature]
Disapproved: _____
Date: 10 April 1995

Clearances:

SHassanein, PDS/ENV
JGoggin, A/OD/PDS/ENV
DDelgado, AGR/A
TGehr, PDS/PS
JDoyle, LEG

Sail Date 4/10/95
SD Date 4/10/95
LS Date 4/10/95
TG Date 4/10/95
JDO Date 4/10/95

AD

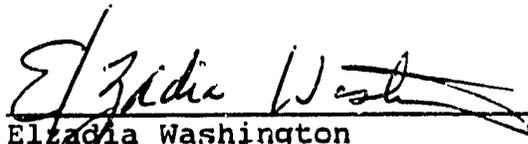


UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

CAIRO EGYPT

RECORD OF CATEGORICAL EXCLUSION
FROM USAID ENVIRONMENTAL PROCEDURES

1. Project Location: Egypt
2. Project Title/ID: Agricultural Technology Utilization and Transfer Project (263-0240)
3. Funding (Fiscal Year and Amount): FY 95 - FY 00
\$50,000,000
4. IEE Prepared By: Date:


Elzadia Washington
Mission Environmental Coordinator

4-10-95

5. Environmental Action Recommended: Categorical Exclusion as per 22 CFR 216.2(c)(i) and (iii) and/or 216.2(c)(2)(ii).

6. Discussion of Major Environmental Relationships of Project:

Background:

The purpose of the Agricultural Technology Utilization and Transfer Project is to improve technologies developed and adopted for the production, processing and marketing of agricultural commodities. ATUT's goal is to increase production, productivity and incomes in the agricultural sector. The objective of ATUT is to increase the utilization of productivity enhancing technologies to increase income from select high value horticulture crops and maintain productivity of important staple food crops through a closely monitored applied and strategic research program conducted in collaboration with U.S. and international institutions.

The ATUT project will focus on two important areas of agriculture: (1) horticultural crops to increase their value and export potential; and, (2) selected food crops to help assure food security. ATUT will have a separate component and different

set of support activities for each focus: Horticulture and Food Crops. In determining costs per component below, the technical Assistance costs have been attributed to each focus area (Horticulture, Food Crops Component) and to activities within these areas as best as can be determined at this stage of the development of the ATUT project.

The two major components of the ATUT project will be to: (1) identify and transfer new horticultural production, post-harvesting and marketing technologies to the private sector; and, (2) develop a carefully focused, collaborative strategic research program aimed at resolving the major constraints to increased productivity of selected staple food crops such as rice, corn, wheat and faba bean. In addition, the project will include a program support and project operations unit to conduct additional economic or commodity systems studies, monitor project performance as well as provide routine project administration.

Under the **Horticulture Component**: ATUT will directly address the limited adoption of export-related production, processing and marketing technologies that seriously impede the generation of potentially large revenues derived from the export of horticultural products.

The Horticulture Component includes activities in Technology Transfer and Adaptive Collaborative Research.

Technology Transfer: ATUT will provide financial and technical assistance for activities related to the transfer (or adaptation) of existing technologies in production, harvesting, post-harvesting, packing, processing and marketing of select horticultural products. The information can be transferred in a variety of ways, e.g., seminars, workshops, pamphlets, and other training methods. The technology transfer activities in horticulture will provide short-term, U.S. technical assistance on a short term basis to provide specific technology transfer support for both private and public sector individuals. Technology Transfer activities will also include observational trips to the U.S. or third countries to see specific aspects related to production, handling or processing of high value horticultural commodities. An example of technology transfer is the recent course conducted by U.S. and Chilean experts on "Managing a Fresh Fruit and Vegetable Export Business" which used a case study approach to introduce modern management concepts to Egyptian exporters. Another example is the determination of the strength of the side walls and the placement of ventilation holes in Egyptian packaging material. The estimated value of the Technology Transfer activities under the Horticulture Component is \$16.0 million.

175

Adaptive Research Grants: ATUT will select a limited number of eligible horticultural crops. Among these may be grapes, green beans, green peppers, garlic, tomatoes, potatoes, etc. Should there be problems of a type requiring adaptive research a competitive grants program will be initiated. The adaptive research grants will be developed collaboratively with the private sector, and U.S. and Egyptian institutes and universities, individually or in combination, to address the constraints identified. Adaptive research grants may include activities ranging from production through marketing. An example of the type of grant which may be solicited would be selecting an early maturing variety of seedless table grape for Egyptian conditions. Another example might include tomato breeding to develop varieties with resistance to yellow leaf curl virus (YLCV) transmitted by the white fly.

When evaluating grant proposals, weighted criteria will be assigned to favor sustainable agricultural practices, e.g., reducing the use of agricultural chemicals and increasing water-use efficiency at the field level. USAID/Cairo anticipates 40 research grants valued at \$ 20.0 million over the life of the project.

The technology transfer activities and the research grant activities under the Horticulture Component are eligible and recommended for categorical exclusion pursuant to the provisions of 22 CFR 216.2 (c)(1)(iii) and/or 216.2 (c)(2)(ii).

Food Crops Component: ATUT will work with Egyptian scientists in reviewing existing food crops research programs to identify the major constraints to increasing productivity of at least three important cereals (wheat, rice, and corn) and one or more other food crops (e.g., faba bean). Based upon this analysis, these critical problems will be rank ordered. ATUT will provide a multi-year program of short-term technical assistance to scientists within Egyptian research institutions to address these important areas.

The strategic program ("International Linkages") may include research in: integrated pest management (IPM) for cereal crops; breeding programs for biotic stress (pest or disease resistance) or for abiotic stresses (drought and heat tolerance) or simply higher grain yields, shorter maturity, etc. Examples of specific work which might be included in the linkages program include: rice resistance to blast for varieties grown in the Upper Delta, charcoal rust and orobanche resistance in faba beans and improving the fertility of long-spiked wheats.

The "International Linkages" research program activities planned under the Food Crops component will be conducted collaboratively with scientists in recognized U.S. or international institutes (such as IRRI, CIMMYT, ICARDA). ATUT will provide as many as 24 grants for a total of approximately \$12.0 million over the life of the project. Because of the limited number, carefully controlled nature and focus of the activities to be financed, the Food Crop Component is eligible and recommended for categorical exclusion pursuant to the provisions of 22 CFR 216.2 (c)(1)(iii) and/or 216.2 (c)(2)(ii).

Environmental Impacts:

Because of the need to sustain the resource base of Egyptian agriculture, the project will also, to the extent feasible, transfer or adapt technologies aimed at reducing the use of chemicals and increasing water-use efficiency (e.g., integrated pest management and genetic resistance to plant pests). Grant funds for technology transfer and adaptive research in horticulture and the strategic research program under the food crops component will allow ATUT to respond efficiently to problems and opportunities that may arise.

Reducing unnecessary and uneconomical use of chemical inputs is important for horticultural products destined for export to certain European countries. Increasing water use efficiency is also important for all crops. The Technology Transfer activity under the Horticulture component, for example, may conduct adaptive research on refining the water budget for horticulture crops grown under low plastic tunnels or walk-in greenhouses. Some research work may be conducted on fertigation techniques to determine the timing and dosage of fertilizer applications for crops grown under various conditions and at various times in the year. The objective is to determine best water use efficiency measures through applied research and pass these water-saving technologies to growers via the technology transfer activities of ATUT. The Food Crops component, as shown above, may be looking at cereal crops which are drought resistant or tolerant to saline soils, an increasingly important problem in Egypt. ATUT will not be exploiting new resources but rather rationalizing the use of existing resources more effectively. In fact, the selection criteria for the Horticulture Component Adaptive Research and the Food Crops "International Linkages" grants will possibly provide additional points for technologies which may reduce the use of chemical inputs or increase the efficiency of water use.

Although possibly involving limited funding for adaptive research grants or transfer of drip and sprinkler irrigation technology, the ATUT project is recommended for a negative determination because all adaptive research and technology transfer activities will be limited in scope, carefully controlled and effectively monitored.

In summary, the major outputs of the ATUT project will be the following:

- An increased number of technologies for high value horticultural crops for exporters, which increase yield, quality and income, are adopted by producers and exporters;
- A program providing low-cost access to international technologies in food crops;
- Development and transfer of disease or pest resistant varieties for major horticultural and cereal crops;
- Drought resistant or salt tolerant cereals developed; and
- A sustainable mechanism for outreach to provide information on new technologies to farmers and the private sector.

Discussion:

The ATUT project will emphasize water-saving and environmentally sensitive technologies targeted upon major problems of select horticultural and cereal crops. However, to ensure compliance with A.I.D. environmental procedures, the project will measure the environmental impact of proposed technologies and make appropriate recommendations to remedy negative environmental effects. The environmental status of the project will be reviewed periodically during implementation by means of routine review of technical assistance and grantees' reports, review of the technology generated and disseminated and site visits by USAID and the GOE staff. Pursuant to 22 CFR 216.3(a)(9), if new information becomes available during project implementation which indicates that the activities to be funded might be "major" and their effects "significant," then the negative determination will be reviewed and revised by the Bureau and an environmental assessment will be prepared. Any required corrections in implementation will be made on the basis of these findings.

ATUT Project funds will not be used for the procurement or use of pesticides unless and until such procurement or use has been cleared by USAID/Egypt pursuant to the provisions of 22 CFR 216.3(b). In accordance with existing practice, all grants and cooperative agreements (or other instruments) executed using Project funding, moreover, will include a specific provision stating that grant/cooperative agreement funds shall not be used for the procurement or use of pesticides without the prior written consent of USAID/Egypt.

Pursuant to 22 CFR 216.2(c)(i) and (iii) and/or 216.2 (c)(2)(ii), the Agricultural Technology and Utilization and Transfer Project is categorically excluded from further environmental review. The project will carry out "research activities which may have an effect on the physical and natural environment but will not have a significant effect as a result of limited scope, carefully controlled nature and effective monitoring." Neither an initial environmental examination nor an environmental assessment is required for this action.

AGRICULTURE TECHNOLOGY AND TRANSFER PROJECT
263-0240

**Determination Pursuant to the Gray Amendment to the
Foreign Operations, Export Financing, and Related
Programs Appropriations Act of 1993**

As Acting Director and Principal Officer of the U.S. Agency for International Development in Egypt, I, John R. Westley, hereby certify that full consideration has been given to the potential involvement of small and/or economically and socially disadvantaged enterprises, historically black colleges and universities and minority-controlled private and voluntary organizations covered by the Gray Amendment.

The project paper to which this certification is attached discusses the efforts that will be undertaken in connection with each element of the procurement plan to maximize the participation of minority-owned and small and disadvantaged organizations. At the time of each procurement action, every effort will be made to encourage the participation of these organizations and draw upon their knowledge and expertise.



John R. Westley
Mission Director

6-5-95

Date

150