EVALUATION OF AGRICULTURE TECHNOLOGY UTILIZATION AND TRANSFER ACTIVITY IN EGYPT

Prepared for

USAID/Egypt

Prepared by

Donald M. Taylor, Team Leader

Melvin Schnapper

Zebuel C. Jones

Jesse J. McCorry

Mohamed Salem

Manal Karim

Checchi/Louis Berger
Joint Venture

1819 H Street, NW
Suite 900
Washington, D.C.
20006

Contract No. AEP-I-811-00-00022-00

Final Report

August 2002

Acknowledgements

The consultants would like to acknowledge the assistance of the Ministry of Agriculture and Land Reclamation (MALR) and the Ministry of Foreign Trade (MFT); as well as Millie Gadbois, Africare Egypt; Jerry Lewis, ACDI VOCA; Samir Sedky Soliman, CARE Egypt; and Douglas Anderson, the Agriculture Led Export Business (ALEB) project. The advice and assistance provided by Hani El-Kolaly, Executive Director and the Board and members of the Horticulture Export Improvement Association (HEIA) were especially appreciated. Any omission of acknowledgement is the responsibility of the consultant team. A list of persons consulted during the Mission is contained in Appendix 1I. The team also thanks USAID Cairo Mission staff Dawn Thomas, Anne Williams and Adly Osman, for their support and guidance.

Report Prepared for the United States Agency for International Development, Cairo, Egypt.
Project Number 263-0240-3-96348 under contract AEP - I – 00-00-00022-00
Task Order 808 administered by The Louis Berger Group, Inc.

Views expressed are solely those of authors, and do not necessarily reflect the official views of the Egyptian Government or the United States Government.

TABLE OF CONTENTS

FINAL REPORT
EVALUATION OF AGRICULTURE TECHNOLOGY UTILIZATION AND TRANSFER ACTIVITY

Executive Summary

Analysis of ATUT Project Results

The ATUT project has attained and in some cases far surpassed its targets. In the process, the project has succeeded in significantly increasing exports of horticultural products and in at least two cases, in creating new export industries from a low or non-existent base. The original project indicators called for a five percent average increase in volume and an eight percent increase in value for selected horticulture commodity exports over the life of the activity. In fact, the volume of exports increased by 432 percent and the value by 441 percent.

One of the very significant contributions of the program was the support extended to the Horticultural Export Improvement Association (HEIA), which has become one of the first modern business support organizations in Egypt. HEIA membership has grown from 40 firms in 1997 to almost 200 currently, including more than 60 small and medium-scale growers and 16 women growers

ATUT is made up of three inter-linked subcomponents, including Horticultural Crops, Food Crops and Biotechnology. The horticultural component was the only one evaluated. This component has three technical subcomponents, the Ronco/ATUT, the Working Groups and the Extension Unit. An adaptive and collaborative research sub-component was originally part of the project but was discontinued in favor of the working group approach. The project has been conducted under the direction of the Minister of Agriculture and Land Reclamation (MALR).

The Ronco team, which was responsible for bringing in much of the project technology, under a direct contract with USAID, worked primarily with larger growers and grower-exporters, since these growers were best positioned to immediately apply the new technologies in order to expand exports. The working groups provided technical support services primarily to medium and some smaller scale growers while the extension training subcomponent trained numerous extension workers who in turn provided technical services to some 160,000 village-level farmers. One of the principal reasons that the project was able to achieve its objectives was the fact that the selection of the Ronco technical specialists was based on their practical knowledge and working experience in horticultural production, postharvest and marketing activities.

The project concentrated on expanding the exports of a small group of level one and level two priority crops selected through the conduct of market studies at the beginning of the project. The level one crops originally included fine green beans, grapes, strawberries, mangoes and melons. Cut flowers were later added to category one and mangoes and melons dropped to category two.

Table grape exports grew from 1,200 tons in 1998, to 6,600 tons worth $22.2 million in 2001. Fine green bean exports increased from virtually none prior to ATUT to an estimated 19,700 tons valued at more than $23 million in 2001-2002, while strawberry exports increased from a little more than 2,000 tons at $10.6 million in 1998-1999 to 5,600 tons worth $22.7 million in 2001-2002. Cut flower exports in 1999, the year ATUT started the cut flower promotion program, were only 4.5 million stems valued at about $500,000. By 2001-2002 the country was exporting 33.2 million stems worth $5.7 million

There are also several areas where ATUT operations could have been improved. Program coordination between ATUT and other organizations concerned with exports, such as the relevant units within the Ministry of Foreign Trade, was lacking. Although this type of coordination was not mandated under the project design, cooperating with other relevant agencies would have helped extend the effectiveness of the project.

The project did not adequately address the marketing function. Early on, it was determined that the primary constraint to expanding exports of the key horticultural commodities was their failure to meet export quality standards. It was decided to focus the project on upgrading production and on export sales, rather than marketing.

While the production focus was valid and succeeded in significantly increasing exports, the project would have been even more effective if it had included a marketing component. The project technical services were primarily focused on improving the quality of the key crops in order to increase the proportion of each crop that was acceptable to foreign buyers. Market contacts, which were initially made primarily by the RONCO/ATUT technical team, were gradually taken over by the project clients. This sales function has been effective in substantially increasing sales of the key commodities and in preparing ATUT primary clientele to engage in their own sales efforts. The project did not, however, adequately address the development of systems for gathering and disseminating market intelligence and for strategic market analysis and planning.

Market considerations did determine commodity priorities for the project. Studies were conducted at the start of the project in those markets holding major sales potential, primarily in the European Union (EU). These studies served to identify the first set of Level 1 commodities and were incorporated into the first project Strategic Action Plan (SAP).

A second set of marketing studies was conducted in 1998 and early 1999 with the results of these studies incorporated into the second SAP. As a result of the study results, the decision was made to down grade emphasis on mango and melon. At the same time, cut flowers and fine green beans were upgraded to Level 1.

While project priorities in terms of commodities to be emphasized were based on market analysis, ATUT/RONCO was required to expend major efforts on upgrading the quality of the selected commodities to meet market specifications. As a result, the project team did not take the next logical step, which would have been to develop an ongoing comprehensive market intelligence system and strategic marketing planning system and transfer this to the industry.

The project team assisted growers and exporters to identify and negotiate with buyers. These skills have been important in the growth of fresh commodity export sales. Because of the emphasis on sales rather than marketing, however, most of the larger growers and exporters do not have access to an adequate market intelligence system nor have they gained the capability for developing effective medium and long term strategic marketing planning capabilities. Future projects of this nature should incorporate measures to build capacity for the development of market intelligence system and strategic marketing planning.

The project currently appears to be reasonably well-managed. In the past, however, several changes in management resulted in a temporary lack of coordination among some of the project subcomponents (the MALR ATUT staff, the Ronco technical service team and the technical working groups).

There has been a general lack of management direction and accountability for working group and extension subcomponents. There does not appear to be precisely defined criteria that would allow for comprehensive evaluation of the accomplishments of these two subcomponents.

The approach to achieving activity goals and objectives was generally effective. One of the important deficiencies, however, was the failure to recruit and train local associates for the Ronco technical team. It was reportedly the original intention of the RONCO/ATUT subcomponent to employ local technical assistants to assist and be trained by the Ronco technical experts, in order to leave behind a trained cadre of local horticulture consultants. This team was unable to discover why this did not happen. It is strongly recommended that future technical assistance projects include on-the-job technical training for local personnel as an integral part of the scopes of work for expatriate consultants.

The intensive, one-on-one service delivery approach pursued by the Ronco consultants has been largely responsible for the excellent progress made by their producer clients. This strategy, however, had the effect of limiting the scope of Ronco direct technical assistance and technology transfer to a very small portion of the total horticulture sector. The Working Groups were able to transfer technology to more industry participants, but their coverage was limited by the relatively small number of people involved in the groups and their part-time participation.

There were no explicit provisions in the project for a human resource development/training subcomponent. While producer responses indicate that the on-farm training approach utilized by the Ronco team and the Working Groups was quite effective, the project, and the industry, would have benefited from the application of a planned and organized human resource development effort.

The improvements in productivity and export capability engendered through project-supported technology transfers have been institutionalized by the project beneficiaries and are thus sustainable. Beyond this aspect, the primary vehicle for the sustainability of project initiatives is represented by HEIA, which has been nurtured and supported by ATUT. The fact that HEIA has progressively improved its industry service capabilities and reduced its dependence on ATUT is an encouraging sign in terms of the continued sustainability of project initiatives.

Measures to ensure the sustainability of the working group and extension components are reportedly being undertaken by the MALR. These include transferring the working groups to the Exporters Union, affiliated with the Egyptian Federation of Chambers of Commerce, and continuing to support the extension component with Ministry (this component has been supported through project counterpart funds from MALR).

Industry Opportunities

Egypt enjoys a significant comparative advantage in the production and export of high value horticultural products. This comparative advantage is based on a number of factors, including favorable agro-climatic conditions, abundant land and water resources, physical proximity to important markets and counter-seasonal production capabilities. The growth in industry cohesiveness and sophistication and an increasing awareness on the part of government toward the importance of private sector primacy in decision-making are also important factors.

Despite the significant growth in exports that has already occurred, a small number of Egyptian horticultural products still command a minor market share in a relatively few export markets. This indicates significant potential for further increases in sales to current markets as well as for entry into new markets.

Any analysis of export potential for Egyptian high value horticultural products must also take into account the market opportunities for processed products. Another major opportunity for increasing horticultural exports is the rapid growth in world demand for organically and naturally grown foods. Egypt is very favorably situated to exploit these markets, particularly in those areas newly opened for cultivation, which have no history of agricultural chemicals application. While the focus is on exports, the Egyptian horticulture industry should not lose sight of the fact that there is also a growing demand for higher quality foodstuffs in the domestic market, led by five-star hotels, up-market restaurants, fast food chains and an increasing number of supermarkets.

Industry Constraints

On order to fully capitalize on these opportunities, however, the Egyptian horticulture industry must overcome a number of policy, commercial and cultural constraints. Among the more significant of these are transport restrictions; regulations affecting easy access to new varieties, agricultural chemicals, fertilizers, transportation equipment, etc.; lack of linkages between research and extension and between producers and researchers; insufficient export volumes; lack of access to technology particularly on the part of small and medium-scale growers; ineffective horticultural extension services; the absence of postharvest facilities; inadequate market information and market intelligence systems and; the some remaining elements of mistrust that still exist between the private sector and the government, among government agencies and within the private horticulture sector (although this situation is rapidly improving). The growing shortage of semi-skilled and skilled workers at all levels of the industry also poses a serious constraint.

The recommended solutions to these industry constraints fall under six general categories. These include assigning the proper roles to government and the private sector; improving postharvest and marketing infrastructure; formalizing a system for providing technical and marketing information and assistance to large, medium and small-scale producers; integrating small and medium-scale growers into the export system; uniting the industry through a network of business support organizations (BSOs) at all levels from village farmer associations to national industry "umbrella" organizations; and applying effective measures to solve other specific industry problems.

One of the most urgent of these specific problems is the impending imposition of the EurepGap protocol being promulgated by major European retailers. This embodies food quality assurance measures combined with social and environmental responsibility standards. Failure to meet those standards will deny Egyptian horticultural products access to current European markets and will prevent entry into new EU markets.

Other critical issues that must be addressed include the improvement of transport facilities, development of a proper cold chain system, improving access to new planting materials, providing better extension services, and measures to develop and retain more semi-skilled and skilled workers.

USAID Intervention

The report recommends several fundamental changes in USAID approach to supporting the Egyptian horticulture sector under the forthcoming project. The most important of these have to do with assigning a much greater role in project implementation to the private sector while continuing to recognize the essential role of the government in policy formulation and infrastructure development and maintenance; incorporating maximum flexibility in future project designs by leaving a majority of project funds uncommitted to specific project components and committing these funds based on demonstrated industry needs during the course of project implementation; adopting a progressive user pays principal to help ensure the sustainability of project initiatives; and leveraging USAID support by providing seed money to startup activities that are designed to attract further financing from other sources.

Private Sector Control

The implementation of donor supported programs should be transferred to the private sector with the government providing needed policy and infrastructure support. While government must remain involved in these two key areas as an important partner, the private sector has advanced to the point where it is now capable of determining its own destiny. Vesting project decision-making in the hands of the private sector will help ensure both the utility of the project to industry and its sustainability.

New Horticulture Support Project

While the ATUT project has been successful in achieving most of its objectives, a significantly different approach to sector support is suggested for any subsequent USAID project intervention. Any new project should involve the larger horticulture industry, including fresh exports, food processing, the domestic market and the various support and service industries.

A new project should incorporate comprehensive measures for productivity improvement and integration of smallholders into the commercial horticultural sector including the export sub-sector. This will require a significant expansion in the provision of technology transfers and technical services. While improving production and harvest practices to increase productivity and improve quality will remain critical, equal emphasis must be placed on upgrading postharvest and marketing techniques and technology.

Two areas that will require specific emphasis in any new project are human resource and organizational development and policy advocacy. Additional emphasis on all phases of marketing is also recommended. Specific components should also be incorporated to enhance industry utilization of information technology and to address policy issues involving genetic crop engineering.

In addition to the involvement of the Ministry of Agriculture and Land Reclamation (MALR) the new project should take full advantage of opportunities to leverage its development efforts by developing a broad base of cooperation with all government entities involved in the export sector, such as the various components of the Ministry of Foreign Trade, the Ministry of Transportation and other relevant government agencies.

The underpinning of the new project should be provided through a program component aimed at supporting a concerted effort to accomplish the development of a network of effective business support organizations (BSOs) at all levels of the horticultural industry, from village farmer associations to national umbrella organizations such as HEIA and EAGA.

In order to achieve optimal results, the new project should be designed in such a way that project activities are selected and implemented by the private sector under the oversight of the government. This will help to ensure that the project effectively meets industry (private sector) needs and at the same time is sustainable on a continuing, long-term basis.

If it is necessary under the governing agreements between USAID and the Government of Egypt that the project be affiliated with a government agency, direct affiliation should be with a neutral entity, perhaps the Ministry of International Cooperation, with other relevant government agencies such as the Ministry of Agriculture and Land Reclamation and the Ministry of Foreign Trade sitting on a project steering committee. The ultimate project goal should be to strengthen HEIA and other industry associations to the point where they can be empowered to substitute for government in playing the pivotal industry development role in addition to meeting their own organizational responsibilities. When that point is reached, USAID should seriously consider establishing a permanent institution (endowment fund, foundation) to provide a financial base for future industry development activities.

A. Overview of the Egyptian Horticulture Sector

1. Horticulture Sector Background

Irrigated farming has been practiced in Egypt for more than 5,000 years. The fertile soil of the Nile Delta once constituted the primary granary for the Roman Empire. The ancient Egyptians were pioneers in the production of horticultural crops. In recent times the Government of Egypt has been more concerned with producing staple crops such as rice, wheat and sugar to feed a rapidly growing population. At present, however, there is growing interest in further development of the horticulture sector.

There are three overarching issues buttressing the heightened interest in developing the Egyptian horticulture sector. These are the desire to increase exports, the need to increase rural incomes and the anticipated increase in competition for available water supplies in the not too distant future. Growth of the horticulture sector holds promise for helping address all three.

Egypt has a significant comparative advantage in the production of horticultural commodities for export, based on its geographic position, agro-climatic conditions, and availability of land and water. Effectively transforming this comparative advantage into competitive advantage at the agribusiness firm and farm level has the potential for significantly increasing the volume and value of Egyptian horticultural commodity exports.

Production of high value horticultural commodities is labor-intensive and requires more semi-skilled and skilled workers than do other crops (strawberries employ 2.4 full-time workers per feddan while cut flowers employ 16.2). Horticulture also generates employment in numerous associated input and output industries. Finally, horticultural products can be grown with significantly lower water inputs proportionate to per unit output and value than can the traditional staple crops.

In addition to fresh produce, the other major area of under-exploited opportunity for increasing the exports of Egyptian horticultural products is through expansion of food processing. The greatest weakness of the horticultural products processing industry has been the lack of a reliable supply of appropriate quality raw materials. An important additional outcome of the overall improvement in the volume and quality of Egyptian horticultural commodities that is needed to increase fresh exports will be to make available greater supplies of appropriate quality raw materials to the food processing industry.

The improvement in the quality and increase in the availability of horticultural products that will be concomitant with the growth of horticultural exports will also benefit the Egyptian consumer, by improving their access to locally produced higher quality food products at reasonable prices. This will also help Egyptian horticultural products maintain their competitiveness with foreign food products that will gain increasing ease of access into the Egyptian market through trade liberalization,

2. Current Status

While Egypt still aims for self-sufficiency in food crops, the potential of high value horticulture commodities for earning foreign exchange and increasing employment and incomes in the rural areas is rapidly gaining recognition within the government as well by the private sector. In addition to the expansion of horticulture farming operations by existing commercial growers, investments in horticultural export enterprises are becoming increasingly attractive to Egyptian investors from outside the sector. Foreign investors are also beginning to evidence

considerable interest. Examples include the huge Toshka project in Upper Egypt, with combined Egyptian, Saudi and U.S. investment, as well as other planned large scale horticultural investments. The Dutch are reportedly considering joint venture investments in Egyptian floriculture production for export.

Fresh horticultural product exports have exhibited impressive growth during the past several years. Overseas sales of four key export commodities, table grapes, fine green beans, strawberries and cut flowers have grown by more than 400 percent in terms of both volume value during the past five years. The potential exists for further very substantial increases in exports of Egyptian horticultural commodities provided the industry can overcome several of the more important current constraints (see below).

a. Government

Development of the horticulture sector has received strong support and encouragement during recent years from the government, particularly the Ministry of Agriculture and Land Reclamation (MALR). Several donor-funded programs, working under the supervision of various government ministries, have provided significant assistance to horticulture industry development. Among the most prominent of these have been several USAID-sponsored projects, particularly the Agricultural Technology Utilization and Transfer activity (ATUT) and the Agricultural Policy Reform Program (APRP). The Agricultural Led Export Businesses (ALEB) project provides assistance to the food processing sector.

MALR is the controlling government agency for the horticulture sector and as such, has played the predominant public sector role in supporting and directing the fresh horticultural export sub-sector. ATUT functions under MALR direction. The ATUT Director General is the Undersecretary in charge of the Horticultural Services Unit of MALR and also serves as Chairman of the Principal Bank for Development and Agricultural Credit (PBDAC).

The two functional elements of MALR that most directly impact the horticulture sector are research and extension. The Agricultural Research Center (ARC) under MALR is primarily responsible for agricultural research in Egypt. The ARC establishment includes 16 research institutes, 11 central laboratories and 48 research stations.

Extension services are provided by several agencies within the MALR. Extension agents are based at the village, district and governorate levels and are overseen by the General Director of Extension Services within each governorate, who reports to the governorate Undersecretary of Agriculture. MALR extension services in the past were focused primarily on the key basic commodities, cotton, rice, wheat, sugarcane, maize and to some extent, potatoes.

Although MALR extension services have generated some significant successes for the staple commodities, MALR capability to provide knowledgeable and effective extension services for high value horticultural crops has been almost completely lacking. Agricultural extension has traditionally been focused wholly on production. MALR currently recognizes the need for marketing-related extension services and closer cooperation with the private horticulture sector and is putting the appropriate policies in place. A number of horticulture extension agents, mostly new agricultural university graduates, have been recruited in recent years and assigned to areas producing horticultural crops. At present, however, no new MALR extension agents are being hired.

The formulation and implementation of policy and regulation of the industry are two other important functions of the MALR that are critical to maximizing the growth and profitability of the horticulture sector. Convenient access to improved planting materials at

reasonable cost is one of the necessary concomitants to competing effectively in export markets for horticultural crops. MALR implementation of phytosanitary rules and procedures and the regulation of water and land use have an important bearing on horticulture industry prospects. MALR is also be instrumental in helping establish linkages between the Egyptian horticulture industry and foreign donors, governments and various institutions.

Several agencies under the Ministry of Foreign Trade are equipped to offer assistance to horticultural commodity exporters. The most important of these are the Egyptian Export Promotion Centre (EEPC), the office of the Foreign Trade Sector and the Commercial Attaché Service. Various policies and regulations administered by the Ministries of Transportation and Education also have an important bearing on the future progress of the horticulture industry.

One of the constraints to economic development in Egypt is the public sector institutional climate, which has not been particularly conducive to the fostering of cooperation among ministries for meeting industry needs. In some instances, turf considerations appear to outweigh the potential benefits to be gained from such cooperation. There are recent positive indications, however, that the Ministries of Agriculture and Foreign Trade may be moving toward closer cooperation in matters concerning the horticulture sector, with the suggested vehicles for such cooperation being the Exporters Union, an affiliated organization of the Federation of Egyptian Chambers of Commerce, and the Egyptian Export Promotion Centre under the jurisdiction of Ministry of Foreign Trade.

The National Export Council provides another unifying element, particularly in the policy area. The Council, which is composed of 14 industry Commodity Councils, reports directly to the President through the Minister of Foreign Trade. The Councils play a major policy advocacy role for their respective industries.

The Agricultural Commodity Council (ACC) is the most active of the 14 industry commodity councils making up the national council. The ACC aims to be the umbrella policy advocacy organization for the entire agriculture sector as well as for the support and service industries affiliated with the sector. Several directors of the Horticultural Export Improvement Association (HEIA) are also members of the ACC.

b. The Private Sector

The private horticulture production sector is basically made up of three segments, including a relatively small number of large producers and producer exporters, many of whom operate their own packinghouses and handle their own overseas marketing. The second segment is composed of medium size growers, the majority of whom produce for the domestic market, while others sell their produce both domestically and to exporters. The third and by far the largest segment in terms of numbers are small-scale producers farming less than three feddans. Some 80 percent of all Egyptian farmers fall into this latter category.

The larger producer exporters with the assistance of the ATUT project have become quite sophisticated in their application of modern production, harvest, postharvest and marketing technologies. The majority of medium and small-scale growers, by contrast, are often unaware of even basic production, harvest and postharvest techniques.

The normal horticultural support industries are active in Egypt. These include suppliers of seeds, agricultural chemicals, machinery and equipment and other inputs and services.

Led by the fresh produce export and food processing sectors, the horticulture industry is becoming more cohesive. The organization and growth of associations such as the Horticultural Export Improvement Association (HEIA), the Egyptian Agribusiness Association (EAGA), the

Egyptian Cold Chain association (an essential area of support for the horticulture industry) and others marks a new and encouraging trend in the development of effective, broad-based Egyptian business support organizations (BSOs). A number of Egyptian agribusiness firms are members of both HEIA and EAGA.

Some signal successes have also been achieved in the organization of small-scale Egyptian farmers in recent years. (See Appendix III). CARE International under the AgReform project beginning in 1996 has organized some 7,000 small-scale horticultural growers (average two to three feddan each) into associations registered with the Ministry of Social Affairs. The project has progressed from helping farmers earn more money when marketing their products locally to helping them gain profitable access to district, governorate, national and currently export markets.

A unique aspect of this project is the fact that the farmer-participants pay for the technical services they receive as well as supporting their associations financially. This contradicts the "traditional wisdom" that smaller farmers cannot and will not pay for technical extension services. It also has favorable implications for developing improved and sustainable private sector sponsored technical extension services.

Africare Egypt in 1999 entered into a project in the Aswan area of Upper Egypt aimed at assisting small and medium-scale farmers (average six feddans) become exporters, starting with cantaloupes and green beans to the U.K. and Italy. The project has been very successful, to the extent of attracting foreign buyers to make special trips to Egypt to visit the producers. This is the third year of exports.

In addition to helping the farmer participants develop export markets, the project has also improved their domestic marketing returns by linking them with buyers at the wholesale markets in Cairo, helping arrange trucking for their products and having some of the farmers travel to the market along with their products in order to familiarize themselves with market demand and marketing procedures. The growers with whom Africare has worked are now able to do all of these things themselves.

ACDI-VOCA, an American NGO consulting firm, began a project to provide marketing information services to small-scale horticultural growers in 1996. Information was gathered on 26 different fruits and vegetables in five major wholesale markets nationwide and disseminated through newspapers, radio and television outlets.

Following the general acceptance of the market information services, the farmer clientele began inquiring how they could capture the higher prices for premium products quoted in the market information reports. The ACDI-VOCA project staff then began training the farmers in postharvest techniques and practices in order to improve quality. Recently the project began working with a smaller group of farmers who have progressed to the point where their quality output enables them to target exports as well as domestic markets.

The project, which is presently sponsored by the MALR, has worked with some 25,000 smallholders to improve the quality of their products by training them in proper harvest and postharvest practices. It has done so by providing commodity specific training to more than 500 village level horticultural extension agents and, with the active participation of the MALR Extension Department, conducting an ongoing program to monitor the agents' effectiveness. The only material incentive that the extension agents receive is a travel allowance of LE 5.00 per day during the average three days per week that they work with project farmer clientele.

According to the ACDI-VOCA project staff involved, both the extension workers and the farmers are hungry for technical information. It has been the observation of the project personnel that the common complaints regarding the lack of effectiveness of MALR horticultural extension personnel stems from the fact that these personnel do not have access to up-to-date technical information that they can use in their work with small-scale farmers. This also explains to a large extent why the smaller farmers generally do not value nor accept the technical assistance services proffered by the government extension workers.

3. Industry Potential

The Evaluation Team was also asked to identify the potential and some of the key requirements for continued industry expansion. The following elements are conducive to such expansion:

- Favorable agro-climatic conditions, including numerous micro-climates;
- Abundant water resources;
- Farming traditions and skills extending back several millennia;
- Physical access to major markets (Europe, Gulf, shipping connections to Asia and North America);
- Off-season production capabilities vis a vis European markets;
- Growing industry cohesiveness;
- Relatively high technical and marketing sophistication levels of larger producer-exporters;
- Increasing awareness on the part of government of the importance of private sector primacy in decision-making;
- Willingness of selected grower-exporters to provide resources and services to small farmers as a means of increasing export volumes;
- The successful organization and entry of selected small-scale farmers into the horticulture export markets;
- Horticultural export industry leaders have been able to gain the political credibility necessary to influence national policy decisions, including access to government at the highest level, up to and including the office of the Prime Minister.

As mentioned above, the potential for increasing Egyptian exports of high value horticultural products appears to be almost unlimited, provided the industry is properly organized and supported.

According to ATUT projections, the export value of table grapes will grow from $22 million in 2000-2001 to approximately $100 million in 2012; strawberries from $18 million to $287 million; fine green beans from close to $28 million to more than $500 million and cut flowers from just over $2 million to $123 million.

The Team finds that these projections are reasonable and could even be exceeded, given Egypt's favorable agro-climatic conditions, ability to produce off-season commodities and the scope for quality improvement and expansion of production. This will only happen, however, if certain conditions are met as described below.

Current market outlets for Egyptian horticultural commodities are mostly in Western Europe (the U.K., Italy, Germany, Holland and Spain), with limited volumes going to the Gulf states. The Egyptian market share for its key horticultural export commodities in all of these traditional European markets is still comparatively low. Eastern Europe, including the former member countries of the Soviet Union, is beginning to show considerable interest in Egyptian horticultural products.

The nearby Gulf countries represent sizeable markets for good quality, high value horticultural products. Egyptian exports to these countries to date, however, have consisted mainly of the lower quality end of these products. Although a few Egyptian firms are already shipping a limited volume of horticultural products to markets in the Far East, these markets are still largely unexploited.

Among those factors favoring a major expansion of Egyptian high value horticultural exports in the coming years is the fact that despite the significant growth in exports that has already occurred, a small number of Egyptian horticultural products command a minor market share in a relatively few markets. This indicates potential for further increases in sales to these markets as well as for entry into new markets.

Penetration of the European markets by Egyptian products is primarily based on their seasonal advantage, that is, Egypt can supply the products at a time the European countries themselves, as well as other supplier countries, cannot. Although European consumption of these products traditionally decreases during the off-season, this is probably due to the fact that the products are scarce and higher priced. North American experience indicates that the increased availability of off-season vegetables and fruits at reasonable prices should encourage significant expansion in European off-season consumption.

Some of the major Egyptian horticultural export commodities are beginning to reach quality levels that make them competitive with other suppliers during the normal supply seasons. This is another favorable indication of future export expansion potential.

The productive capabilities of Israel, traditionally a major supplier of horticultural products to European markets, are being circumscribed by rising of production costs and shortages of water and energy. Egypt is in a favorable position to compete with other African and North African suppliers to the European markets.

The Gulf countries currently import high value, high cost horticultural products from the Americas. Egypt has a significant freight rate advantage as well as being able to supply products to these countries in a much more timely fashion. Egypt should also be able to compete with North American and Latin American suppliers to markets in East and Southeast Asia.

Any analysis of export potential for Egyptian high value horticultural products must also take into account the market opportunities for processed food products. Several Egyptian food processors are already developing a worldwide reputation for producing quality products. Introduction of more frozen food and other processing operations, for which Egypt is well suited, can provide alternative markets for producers and greatly expand exports of horticultural products.

Another major opportunity for increasing horticultural exports is the rapid growth in world demand for organically and naturally grown foods. Egypt is very favorably situated to exploit these markets, particularly in those areas newly opened for cultivation, which have no history of agricultural chemicals application. In upper Egypt, for example, the twin attributes of previously uncultivated land and off-season production is helping foster the growth of a new

cantaloupe export industry as well as presenting opportunities for increased exports of fine green beans and other commodities.

While the focus is on exports, the Egyptian horticulture industry should not lose sight of the fact that there is also a growing demand for higher quality foodstuffs in the domestic market. This demand is being led by five-star hotels, up-market restaurants, fast food chains and an increasing number of supermarkets. At the same time, the necessity for raising quality standards in order to access export markets is making such higher quality products increasingly available to the domestic market as well. These trends are reinforcing one another and helping create a domestic market base for high quality horticultural products that can help achieve the increase in the availability of exportable horticulture products.

4. Constraints

The elements cited above foster a climate that is conducive to further favorable development of the Egyptian horticulture export sector. It is important to realize, however, that such development is not inevitable. There are also constraints that unless properly addressed could significantly hinder industry progress.

These can be grouped into the general categories of policy, commercial, and cultural constraints. All three categories are closely interlinked and must be addressed simultaneously in order to achieve successful sector development.

a. Policy Constraints

- High tariffs on imports of capital equipment essential to the horticulture industry, such as refrigerated trucks and containers, packaging material, certain production inputs, etc.
- Restrictions on the commercial trucking industry.
- Unduly restrictive phytosanitary and imported variety registration regulations.
- Lack of a law governing intellectual property rights including plant variety protection and agricultural chemicals introduction and use.
- Onerous and time-consuming customs procedures particularly for inbound goods, which tends to aggravate difficulties in obtaining refrigerated containers for exports of perishable produce;
- Legal restrictions under the laws governing NGOs, on the rights of business support organizations (associations) to establish for-profit subsidiaries (necessary to carry out certain commercial activities).
- Lack of linkages between agricultural research institutes and extension services and between research institutes and agricultural producers.
- Imposition of a high level of indirect taxes on horticultural exports.
- Absence of tax incentives to encourage investments in high value, high-risk enterprises such as those producing and exporting horticultural products.
- A land registration system that has resulted in most owners of agricultural land being unable to obtain land titles on a timely basis and thus being ineligible to use their land as collateral for medium and long term loans (short-term production loans are available without collateral from the Principal Bank for Development and Agricultural Credit).

b. Commercial Constraints

- The available volume of export quality horticultural products is not sufficient to create major impact in existing or prospective markets except in special off-season cases where no other supplies are available.
- Medium and small-scale farmers generally do not have access to needed technology or even to simple production and harvest techniques.
- Larger growers and grower-exporters will experience difficulty in accessing new technology in the absence of the USAID/MALR-sponsored ATUT project unless HEIA and other organizations can help take up the slack.
- Most government extension personnel are not trained to provide horticultural extension services and most lack access to current technical information, leading to a lack of confidence in these personnel on the part of farmers.
- Although attempts are being made to reform the government-fostered farmer cooperative system, most of these cooperatives are unable to function effectively as agricultural change agents and do not remain viable when government support is withdrawn.
- The management and financial resources needed for the organization of effective, relevant farmer associations are largely lacking.
- Analytical laboratory services (soil, water, plant, pesticide testing) are expensive and often inconveniently located.
- Although Principal Bank for Development and Agricultural Credit (PBDAC) loans are available to farmers, too many small-scale farmers must still depend on traders or money-lenders (exorbitant interest rates, control of input and final product prices in the case of the trader).
- Postharvest facilities are almost universally lacking, particularly pre-cooling and refrigerated storage facilities as well as refrigerated vans and containers.
- Transportation from farm to market is erratic and costly.
- There is no grading or quality control for produce marketed domestically.
- Market information and market intelligence services, particularly for export markets, are either lacking or are ineffective.
- Most exporters of high value horticultural products lack any cohesive marketing strategy.
- Only a handful of larger grower-exporters are close to being qualified for certification under the new EuropGAP program; this is perhaps the most critical immediate constraint threatening the continued growth of the horticulture export industry.

c. Cultural Constraints

- There still remains a certain amount of distrust between various government agencies and the private sector, largely a legacy from the socialist era, although this situation has greatly improved in recent years.
- Government agencies have traditionally been accustomed to competing with each other for influence and budgets rather than cooperating for the common good.

- Until very recently, there was no tradition of cooperation among enterprises within an industry sector.
- A great deal of mistrust still exists between larger and smaller-scale agricultural producers.

d. Work Force Constraints

One of the more important constraints to further horticulture sector progress is the shortage of qualified workers at all levels of the industry. This lack is particularly acute at mid-management, supervisory and skilled and semi-skilled worker levels. A major cause of the lack of talent at the mid-management and supervisory levels is the system of higher education, which produces university graduates in agricultural disciplines who have no practical, work-related skills. To compound the problem, most university graduates prefer white-collar work in a government office to a supervisory or management position in an agribusiness enterprise.

Another workforce related issue is the fact that the horticultural labor force is composed predominantly of young women, many of whom are trained to handle semi-skilled or skilled tasks, yet most of these are employed for only a limited time before getting married and exiting the work force. This is a cultural and social rather than economic phenomenon. The solution will need to be based on economic as well as cultural social rationale, however.

5. Addressing Industry Constraints

The solutions to the industry constraints outlined above can be classified under six general categories. These include assigning the proper roles to government and the private sector; improving postharvest and marketing infrastructure; formalizing a system for providing technical and marketing information and assistance to large, medium and small-scale producers; integrating small and medium-scale growers into the export system; uniting the industry through a network of business support organizations (BSOs) at all levels from village farmer associations to national industry "umbrella" organizations; and, stemming from these categories, applying effective measures to solve specific industry problems.

a. Role of Government and the Private Sector

The government must be responsible for those elements that the industry cannot provide, including physical infrastructure, an appropriate policy regime, regulation, market facilitation (in cooperation with the private sector), dealing with foreign governments and multi-lateral institutions (in close coordination with the private sector), extension services (with the eventual goal of shifting majority emphasis to private and semi-private extension services), basic and applied research (linked to private sector needs), organizing and supporting market promotion (trade fairs and exhibits, inbound and outbound trade missions, etc.) and similar overall support elements.

Government intervention in the sector cannot be limited to the Ministry of Agriculture. Other ministries, particularly the various divisions of the Ministry of Foreign Trade, will play an important role in further development of the horticulture export sector. Cooperation from the Ministries of Education, Transportation and Social Affairs, among others, is also essential. In summary, the government role should be that of support and facilitation while industry should be primarily responsible for commercial decision-making and for determining its own needs, within the parameters set by policy and regulatory requirements.

The private horticulture sector in larger terms includes small, medium and large-scale producers and producer-exporters (with classification based on intensity of investment and overall returns, not only on area farmed); traders (brokers); exporters; market operators including wholesalers; food processors: retailers; support industries (production input suppliers, manufacturers and dealers in machinery and equipment, equipment maintenance and repair workshops, transport providers, cold chain operators, etc.); service industries (custom operators--land preparation, spraying, labor contractors, etc.), banks, insurers, technical consultants, commercial market information providers, etc.); and industry, trade and commodity associations

The most important role of the agricultural producer is to generate sustainable profits. This in turn makes possible the continuing viability of the other components of the sector. The private sector is in the best position to determine individual and industry constraints and needs. The producer should have the freedom to make all commercial decisions, within the parameters of applicable policies and regulations.

When policies and regulations are inappropriate, the affected producers, with the support of other private sector elements within the sector, must unite in order to advocate changes in these policies and regulations; this is best accomplished by working through industry associations. The private sector should be empowered to influence government actions in respect to research and extension and to direct government and donor assistance activities aimed at the sector.

b. Improving Postharvest and Marketing Infrastructure

1) Postharvest

The single most important determining factor in the quality of fresh horticultural products reaching the consumer is temperature. The product should be harvested before or shortly after sunrise, when ambient temperatures are at their lowest, and pre-cooled as soon as possible after harvest, ideally within thirty minutes. Once the product is cooled to the proper temperature, it should remain at or near that temperature until it is purchased by the consumer. These are the ideal conditions for maintaining fresh produce quality.

Unfortunately, in Egypt, in most cases it is currently impossible to approximate these ideal conditions. Except for a few larger producer-exporters, postharvest cooling and refrigeration facilities are non-existent. Use of refrigerated trucks from initial collection points to wholesale markets or buyer's premises is uncommon. Refrigerated storage space at airports is almost completely lacking, although HEIA is in the process of constructing a refrigerated facility at the Cairo airport.

In order to produce the quantities of export quality fresh produce that will be required to expand current markets and gain entry to new markets, and particularly if large numbers of small and medium-scale producers are to be integrated into the system, it will be absolutely essential to develop a network of Postharvest Centers throughout the main Egyptian horticultural producing areas.

The Postharvest Centers should be located in areas where there is a concentration of high value horticultural crop production. They should follow a standard design, modified to fit the needs of the type of crops predominating in each of the areas surrounding a particular Center. The Centers would receive, clean, sort, grade, pre-cool and package farmer produce; conduct routine laboratory analyses; and provide refrigerated warehouse space and refrigerated transport services from the center to various markets.

The Centers could also serve as a central point from which to provide technical information and extension services, production inputs and market information. Inspection services could be provided for EurepGap and other export quality assurance programs. Regularly scheduled produce auctions, administered by Center management, could be held on the premises. (further details on Center funding and benefits are included in Appendix V).

In addition to improving product quality and reducing losses through implementation of cold chain systems, the Centers as part of their extension role should focus on reducing harvest and postharvest handling losses through providing technical advice to producers. Improper harvesting and handling practices are responsible for significant levels of waste and quality losses in the field and from field to collection point. For example, common causes for significant absolute losses as well as quality and price reductions for green beans are picking the beans without their calyx; trampling of the vines during the first harvest, thus destroying much of the remaining crop; tossing the beans in the air and letting them fall to the ground to get rid of leaves, resulting in excessive bruising; and packing in improper containers.

Each of the Postharvest Centers should be owned and operated by a local for-profit, limited liability corporation. Potential shareholders in the corporation include growers, exporters, traders, support industries, commercial banks and others. The corporations will need to be designed as profitable, commercially viable operations in order to attract investors. Professional management responsible only to the shareholders should be engaged to oversee Center operations.

The capital investment required to establish the centers should be sourced entirely from the private sector. This is a necessary requirement for ensuring commercial viability. The primary contribution of USAID, other donors and the government to the establishment and operation of the Centers should be in the form of technical assistance and training. Significant inputs that will require external (donor) funding will be the development of the business plans for the centers, the promotion of the center concept to farmers, assistance in organizing farmer associations and short-term technical assistance on various aspects of center management and operation. The government might also assist by providing certain loan guarantees.

It is important that local small and medium-scale growers acquire a significant portion of the Center equity. Most of these growers, as individuals, will be unable to invest upfront cash in the Centers. A workable solution might be to vest ownership of the farmer shares in grower associations, with USAID contributing the initial farmer equity to be repaid by the farmer associations through a check-off mechanism. The funds recovered through the check-off could be placed with a cooperating commercial bank and used as a revolving source of credit directed toward financing production inputs (short term) or capital improvements (medium term) for farmer users of the Center.

Financial support for Center operations would be provided from the following anticipated income streams (as well as others to be developed).

- Fees charged to sellers and buyers
- Transportation and storage fees
- Lease and rental revenue from related business firms utilizing the Center premises
- Fees for technical services including extension and laboratory services
- Margins on sales of production inputs, tools, implements, equipment, etc.

The Centers would help increase opportunities for raising farmer incomes, increasing returns to the economy and generating significant increases in foreign exchange earnings by preventing or reducing the losses associated with harvest, postharvest and marketing of high value horticultural products. Based on interviews with knowledgeable industry representatives, ATUT personnel and others, the team estimates that reducing these losses by just 50 percent would generate a minimum increase of $20 to $30 million in annual revenues to the sector (some estimates place the figure much higher). When improvements in produce quality are taken into account, the potential gains are even greater. A major share of these increased revenues would accrue directly to the small and medium-scale Egyptian farmer.

2) Marketing

Another marketing infrastructure improvement that is badly needed is the establishment and implementation of effective market information and market intelligence systems. The ATUT project has been supplying some market information through its website and database. The project, however, will end in September 2002, leaving a significant void in market information services unless some other entity continues to maintain the ATUT database.

It is strongly recommended that the ATUT market information and data base system be maintained after the project ends (see the section on sustainability of ATUT initiatives in this report for further discussion of this recommendation). Further, however, it is recommended that a more useful market information and intelligence dissemination system be implemented, perhaps through HEIA (see Appendix VI).

There has been no coordinated, effective system in the past for collecting and disseminating market intelligence for the horticulture sector. ATUT established a system of priority crops based on a series of (still unpublished) market studies, most of which were conducted by an interim team prior to project startup. These studies, however, represented a rudimentary form of market intelligence, since for the most part, they encompassed only the types and volumes of product imported, import trends and the conditions (duties, phytosanitary restrictions, etc.) under which they were imported, without further in-depth market analysis.

After selecting the priority crops, the ATUT-Ronco technical staff discovered that most of the current production of these crops did not meet export quality standards. A conscious decision was made at that point to concentrate project technical efforts on transferring to the producer-exporters the production, harvest and postharvest technologies necessary to bring the commodities up to export quality standard and, once that was done, emphasize sales rather than focusing attention on marketing.

The decision was also made to direct the Ronco technical assistance effort almost entirely toward those larger producers and producer-exporters who possessed the resources required to upgrade their technology and engage in volume exports. Initial sales links with European buyers were established individually by Ronco long-term technical consultants, through their previous trade contacts.

The only true market intelligence activities carried out by the ATUT project consisted of sponsored visits by groups of producers to target markets, for trade reconnaissance purposes or to take part in trade shows and exhibits. The Egyptian Export Promotion Centre also sponsored a number of market promotion and intelligence events during this period. Several individual horticulture product exporting firms currently carry out regular in-house market intelligence activities.

Good market intelligence is an essential prerequisite to maintaining current export markets and entering new markets. At least three layers of market intelligence are required by the Egyptian horticulture industry. Only one of these layers is currently being serviced, albeit inadequately.

The first layer should be provided by the Egyptian commercial attaché service through its Commercial Representatives stationed at Egyptian embassies abroad. One of the duties of the commercial representatives attached to each Egyptian Embassy should be to conduct a continuing market scan in their host countries and transmit the results of this scan to the relevant producers and exporters through the Ministry of Foreign Trade and the concerned trade associations. Additional assistance in developing marketing intelligence for foreign markets can be obtained from the Ministry of Foreign Trade Egyptian Export Promotion Center.

The commercial representatives should monitor changes in import regulations, import infrastructure, the status of competing suppliers, shifts in consumer tastes and preferences and other factors that are liable to affect the markets for Egyptian exports, as well as replying to specific queries from producers. In order to enable them to do this effectively, however, the exporters must provide the commercial representatives with a comprehensive understanding of the exporters' needs and must conduct a continuing dialogue to provide feedback concerning the information transmitted by the attaches. The mechanism for establishing and maintaining this feedback link should be the industry trade associations.

The second layer of market intelligence should be the responsibility of the trade associations. Based on information supplied by the commercial representatives, the association should sponsor periodic surveys of key markets. The purpose of these surveys is to provide more in-depth information on the market structure, requirements and trends, including identification of specific buyers and their requirements. Concerned association members should be expected to defray all or a portion of the cost involved in these surveys.

The association should also cooperate with the commercial representative service, the Egyptian Export Promotion Center and other agencies for the sponsorship of trade shows and exhibits of Egyptian products in other countries. The trade association might also consider sponsoring or co-sponsoring with other industry participants and/or the government, commercial trade offices in one or more key markets.

The responsibility for the third layer of market intelligence, and the only one that currently is underway, although on a very limited basis, rests with the exporting firms themselves. This includes conducting their own regular market scans based on their specific export interests, identifying and establishing long-term relationships with buyers in these markets, and conducting or sponsoring relevant market research activities. In order to carry regular out proprietary market intelligence activities effectively, however, most Egyptian horticultural products exporters need some training in the methodology and practice governing such activities. Providing this training is a legitimate area of service for the trade associations, particularly HEIA.

3) Market Information

It was suggested in the section immediately above that HEIA (or some other association) utilize the market information base created by the ATUT project to develop a more efficient and usable market information delivery system. Ideally, that system would be married with a similar system for retrieving and making available technology and technical information. Both of these systems should be implemented through a user-pays, for-profit approach.

The ATUT project, largely through the Ronco USAID contract, has made technical information generally available to larger horticultural producers and producer-exporters, and via the Working Group and Extension Training components of ATUT, to a number of medium and small-scale growers. The ATUT information department through its website and data base has made marketing information generally available. ATUT is due to end shortly, however, cutting off this technical and marketing information channel.

The Egyptian Export Promotion Centre with the assistance of APRP is currently setting up an international marketing information website. Some preliminary discussions have been held concerning possible consolidation of the ATUT website and database with the new EEPC system. Obviously, adjustments would need to be made in the EEPC budget to support these new initiatives.

As outlined in Appendix VI, HEIA, working in cooperation with whatever agency is assigned the responsibility for maintaining the ATUT web page and database, would be a good choice to develop and implement a new market information system. The information would be disseminated on a paid subscription basis, using either e-mail or fax hard copy, as specified by the individual clients.

Future expansion of Egypt's horticultural commodities export industry will require the extensive participation of medium and small scale growers. Special attention must be paid to the needs of these growers for market information and to the means of providing them with such information.

Most medium and small-scale growers lack access to computer-based information services. Market information and market intelligence must be transmitted to these growers through an intermediary that does have access to electronic information sources. This intermediary could be a nucleus enterprise, a larger association affiliated with smaller grower associations (such as the associations organized by CARE and Africare), the postharvest centers recommended above or other organizations that maintain direct contact with smaller-scale farmers.

The ACDI-VOCA market information project, for example, has had considerable success in disseminating market information gathered from domestic wholesale markets to smaller-scale farmers through local newspapers and radio. Market information could be posted and updated on a regular basis at the postharvest centers.

c. Integrating Small and Medium-Scale Growers into the Export System

Improving the productivity of small and medium-scale growers and helping them gain the capability to produce export quality horticultural products will benefit the local market and the food processing industry as well as the fresh produce export system. The major rationale for fostering such improvement will be to enable the horticulture industry to produce larger quantities of exportable products. The resulting improvement in rural incomes, the positive effects on domestic market supply and quality and the support engendered for the expansion of the Egyptian food processing industry should also be considered among the positive outcomes.

Following are the principle constraints to the effective integration of small-scale farmers into the fresh horticulture products export system (the prevalence and the severity of the various constraints vary considerably depending on the specific crop and the area in which it is grown).

- Difficulty in obtaining improved varieties suitable for export.
- Absence of required production technology for new and improved varieties.
- Lack of knowledge and failure to apply appropriate harvest and postharvest practices

- Limited number of middlemen providing marketing services, leading to lack of competition.
- Transportation and other infrastructure deficiencies (including lack of cold chain facilities).
- Lack of formal quality standards in the domestic market (although definite price differentials exist for better quality horticultural products in the major Egyptian wholesale markets).
- Insufficient food processing outlets for products that do not meet export requirements.
- In the case of contract growing, lack of trust and perception of risk on the part of both the small-scale farmers and the contracting exporters.

One of the prerequisites for empowering smallholders to improve their commercial capabilities, become more productive and to access higher value export markets is to encourage farmer organization. Individual small-scale farmers generally cannot acquire the technical, financial and marketing resources required to enhance value addition nor can they take advantage of the market power provided by volume input procurement and product sales. The solution to these constraints is effective organization.

In order to be successful, the impetus for such organization must originate with the farmers themselves, in answer to felt needs. The initiative may be prompted through intervention by an outside organization, but the movement to organize must be farmer-led. One important reason for the failure of the cooperative movement in many developing countries has been the role of the government as the instigator and financier for cooperatives. Once government financial support is withdrawn, as it must inevitably be, the cooperatives usually disappear. Some of the ways in which a viable small-farmer organization may be developed are illustrated below.

- Through the leadership of one or more larger farmer-members of the community (an example is the green bean group interviewed by evaluation team members at Fayoum).
- Through the intervention of an NGO or other outside entity (CARE and AfriCare in Egypt).
- By a “nucleus enterprise” buyer (larger grower or grower/exporter, processor, etc.).
- Through the creation of a nucleus institution serving farmers in a given area, such as a common-use packinghouse that can serve as a center for marketing, technical advice and similar services, as well as volume purchases and distribution of production inputs and volume marketing of farm products.

There are a number of working models already being implemented in Egypt for bringing small and medium scale farmers into the horticulture export sector (see Appendix V). The pressing need is to greatly expand these efforts by providing a base of support services that can be applied to all of these existing models.

The elements that need to be put in place to accomplish this include the network of postharvest centers recommended above, practical training facilities for private and public sector horticulture extension workers, the market information and technical services systems mentioned previously, more workable arrangements for providing farmer credit and greater efforts exerted to organize small-scale farmers into associations or other groupings combined with establishment of association networks encompassing different industry levels.

d. Uniting the Industry

One of the most important measures required in order to accomplish the horticulture industry development objectives mentioned throughout this report will be to unite the industry. As recently as six years ago, when the ATUT project was inaugurated, this would have seemed an impossible dream. Most larger producers were not even on speaking terms with each other, small and larger-scale producers distrusted one another, attempting to organize small-scale growers outside the official cooperative system was considered impossible, and the government and private sector were largely estranged.

During the past six years the horticulture industry has experienced an almost complete turnaround. The larger growers under the HEIA banner are cooperating for the common good as never before, an international NGO has successfully established and registered a significant number of farmer-run associations with the Ministry of Social Affairs, and government agencies are beginning to seriously consider the needs of the private sector during their formulation of policies and programs.

The most effective means of addressing the above constraints and enabling the sector to exploit its potential for continued rapid and profitable growth will be to unite the horticulture industry through the establishment of a network of functional business support organizations (BSOs). The advances cited above provide a strong base for accomplishing this aim.

A business support organization (BSO) is any non-profit entity whose membership is made up of private sector enterprises and individuals and which provides business-related services to this membership. This can include trade and commodity associations, chambers of commerce, farmer associations (including cooperatives) and many others.

The main benefit of BSOs is their ability to organize individual businesses (or farmers) into groups that are able to acquire the managerial, technical and financial capability to provide the needed industry leadership and support that would not be possible for individual enterprises. The responsibilities of the BSO include acting as a spokesman for industry policy advocacy and as a catalyst and facilitator for acquiring and disseminating information of all types to its members.

A BSO must also be financially self-sustaining. This imposes an important discipline on BSO management. Provision of member services on a user pays basis is an important component of financial sustainability, but unless those services are of value, the members will not be willing to pay for them.

Government should not be directly involved in industry organization (government sponsored industry organizations in almost all cases are neither effective nor sustainable). Donor assistance should be limited and time-bound in order not to create dependency. NGOs can play an important role but that role should include a firm exit date in order to help encourage organizational self-sufficiency.

Organization of the horticulture industry will not occur spontaneously, however. In order for it to occur, there should be a model to follow. This model should also be able to function as a catalyst and facilitator for industry organization and development.

There are several reasons for utilizing a model to foster development in the horticulture sector. Organizing and making functional the various BSOs that are needed in the horticulture sector will be an imposing and difficult task. Establishing a model that can serve as an example of all of the various organizational development and service activities will enable proponents of prospective BSOs and management of existing BSOs to “walk through” the necessary

organizational development and program implementation steps, rather than attempting to learn from written materials or through trial and error.

The model should also function as a repository of management, marketing and technical information that other BSOs can consult as needed. This could be carried a step further, with the model operation providing technical consultation and training services to other BSOs, on a fee basis.

There are a sizeable number of separate initiatives underway in Egypt aimed at improving various aspects of the horticulture sector. These initiatives are generally not coordinated and in many cases, are not known by other practitioners in the field. One of the functions of the model BSO recommended above should be to serve as a clearinghouse for all of the various horticulture development activities.

The two most useful current industry models are the farmer associations organized by CARE, and the Horticultural Export Improvement Association (HEIA). These models have both been successful in accomplishing their initial aims, are continuing to grow and become more effective, and illustrate the opposite industry extremes, from two and three feddan producers at the one end, to larger, commercial growers at the other.

e. Solving Specific Industry Problems

1) EurepGAP

The impending imposition of the EurepGAP protocol by European buyers for major food outlets will require the adoption of extensive, well-coordinated measures to enable the Egyptian horticultural industry to meet the necessary standards. Failure to meet those standards will deny Egyptian horticultural products access to most current European markets and will prevent entry into new EU markets. Therefore one of the main priorities must be to prepare as much of the industry as quickly as possible to meet the new standards.

ATUT/RONCO originally established a quality assurance department and trained 20 technicians to work with growers to implement EurepGAP requirements. This program has since been turned over to HEIA.

RONCO/ATUT for the past year has been providing EurepGAP awareness training to small-scale farmers associated with the CARE AgReform project. Input suppliers Syngenta and Bayer a swell as SGS, which is a EurepGAP certification organization, also participated in this effort. ATUT/RONCO has translated several EurepGAP inspection criteria manuals into Arabic and has published a background document “Food Safety and Good Agricultural Practices” in both English and Arabic. Some of the larger exporter-growers are acquainting their contract growers with EurepGap requirements. CARE and Africare are working to acquaint their farmer clientele with EurepGAP requirements.

While the HEIA quality assurance program and the other initiatives outlined above represent a good start, this capability must be augmented if the horticulture export industry is to meet the deadline for EurepGap qualification. The urgency of this situation would seem to warrant the formation of a EurepGap Task Force, with membership consisting of representatives of growers, the Horticultural Research Institute, concerned NGOs, USAID and other donor representatives and programs, and the MALR. The Task Force could be formed and chaired by HEIA, as the association whose membership is most directly involved. The food processing industry must also be involved.

2) Transport Facilities

Transportation inefficiencies are a major barrier to horticultural export growth. Trucking represents the major problem area. Much of the truck fleet is obsolete and needs replacement. There is a critical need to reduce the present duty on imported trucks and equipment, particularly refrigerated vans and containers. The duty was supposedly reduced from 42 percent to five percent some time ago, but this change in regulations has not been implemented by Customs. HEIA, EAGA and the Cold Chain Association should join forces with the Agricultural Commodity Council to lobby for implementation of the five percent tariff level.

The above associations should form a special committee to document the adverse economic effects of other restrictions on trucking, such as the restrictive backhaul provisions, and lobby government for policy changes. These same associations could also combine forces to determine what is holding back the construction of the cold storage facility sponsored by HEIA at the Cairo airport and suggest solutions. These groups by working together will have a much better potential for obtaining policy changes favorable to their combined clientele than would each association acting alone. (See Appendix VII).

3) Cold Chain Systems

The importance of establishing a network of postharvest facilities including pre-cooling and cold storage was emphasized earlier in the report. HEIA in consort with other groups such as CARE, Africare, concerned USAID projects, EAGA, and other relevant organizations, should organize a program for promoting the establishment of these facilities, including developing standard designs and cost estimates, and preparing pro forma business plans and investment acquisition campaigns.

The establishment of postharvest facilities must be synchronized with the provision of technical assistance to growers. The cold chain starts when the crop is harvested and depends on proper harvest techniques and postharvest handling to maintain quality. Use of a proper cold chain can maintain product quality, but cannot improve it.

4) Access to Improved Planting Materials

The horticultural export industry needs continual access to new, improved varieties in order to keep pace with changing consumer demand in different export markets. The current system of imported variety testing and registration unduly restricts the timely availability of new varieties, can act as a constraint to exports and affects the competitive ability of the Egyptian horticulture industry.[1]

Egypt also lacks a Plant Variety Protection Law. This acts as a barrier to private investment in development and production of new varieties, complicates the licensing of ARC varieties and inhibits foreign companies from introducing valuable new varieties to Egypt.

It will require combined and organized pressure from the industry to effect favorable changes in policies and regulations affecting planting materials. A natural and much desired alliance to work toward accomplishing these changes would be HEIA, EAGA and the Egyptian Seed Association, with the effort spearheaded by the ACC.

[1] "Registration of a new variety in Jordan takes less than a month, while in Egypt it requires an average of more than three years" (Syntheses Policy Briefs, APRP/RDI, 2002).

5) Providing More Effective Extension Services

The ultimate solution to providing effective technical extension outreach to the horticulture sector will be the utilization of private extension services. (See Appendix V). One approach which is already being used is the provision of technical extension services by larger producers to their contract growers (the Nucleus Enterprise Model). Another is the employment of extension agents by producer associations ranging from groups of small-scale farmers to national associations such as HEIA and/or by postharvest centers. A promising model that is just beginning to be used is the provision of extension services by an input supplier as a business development tool and in consideration of large volume purchases of production inputs (see Appendix V).

In 2001, ATUT/RONCO conducted a successful small farmer NEM-type strawberry marketing program as part of its extension activities. Three small-scale strawberry growers farming six feddans produced strawberries for the EU market, selling their products through an established HEIA member that supplied the growers with production credit. Another 25 growers in the same area were expected to affiliate with the larger grower-exporter during the current production season.

Another example of successful private sector extension initiatives is the work with melon and grape growers in Upper Egypt co-sponsored by HEIA and APRP. In addition, HEIA is working with APRP to provide EurepGap training to MALR extension personnel in several governorates.

It will take some time for the development of a private extension network with the capacity to serve a majority of the needs. In the meantime, in order to cope with these needs, the Team recommends that MALR consider establishing a separate, specialized horticultural extension unit within the Ministry. The organization of such a unit is discussed further in Appendix V.

6) Developing Skilled Workers

As mentioned above, one of the factors limiting growth of the horticulture industry is the lack of sufficient skilled workers. Most middle school and university curricula in Egypt are not conducive to the development of skills that are useful in the workplace.

One of the more encouraging initiatives is the combination training and apprenticeship program set up for agricultural technicians by the Mobarak-Kohl program at Mobarak University in Sadat City, through the efforts of HEIA. The Mobarak-Kohl program is a demand driven educational program. Initially established utilizing technical assistance and some funding from the GTZ, (the German government economic assistance program) the program now has 25 units throughout Egypt and is financially self-sufficient.

There is a general consensus that current graduates from Egyptian agricultural universities lack the job skills required to make them effective private agriculture sector employees. Many of the graduates have as their goal becoming employed by the government rather than the private sector.

In an attempt to help meet the growing shortage of technical, managerial and supervisory staff in agricultural and agribusiness enterprises, HEAI negotiated with Mobarak-Kohl for the establishment of a technical course for agriculturists. This will be followed in time by the creation of an agricultural training center or centers under the Mobarak-Kohl system.

The Mobarak-Kohl program is unique for Egypt. The units are accredited as technical middle schools. They conduct a wide range of departmental programs, covering almost all areas of Egyptian industry. The units are totally demand-driven. Unless local industry in each of the areas where a school is located agrees to support a particular program, that program is not implemented.

Students are deliberately selected from among those coming from poorer families. Students from more well to do families are pressured by their parents to attend university. Most of the Mobarak Kohl enrollees are unable to afford a college education.

The students begin their schooling with a three-month orientation period spent in class rooms. After the first three months, they are expected to spend four days per week working in an enterprise that is related to their principle course of study and two days per week in the classroom. The students are paid a regular wage by their company sponsors/employers. Several of the Mobarak Kohl agricultural students told the evaluation team that although they are still in middle school, they earn more than their brothers who are university graduates.

The first HEIA-originated Mobarak-Kohl agricultural course, which got underway several months ago, is not yet equipped to teach purely agricultural skills. The students enrolled in the course are trained in machinery and equipment maintenance and repair, plumbing, electrical installation and maintenance, welding and other skills that will be useful to them in their farm apprenticeships and in their future employment.

The farming companies that employ the student apprentices are uniformly pleased with their charges and in almost all cases plan to offer them full-time, permanent employment following graduation. One of the evaluation team members observed that many of these young men will probably in another ten years be successful entrepreneurs, operating their own farms and agribusinesses.

Much greater emphasis on skills training is needed at all levels, including enlarged application of the Mobarak-Kohl dual vocational training system for agricultural skills, following the example of the pilot project initiated by HEIA.

B. Analysis of Project Results

1. Overall Conclusions

The ATUT project has had a substantial and very favorable impact on the Egyptian horticulture sector and industry. It has succeeded in significantly increasing exports of horticultural products and in several cases, in creating new export industries from a low or non-existent base.

The ATUT project has attained and in some cases far surpassed its targets. The original indicators called for a five percent average increase in volume of exports of selected horticultural crops over the life of the activity; in fact, exports of the five key crops increased by 430 percent. The target for the increase in value of exports over the life of the project was eight percent while export values actually increased by 440 percent.

Export revenues from grapes, strawberries, fine green beans and cut flowers, crops that received ATUT technical assistance, grew from less than $10 million in 1996 (pre-project) to more than $70 million in 2001. Combined revenues are projected to reach $170 million in 2002. ATUT was responsible for creating new fine green bean and cut flower export industries as well

as fostering very substantial gains in exports of other key horticultural crops. Industry employment grew from an estimated 7,117 jobs in 1996 to approximately 13,000 by 2001.

According to the indicators of Purpose and Activity Level Success, ATUT has met or exceeded all but one of the quantitative standards set forth in the Activity Paper. The exception is in the area of adaptive research where ATUT was expected to make 40 awards, but made a total of 37 before the research program was cancelled in 1999.

One of the very significant contributions made by the program was the support extended to HEIA, whose membership has grown from 40 firms in 1997 to almost 200 currently. The number of small and medium-scale growers among the HEIA membership grew during this period from 14 to 62, while women members increased from a single farm in 1997 to 16 farms owned and operated by women today. HEIA is also starting to produce spin-offs as well, such as the Cut Flower Association, which went from being a HEIA commodity council to becoming an independent HEIA affiliate.

The ATUT project had several interlinked subcomponents. Most of the technologies transferred by the project originated with the Ronco technical consulting team, composed of expatriate advisors (long and short-term) and local consultants. The other important subcomponents were the working groups and the extension training subcomponent. An adaptive research sub-component was originally part of the project but was discontinued in favor of the working group approach.

At the start of the project a group of commodities that was deemed to have favorable export potential was selected for concentration (the working groups and the extension component also provided technical assistance to several additional commodities). The Ronco team at the beginning of the project elected to work with larger growers and grower exporters who had the managerial and financial resources and the commitment required to effectively utilize the Ronco technical assistance to expand their horticultural exports.

This was a proper strategy, given the relatively under-developed state of the Egyptian horticulture export industry at the time. It has paid off in terms of very significant expansion for the selected crops. Ronco during the final year of the project began some limited activities with small-scale growers.

The Ministry in 1997 introduced the “Working Group” program to replace the adaptive research grants. The working groups are multi-disciplinary teams drawn from universities, research institutes and the private sector. Each team is assigned either a crop or a functional area of concentration. The teams have worked primarily with medium-scale producers, to improve their productivity through transfer of technology. The Working Groups in carrying out their activities during most of the project duration cooperated closely with the Ronco team, although there were periods of relative estrangement due to changes in project management.

The current working group areas of concentration include grapes, mangoes, herbs and spices, melons, green beans, strawberries, cut flowers, organics, water action and irrigation systems. The organics working group also addresses composting.

The third subcomponent, extension training, is spearheaded by a series of Scientific Committees, with members from research institutes and universities. Each committee is made up of four or five members. Some of the working group members are also members of one or more scientific committees. The scientific committees provide training to horticultural extension workers, utilizing demonstration farms for training purposes. The horticultural extension workers in turn transfer the techniques and technologies to 160,000 village farmers.

The extension scientific committees have had no direct interaction with the Ronco team. Technologies introduced by ATUT/RONCO, however, are transferred to the scientific committees by those committee members who are also members of a working group. The working groups and the scientific committees report directly to ATUT project management.

Due to the press of required evaluation activities, the Evaluation Team was only able to access detailed information on the activities of the extension component shortly before the team's departure from Egypt. Due to lack of time, the team therefore was unable to validate or even properly evaluate the activities carried out by this component.

One of the principal reasons that the project was able to achieve its objectives was the fact that the Ronco technical specialists were selected based on their practical knowledge and working experience in horticultural production and postharvest activities. ATUT-RONCO intervention enabled the project grower clientele to achieve very significant advances in production, postharvest and marketing technologies and to greatly expand their export sales; ATUT-RONCO clients are effectively transferring some of these technologies to smaller-scale growers from whom they are buying horticultural commodities.

The Working Groups provided much needed technical assistance to a sizeable number of primarily medium-scale producers as well as to some smaller-scale producers. The ATUT extension activity, backed up by 175 scientific committee members, reportedly trained a large number of extension workers who in turn worked with about 160,000 small farmers during the life of the project.

The ATUT information unit prepared and distributed a large number of technical publications and cooperated in the dissemination of technical information to governorate level Ministry of Agriculture offices. The ATUT website provided extensive price information and other useful data. ATUT also collaborated closely with Care and Africare in providing training and technical services to small-scale horticultural producers.

There are of course areas where ATUT has not performed as well as it might have. In the judgment of the Team, project monitoring and evaluation efforts have been inadequate. There was no provision made for a mid-term review. The annual monitoring and evaluation reports were evidently meant to replace a formal external mid-term review, but they did not prove to be an adequate substitute. The participative monitoring and evaluation system was comprehensive, but it is difficult to relate the information collected to the reporting requirements of the USAID Mission SO and IR structure.

This latter point is understandable when it is considered that at the time ATUT was designed there the system of SOs and IRs had not yet been instituted. The project was designed to meet the objectives established in the project paper. However, the TA team did provide on a regular basis the required targets and results corresponding to the subsequent SO and IRs.

Program coordination between ATUT and other organizations concerned with exports, such as the relevant units within the Ministry of Foreign Trade, was lacking. Although this type of coordination was not mandated under the project design, cooperating with other relevant agencies would have helped extend the effectiveness of the project.

The project did not adequately address the marketing function. Although the project was "market driven", the decision was made near the beginning of the project that because of the need to improve quality standards for export, improvements in production rated a higher priority than marketing activities. The project thus concentrated on technical production aspects and focused

on sales rather than marketing.[2] While the concentration on quality improvement was essential, the team believes that pursuing the marketing function in tandem with the production focus would have resulted in a more effective project.

The sales function has been effective in substantially increasing sales of the key commodities and in preparing ATUT primary clientele to engage in their own sales efforts. The project did not, however, adequately address the development of systems for gathering and disseminating market intelligence and for strategic market analysis and planning.

A number of marketing studies were conducted just prior to or during the initial project period, but none of these were published, although the information developed through the studies was utilized for project planning purposes (see below). Whatever market intelligence the studies contained was available only to the ATUT staff. Since the results of the studies were not widely disseminated, the cost for their conduct did not produce commensurate benefits. ATUT market identification, development and promotion activities were carried out on an ad hoc basis by the Ronco technical consultants but the results were largely confined to the larger producer-exporters who constituted the ATUT-Ronco clients.

While the production focus was valid and succeeded in significantly increasing exports, the project would have been even more effective if it had included a marketing component. The project technical services were primarily focused on improving the quality of the key crops in order to increase the proportion of each crop that was acceptable to foreign buyers. Market contacts, which were initially made primarily by the RONCO/ATUT technical team, were gradually taken over by the project clients.

Market considerations did determine commodity priorities for the project. Studies were conducted at the start of the project in those markets holding major sales potential, primarily in the European Union (EU). These studies served to identify the first set of Level 1 commodities and were incorporated into the first project Strategic Action Plan (SAP).

A second set of marketing studies was conducted in 1998 and early 1999 with the results of these studies incorporated into the second SAP. As a result of the study results, the decision was made to down grade emphasis on mango and melon. At the same time, cut flowers and fine green beans were upgraded to Level 1.

While project priorities in terms of commodities to be emphasized were based on market analysis, ATUT/RONCO was required to expend major efforts on upgrading the quality of the selected commodities to meet market specifications. As a result, the project team did not take the next logical step, which would have been to develop an ongoing comprehensive market intelligence system and strategic marketing planning system and transfer this to the industry.

The project team assisted growers and exporters to identify and negotiate with buyers. These skills have been important in the growth of fresh commodity export sales. Because of the emphasis on sales rather than marketing, however, most of the larger growers and exporters do not have access to an adequate market intelligence system nor have they gained the capability for

---

[2] The terms *marketing* and *sales* are often used interchangeably, but they are not the same. Marketing involves the identification, planning and development of served markets, definition of major product lines, analysis of major competitors and positioning of product lines in their respective markets, and all of this on an ongoing basis. Sales, on the other hand, involves direct customer contact, calling on target accounts, developing accounts, closing sales and providing after sales service.

developing effective medium and long term strategic marketing planning capabilities. Future projects of this nature should incorporate measures to build capacity for the development of market intelligence system and strategic marketing planning.

2. Activity Organization and Management

ATUT currently appears to reasonably well-managed. Several changes in management personnel have been made during the course of the project. There have been three chiefs of party, and a new Director General was appointed at roughly midpoint in the project. These changes at the time they occurred resulted in a temporary lack of coordination among some of the project subcomponents (the MALR ATUT staff, the Ronco technical service team and the technical working groups).

There appears to have been a lack of accountability on the part of the working group and extension subcomponents. These subcomponents report directly to project senior management. While initial planning exercises were carried out for each subcomponent, the team could find no evidence of any precisely defined criteria that would allow for comprehensive evaluation of the accomplishments of these two subcomponents. Reporting on results is inadequate, particularly for the extension subcomponent.

While ATUT, particularly the Ronco technical service team, and HEIA worked very closely together during the early part of the project, the two groups have become increasingly estranged during the past year or two. There appears to be a feeling on the part of some ATUT personnel that HEIA, from being almost entirely dependent on ATUT technical support at the outset, have become too independent and are "competing" with ATUT. HEIA management and members, on the other hand, feel that they have reached the point where they no longer need ATUT support and are determined to stand on their own feet.

Although these attitudes have occasioned some recent friction between the two groups, in fact this separation is a positive development. It indicates a strong element of project sustainability, particularly for that portion of the project that has extended technical assistance to the private horticulture export sector.

3. Approach to achieving activity goals and objectives

The approach to achieving activity goals and objectives was generally effective. The Ronco practice of recruiting staff and short-term consultants from the ranks of industry has been particularly beneficial in that it ensured that the proffered technical assistance was practical and geared to actual producer needs.

One of the important deficiencies, however, was the failure to recruit local personnel to work with and be trained by the Ronco specialists. Ideally, each Ronco expatriate specialist should have been able to train up to four local apprentices who in time could have constituted a cadre of qualified local horticultural specialists for employment by industry or as technical consultants. This would have been a very important contribution to the future of the Egyptian horticultural industry. According to project management, RONCO intended to train local staff, but MALR policies were not conducive to the direct hire of recent agricultural college graduates that would have been the logical recipients of such training.

The ATUT/RONCO team did, however, train more than 20 quality control specialists during the period 1998 through 2001. These specialists form the nucleus of the HEIA quality control department.

The competitive and collaborative grants system for the promotion of applied research was halted before it was able to fully demonstrate its utility, but it appears from discussions with those involved that the system would have been an effective approach to linking research to producer needs.

The working group concept was sound, but the program could have produced better results if it had been better planned, organized and monitored. The group leaders were selected by the MALR but were then expected to select their own group members and plan their own programs.

The groups, which included university personnel and private sector representatives as well as ARC researchers, did not have an official "home base". They worked part-time for the ATUT project, and were expected also to tend to their regular duties at their parent institutions. They were left on their own to decide on the focus of their efforts and on the clientele they served.

Despite this lack of central organization and direction, most of the working groups provided valuable services to their clientele. With certain exceptions, however these services consisted primarily of extension activities, rather than being research-oriented. One reason the groups' services were particularly sought after was because there is a serious shortage of qualified MALR horticultural extension personnel. In retrospect, providing extension services probably did not represent the optimum use of senior research personnel.

Another observation that has been made concerning the working groups is that in most cases, their members were older, more senior people. It would have been useful to have recruited some younger research scientists in order to provide them with relevant field experience and prepare them to replace the older scientists when they retire. [3]

Complete records have been kept of the number of training sessions for extension personnel conducted by the Scientific Committees and the number of farmers visited by the extension personnel who were trained. Due to the press of other activities, the team was only able to review these reports a few days prior to their departure from Egypt and was thus unable to verify the details.

4. Service delivery to project beneficiaries

The intensive, one-on-one approach to service delivery pursued by the Ronco consultants has been largely responsible for the excellent progress made by their producer clients. Given the relatively underdeveloped nature of the horticultural export industry at the start of the project including the quality deficiencies that disqualified most commodities for export, focusing attention on a limited number of clients with the capacity and the willingness to gain maximum benefits from such attention was the correct strategy for Ronco/ATUT during the initial project period. The advent of HEIA, which occurred in roughly the same time frame as the initiation of ATUT, was a very important facilitating factor in providing a ready made clientele for ATUT service delivery.

[3] One of the working group leaders commented that he had learned more about the practical needs of agricultural producers in four years of association with the ATUT project than he could have learned in 20 years at the university.

This strategy, however, had the effect of limiting the scope of Ronco direct technical assistance and technology transfer to a very small portion of the total horticulture sector. The Working Groups were able to transfer technology to more industry participants, but there coverage was limited by the relatively small number of people involved and their part-time participation.

Judging by the reported results, the efforts of the Working Groups were generally effective, as noted above. The design of the delivery system, however, specified that the Working Groups would provide technical services to both large and medium-scale producers. The limited practical field experience of most of the Working Group members seriously limited their usefulness to the larger growers (as one grower-exporter observed, the Working Group for his commodity came to learn from him rather than to teach him).

For this reason, most of the Working Group technical assistance services benefited medium and smaller scale producers and new producers. This in itself, however, represents an important contribution to industry progress.

While the extension subcomponent covered a large number of generally small-scale farmers, due to the lack of time afforded the evaluation time to validate the relevant data, it was not possible to determine the effectiveness of this delivery system.

There were no explicit provisions in the project for a human resource development/training subcomponent. Producer responses indicate, however, that the on-farm training approach utilized by the Ronco and Working Groups were quite effective.

6. Technical Services and Technology Transfer

a. Grapes

Egyptian table grape growers have set new export records every year since the ATUT project began providing assistance in 1999**.** Table grape exports in 1997 amounted to 1,800 tons. By 2001 exports had increased to 6,600 tons, valued at more than $22 million. Egyptian table grape exports to the European Union increased by 23 percent, from 4,568 tons in 1999-2000 to a record high of 5,615 tons in 2000/2001. Export earnings rose to an estimated $20 million during the marketing year, a 55 percent increase from the previous year. ATUT projects table grape export volume to increase to approximately 24,000 tons with a total value of more than $50 million by 2007.

ATUT/RONCO advisors provided production technologies, management skills, harvesting techniques, and post harvest technical support to 27 table grape grower-exporters during the 2000/2001 season. Seven additional grape growers were expected to begin exporting to the E.U. during the 2001/2002 growing season.

During the 2000-2001 crop year, the ATUT extension subcomponent provided technical assistance to approximately 6,800 growers. Average production for the assisted growers was 12.7 percent greater than the Governorate average. The ATUT working group technology transfer activities, primarily providing assistance in the areas of pruning, fertilization, and the application of gibberillic acid and Dormex sprays, were carried out on 40 farms during the 2000-2001 season. A 100-feddan increase in area planted to table grapes was expected in 2001-2002. The grape working group provided new grape stocks to 50 growers during 2001-2002.

Table grape growers are becoming increasingly self-sufficient. The larger grower-exporters have gradually reduced their dependency on ATUT/RONCO assistance to the point

where they are no longer utilizing such assistance. Instead, they are depending on their own resources or on HEIA for sourcing needed technical assistance. The Quality Assurance program developed by RONCO advisors was also taken over by HEIA at the close of the 2001 season. (See Appendix III for additional information on grapes).

b. Green beans

Prior to the advent of the ATUT project there were essentially no exports of fine green beans, although Egypt was a major supplier of bobby beans to the European market, exporting approximately 17,000 tons annually. Shipments of fine green beans in 1999/2000 amounted to 4,300 tons valued at approximately $10 million, increasing to 19,700 tons worth $23 million in 2000/2001. Total exports of Egyptian fine green beans to the E.U. in 2001-2002 are projected to exceed 18,500 tons with a total export value of $45.5 million.

Some 85 percent of Egyptian green beans are grown by small-scale farmers (one to two feddans each). Egypt has traditionally been a major supplier of "bobby beans" to the European market. ATUT decided to work with the existing large production base (40,000 primarily small-scale growers) to introduce fine green beans, a much higher value crop, for export.

The ATUT/RONCO green bean team, the working groups, and the extension subcomponent provided small-scale green bean growers with technical services including variety trials, production techniques, and field packing and shipping procedures in order to reduce losses. The Ronco team also assisted larger-scale growers (more than five feddans), with than 750 technology transfer visits to 24 commercial farms since the green bean program started in early 1999. Some 85 technology visits were provided to smaller farmers by Ronco and Working Group specialists. In addition, 15 visits were made to Africare-sponsored small-scale farmer exporters in Upper Egypt.

c. Strawberries

Strawberries have been one of the outstanding success stories for the ATUT project. Exports have increased from 1,200 tons in 1996, the year before project startup, to approximately 5,600 tons worth $22.7 million in 2001-2002. As one example of their effectiveness, ATUT strawberry advisors were able to increase strawberry yields for a group of small-scale farmers in the Delta from nine tons per feddan to 19 tons, by introducing the use of transplant technologies, improved irrigation systems, better fertilizer and post harvest practices, and other improved techniques.

The Ronco experts worked primarily with larger farmers while the Working Groups and the extension subcomponent addressed the technology needs of smaller-scale growers. Ronco provided more than 1,150 technical assistance visits to 24 strawberry producer-exporters while the strawberry working group provided technical services to 14 farmers with a total growing area of 1,155 feddans. RONCO provided joint assistance with the working group for six of these farms.

HEIA launched a strawberry council in 1998 to advance strawberry production and exports. By May, 2001, council membership numbered 24 farmer-exporters, including three female operators. Several of the council members are providing technical assistance to smaller-scale farmers and purchasing their strawberries to add to their own export sales.

A major ATUT contribution to the Egyptian strawberry industry was the introduction of the proper varieties and technology to enable replacement of the Frigo type transplants (new

plants grown from runners) with fresh transplants. ATUT tested 15 new strawberry varieties for performance under Egyptian conditions and selected three of these that are now in common use.

ATUT also promoted the establishment of nurseries for the propagation of fresh strawberry plants. These programs resulted in significant quality improvements and an increase in the volume of strawberries produced and exported. Small-scale strawberry farmers as well as larger producers were able to effectively apply the new technology to increase the quality of their strawberries and participate in the export industry.

New technologies introduced by the ATUT project include integrated pest management (IPM), drip irrigation, apiary sciences, soil and plant analysis, waste analysis and post harvest/cold chain technologies. The application of these new technologies has resulted in rapid advances in the Egyptian strawberry industry and has made it possible for the industry to compete effectively with other African and Mediterranean suppliers to the European Union and the Gulf states.

d Cut Flowers

Until three years ago, when ATUT placed cut flowers on their list of priority export commodities, there was literally no cut flower export industry in Egypt. Flowers were grown almost entirely for the domestic market. Only one medium-scale grower was exporting on a regular basis, to Italy. Exports in 1999 amounted to only 4.5 million stems, with revenues estimated at $400,000 to $600,000.

In 2000-2001, following the start of the cut flower export program, some 11.7 million stems worth $2.1 million were exported. In the following year, exports increased to 33.2 million stems valued at $5.7 million. ATUT forecasts cut flower export sales of 175 million stems worth $29 million in 2007, increasing to 750 million stems valued at $123 million by 2012. There are presently 19 members of the HEIA Cut Flower Council, of whom 12 are exporting cut flowers. The others are preparing to do so.

ATUT initially assisted HEIA in organizing visits to two international horticultural trade shows in Amsterdam, followed by sponsorship for attendance of Egyptian cut flower growers in Japanese trade shows and again to the Netherlands. These initial forays introduced Egyptian cut flowers to the Dutch cut flower trade and created a great deal of interest among the Dutch flower buyers. The fact that Egyptian cut flowers are able to command good prices at the premium Dutch cut flower auctions provides significant recognition of the effective efforts of ATUT, HEIA and the Egyptian cut flower growers.

To help establish the Egyptian cut flower export industry, it was necessary for ATUT advisors to conduct varietals trials for a substantial number of cut flower varieties. ATUT also provided technical assistance in areas including floriculture management, improved production practices, irrigation, fertilizer management, insect control, harvesting, post harvest handling, and shipping, as well as marketing services. The ATUT team has in effect helped create a totally new horticultural export industry, and one that appears slated in future years to become one of the top Egyptian export earners.

7. Monitoring and Evaluation

a. Overall

ATUT employed an elaborate system for monitoring and evaluation that was developed in 1997 (Edgar Nesman, Amer Jabrin, ATUT Horticulture Program Monitoring and Evaluation

Plan, March: 1997) as a part of the early project implementation. The initial design was modified in 1998 to reflect the priorities established during the first Strategic Action Planning conference participated in by the project's principal stakeholders. The technical adequacy of the ATUT system was enhanced by using a number of baseline surveys that helped the project to clearly identify the points of departure for the several actions it would undertake to meet the objectives of the project and those of USAID.

The M&E system was designed to carry out three tasks:

? prepare baseline studies at the start of ATUT;

? monitor project evolution and periodically measure accomplishments;

? conduct an internal impact assessment at the end of the project.

The original intent was to have an M&E unit as an integral component of the project management approach. This would be consistent with using the system as a means of providing ongoing monitoring information that could be used for decisions regarding operations and the delivery of services to the project clients. ATUT, however, carried out its principal monitoring and evaluation activities on an annual basis. There is no clear indication that ATUT had alternative means for reporting systematic monitoring information to the project management

The first of the annual monitoring and evaluation reports, prepared by one of the authors of the initial ATUT M&E plan, was issued in 1998. All succeeding reports through 2001 were the responsibility of the same person.[4] In anticipation of the project's conclusion in 2001 an impact evaluation of ATUT was also conducted in 2001 (John Litschauer. An Evaluation of The Agricultural Technology Utilization and Transfer Project, November: 2001.)

The several monitoring and evaluation reports provide a good record of ATUT's evolution, accomplishments and weaknesses. In general, it appears that the weaknesses were addressed as a result of the reports, since they were not repeated in the succeeding annual report. In fact, one can develop a relatively sound quantitative portrait of ATUT's performance on its program indicators under Strategic Objectives1-3.

The M&E system that was designed and implemented by the project provides a wealth (perhaps more than was strictly necessary) of quantitative and qualitative data. However, with the exception of having twice conducted field surveys to coincide with the preparation of two Master Strategic Action Plans (in 1997 and 1999), the extent of collaboration with growers, exporters, allied services, et. al. outside this global planning framework is difficult to clearly discern from the available documentary record. Much of this type of collaboration has now been taken over by the growers themselves through their participation in HEIA.

Record-keeping with regard to short-term technical assistance has been satisfactory. However, it must also be noted that some of the records reviewed by the team did not clearly indicate a product for each such assignment. In a number of instances e.g., facilitation services in connection with ATUT planning exercises, the activity was itself the product of the consultants' services. Nevertheless, the team believes that a summary report of such activities should be submitted by the consultants.

In the main, the project has performed well in these areas. However, the team noted that some of the indicators were poorly worded, and in consequence the associated outcomes appeared to be poorly suited as appropriate measures of achievement. In the same context, the team also

[4] The report for the year 2000 was not available for review by the team.

believes that some of the original quantitative indicators did not present a particularly significant challenge. (See, ATUT PROJECT MONITORING PLAN FOR EXTENSION OF CONTRACT 263-0240-C-00-6053-00: Part II, Annual Monitoring and Evaluation Report: September 2001.)

b. Technical Issues regarding M&E

The project's monitoring and evaluation reports contain drawn from three separate databases at Ronco, HEIA and the ATUT MIS unit. An important part of the explanation for the presence of multiple databases seems to be that the MIS unit was assigned the responsibility for database development in the early days of ATUT and the project's managers apparently did not fully consider the implications of this division of responsibility. They did, however, maintain a wholly separate database for the project's financial and budgetary management. The issue, in the team's view, is that the MIS unit has compiled a significant portion of the project's historical record in a format that is incompatible with the software used by the other components for project operations and management. Similarly, USAID can only access this data for its own reporting purposes in "hard copy". The MIS unit, part of the Ministry, uses a database program developed for Macintosh computers. This hinders the exchange and manipulation of data for M&E purposes. Indeed, the MIS unit devoted an unknown amount of resources to reconstructing records from NARP in order for them to be usable on Macintosh computers. Somewhat paradoxically, there is no translation program that will convert the data from its current proprietary format into one that can be used by PC-based database programs. Project management did not recognize this incompatibility as a potential impediment to its reporting requirements and analytic needs. This should not be taken to mean that the data were unavailable to others. Rather, access to the raw data by the majority of the staff and consultants who were PC users was virtually impossible.

It should be noted, however, that the current program management seems to be more proactive in its use of the ATUT MIS unit in meeting the Mission's reporting requirements under the existing SO regime. The ATUT Monitoring and Evaluation Plan for the final year of project operations is an example of this point as it makes significant use of the ATUT MIS database. Moreover, the evaluation team encountered little difficulty in securing answers to its questions requiring use of data records maintained by the MIS unit. In addition, Ronco's several "close out" reports constitute a useful complementary database that specifically treats the horticultural crops of greatest interest to the project. These reports were prepared in PC-readable formats. Nevertheless, in the absence of a software solution, the project information currently contained in the ATUT MIS unit database should be retrieved and converted to PC-compatible format. This task should be given high priority in preparing a successor intervention in the horticulture sector.

3. In chapter 8, Analysis of Cost Effectiveness, a. Technology Utilization Costs and Benefits, Sentence 4 "This category of expenditure should also include that portion of the subcontract with Kelly Harrison Associates---"—should read that portion of the "***contract managed by***" Kelly Harrison Associates.

c. Adaptive and Collaborative Research

An ambitious program of adaptive research (short-term using Egyptian researchers) and collaborative research (long-term using US-Egyptian teams) had been envisioned by the project. Each of these programs was expected to be market driven by the needs of the horticulture

industry. The adaptive research program, also referred to as the Accelerated Impact Program, awarded a total of 37 grants from 1997 to 1999.

The MALR in 1997 proposed, and USAID agreed, to replace the research program with the Horticultural Research Working Groups composed of Egyptian research personnel from the MALR Agricultural Research Centre, university faculty members and the private sector. The proximate explanation of this change was that a shift in policy preferences had been made by the Ministry. These groups, organized along commodity and subject matter lines, were oriented to the needs of medium and to some extent, small-scale growers. In this respect their activities differed from those of the Ronco commodity advisors who were most concerned with the larger growers. The monitoring report for 1999 indicates that the Working Groups were very popular with small growers.[5]

In addition to the Accelerated Impact Grants, the project had planned to make 15-20 competitively selected collaborative research awards. These were expected to involve problems that would require a more intensive and longer research activity of three to four years. The project selected the issues to be investigated from a pool of issues identified by the industry.

The selection process was to employ a well-accepted device of outside peer review panels to assess the quality of the grant applications and the qualifications of the research teams relative to the nature of the investigation's requirements. After engaging this process, the project selected 17 grant applications for financial support. However, only three awards were actually made.

The majority of the planned research was not carried out as all of the pending awards were subsequently cancelled. Thus, after 1997, ATUT lacked a high level research component. The team could not find any attempt in project records to explain the consequences of this change on its primary goal of promoting horticultural exports. Clearly, however, the intent to enrich the services delivered to growers by providing market-driven research results was diminished by the choices described in the foregoing paragraphs.

d. Evaluation of Training and Human Resource Development

ATUT devoted considerable resources to these areas including the use of the services of the USAID-funded DT 2 for formal education programs, study tours and observational visits, direct on-farm training and demonstrations, and in-country seminars on specialized topics. The transfer of training responsibilities to HEIA led to an important investment in improving the skills and employment conditions of women in the agricultural workforce.

It is important to the evolution of the industry and any subsequent USAID support that measures be introduced that will contribute to maximizing the investment already made. One of the most important of these measures would be initiatives undertaken to reduce turnover rates for women in the agricultural workforce. This could involve, for example, providing women who have received advanced skills training with increased opportunities for jobs with greater responsibilities for crop production and quality control; or, as some agricultural firms are doing, making it a practice to hire both husband and wife, making the job a family endeavor.

In order to evaluate a program or project, the results of that program or project should be compared with a set of predefined objectives. There were no explicit provisions made in the ATUT project design for either a human resource development component or an organizational

[5] Amer Jabarin, Third Annual Monitoring Report (Including Cut-Flower Baseline Study) and Mid-term Evaluation of Performance Targets, September: 1999:43-44.

development component. Since the ATUT project did not include any predetermined objectives for HRD or OD, the measures of HRD in the following evaluation will be based on the qualitative attention to HRD issues that were introduced as a result of felt needs on the part of project personnel.

All of the technical skills training, including production, harvest, postharvest and other techniques carried out within the ATUT project could be defined as HRD, since acquiring these skills increases the human capacity to be more productive. This portion of the evaluation will go beyond the purely technical aspects of such training to determine to what extent ATUT was able to incorporate a sustainable focus on people skills including the ability to organize, cooperate, and work together as a team for mutual and collective benefit.

There are many different types of training. Some of those utilized by ATUT included technical and market study tours, field training by the working groups and the Ronco specialists, extension training by the scientific committees, workshops, seminars, use of technical publications and others.

1) Study Tours

The study tours were highly rated by the participants. The tours allowed Egyptian growers to observe and compare cropping, harvest and postharvest practices utilized by growers in other countries. The market tours were equally important, since they provided an opportunity to learn foreign product specifications, observe what products are in demand and meet foreign buyers who might develop into future customers. The tours also allowed participants to raise questions in a shared environment where answers are heard by all for later group discussions. Some of these tours were rigorously evaluated with pre-tour screenings and post-tour interviews and assessment at levels one, two and three (see Appendix IV for a discussion of the learning levels).

2) Field Training

Technical field training carried out by the Ronco specialists must be rated very effective, based on the subsequent adoption by the clients of the technology and techniques that were taught, and on their subsequent export successes.

Technical field training by Working Groups was also rated highly by most recipients, although a significant minority rated the training adversely. The difference appears to lie in the capabilities and motivation of the various working group members. Each group was almost totally autonomous and their contribution and relationships with small-scale farmers depended on individual commitment and initiative and not on any overall managerial leadership.

There was no working group concerned with HRD. This is another example of how neglected the human resource element is in almost all agribusiness activities. It will take considerable effort to create a corporate culture that embraces human resource development as a critical element for any organizational improvements. The primary weakness of the working groups was their lack of accountability at the individual, group and organizational level.

The extension component concentrated on training village extension workers at a series of demonstration farms nationwide. While there are comprehensive records of the number of extension workers trained and the number of small-scale farmers subsequently trained by these extension workers, the Evaluation Team did not have time to properly evaluate the claimed results.

3) Management Training

A general analysis of improvement in management skills at all levels can only be impressionistic since a more rigorous conclusion would depend upon pre-testing or some pre-ATUT analysis of existing managerial skills. The general impression of the Team is that managerial skills have improved as a result of the project, but not through any formal application of management training, management development or organizational development measures.

Managerial skills have evolved primarily due to the interaction between ATUT clientele, the Ronco specialists and other ATUT technical personnel. In a way this represents an ideal case of on-the-job training through being exposed on an intimate basis to role models who possess superior skills. The unrealized gain in managerial skills has been due to the fact that the informal on-the-job training approach was not integrated with formal management development and organizational development training. One encouraging note is that fact that HEIA has integrated management training, management development, and organizational development into its development model.

Most of Ronco's training successes have been due to its practice of hands-on, often one-on-one training relationships developed between the consultants and client farmers. This training technology can also be transferred to client management, through teaching behavior that supports mutual trust, teamwork, leadership, etc. and then training people how to duplicate that behavior, giving them frequent feedback and supporting them through the emotional issues that might arise as lifetime behavior is changed.

4) Specific OD recommendations

Future USAID technical development projects, such as ATUT should include an explicit commitment to fostering human resource development and organizational development as an integral part of project design.

HEIA should commit to organizational development as a central discipline. One means of fostering this discipline is to conduct team-building sessions that are focused on short-term objectives that require commitment, in measurable terms, to the organizational development outcomes of cooperation, sharing, teamwork, conflict resolution, accountability, and others.

e. External Linkages

In the view of the Evaluation Team, there could have been more coordination among the various USAID projects. Collaboration has taken place among some of the various activities under the SO 16 umbrella, most notably in the areas of training and transfer of technology. Some of the more important instances of collaboration can be seen in the joint training exercises for extension service personnel that were organized by APRP and HEIA. This collaboration did not, however, appear to be carried out on a sufficiently systematic basis.

There appears to be a somewhat more extensive record of collaboration between ATUT and APRP than was the case with ATUT and ALEB. Because the two projects have some clientele in common, one might have expected collaboration to have been more frequent. It would appear that ATUT and ALEB largely failed to exploit the natural linkages between fresh fruits and vegetables and food processing for export markets.

The team found some reason to believe that this situation was improving via more frequent interaction involving HEIA and ALEB. It should also be observed that cross SO collaboration offers good potential for enhancing cost-effectiveness. ATUT for example, and any

successor project, is relevant to SO 17 because of the relationship with environmental issues and SO 19 in the area of training and skills development.

ATUT has also established solid working relationships outside the project boundaries. For example, it has worked with the U.S.-based Produce Marketing Association (PMA) on techniques to improve pre- and post-harvest handling. PMA also assisted in the preparations and implementation of a number of observational visits to international marketing venues for horticultural growers.

8. Analysis of Cost Effectiveness

a. Technology Utilization Costs and Returns

The initial Ronco contract line item for technology transfer was $972,025. The actual definition of technology transfer was not clearly stated. In fact, the actual amount expended for technology transfer is considerably larger. This category of expenditure should also include that portion of the contract managed by Kelly Harrison Associates for the consultant services this subcontractor provided. In addition, MALR had expenditures in this category for the broad horticultural extension services it provided to a very large beneficiary group of small holders.

b. Overall Project Cost Benefit Analysis

The project is currently operating with an authorized budget level of $55 million for the period 1996-2001. This sum is $5 million higher than the initial authorized level of $50 million. The original bilateral agreement, signed in 1995, has been amended four times, most recently in December 2001 when the project was extended through September 2002. Despite the several amendments, the project was not subject to a mid-term evaluation. Nor, from the information available to the team, was ATUT subjected to a desk evaluation.

ATUT is one of several interventions in the agricultural sector that addresses SO 16 in the Mission portfolio. In addition to ATUT, USAID also provides support for expanding the role of exports by the private sector in the Egyptian economy. The ATUT project has directly contributed to a significant increase in the value of Egyptian horticultural exports to the European Union and Gulf Region markets. By the close of 2001, the value of these Level One exports (cut flowers, fine green beans, strawberries and table grapes) had reached $141 million. This represents a return of slightly more than $2.56 for each project dollar invested.

While there are no comparable activities in the Mission portfolio with which to compare ATUT, two smaller initiatives (Care and Africare) might offer a basis for gross cost comparisons because their activities are also directed to fostering entry into the export market for some of the same crops that are targets of the ATUT project. Interestingly, the investment costs for the farmers growing the same crops are similar despite the differences in scale and geographic location of the projects. But it should be kept in mind that the smaller projects are also direct and indirect beneficiaries of ATUT expenditures for technical assistance, e.g., for extension services and transfer of technology in the area of cultivation techniques and GAP requirements.

The Mission portfolio does not contain any activities that are similar to those financed by ATUT. Obviously, there is some similarity in cost categories across organizational categories, e.g., consultants, salaries or subcontracts. As the team now understands the position of USAID/Egypt, the ATUT project will not be continued beyond September of the current year. Thus, in cost-benefit terms, it is difficult to envision a situation that would provide a basis for meaningful estimated costs of alternative uses of USAID financial assistance. Conceivably, if

time were available, one might consider comparisons of costs among the several horticultural crops that benefited from direct ATUT support.

9. Sustainability

Project achievements affecting those beneficiaries who were the recipients of the majority of technical assistance from the activity (large and medium scale producers) have been institutionalized within their commercial operations and should be sustainable.

Many of the initiatives put forth in general support of the horticultural industry, including those in the area of transportation, cold chain improvement, market development and others, will only be sustainable provided industry groups such as HEIA and its affiliated associations continue to receive the support required for their continued strengthening and organizational development and if the results are disseminated to a much broader audience than the current ATUT/HEIA clientele.

The most valid indicator of the sustainability of project private sector initiatives is the growing capability for assuming industry service responsibilities that is being evidenced by HEIA. For example, the technical assistance activities formerly carried out by ATUT Ronco in behalf of the larger table grape producers have already largely been taken over by HEIA, as have the quality assurance function and activities benefiting women in horticulture. It is the considered judgment of the team that HEIA, with interim support from USAID, will in the next several years mature into a position of horticultural industry leadership that will enable the association to help continue to carry forward most of the private sector ATUT initiatives.

There appears to be a very large and continuing demand from newer and smaller-scale horticultural producers for the technical services provided by the various ATUT Working Groups. The groups have obviously been filling an otherwise unmet need.

The MALR is reportedly considering placing the Working Groups under the administration of the Exporters Union, a quasi-independent trade association sponsored by the Federation of Egyptian Chambers of Commerce, once the ATUT project ends. While this could lead to the sustainability of this particular ATUT activity, four important factors should be considered when planning this shift.

- Careful analysis should be made to determine whether the Working Groups should continue to primarily fulfill a technical extension role, or whether the senior research personnel who make up the majority of the groups' membership would better utilized to help translate farmer needs into more demand-driven research planning and implementation.
- Measures should be instituted to improve planning, monitoring and accountability for working group results.
- The working group leadership should be made responsible for recruiting younger research institute and academic personnel for the groups, in order to train more professionals to provide technical services to farmers and to ensure succession within the groups.
- One of the important strengths of the Working Group system has been its access to current technology provided by the ATUT Ronco technical specialists. Unless similar access can be maintained in some fashion, the relevance of the groups will tend to rapidly diminish (perhaps HEIA can be of service in this respect).

The budget for the ATUT extension component is being provided by the Ministry in the form of project counterpart funds, with the exception of a travel allowance for extension personnel involved in the program. It is assumed that the Ministry will continue to fund this effort in the absence of ATUT.

The ATUT web site and data base are well worth continuing. The key concern here is finding a home for these components with an organization that is financially capable and willing to ensure that the data base and the web site are maintained and updated in a timely fashion. Otherwise, both will shortly become obsolete.

The Egyptian Export Promotion Centre (EEPC) in mid-2002, with the assistance of the USAID-funded Agricultural Policy Reform Program, was in the process of installing a trade data base and web site. There has been some discussion between ATUT and EEPC concerning the integration of the ATUT web site and data base with those of the Promotion Centre.

The EEPC recently announced plans to convert from a government agency under the jurisdiction of the Ministry of Foreign Trade, to a semi-privatized trade promotion organization modeled along the lines of the Japan External Trade Organization (JETRO). The Japanese government is providing technical assistance to further this move. There has also been some discussion of merging the Exporters Union with the newly reconstituted EEPC. These moves would appear to make even more logical the incorporation of the ATUT market information data base and web site into the new EEPC.

The ATUT project published a large number of reports during the course of the project. These reports constitute a valuable technical resource for the horticultural industry. ATUT staff are presently putting the reports on CDs. USAID should encourage and monitor this activity. USAID should also ensure that every effort is made to translate the ATUT MacIntosh data bases to a form that is compatible with PCs.

The use of CDs to reproduce the ATUT publications and data will enable multiple copies to be made at a relatively low cost. The MALR will almost certainly wish to retain one set. Another set should be lodged with HEIA and a third (at least) with the USAID Mission until such time as USAID ends its tenure in Egypt.

C. Conclusions and Recommendations

1. ATUT Results

The ATUT project has begun a process of institutionalizing improved systems and procedures for the design, implementation and monitoring of needed industry interventions, in concert with related actions by ALEB and APRP. This is a reflection of the growing .convergence of interests among the various private sector actors who see increasing potential for growth in export markets.

Project beneficiaries have developed skills in advocacy for common interests. Thus, HEIA is working in cooperation with groups such as ESAS and the ACC to address specific legislative and regulatory impediments.

In addition, ATUT has helped improve the capability of a growing number of smallholders to produce commodities that have substantial potential for the export market. Over time, this latter development can contribute to an increase in direct exports by organized groups of smallholders as well as expanding the supply of exportable commodities available to larger grower-exporters and exporters. The successes achieved by Africare, CARE and ACDI-VOCDA

in improving the quality of smallholder horticultural produce and their introduction of selected smallholders to export markets indicates the very real potential for further developments along these lines.

To improve SO-wide coordination and collaboration, the Mission should review its approach to managing the multiple activities it organizes under a given Strategic Objective. It may be necessary to require greater harmonization of operational and financial management systems among the projects grouped under a single SO.

Mission management has to play a more active role in securing collaboration among its funded activities. The Team believes that a greater acceptance of responsibility must be taken by the Mission, because it is in the best position to maintain the coherence and integrity of the vision that informs the pursuit of its Strategic Objectives.

The project, through HEIA, has collaborated with the European Union's farm credit facility Multi-Sector Support Program (MSSP) in addressing some of the problems related to the need for credit among smallholders who want to move into horticultural production for the export market.

2. The Horticulture Sector

The larger producers and producer exporters who represent the primary beneficiaries of the technology transfers from the Ronco subcomponent have, largely due to these transfers, reached a point of sophistication where they need more specialized technical assistance that focuses on providing in-depth technical solutions to specific production and postharvest problems. The Ronco subcomponent has utilized long-term technical specialists whose services were supplemented by a series of short-term and intermittent consultants. Each of the Ronco specialists was expected to service a relatively large number of grower clients (an average of 20 each), and to provide a broad range of technical advice to these clients.

Most of the clients have now reached a point where they no longer require basic technical information provided by a crop generalist. Instead, their primary need is for more narrowly focused technical consultants who can devote more attention to individual technical problems. The services of these consultants, because they are focusing on specific problem, are not required for extended periods. Because of their changing needs, many of the former Ronco clients are beginning to employ technical consultants directly, on a commercial basis, as well as turning to HEIA to help them identify and recruit such consultants.

One of the major challenges to the future of the Egyptian horticulture export industry during the next few years will be to integrate large numbers of small and medium-scale growers into the industry in order to expand export availability, while at the same time maintaining and improving product quality to meet export market demand. The accomplishment of this task is made more difficult by the impending imposition of EurepGap.

Integrating the required numbers of small and medium-scale producers into the export sector will require extensive provision of technical services as well as significant improvements in infrastructure. ATUT was not set up to provide this magnitude of services, nor could any donor project accomplish this, due to the financial and manpower resources required. These disparate needs dictate the design of a new approach for donor support to the horticulture sector.

D. Recommendations for Future Support Activities[6]

1. Recommended Changes in Approach

It is the understanding of the team that the ATUT project will end in September 2002 or shortly thereafter, and that USAID will subsequently sponsor a follow-on project in support of the horticultural sector. Following are some preliminary team recommendations regarding the design and structure of any future USAID support to the sector. These recommendations include some fundamental changes in USAID approach to supporting the Egyptian horticulture sector.

a. Private Sector/Government Partnership

The implementation of donor supported programs should be transferred to the private sector with the government providing policy and infrastructure support and acting in a monitoring capacity. While government must remain involved as an important partner, the private sector has advanced to the point where it is now capable of determining its own destiny. Vesting project decision-making in the hands of the private sector will help ensure both the utility of the project to industry and its sustainability.

b. Flexible Funding Arrangements

The horticulture sector has undergone rapid and far-reaching changes during the ATUT period. The industry will continue to change, in ways that may not now be evident. New challenges as well as new opportunities will be encountered. The funding provisions for any new donor support program should be structured in such a way that the industry can effectively address these new challenges and opportunities.

The project design should include a minimum of specific subcomponents. Instead, the design should specify objectives and parameters for funds utilization. During the course of project implementation, funds would be committed to specific activities based on the presentation by proponents for those activities of comprehensive proposals detailing the purposes for which the funds will be used and the benefits to be derived from such use.

Eligible proponents would include trade, commodity and farmer associations, and NGOs. Proposals would be evaluated by a project steering committee with membership composed of representatives from the relevant trade associations and related interests including NGOs and others, with oversight participation by USAID and Government of Egypt representatives.

A project secretariat should be established within a qualified trade association to administer the fund disbursal, monitoring and evaluation processes (the responsibilities of the secretariat should not include fund allocation). The only trade association that is currently qualified in terms of leadership, vision and managerial capacity to act as a fund secretariat is HEIA.

The HEIA secretariat will need to be supported by the new project. This can best be done by locating a project management unit (PMU) within the HEIA organization, staffed jointly by a general contractor and by HEIA, as suggested below. The PMU in addition to its project and fund administrative responsibilities would also be charged with providing on the job training to HEIA counterpart staff, enabling HEIA acquire the professional project management skills that will

[6] The recommendations contained in this section represent the opinions of the Evaluation Team, and do not necessarily reflect the views USAID

enable the association to ultimately become fully responsible for managing future industry development programs.

c. Sustainability

The support program should be set up in such a way that it provides maximum encouragement for the implementation of a user pays concept. Provisions for user payment should be progressive, so that the share of costs paid by the clientele gradually increases during the term of the project, with the ultimate goal of making the program completely self-financing by project end.

Since the private sector participants themselves will be responsible for determining what sort of services are to be offered by the program, the willingness to pay for those services should be much stronger. The participants will support the more successful services, making them sustainable.

d. Leveraging USAID Support

The USAID funding should be presented in the context of seed money, to be utilized to facilitate the development of specific subprojects and the participation of other financing and implementing entities in these subprojects. The USAID seed money might be used for preparation of business plans and feasibility studies, establishment of pilot projects, for providing planning and design services, etc.

2. Specific Recommendations for Potential Future USAID Assistance

a. General Provisions

While the ATUT project has been successful in achieving most of its objectives, a significantly different approach to sector support is suggested for any subsequent USAID project intervention. The entire horticultural sector should be taken into account when designing a new project, including fresh exports, food processing, the domestic market and the various sector support and service industries. These are all essential components of the total horticultural system and as such are interdependent.

A design team for any new horticultural support program should obtain and carefully consider the views of a broad spectrum of sector participants, including but not limited to the Ministry of Agriculture and Land Reclamation, Ministry of Foreign Trade, Ministry of Transport, Ministry of Education, other ministries as applicable, private sector stakeholders representing small, medium and large-scale producers, processors, support and service industries, NGOs involved with the sector and possibly even representative foreign buyers.

Support for improvements in overall smallholder productivity and product quality as well as the integration of small-scale growers into the horticulture export system should constitute an important part of any new project. In order to accomplish this, the types of technical services that have been provided by ATUT-Ronco need to be greatly expanded in order to serve a much larger segment of the farming population, benefit a broader spectrum within the horticulture sector, and continue to foster export development. The optimal approach to doing this will be to support the expansion of all of the smallholder development models presented in Appendix V.

While improving production and harvest practices to increase productivity and improve quality will remain critical, equal emphasis must be placed on upgrading postharvest and marketing techniques and technology.

Two areas of critical importance to the future of the industry that must also be emphasized under a new project are human resource development and policy advocacy. Organizational development is another important issue that should be addressed, particularly in the context of association building. Much more emphasis will also need to be placed on marketing.

A new project should take full advantage of opportunities to leverage its efforts by developing a broad base of cooperation with other entities in the export sector, such as the various components of the Ministry of Foreign Trade. This is an area of opportunity that ATUT did not exploit to any great extent.

One of the key components of the new project should be a program aimed at supporting a concerted effort to accomplish the development of a network of effective business support organizations (BSOs) at all levels of the horticultural industry, from village farmer associations to national umbrella organizations such as HEIA and EAGA.

b. Effective Horticulture Research

Special note should be taken here of the need to develop an effective, demand driven horticultural research system. This area was almost completely neglected under ATUT following the dismantling of the adaptive and collaborative research component. The new project would be well advised to incorporate a strong research development system.

In order to ensure that this component is demand-driven and structured in such a way that it satisfies critical industry needs, it should be implemented on a competitive basis with the award of research grants determined by an independent private sector-dominated board or committee, backed up by resource persons from the research and academic community. Utilizing the Special Activities Fund and project steering committee structure suggested below might be an appropriate approach to structuring such a research program.

Private sector proponents would initiate research proposals based on individual and industry needs. The proponent would need to commit to providing a proportion of the research project costs (perhaps 25 percent). Research projects approved by the project steering committee would be advertised and bid out, with qualified public, academic and private sector organizations eligible to bid for the conduct of the research.

The winning bidder would be selected by the steering committee with the participation of technical specialists selected for their expertise in the particular research field. The research results would be the exclusive property of the private sector co-financier for the first crop cycle, after which they would be disseminated publicly. The proposal could be initiated by a private firm or by an association such as HEIA or EAGA.

c. Facilitating Extension Services

Facilitating the rapid evolution of effective horticultural technical extension services should also be an important concern of the next USAID horticultural sector support program. The rapid and extensive improvement of overall horticultural production, harvest and postharvest technology and practices will be essential not only to expand export markets, but also to maintain

access to current markets, given the advent of quality assurance programs such as EurepGAP Fair Labeling Practices program.

Integrating medium and small-scale producers into horticulture export systems will require the availability of effective technical extension services. There are several approaches to providing these services. Given the magnitude of the task, most or all of the following approaches will need to be applied. (See Appendix V for a more in-depth discussion of this subject):

- Grower-exporters and exporters provide technical extension services to farmer-suppliers in order to ensure that the quality of their commodities meets market requirements (the nucleus enterprise model, which is currently being applied by several HEIA members);
- A medium-scale farmer leases land to smaller family farmers on a crop sharing basis and provides planting materials and technical assistance to help assure crop productivity and quality (this is being practiced to a limited extent in agricultural areas near Cairo);
- A supplier of production inputs extends technical services to small-scale growers producing under contract for an exporter as a means of increasing sales of his inputs (this is already happening within the Africare project in Upper Egypt);
- Small-scale producers of high value horticultural crops organize into formal associations and pay for technical services on a group basis (CARE AgReform beneficiaries are utilizing this model);
- A larger industry association provides technical assistance to small-scale producers as a means of benefiting the industry (HEIA with some ATUT assistance is doing this);
- An NGO utilizes donor and other funding to help provide technical extension services to small-scale growers with the goal of eventually having the growers fully pay for the services (Care, Africare);
- An outside entity trains and upgrades the skills of MALR horticultural extension personnel to make them more effective (CARE, ACDI-VOCA, the ATUT extension component).

All of the above measures are already being applied on some scale within the Egyptian horticulture sector, but they need to be greatly expanded in order to meet current and future industry needs. All of these measures with the exception of the ATUT extension component represent private sector initiatives. A comparison of these various smallholder extension initiatives with the largely ineffective MALR horticultural extension service leads to the obvious conclusion that successful integration of smallholders into the Egyptian high value horticulture industry, including the export subcomponent of that industry, can and should be based on private sector provision of technical extension services.

It will take time, however, for private sector extension services to reach the stage of development required to service all of the technical needs of the horticulture industry. In order to provide a larger capability for providing these services in the interim, there is need to further professionalize MALR horticulture extension services. The experience of CARE and ACDI-VOCA have shown that village level government extension workers can be successfully motivated and equipped to provide professional services to small-scale farmers. One means of doing this might be to establish a special horticultural extension unit, perhaps under the auspices of the MALR Horticulture Research Institute (a component of the MALR Agricultural Research Center). The service could be made up of volunteers seconded from the regular MALR extension service staff.

In order to provide client-based accountability and control, the horticultural extension workers might be attached to specific grower associations, with a small stipend paid by the association in addition to the regular extension salaries. The more capable of these horticultural extension personnel would eventually move into the private extension sector. (This concept is explored in greater depth in Appendix V).

d. Incorporating Information Technology

An important competitive factor for the Egyptian horticulture industry will be the development of an integrated information technology (IT) support system. A program for creating effective modes for utilizing IT should be an important component of the new project. IT will be central to a number of different applications.

(1) Providing Marketing and Technical Information

One of the primary requirements for the future growth of the Egyptian horticulture industry will be a continuing flow of technical and marketing information to large, medium and small-scale producers as well as to exporters and representatives of allied industries (input suppliers, transportation and cold chain facility operators, brokers and exporters and others affiliated with the industry).

The impending end of the ATUT project makes the establishment and operation of an effective technical and marketing information collection and disbursement facility imperative. The goal of this facility should be to collect a much wider spread of information and distribute it to a much broader base of clientele than was done by ATUT.

The information could be packaged into several different levels of detail. More general information could be distributed free of charge through the internet. More detailed information could be distributed on a subscription basis, by e-mail, fax or regular mail. The subscription charges would help defray the cost of the service. Fees would also be charged to distributors of various industry inputs or others who want to be listed on a regular basis on the website. The information would be sourced from the internet, from various commercial sources and from the Egyptian and foreign governments.

Establishing and operating such a service unit would need to be supported initially by project funding. The ultimate goal should be a self-financing entity, however. This service should be combined with the marketing promotion service described in the next section.

HEIA is the only private sector group that currently has the capability of setting up such a service. HEIA would not necessarily have to maintain all of the required data bases for the facility. It has been suggested that the ATUT database be combined with that of the revamped Egyptian Export Promotion Centre. The Centre could maintain the primary data base and make its contents available to the HEIA technical and marketing information service.

(2) Market Promotion

An effective means of attracting export buyers for Egyptian high value horticulture commodities and branded products would be a series of websites representing various horticulture product sellers, including exporters, larger producers and producer-exporters, producer groups, the postharvest enterprises recommended for development herein, food processors and others with horticultural products to sell.

These individual websites should be linked to a master website, established by an organization such as HEIA. The “Egyptian Horticulture World” website would provide general

information about the industry and would provide links to the individual websites maintained by the sellers. Revenues for website operations would be derived from fees charged participants for listing on the master website. This system should be combined with the technical and marketing information system suggested above.

(3) Quality Assurance

HACCP (Hazards Analysis at Critical Control Points) certification has already become a requirement for many of the food products traded internationally. As the EurepGAP protocol, Fair Trade Labeling Initiatives and other international programs combining food safety, sanitation, environmental and worker social considerations become more widely applied, another competitive advantage for the Egyptian horticulture industry will be a program for tracking food products from each farmer's field to the ultimate consumer.

This can be done by assigning an electronic code to each commodity lot at harvest and maintaining the identify of each such lot electronically as it passes through the postharvest, processing and marketing process. This would be similar to the use of a bar code for identifying and pricing wholesale and retail merchandise.

(4) Facilitating Contract Deliveries

Another use of the bar code concept that is widely used in a number of countries to maintain identification of products delivered by contract growers is the use of an electronic card, similar to a credit card, to account for deliveries. As each farmer delivers his commodity to be weighed, the electronic card is "swiped" and the weight and value of the commodity lot entered electronically.

The resulting information is transmitted immediately by electronic means to a bank or other paying entity. The farmer then uses his electronic card as a means of identification to withdraw the funds owed to him for the delivery or to transfer the funds to a savings or billing account or other destination. This system is particularly useful when many smaller lots are being received regularly from small producers, with these small lots often being mingled on the same delivery truck. It also removes the necessity for the buyer representative to carry cash in the field, which might be hazardous in some areas.

There are many other areas of potential agricultural IT applications in addition to the sampling mentioned above. One of the substantial contributions that the next USAID horticultural support program could make would be through the conduct of a comprehensive study to determine which of these IT applications would be practical and beneficial to the Egyptian horticulture industry.

e. The New World of Biotechnology

One of the most important current influences on the production and marketing of agricultural products has been the development by plant scientists of "transgenic" techniques for designing new crops by splicing together particular genes rather than depending on the hit or miss plant breeding techniques that have been followed for the past several hundred years. This influence will be felt even more strongly in coming years.

The issue of genetically engineered food is still highly controversial. The proponents and the opponents are bitterly divided. Depending on which side of the divide is being heard from, crop engineering is either the solution to resolving world hunger and a ensuring a sustainable environment or is a harbinger to opening a Pandora's Box of threats to human health and the ecology.

Despite the controversy, crop engineering, with proper safeguards imposed, will continue to develop rapidly. Not only do transgenic advances hold the potential for reducing global hunger and reducing the amount of pesticides used to produce food products, but they will eventually also serve to improve the nutritional content and flavor of various foods. For agricultural smallholders, crop engineering promises to make their crops more productive and enable them to produce more from degraded land such as soils with high salinity.

Bio-engineered foods are here to stay and will become increasingly prevalent. It will be crucial for Egypt to develop and utilize the appropriate policies both in respect to the importation and use of genetically altered foods and to meet regulatory and market standards in the important foreign markets for Egyptian horticultural products.

One component of the USAID-funded ATUT project was the issuance of grants to the Agricultural Genetic Engineering Institute (AGERI), a sub-entity under the Agricultural Research Center (ARC) of the Ministry of Agriculture and Land Reclamation. AGERI is effectively carrying out a research program directed at bringing Egyptian agriculture up to date in the field of genetic crop engineering. The work of AGERI, however, needs to more explicitly address issues of concern to the private sector horticulture industry on the one hand, and be positioned in such a way as to have a more direct influence on government policy makers on the other.

In terms of a new USAID horticultural support project, means should be found to insert more private sector concerns into the AGERI program planning process. The private horticulture sector should be thoroughly briefed on the potentials and perils of genetic crop engineering and the implications for the industry, as well as assisted in developing and implementing an effective policy advocacy capability in this area.

3. Structuring A New USAID Horticulture Support Activity

Following is a brief summary of the recommendations of the Evaluation Team for the most effective structure for any new USAID horticulture support project

a. Private Sector Implementation

In order to achieve optimal results, any new USAID horticulture industry support project should be designed in such a way that project activities are selected and implemented by the private sector. This will help to ensure that the project effectively meets industry (private sector) needs and at the same time is sustainable on a continuing, long-term basis.

It may be necessary for the project to be affiliated with a government agency until HEIA and other associations can be strengthened to the point where they are capable of playing a pivotal industry development role in addition to meeting their own organizational responsibilities. When that point is reached, USAID should seriously consider establishing a permanent institution (endowment fund, foundation) to provide a financial base for future industry development activities.

The two Egyptian government agencies that will be most closely aligned with goals and activities of the new project are the Ministry of Agriculture and Land Reclamation (MALR) and the Ministry of Foreign Trade. While it will be important for the project to work closely with both of these Ministries, the current political realities make it inadvisable for the project to be attached to either one. A workable compromise might be to affiliate the project with the Ministry of International Cooperation and, through USAID, initiate Memorandums of Understanding or Agreement (MOU or MOA) with MALR and Foreign Trade to cover their cooperation. The latter two Ministries should also be members of a Project Steering Committee.

A qualified American consulting firm would be contracted by USAID to take administrative responsibility for the Project Management Unit (PMU). The PMU would be housed with HEIA, which is presently the only one of the relatively new agricultural sector associations with the organizational capability of playing this role.

Each of the expatriate PMU staff would have a HEIA counterpart who would work closely with the staff member on a full-time basis. Each short-term technical consultant would also be assigned one or more local counterparts from the HEIA staff, other private sector sources, or from universities, research institutes or an appropriate government department. This approach is also designed to help develop HEIA capability to manage an ongoing sector development program.

The contractor would be expected to function with a relatively small administrative staff made up of management advisors, possibly a chief of party/management and organizational development advisor (preferably with agribusiness experience), a financial systems advisor (preferably with NGO fund-raising experience), a training and human resources development advisor and a marketing systems advisor. Technical specialists would be brought in on a short-term, as-requested basis to fulfill industry and HEIA technical assistance needs.

The PMU would be responsible for:

- The administrative details of the project;
- Providing on-the-job training for matching HEIA management and staff counterparts;
- Helping identify and recruiting various technical specialist (local and expatriate) on an as-needed basis;

b. Monitoring, evaluation an reporting

The horticulture sector is undergoing rapid change. The traditional approach to project design, consisting of incorporating specific activities at the outset and assigning a fixed budget to these activities, is not the most effective means of meeting future industry needs. Meeting these needs will require a high degree of project flexibility.

Rather than spelling out discrete components that will be in place for a five or six-year period, the project design should incorporate objectives (expected results) and acceptable parameters for implementation, with sub-projects to be defined according to changing industry needs during the course of the project, with these needs to be determined by the industry (private sector) participants.

This can best be done by providing the majority of project activity financing in the form of a Special Activities Fund (SAF) which will be available to any industry group affiliated with the horticulture sector, including associations of producers (large, medium, and small-scale), processing industry associations, and groups from other horticulture-related industries (associations rather than individual firms or farms). The groups will be required to submit proposals detailing the projects for which they seek to receive SAF funding.

A steering committee representing various private sector interests (primarily associations) and with ex-officio (oversight) membership from the relevant government departments and USAID, would be selected through a consultative process and with USAID concurrence to oversee the project. The steering committee would evaluate and accept or reject the proposals based on criteria to be established by the committee in consultation with USAID, the government

and the committee members. Steering committee directors and members would be rotated on a regular basis to ensure that no special interest group becomes entrenched.

Proposals could encompass a wide range of activities of benefit to the sector, such as hiring of short-term technical consultants to service industry groups, support for organization and training of small farmers for the purpose of entering into a nucleus enterprise arrangements with buyers, design and partial construction costs for common use postharvest facilities, technical training courses, establishment of market intelligence and market information systems and others, possibly including, as suggested above, a facility for funding client-directed research.

All activities would be supported by the SAF on a progressive cost-sharing basis, with the proportionate share of costs adjusted according to the purpose of the activity to be supported and with the eventual goal of full cost recovery once the industry/activity has advanced to the stage of development where this is possible.

The money provided by the SAF would insofar as possible constitute seed money, with co-financing of selected activities to be solicited from other sources (other donors, foreign investors, commercial banks, private agribusiness companies, NGOs, etc.).

Numerous details will have to be worked out by a project design team in order to justify the suggested project design and to develop strategies to make the system workable, including ensuring that small as well as larger scale producers will benefit. At this point, however, it is the considered recommendation of the team that empowering the private sector to direct the implementation of any new horticulture support project represents the optimum approach for providing maximum benefit to the sector as well as for achieving long-term sustainability.

E. APPENDICES

I. Selected References

Analysis of Agricultural Trade in the European Market—Implications for the Near East, U.S. Department of Agriculture, Washington, D.C., Oct. 1993

Amendment to Project No. 263-0240, Agriculture Technology Utilization and Transfer Project, U.S. Agency for International Development, Jan. 1992

Arab Republic of Egypt, Toward Agricultural Competitiveness in the 21st Century, World Bank, Cairo, Egypt, Dec. 2001

Country Report, Egypt, The Economist Intelligence Unit, London, U.K., Aug. 2001

Dale, Heather, Status Assessment of Agricultural Research and Extension Reform, Agriculture Policy Reform Program, Cairo, Egypt, Cairo, Egypt, Dec. 2001

Delouche, Dr. James C., Improving Access to New and Improved Vegetable Varieties, Agriculture Policy Reform Program, Cairo, Egypt, Sept. 2000

Delouche, James, Legislative, Regulatory and Service Framework for the Egyptian Seed Industry, Agriculture Policy Reform Program, Cairo, Egypt, Mar. 1998

Egyptian Export Promotion Centre, EEPC A New Horizon, Ministry of Trade and Supply, Cairo, Egypt

Fisher, William, Agricultural Sector Assessment (Draft), Agriculture Policy Reform Program, Cairo, Egypt, Cairo, Egypt, Apr. 2002

Harrison, Kelly, European Export Market Analysis for Five Egyptian Horticultural Crops, Kelly Harrison Associates, Cairo, Egypt, Aug. 1994

Implementation and Financial Plan Oct. 2001-Sept. 2002, Agricultural Technology Utilization and Transfer Project, Cairo, Oct. 2001

Jabarin, Dr. Amer, The Third Annual Monitoring Report: Mid Term Evaluation, Agricultural Technology Utilization and Transfer Project, Cairo, Egypt, Jun. 2000

Krenz, Dr. Ronald D., Horticultural Sub-Sector Map, Agriculture Policy Reform Program, Cairo, Egypt, Jun. 1998

Litschauer, John, An evaluation of the Agricultural Technology Utilization and Transfer Project, Agricultural Technology Utilization and Transfer Project, Cairo, Egypt, Nov. 2001

Memorandum of Understanding Between The Arab Republic of Egypt and the U.S. Agency for International Development, Tranche IV, The Agricultural Policy Reform Program, Cairo, Egypt, Sep. 1999

Memorandum of Understanding Between The Arab Republic of Egypt and the U.S. Agency for International Development, Tranche V, Cairo, Egypt, Jul. 2001

Mageed, Dr Eid M.A., Intellectual Property and Technology Commercialization Office (IPTCO): Operations Manual, Agriculture Policy Reform Program, Cairo, Egypt, Nov. 2001

Market Oriented Development for Major Horticultural Crops in Egypt, Grapes Vol. III, National Agricultural Research Project, Cairo, Egypt, May 1994

Market Oriented Development for Major Horticultural Crops in Egypt, Tomatoes ol. V, National Agricultural Research Project, Cairo, Egypt, May 1994

Market Oriented Development for Major Horticultural Crops in Egypt, Citrus Vol. II, National Agricultural Research Project, Cairo, Egypt, May 1994

Market Oriented Development for Major Horticultural Crops in Egypt, Potatoes Vol. IV, National Agricultural Research Project, Cairo, Egypt, May 1994

Nelson-Kluk, Susan, Promoting the Propagation of "True to Type" Grape Planting Stock, Agriculture Policy Reform Program, Cairo, Egypt, Dec. 1999

Poulin, Dr. Roger, An Economic Valuation of Public Sector Seed Production: Privatization, Legal Strategies, and Policy Issues, Agriculture Policy Reform Program, Cairo, Egypt, May, 2001

Pietrus, Joseph, Horticulture SubSector Policy and Regulatory Constraints, Agriculture Policy Reform Program, Cairo, Egypt, Jan. 1999

Quemada, Dr. Hector, Regulating the Commercialization of Transgenic Plants for Food and Feed in Egypt: Food Safety Assessment, Agriculture Policy Reform Program, Cairo, Egypt, May 2001

San Martin, Tessie, Workforce Development Strategies, Agribusiness Cluster Report, Price Waterhouse Coopers, Cairo, Egypt, Jan. 2000

Sawan, Dr. Omayma, The Annual Report of the Achievements of the Organic Farm Group 1999-2000, Agricultural Technology Utilization and Transfer Project, Cairo, Egypt

Syntheses Policy Briefs, Agriculture Policy Reform Program, Cairo, Egypt, Mar. 2002

Swanberg, Dr. Kenneth, Horticulture Competitiveness Study: Green Beans and Potatoes, Agriculture Policy Reform Program, Cairo, Egypt, Cairo, Egypt, Apr. 2000

Technical Proposal for Extension of Contract 263-0240-C-00-6053-00, Ronco Consulting Corporation, Cairo, Egypt, Aug. 2001

USAID/Egypt Strategic Plan FY 2000-2009, Advancing the Partnership, U.S. Agency for International Development, Cairo, Egypt, Feb. 1997

Westley, John R., Project Paper, Agriculture Technology Utilization and Transfer Project, U.S. Agency for International Development, Cairo, Egypt, May 1995

York, E.T., A Revitalized, Better Coordinated, and More Effective Agricultural Extension System for Egypt, Tropical Research Development, Inc, Gainesville, Florida, Aug. 1994

II. Principle Contacts

Alexander, Louis, Asst. Country Director, CARE Egypt
Al-Shiaty, Eng. Hamed Ahmed, Chairman, Shoura Chemicals
Anderson, Douglas, Marketing Director, ALEB
Basioney, Ibrahim, Director, United Co. for Food Industries
Bibawi, Sameh Y., General Manager, Yona Import-Export
Burgstaller, Dr. Heinz, Team Leader, GTZ
Deuvletian, Roupen, Owner/manager, Florabel
El-Basyoumy, Mahmoud Helmy, Director, Floramix
El Beltagy, Sherif, Secretary General, HEIA
El Din, Dr. Osama Khier, President, Agricultural Commodity Council
El Eraky, Mohamed S., Export Services Manager, Orouba Agrifoods Processing
El Ghandour, Dr. Mohamed Adel, Director, Centech
El-Kolaly, Hani, Executive Director, HEIA
El Komsan, El Sayed M. Abu, First Under Secretary, Foreign Trade Sector
El-Nagger, Samir, Chairman, Daltex
El Seoud, A. Mokhtar A., President, Global Trading Company
Millie Gadbois, Country Rep., Africare Egypt
Elshobaki, Dr. Farouk, President, Trade Export Agencies
Fahmy, Gamal El-Din, Professor, Cairo University
Gleason, Jane, Chief of Party, APRP
Haraz, Eng. Mokhles, Owner, Haraz Farms
Harrison, Kelly M., Managing Director, Egyptian Sun for Agricultural Development
Karim, Dr. Manal, Head of Research and Markets, Egyptian Export Promotion Center
Kassem, El Said, First Undersecretary, Ministry of Foreign Trade
Korra, Eng. M. Ayman, President, Consukorra
Lewis, Jerry, Vice President, ACDI VOCA
Madkour, Prof. Dr. Magdy A., Vice President, MALR Agricultural Research Center
Mahdy, A., Director, Audreian Flowers
Marei, Hassan, Owner, Marei Nurseries
Mosaad, Mowafak, Managing Director, Orouba Agrifoods Processing
Nashrallah, Khalil, Executive Manager, Wadi Food Processing Company
Omar, N. Ali, Executive Assistant to the Chairman, PBDAC
Ragab, Eng. Zarkaria, Project Manager, Mobarak-Kohl Project
Rashed, Sherif H., Executive Manager, Agricultural Commodity Council
Rimmen-Mohl, Ghislaine, Commercial Attache/Food and Agriculture, Embassy of France
Salem, Dr. Mohamed Hamdy, Executive Director, Egyptian Export Promotion Centre
Soliman, Samir Sedky, Project Manager, CARE Egyp

III. Horticulture Sector SWOT Analysis

The following SWOT analysis represents an amalgamation of Evaluation findings and more formal SWOT analysis exercise carried out by HEIA. Strengths

- Egypt has a very significant comparative advantage in the production and export of high value horticultural products, based on location, agro-climatic conditions, availability of land and water, and market access due to counter-seasonal production.
- The horticultural sector assisted by ATUT and other USAID projects is beginning to translate that comparative advantage into competitive advantage at the individual farm and agribusiness firm level.
- The larger grower-exporters served by ATUT, have become relatively sophisticated in production and marketing, and in order to increase their output, they are increasingly willing to help extend their knowledge to smaller-scale growers.
- The industry is also becoming increasingly cohesive, through the growth of trade associations such as HEIA.
- Horticulture crops are more valuable than other crops and use less water per volume and value of production; this is important given projections of potential shortfalls in water availability during the coming decade.
- There are unutilized and underutilized opportunities to expand horticultural production

Weaknesses

- Shortage of essential skills at all levels within the agribusiness sector, due in large part to the deficiencies of the education system.
- Low productivity of Egyptian labor compared with that of competitors.
- Lack of knowledge/failure to apply proper harvest, postharvest and marketing practices.
- Inadequate postharvest and marketing facilities for horticultural crops (packing/packaging, cold chain, transport, etc.).
- Poor infrastructure management.
- Absence of efficient market intelligence/market information systems/facilities.
- Cultural bias toward women working after marriage (exists primarily at rural lower socio-economic levels).
- Onerous customs procedures.
- Older lands are subject to high level of infestation from soil borne pests and diseases.
- GAP compliance delayed due to lack of national strategy.
- Lack of organization among small farmers.
- Imbalance in the relative influence between small farmers and traders over costs, prices and marketing decisions.
- Unwillingness of certain government officials/managers to abdicate commercial decision-making in favor of the private sector

- Some remaining problems in sourcing imported planting materials and other agricultural inputs, including government restrictions on testing of seed and pesticides.
- Still too many instances of failure to meet foreign buyers' quality standards.
- Insufficient volume of export quality horticultural commodities available to significantly influence most markets.
- Insufficient linkages between researchers and producers; lack of practical experience and lack of understanding of producer problems on the part of most researchers.
- Ineffective extension services.
- The general antipathy that persists between the government and the private sector in Egypt; this makes it difficult to forge a fruitful partnership in which the capabilities of the two sectors can be exploited for the benefit of both the industry and the nation.
- The lack of cooperation among different government agencies.
- Land tenure problems associated with slow registration leading to inability to use land for collateral.
- Not enough investment in food processing.

Opportunities

- There are immense opportunities for increasing the export of high value Egyptian horticultural commodities (see above Strengths).
- There are also very substantial opportunities for growth in the processing industry and for increasing exports of processed foods.
- A major opportunity also exists for producing and exporting organically and naturally grown food products.
- There are also growing opportunities for providing high quality horticultural products to the domestic market represented by supermarket and fast food chains, up-market restaurants and five-star hotels.
- The devaluation of the pound has made Egyptian exports more competitive.

Threats

- Failure to implement EuropGAP requirements.
- Difficult and time-consuming procedures for registering new varieties combined with IPR and royalty issues.
- Low worker productivity.
- Difficulty of attracting foreign investment in the sector,
- Lack of funds at reasonable interest rates.
- Competition in the domestic market that is being fostered by trade liberalization.

IV. Commodity/Industry Profiles

A. FINE GREEN BEANS

Introduction

Prior to the startup of the ATUT project, Egypt was an important supplier of "bobby" beans (larger stringless green beans) to markets in the European Union (EU), with exports of approximately 17,000 tons annually. As part of their priority export crop selection process, ATUT decided to introduce fine and extra fine green beans (smaller beans), which command a significantly higher export price than bobby beans.

The main suppliers to the European fine green bean markets were Morocco, Spain, Kenya and Uganda. Egypt has a freight rate advantage over the other suppliers with the possible exception of Spain. ATUT technical specialists understood, however, that extensive technical assistance in the areas of varietals research, production technology and harvest and post harvest handling practices would be required in order to provide the volume and quality of fine beans required to successfully compete in European markets.

Identification of fine green bean varieties that were both acceptable to European buyers and adapted to Egyptian agro-climatic conditions was the initial requirement for building a fine green bean export industry. ATUT tested some 50 imported varieties, from which three French varieties were selected as being most suitable. These varieties were introduced to existing green bean growers. While ATUT technical assistance was concentrated primarily on 24 larger growers with five feddans or more (one feddan is roughly equivalent to one acre) a large number of smaller growers (one to two feddans) were also included. Some 85 percent of Egyptian green beans are produced by approximately 40,000 Egyptian smallholders.

There were basically no fine green bean exports prior to 1998. Shipments of fine green beans in 1999/2000 amounted to 4,300 tons valued at approximately $10 million, increasing to 12,300 tons worth $28 million in 2000/2001. Total exports of Egyptian fine green beans to the E.U. in 2001-2002 are projected to exceed 19,700 tons with a total export value of $23 million. Total area planted to fine green beans in 2001/2002 is estimated to be approximately 3,000 feddans, compared with 1,100 feddans in 1999/2000 and essentially no plantings before 1998. Some 65 percent of the total crop was exported during the 2000/2001 growing season, compared with 35 percent in 1999/2000.

Starting in 1999, ATUT has been responsible for creating an essentially new export industry for fine green beans. According to ATUT projections of total growth potential, by 2012 Egypt could be producing as much as 300,000 tons of fine green beans, worth $500 million, with the majority for export. Actual production will of course depend on Egypt's ability to develop markets for this production.

Technology Transfers and Technical Assistance

The majority of fine green bean technical assistance was provided by the ATUT Ronco contractor and the Green Bean Working Group. From 1999 to date, some 760 technical assistance visits were made to larger green bean farmers and 85 visits to smaller farmers. During 2001/2002 the technical services provided to smaller growers was significantly expanded.

These included provision of technical assistance to small scale grower exporters being assisted by an international NGO, Africare, in Upper Egypt, through 15 technical assistance visits from Ronco specialists. In addition to individual farm visits, some 538 farmers benefited from six

green bean production and postharvest seminars. A total of 2,415 feddans of green beans were produced under the supervision of the ATUT project during this period.

The other project element that provided technical assistance to small-scale green bean farmers was the ATUT extension component. This component utilized Scientific Committees composed of academics and research scientists to train horticulture extension workers who in turn provided technical assistance to smallholders. According to Scientific Committee Reports, the ATUT extension component during the period 1996 through 2001 provided technical assistance to some 17,000 small-scale green bean growers farming more than 32,600 feddans (it should be noted that the majority of the growers serviced were not producing fine beans and were not involved in exports).

ATUT only provided the Evaluation Team with any detailed information on the activities of the extension component shortly before the team's departure from Egypt. Due to lack of time, the team therefore was unable to validate or even properly evaluate or the following claims.

Table III-1. Extension Component Results, Green Beans, 1997-2001

Year	Govenorates	Farmers	Technology Transfer	Village Extension Workers	Science Committee Visits
1997/1998	4	4,778	15	26	6
1998/1999	4	3,184	10	36	4
1999/2000	4	2,971	10	33	4
2000/2001	4	2,685	9	48	3

SOURCE: ATUT Extension Programs Report 01 – 5/11/2001

Table III-2.

Year	Governorate Area (Feddans)	Total Area (Feddans)	% of Area Covered by Project	Total Number of Growers	Total Growers Covered	% of Growers Covered
98/99	16,699	3,603	21.5	6,659	3,184	47.8
99/00	10,829	4,162	38.4	6,811	2,971	43.6
00/01	9,860	3,432	35.5	11,322	2,685	23.7
Average	12,462	3,732	31.8	8,264	2,140	38.3

SOURCE: ATUT - 2002

Specific Technical Assistance Accomplishments

Varietals Trials

During 1997/1998, the ATUT/RONCO staff introduced 28 new varieties of extra fine green beans for field trials, primarily to identify varieties that might have potential for increased production of fine green beans for export. The varieties tested yielded an average of three to nine tons more per feddan than traditional bobby bean varieties. In 1999/2000, ATUT conducted additional field trials of nine French fine green bean varieties, resulting in average yields 6.5 tons higher than traditional varieties.

Trials conducted in 2001/2002 with newer French green bean increased average yields by eight to nine tons. The overall average increases in yields from the various varieties tested amounted to some 300 percent over the traditional bobby bean varieties. The Paluista variety of French fine green beans, which has been adopted by a large number of bean farmers, provides average yields of nine tons per feddans compared to older bobby varieties that yield an average of three tons per feddan.

Bed Preparations and Irrigation

Early in the program, soil problems were identified as significant constraints to green bean productivity and quality. The soil was commonly fertilized using cow manure, which did not provide a proper level of nutrients and led to nematode infestation. ATUT recommended substituting chicken manure in order to raise nutrient levels and limit the introduction of nematodes.

Soil pH was also found to be unsuitable for optimum green bean production. ATUT introduced sulfur to balance pH, which also resulted in reducing the incidence of soil borne fungal organisms.

ATUT recommended 15 meter long raised plant beds to substitute for the very long planting beds traditionally utilized by Egyptian growers. This helped improve the distribution of irrigation water and resulted in reduced soil salinity. Two and four line drip irrigation systems were introduced to improve water utilization.

The ATUT-sponsored field trials also demonstrated the feasibility of increasing plant density from the previous 25,000 plants per feddan to up to 48,000 plants. This simple expedient alone resulted in greatly increased productivity.

Plant Nutrition

Farmers in Egypt, as in most other developing nations, typically apply high levels of nitrogen fertilizer in preference to more balanced fertilizers, due to the lower cost. Over time this practice can result in significant reductions in productivity as crops receive too much nitrogen and too little of the other nutrients required for optimum plant growth. ATUT technical specialists were able to demonstrate to farmers increases in productivity resulting from correctly balancing soil nutrients in combination with properly adjusted soil pH levels.

The ATUT advisors also provided advice on the correct timing for applying fertilizers according to the stage of growth for each crop. Foliar fertilizer applications were introduced as an alternative method of applying minor nutrients.

Insect Control/Integrated Pest Management (IPM)

Egyptian farmers were largely unfamiliar with IPM prior to the advent of the ATUT project. ATUT introduced low impact chemical treatments and the use of botanical pest control to replace traditional chemical treatment. This approach is vital to maintaining and increasing fresh produce exports to traditional Egyptian markets, particularly with the advent of the new EurepGAP requirements.

Farm managers and pesticide applicators were also trained in the identification of beneficial and harmful insects, in order to reduce unwarranted pesticide applications. Insect scouting techniques were also taught to assist farmers to identify the type and concentration of insects infesting their crops. This also helped reduce unneeded pesticide applications.

Harvest Techniques

Estimates of crop losses during harvest developed by ATUT technical specialists graphically illustrate the need for training farmers in proper harvest techniques. Some of the harvest techniques introduced by ATUT include:

- Selective harvesting to eliminate retention of immature or damaged bean pods;
- Leaving the calyx intact to meet export requirements;
- Proper handling to reduce damage to the beans during harvest;
- Increased frequency of harvesting in order to market beans at the correct stage of maturity;
- Training of harvest crews to increase productivity (average harvest per worker per day increased from 30 kg. of beans to 50 kg. after training);
- Training in proper after harvest storage techniques.

Field Pre-Cooling and Cold Storage

Prior to ATUT, there were only four field pre-cooling units in use in Egypt for cooling vegetables immediately following harvest. As of early 2002, more than 53 additional pre-cooling units had been constructed at 21 farm sites, increasing cooling capacity by more than 600 percent. Three new cooling units are under construction, including a postharvest center with cooling and refrigerated storage capacity being constructed by the Africare project in Upper Egypt. Two additional postharvest centers with pre-cooling and cold storage facilities are being planned by HEIA.

ATUT introduced a small pilot unit for field pre-cooling of harvested green beans in the Fayoum area. This type of simple installation can be a very useful adjunct to the more elaborate postharvest centers recommended in this report. Pre-cooling immediately following harvest helps reduce the dehydration that is a major cause of lower quality and lower prices for green beans in export markets.

Green beans stored outside in average ambient temperatures of 25.6° at 46 percent relative humidity can lose up to 90 percent more moisture through dehydration than beans stored in humidity augmented cooling facilities. Under traditional harvest and post harvest handling conditions, green beans remain under ambient temperatures and humidity for an average of six to 12 hours before they are packed and shipped. This leads to substantial losses in quality and value.

Loss Levels

Losses in Egyptian fresh produce export commodities due to reduced quality and actual waste are extremely high. These losses are primarily due to shortcomings in harvest procedures and in postharvest techniques and facilities. While it is difficult to arrive at definitive quantification of losses due to conflicting data, knowledgeable industry participants estimate such losses to range from 30 to 50 percent during harvest, postharvest handling, storage and transportation.

Future Industry Requirements

Egyptian exports of fine green beans have the potential for very significant growth, due to the ability to produce green beans in the winter months and to Egypt's geographic location and proximity to the European market as well as to agro-climatic factors, freight rate advantages and other competitive factors. Taking full advantage of this potential will require continued expansion

in fine green bean production as well as improvements in the quality of Egyptian fine green beans.

The ATUT project has established a viable base for the continued expansion of fine green bean exports. Building on that base will necessitate the integration of a much larger number of small-scale green bean growers into the fine green bean export system. Such integration can only be accomplished through widespread adoption of improved harvest and postharvest handling techniques combined with the development of adequate postharvest and marketing facilities.

The one to three feddan growers who will ultimately be responsible for producing the bulk of the fine green bean exports are unable individually to access the required technology, to accumulate the capital to construct the necessary facilities, or to establish the needed export market linkages. Accomplishing these can only be done through effective organization of these small-scale growers.

There are at least two examples of the successful organization of small-scale Egyptian horticultural commodity producers. The CARE AgReform project since 1996 has helped organize 7,000 small-scale vegetable farmers in three governorates into grower associations registered under the NGO regulations administered by the Ministry of Social Affairs. Africare in Upper Egypt has successfully organized associations made up of small and medium-scale grower-exporters.

Sources of technical assistance for improving harvest, postharvest and marketing techniques will also be needed. The technical assistance can be provided by private extension services organized by marketing entities under the nucleus enterprise system, by the grower groups themselves, by the postharvest centers or by other sources and/or by a greatly improved government horticulture extension service.

A system of postharvest centers with all of the required facilities, spanning the important green bean production areas, will also be essential. The rationale and suggested approaches to accomplishing such a system is explored in greater depth elsewhere in this report.

In many cases, the small scale producers of fine green beans will find it advantageous to link with larger grower-exporters for improved market access. HEIA is the logical organization to foster these linkages as well as the development of postharvest facilities and technical services. Rather than performing all of these roles directly, HEIA in most cases could act as the catalyst and facilitator to bring together the necessary support elements and help plan and monitor their activities.

B. STRAWBERRIES

Strawberries were selected as an ATUT priority export crop at the beginning of the project. Annual Egyptian strawberry production averaged about 28,000 tons prior to 1996, with exports amounting to approximately 1,200 tons per year. An initial ATUT market study indicated that there was a very large unmet demand for winter and early spring strawberries in the European market. Egypt is capable of producing strawberries during this period.

In order to take advantage of the marketing potential, Egyptian strawberry producers needed to utilize new varieties, change their production systems, apply integrated pest management (IPM) techniques, improve their irrigation practices and fertilizer application programs, and adopt better harvest, postharvest, packaging and shipping practices. ATUT provided the technical assistance necessary to accomplish these changes.

Field trials were conducted to determine the most desirable varieties, which were adopted by the commercial strawberry producers. Several of the new varieties, such as Sweet Charlie and Camarosa, produce up to 46,000 pounds of premium quality strawberries in November and December. Others can be harvested as late as early April, greatly extending the production season. The new varieties were also selected for better quality and longer shelf life.

The ATUT technical advisors were responsible for strawberry growers making extensive changes in production, harvest, postharvest and marketing practices as well as the adoption of improved varieties (see below). Primarily as a result of the project, export volume of strawberries increased five-fold between 1996 and 2002, from 1,200 tons to approximately 5,600 tons, valued at $22.7 million.

New technologies introduced by the ATUT project include integrated pest management, drip irrigation, apiary sciences, soil and plant analysis, waste analysis and post harvest and cold chain technologies. The application of these new technologies have been responsible for rapid advances in the Egyptian strawberry industry and have made it possible for the industry to compete effectively with suppliers from other African and Mediterranean nations in the European Union and the Gulf states.

Technology Transfers and Technical Assistance

The ATUT-Ronco technical team worked primarily with the larger strawberry growers while the strawberry working group addressed the needs of medium-scale growers. The Ronco team also collaborated with the strawberry working group in several instances. The ATUT-Ronco team was responsible for some 1,150 technical assistance visits to 24 grower-exporters, while the working group provided technical assistance to 14 medium-scale farmers.

Beginning in 1996, a series of workshops were held on subjects ranging from strawberry production technologies to pest control to nursery management to export opportunities and requirements. ATUT also sponsored observation trips to England, and the United States (California and Florida) for some 54 Egyptian strawberry growers.

According to Scientific Committee records, extension workers trained by the committees provided technical assistance and technology transfer services to some 1,450 small-scale strawberry growers between 1998 and 2001. ATUT only provided the Evaluation Team with any detailed information on the activities of the extension component shortly before the team's departure from Egypt. Due to lack of time, the team therefore was unable to validate or even properly evaluate or the following claims.

Table III-4. Extension Component Results, Strawberries, 1998-2001

Year	Governorates	Total Farmers	Technology Transfer	Village Extension Workers	Science Committee Visits
1998/1999	3	81	3	5	2
1999/2000	3	286	6	7	3
2000/2001	4	1,083	9	11	4

SOURCE: ATUT Extension Programs Report 01 – 5/11/2001

Table III-5.

Year	Governorate Strawberry Production Area (Feddans)	Total Served by Project Extension (Feddans)	% of Area Served By Project Extension	Number of Strawberry Growers In Governorate	Number of Growers Served by Project Extension	% of Growers Served by Project Extension
98/99	425	82	19.3	10	6	60
99/00	735	286	38.9	22	15	68.2
00/01	7,332	1,083	14.8	8,349	1,270	15.2
Average	2,830.6	483.7	17.1	2,793.7	430.3	15.4

SOURCE: ATUT - 2002

The 24 larger-scale strawberry growers with whom ATUT-Ronco initially worked have progressed technically to the point where they presently require a level of technical assistance that goes beyond the assistance provided by the project. These growers now have the financial capacity to a pay for their own specialized technical consultants on an as-needed basis.

Introducing export strawberry production to smaller-scale farmers will require the provision of continued technical assistance at a more general level, however. In the absence of the ATUT project, some of this assistance may be provided by HEIA.

HEIA organized a subsidiary strawberry council in 1998. By May 2001, Council membership included 24 larger-scale strawberry producers of whom three were women. Council members with HEIA assistance are interested in providing technical services to smaller-scale strawberry producers as a means of increasing the exportable volume of strawberries.

As an example of the potential for increasing the productivity of smaller producers, ATUT strawberry advisors provided technical assistance to a pilot group of small-scale strawberry farmers in the Delta region during the 2001/2002 cropping season. The ATUT assistance resulted in average yields increasing from nine tons per feddan to approximately 19 tons per feddan. These gains in productivity were achieved through improvements in transplant technologies, irrigation systems, fertilizer programs, postharvest practices, and other technical advances.

Specific Technical Assistance Accomplishments

Varietals Trials

Prior to the initiation of the ATUT export project, many farmers were utilizing six year old strawberry varieties, many of these available only as Frigo transplants. Fresh transplants were scarce due to the absence of nurseries.

ATUT introduced 15 new strawberry varieties for field trials in order to determine which varieties would produce the highest yields under Egyptian growing conditions. The best varieties identified for Egyptian production were the early maturing Short Day Varieties. Of these, the early-seasonal varieties Sweet Charlie and Camarosa were selected due to their higher yields.

Nurseries

ATUT encouraged the construction of nurseries for the propagation of fresh strawberry transplants to replace the commonly used Frigo transplants. The Frigo method uses runners from

the previous year's crop to vegetatively produce transplants, which are not as productive as fresh transplants due to the damage suffered during the preparation process. The use of fresh transplants requires nurseries for their propagation.

ATUT taught nursery management and operating skills to managers and nursery workers, including advanced crop production techniques such as the importance of maintaining proper pH and controlling fertilizer applications for new seedlings as well as the use of artificial planting media.

New irrigation systems were introduced for nursery propagation and grow out areas. It is important to utilize specialized sprinkler systems to deliver the proper rates of water to the new seedlings. These sprinkler systems are also utilized to maintain humidity levels inside the nursery, which directly affects the quality of transplants produced. In some nurseries, it was necessary to improve ventilation and cooling systems to reduce heat stress to new seedlings. ATUT provided the technical assistance and technology transfers needed to incorporate the necessary management and design features.

Soil Preparation and Management Techniques

ATUT advisors introduced several new field practices to improve the productivity of the new strawberry varieties. Although new to Egyptian farmers, these practices were enthusiastically adopted.

Due to the lack of proper soil preparation in the past, it was necessary to instruct farmers in methods to break up the hard pan under the surface soils. Sub-soiling allows better root development due to improved aeration. By breaking up the subsoil, water and fertigation applications are made more readily available to the root systems.

ATUT technical specialists provided advice and instruction on the sub-soiling, disking, and roto-tilling techniques to improve the soil prior to planting. The importance of leveling the land prior to forming growing beds in order to increase the effectiveness of drip irrigation was emphasized. ATUT advisors also introduced soil treatment procedures to reduce the incidence of weed seeds, insects, nematodes and other soil contaminants. Solarization techniques were taught as an alternative method of soil treatment, since the use of soil chemical treatments such as methyl bromide is being ended internationally due to worker safety and environmental concerns.

Training farmers in pH and fertilizer control was also important for improvements in field grown strawberry quality and yields. Soil fertilization practices were developed by the ATUT advisors to provide strawberry growers with the specific formulations required for optimum plant growth.

ATUT advisors recommended that chicken or other poultry (pigeon) manures be substituted for cow manure to improve the fertilizer uptake potential of the strawberry plants. The introduction of higher levels of organic matter increases the soils ability to hold and release both basic nutrients (N-P-K) and micronutrients.

Improved raised bed forming techniques were demonstrated by ATUT advisors in order to promote better root growth and drainage, and to improve water consumption. ATUT advisors also counseled farmers on various methods of controlling soil salinity levels in strawberry fields, since this is a major impediment to strawberry production. Sprinkler irrigation systems were utilized prior to installation of mulch coverings to reduce levels of soil salinity

Raised bed dimensions were changed in order to accommodate four plant rows per bed to increase the total number of plants per feddan. In addition to providing instruction on the formation of raised growing beds, ATUT advisors also instructed farmers on the application of

mulch on raised beds to improve water retention, reduce weeds, lessen insect pressures and to prevent the strawberry fruit from coming into contact with the soil and irrigation water. This latter measure reduces the likelihood of sand impregnation and potential contamination from irrigation water, both of which reduce export potential.

Transplant Operations

The primary reason for utilizing fresh transplants in strawberry farming is to produce healthier, sturdier plants that will produce higher yields of quality fruits. Transplants are traditionally grown in a plant nursery from tissue-cultured plants. The young plants require exacting levels of water, fertilizers, pH control, and temperature regulations to produce healthy plants with advanced root growth. Fresh transplants are stronger and grow faster than the traditional Frigo plants, making them less susceptible to damage from insects and soil born diseases.

Traditional strawberry cultivation consisted of planting only one plant on the edge of each bed and allowing runners to fill across to the opposite side of the bed. This method is not as productive as using nursery raised tissue culture plants. Using the runner method results in approximately 27,000 plants per feddan. Use of fresh transplants enables farmers to increase population to 36,000 to 40,000 plants per feddan. ATUT advisors also assisted strawberry farmer with production projections in order to estimate fertilizer demands, insect control inputs, labor force requirements, and packing carton requirements.

When utilizing mulching techniques for transplanting strawberries, drip irrigation is necessary to supply both water and fertilizer (fertigation) to the strawberry plants. ATUT advisors were instrumental in shifting strawberry growers from one drip irrigation line per bed to two lines, making available additional water and fertilizer to boost plant growth. ATUT also introduced plastic hoop tunnels to protect young strawberry transplants from adverse weather conditions, including wind, rain, and blowing sand.

Irrigation Practices

In order to reduce water usage and improve production levels, ATUT introduced new irrigation methods to substitute for the traditional flood and furrow irrigation practiced for the past several thousand years in Egypt. These new methods included drip irrigation, overhead sprinkler systems and soil moisture measuring devices. ATUT also provided assistance to strawberry farmers in irrigation system design and installation.

Table III-6. Improved irrigation technologies introduced by ATUT

TECHNOLOGY	PURPOSE
Drip Irrigation	Reduces water usage Acts as a delivery system for injected fertilizers (fertigation), as opposed to hand fertilization Provides delivery system for water and fertilizers under mulches on row crops Improves crop yields through pinpoint application of nutrients directly to root zones
Sprinkler Systems	Used to maintain humidity for new plants in greenhouses/nurseries and in the field. Reduces soil salinity. Sprinkler systems can also be utilized to reduce frost damage in freezing weather
Tensiometers	Used to more accurately determine water demands of plants

The irrigation technology introduced by ATUT has resulted in an estimated average increase in crop productivity in the range of 25 to 45 percent.

Fertilization Practices

In addition to providing assistance with fertilizer formulation and pH controls, the ATUT advisors instructed farmers on the necessity of performing soil and leaf analysis to determine proper fertilizer application rates.

ATUT introduced fertilizer injection systems for use with drip irrigation, for the purpose of increasing the effectiveness of fertilizer application and reducing input costs. It was also necessary to instruct farmers concerning methods to utilize for determining the proper timing for fertilizer and water applications.

Disease and Insect Controls

In order to comply with the pending EurepGAP regulations, Egyptian farmers must reduce their use of chemical pesticides. The majority of Egyptian farmers need professional advice in order to effectively control plant pests and diseases while utilizing fewer chemicals.

ATUT advisors provided the following crop improvement techniques in addition to the previously mentioned technology transfers:

- Insect and disease identification techniques were taught to farmers and extension agents in order to ensure proper selection of counter measures;
- Scouting procedures were taught to determine the insect and disease pressure on crops;
- Field sanitation practices were taught to farmers to reduce the spread of harmful biological contamination;

- Worker sanitation and hygiene practices were taught to farmers in order to reduce the potential of spreading contamination to fresh fruits intended;
- ATUT advisors provided instruction on the proper calibration techniques for spray equipment to increase effectiveness and reduce pesticide waste and contamination;
- Staff of the Biological Control Department of the Ministry of Agriculture were trained in the mass production of predator insects for Integrated Pest Management (IPM) controls.
- ATUT advisors also instructed the Biological Control Department staff on the life cycles of harmful insects and the proper release points for beneficial insects produced in the rearing facility as well as monitoring practices to determine proper release levels of IPM solutions.

According to ATUT reports, two private farms began production of spider mite predators at their own on-site rearing facilities in 2001. The predators were utilized to treat some 570 feddans.

Pollination

ATUT specialists introduced apiary production methods to Egyptian strawberry producers in order to use bees for pollination purposes. Misshaped berries are due to poor pollination. (Defects are also caused by adverse weather conditions, fertilizer deficiencies, fungal infections, and insects.

ATUT records show that introduction of three bee hives per feddan of strawberries increased yields from 20 to 45 percent. There is a direct linkage between proper pollination and the quality of strawberries, including higher brix content.

Harvest and Post Harvest Technology

One of the most important sets of technology transfers made by ATUT to the Egyptian strawberry industry was the concept of field sorting, packing, and postharvest handling techniques. During the 1998/1999 season alone, five major defects including bruising and off shapes and sizes reduced the total exportable Egyptian strawberry crop by almost 50 percent.

As a result of ATUT introduction of new harvesting and packing methods, bruising of fruit during the 1999/2000 crop season was reduced by 60 percent compared with the previous year's crop. ATUT introduced field picking and packing carts that enabled harvest crews to use both hands to pick strawberries, effectively reducing damage to plants and increasing the identification of additional ripe berries that were previously overlooked when harvest crews utilized only one hand for picking. Prior to the introduction of the picking carts, harvest crews picked with one hand and held the collection baskets with the other.

Picking carts were divided into three separate compartments to increase harvest productivity in the fields; one section of the picking cart was designated as export quality, while the remaining sections were reserved for domestic production and waste. Reducing the necessity to sort strawberries in the packinghouse reduced bruising from 9.4 percent of the crop in 1998/1999 to 3.95 percent in 1999/2000.

Prevention of quality deterioration following harvest requires careful handling practices and use of a cold chain during all stages from harvest to market. ATUT designed the entire cold chain system for Egyptian strawberry exporters.

Strawberries must be cooled as soon as possible after harvest, preferably within two hours, to prevent quality losses and extend shelf life. The preferred method for removing field heat in strawberries is forced-air cooling. Forced-air coolers can remove up to seven-eighths of the field

heat from strawberries in 1.5 to 2.5 hours, depending upon the capacity of the system being utilized. It is important to maintain relative humidity at levels no lower than 85 to 90 percent to reduce the risk of dehydration. ATUT advisors provided designs for per-cooling facilities and also assisted growers with packaging design services to develop shipping boxes that would allow the forced-air cooling system to remove field heat rapidly from the fruit.

Before production reached levels that made possible export shipments in refrigerated containers, strawberries were shipped by air. Although this shortened shipping time from Cairo to overseas markets, the strawberries still had to be shipped from the farm to the airport in non-refrigerated vehicles, which reduced shelf life to 24 to 48 hours. Shipments made in ocean-going modified atmosphere containers extend the shelf life of strawberries to approximately five days.

Future Industry Requirements

According to ATUT estimates, the larger commercial strawberry growers with whom the project has primarily worked could increase production and exports an additional three-fold over the next five years, although a limiting factor could be availability of workers in areas remote from urban centers. The ATUT technical staff is also optimistic about the ability to introduce export strawberry production to larger numbers of small-scale producers. This to some extent might ameliorate the problem of finding sufficient harvest laborers.

Continuing increases in Egyptian strawberry exports will require reducing overall production costs to increase the competitiveness of Egyptian strawberries as well as the integration of more small-scale farmers into the Egyptian strawberry export system in order to gain greater export volume. Production costs can be significantly reduced through the use of advanced transplanting equipment and mulching strawberry beds to reduce requirements for hand labor and chemical weed treatment.

C. CUTFLOWERS

Summary

ATUT during the past three years has effectively created a wholly new cut flower export industry, one that shows favorable promise for becoming a major future contributor to Egyptian export earnings. In just two short years, Egyptian cut flower producers have made a lasting impact on the flower auctions in the E.U. and Gulf states by supplying high quality, competitively priced cut flowers grown from a wide variety of new introduced varieties.

In addition to providing practical, industry-based, hands on technical assistance to cut flower growers, the ATUT technical staff and short-term consultants were directly responsible for establishing vital connections with European cut flower buyers. Since almost none of the cut flower growers assisted by ATUT advisors had ever engaged in exports, the marketing services provided by the ATUT advisors had a great deal to do with the success enjoyed to date by the cut flower industry.

In order to establish a viable Egyptian cut flower export industry, it was necessary for ATUT advisors to perform varietals trials for a large number of cut flowers varieties. After identifying the cut flower varieties that were the most suitable for the export markets, the ATUT team had to provide technical assistance in the areas of floriculture enterprise management, improved production practices, irrigation, fertilization, pest and disease controls, harvesting, post harvest handling and shipping.

Background

Based on a market study conducted by ATUT-Ronco in 1999, cut flowers were added to the list of the project level one export commodities. At this time, only one regular exporter, who was shipping about 4.5 million stems valued at $400,000 to $600,000 annually, to Italy. In 2001, the second year of cut flower exports under ATUT, 12 producers exported 11 million stems, earning more than $2 million. Exports in 2002 are project by ATUT to reach some 23 million stems valued at $4 million.

The many micro-climates found in Egypt as well as lower freight rates to the European and Gulf markets help provide Egypt with a comparative advantage over other African cut flower producers. Prior to ATUT and HEIA intervention, the cut flower export industry was lacked organization as well as an export development strategy. Cut flowers were grown almost exclusively for the domestic market, with the exception of one medium-scale exporter to Italy and some limited export to the Gulf nations, which did not impose exacting import quality standards.

Prior to ATUT initiation of the cut flower program, no organized market promotion activities were carried out in favor of the cut flower export industry. ATUT organized the Egyptian participation in the International Flower Show in Japan in 2000. ATUT in collaboration with the Horticultural Export Improvement Association (HEIA) also organized the participation of Egyptian cut flower growers in the International Horticulture Trade Show (NTV) in Amsterdam in 2001and 2002, with an average of 85 attendees in each year. More than 20 meetings were arranged between Egyptian cut flower grower-exporters and Dutch buyers. Egyptian cut flower growers were introduced to the Dutch flower auction system through seminars and observation visits.

HEIA instituted a cut flower grower's council in 1999, starting with 17 full members and 12 associate members, including seven female growers. The council now has 26 full-time members and is still growing. The HEIA cut flower council is now directing most of the activities for promotion in the E.U. and Gulf markets. The cut flower council recently organized a full-fledged cut flower association, which remains affiliated with HEIA but has become responsible for directing most industry technical and promotional activities.

The Netherlands is the major European importer and re-exporter of cut flowers. Import standards and specifications are extremely high. In order to penetrate this market, the quality of Egyptian cut flowers had to undergo significant improvement. Selection of those varieties with market acceptance was also key requirement. These two factors along with the establishment of market linkages became the priority concerns of the ATUT cut flower export promotion program. Another important need was the development of sufficient volume of exportable cut flowers in order to attract serious buyer interest.

In order to meet these needs, ATUT-Ronco provided technical experts to advise cut flower growers who were interested in becoming exporters. The cut flower advisors were selected on the basis of their actual commercial, hands on experience in the production, postharvest handling and marketing of cut flowers.

The advisors initially worked with 26 interested cut flower growers. Some 19 of these producers were still involved with ATUT in 2002. The key to the success of the ATUT program has been the intensive supervision provided to the participating growers by the cut flower advisors.

Table III-7. Actual and Projected Exports of Egyptian Cut Flowers, 2000-2012

Item	2000	2001	2002	2007	2012
Stems (million)	0.45	11.70	33.20	174.90	748.80
Value (US$ million)	0.50	2.10	5.70	28.70	122.80

Source: ATUT

Table III-8. Export Destinations, Cut Flowers

Year	**E. U. Volume (Tons)**	**E.U. Value (US$)**	**Gulf Volume (Tons)**	**Gulf Value (US$)**	**Other Volume (Tons)**	**Other Value (US$)**
1998	95	$134,000				
1999	120	$342,000			9	0
2000	117	$444,000	13	na	10	0
2001	89	$384,000	39	na	13	0

Source: Eurostat, Quarantine and Itc – April 2002

It is apparent that the Eurostat data does not agree with ATUT data. Due to time limitations, the team was unable to reconcile the conflicting data. This example illustrates the need for additional future efforts to develop more reliable export statistics.

Technology Transfers and Technical Assistance

In addition to providing technical assistance in the areas of production, postharvest and marketing, ATUT also provided assistance in several other areas. ATUT linked cut flower producers and HEIA with the Dutch Center for the Promotion of Imports from Developing Countries (CBI) which continues to provide the Egyptian cut flower industry with export promotion assistance. ATUT/RONCO advisors also linked the Egyptian cut flower industry with the Dutch Floriculture Environmental Project (MPS) in order to educate and assist HEIA Cut Flower Council members with compliance issues related to upcoming EurepGAP requirements.

ATUT was instrumental in coordinating import quota reviews by the Dutch Ministry of Agriculture, resulting in the Egyptian cut flower import quota being increased from 3,000 tons to 6,000 tons. The cut flower association, which was formed with assistance provided jointly by ATUT and HEIA, greatly influenced the airline industry in lowering airfreight rates and increasing shipping capacity for cut flower growers. ATUT also introduced Egyptian cut flower producers to the Dutch cut flower auction system.

Table III-9. Number of Technical Assistance Site Visits to Cut Flower Growers

Year	1997	1998	1999	2000	2001	2002	Total
Technical Assistance Visits	0	0	30	246	309	165	754
No. of Farms	0	0	9	26	22	19	76

The cut flower industry work force is comprised primarily of women and girls. The following table indicates the number of new jobs actually created in 2001 and projected new job creation through 2012.

Table III-10. Cut Flower Industry Job Creation

2001	2002	2007	2012
240	432	1,716	5,720

Specific Technical Assistance Accomplishments

Varietals Trials

ATUT initially developed a joint cut flower varietals research program with the Batheem Research Center (a government-owned facility). The initial area of one feddan was later expanded to 2.5 feddans. ATUT advisors worked closely with HEIA and the cut flower working group to develop appropriate criteria for varietals suitability trials.

Some 18 varieties of eight summer flowers were tested, resulting in the selection of six varieties for further development. Following this initial testing program, most of the cut flower grower-exporters have started conducting their own varietals testing and development programs. ATUT also successfully introduced seven foliage varieties.

The following table shows the number of export varieties introduced through private farms and the Batheem Research Center during the 2000-2001 and the 2001-2002 growing seasons.

Table III-11. Variety Introduction

Item	Farm Trials 2000-2001	Farm Trials 2001-2002	Batheem Trials 2000-2001	Batheem Trials 2000-2001
Seeded Varieties	12	16	11	29
Tissue Culture	19	21	18	38
Foliage Plants	3	11		

According to ATUT reports, 11 varieties of flowers are now being exported to the Netherlands, Italy, the Middle East and other countries as a result of ATUT intervention.

Nurseries

Prior to the advent of the ATUT cut flower export program, only one cut flower farm operated a nursery, and the technologies practiced at this existing nursery were out of date. ATUT recognized the necessity for nursery development and provided technical assistance for this purpose. Some of this technical assistance included:

- Improvement of propagation techniques for three commercial farms;
- Establishment of procedures for ensuring proper cuttings;
- Introduction of rooting process and proper handling techniques to reduce damage to transplants;
- Introduction of seedling and plug production techniques to two private farms;
- Direct seeding block technology introduced to eleven producers to reduce seedling/cutting loss;
- Utilization of media mixtures on three farms to increase seedling and plug productivity and reduce the potential for damage from soil born diseases;
- Introduction of greenhouse environmental controls;
- Utilization of CO_2 generators and monitoring devices during winter months to increase plant vigor in greenhouse crops;
- Introduction of artificial lighting methods to control growth of light sensitive flower varieties;
- Design and installation of cooling systems control ambient and accumulated heat effects on young plants; evaporative cooling systems are very efficient in the hot dry climates found in Egypt.
- Introduction of misting systems for plant propagation to improve productivity and promote higher-quality root development in young cuttings;
- Introduction of advanced ventilation techniques to greenhouse growers to increase Botrytis control measures in greenhouse-grown plants and seedlings.
- Introduction of more efficient fertilization techniques, including fertigation, to cut flower growers in order to increase productivity and reduce fertilizer usage;
- In addition to introducing the concepts of proper fertilizer application rates and delivery systems, pH control techniques were also presented to increase the productivity and quality of cut flowers;
- Irrigation systems were designed in-house, and then installed to reduce water usage and improve plant growth;
- Sanitation practices were stressed to reduce insect pressures and biological contamination from both workers and plant residue.

Farm and Crop Management

In order to make farms more productive and produce a higher quality product, it was necessary for ATUT to provide a wide variety of advanced management practices to Egyptian flower growers. Many elements of the growing process are highly technical and require the introduction

of systems and techniques that were unfamiliar to many of the growers. ATUT was instrumental in the development and dissemination of the various management solutions.

The following are examples of training programs provided by ATUT to enable cut flower growers to fully utilize new farming techniques and technologies required to improve all aspects of production.

- ATUT provided guidance on layout of growing areas, water supply systems, electrical installations, and other necessary infrastructure improvements for 16 producers and three potential producers.
- Plowing techniques were introduced to growers to increase proper plant growth, including raised bed technology to improve productivity for specialized crops.
- Flowerbed preparation, including soil sterilization methods, was promoted to reduce soil contamination and improve water management techniques.
- Plant support systems (Trellises) were designed by ATUT technicians to increase support and productivity for long stemmed flower crops.
- Lighting systems were designed to improve the capacity of growers to adjust the light requirements for specific flower varieties.
- Treatment methods for the reduction of soil born diseases were presented to growers to reduce losses in cut flowers.

Transplant Operations

The following procedures were demonstrated to cut flower producers to improve the quality of transplants:

- Plug production techniques were introduced to reduce costs and improve overall productivity;
- Spacing of individual transplants is vital to ensure proper growth and increase future productivity was demonstrated;
- Thinning procedures were suggested to improve individual flower quality (plants too close together reduce availability of sunlight to each plant, harbor insects and result in non-uniform nutrient and water absorption rates);
- Plant selection techniques were taught to producers in order to provide seedlings that would produce the highest yields in the field or greenhouse.

Irrigation Systems

Prior to ATUT intervention, irrigation systems on existing cut flower farms and in greenhouses were not utilizing modern delivery systems and water management techniques. Under the guidance of ATUT/RONCO staff, drip irrigation techniques were introduced to improve water and fertilizer (fertigation) delivery as a means of increasing productivity and flower quality.

Technical irrigation assistance measures were carried out by ATUT as follows:

- ATUT reviewed and designed or redesigned irrigation systems for eleven cut flower farms utilizing both surface and underground water sources;
- ATUT specialists introduced water management techniques for each of the flower various crops;

- Soil tensiometers were introduced to accurately determine precise water requirements for cut flowers;
- ATUT advisors introduced various irrigation system designs to deliver the specific requirements of a wide variety of flower crops including drip and sprinkler irrigation as well as misting systems.

Plant Nutrition

Cut flower growers had little or no knowledge of proper fertilization techniques prior to the ATUT cut flower intervention. Most producers had never tested their soil to determine composition or nutrient content. This knowledge is vital to successful cut flower production. ATUT introduced soil testing and explained how to utilize the tests to determine proper fertilizer formulation, application and maintenance.

Pest and Disease Control

Prior to the ATUT cut flower program, very little was known about Integrated Pest Management (IPM) and the techniques used to properly apply pesticides to reduce insect pressures on various flower crops.

European flower markets exercise a very low tolerance for insect infestations on imported flowers. ATUT introduced predator insect technology to counter the infestations of insects in cut flowers. One example is Phytoseiulus persimilis, which is used to control spider mites in cut flowers.

The ATUT/RONCO advisors also instructed growers on the specific requirements and regulations of the EurepGAP environmental standards. Implementation of the EUREPGAP program is scheduled to begin in 2003, so it is vital that cut flower growers comply with the floriculture environmental standards (MPS). In addition to the EurepGAP MPS requirements, cut flower growers must also adhere to any MFTA requirements.

The MPS standards for cut flowers are more narrowly defined than the EurepGAP fruit and vegetable standards, making the standards and procedures less difficult. ATUT advisors worked closely with Dutch MPS officials to develop a specific export compliance program for the Egyptian cut flower industry.

The following pest control measures were presented to cut flower growers by ATUT:

- Pest and disease identification sessions were held with growers and field staff to ensure that farmers could properly identify pest and disease infestations;
- Pest scouting techniques were provided to farmers and technicians to illustrate the types of insects and levels of infestations;
- Pesticide selection techniques and safety measures were provided to managers and farm workers to ensure pesticide efficacy and worker safety;
- Pesticide equipment calibration techniques were taught and are apparently being applied.

Farm Management Techniques

The following farm management assistance was supplied by ATUT:

- Farm management programs were established for three floriculture farms;
- Floriculture environmental program criteria were incorporated into pilot programs;

- Instruction in farm management skills including environmental awareness training and record and IPM application and record keeping skills for compliance with EUREPGAP requirements.

Harvesting

Due to the extremely strict specifications required by foreign cut flower importers for individual flower varieties, ATUT experts were required to provide specific harvesting techniques for individual flower varieties. This training was necessary to ensure that the quality levels of the final export products met importers standards in the E.U.

The following techniques were presented to cut flower growers by the ATUT project;

- Harvest related indices were delivered for 70 separate flower varieties;
- ATUT provided training on harvesting and post harvest handling techniques, including application of post harvest chemicals, to 19 producers;
- ATUT provided farm workers and managers with labor efficiency models to reduce man-hours required for harvesting operations.

Grading and Packing Operations

Most cut flowers are lost in the first hour after harvest, primarily due to improper handling techniques. In order to reduce the loss from improper handling, ATUT utilized the following training techniques:

- Grading procedures were taught to harvest crews and managers in order to assist them with identification of proper stem selection, and to classify the selected stems according to size and quality;
- Workers and managers were trained to identify stem quality, length, and diameter requirements for specific export markets.
- ATUT assisted in the development of shipping boxes to ensure proper delivery of cut flowers to E.U. markets;
- ATUT continually delivered training to packing crews and supervisors to ensure that the more than 70 varieties of cut flowers presented for export were acceptable to a wide variety of importers around the world.

Post Harvest Techniques

ATUT provided the following post harvest training and facility design services to new cut flower exporters:

- ATUT provided packinghouse designs for eight cut flower growers;
- Design services were provided for packing tables on eight farms;
- Cold storage designs were provided by ATUT for five cut flower farms;
- Five cut flower farms received planning and design services for storage facilities from ATUT.

Marketing

Most of the initial cut flower marketing contacts were made by the ATUT/Ronco technical specialists. ATUT introduced Egyptian cut flower growers to the Dutch auction system in

Holland. These introductions provided new cut flower growers with very important insights into the quality, competition, and requirements necessary to enter this well-established market. Introductions to the Dutch auction also provided growers with the opportunity to meet buyers from Holland and the Netherlands.

Weekly auction reports were provided to HEIA cut flower growers for varieties grown in Egypt. Egyptian growers and HEIA were provided with auction sources for acquisition of market information.

Transportation

Transportation is one of the most significant constraints to quality improvement for Egyptian cut flower exporters. Rapid movement of flowers to export markets is vital for maintaining quality. At present, however, it is not uncommon for flowers to be left in the airport air cargo holding area for periods of up to two days before shipment, usually rendering the flowers unsuitable for export.

A new airport refrigerated holding facility is in the final planning stages through the auspices of HEIA and the Government of Egypt. This facility will make it possible to reduce cut flower losses by up to 50 percent according to ATUT/RONCO advisors.

Business Management

ATUT advisors provided training in general business practices to improve business management and operations. Basic skills such as business plan development, cost analysis, and capital asset requirements were provided to seven growers who requested these services. Manpower cost analysis was also performed to develop more productive use of labor.

Future Industry Requirements

The high quality cut flower products grown in Egypt have in a very short time built an excellent reputation in several international markets. The industry is in a good position to build on this reputation and greatly increase exports of cut flowers in future. This will require the integration of much larger numbers of cut flower growers into the cut flower export system.

There are a large number of medium and small-scale cut flower growers who are presently producing for the domestic market. Opportunities for introducing growers to export markets are encouraging, based on the ATUT experience of the past three years. In order to do so, however, the continued availability of technical assistance will be critical.

The new cut flower association represents an encouraging development. The Dutch in particular have shown interest in continuing to provide technical and marketing assistance to the Egyptian cut flower industry. Some interest has also been expressed in the potential for joint venture investment in order to utilize Egypt as a supplemental cut flower production base. These interests if they are to come to fruition must, however, be pursued in an organized manner.

The responsibility for this pursuit as well as for providing the technical production, postharvest and marketing assistance that will be essential for future industry growth will rest primarily with the association and with HEIA. In order to successfully accomplish these tasks, however, both the association and HEIA will require some level of donor support for the next few years. This support should be provided on a diminishing scale, with the understanding that both organizations must at some agreed upon date provide fully for their own financial needs.

D. TABLE GRAPES

The table grape export industry in several respects represents one of the more significant ATUT success stories. Grapes were one of the first commodities to be selected as a priority export crop by the project.

Egyptian table grapes were already being exported in limited quantities when ATUT entered the scene. Table grape growers were the first Egyptian producers to recognize the benefits to be gained from industry cooperation. The establishment of the Horticultural Export Improvement Association (HEIA) was the direct result of a trip to Chile and California sponsored by a previous USAID project, the National Agricultural Reform Program (NARP).

Prior to this trip, which involved some 25 Egyptian grape growers, larger producers typically did not associate with other producers, whom they considered competitors who would "steal" their technology if allowed to do so. Due to the enforced intimacy of the Chile trip, the producers became better acquainted and realized that they shared common bonds of knowledge and production and marketing constraints

HEIA was formed at approximately the same time as the ATUT project got underway. This fortunate juxtaposition was an important element in the success of both ATUT and HEIA. Some 90 percent of ATUT clients were HEIA members. Without the technical assistance provided to its members as well as to HEIA as an organization, the Association could not have progressed nearly as rapidly as it has. In the absence of the ready-made client base provided by HEIA members, ATUT goals would have been much more difficult to accomplish.

Egyptian table grape growers have set new export sales records every year since the ATUT project began providing assistance in 1999. Table grape exports in 1997 amounted to 1,800 tons. By 2001 exports had increased to 6,600 tons, valued at more than $22 million. ATUT projects table grape export volume to increase to approximately 15,000 tons with a total value of more than $50 million by 2007.

Table III-12. Table Grape Exports, Actual and Projected

Item	1997	1998	1999	2000	2001	2002	2007	2011
Volume (000 tons)	1.8	2.6	3.6	5.8	6.6	7.7	24.3	45.6
Value ($ million)	na	na	na	14.7	22.2	19.2	52.5	99.5

Source: ATUT

An important measure of success for development oriented projects is sustainability. The ATUT table grape program has achieved significant success in this respect. By the 2001 growing season, table grape producers had reached a point of technical sophistication and financial progress that enabled them to begin utilizing their own and HEIA resources to obtain technical assistance, rather than continuing to depend on ATUT. This progress was largely made possible by the professional capabilities and dedication of the ATUT technical grape specialists and the quality of the technical assistance they provided to the commercial grape growers. The quality assurance program developed by the ATUT/RONCO advisors was also handed over to HEIA in 2001.

The following table indicates the number of jobs created and projected by the activities of the table grape industry. The work force is primarily comprised of women (75%.)

Table III-13. Table Grape Work Force

2001	2002	2007	2012
2,390	3,000	4,110	4,200

Technology Transfers and Technical Assistance

ATUT provided a widely varied assortment of technical assistance to both large and small Egyptian grape growers over a five-year period. The specific technical assistance ranged from production, postharvest and shipping issues to market analysis.

One of the more significant examples was the assistance provided by ATUT to HEIA for the development of a set of export quality standards for Egyptian table grapes. These standards cover a wide variety of quality related elements including the following:

- Sound product (Safe for human consumption;
- Clean (Free of any visible foreign matter);
- Practically free from dame by pests or diseases;
- Free from all visible traces of mold;
- Free of abnormal external moisture;
- Free of foreign smell and/or taste.

The standards also require table grape bunches to be intact, well formed, normally developed, and carefully picked. The standards are designed to ensure acceptance of Egyptian table grapes in all major export markets. Adherence to the standards will become an increasingly competitive requirement for accessing world export markets.

In addition to the direct services provided to larger grape grower-exporters by the ATUT/Ronco specialists, the ATUT grape working group carried out technology transfer activities at 40 smaller farms during the 2000-2001 season, primarily providing assistance in the areas of pruning, fertilization, and the application of gibberillic acid and Dormex sprays. A 100-feddan increase in table grape production is expected in 2001-2002. The working group provided new grape planting stock to 50 growers during 2001-2002.

The ATUT extension component according to its records was responsible for providing technical extension services to approximately 6,800 small-scale table grape growers. The following table indicates the activities of the grape extension component from 1998 through 2001.

Table III-14. Extension Component Results, Strawberries, 1998-2001

Year	Governorates	Total Farmers	Technology Transfer	Village Extension Workers	Science Committee Visits
1997/1998					
1998/1999	7	3,769	18	75	9
1999/2000	9	3,724	28	77	10
2000/2001	4	3,350	17	62	7

Source: Atut Extension Programs Report 01 – 5/11/2001

Table III-15.

Year	Governorate Strawberry Production Area (Feddans)	Total Served by Project Extension (Feddans)	% of Area Served By Project Extension	Number of Strawberry Growers In Governorate	Number of Growers Served by Project Extension	% of Growers Served by Project Extension
1998/1999	123,550	13,785	11.2	43,555	94	21.8
1999/2000	125,402	17,442	13.9	44,633	9,193	20.6
2000/2001	119,229	14,830	12.4	36,832	8,693	23.6
Average	122,727	15,352	12.5	41,673	5,993	22.0

Source: Atut – 2002

ATUT held a total of 18 technical seminars for grape growers starting in 1996, with a total of 1,872 participants. Subjects ranged from production and postharvest techniques to planning and management of table grapes for export to nursery development and management to table grape nutrition, fertilization, and salinity. Five observation trips to Chile, California, South Africa and Israel, involving some Egyptian 66 grape growers, were organized and sponsored by ATUT during this period.

Specific Technical Assistance Accomplishments

Site Preparation

ATUT advisors provided advice on site selection and layout of vineyards prior to the initiation of planting operations.

Irrigation

ATUT advisors assist growers with the design of irrigation systems that will be utilized to grow table grapes. Drip irrigation systems were utilized to reduce water demands and to provide fertigation capacity.

The ATUT staff advised grape producers not to reduce watering cycles to improve the color in grapes. This practice eventually results in cracking caused by the plant drawing moisture from the plant and fruit during the day and returning this water to the fruit during the cooler hours at night.

Trellis Design and Construction

ATUT advisors assisted growers with the design and construction techniques necessary to provide the long-lasting support systems for the table grape vineyards. Proper spacing is vital to provide the air movement that reduces the potential for fungal and bacterial growth in the vineyard.

Fertilizer Management

Soil testing techniques were provided to growers in order to determine the proper fertilizer formulations necessary to establish and maintain high volume grape production. Along with fertilizer management, producers were also taught the techniques of pH control by utilizing various corrective measures.

Improper fertilization reduces the plants ability to fight diseases and insect pressure, so it is vital to design the proper fertilizer program for producers. Poor fertilization can affect several aspects of production, including shot berries, waterberry and lack of color

Spray Equipment Calibration and Operations

ATUT advisors provided technical assistance to growers on the proper calibration and operation of mechanical spray equipment to reduce the potential of damage to the table grape crop. Improper spray pressures, in relationship to improper nozzle selection, incorrect chemical dosages, lack of agitation, and improper mixing of chemicals can damage the skins of grapes. Applying spray materials at the wrong time of the day can also result in a damaged crop.

Vine Management Techniques

In order to ensure maximum production, growers were instructed on the proper methods of thinning, pruning, defoliation, and bunch management throughout the entire growing cycle as well as proper vineyard canopy management practices.

Growth Regulators and Amendments

ATUT advisors provided technical assistance to grape producers on the application of Dormex and gibberillic acid to enhance grape size, uniformity, and ripening characteristics. It is very important to apply these treatments to Thompson and Flame seedless grape varieties to obtain cell stretch. Growers were also given advice concerning the use of Etheral, and CCPU (cytofex) to enhance color in grapes, growers must be aware of the levels of nitrogen in the plants and grapes to properly manage these treatments, or detrimental effects will be realized.

Pest and Botrytis Control

Due to the pending pesticide restrictions that will soon be applied to all vegetable and fruit products destined for the E.U. under EuropGAP standards, it has become necessary to seek alternative methods of insect pest and Botrytis control.

Integrated Pest Management (IPM) techniques were presented to growers by ATUT advisors as a means of reducing the cost of pesticide applications and increasing efficacy. Through the use of predator insects, harmful insects, like thrips, berry moths, and mealy bugs, are eradicated without leaving behind traces of pesticides that might reduce the export potential of table grapes under the EurepGAP standards.

The introduction of Integrated Pest Management (IPM) alternatives that were taught by ATUT advisors effectively reduced the use of various chemical sprays by more 50 percent. This

reduction in pesticide use will enable table grape producers to more easily meet EurepGAP standards.

Harvest and Post Harvest Technology

In order to produce higher quality grapes for export, it is important to harvest the grapes at the correct stage of maturity while utilizing extreme care so as not to damage the grapes during packing operations. ATUT advisors provided intensive training programs to table grape producers in the advanced techniques required to produce higher quality table grapes for the export markets.

Training of management and field workers is vital to the success of the grape industry as a whole. Along with proper vineyard management techniques, producers must understand that there are many new harvesting and postharvest techniques that are currently being employed in the grape industry around the world to insure high quality and volume grape production. It is the responsibility of the producers to keep themselves apprised of any new technologies that are available to increase production values.

The ATUT staff provided the following technical assistance to improve the harvesting and post harvest technology capabilities of table grape producers:

- ATUT advisors introduced the use of grape maturity indexes and refractometers to determine the soluble solids levels to enable growers to determine the exact timing for harvest operations that will produce grapes with the highest brix (sugar) ratio;
- Field cleaning techniques were taught by ATUT staff members to reduce damages caused by excess handling during harvest;
- ATUT advisors provided assistance with packinghouse design and management practices for ensuring rapid processing to reduce time loss in the cold chain, dramatically increasing the percentage of high quality pack-out;
- Quality control measures were introduced by ATUT to ensure high quality standards in export grape shipments;
- ATUT was instrumental in the development of improved, locally manufactured shipping cartons to replace the more expensive imported cartons;
- ATUT was also involved with the design of shipping containers to ensure that there were sufficient holes placed strategically in master cartons to allow forced-air cooling systems to properly pre-cool field crops for shipment in sea containers destined for the E.U. and other markets.

Transportation

ATUT/RONCO technical specialists since 1998 have been instrumental in the development of transportation logistics and linkages with fresh fruit and vegetable importing countries. Prior to the advent of ATUT, it was difficult for shippers to acquire sufficient space on ships and aircraft for their products due to a shortfall in refrigerated holding facilities and shipping containers. It was almost impossible for shippers to control temperatures during transfers between transport systems

In order to address these problems, ATUT started working directly with transportation companies to educate them regarding horticulture industry export requirements and the importance of reliable transportation services. ATUT was effective in reducing airfreight costs for fresh fruits, vegetables, and cut flowers from Egypt to the E.U. and in improving the availability of cargo space.

In addition to helping develop improved transportation services, ATUT was instrumental in arranging on-farm inspections by the Government of Egypt Inspection Service, to reduce inspection holding time at shipping ports. In the past, ocean-going containers have been held in Egyptian ports for up to three days while waiting export inspection.

Quality Control

ATUT/RONCO staff created a very effective quality control department, which was transferred to HEIA in 2001. The efforts of the Quality Control department greatly improved quality levels of exported produce as well as the perception of quality on the part of importers and end users.

Future Industry Needs

The Egyptian grape industry will continue to require specialized technical assistance. The larger growers, who represented the great majority of ATUT clientele, have reached the point where they both require more specialized technical inputs than those that were provided by ATUT, and can afford to obtain those inputs with their own resources.

The industry in order to expand significantly will need to involve more medium and small-scale growers in the export system. This can best be done through enabling the larger growers to provide the necessary marketing, technical and financial support for the medium and small-scale producers, utilizing one or more variants of the nucleus enterprise model (NEM). Organizing this approach and obtaining the needed technical and financial support should be a concern of HEIA and the table grape council under HEIA.

V. Human Resource Development/Organization Development

Introduction

There was no explicit organizational development (OD) or human resource development (HRD) component within the ATUT project. Despite this lack, all of the technical (growing, harvesting, post-harvesting, cold chain, exporting, etc.) training within the ATUT project could be defined as HRD since all of these skills increase the capacity of human resources to be more productive.

This appendix will focus on issues that go beyond the purely technical and will evaluate the extent to which ATUT in fact did support a modest, accomplishable and sustainable effort to develop people skills, defined as organizing, cooperating and exploiting available human resources for mutual and collective benefit. Further, it will provide definitions for various HRD and OD terminology. Finally, the appendix will provide recommended approaches for incorporating OD and HRD concerns in future USAID development projects in Egypt.

Evaluation

Evaluating progress requires an assessment of how well an action or program is accomplishing predefined objectives. Doing well or not is evaluated in accordance with the definition of "well" or "success" as specified in the project or activity design.

The ATUT project, although it included specific targets for increased horticulture production, exports and adoption of new technologies, lacked specific provisions for HRD, which is being assessed retroactively. Because of this lack, the measurement of HRD success is based on qualitative attention to HRD issues under the project, issues which were introduced as a response to a felt need on the part of project management.

This approach does not take into consideration the normal measurements of cost, number of attendees, type of participants, etc., since under the circumstances these have little relevance to the conclusions and recommendations resulting from the evaluation. Rather, the evaluation will focus on the degree to which HRD was incorporated, albeit more or less randomly, into the project and more important, the need for a formal commitment to HRD in future projects. In fact, organizational and human resource development is more concerned with the quality of learning, how well it was applied and the consequent impact, rather than with statistics.

Since there were no HRD targets apart from those implied by horticultural productivity and export focused objectives, it is not possible to measure progress in any rigorous way. There is also a belief, evidenced through a number of evaluation team interviews, that the measurement of HRD progress is less rigorous than the measurement of horticultural productivity. This report will address that issue and describe a methodology that exploits HRD qualitative and quantitative measures to evidence the rigor of HRD objectives, monitoring and evaluation.

ATUT Training Methods

There are many ways to accomplish training. Several of these were applied by ATUT, often with the participation of HEIA. ATUT approaches included the following:

Visits by ATUT technical specialists to participant farms

This approach provided the greatest successes for the ATUT project. ATUT technical specialists were selected based on their practical working experience in the production, postharvest handling and marketing of the selected commodities.

The specialists concentrated on a limited number of farmers who possessed the managerial and financial capability and the willingness to effectively apply the proffered technical assistance and technology transfers to increase commodity exports. The major increases in exports of the priority commodities that were achieved during the course of the project provide objective testimony as to the effectiveness of this approach.

Technical Seminars

Most technical seminars were held in the field, on participant farms. The seminars covered a broad range of subjects, including production, harvest and postharvest practices; pest and disease control; irrigation and fertilization; nursery development and management; production of crops to meet specific export market specifications; compliance with EurepGAP and others. The seminars attracted a large number of non-participating producers as well as the direct ATUT clientele.

Study Tours

The overseas study tours organized by ATUT and HEIA were rated very useful by the participants. The tours enabled Egyptian growers to observe production, postharvest and marketing practices in competing countries. They also provided opportunities for Egyptian growers to raise questions in a shared environment where answers are heard by all for later discussions. Rigorous assessments were conducted to measure the effectiveness of those tours co-sponsored by DT2 and HEIA.

Publications and the ATUT Web Site

ATUT included an active publications program. The publications issued by the project were generally well received and highly rated. The ATUT Web Site and data base represent a comprehensive collation of production and market information. The only complaints heard were that the web site was sometimes difficult to access.

Working Groups

The ATUT Working Groups focused their attention on medium-scale growers as contrasted with the primary clientele for the ATUT/Ronco technical team, which was more concerned with the larger producers. The groups were made up of senior researchers, academics and some growers, with the goal in mind of establishing closer links between the research community and farmers, and making research more demand-oriented.

Because of the inadequacies of the government horticulture extension services, the working groups in fact much more of an extension rather than a research role. While the groups to a large extent provided a useful service, primarily benefiting new growers and smaller-scale farmers, it is questionable whether this was the most appropriate way to utilize senior research personnel.

The Working Groups were technically oriented, with little if any consideration given to HRD issues. This lack is particularly evident in the failure of most of the groups to adequately plan for any succession by recruiting and training younger, less experienced personnel as group members. Many of the working group volunteers were older persons who are approaching retirement.

Extension Component

The ATUT Extension Component was composed of a sizeable number of Scientific Committees, again made up of senior research staff and academic research personnel. Some working group members were also members of the scientific groups.

The scientific committees trained village level horticultural extension service personnel throughout the country, utilizing selected model farms. The extension workers in turn provided technical service to large numbers of small-scale farmers.

General Training Considerations

The flow of technology within the ATUT project started with the long-term and short-term expatriate consultants employed by the ATUT general contractor, Ronco. The technology was transferred directly to larger commercial growers by the Ronco specialists; the specialists in turn transferred relevant technology to the working group members through the conduct of joint technical service activities; and the working group members who also participated in the scientific extension committees in turn provided the technology to these committees

The Ronco consultants were particularly effective in transferring technology, skills and techniques to the larger growers who represented the majority of their clientele. Their effectiveness stemmed in large part from consultant selection criteria, which stressed practical hands on commercial experience as the most important prerequisite for employment. The consultants were drawn from among the best qualified candidates from the United States, Chile, Italy and elsewhere.

A general analysis of level of improvement in management skills attained through the project, in the absence of any baseline information or goals built into project design, must of necessity be subjective, at all levels. The impression gained by the evaluation team was that a considerable degree of management skills improvement was attained, despite the lack of any formal approach to fostering such improvement.

The improvements in management skills were largely due to the opportunity for intensive interaction between the Ronco technical specialists and their grower clientele. In the judgment of the evaluation team, these improvements could have been significantly enhanced if there had been a more formal approach to management and organizational development incorporated into the project design.

Analysis of the appropriateness, effectiveness and results of the training approaches and methods utilized under the activity is ambiguous except in those areas where the training is very technical and the skills are demonstrated in the classroom. For ATUT, the classroom has most often been the farm itself.

The one ATUT HRD element that can be evaluated with some certainty is the measurement of how well the participants learned the skills that were taught, to what degree the skills are being utilized, the reasons for not utilizing the skills, and the impact of skills use. The technical agricultural skills that were taught are specific, measurable, have to be demonstrated in the field and the impact in terms of increased yields and quality improvements can easily be measured.

This brief overview of a universal approach to measuring the design, development and effectiveness of training and will serve as the context of for the evaluation of ATUT HRD efforts and recommendations for future HRD and OD measures.

Definitions

The terms “Human Resource Development” (HRD) and “Organizational Development” cover a broad range of specialized issues and activities. The following sections will define some of these issues and activities in order to foster a general understanding of the disciplines.

Data, Knowledge, Intelligence and Wisdom

It may be useful to begin with a definition of the above four commonly used terms.

Data in a training context has no meaning in and of itself, but rather represents an enumeration of items such as number of participants, cost per participants or per workshop, etc.

Knowledge can be extracted from the data and the context in which the data occurred, for example, cost-effectiveness can be calculated by analyzing data on costs per participant and/or per activity and comparing this with the impact of the training in financial terms.

Intelligence is concerned with making judgments concerning what was good or bad, did or did not meet expectations, etc., based on appropriate knowledge.

Wisdom consists of the ability to usefully apply the intelligence gained to subsequent similar situations (lessons learned).

The evaluation of ATUT HRD and OD makes use of ***intelligence*** while the resulting recommendations represent the application of ***wisdom***.

HRD Definitions

HRM Systems

HRM systems are those systems and procedures that an organization uses to anticipate and plan its human resource needs and utilization. HRM systems constitute the overall framework within which all human resources are managed and consists of various systems regarding performance, career, rewards, hiring, firing, etc. as well as administrative support elements such as a data base incorporating critical information concerning each employee.

Following is a list of common HRM components:

Benefits: Corporate policy governing employee eligibility for bonuses, vacation time, tuition support, insurance, company car, club memberships and other job perquisites;

Career Planning: Assistance provided to employees to help them determine their position moves, promotional sequence in the corporate hierarchy and other employment-related strategies over periods ranging from two to as long as 10 years;

Career Development: Plans supported by the employer and developed with employee input, that identify specific training, education and experience that the employee needs to enhance his or her career potential;

Career Pathing: This is done at the corporate level to determine which positions must be held in order to advance to specific higher positions, how many years managers should serve in each position, and what types of training and education are required for an employee to move through various vertical, horizontal or diagonal career paths;

Compensation: The employee financial package including base salary, bonus, stock options, etc., which is determined by the value of that position the organization, company needs, employee skill levels and employee demands for accepting the position;

Competency Profiling: Determines skills, knowledge and experience requirements for a particular job; used for purposes of recruitment and employee development;

Gender Concerns: Focus on the incorporation of women into all functions and levels of the organization (some 90 percent of all workers in commercial horticultural enterprises are women, but most of these are employed as laborers with very few at a supervisory or managerial level);

Hiring: This is the process of extending an offer of employment to job candidates (most executive positions in the typical Egyptian family-owned company are filled by family members);

HRIS: The Human Resources Information System consists of the management of an employee data base and supports queries regarding employees background, years of employment and other employee information; can be used for purposes of planning, company reorganization and human resource strategic planning;

Job Description: A summary of specific job requirements and responsibilities;typical format consists of job title, report to, positions reporting;

Maternity Leave: The formal leave policy for women following parturition (some companies may also provide paternity leave to allow working women to return to work sooner while sharing new parental responsibilities with their spouses;

Organization Design: Development of structures that organize functions, hierarchies, reporting relationships, etc. in ways that better serve the tactical and strategic objectives of the company;

Outsourcing: Hiring outside firms to perform functions that are not core competencies of the company, commonly consisting of legal, customer service, recruiting, insurance, and many personnel functions;

Performance Management Process: The system that develops, measures, manages, aligns, improves and rewards all performance outputs;

Personnel Policies: Internal rules and regulations that apply to all aspect of employee hiring, retention, rewards, firing, etc., must be congruent with local laws and are usually published and are often posted in prominent places within the company premises;

Promotion Policies: Closely related to the Performance Management Process in organizations that reward for performance and can support career planning and loyalty;

Recruitment: The procedures for attracting candidates to fill empty positions; should be aligned with job descriptions and the needs of the hiring manager and department;

Rewards System: Determines what special benefits the employees can expect to receive as a result of satisfactory or superior performance, typically consisting of financial benefits, promotion, leave with pay, some form of recognition and even special events held to recognize outstanding performance of groups and individuals;

Succession Planning: Determining who will fill a position that becomes vacant due to death, illness, promotion, retirement, etc.;

Termination: A formal procedure carried out with legally defensible techniques that provide for the systematic firing of employees whose behavior and/or productivity does not meet employee standards of at least satisfactory;

Tuition Reimbursement: Employer support to reimburse employees for courses they have paid for that are work-related and are expected to contribute to their effectiveness on the job.

Company Policies: The body of rules, regulations and procedures that govern all the above and prevent the arbitrary use of power and personal prejudice to govern employee rights, privileges and opportunities.

Training Evaluation

This section describes a training evaluation methodology that can also be used to develop curriculum, training objectives and align the training event with the ultimate purpose of the

organization. In this four-level model, each level of proof of accomplishment is dependent upon proving that the previous level was accomplished.

Level 1. Participant Reaction

Did participants enjoy the training and/or believe they will use what they learned? All of the answers are exclusively student self-reported, making them potentially subjective and unreliable. Answers are too often influence by whether the participants liked or disliked the trainer.

Level 2. Test that Learning Took Place

Describe in measurable terms what skills were supposed to be learned as defined by training objectives. What is the proof that any of these were actually learned? Participants should be pre-tested to determine what knowledge they already have to. Are they qualified participants? This will also help determine whether the learning was acquired as a result of the training or existed prior to the training.

Level 3. Transfer of Skills to the Workplace

Of those skills that can be proven to have been acquired as a result of the training, which are being applied on the job? Is there data that proves that transfer of skills and knowledge actually occurred? If you can prove that level two learning did take place but there is no evidence of the application of such skills or knowledge transferred, then either the wrong skills were taught the work environment is not supportive of the application of the acquired skills.

Level 4. **Impact.** What impact has the training produced on the job, function, company, etc in terms of increased effectiveness and productivity, money saved, etc.

Level 5. **Return On Investment (ROI):**

This is a comparison between all of the training costs and the financial benefits realized as a result of the training. It provides an additional measurement of the degree to which the training benefited the organization and an indication of which kinds of training are worth repeating.

Training Of Trainers (TOT): Training of trainers represents another level of training, which represents a means of multiplying the efforts of the original trainers in order to reach a much wider audience. A TOT model is Appendix B which has the purpose and objectives of a generic TOT program.

HRD and Training Resources

There are a number of examples of agriculture sector-related human resource and organizational development initiatives in Egypt. HEIA has embarked on such a program and in May, 2002, was engaged in a search for a full-time organizational development executive.

The USAID-funded Agriculture Led Export Business (ALEB) project incorporates an HRD program under the title Organization and Human Resources Development, which was started in mid-1999 and continued intermittently with short-term technical assistance consultants until 2001, when a full time Co-Director of Business Development Services was appointed. ALEB has a proven track record in transferring OD and HRD to its corporate clientele and can serve as a model for other such efforts.

The Walla Walla Community College, of Walla Walla, Washington State in association with Al-Azhar University College of Agriculture in Upper Egypt has established an agricultural training facility aimed at training agricultural technicians, especially in the New Valley (East Oeweinat)

area of Upper Egypt. This effort, however, will focus primarily on skills training rather than incorporating HRD or OD.

DT2, another USAID Egyptian program, in cooperation with the International Institute for Education (IIE) is currently funding some 25 PhD candidates in bio-engineering at U.S. universities. The program also several Egyptian participants in the Harvard University annual Senior Executive Program.

MDI was established for the purpose of creating awareness of OHRD issues through bringing prominent practitioners including Tom Covey to speak to large audiences about human performance issues related to increasing productivity in the workplace. MDI2 will extend this awareness into skills training, mostly on a mass audience basis.

The Farm Machinery Training Center (FMTC) in Alexandria was founded to "improve the skills and knowledge of handling, maintaining and repairing all types of modern agricultural machines". (Dr. Samira Khalil, General Director). This is only program which has training objectives stated in terms of learner outcomes and conforms to the training model advocated in this report.

Egypt also has many excellent training resources in the areas of human resource development and management. A few of these are:

- The Egyptian Human Resources Management Association, which is the local affiliate of the Society of Human Resources Management headquartered in Alexandria, Virginial led by Ms. Mushira El Bardai, HR Director, AUC;
- A formal group of HR-related individuals within the donor community based in Egypt, that meets monthly under the leadership of Larry Hearn, COP, Pal-Tech, DT2;
- A newly established Management Consulting Association initiated by Dr. Tarik Hatem, AUC.

There are also a number of other human resource development organizations in Egypt.

Other HRD and OD Considerations

A Primary Workforce Issue

The labor component for horticultural commodities, particularly for harvest and postharvest activities, is provided primarily by females. The proportion of female workers varies from a minimum of 50 percent up to 90 percent depending on the particular commodity, although in nursery and packing activities it commonly reaches100 percent.

At present, most of the horticultural workers are young women. When these young women marry, the Egyptian rural culture is such that they are expected to cease employment and devote full time to their husbands and households. This necessitates continual recruitment and training of new workers. A sizeable proportion of the female labor fills semi-skilled and in some cases skilled positions, adding to the inconvenience and financial burden on the employer.

Given the heavy dependence of the horticulture sector on female labor, this is not so much a gender issue as it is a workforce issue. "Women are being trained for some quite specialized and skilled jobs, such as grading and packing of produce. These women cease their employment when they get married, their skills and the effort are lost to their employer and effort and resources must be applied to training new workers." (from The Feminization of Strawberry Production, Dr. Sawsan El-Messiri, Gender Consultant).

This will become an increasingly important issue and a potential constraint on the future rate of growth of the horticulture export industry. The dramatic dependency of the horticultural industry on female workers makes it essential for future projects dealing with the industry to place emphasis on enhancing the roles and working conditions for women workers.

Training and Education

As used in this report, training refers to observable, measurable skills being taught, such as planting melon seeds at the proper depth, distance and timing using appropriate fertilizers. Managerially, this can be equated with the steps of running a meeting, delegating, giving performance feedback, demonstrating leadership skills, etc. In other words, all of the skills of an HRD nature can be trained for and evaluated in the same way as any agricultural skill.

On the other hand, education is the teaching of knowledge of an intellectual nature that may or may not result in behavioral changes or skills development. One can be educated about the workings of how teams work effectively and not be an effective team member or leader. If one is trained in teamwork and leadership, one can demonstrate specific behaviors and skills. All training requires some education as well, unless it is so mechanical that the performance requires no understanding of why particular behaviors are the most appropriate.

Thus most managerial training within the ATUT context has been education while all the training of a technical nature has ideally lent itself to the four-level training model for purposes of evaluating appropriateness, effectiveness and results.

Organization Development

Donors and local human resource specialists in Egypt commonly assign multiple meanings to the term organization development. Some of these meanings do not equate with the use of the term in this report as defined below. Common definitions of organization development include organizational strengthening, meaning any activity that enhances the performance of an organization; organization design or the organization of functions, accountabilities and reporting relationships; and organization creation, which means bringing into being a new organization.

Organization development is defined for purposes of this report as the behavioral science approach utilizing different concepts and techniques regarding group dynamics and how people interact when they are solving problems, making decisions and resolving conflict. OD also supports the legitimacy of discussing group leadership, corporate culture, trust building and the emotional content of whatever other issue is being pursued. People are also knowledgeable about who has what title, where they are positioned in an organizational chart, their general range of salaries, education, years with the company, etc.

What are commonly not a legitimate topics for discussion are rules for whether or not to show up to meetings on time, patterns of interruptions, to what degree decisions are based on status, knowledge, avoidance of conflict, self-interest and the group's greater good, etc. OD makes all of these issues explicit and, rather than threatening, they become quite comfortable and necessary discussions for improved group effectiveness.

Corporate Culture

This is arguably the most critical element of this whole report because it defines how people think about HRD. According to the experience of the Evaluation Team, the OHRD component is usually ranked last in organizational priorities. This has been the corporate culture of the ATUT project.

The corporate culture is the total environment within which people work, think and feel about their work, relationships and what actions are rewarded and punished. Though very complex, it is the fabric that ultimately determines people's satisfaction with their job, their loyalty, motivation and the retention of employees. The idea of corporate culture for USAID project clients is critical both for internal HRD and sector development through improved collegial and collaborative efforts.

Conclusions and Recommendations

Organization Development

An evaluation of institutional development including development of HEIA leads to the conclusion that all of the institutions of the horticultural export chain are becoming more mature, sophisticated and more competent because of the various ATUT-sponsored activities, including use of various consultants on short and long-term bases, on the job training, observation trips to other countries, on-site visits within Egypt and others. Much of this development is evolutionary as new farmers enter the industry with previous sophisticated business and managerial skills, financial resources, tremendous ambition and a history of entrepreneurial success. Many of these new farmers start out with the best equipment, agricultural practices, financial, managerial and technical resources. Many of these new farmers are "seeding" the horticultural environment with their newly acquired knowledge.

Additionally, HEIA is leading the way as a credible, powerful industry player with growing membership and the realization that it must be market-driven, customer-focused and financially viable without donor support. In HRD terms, apart from Farm Frites in the agro-processing sector, HEIA is quickly becoming the most sophisticated HRD consumer with proposed HRM/HRD systems embodying career planning, performance management, internal and external customer satisfaction functions and aggressive recruiting/hiring procedures. In short, HEIA is either beginning to implement or seriously considering the implementation of most of the HRM/HRD systems described in this report.

Corporate Culture

Ultimate support for HRD efforts is supported by corporate culture. Its nascent state within the ATUT environment has been hopeful but not sufficient to support anything but modest HRD advances. Since so much of the Egyptian private horticulture sector is characterized by demand-driven services, HRD services which are not in demand in the market-place will need an awareness campaign to increase interest and demand. The recent growth of a local HRD consulting industry is encouraging, although most of this industry consists of part-time academics and individual "boutique" shops.

A major shortcoming within the Egyptian horticulture sector has been the lack of cooperation among the various elements of the industry. This situation has improved markedly during the past few years, but further progress is necessary for optimum industry growth. The larger horticulture industry "corporate culture" is evolving from one of distrust between Government and the private sector, between farmers themselves, between all participants in the supply chain, post-harvest chain, cold chain to the realization that all of these elements must work together to foster mutual benefit and progress.

An example of the benefits to be gained from development and maintenance of a favorable corporate culture is the agro-processing company Farm Frites, where in a recent interview, the Evaluation Team was told that among the dozen employees at middle-management and executive levels who were participants in modest OD efforts some three years ago, all are still employed. The company has made a considerable investment in improving employees skills. While these skills are very saleable to other employers, the employees concerned have elected to stay with Farm Frites. The conventional wisdom is that at least half these employees should have gone on to more lucrative opportunities by now. They are still there because the corporate culture supports their continued development, modest career mobility and an atmosphere of being valued as critical members of the management team.

The following table illustrates three human resource development strategies.

STRATEGY	PURPOSE
Training	Develop individual skills and knowledge. Change attitudes, values. Develop appreciation.
Organization Development	The focus is on the improved performance of an organizational unit, be it a ministry, section, or department. It incorporates MBO techniques of measuring progress toward the unit's and individuals' stated objectives and, often, elements of all the other strategies mentioned herein.
Political Action	Through legislation, decrees and policies the focus of agencies and ministries and other public sector organizations can more fully support HRD efforts in the private sector, e.g. tax credits for training, for promoting gender activity, etc.

Small-Scale Farmers/Women Farmers

Small farmers do not have the resources to sustain long-term HRD investments, so the formal training should, as much as possible:

- Be on-site as part of an OD approach;
- Should be more modularized with shorter feedback loops so the trainers will get feedback in smaller and more rapid increments to be able to modify the HRD efforts;
- Put less emphasis on literacy as a factor, with little or no reading material or writing exercises included.
- Smaller farmers and. women farmers may not be as sophisticated as larger farmers regarding the total food chain, especially the marketing and postharvest areas, therefore their HRD training should include managerial skills with applications yielding immediate results and pay-offs.
- HRD efforts should incorporate more family-ownership skills as 95% of all growers will be passing on management and ownership to sons and daughters for perhaps the next several generations, until these companies are large enough to engage professional managers.

- For women specifically, all HRD efforts incorporate literacy and hygiene. HRD programs should also include training in leadership, teamwork, assertiveness, self-esteem and thinking through the decisions of whether or not to continue working after marriage.

Human Resource Development

- Build HRD into any next Agricultural/Horticultural Export project as an explicit component so that it is not left to chance.
- Analyze personnel systems, policies, practices and procedures to determine company needs and assist companies in developing functional and coordinated personnel systems.
- Prepare a "Tool Box" (as was done by ALEB) on Model Employment Policies in agro-processing and a "Tool Box" on Organizational Management and Organizational Design in Agro-processing.
- Provide training in human resource development and help design in-house training programs.
- Provide guidance to target companies in the development of employee policy and procedure manuals. A critical component of these policies and procedures should include incentives, rewards and sanctions in the areas of timeliness, absenteeism, documentation and reporting, adherence to company policies and growth objectives, etc.

Training

Education needs to be more pragmatic. Current graduates, even of the agricultural schools, are viewed as too theoretically trained and companies report that it takes several years of on-the-job (OTJ) training to fully qualify these graduates for their job responsibilities.

The four level evaluation model should be used for all future training. Evaluations of current USAID-sponsored training, with few exceptions, certify attendance and not learning. Learning is certified by a test (paper and pencil, demonstration of learning, simulation, field exercise, role play, etc.) that demonstrates that the learning objectives (predefined learning outcomes stated in measurable terms) were reached. When objectives are properly written, to what degree learning occurred can be determined absolutely

An OHRD unit should be created within HEIA, the Foreign Trade Training Center, the MALR or other horticultural organization that has the funding, staff commitment and philosophical orientation to develop the skills of leadership, teamwork and conflict resolution. This would provide a home for all of the existing OHRD resources that are now scattered and not aware of each other's existence. This OHRD home should also be a clearinghouse for the many private consulting firms that deliver HRD services.

Organization Development

The traditional approach to organizational development is for an expert consultant to interview an organizational client that is seeking development assistance and recommend solutions. The more viable organization development approach is to facilitate and teach the problem-solving expertise to the client so that he/she can become the expert and solve their own problems. Experience with ATUT and ALEB shows that this approach works in Egypt.

Another useful approach already being demonstrated by Management Development Initiatives (MDI) is the concept of "Advanced Companies". These are companies of various sizes, objectives, products and services which have two factors, visionary leadership and commitment, in common, They advanced companies have engaged in an extensive OD effort that combines

managerial skills training, teambuilding and profound changes in corporate culture. They are then used as models by the development agency to encourage other firms to follow suit.

Organizations and Structures

Though there has been great attention to the conventional challenge of how to best organize people, functions and resources, the focus and discussions tend to be legalistic and/or mechanistic.

Missing from these strategies is the element of organization development. When recommendations discuss building of trust, leadership, teamwork, etc. the conventional approach assumes that the appropriate organizational chart, mandates, clarity of legalistic documents, etc. will ensure that trust will build, cooperation will increase, teamwork will improve, etc. This may in fact happen. The best means of accelerating this development and changing corporate culture is not to assume that this will be improved solely by these traditional approaches, but to utilize the proven methodology of OD

As these conventional approaches are initiated, OD can make explicit the issues of trust, teamwork and cooperation by utilizing exercises that make explicit the degree to which any of these factors are extant in the corporate culture, how much more is desirable and how to get there by closing the gap.

It has been the experience of many OD practitioners, both Egyptian and non-Egyptian, that all of the OD methodologies are valid and appropriate approaches that Egyptian corporate culture will readily accept. Unfortunately, most donors including USAID are naïve regarding even the existence of this approach and therefore it is not part of their world-view for problem-solving.

Though there are frequent workshops and conferences dealing with the many technical issues, there has not been a conference that included discussions of how to improve trust, how to create win-win conflict resolution, teamwork skills for improved relationship between government and the private sector and similar OD issues. These topics may sound strange and yet, OD practitioners who have run corporate and organizational teambuilding workshops focused on these issues report successes, limited only by the lack of sustained effort and clients' commitment to the time and funding to increase the efforts.

***Specific OD recommendations*:**

- Commit to OD as a central discipline of HEIA and conduct teambuilding sessions that are very focused on short term objectives that require commitments, in measurable terms, to the OD outcomes of cooperation, sharing, teamwork, conflict resolution, accountability, etc.
- Foster a corporate OHRD culture through providing explicit encouragement for the integration of specific OHRD elements within each organization concerned.
- Advocate the Steven Covey model of "advanced partner companies" by assisting at least one HEIA member company qualify as a member of this group and using that company as a model for other HEIA members.

Training Recommendations

Future USAID projects should incorporate introduce human resource principles and train clients to develop their own human resource systems. Following are some of the required measures:

- Work with local subject matter experts to help them articulate the learning objectives of each HRM/OD module;

- Develop a pre-test to determine what participants already know and whether or not they are truly qualified to participate in a particular course or module;
- Determine the best way to teach HRD and OD objectives, so that the approach would not just be through lecturing;
- Conduct "train the trainers" sessions so that consultants will be able to use experiential training, role playing, simulations, etc. to achieve the learning objectives;
- Develop means of testing to confirm that learning actually occurred;
- Simulated application of the skills and knowledge that should have been learned,
- Research projects that apply the skills,
- In-class role plays that demonstrate newly acquired skills,
- Similar to the ATUT development approach, select firms that have the managerial and financial capacity to develop successful in-house HRD programs and provide them with the technical assistance required to do so, with these firms acting as models for other industry participants;
- Compile a comprehensive directory of HRD-related programs and resources that can support firms and organizations in the horticultural sector.

Gender Issues

Women should receive more training than is currently available; they are likely to make better supervisors and managers than men since they have typically been employed as laborers and fully understand the working conditions, cultural backgrounds and unique female sensitivities of the horticultural workers, most of whom are women.

Employers need to be more creative to retain valuable female labor that is commonly lost because of marriage. Solutions might include:

- Job sharing, allowing at least two women to share the same job, perhaps on a half-time basis;
- Establishment of child care centers to allow women to bring young children to work (this approach has more than paid back any cost to the employers in terms of retaining qualified and experienced employees);
- Employing the family as a unit, with husband and wife both provided with jobs in the same area (this is already being done to a limited extent by several horticultural firms and is proving to be successful in retaining women employees after marriage);
- Specific gender training similar to that conducted by Dr. El-Messiri who focuses on female roles, self-esteem, aspirations, and gets women to realize that if they aspire to a certain lifestyle, their husband's income alone is not likely to provide it and they are a necessary contributor to the improved life of their children and family;
- The most important factor, however, has been the further education of women, since better educated women are more inclined to pursue a career, have smaller families and contribute to overall family and employer well-being;

With women being such a dominant factor in horticulture sector employment, they represent, even more so that the men, the greatest potential for dramatic OHRD improvements.

Prescriptions for Effective Teamwork: Corporate Culture
by Mel Schnapper, Ph.D.

Corporate culture is thought by many to be most elusive and ambiguous. My position is that it is as concrete an element as a chair or desk. And it can be driven (managed) as consciously as the way you drive your car. It can be measured and managed. Too often people in organizations too easily accept the role of victim of corporate culture by repeating statements such as "Well, that's the way things are around here". The point of this article will be that members of teams and ultimately of the entire organization, can be managers of corporate culture and not its victims.

So, what is corporate culture? Corporate culture is simply the micro level of what ethnic culture is the way an anthropologist might define it. It consists of values, beliefs and what people think about their own specific behaviors and whether or not, and how, these behaviors will be rewarded, punished or given no attention. For instance, in some teams the norm for meetings that are scheduled for 9:00 am is that they really start at 9:15 or later. For other teams, meetings will start precisely on time. People that show up late are reprimanded either verbally or non-verbally, showing up on time is seen as a necessary behavior for being effective, respectful, liked and for other psychic rewards.

One exercise, I frequently do with clients is to question the staff for norms that could fit into a two by two matrix along the lines of behaviors that are Frequent, Infrequent/ Desirable, Undesirable as shown below:

	Frequent	Infrequent
Desirable	-staying late to help others -"hanging" out after work	-celebrating a birthday -hearing that you did a good job
Undesirable	-Coming to meetings late -leaving food around work area	-coming to work late -people get into public arguments

These are some of the things that the staff of one client came up with. This exercise allowed the staff to discuss specific behaviors and make specific action plans to change these norms. The goal, of course, is to put energy and attention to those norms that are Frequent and Undesirable (reduce), and Infrequent and Desirable (increase). This matrix will be revisited over subsequent meetings to see how well these specific norms (as an aspect of corporate culture) are being managed and what new norms are created or eliminated.

Another way to get at corporate culture is to use a participant survey technique to identify the perception of corporate culture. One such instrument (a questionnaire that typically has a series of scaled or multiple choice answers) diagnoses culture along four dimensions: role, power, task, relationships. Other instruments pick other significant dimensions of corporate culture: candor, trust, leadership style, rewards, trust, etc.

Since corporate culture can embrace all dimensions of a corporate environment, the consultant needs to pick the instrument having those variables that are most relevant to the client's issue.

There are hundreds of instruments that diagnose corporate culture or as it sometimes called, climate. Every instrument will pick its own variables to describe measure and manage. I use diagnostic instruments which are of modest simplicity and require a modest effort and amount of time to complete and use for feedback. It also gives team members categories within which to explore the "how" of what happens on a daily basis within their team or larger organization.

Specifically, a culture which is highest on task will support the degree to which individuals can ignore their attention to respecting the traditional authority of various managers, showing the expected deference to people because of their title, years of employment, credentials and other ways in which status is defined.

A culture which is highest on role will reward people who operate within the confines of their respective territory, even when task accomplishment is being compromised.

When relationships is the most critical, being a nice guy and getting along is most critical and will be favored by everyone.

When power is the most critical factor, people will manage their behavior to acquire power as defined by the organization.

Any organization has a mix of these factors and many more than these four factors. But these four factors have very easily describable behavioral components that team members can discuss and alter in conscious ways.

For one client, the exploration of corporate culture has evolved into a consensus that efforts and rewards will have a team basis and thus the corporate objectives as they are now being clarified, have a focus, not on observing role or power, but on task and relationships. This allows the team members, while focusing on task, to give greater attention to getting the job done and think more consciously about how getting the task done can involve relationship building and how it might impact positively or negatively on their relationships with each other. Now, obviously, the dimensions of role and power must be given some attention also, but they are consciously relegated "in the way things get done" to a lesser level of importance.

The major factor that determines the corporate culture is the behavior, reward and punishing behavior and modeling of the top executive of the company and whoever heads up each particular unit. That is why a company may have a dominant culture with many subcultures depending on the leadership style of that unit's leader. When leaders complain of their unit's corporate culture or norms, they are often unaware of how much of an influence they themselves represent.

The other critical dimension is that corporate culture is the medium within which everything else occurs; it's like the water that fish swim in. So, no matter what kind of change or performance management improvement a team or company is trying to effect, there has to be attention to corporate culture.

When companies and teams go through traumatic changes in the way business is conducted, attention to corporate culture can make conscious, those dynamics, feelings, values, and beliefs that everyone has. Staff can benefit from the language, and more importantly, the permission and support, to discuss and manage culture for their own individual and collective benefit.

Corporate culture is even described by some as the last great frontier of making organizations more effective.

VI. Smallholder Development Models for Egypt

Introduction

The following models are already being utilized as tools to help improve the horticulture production, postharvest and marketing skills of Egyptian smallholders and to ultimately enable their products to gain access to world markets; or, in the case of the postharvest model, are in advanced stages of planning and design. The success of these models, limited though they may be in some cases, have graphically demonstrated that the following commonly held beliefs are actually untrue:

- Products grown by Egyptian horticulture producers farming less than three feddans cannot compete in export markets;
- Small scale Egyptian farmers are unable, or unwilling, to pay for the technical services aimed at improving their production, postharvest and marketing skills; and,
- Egyptian farmers will not cooperate for their common good.

Small-scale farmers in Upper Egypt and elsewhere are directly exporting their own high value horticultural commodities while others are successfully supplying larger grower-exporters and exporters. A sizeable number of small-scale farmers are willingly paying for technical services, and through the efforts of CARE's AgReform Project alone, 7,000 small-scale producers have banded together in registered associations (NGOs) in order to jointly acquire technical extension services and market their products.

Wider application of these successful models will address the following important national issues:

- It will help produce the larger volumes of export quality horticultural products that will enable Egyptian agriculture to establish a commanding presence in existing and new markets;
- It will increase the family incomes of the majority of Egyptian horticultural crop producers who till less than three feddans; and,
- It will substitute higher value crops with lower water requirements for some of the lower value crops with higher water requirements that are presently grown in Egypt.

Rationale for Including Small and Medium Scale Farmers in the Export System

Achieving a significant increase in export volumes is not only a national and a horticulture industry goal; it is also necessary in order for Egyptian horticultural product exporters to establish an influential presence in export markets.

- The producers and processors of horticultural products for export are unable to expand their own production enough to enable them to meet this goal.
- In order to increase export volumes it will be necessary to source additional horticultural commodities in substantial quantities from small and medium-scale producers who are not now producing for export.

- Enabling small and medium-scale growers to produce the quantities and quality needed for export markets will require large-scale, concentrated efforts to improve their production, postharvest, and marketing capabilities and systems.

In order to be successful, these efforts must involve all of the elements concerned with the horticulture sector, including producers, processors, input suppliers, service providers, NGOs, academia, the government and donors. (the commodity chain concept) The task is made more difficult by the pressures on the horticulture export industry that are being created as a result of EUROPGAP, the new EU pesticide protocol, and similar international food quality and safety initiatives by other countries.

Given the above, any future USAID project in support of Egyptian horticultural exports should include measures aimed at helping foster the integration of large numbers of small and medium-scale producers into the horticulture export industry for both fresh and processed products. This will in turn result in continuing improvements in production for the domestic market and in domestic marketing systems.

An overarching reason for fostering the further development of the following models is found in the forgone opportunities for raising farmer incomes, increasing returns to the economy and generating significant increases in foreign exchange earnings that now result from losses associated with harvest, postharvest and marketing of high value horticultural products. Based on interviews with industry representatives, ATUT personnel and others, the team estimates that reducing these losses by just 50 percent would generate a minimum increase of $20 to $30 million in annual revenues to the sector (some estimates place the figure much higher).. When improvements in produce quality are taken into account, the potential gains are even greater. A major share of these increased revenues derived through widespread application of the suggested models would accrue directly to the small and medium-scale Egyptian farmer.

Operating Models

No single development model will serve to accommodate all of the potential opportunities for accomplishing broad-based horticultural industry improvement through small and medium-scale producers. The Team has identified several models that are already being applied in Egypt, although still on a relatively small scale, as well as a model that has been planned and designed and is in the process of adoption.

The models have an advantage over theoretical constructs in that they represent already existing approaches to broadening the scope of the horticultural export sector, although they may require some modification to make them more universally applicable. It also needs to be pointed out that the horticulture sector support systems proposed in this paper would, and should, serve all of the following models.

The Nucleus Enterprise Model

The Nucleus Enterprise Model (NEM) refers to a formal, contractual alliance between a larger producer, processor, trader or other entity that has access to markets, technology and financial resources, and smaller producers to whom the nucleus enterprise is willing to extend this access as a means of obtaining additional product supplies (see following box). In the Egyptian context, application of a modified NEM to high value horticultural crops is thus far confined to a few large-scale exporters, grower-exporters and food processing firms. These larger entities typically contract with smaller growers for a specified volume of products. In order to obtain products that meet the required export standards, the nucleus enterprise provides the growers with some combination of production inputs and technical assistance.

The most frequently cited flaw in the application of the NEM under Egyptian conditions is the lack of equity occasioned by the larger producers (the nucleus enterprises) taking advantage of the smaller producers (the contract growers). The second most common complaint is the tendency of the contract growers to "pole vault" or sell their production outside the contract in order to obtain a higher price.

These complaints are obviously related. If the relationship is one-sided in favor of the contractor (nucleus enterprise), the lack of loyalty on the part of the smaller producers is understandable. The team, however, has observed a number of equitable, trust-based supply/purchase relationships between larger and smaller growers, approximating the NEM, indicating that such relationships can and do already exist in Egypt.

Another reason for resistance to adopting the NEM is the perceived risk for both parties to the arrangement. The risk to the contracting nucleus enterprises that have pre-committed a certain volume of product to their buyers is that they will be unable to supply that volume because of quality deficiencies in the products received from the contract growers or because the growers do not deliver the contracted volume to the nucleus enterprise.. EuropGap, the EU pesticide protocol and similar international initiatives will increase the quality risk.

The risk for the small-scale grower is that after he has invested time, money and other resources in the crop, the nucleus enterprise will refuse to buy it. The perception of this risk is considerably reduced when the buyer provides inputs such as seeds as well as technical assistance to the contract growers, thus making a more solid commitment to purchase the crop. Reducing both the perceived and actual risks to both parties through proper risk management, and building a climate of trust between the farmers and the nucleus enterprises is an essential element in the successful implementation of this model.

Notwithstanding the problems, the nucleus enterprise model when properly implemented provides a valid means of integrating smaller producers into the horticultural export marketing system through the establishment of a beneficial partnership between these smaller producers and larger firms with the need to expand their access to export markets. Several of the producer-exporters interviewed by the evaluation team are successfully applying the NEM. In the case of a lower-value Egyptian horticultural crop, potatoes, use of the model is widespread.

Based on our findings, the Team believes that three major initiatives need to be carried out in order to successfully foster expansion of the NEM in the high value horticulture crops sector.

- First, an industry-wide standard of conduct for contract growing arrangements needs to be established. This standard of conduct would cover contracting arrangements and contract provisions, the roles and responsibilities of the separate parties to the contract, and provisions for arbitration.
- Second, the participating smaller producers should be organized into farmer associations. This must be based on initiatives by the farmers themselves, not brought about through the intervention of the government or other third party, although an outside party (not the government) can provide encouragement and advice.
- Third, the contracting farmers must be considered, and treated as, equal partners with the larger contracting entities. This element is absolutely essential to successful implementation of the model.

Contracting standards should be designed by industry representatives under the leadership of a relevant industry association such as HEIA. Adoption of and compliance with the regulations should be voluntary, but compliance should be made the basis for participation by the contractors

in programs benefiting the industry. Contract growers failing to meet contractual conditions should be banned from future contract growing arrangements with the banning publicized within the industry.

An NEM support program that is working well in another country consists of the appropriate industry trade association helping to establish a committee composed of male and female contract growers, (usually representatives of grower associations), the contracting company, association representatives, and NGOs active in the area. These committees meet at least monthly to discuss and agree on solutions to any problems occurring within the contractual relationship. Most differences are settled at these meetings. Any that cannot be settled at the meetings are submitted to an arbitration committee organized and chaired by the association but made up of impartial third party arbitrators.

The NEM model requires time to be successfully put in place. The originator of this model for the Egyptian potato industry has been following the system for 35 years, but it took his company several years to successfully establish the model. According to this person, it is essential to adopt a rigorous selection process during the first several cropping seasons to identify those growers who are willing to consistently fulfill their contracts, with those who do not fulfill the contracts being dropped from the scheme.

The growers must have access to the proper technical support and production inputs. The logistics system for scheduling harvest and moving crops from field to buyer's premises must function efficiently. Another important factor is for the contractor whenever possible to maintain his own production operation in order to demonstrate proper production, harvest and postharvest practices to the contracting farmers. The person mentioned above is confident that the NEM system if properly organized can be used successfully for other Egyptian horticultural crops.

The individual contracting entities will probably be unable to contribute all of the costs involved for organization and training of farmers, association support and other costs associated with establishment of the system. The initial funding for these purposes will need to come from outside sources and be channeled through the administering association. This would appear to represent a valid use of USAID funds. The donor funding should be utilized as seed money to enable system start-up and initial development, and should end once the system gains sufficient momentum to be self-financing.

The training and extension services mentioned below, under Section C, Support System Requirements, can also be usefully applied to the support of the NEM system. These will primarily address technical areas such as satisfying the requirements of EuropGap and the EU pesticide protocol, as well as the training of nucleus enterprise field staff.

THE NUCLEUS ENTERPRISE MODEL

By Don Taylor, Agribusiness Development Specialist

Note: The Nucleus Enterprise Model (NEM) was conceptualized by the Consultant in response to a request by Asian Development Bank to design a viable approach to utilizing the private agro-industry sector, rather than the government, as the primary mechanism for smallholder agro-industry development in Papua New Guinea (PNG). The Consultant led a team responsible for the design of a smallholder agro-industry development project in PNG utilizing the NEM approach. The first component of the project will be implemented starting in the second half of

2002. The Government of Papua New Guinea has since adopted the NEM as the basis for future smallholder development efforts.

Background

A key constraint to agricultural development in most developing countries is the lack of reliable support mechanisms for commercializing smallholder agriculture. What is needed first is an assured market. Once that assured market is realized, smallholders need to have access to the credit, technical capabilities and the production, postharvest and marketing facilities required to supply products that meet the quality, cost and scheduling requirements of that market.

An effective means of supplying these is through application of the Nucleus Enterprise Model (NEM), where this is applicable. A nucleus enterprise is defined as a private agro-industry firm with access to markets, technology and production inputs and with the management skills and financial resources required to extend that access to associated smallholders. It is in the interest of the nucleus enterprise to extend support services and production inputs to associated smallholders in order to obtain additional volumes of higher quality raw materials and/or semi-finished products to supply the market. Any commercial firm that meets the above criteria, such as a nucleus estate, food processor, trader or a group of growers organized into a corporation, can function as a nucleus enterprise. The nucleus enterprise does not have to be a large corporate entity, so long as it meets the above criteria.

Rationale for the NEM is based on the fact that it is extremely difficult (although not impossible) to develop commercial agro-industry enterprises based on smallholders alone. Smallholders in developing countries typically lack adequate access to credit and capital, production inputs, modern production and post harvest techniques, current technology, management skills and markets. They are generally unable to guarantee a reliable volume of product that meets market specifications. Attempts to organize smallholders into production cooperatives or other organized production groups have had varying success. Utilizing smallholder production groups as the sole base for developing commercial agro-industry enterprises has not succeeded in most developing countries.

The most productive approach to developing subsistence smallholders into commercial agro-producers is through the involvement of a private sector nucleus enterprise that will function as a catalyst for such development. The nucleus enterprise system (see definition above) treats the out-growers as partners in the enterprise rather than as mere contract suppliers. The nucleus enterprise provides production inputs on a loan basis, extension services and a guaranteed market outlet. To be effective, however, the nucleus enterprise must go beyond this and exercise some degree of management control over the smallholders' production and post harvest practices and must take some responsibility for the general well being of the smallholder and his family. Properly designed and carried out, the nucleus enterprise system benefits both the agro-enterprise and the associated smallholder households, enabling both to enjoy higher incomes. The Nucleus Enterprise Model can be applied to almost all crop.

The nucleus enterprise system requires a higher level of production inputs and a significantly greater commitment of financial and management resources than other formal prior arrangements for purchasing harvested crops from smallholders. If managed properly, however, the increase in productivity and the greater market value of the resulting commodities more than compensate for the additional resources expended.

The most significant element in the nucleus enterprise system is the guaranteed market. All of the other necessary elements may be in place, but if the products grown by smallholders cannot find profitable markets, the system will not function.

The Smallholder-Nucleus Enterprise Model

Extension

- The nucleus enterprise has the focused technical capability to provide productivity enhancing advisory services to smallholders.
- It is advantageous for the nucleus enterprise to provide such technical advisory services to affiliated smallholders because it increases the quality and volume of products marketed by the nucleus enterprise.
- The nucleus enterprise can also provide a valuable service by helping government and/or quasi-government research institutions prioritize their research efforts to focus on activities that directly address commercial productivity improvement.
- The technical extension services provided by the nucleus enterprise are continually upgraded; in order to remain competitive, the nucleus enterprise must ensure that their smallholder suppliers continue to improve their own production and post harvest techniques.
- The technical extension services provided by the nucleus enterprise are by definition sustainable as long as they continue in business; a continuing smallholder extension effort is required to maintain productivity and market access.

Market Access

- The nucleus enterprise possesses the market access that smallholders often lack due to volume, quality and other constraints.
- The most important criterion defining a nucleus enterprise is its access to profitable markets; in order to remain viable, the nucleus enterprise must not only maintain its access to present markets, but must also continually seek out new and more profitable markets.
- The ability of the nucleus enterprise to maintain and extend market access depends on the capability of its smallholder suppliers to produce to constantly changing market specifications.
- In order to do this, the nucleus enterprise must continually work with its smallholder suppliers to upgrade their technical production and post harvest skills.
- The sustainability of market access by the nucleus enterprise is dependent not on government budgetary support or donor funded projects, but on the business capabilities of the enterprise.

Supply logistics

- The nucleus enterprise has the technical capability and access to information required to select production inputs based on the most rational productivity criteria.
- The nucleus enterprise because of its volume purchases can usually provide production inputs at a significantly lower cost than can individual smallholders.
- The nucleus enterprise must also have the financial capability or access to commercial financing required to provide production inputs on a reasonable credit basis to its smallholder suppliers.
- The nucleus enterprise either possesses the in-house logistical capability of delivering production inputs at the time, place and in the volumes required by their supplier smallholders or has the financial and management resources required to outsource these logistical services; most smallholders lack this capability.

Production Credit

- The nucleus enterprise has the optimum capacity to both provide production credit and to ensure that credit is repaid, through distributing the physical production inputs to the smallholder suppliers, marketing smallholder production and deducting loan repayments from product sales.

Infrastructure investment and maintenance

- The most immediate and significant economic impact from infrastructure investment is derived from relatively small investments that directly address commercial, particularly market access, constraints,

such as farmer to processing plant roads and bridges, wharves, public markets, etc.

- Coursing infrastructure investment through nucleus enterprise operators ensures that the funds will be spent effectively, since the commercial viability of these operators is to a large degree dependent on being able to move goods regularly to market at reasonable cost while maintaining quality.

Smallholder Food Crop Marketing

- Building effective partnerships between nucleus enterprise operators and smallholder suppliers of industrial commodities such as tree crops can establish a useful base for incorporating the marketing of smallholder food crops, particularly high value products such as vegetables and fruits, into the already established transportation and distribution networks of the nucleus enterprises. The margins provided by reduction of in-transit losses and improvements in product quality can both improve smallholder returns and provide additional profit to the nucleus enterprises.

Ancillary Business Development

- The nucleus enterprise can also act as a catalyst to develop ancillary business enterprises in the local community, through outsourcing services such as trucking, nursery operation, land preparation and others, including assisting local entrepreneurs source the required investment capital and business skills.

The Crop Sharing Model

A number of medium scale growers, particularly those who are pursuing other full-time occupations and are thus unable to manage their farms full-time, rather than hiring labor to work their farms are entering into crop sharing arrangements with local smaller scale family farmers. Typically, the larger growers divide their fields into plots of 2.5 to 5.0 feddans, which are then turned over to individual farm families to till.

The landowner provides all of the production inputs. The small-scale farmers utilize their family labor to plant, cultivate, harvest and carry out other necessary tasks under the general supervision of the landowners or their representatives. The proceeds from the sale of the crop are shared on a pre-agreed basis, often consisting of an equal share to each participant. This scheme offers distinct benefits to both sides.

The landowner avoids the necessity for employing paid farm labor. This is particularly useful to the medium scale farm owner who is fully employed away from the farm and who finds it difficult to generate the cash flow to meet payrolls while the crop is maturing. The families that work the farm have an incentive to do so properly, since they will share in the proceeds from their labor. The system provides a practical means of transferring technology to the participating family farmer. It also enables the farm families to earn additional income and perhaps accumulate the capital required to improve their own farming operations.

Application of the training and extension support system as well as the marketing access outlined below, would also greatly benefit the application of the crop-sharing model and improve its outcome. This would provide an additional source of technology and enable the farm to enlarge its scope to include availing of export markets.

The Technology Transfer To Workers Model

Many of the full-time employees of larger export-oriented horticultural production operations maintain small farm plots of their own. During the course of their work, these employees are

exposed to current technology, improved production and postharvest techniques, new varieties, etc. Facilitating their application of the knowledge gained to their own small-scale farming operations could in time help foster their emergence as a cadre of more advanced small-scale commercial farmers, producing higher quality products for domestic and export markets.

This might be done by utilizing the employers (the larger growers) as a conduit for providing the worker-farmers with credit for production inputs, for access to new varieties and as a marketing channel for their produce. The worker-farmers would provide an add-on developmental benefit by exposing their neighboring farmers to the new technologies, varieties, and production, harvest and postharvest techniques. Egyptian farmers learn by example and are accustomed to passing newly acquired knowledge along to their friends and neighbors.

The NGO Support Model

The following models illustrate two approaches by non-government organizations with smallholder development models underway in Egypt. These models while differing somewhat in their approach have the same goals, to improve the production and marketing practices of small and medium-scale farmers and thus enable them to increase their family incomes on a sustainable basis.

CARE Egypt

The CARE AgReform project started in 1996. Since its inception the project has provided technical and marketing information and assistance to 7,000 small-scale farmers (average two to three feddans each) in three governorates. The project has progressed from helping farmers earn more money when marketing their products locally to helping them gain profitable access to district, governorate, national and currently, export markets.

The project is focused on providing marketing and technical production and postharvest information to the farmer clients, through periodic visits by technical specialists to groups of farmers. The small-scale farmers, who did not perceive information to be of value to them were initially skeptical toward the project. The project was able to recruit only 13 farmers at the outset. After the first cropping season, when other farmers observed the benefits gained by the original 13 (greater productivity, higher profits in the marketplace) farmer participation in the project grew rapidly.

Once the technical production and marketing information was being utilized by large numbers of farmers, project management suggested to the farmers that if the service was really useful, they should pay for it in order to ensure longer-term program sustainability. The majority of farmers readily agreed. Once they started paying for the services, the farmers became much more discriminating, and demanding, concerning the type and quality of information given them.

Currently, for horticultural crops, each farmer member of a group receiving the services of a visiting technician pays a per visit fee ranging from LE20 to LE50 depending on the size of the group. Producers of staple commodities such as rice, wheat and sugar pay a lesser fee, as do women farmers, who generally have fewer assets and lower income levels than male farmers. The AgReform project was the first technical service provider in Egypt to charge small-scale farmers a fee for services rendered.

As a means of more effectively focusing their efforts, the project has helped organize the participants into farmer associations that are registered with the Ministry of Social Affairs. The individual associations, consisting of up to 50 members each, charge their farmer members an annual membership fee that ranges from LE10 to LE50. In addition, they have instituted check off systems to earn operating revenue. Cantaloupe growers, for example, pay their associations 10

piastres for each kilogram of cantaloupe sold. The project presently provides technical services only to farmers who are members of one of the associations.

AgReform first encountered some opposition from village-level governorate extension workers, who feared that the project was attempting to replace their services. Project personnel were able to overcome this opposition by working with the extension personnel and demonstrating that the project was there to supplement, not supplant, their efforts.

In the areas where the project is active, fully half of the village level extension workers, who are employed by the Ministry of Agriculture and Land Reform through the governorates, also own and operate their own farms. In an ironic twist, many of these farmer-extension workers have become members of the project-assisted farmer associations and are paying for project technical and marketing services.

The project is currently working with 54 growers who are producing and selling cantaloupes and garlic to exporters. The export producers are beginning to enter into formal supply/purchasing agreements with the exporters who are the buyers of their products. Because the varieties grown must be suitable to the export markets, the buyers generally supply seed to the growers.

At the beginning of the project, quality was a problem. There were no grades or standards and little if any price differentiation based on quality in the domestic market, at least partially because good quality produce was largely unavailable. There was no incentive for the farmer to produce better quality produce. Even if he did, by the time the product reached the market, most of the quality was lost.

The project has been able to demonstrate to participating farmers that delivering better quality produce to the right domestic markets will also earn them higher prices (this has also been demonstrated by other smallholder development programs in Egypt). Due to this greater quality consciousness, the 54 growers who are currently producing for export had no great difficulty in further upgrading their production to meet export standards. (One of the exporter-buyers commented that the quality of the garlic supplied him by the project growers was the best he had ever encountered).

One of the larger exporter-buyers not only supplies seed to his contract growers, but has also enlisted the company supplying the seeds (LE180,000 worth annually) to provide technical assistance (extension services) to the growers. The seed company considers this a market development tool. Thus the exporter with the assistance of the seed company is acting as a nucleus enterprise model (see above).

The greatest barrier to initiating supply and marketing arrangements between small-scale farmers and exporters was lack of trust and perception of risk on both sides (the growers were not certain that the exporters would really purchase their products and the exporters doubted the ability and the willingness of the farmers to provide a reliable supply of the required quality). CARE personnel have functioned as an “honest brokers” to help introduce measures that reduce the risks for both farmer and exporter and in the process, build mutual trust.

One of the strengths of the project system outlined above is the fact that unlike farmers who belong to the official farmer cooperative system, the farmers participating in the CARE model are responsible for making all of the decisions that affect their own livelihoods. CARE may recommend certain crop varieties, for example, but the farmers decide whether or not they want to plant those varieties.

The project has shown participating farmers the benefits to be gained from producing for the market, rather according to the farmers’ own preference. Formerly, the farmer participants grew

crops that were familiar to them, that were easy to grow or that their neighbors grew. Now, they track the requirements of the market and produce according to those requirement.

A number of valuable lessons can be learned from the CARE experience:

- The traditional attitudes and practices of small-scale farmers can be changed by demonstrating the tangible benefits to be gained through such changes;
- Small-scale farmers will organize, and cooperate, if they are convinced that it is to their benefit to do so;
- In order for this to happen, and be sustainable, the initiative for cooperation must originate with the farmers themselves, not be imposed by an outside entity (although such an entity may required initially as a catalyst to persuade and demonstrate the benefits of organization) , and the farmers must be left free to make their own decisions;
- Small-scale farmers can, and will, pay for technical services, provided they are convinced that these services are worth paying for;
- Small-scale Egyptian farmers can produce export quality products;
- Buyers and small-scale growers can successfully utilize formal supply/purchase arrangements to help reduce actual and perceived risk to acceptable levels;

Africare Egypt

Africare Egypt in 1999 entered into a project aimed at assisting small and medium-scale farmers (average six feddans) become exporters, starting with cantaloupes and green beans to the U.K. and Italy. The project is working in the Aswan area of Upper Egypt. This is the third year of exports.

The project works with different farmers each year, 30 the first year, 35 the second year and 25 this year. The project extends credit to the farmers and provides them with technical assistance (one Egyptian agronomist oversees 10 farmers).

In addition to helping the farmer participants develop export markets, the project has also improved their domestic marketing returns by linking them with buyers at the wholesale markets in Cairo, helping arrange trucking for their products and encouraging some of the farmers to travel to the market along with their products in order to familiarize themselves with market demand, marketing procedures and buyers.

Africare works with a different set of growers each year. The growers with whom Africare has worked in the past are now able to do all of the above through their own initiatives.

The Africare project participants are farming new lands, so there are no serious plant and soil diseases and few insect pests. Located as they are in Upper Egypt, the growers can supply the European market at a time of the year when no other suppliers can do so. Based on these advantages, Africare was able to arrange for a visit to the growers by representatives of a consortium of U.K. supermarket chains. This helped establish sustainable links to buyers of their exported products.

The following were important lessons learned from the Africare experience:

- Farmers in order to be able to produce export quality products need intensive technical assistance for the first year and easy access to credit for the first two or three years;

- Small and medium-scale farmers with marketing advantages (in this case a seasonal window and virgin lands) can export successfully despite limited product availability, so long as they can produce the required product quality;
- Improving domestic marketing practices is important to achieving export success as well as overall commercial success.

The MALR Extension Service Utilization Model

ACDI-VOCA in 1996 set up a market information project aimed at providing current information on market prices to small-scale horticultural crop producers. The project initially worked with farmers in 11 governorates with the later addition of four additional governorates.

Price information is gathered for 26 products in five major national wholesale markets. The information is disseminated through newspapers, radio and television. Monthly price bulletins explaining price formation and changes are also published and widely distributed.

The price information became widely accepted by small-scale farmers. After some time, however, many of the farmers began inquiring why their own produce failed to command the price levels reported by the service. The answer, of course, was that their products failed to meet the higher quality standards required to earn premium prices.

A common misconception exists among many observers of Egyptian agriculture, that there is no quality or price differentiation in domestic wholesale markets for horticultural crops. This stems from the fact that during the 1960s, the Egyptian government controlled all commodity prices (in the case of staple crops such as cereals, the government also acted as the buyer). During this period there was no incentive to produce better quality produce.

There are still no formal domestic market grades or standards for vegetables and fruit. Nevertheless, there is a definite graduated wholesale pricing system, based on quality. This is largely due to the fact that there is an increasing demand for better quality fresh produce from the hotels, restaurants, fast food chains and supermarkets.

ACDI-VOCA in a response to demand from their market information clientele then instituted a program to help improve the quality of fresh vegetables and fruits. They did this by establishing training programs for village level government extension workers to enable them to provide a higher level of technical assistance to the small-scale farmer clientele. The extension agents attend a five-day training course for each crop with which they will work. The training involves three days in a classroom and two days of practical, supervised on farm application of the skills learned in the classroom.

The ACDI-VOCA-trained extension workers then transfer the production, harvest and postharvest skills to small-scale farmers in their areas of responsibility. The only material incentive received by the extension workers is a transportation allowance of LE 50 per day for the average three days per week they work with the ACDI-VOCA client farmers.

The program, which has involved some 510 extension workers and more than 25,000 farmers to day, has been very successful in raising the average quality and market prices for small-scale farmers. A growing number of these farmers are currently beginning to sell their commodities to export buyers. The basis for these sales is the improvements in quality made for the domestic market, with very little increase in quality required to qualify for exporting.

One of the project's major value additions was the reduction of losses due to quality defects. Recent postharvest economic study conducted by ACDI-VOCA showed that the application of improved harvest and postharvest techniques with vegetables for the local market resulted ikn an

average 25 percent net increase in sales revenues. The study also indicated that the most important cause of damage to vegetables from the field to the wholesale market was the use of improper packing materials (split wood crates) and poor packing practices.

The Postharvest Center Model

The Team considers this the most significant of the smallholder development models and recommends that its implementation be a core concern of any future USAID initiative aimed at further development of the Egyptian horticulture sector.

Variations of this model have been extensively studied and designs formulated on at least two occasions. A World Bank team previously prepared the design for a similar model. HEIA with the assistance of the Agricultural Policy Reform Program (APRP) has been working toward the establishment of a pilot postharvest center in Ismaleya. Africare will be constructing a postharvest center in the near future. More recently, at least partially as a result of Evaluation Team preliminary recommendations, HEIA has begun developing a consortium to establish a postharvest center in Fayoum.

The proposed Postharvest Centers would be located in areas where there is a concentration of high value horticultural crop production. They would follow a standard design, modified to fit the needs of the type of crops predominating in each of the areas surrounding a particular Center. The Centers would perform several key functions:

- Receiving, cleaning, sorting, and grading farmer produce;
- Conduct of routine laboratory analyses of products;
- Pre-cooling;
- Packaging;
- Refrigerated warehousing;
- Collection and posting of market prices;
- Provision of technical information and assistance (extension services);
- Volume procurement and sale of production inputs at lower cost;
- Conduct of regularly scheduled produce auctions;
- Advisory services for contract negotiations between larger producer-exporters and small and medium-scale growers and between produce buyers and sellers;
- Provision of refrigerated transport services where practicable and necessary;
- Providing assurance services for EuropGAP and other export quality control systems;
- Provision of other services as deemed necessary and practicable.

Each of the Postharvest Centers should be owned and operated by a local for-profit, limited liability corporation. Potential shareholders in the corporation would include growers, exporters, traders, support industries, commercial banks and others. The corporations will need to be designed as profitable, commercially viable operations in order to attract investors. Professional management responsible only to the shareholders should be engaged to oversee Center operations.

The capital investment required to establish the centers should be sourced entirely from the private sector. This is a necessary requirement for ensuring commercial viability. The primary contribution of USAID, other donors and the government to the establishment and operation of the Centers should be in the form of technical assistance and training (see below).

Significant inputs that will require external (donor) funding will be the development of the business plans for the centers, the promotion of the center concept to farmers, assistance in organizing farmer associations and short-term technical assistance on various aspects of center management and operation. The government might also assist by providing certain loan guarantees. Some of the initial capital investment (seed capital) might come from the USAID-sponsored Special Activities Fund recommended elsewhere in this report.

It is important that local small and medium-scale growers acquire a significant portion of the Center equity. Most of these growers, as individuals, will be unable to invest upfront cash in the Centers. A workable solution might be to vest ownership of the farmer shares in grower associations, with USAID contributing the initial farmer equity to be repaid by the farmer associations through a check-off mechanism. The funds recovered through the check-off could be placed with a cooperating commercial bank and used as a revolving source of credit directed toward financing production inputs (short term) or capital improvements (medium term) for farmer users of the Center.

Financial support for Center operations would be provided from the following anticipated income streams (as well as others to be developed):

- Fees charged to sellers and buyers;
- Transportation and storage fees;
- Lease and rental revenue from related business firms utilizing the Center premises;
- Fees for technical services including extension and laboratory services;
- Margins on sales of production inputs, tools, implements, equipment, etc.;

The Postharvest Centers if properly conceptualized and implemented should produce the following beneficial effects for the horticulture industry:

- Significant reductions in postharvest losses;
- Availability of a larger proportion of higher quality product for both the export and domestic markets;
- Higher incomes for all participants in the food marketing chain, from farmers to exporters;
- Facilitation of market access and expansion by ensuring that horticulture products meet export standards;
- Reduction of production costs through lowering the cost of production inputs and helping improve efficiency and productivity;
- Reduced marketing costs and increased market leverage by offering larger lots combined with increased reliability of product quality and supply;
- Reduced shipping costs and increased availability by accumulating larger volumes;

- Leveling of the playing field for sellers and buyers of horticultural products by providing timely, accurate market information and fostering the participation of larger numbers of both as well as through the conduct of an auction system for high volume commodities;
- Attracting buyers through market promotion such as establishment and operation of a marketing website.

The Postharvest Centers are not meant to supplant the private packinghouse operations of the larger grower-exporters. In many cases these operations are already providing many of the services outlined above. The Postharvest Centers would complement, and supplement, the efforts of these grower-exporters.

A note of caution should be sounded here. Attempts to eliminate or bypass the traditional middlemen (traders) who act as the conduit for agricultural products between the small farmer and the larger buyers are risky and, unless carefully thought out and engineered, often fail. Middlemen usually have close and long-established ties to farmers and buyers. They perform essential services for both (provision of production credit, risk-taking, consolidating, sorting and hauling of products from farm to buyer and others). Traders usually react with hostility to the prospect of having their livelihoods taken away. The better course is to devise means of co-opting the middlemen into participating in more efficient marketing systems (while at the same time creating conditions favorable to enticing more middlemen into the picture, thus increasing competition).

Processing enterprises represent an essential component of the more vibrant, larger and more advanced Egyptian horticulture sector envisaged for the future. A greatly expanded and more efficient processing industry will provide increased export opportunities for the sector and will provide an effective alternative to the increased competition in the domestic market that is being brought about by trade liberalization. The Postharvest Centers will also better serve the needs of the processing industry.

Support System Requirements

The above models if they are to be successfully implemented will require a comprehensive support system tailored to their needs. This support system will require involvement by the government, the private sector, non-governmental organizations of various types, and the relevant donors (USAID, et al). Following are some suggested support system elements and their relationship with one another and with the sector.

Model Training Farms

An essential adjunct to the Postharvest Center system will be a series of Model Training Farms to be established in each area where a Postharvest Center is located. These model farms will provide training grounds for both farmer leaders and horticultural extension workers.

The establishment and operation of the model farms should follow the example set by the Mobarak-Kohl project, where the initial capital investment (buildings, other facilities, etc.,) is provided by national or local government and the operating costs are borne by the users. Funds for capital and perhaps operating costs could also be sourced from regional organizations such as the Arab League or the Gulf Cooperation Council, with the proviso that the farms could also train participants from other countries in the region.

In order to reduce the initial costs for establishment of the model farms, they should wherever possible be located at already existing institutions, such as a local university or government installation. Their operations, however, should be completely independent of the institution

within which they are located (although in the case of universities, the model farm instructional staff could hold joint appointments as university faculty).

The model farms should adopt a "learn by doing" approach, whereby trainees are provided hands on experience in production, harvest and postharvest practices in the field, utilizing the primary crops produced in the area, as well as training in irrigation practices and other functional areas, supplemented with classroom instruction. Emphasis should be on "training trainers", including both extension workers and farmer leaders, who will be expected to pass the lessons learned along to other farmers. A farmer-to-farmer training model is evidently very workable within the Egyptian rural context.

The training at the model farm should be combined with an apprenticeship program to provide additional practical experience. This will require the participation of larger growers to provide the apprenticeship opportunities. It will also be of benefit to these larger growers, not only in terms of providing them with additional manpower, but also in identifying, and influencing, future farmer-suppliers and extension workers who can assist in training and monitoring their farmer-suppliers.

The financial support for farm operations should be derived from training fees, with the government paying for the training of the extension agents and fees for the training of farmer leaders charged either directly to the participants or sourced from donor programs, NGOs or, preferably, larger grower-exporters and processors with an interest in obtaining a greater volume of higher quality product from farmer-suppliers. Additional income can be derived from sales of the commodities produced by the model farms, and from larger growers involved with the apprenticeship program.

The model farms should be affiliated with the Postharvest Centers located in their area and should coordinate their activities closely with the needs of these Centers. Private extension workers employed by the Centers will also be trained at the model farms.

Extension Services

The rapid and extensive improvement of overall horticultural production, harvest and postharvest technology and practices will be essential not only to expand export markets, but also to maintain access to current markets. While such improvement will be a necessity for meeting future consumer safety and quality concerns worldwide, the timing is particularly critical in terms of EuropGAP requirements. Monitoring will also be necessary to ensure that pesticide application conforms to the requirements of the new EU pesticide protocol.

Satisfying these needs will necessitate a significant expansion in both the scope and quality of horticultural extension services. The MALR extension services have traditionally focused primarily on the basic commodities including cotton, rice, wheat, maize and sugarcane as well as livestock. There is still relatively little knowledge or experience within the extension services concerning the specialized needs of the horticultural crops. Partially as a result of this lack of government extension expertise in horticulture, private extension services sponsored by grower-exporters and other agribusiness entities are becoming more prominent.

The growth of private sector sponsored extension services should be encouraged. Currently, primarily larger, wealthier growers and grower-exporters provide private extension services. As more small and medium scale farmers become organized into cohesive groups, these groups should increasingly be able to hire their own private extension services for the benefit of their members.

It will be quite some time, however, before private extension services can meet the full extension requirements of the horticulture industry. Development of upgraded, specialized government

horticultural extension services is imperative. Consideration should be given to instituting a special horticultural extension unit under the auspices of the MALR Horticulture Research Institute (a component of the MALR Agricultural Research Center).

The housing of the horticulture extension service within the Institute would have the distinct advantage of providing an immediate link to horticulture research. This would help equip the extension workers to better serve the producers. Equally important, however, it would also provide a feedback mechanism to help link research to actual producer needs.

In order for the proposed horticultural extension service to be effective, the personnel selected to man the service will need to be not only capable, but also exceptionally motivated and dedicated. Several measures can be suggested to ensure the effectiveness of the horticultural extension workers.

First, appointment to the new service would be voluntary, with the volunteers (from the regular extension service) being carefully screened by a committee made up of representatives from the Institute, the MALR extension administration and the private sector. Each volunteer would be required to undergo training at the model training farms described above, including participating in the apprenticeship phase.

The horticultural extension agents would be assigned to work with a specific farmer association, with a Postharvest Center, or in some cases with an agribusiness firm or larger grower who is sourcing from a group of farmers, rather than being assigned to a geographic area. The government would pay the agent's basic salary, but the sponsoring group would be required to pay an additional stipend for the agent's services.

Each sponsoring group, after a reasonable trial period, would have the prerogative of ending their sponsorship of an agent for cause, primarily unsatisfactory performance, after which the agent would either be reassigned to another sponsoring group for a second chance or transferred back to the regular extension service. After two sponsor terminations, the agent would automatically rejoin the regular service. This approach should help ensure capability and accountability within the proposed horticultural extension service.

Planning for more effective horticultural extension services should also take into account that field extension personnel although they are technically part of the MALR, fall under the jurisdiction of the governorates in which they serve. The village level extension workers are evidently more amenable to cooperating with and learning from local farmer associations.

Also, as pointed out above, many of the village level extension workers also operate their own farms. Thus they have an even greater incentive to acquire improved farming skills, which can be applied on their own farms as well as being transferred to other farmers.

Senior Research and Extension Advisory Services

The system of commodity-based Working Groups introduced by the ATUT project has considerable merit. The Working Groups were instrumental in helping spread the technology generated by the Ronco team within ATUT to a wider range of producers. Depending on the particular commodity, these included a sizeable number of small and medium-scale producers, in contrast with the Ronco specialists, who focused their attention primarily on larger producers who were better able to take advantage of the technology to achieve export goals.

The Working Group system established productive links between researchers from academia and various research institutes and producers. These links have generally been lacking in Egyptian agriculture. The system also fostered a closer working relationship between university researchers

and MALR. The Working Group members benefited from gaining a broader perspective on the real world concerns of agriculture producers.

A third benefit derived from the ATUT Working Group system was the transmittal of technical information and technology generated by the project to the general MALR extension system, through the ATUT extension component. Many of the Working Group members also belong to the Scientific Committees organized to train extension workers. The technology developed by Ronco was transferred first to the Working Groups and then to the Scientific Committees, who in turn trained large numbers of extension workers who then transferred the technology to a large number of small-scale farmers.

There are a number of lessons to be learned from the Working Group experience. The ATUT Working Groups were very loosely organized, essentially reporting directly to the Minister of MALR. For all practical purposes, they were "floating" without a common base of operations except for their links to ATUT through the Working Group coordinators. Because of the lack of overall organization, the degree to which any strategic planning was carried out as well as the level of accountability varied greatly between groups. There was also some lack of coordination between the groups and other elements of ATUT, the MALR and others.

Rather than focusing on determining producer needs for applied research, the majority of the working groups acted primarily in an extension role, filling the gap left by the lack of horticultural expertise on the part of the regular MALR extension services. While their extension activities produced some valuable results, senior research people functioning essentially as extension agents appears to represent a less than optimal use of resources. This becomes even more evident when it is considered that the Working Group members continued to hold full-time positions in their parent institutions and were able to devote only part-time efforts to the ATUT activity.

The Team recommends that the MALR continue to apply the Working Group concept, but with significant modifications. In order to provide a "home" for the groups, it is recommended that they be attached to the MALR Horticultural Research Institute, where they will complement the proposed Horticulture Extension Service. The newly designated Senior Advisory Service would have several functions:

- Provision of technical advice and backup to the Horticulture Extension Service;
- Assistance in determining research priorities based on feedback from producers through the horticulture extension agents;
- Acting as resource persons to a curriculum steering committee for the Model Training Farm system;

This change would necessitate a budget allocation on the part of MALR to fund the stipend paid to the Working Group members. Employing the services of group members on an as-needed basis, calling them in (and paying them) only when there is a demand for their services, can make this less onerous, however. (This approach will also help ensure that the services are provided on a demand-driven basis). It may also be possible to design some type of user pay system to defray part of the costs.

The Associations

Industry associations particularly HEIA, and others as applicable will need to play a very significant leadership role in the implementation of the above measures, particularly the Postharvest Centers and the system of Model Training Farms. It is in the best interests of the

associations to play this role, since the suggested measures should help assure the continued growth and prosperity of the industry.

HEIA, for example, needs to expand its current efforts to reach out to other industry segments besides its own membership. The organization should adopt flexible bylaws and procedures in order to bring more small and medium-scale growers into its orbit. For a more indepth look at suggested HEIA organizational strategies, see Appendix ___ of the Evaluation Team Final Report.

The APRP Example

The APRP project, in cooperation with HEIA, has actively addressed the need for more effective research and extension activities aimed at smaller scale growers. These pilot efforts in two governorates have succeeded in helping increase horticultural exports, started the process of establishing working relationships among exporters, farmers and government officials and utilized the private sector (HEIA) to train government extension workers. ATUT has a similar activity underway with HEIA.

Some of the specific APRP initiatives include cooperation with HEIA and the two Governorates in training extension specialists in horticultural cultivation and Good Agricultural Practices; encouraging contract farming among farmers, farmer groups, and exporters; and working with MALR and HEIA to establish refrigerated transport, cooling units and packinghouses in the pilot Governorates.

Lessons Learned

It is important to realize that all of the measures suggested above are actually being applied in Egypt today. Their feasibility has been demonstrated. The challenge is to better organize and to greatly expand these initial efforts. Several guiding principles should be kept in mind when doing this:

- The leadership must come from the private sector;
- The preferred mode of building private sector leadership capabilities is to foster the growth of business support organizations (associations) at all levels within the horticulture industry, starting with small farmer associations and leading up to industry-wide associations such as HEIA;
- The role of the government should be to support and facilitate the efforts of the private sector while avoiding any unnecessary interference;
- The private horticulture sector in Egypt has made tremendous advances in status and capability during the past several years;
- The horticulture sector now has the potential, and the opportunity, to build a much broader-based and more profitable industry;
- In order to consolidate their present position and build on it, the sector will need donor assistance for several more years;
- The goal of such assistance, however, must be to help develop private sector capability rather than fostering continued dependency on donor funding.

There are also a number of lessons to be learned from efforts to date to develop small-scale growers into capable, commercially successfully, market-oriented producers:

- Small-scale growers can be successfully integrated into the export marketing system;
- Small-scale growers are able, and willing, to pay for technical services as long as these services are shown to have sufficient value;
- In order for farmer development to happen, however, there needs to be an external intermediary (catalyst) to help start the process and carry it forward;
- This intermediary can be a nucleus enterprise, a not for profit development organization or other entity;
- If the intermediary is a development organization, one of its critical tasks must be to help the small-scale farmers find a substitute intermediary for the longer term, when the organization is no longer there;
- This can be done by forming and strengthening farmer associations or by identifying and involving a nucleus enterprise or other permanent intermediary;
- Input suppliers (seeds, agricultural chemicals, equipment, etc.) should also be called upon to contribute to industry development, with this activity considered as to be a business development tool;
- Involving small and medium-scale growers in the export subsector is more than just another option, it is absolutely essential if the Egyptian horticulture industry is to reach its full export potential.

VII. Recommended HEIA Organizational Strategy

Introduction

One of the primary approaches to facilitating the further development of the Egyptian horticulture sector will be to organize the industry through the establishment of Business Support Organizations (BSOs) at all levels. The most effective means of rapidly doing this will be to utilize an existing BSO as model for other aspiring BSOs. In the case of the Egyptian horticulture industry, the BSO that is currently best qualified to serve as the model is the Horticultural Export Improvement Association (HEIA).

HEIA, Past, Present and Future

Cooperating with other horticultural producers has traditionally been an alien concept among Egyptian commercial farmers. Fellow growers were considered to be competitors who would steal proprietary secrets if you associated with them. This changed in late 1996 as the result of a trip to Chile sponsored by a USAID project, to allow a handful of large commercial grape growers to observe Chilean grape production practices.

Forced to spend an extended period in each others company, the Egyptian growers came to the slow realization that they all shared much the same knowledge base and faced many of the same problems, that their true competitors were grape growers from other exporting countries, and that they needed to band together in order to compete internationally. This led in 1997 to the formation of HEIA.

The Egyptian Horticultural Export Improvement Association (HEIA) was first registered in 1997 by the Ministry of Social Affairs as a non-government organization. Previously, the government had assisted in the establishment of a joint marketing corporation, the Desert Growers. This was not successful, since the producers involved maintained their own competitive marketing activities, joining the group only to find out what other producers were doing. The growers who established HEIA insisted that it be set up as a non-profit industry association.

Seeing the benefits of working together, the HEIA founders determined to create an industry association that was not subject to the mismanagement and organizational deficiencies that had limited the effectiveness of existing Egyptian business support organizations. Traditionally, industry associations were fostered by government or were organized by powerful private sector business figures that tended to dominate the direction and activities of the association in perpetuity. In order to avoid either of these constraints, HEIA was designed to be wholly separate from government influence and the organization's bylaws ensure that the office of the president and the other officers and board members are rotated on a regular basis.

The fact that HEIA and a new USAID-funded horticultural development program, the Agricultural Technology Utilization and Transfer activity, were born at approximately the same time proved to be a fortuitous coincidence for both USAID and HEIA. ATUT provided some initial financial support for HEIA, which was soon superseded by direct grants from USAID. More important, however, HEIA members have accounted for some 80 percent of the clientele for ATUT/RONCO technical and marketing assistance.

Without the assistance of USAID and ATUT, HEIA would have taken much longer to reach its present prominence. Without the cooperation of HEIA members, ATUT would have had a much more difficult time finding suitable recipients for the technical and marketing assistance it offered. It has largely been the synergies between the two programs that have made them both successful.

HEIA had 40 members by the end of 1997. By mid-2002, membership had reached almost 200 and was still growing. The association has continuously strived to improve its service capabilities and, while it still has a long way to go to reach maximum effectiveness, has already made an impressive start in that direction.

The HEIA management and Board of Directors, while they realize that becoming a role model for the horticulture industry will be a daunting task, are nevertheless prepared to exert their best efforts to do so. One of the constraints facing HEIA, however, is the adverse perception of the association that prevails in certain segments of the industry.

This adverse perception stems from several sources. One such source is resentment over the support that the association has received from USAID on the part of other organizations that have not received such support. Another source is the fact that the original and still predominant membership of HEIA consists of larger, more influential producers and producer-exporters. There is a strong feeling in some circles, that because of their status, these more prominent members exert a primary role in the direction of HEIA activities and receive the bulk of HEIA services.

There is also a perception that HEIA members unfairly exploit the small-scale farmers from whom they purchase produce, and that they are opposed to small farmers developing an export capability of their own, since they will be "competing" with the larger producers. This perception is parallel to the common observation that "HEIA is a rich man's club that excludes all but the wealthy growers". This perception is not only held by non-HEIA producers, it is also voiced by other associations and industry service organizations.

These perceptions are understandable, but generally unfair. HEIA was formed by people with the ability, experience and resources to act on a vision that others had not yet formulated. These were the larger producers. They were, and are, the prime movers behind HEIA progress to date.

HEIA members in fact are beginning to reach out to smaller scale growers for their raw material supply. It is in their interest to do so. HEIA management realizes that exploitation of the smaller-scale growers is in the end self-defeating. HEIA as an organization is actively involved in training of smaller-scale producers and in attempting to set up postharvest facilities that will better serve these smaller-scale producers. The association is also attempting to recruit additional smaller-scale producers for their membership.

Regardless of the facts, however, an important HEIA goal must be to inform and educate the rest of the sector so as to change these adverse perceptions. In order to do this, HEIA must reach out to other segments of the industry, cooperate with them and guide them to further development. HEIA in future must set goals that lead to betterment of the entire industry, rather than focusing only on those that benefit HEIA members.

Assuming this leadership role will require not only effective and visionary management, it will also require additional resources, resources that HEIA currently does not possess. By demonstrating both the willingness and the capability of assuming an industry leadership role, however, HEIA becomes the logical candidate to acquire such resources from USAID and other funding sources. It will be an important task of HEIA, however, to utilize these resources in such a way that they will help provide means for the association to become financially self-sufficient over time.

HEIA has also become active in the development of industry improvement initiatives. One of these is the operation of a quality control department within the association, one of whose important tasks is to assist the industry to prepare for the imminent enforcement of EurepGap

requirements. ATUT initiated the quality control effort, which was later transferred to HEIA and is in the process of considerably expanding its scope.

Other important initiatives that are underway include:

- Implementation of an active gender program that was also originally initiated by ATUT;
- Planning and implementation of a comprehensive organizational and human resource development program for the association;
- Establishment of a cold storage facility at Cairo airport;
- Construction of a postharvest facility in Ismaila in cooperation with the USAID-funded Agricultural Policy Reform Program (APRP);
- Organization of a consortium to develop a postharvest center in Fayoum;
- The training of extension workers and others.

One of the most pressing issues that HEIA must effectively confront is that of integrating many more small and medium scale producers into the horticultural products export system. This will require HEIA to actively pursue a number of the small-scale farmer development issues illustrated above. HEIA management and board have already evidenced their willingness to do so. Because it is still a relatively young grouping, however, successfully doing so will require continued USAID support, with the goal being to gradually scale down the level of that support as HEIA becomes increasingly financially self-sufficient.

Following are some suggested measures for countering the current criticism directed towards HEIA and increasing the credibility of the association among its key publics—the large, medium and small-scale growers; government officials and politicians; the horticulture services support sector; foreign customers for Egyptian horticulture products; and the donor community, while strengthening HEIA's role as the leading horticultural sector BSO.

Improving HEIA's Image

It should be pointed out that no effort to improve the public perception of an organization by informing the public of its achievements can be successful unless the achievements actually exist. Therefore HEIA will need to accentuate its already substantial accomplishments and introduce new initiatives that lend themselves to gaining wider acceptance among its important publics.

This does not mean that HEIA should undertake activities for the sake of publicizing these activities. HEIA must be adept at both creating new initiatives that will be of substantial benefit to the horticulture industry and at informing its publics of the achievements brought about through these initiatives. Following are some suggested approaches to accomplishing these twin objectives.

Before examining these, however, another point needs to be clarified. Engaging in the activities suggested below will require substantial initial operating capital in addition to HEIA's own internal resources, as well as an expansion of HEIA technical and managerial capabilities. The approach to solving the need for additional finances, will be for HEIA to develop well-planned, effective programs that address industry shortcomings (which are highlighted in the Evaluation Team report) and that obviously merit support. USAID as well as other donors are always open to helping fund programs that effectively address perceived needs. One of the ultimate goals of any HEIA activity should of course be to eventually make it self-financing, but that requires a sometimes lengthy period.

The issue of how to manage these activities, particularly at HEIA's current stage of development, must also be a primary concern. The most viable solution to addressing this issue is effective networking. In almost any activity in which HEIA might engage, other organizations will be working toward similar goals. Cooperating with these other organizations to achieve common goals will help HEIA leverage its own efforts. It will also help build understanding and support for HEIA as an organization on the part of the network partners.

Industry Service Activities

Market Information and Intelligence

The ATUT project maintains a very comprehensive website and database. The contents are excellent, but access is sometimes problematic. The website currently posts market prices from key export markets for the primary horticultural export commodities. These prices are approximately one week old when posted, however.

The ATUT project will end in September 2002. A top priority for both industry and the government should be the continuation of this valuable service. Discussions are underway concerning the possible transfer of the ATUT website and database to the Export Promotion Centre (Ministry of Foreign Trade).

An ideal alternative from an industry standpoint would be to transfer the website and database to HEIA. These will quickly become irrelevant, however, if they are not maintained and regularly updated. HEIA does not presently have the organizational capacity to do this. HEIA should, however, explore the possibility of cooperating with whatever agency falls heir to the ATUT website and database.

HEIA, utilizing the information generated by the system, could set up a marketing information and intelligence service that was designed to be of greater utility to the horticulture industry, because of timeliness, depth of information and ease of access. In addition to timely price and volume information, the service could include regular information on wholesale market conditions and other local factors affecting real time demand and prices.

This might be done by paying a (minimal) retainer to a person or office at each of the major foreign wholesale markets for information collection and transmittal (and providing them with copies of the market reports as an additional incentive). An exchange system might be established with market intelligence providers in key market countries, with HEIA contributing information on Egyptian production and marketing conditions in exchange for similar information on these market countries.

The price and market information service would be made available on a subscription basis, with price information perhaps provided daily and market intelligence on a weekly basis as well as at any time that a significant event occurs that materially affects the market. Clients could choose to receive the information either via e-mail or faxes. The specially packaged market reports should be more informative and more convenient than accessing the website, particularly if the price information could be made timelier.

Setting this operation up would require the establishment of a market intelligence department within HEIA, with staff perhaps consisting of a manager, administrative assistant, one or two IT specialists and a logistics specialist. Appropriate computer hardware and software would need to be acquired and installed. The market department could be combined with a technology retrieval department as suggested below.

Subscriptions should be priced at a level that would defray operating expenses and ideally, generate some profit. Potential customers include individual HEIA members, other Egyptian exporters, other food industry participants, farmer associations, government offices at the central and governorate level, and others with an interest in food exports. The key to generating subscription revenue will be the quality and timeliness of the information. Inquiries for more in-depth information can be referred back to the database managers.

This service, once established, can be grown over time into a comprehensive market intelligence service, with other market information and promotion activities, including market surveys and analyses, trade missions, trade show participation and others conducted and coordinated by HEIA on a for-profit basis.

The activity should be carried out in close cooperation with the Trade Promotion Center and with the Commercial Representative Service of the Ministry of Foreign Trade, as well as with other relevant government agencies. Increased cooperation between the the public and private sectors in Egypt will be essential to achieve satisfactory progress for the horticulture industry. HEIA is in a good position to take the lead in establishing this cooperation,

From a public relations standpoint, each time a HEIA market information or market intelligence bulletin lands on the desk of a non-member, from the private or public sector, it will enhance familiarity with and respect for HEIA as an organization.

Technology Retrieval

One of the services that the Egyptian horticultural industry urgently needs is the identification and retrieval of information concerning new production, harvest, postharvest and marketing technologies developed in other countries. Thus far, this has come to Egypt in the form of expatriate consultants (the ATUT project, which is scheduled to end shortly, has been a major conduit for such technologies). This is a valid approach, but there is also a need for a more comprehensive service aimed at replying to industry inquiries concerning new technologies.

These might include plant varieties, crop cultural practices, harvesting techniques, postharvest technologies, new equipment or other technology. Once the particular technology is identified, information concerning the source of supply and other details can be obtained and made available to the Egyptian client. The development of such an efficient technology search and procurement service has been made possible by the advent of the worldwide web (internet).

One simple example is test kits for soil pH or soil, water or leaf analysis. Such testing at short, regular intervals is necessary to achieve optimal productivity. Yet the cost of such analyses performed by local Egyptian laboratories prohibits their regular use by all but the largest farmers. Simple kits for analyzing these elements at a level suitable for farm decision-making can be obtained abroad at a very reasonable price. HEIA, in identifying the sources, might go a step further by assembling orders and pre-payments and arranging for volume shipments of these test kits (a container load at a time).

The technology retrieval and procurement service would also be operated on a for-profit basis, with fees charged for services. Since the basis of the service would be use of the internet, the technology service could logically be combined with the operations of the market information service, with the addition of one or two suitable personnel.

This service would be a means of introducing HEIA capabilities to additional audiences and gaining their appreciation and respect. It would also provide a source of additional income for the association.

HEIA Involvement with Small-Scale Farmers

There appears to be an industry consensus that one of the important priorities for the horticulture export industry is to increase the volume of commodities that are available for export. It is also commonly agreed that in order to accomplish this, the involvement of small and medium-scale farmers in producing horticultural commodities for export will be essential.

There are several approaches for facilitating this involvement. (These are examined in more depth in Appendix V). One approach is to link smaller growers to large-scale growers and grower-exporters who have developed export market outlets and are willing to partner with smaller growers in order to supply those markets. HEIA can play an important role here by ensuring that proper practices are carried out by both the larger and the smaller growers involved.

Another approach is to link groups of small-scale growers directly with overseas buyers. Two international NGOs, CARE and Africare, are already doing this successfully in Egypt (see Appendix V). Thus far it has not been possible to establish close links between these two activities and HEIA, although both sides, particularly HEIA, appear to interested in doing so.

It would be worthwhile from a public relations standpoint as well as for the overall benefit of the horticulture sector for HEIA to agree with the NGOs concerned on a workable mode for providing some technical support and marketing to the NGO clientele. In addition to the present provisions for regular and associate members, HEIA might establish a third membership category, for farmer associations made up of small-scale farmers. The new USAID horticulture support project should encourage and help facilitate this development.

HEIA could then act as a conduit for disseminating technical production, harvest, postharvest and marketing technology as well as market information to the small-scale growers, and could assist them in linking with export buyers. The cost of these services might at the outset need to be partially or wholly subsidized from other HEIA income sources.

The experience of the CARE project, however, shows that small-scale farmers are willing and able to pay for these kinds of services. It will take some time to develop a user pays system, however, because at the start of the cooperation the farmers will lack confidence in the HEIA's motivations and the usefulness of their services.

Because CARE and Africare are already experienced in working with small-scale farmers, HEIA would need to invest minimal management resources in this effort. A partnership between HEIA and these and possibly other NGOs would also enable the approach to be applied to a larger number of small-scale farmers.

In addition to increasing Egyptian horticultural exports, such a program would go far toward demonstrating that HEIA is a socially responsible organization that focuses on the greater good of the industry rather than considering only the needs of the association.

Social Responsibility

One of the most significant food industry developments over the past couple of decades has been the increasing influence exerted by concerns over food safety and hygiene. In recent years, this concern has been extended to cover the environment in which the food is grown, and now, the living conditions of the workers who provide the food. Because they answer directly to consumers, the retail food chains, particularly in Europe, have been at the forefront of the movement to address concerns of the consumer movement.

The EurepGap protocol is the most recent, and one of the most far reaching, attempt to control the conditions under which food is produced and marketed (another international program which is

even wider spread but which has not yet affected Egyptian agriculture to any appreciable extent is the Fair Trade Labeling Initiative). This proliferation of retailer-led measures for controlling food the conditions under which food is produced, which was initially based on GMP (good manufacturing practices) for the food processing industry, also includes the HAACP program and to some extent, the various ISOs. Organic and natural food certification is an offshoot of this process. This progression will continue and become more all-inconclusive, enveloping first the developed countries and later, to varying degrees, other countries at varying stages of development.

EurepGAP is increasingly seen as a threat to Egyptian horticultural exports. To date, only a few Egyptian producer-exporters have been certified under EurepGAP. Bringing small and medium-scale farmers into the export sector will increase the difficulties attendant to EurepGAP qualification for the Egyptian horticultural export industry.

This is not just an Egyptian problem, however. All of the countries that export horticultural products to the European Union must cope with the same requirements. The horticulture sectors of most of these countries are as little prepared for the imposition of EurepGAP as is Egypt. If Egypt can mount an effective campaign to ready the industry for EurepGAP, in the context of meeting the social responsibilities of the sector, and can make this stance widely known among its customers, then EurepGAP can become an important marketing tool rather than a serious constraint.

HEIA is in the best position to lead this campaign. The association has already established a quality control department, is training managers in GAP requirements and has assisted three member firms to become GAP certified. What HEIA should do now is to effectively publicize the position of the association, and that of the industry as a whole, in support of social responsibility.

The HEIA Public Information Program

“People do not realize the good you are doing unless you tell them about it”. (This is a quotation from the author).

One of the essential requirements for increasing the credibility of HEIA as an industry leader is the implementation of an effective public information program. This program should consist of several elements.

News and Feature Articles

The primary tool for implementing an industry or organizational public information campaign is through the issuance of regular news releases and feature articles to the local mass media. A few of the news releases and feature articles should be about HEIA directly, new officers, new activities, accomplishments. The majority of the releases, however, should concern various aspects of the Egyptian horticulture industry.

The most interesting of these releases will concern people and their activities, individual farmers or groups of farmers or larger firms and farms that are doing something interesting or noteworthy. Other subjects might include success stories (first time exporter, quality and/or market breakthrough, certification for EurepGAP, etc.); commodity profiles (growth of cantaloupe exports from Upper Egypt, etc.); investment opportunities (postharvest facilities, growing organic produce, etc.) and others.

Most of the news releases and feature articles will be meant for publication by the Egyptian media. It is worthwhile, however, to occasionally aim industry feature articles at international trade magazines. A project in the Philippines with which the Consultant was previously involved

was able to attract attention, and develop sales to several foreign buyers, through feature articles placed in international fruit and vegetable and fisheries magazines. In order to ensure that the articles will be published, HEIA will need to contact the magazine editors in advance to learn about their specific interests and requirements.

HEIA already publishes a professional newsletter for the membership. The subscription list for the newsletter should be extended to opinion leaders in government, related industries and other opinion leaders, if this has not already been done.

HEIA might also organize a horticulture industry speakers' bureau among the board of directors and the membership. Various organizations (civic groups, chambers of commerce, other associations, donor agencies, etc.) should then be informed of the availability of HEIA speakers for special occasions.

The ATUT project intends to place all of the technical information generated during its six-year tenure on CDs before the project ends in September. HEIA might offer to become the distribution conduit for these CDs. The cost of reproducing CDs is very minimal. HEIA could sell the CDs for a nominal sum, to cover the cost of reproduction and handling.

In order to carry out a public information campaign, HEIA will need to establish an information office (or communications section) with an editor and perhaps two feature writers. The writers can be recent journalism graduates, preferably with some knowledge of agriculture. It is much easier, however, to teach a writer about horticulture than it is to train a horticulturist to be a good writer.

Others

There are many other areas in which HEIA can organize the association to "do good" and then let the world know about it. The above represent only a few of the actual possibilities. It will be important for HEIA management and Board when planning corporate strategy to consider not only the benefits to the organization and to the industry from pursuing certain activities, but also how these benefits can be made known to a wider audience.

VIII. Transportation Constraints

Introduction

Despite all the advances made by the Egyptian horticulture industry since the beginning of the ATUT project in 1998, the present and projected lack of adequate refrigerated transportation options will continue to reduce the potential for increased exports of fresh, frozen, and processed foods from Egypt.

Prior to the services provided by the ATUT/RONCO project, most fresh vegetables and cut flowers were shipped by air. High freight costs and lack of cargo space on departing aircraft severely limited the potential for Egyptian exports. In addition to a lack of available space on airlines, the potential for exports was further reduced by the lack of cold chain facilities. The resulting loss of product quality severely reduced the potential for follow-on orders from importers.

The goal of the transportation element of the ATUT/RONCO project was to increase the availability of land, sea and air transportation, reduce shipping costs, improve cold chain facilities, and promote education within all elements of the industry; this was accomplished beyond all expectations.

After the ATUT/RONCO staff performed the initial transportation sector review, it was obvious from the beginning that the refrigerated transportation requirements of the horticultural sector could not be met by the existing Egyptian transportation infrastructure. The ATUT/RONCO team began to identify potential solutions to remedy these problems almost immediately.

The Egyptian transportation industry sorely lacks not only the modern refrigerated equipment necessary to transport food products, but also lacks the organizational skills necessary to provide the high levels of services required by the rapidly growing horticultural industry, both now and in the future. It will do little good to produce high quality horticultural and processed food products if they cannot be transported to market quickly under constant refrigeration. Currently, shipments are often mishandled due to lack of coordination between the various stages of transportation services. The cold chain must be tightly controlled, however, in order to maintain perishable products at the required levels of refrigeration necessary to maintain high quality standards.

Ocean Shipments

Successful sea shipments of highly perishable crops including table grapes, green beans and strawberries came only after changes brought about by the ATUT/RONCO transportation team. Among the most immediate problems facing the team, was to reduce transit times from Egypt to the European Union (E.U.) and the United Kingdom (U.K.).

In order to reduce shipping times between Egypt and E.U. importers, the ATUT/RONCO team introduced the “multi-modal system,” which effectively reduced shipping times and shipping costs over traditional sea freight systems. The multi-modal concept begins with land based truck transportation transferring shipments from the packing facility in Egypt. At that point, either a loaded container or loads destined to be transferred into refrigerated containers at the port, are driven to the port handling facility, where the temperature controlled container is loaded on a ship that will transport it to either an Italian or Slovenian port for transfer to land based trucking companies for transfer to the final destinations in the E.U. The ocean portion of the sea shipment takes approximately 1.5 to 2 days from Egypt to either destination. From those transit points, the overland shipping time to several E.U. countries is approximately one day. Traditional ocean shipments, however, can take upwards of five days to reach the same destinations.

The levels of high-quality technical assistance provided to Egyptian farmers by the ATUT/RONCO program have rapidly increased the export volumes of high horticultural quality products. This increase in exports has been achieved more rapidly than the transportation industry can provide the modern refrigerated equipment necessary to move these products from the farm to the export shipping points. Accordingly, the efforts of the ATUT/RONCO project have greatly expanded the potential for exports of fruits, vegetables and cut flowers to the E.U. and the Persian Gulf States as well as to United States.

One of the primary constraints facing ocean shipment of perishable commodities is the lack of availability of refrigerated sea containers as well as generator sets for container refrigeration. While the availability of generator sets has increased, the sets still remain in short supply. In 2000, there were less than 100 generator sets available for the entire country. Highly perishable export crops such as strawberries and grapes will deteriorate rapidly if the cold chain is broken even for short periods of time. The quality of the refrigerated transportation equipment is vital in maintaining the proper temperatures during shipping.

ATUT Intervention

The ATUT/RONCO transportation division, headed by Mr. Yasser Essam, has become an invaluable resource to the Egyptian horticultural industry, relative to the export of cut flowers and fresh fruits and vegetables from Egypt. Mr. Essam has been instrumental in facilitating dialog and overall communication between producers and shippers, shipping lines, freight forwarders, truckers plus other transportation service providers.

The ATUT/RONCO team provided technical information, using formal and informal training programs, to advance the understanding of transportation logistics relating to the exportation of fresh vegetables. Mr. Essam was so successful at promoting educational programs to the transportation industry, that he was selected by the Egyptian Minister of Foreign Trade to develop a transportation logistics agenda for a visit to Egypt by the Italian Minister of Agriculture. The success of this program led to another request of Mr. Essam to lead the Egyptian delegation in negotiations with the Italian government to develop a bilateral partnership horticultural trade agreement based on the Egypt EU Mediterranean Trade Agreement.

Between 1998 and 2000, the number of shipping lines transporting table grapes from Egypt to overseas markets increased from four to 10.

- Table grape shipments in 20 foot containers increased from 82 in 1999 to 430 in 2001.
- Green bean shipments increased from 60 in 1999 to more than 1,000 in 2001.
- Air freight costs were reduced from $1.30 per kg. in 1999 to $0.60 per kg. in 2001.
- Transit time for table grapes from Egypt to the U.K, was reduced from nine to 13 days in 1998, to five to nine days in 2001.

I addition to the accomplishments listed above, the ATUT/RONCO project continues to actively seek solutions to problems related to sea container-related losses. Among the many problems still facing shippers are the containers' internal environment and physical control systems.

Transport Modes

Truck Transportation

Due to the limited number of modern refrigerated trucks and trailers available in Egypt, it remains extremely difficult to transport crops from the fields to the packing and/or shipping facilities in a

timely manner. It has been reported that some export commodities fail to enter the cold chain for grading and packing for up to 15 hours following harvest. The estimated losses due to inadequate post harvest and cold chain access amount to tens of millions of dollars every year for the five ATUT priority export commodities.

The availability of modern refrigerated transportation equipment will become more critical in the near future, primarily due to the demands that will soon be placed upon the Egyptian transportation industry by the new farms currently being developed in Upper Egypt. These projects include Toshka, amounting to 540,000-plus feddans; Wadi Saida with 25,000 feddans; and a projected 200,000 feddan projected in East Owinat.

An interview with Mr. David Finn, of Sunworld Inc., revealed that Sunworld's Toshka project will require as many as 200 trucks per week once it becomes fully operational, to move perishable commodities from the Toshka area to the export shipping points. The future demands placed upon the available transportation assets by the Upper Egypt projects will greatly reduce the availability of quality transportation equipment for other producers in Egypt. This increase in demand for transport facilities must be addressed before the requirements for transportation out strip the current equipment levels.

In order to meet the projected demands on the Egyptian transportation industry, Egyptian transportation companies and horticultural producers will be forced to import modern trucks, semi tractors, and refrigerated trailers with air-ride suspension to transport the increased production of fresh/processed foods and cut flowers to packing and port facilities. Without this influx of new equipment, major losses will be suffered by producers of horticultural export commodities.

Due to the high rates of product loss resulting from the improper control of post harvest and cold chain practices, regional collection centers must be available to farmers to insure that harvested crops can be quickly processed and packaged and then placed into a cold storage facility. In order to accomplish this rapid transfer from harvest sites to the collection centers, smaller 10-wheel type refrigerated vans should be provided by the collection centers for collection of harvested crops, in order to ensure the integrity of the cold chain.

Among the problems that must be overcome is the control of the temperature and humidity levels that are required to maintain high product quality from loading point to destination. Container loading crews must be trained in the proper techniques of pre-cooling containers prior to initiation of loading operations. Containers that are loaded at ambient temperatures will greatly reduce the ability of the refrigeration equipment to properly maintain the desired temperatures during shipment.

Proper loading techniques include:

- Utilization of quality shipping pallets to maintain load integrity;
- Pallet wrapping to prevent load shift while in transit;
- Load bracing; and
- Proper loading techniques to ensure even load distribution and integrity for floor loaded shipments.

Improper loading techniques will not allow air flow through the products loaded in the container, resulting in loss of quality.

Rail Transport

Rail transportation of refrigerated and dry containers from Upper Egypt is currently unavailable and will likely remain so for the foreseeable future. In the United States, rail transportation is a low cost alternative to trucks for moving containers to port facilities.

Barge Options

Barge traffic on the Nile for movement of containers is not an option, due to the rather primitive nature of this form of transportation. This method is currently utilized to move bulk commodities, including building materials. Due to time constraints, however, it was impossible to determine the potential for Red Sea, Suez Canal shipment options.

Air Transportation

The availability of air freight transportation was seriously curtailed as a result of the reduced international flights to Egypt following the events of September 11. With the increasing availability of ocean going container shipments, however, demand for air shipments for fresh fruits and vegetables is gradually declining. Interviews with air transport companies indicated that it may be at least a year or two before scheduled flights to and from Egypt return to normal. When the new projects in Upper Egypt begin exporting perishable products, it is likely that new airport facilities will need to be constructed in the region by either the Egyptian government or private companies to ensure sufficient air cargo capacity for exports.

In order to improve the handling of perishable air freight shipments from the Cairo airport, a new refrigerated airport shipping facility is being developed by the Horticultural Export Improvement Association (HEIA). The proposed new facility is currently in the formative stages of construction, but a final completion date is not certain. An existing cold storage and shipping facility already exists at the Cairo airport, comprising 1,415 square meters. This facility is not being utilized due to faulty design factors.

Ocean Transport

In order to make Egypt a more attractive port of call, Egyptian shippers must offer higher volumes of shipments to justify investment in facilities and changes in shipping schedules. Due to the lengthy port clearance procedures required by Egyptian customs and health inspectors, containers may be delayed in leaving Egyptian ports for periods of up to three weeks. This makes international shipping lines reluctant to provide refrigerated containers to Egypt. Many Egyptian importers utilize the port container facilities as a low cost form of storage facility, adding to delays in making contgainers available to exporters.

Conclusions

The transportation industry in Egypt is at a critical point in its development, with the demands that will soon be placed on it threatening to overwhelm current capacity. The most critical requirement for upgrading export transportation capabilities will involve making available a large number of additional refrigerated trucks and trailers to ship harvested crops to collection and processing centers and then on to the final shipping points. This will be essential in order to maintain the unbroken cold chain that is vital to maintaining product quality.

The Egyptian government has reportedly reduced import tariffs (from 44 percent to five percent) on refrigerated transportation equipment to encourage transportation companies and producers to update their aging fleets. According to industry and government representatives, however, the new tariff rates have not been implemented, although no reasons for this lack of action could be

determined. Putting the reduced tariff rates into practice should constitute an important part of the policy advocacy agenda of any new USAID project in Egypt.

It will be extremely important for any future USAID-sponsored project to continue the transportation advocacy work initiated under ATUT. Without a united effort from producers, transportation companies, brokers, shipping lines, and truckers, little improvement will take place in the modernization of the Egyptian transportation industry. The Egyptian government will need to improve port facilities, customs and health inspection procedures, roads and airport facilities in order to ensure continued rapid growth in the exports of horticultural commodities.

The introduction of regional refrigerated collection centers for perishable commodities combined with significant improvements in the Egyptian transportation industry will be essential measures for controlling the mounting losses of fruits, vegetables and cut flowers and enabling the Egyptian horticultural export industry to fully exploit its competitive advantages.

IX. Representative Contact Reports

Following are several representative contact reports submitted during the course of the evaluation activity by the evaluation team leader.

CONTACT REPORT

Name	**:**	Don Taylor**,** Team Leader	**Date:** 9/4/02
Participants	**:**	Hani El Kolaly, Executive Director, HEIA; USAID representatives and Evaluation Team Members	
Venue	**:**	HEIA offices, Cairo	
Purpose	**:**	Briefing for team members on HEIA organization and history	

Major Discussion Points :

- HEIA was formed in early 1996 following an observation trip to Chile for some 25 Egyptian grape growers, sponsored by NARP, a USAID-funded project.
- Prior to this trip, which afforded an opportunity for the larger growers to become personally acquainted, the larger growers had no history of cooperation for mutual advantage.
- The enforced close association during the trip convinced the growers that they had many problems in common and that it would be to their benefit to cooperate with each other for the good of the industry through the formation of a non-profit trade association.
- The USAID-funded ATUT project was also inaugurated in 1996; the synergies developed through the juxtaposition of the two organizations was responsible for much of the subsequent success of both.
- ATUT initially provided technical assistance and limited budget support for HEIA initial operations.
- USAID subsequently supported HEIA operations through a series of grants.
- ATUT until recently provided the bulk of technical support for HEIA and its membership; 90 percent of the ATUT/Ronco technical assistance has gone to HEIA members.
- HEIA was the first modern private sector business support organization in Egypt; earlier associations were either formed as a result of government initiative or were under the exclusive long term control of powerful industry leaders.
- HEIA by contrast has retained very capable professional management and its affairs are directed by a Board membership that is rotated through regular elections.
- Several other modern industry associations have subsequently been established, following the HEIA model.
- HEIA was originally established by the larger, more powerful horticultural commodity growers and grower exporters, which has give rise to the impression in some segments of

the horticulture industry that the association is managed for the benefit of a few industry leaders.

- Contrary to this perception, the Evaluation Team is convinced that HEIA management and Board is dedicated to the overall welfare of the horticulture sector; now that its internal organization structure has reached a satisfactory level (although organizational development is still being actively pursued) the association is increasingly reaching out to assist the entire industry, particularly small-scale producers.
- HEIA membership continues to grow, reaching almost 200 by mid-2002, consisting of smaller and medium scale growers and other industry participants in addition to the larger growers and grower exporters.
- Several HEIA members are also members of the Egyptian Agribusiness Association (EAGA) and of the influential Agricultural Commodity Council (ACC).
- One of the most encouraging developments in terms of the continued sustainability of the activities launched by ATUT Ronco is the fact that HEIA is increasingly assuming responsibility for the continuation of these activities.
- HEIA has already assumed full responsibility for the quality control and gender programs which were initiated by ATUT.
- The larger commercial grape growers who were the recipients of technical assistance under the ATUT project are currently either working through HEIA to obtain such assistance or are doing it on their own.

Results and Conclusions :

- HEIA is presently the only BSO associated with the horticulture sector that has the will and capability to assume a position of industry leadership.
- Thus USAID should continue to support the further development of HEIA and look to the association to serve as an industry model.
- This poses a heavy responsibility for HEIA management, Board of Directors and members, but the Team believes that HEIA is capable of assuming this responsibility provided the association continues to receive support from USAID and perhaps other donors until it can become financially and technical self-sustainable.

Follow-up Action Required :

- HEIA and its membership will be important sources of information on the impact of the ATUT project and the follow-up support required by the horticulture industry.
- The Evaluation Team will consider means by which HEIA can be strengthened further in the future through continued USAID intervention.

CONTACT REPORT

Name	**:**	Donald M. Taylor	**Date:** 16/5/02
Participants	**:**	Millie Gadbois, Country Representative, Africare Egypt; Don Taylor, Team Leader, Zeb Jones, Food and Agriculture Analyst, and Jesse McCorry, Evaluation Analyst, ATUT Evaluation Team	
Venue	**:**	Africare Office, Cairo	
Purpose	**:**	To discuss smallholder development models	
Major Discussion Points	**:**		

- Africare project aimed at assisting small and medium-scale farmers (average six feddans) become exporters, starting with cantaloupes and green beans.
- The project is working in the Aswan area of Upper Egypt.
- This is the third year of exports for the project; project farmers are exporting cantaloupe to Italy and green beans to the U.K.
- The project works with different farmers each year; first year 30 farmers, second year 35, this year 25 (against a target of 40).
- The project extends credit to farmers.
- Farmers in order to be able to produce export quality products need intensive technical assistance for the first year and credit for the first two or three years.
- Africare assigns one Egyptian agronomist to each 10 farmers.
- They are also assisting farmers improve their domestic marketing, through linking them with brokers and arranging transportation from the production area to Cairo wholesale markets and having farmers travel with their produce to the markets in order to make contacts and learn more about market requirements and procedures.
- After one or two seasons, the farmers are able to carry on domestic marketing activities by themselves.
- ATUT/Ronco helped the project conduct variety trials and identify markets.
- Africare was able to attract representatives of a U.K. consortium to come to Aswan to visit their growers to assure themselves of the quality and reliability of supply.

- The fact that project growers have a relatively small volume of product available for export has not been a problem, because they are among the very few off-season suppliers of cantaloupe and because they are farming virgin lands, with few soil diseases or insect pests and no history of pesticide use.

- The project growers are certified in Germany as producers of "natural" foods.

- The main problems have been need for grower credit, lack of postharvest facilities, market identification and necessity for teaching quality production to farmers.

Results and Conclusions :

- Small and medium-scale farmers with marketing advantages (in this case a seasonal window and virgin lands) can export successfully despite limited product availability, so long as they can produce the required quality.

- Availability of credit is a requirement.

- Gaining export capability requires intensive technical assistance at the outset.

- Improving domestic marketing practices is important to export and overall commercial success.

- Organizing small and medium scale farmers for export requires the presence of an intermediary.

Follow-up Action Required :

None

CONTACT REPORT

Name	**:**	Don Taylor, Team Leader **Date:** 20/5/02
Participants	**:**	Samir Sedky, Project Manager, and Mohamed Zohir, Export Advisor, AgReform Program, CARE Egypt; Don Taylor, Team Leader, and Jesse McCorry,Evaluation Analyst, ATUT Evaluation Team.
Venue	**:**	CARE Office, Cairo
Purpose	**:**	To discuss smallholder development models.

Major Discussion Points :

- The Agriculture Reform Program since its inception has provided technical and marketing information to 70,000 small-scale farmers in three governorates.

- AgReform participants own an average of two to three feddans each.

- The program first focused on local markets, then progressively helped the farmers introduce their products to district, governorate and finally, national markets.

- They are now extending the program to export markets, working with 54 farmers who are selling cantaloupes and garlic to exporters.

- The growers are beginning to insist on formal purchase contracts from the exporters, who are also supplying seed.

- At the request of one of the exporters, Syngenta Company, the seed supplier, is also providing technical assistance (extension) to the growers who are contracted to the exporter.

- The AgReform Program, under CARE, is the first example in Egypt of small-scale farmers being charged for technical assistance, in this case marketing and technical information.

- At first the information services were provided free of charge; even so, only a few farmers were interested, since “information has no value”.

- Once the farmers who initially signed up demonstrated the benefits of having convenient access to marketing and technical information, however, many more farmers joined the program.

- When CARE instituted the user fee requirements, farmers were very willing to pay LE 20 to LE 50 each, per visit, for the experts who provided the information (growers of non-horticultural specialty crops and women farmers are charged lower fees, based lesser on ability to pay).

- As soon as the farmers started paying for the information, however, they became much more discriminating (demanding) about the kinds and quality of information they wanted.

- Initially the program encountered total lack of cooperation from village level extension personnel, but was later able to convince these personnel that the program was not aimed at replacing the extension workers, but rather at supplementing their efforts; today, local extension personnel work closely with the program.

- In the areas where the program is active, fully 50 percent of the government extension workers also have their own farms; these extension personnel who also have farms are actively taking part in the program and paying the fees required to do so.

- CARE staff are helping organize farmer associations and registering them with the Ministry of Social Affairs (the growers refuse to register as cooperatives under the Ministry of Agriculture and Land Reclamation because they do not want Ministry control); in order to avail of program services, farmers must be members of one of these farmer association.

- The associations in addition to annual membership fees that vary from LE 10 to LE 50, depending on the particular association, charge growers a check-off fee which is used for association operating expenses; in the case of cantaloupe, for example, the check off fee is 10 piastres per kilogram marketed.

- Unlike government sponsored organizational efforts, farmers taking part in the program are themselves responsible for all decision-making; for example, CARE will recommend certain varieties, but the farmers are free to select the seeds they want to plant

- When the program first started, market considerations did not enter into production decisions by farmers.

- Now, however, farmers involved with the program routinely consider market needs before making planting decisions.

- At the beginning of the program, quality was a problem; there were no grades or standards and little if any price differentiation based on quality in the domestic market, since good quality produce was largely unavailable, so there was no incentive to improve quality.

- The program has been able to demonstrate to a sizeable number of program participants that if they deliver better quality produce to the right markets, their produce will command a higher price (this has also been demonstrated by other smallholder development programs in Egypt).

- When CARE began working with farmers who wanted to produce for export, quality considerations became a paramount concern.

- Because of past CARE introduction to quality requirements these farmers were able to quickly bring the quality of their products up to export standards (one amazed export buyer told CARE that the garlic he obtained from the program growers was the best he had ever purchased).

- The greatest barrier to initiating supply and marketing arrangements between small-scale farmers and exporters was lack of trust and perception of risk on both sides (the growers were not certain that the exporters would really purchase their products and the exporters doubted the ability and the willingness of the farmers to provide a reliable supply of the required quality).

- CARE has worked as an “honest broker” to help foster conditions that reduce the risks for both farmer and exporter and in the process, builds mutual trust.

- CARE rates the cooperation and assistance received from ATUT, and in particular the Ronco team, as very good.

- HEIA was also approached for assistance, but the organization was not flexible enough to accommodate the needs of program farmers.

Results and Conclusions:

- The CARE experience leads to the following conclusions.

- Small farmers are willing, and able, to pay for technical services, in this case information, so long as these services are seen to be worth paying for.

- Small-scale farmers are prepared to cooperate with each other for their common good when shown a valid rationale for doing so.

- Such cooperation is successful only when the farmers themselves are free to make their own decisions in the absence of any form of coercion from outside the group.

- As one form of cooperation, small-scale farmers can be led to see the benefits of joining together into associations, including supporting those associations financially.

- When better quality fresh produce is made available, there is a demand for such produce in as well as a willingness to pay a higher price to obtain it.

- Buyers and small-scale growers will enter into formal supply/purchase arrangements provided the actual and perceived elements of risk can be reduced to an acceptable level.

- These arrangements will be expanded according to the degree to which trust can be built between the two sides.

- Improving the technical and marketing skills of small-scale farmers requires the long-term presence of a qualified intermediary, in this case CARE.

- Sustaining small-scale farmer improvement requires that an external intermediary (such as CARE) be replaced with an internal intermediary (farmer association, nucleus enterprise, or other private sector entity).

- Government cannot function as an effective farmer intermediary.

Follow-up Action Required:

None

CONTACT REPORT

Name	**:**	Don Taylor	**Date:** 22/05/02
Participants	**:**	Don Taylor, Zeb Jones, Jesse McCorry, Dr. Kamal, Dr. Salem, ATUT Evaluation Team; El Sayed M. Abu El Komsan, First Under Sectretary, Foreign Trade Sector	
Venue	**:**	Office of the Undersecretary	
Purpose:		To discuss ATUT project, general foreign trade policy and other trade matters	

Major Discussion Points :

- The Undersecretary expressed considerable frustration concerning the lack of coordination and cooperation from ATUT, not only in respect to the Ministry of Foreign Trade and his department, but with all agencies concerned with foreign trade.
- Although the ATUT project has been underway since 1996, it was not brought to his attention until approximately two years ago.
- He immediately approached the project and requested that the market intelligence and market information/data being compiled by ATUT be made available to his department on a quid pro quo (information exchange) basis; he even purchased and installed computer software that could be connected to the ATUT data base for this purpose.
- He also requested ATUT to help him determine transportation-related problems and constraints affecting foreign trade so that the government could address these.
- ATUT in reply invited the Under Secretary to attend the planning conference at Sharm el-Sheikh, where he "enjoyed the picnic".
- ATUT made no further attempt to contact his department.
- One of his aides spent approximately five months attempting to establish some form of cooperation with ATUT but was rebuffed.
- At the request of the Department, the Export Commodity Council for horticultural products (whose members are also HEIA members) also attempted to foster market intelligence/information links between ATUT and the Department, but was unable to obtain ATUT cooperation.
- ATUT finally informed the Undersecretary that the marketing intelligence and market information/data gathered by ATUT was available only to ATUT clients and could not be shared with anyone else.
- The Undersecretary's department is in a position, through the governate trade point offices, which are also under the Ministry of Foreign Affairs, to disseminate market information to medium and small-scale farmers throughout Egypt; it would have benefited both institutions (ATUT and the department) if they could have pooled their market information and intelligence.

- The commercial attaches at Egyptian embassies are also under the Ministry of Foreign Trade; a link between ATUT and the Department could have resulted in mobilizing the attaches to provide market intelligence more responsive to farmer needs (demand driven services).
- The Department, and particularly the Undersecretary, constitute the focal point for the making of foreign trade policy; a close working relationship between ATUT and the department would have enabled the project to better serve their clientele and the horticultural industry by being able to provide private sector inputs and thus have a positive influence on such policy making.
- The Undersecretary observed that while ATUT has been a good project and has helped develop the horticultural export industry, it was constrained to work with only a relatively few large farms and thus had only limited macro-economic effects on the overall agricultural sector; the Department would have liked to work with ATUT to help spread these effects beyond the immediate ATUT clientele.
- He recommended to the team that any future project should be designed under the tutelage of a steering committee composed of representatives of all of the sectors concerned with foreign trade; and that cooperation and coordination between the project and these sectors should be fostered.

Results and Conclusions :

- This is a dramatic example of the territoriality and resistance to cooperation between agencies that exists within the Egyptian government.
- This situation is not unique or even unusual.
- But it also illustrates a very significant “missed opportunity” for the ATUT project.
- From an evaluation standpoint, it also appears to point to a lack of sufficient coordination between ATUT and other entities involved in foreign trade.

Follow-up Action Required :

- While it is probably too late for the ATUT project to correct this situation, the lessons learned in this particular instance need to be applied in the design of future projects.
- Safeguards should be established to ensure that the design and implementation of future projects be made accessible to all interested agencies and organizations that are active in the project areas of emphasis, and that initiatives and information developed by such projects are made freely available to all interested parties.

X. Acronyms

ACC	Agricultural Commodities Council
AGERI	Agricultural Genetic Engineering Institute
AIC	Accelerated Impact Grant
ALEB	Agriculture Led Export Businesses
ARC	Agricultural Research Center
ATUT	Agricultural Technology Utilization and Transfer
APRP	Agricultural Policy Reform Program
BSO	Business Support Organization
CAS	Commercial Attache Service
CFA	Cut Flower Association
EAGA	Egyptian Agribusiness Association
ECCA	Egyptian Cold Chain Association
EEPC	Egyptian Export Promotion Center
EEU	Egyptian Exporters Union
EU	European Union
FECC	Federation of Egyptian Chambers of Commerce
GDP	Gross Domestic Product
GOE	Government of Egypt
HACCP	Hazard Analysis and Critical Control Points
HEIA	Horticulture Export Improvement Association
HRD	Human Resource Development
HSC	Horticulture Service Unit
IPM	Integrated Pest Management
IRR	Internal Rate of Return
IT	Information Technology
LE	Egyptian Pounds
M&E	Monitoring and Evaluation
MALR	Ministry of Agriculture and Land Reclamation
MFT	Ministry of Foreign Trade
MIS	Management Information System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOE	Ministry of Education
MSA	Ministry of Social Affairs
NARP	National Agricultural Research Project
NEC	National Export Council
NEM	Nucleus Enterprise Model
NGO	Non-Governmental Organization
OD	Organizational Development
PACD	Project Assistance Completion Date
PASA	Participating Agency Service Agreement
PBDAC	Principal Bank for Development and Agricultural Credit
PHC	Post Harvest Center
PIL	Project Implementation Letter

PMU	Project Management Unit
SAP	Strategic Action Plan
SO	Strategic Objective
STTA	Short Term Technical Assistance
TA	Technical Assistance
TTC	Technology Transfer Component
USAID	United States Agency for International Development
WG	Working Group
WTO	World Trade Organization