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Ministry of Agriculture & Land Reclamation
US Agency For Intl. Development
Agriculture Policy Reform Program
Reform Design and Implementation

PN-ACT-189

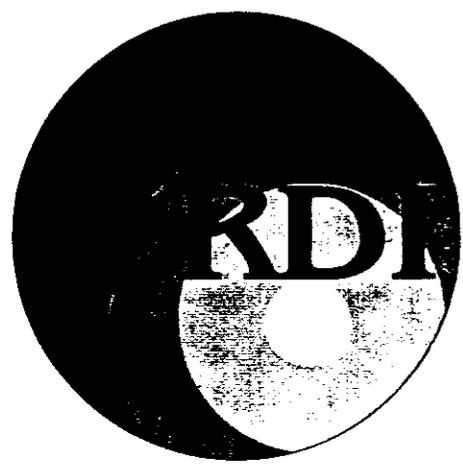
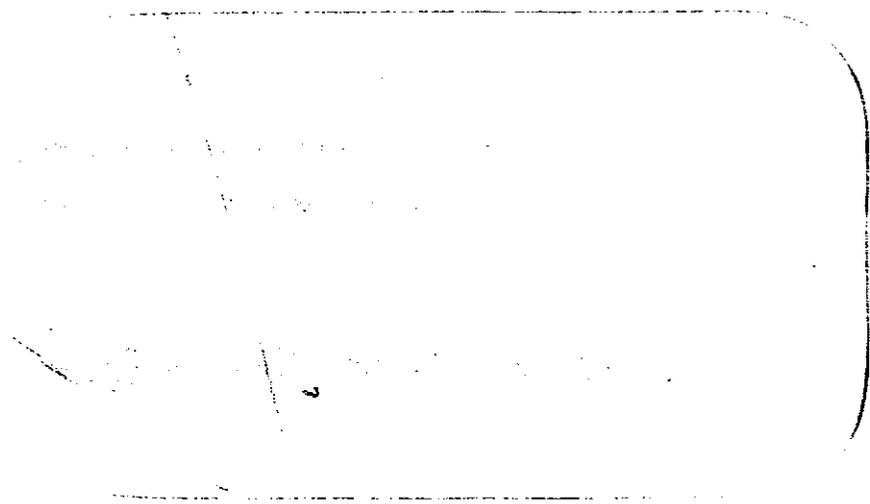
وزارة الزراعة واستصلاح الأراضي
الوكالة الأمريكية للتنمية الدولية
مشروع إصلاح السياسات الزراعية
وحدة تصميم وتنفيذ السياسات

Ministry of Agriculture and Land Reclamation

AGRICULTURE POLICY REFORM PROGRAM

Reform Design and Implementation Unit (RDI)

USAID CONTRACT NO. 263-C-00-97-00005-00



APRP

Reform Design and Implementation Unit

Development Alternatives Inc. Group: Office for Studies & Finance, National Consulting Firm Development Associates, Cargill Technical Services, The Services Group, Training Resources Group, Purdue Universities, University of Maryland

RDI REPORTS

A

Report No. 155

*Status Assessment of
Agricultural
Research and
Extension Reform*

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December 2001

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EXECUTIVE SUMMARY

There is a strong need for more services for small holders and agribusinesses in Egypt's new liberalized economy. Effective research and extension is essential in order to take advantage of Egypt's potential to export high-value agricultural goods, particularly horticulture, by improving the overall quality of the exported product. This includes exposing farmers to new crops and methods of production, improving extension services to farmers, and improving methods of packaging and transporting horticultural produce.

APRP has been working with the Ministry of Agriculture and Land Reclamation in order to develop a new policy mandating extension officers to undertake tasks responding directly to the needs of stakeholders in agricultural production and processing for export in specific pilot Governorates. This has included promoting private sector participation in the research and extension process in order to make such involvement an effective tool in the advancement of technology transfer.

The purpose of this study was to conduct a thorough appraisal of APRP's experiences in research and extension reform in the pilot Governorates of Ismaleya and Luxor/Qena in order to identify successful elements for locally adapted replication in the new pilot projects of Giza, Beni Sweyf, and Beheira.

The projects in Ismaleya and Luxor/Qena have met with measurable success. Horticultural exports have increased, and exporters, farmers, and government officials have been brought to the negotiating table in order to begin the process of establishing effective, mutually beneficial working relationships. This has included training governmental extension workers by the private sector, negotiating exporter-grower contracts, working to improve the transport of produce to external markets, and promoting the formation of private, commodity-based cooperatives. The process of reform, however, cannot be completed overnight, and several lessons have been learned from APRP's work in Ismaleya and Luxor/Qena. APRP needs to continue to promote clear lines of communication between all parties in order to train extension workers in the specific needs identified by the growers themselves and to facilitate the promulgation of mutually-beneficial contracts.

INTRODUCTION

Egypt's official agricultural extension system—based in several agencies of the Ministry of Agriculture and Land Reclamation, the cooperative movement and in certain other public sector agencies—has proven itself effective in getting technical innovations into the hands of Egypt's farmers and other rural producers. This work in both crop and livestock sectors has achieved notable results.

However, recent policy reforms in Egypt have begun to alter the face of the Egyptian countryside. Farmers now have the freedom to choose what to grow, how to grow it, and to whom to sell their crops. Market forces are taking hold, and new agribusinesses are emerging every day.

As the agricultural economy grows, specializes and becomes more export-oriented in this era of full market liberalization, stakeholders realize that they need information that MALR extension and research institutions and staff should provide. Many of these needs—market information, economic analysis of the returns to investment in specific cropping patterns or equipment, information about processing and storage, etc.—have not been available in the past from the state services.

Richer farmers can pay for these services from private agencies and have begun to do so. Many Egyptian agribusinesses hire international consultants when needed, and many more hire Egyptian expertise from the universities, the Agricultural Research Center or private sector agricultural service companies. However, medium-scale and small-scale farmers, many of whom provide (or wish to provide) export-grade production to processors, traders, packers and exporters, badly need support from public sector extension and research services.

Working in conjunction with APRP, the MALR has worked to fashion a new policy that defines the role of public sector research and extension institutions in support of the private, free-market agricultural economy of Egypt. The government is now moving towards incorporating market considerations and private export needs into research and extension in order to link local farmers with high-value export markets.

Objectives of Study

This study was commissioned in order to document APRP efforts in redefining the government's role in research and extension in Egypt's newly liberalized export-oriented agriculture sector. This has entailed divesting the government from those research and extension services which the private sector could perform, and strengthening those which rest in the domain of public administration.

The specific objectives of this study are:

- 1) to document the work of APRP in research and extension in the pilot Governorates of Ismaleya, Luxor/Qena, Giza, Beni Sweyf, and Beheira;

to solicit participant observations of research and extension services in the pilot Governorates in order to assess extant obstacles to reform as well as to learn from past successes in pilot areas;

3) to identify the successful elements of the pilot projects in Ismaleya and Luxor/Qena for locally adapted replication in the pilot Governorates of Giza, Beni Sweyf, and Beheira.

Methodology

In order to conduct this evaluation, the consultant traveled to the pilot project Governorates of Ismaleya, Luxor/Qena, Giza, and Beni Sweyf and interviewed Directors of Extension Services, Undersecretaries of Agriculture, cooperative leaders, and small- and large-scale growers. In-depth discussions were also held with representatives and members of the Horticultural Export Improvement Association (HEIA). On-site visits of farms were carried out in Luxor and Qena.

Background of Research and Extension Reform

The Agricultural Policy Reform Program has been working closely with the MALR to improve the provision of agricultural extension services and to define the role of the public sector research and extension in a liberal, private sector led, free market agricultural economy.

In its focus on research and extension reform in Egypt, APRP's work has passed through two distinct phases. First, APRP-RDI worked to *define* the new policy of government research and extension services within the specifications of Tranche II. In its second phase, APRP has moved to *implement* this new policy in the pilot Governorates under Tranche III and Tranche IV.

Redefining the role of the public sector research and extension institutions is a major organizational change effort, and the success of this effort requires the active participation and support of all groups—from field extensionists and governmental officials to exporters, growers, and cooperative leaders. To ensure this active participation and support, representatives of all key groups have been involved in each of the phases of the reform project. This has entailed participation in meetings and workshops in Upper, Middle, and Lower Egypt as well as in Cairo. APRP has also worked with MALR research and extension agencies, as well as with rural organizations, cooperatives, and the private sector to implement the policies developed at these seminars in the pilot Governorates.

Phase I: Devising the policy framework for research and extension reform

As part of Tranche II, APRP worked with the MALR to approve a policy which defined the respective roles of the public and private sectors in Agricultural Research and Extension in support of the free-market agricultural economy. In order to accomplish this,

APRP-RDI conducted a series of workshops with all key stakeholders in pilot Governorates as well as in Cairo. These workshops were utilized in order to clarify the needs and expectations of all groups.

The proposal approved by the Minister specified the background to the development of the policy, its objectives, and specific directions the MALR will take in order to ensure the implementation of a suitable system to develop and transfer new and appropriate technology to farmers and agribusinesses.

Phase II: Implementation of the new policy

In Tranche III, the MALR implemented a phased plan for the support and transfer of specified research and extension activities to the private sector. The plan included: a) specification of the research and extension functions which the public sector would enable the private sector to provide in Ismaleya, the first pilot Governorate; and b) administrative and management structures and rules to ensure MALR inspection, certification, licensing and quality control for services and information offered by the private sector.

Tranche IV has witnessed the development and implementation of a second pilot plan in Luxor/Qena, as well as the initial implementation of the successful elements of the pilot activities in Giza, Beni Sweyf, and Beheira.

In implementing the new research and extension policy, APRP-RDI has focused on four main areas of reform: training extension agents in export-oriented production; facilitating contract farming between growers and exporters; improving post-harvesting facilities for export crops; and forming farmer cooperatives focusing on export production.

Training Governmental Extension Workers

In cooperation with HEIA and the Governorates, APRP is working to train extension specialists in horticultural cultivation and Good Agricultural Practices (GAP) for export-quality produce.

Contract Farming

APRP is encouraging contract farming arrangements among farmers, farmer groups, and exporters. This encouragement entails establishing and enforcing policies that protect both sides in the contractual relationship. It also includes strengthening the institutions that will represent the farmers in the negotiations, particularly private growers cooperatives specializing in horticultural production.

Improving Logistics for Horticultural Exports

Recognizing the importance of effective post-harvest care and transport of horticultural produce, APRP is working with MALR and HEIA to establish refrigerated transport, cooling units, and packinghouses in the pilot Governorates.

Formation of Private Commodity-Based Associations

APRP is working with MALR to encourage the formation of private commodity-based associations and to decouple existing cooperatives from government control. In the future, these organizations will take on the responsibility of helping to fund and undertake research and extension activities.

Results in promoting horticultural exports have been positive. The value of horticultural exports is triple 1998 levels, making it one of the three strongest agribusiness sub-sectors in terms of investment, export value, and private sector job creation in Egypt. Additionally, according to HEIA, contract growing arrangements with small-holders account for half of all production for export.

ISMALLEYA

APRP selected Ismaleya to be the first pilot project for research and extension service improvement in Egypt. Ismaleya's pleasant weather suitable for the early production of horticultural produce, along with the vast areas already planted with vegetables and fruit, indicated that Ismaleya had significant potential in orienting its production toward export.¹

Research and Extension in Ismaleya

Governmental extension services in Ismaleya have met with a significant measure of success with field crops. Horticulture, however, has traditionally been neglected by research and extension, meaning that those farmers dedicated to horticulture cultivation have not had access to up-to-date technical information, nor have they received training in GAP.

APRP has been working with the Ismaleya Governorate, HEIA, farmers, and cooperatives to meet the demands of the export market by planning training sessions for horticultural extension specialists and by guaranteeing that these growers will have a market for their produce. This has entailed participating in negotiations between exporters and growers and in working to provide a packinghouse for horticultural produce.

The initial results of research and extension liberalization and export promotion in Ismaleya have been positive. In 1998, 51,808 feddan were dedicated to fruit and vegetable cultivation. Recent data puts this figure at around 135,000 feddan. This 160 percent increase in horticultural production indicates that increased access to information and improvements in cultivation techniques has resulted in significant benefits to both farmers and exporters.

APRP Activities in Ismaleya

Recognizing the importance of involving all relevant groups in the planning and implementation process, APRP initially held a series of meetings with stakeholders in Ismaleya under the auspices of the MALR Extension Service and the ARC. Participants in these meetings were able to voice their concerns and to define their needs and expectations of the project. Ismaleya chose members of committees to move forward with implementing the pilot project, and exporters, farmers, and cooperatives have been working together in order to reconceptualize the method and goals of research and extension services. All groups in Ismaleya have shown an active commitment to supporting this activity.

¹ According to HEIA, 60,000 feddan in Ismaleya are dedicated to fruits like mango, citrus, and grapes and more than 75,000 feddan to vegetables such as potatoes, tomatoes, green beans, strawberries, peppers, zucchini, and cucumbers.

Workshop Goals...

The workshops held in Ismaleya were designed to:

- Explore what is needed in extension in the market economy*
- Examine the information needed by farmers, traders, exporters and processors*
- Explore why contract farming is important to farmers, agribusinesses and exporters*
- Examine what the contracts should include*
- Determine what is required in private sector and cooperative participation in research and extension*

Workshop Findings...

Participants in the workshops expressed the following:

- Farmers desire information on which crops they should grow; the technical assistance to grow and harvest these crops; and solid contracts with price guarantees. Farmers expressed a willingness to pay for high-quality extension services.*
- Cooperatives wish to play an active role in contract negotiations with exporters. In the future, they envision themselves as playing a key role in the provision of up-to-date technical assistance to farmers, and would like to see exporter training of extension workers. Their primary interest in training and service provision to their members is in export promotion.*
- Extensionists want to receive training in export-oriented cultivation and post-harvesting practices from the exporters. They would like to receive salaries based on their performance of crop yield quantity and quality, and desire more government*

Training extension workers

APRP-RDI's work in Ismaleya has led to a significant improvement in the level and quality of cooperation between the public and private sectors in research and extension services. Through its activities in promoting extension worker training, APRP has witnessed a shifting of a portion of the responsibility of research and extension provision onto the private sector.

APRP has worked with the Undersecretary of Agriculture and Director of Extension to select a list of 20 extensionists in Ismaleya to be trained as specialists in export-oriented horticultural production and GAP. They have also chosen an additional 30 to be trained specifically in organic production. The extensionist training has been delayed due to funding difficulties, but plans are in the works, and HEIA and APRP are ready to begin training once funding has been secured.

APRP is also working with the horticultural cooperative to select a second group of ten recent graduates in agricultural engineering to be trained by HEIA and work exclusively

for the packinghouse center to be built. This training, however, has also been put on hold due to funding difficulties and negotiations to be ironed out with HEIA concerning the packinghouse.

Delays in HEIA training, however, have not stopped the Undersecretary of Agriculture and the horticultural cooperative from working with APRP to improve extension services through additional training in horticulture production. The Undersecretary has authorized seven of the twenty specialized extensionists waiting to be trained by HEIA to be trained at the cooperative training center with the cooperation of the Governorate research center. These extensionists have been trained in potato cultivation for export, and each is now responsible for 50 feddan of cooperative land.

The plan is now for those extension workers trained by the cooperative to train other extension workers through meetings in villages and through workshops at the Governorate level. This is a break from past practices in extension training. Prior to this program, cooperatives had had no direct participation in extension agent training, and agents had not trained each other. This new form of cooperation with horticulture is going well, and Undersecretary Mosad hopes to expand the number of extensionists trained in this program. Eng. Mosad is also working on a program providing for researchers to train key local farmers, who will then work with farmers in their community as a local farmer-to-farmer activity.

The Undersecretary of Agriculture and the horticultural cooperative have additionally been working to train extensionists in marketing. HEIA does not currently offer marketing training to extensionists, so the Ismaleya Governorate has reached an agreement with the Ministry of Agriculture to finance the training of a group of 25 extensionists in marketing by the cooperative training center and representatives of the Governorate research center.

Cooperative members and the Undersecretary, however, prefer to have HEIA's participation and expertise in this area as well. In response to this request, Amr Rizkana of HEIA has indicated that he will work to locate international marketing experts to incorporate them into the training sessions offered by HEIA as soon as DT2 funding is secured.

Complementing the work of APRP-RDI, the Agricultural Technology Utilization and Transfer program (ATUT), has also been participating in extension training. Beginning in 2000, ATUT-Ronco offered practical training courses on post-harvest and sorting practices of strawberries and green beans in Ismaleya. The goals of the training sessions were: 1) to introduce an awareness program of export-oriented production to small growers through extension agent training; and 2) to inform exporters of the GAP requirements. These courses included the recommended practices of producing clean crops to meet international standards of food safety.

A portion of the burden of research and extension is therefore slowly being taken over by the private sector. Those extension workers who will be trained by HEIA and work exclusively for the packaging facility will be purely private sector workers paid by the

facility. Their compensation will be performance-based, contingent upon the quantity and quality of the produce delivered to the exporters. It is also planned that the facility will have ten governmental extensionists participating, and these workers will continue to get paid by the government, but will receive additional compensation from the facility based on performance as well. This bonus system devised by the facility will supplement governmental salaries and work as incentives for extensionists to get out to the fields and work directly with the farmers.

Grower-Exporter Negotiations

APRP has been working with growers, the Ismaleya horticultural cooperative,² and exporters to establish mutually satisfactory export agreements in Ismaleya. The results of this effort in Ismaleya have been positive, with horticultural exports out of Ismaleya having increased significantly. Additionally, the terms of grower-exporter agreements have improved, and farmers are now better situated to share the economic benefits of the sales with the exporters. Devising exporting agreements to the satisfaction of all parties, however, is still in the process of refinement, and the lessons derived from the experiences of growers and exporters in Ismaleya should hopefully contribute to improving future agreements in Ismaleya as well as in other Governorates.

Prior to the establishment of APRP's pilot project, growers in Ismaleya faced a difficult situation with exporters. Lacking real negotiating power, farmers entered into agreements without the benefit of contracts or price guarantees. This situation has slowly been changing as APRP has facilitated negotiations between exporters and the horticultural cooperative.

Contract agreements have been most successful with potatoes. The horticultural cooperative is now in its second year of contracting with potato exporters, and both sides of the partnership are satisfied with the terms of the agreement. The contract is based on the model of a basic contract provided by APRP to the cooperative and the Ismaleya Undersecretary for Agriculture.³ Among other stipulations, it specifies a minimum guaranteed price for potatoes at harvest. The same contract has been renewed for this year (the only change is the price offered to farmers to reflect international market shifts).

Potato Exports: how the terms of negotiations changed

When APRP began the pilot project in Ismaleya, farmers emphasized that they were unsatisfied with their business relationships with exporters. APRP sponsored a series of meetings involving the horticultural cooperative, growers, the Undersecretary of Agriculture, and exporters in order to discuss the export of potatoes.

Using the model contracts provided by APRP, the cooperative and farmers were able to alter the terms of trade of potatoes with the exporters. This was accomplished by: 1) demonstrating the fairness of the model contract to both parties (approval by the Ministry of Agriculture gave the contract added legitimacy); 2) guaranteeing a high quality product due to the contributions of the recently trained extensionists in potato production; 3) involving the Undersecretary of Agriculture in the meetings as a mediator; and 4) involving the cooperative in the negotiations. Previously, small farmers had been unable to exact concessions from exporters due to their limited negotiating power. Working with the cooperative, however, small and large-scale growers were able to negotiate more equitable terms for the farmers and the cooperative.

The results from last season have therefore been positive. The new agreement has established a level of trust between the exporter and growers, and has also led to an increase in the cultivation and sales of potatoes. Last year there were 200 feddan of potatoes dedicated for export, and this year they expect that area to double to 400 feddan.

The horticultural cooperative is also now working with growers and exporters to establish contracts for strawberries. Currently, the sale of fresh strawberries happens either with farmers establishing verbal, non-binding agreements with contractors at the beginning of the season, or with exporters visiting the farmers later during harvesting to negotiate sales. Either method of transaction leaves the farmers with a measure of uncertainty as to the profitability of the strawberry crop, and thereby works as a disincentive for the farmers to invest significant sums of money into export-quality cultivation and harvesting methods.

However, in spite of these obstacles, strawberry exporting has increased in the past two years according to estimates from the horticultural cooperatives and strawberry growers. Part of this success in export-oriented strawberry cultivation has been due to the work of ATUT's grower and exporter training program in production and post-harvesting practices, as well as to the nascent efforts of the cooperative. Demand for strawberry runners from nurseries exceeded supply last year by one million plants. This is a good indicator that farmers are selling a significant amount of strawberries to exporters, and that this amount is increasing. This, however, also points to the need for greater communication between all parties involved, so that farmers are able to purchase the number of runners from the nurseries that they will need to cultivate and sell for export, and exporters are able to meet foreign market demand.

Interviews with strawberry farmers indicated that they have had good sales to exporters, but that they wish to have written contracts specifying the terms of the deal and minimum prices for the next season. Exporters, for their part, are interested in working with the farmers but are wary about engaging in binding contracts at this point. They want to see the packinghouse built and extension workers trained to improve current production practices. The horticultural cooperative is currently engaged in negotiations with exporters to reach an agreement on this.

The horticultural cooperative is also engaged in promoting the export of mangos in Ismaleya. As with strawberries, informal agreements between mango exporters and farmers have been taking place for many years, with exporters verbally establishing how much they will purchase at the beginning of the season. Wishes of mango farmers are akin to those of strawberry farmers: they desire written contracts in order to guarantee a level of security. The Director of the cooperative has been in negotiations with mango exporters since early July in order to get a written contract by the end of the year. The Director is optimistic that a mutually beneficial agreement will be reached.

Improving mango and strawberry cultivation...

The Undersecretary for Agriculture is now working with the cooperatives to change the quality of production of strawberries and mangos for export by training farmers and extensionists in integrated management. In the past two years, farmers have established an area of strawberry and mango production that has been chemical free. The cooperative has been successful in marketing this produce to exporters.

The horticultural cooperative recently achieved an agreement with a French exporting company who wanted to import Egyptian mangos into France. Prices were agreed upon ahead of time, and a contract was in the process of being completed. However, the business deal has not been carried through. When the cooperative received freight estimates from the airlines for export, they calculated that they would lose \$60 per ton of mangos shipped. The Director of the cooperative is now in negotiations with the airlines to get a special shipping rate for the mangos to France.⁴

With other exported crops such as green beans, peppers, cantaloupes, and cucumbers, farmers depend on traders to purchase their goods. There are no written contracts with any of these crops, and the cooperative is not focusing on them in negotiations with any exporters concerning these at the present time. The Director of the cooperative stated that he hopes to play a role in future negotiations, but he feels that the traders (or "middle men") are disrupting potential business relationships between the exporters and the cooperative and are taking advantage of the growers.

The Question of the "Middle Men"

The powerful position of traders in exporting horticultural produce in Ismaleya is undeniable. Opinions, however, vary on the ramifications of their presence within the market place.

The cooperatives see traders as taking away valuable farmer revenues by buying from small farmers at low cost, and then selling to exporters at a high profit. They are taking over the function of what farmers could and should be doing by themselves. They also claim that some disreputable traders have mixed good and bad quality produce from different farms, thereby increasing distrust between growers and exporters for future transactions.

Some exporters, on the other hand, view traders as important partners who absorb a significant amount of the risk of the transaction by buying products that have the potential to be damaged through the post-harvesting and transport processes. Additionally, exporters do not have the capacity to deal with hundreds of small farmers; working with middle men who collect orders and put them all together is much more efficient for the exporters and allows small-scale growers access to global markets.

The issue of the middle men will continue to be salient in Ismaleya in the near future, and it is important that their presence in the exporting chain be taken into consideration when discussing exporting policy in Ismaleya. There are clearly significant tensions between the traders and the cooperatives, and this issue may be worth exploring in the future.

Packinghouse Facility

APRP has been holding regular meetings with the HEIA green beans council and with representatives of the Ismaleya horticultural cooperative to set up a packinghouse center with a cooling facility in Ismaleya. This packinghouse center will have an agricultural extension center annexed in order to offer private extension services to those

⁴ This was the first time that cooperatives were directly involved in negotiations to export mangos in Ismaleya. Farmers generally work directly with exporters who primarily sell to Arab countries due to lower costs of shipping and special agreements already established with the airlines.

growers cultivating their crops for export. The project's overall aim is to assist growers in getting their products to the global market.

It is anticipated that the center will play a key role in working with farmers to follow the right steps in all agricultural operations in accordance with the GAP. This will include training extensionists and growers in document filing in order to keep an updated tracking system of crops from planting to harvesting. According to Mr. Beltagui, these files are an integral step in getting the internationally accredited certificates which are necessary for exporting local products.

The packinghouse will be designed to serve both growers and exporters. Growers will benefit from up-to-date harvesting and post-harvesting methods as well as contract negotiations with exporters. Exporters, on the other hand, will benefit from receipt of the quantities and varieties needed according to the contract brokered by both growers and exporters at the beginning of the season to meet external market demand.

At this point, growers and exporters plan to work together to pay for the facility, and APRP is now working on negotiating funding among the interested parties. The horticultural cooperative is devising a campaign aimed at convincing growers to contribute LE 2.5 million to purchasing packinghouse shares. The cooperative also expects exporters to contribute another LE 2.5 million. The cooperatives have asked the extension workers to make an announcement about the unit and the money needed for the investment to all growers in their areas. The Undersecretary of Agriculture has furthermore requested a grant of LE 5 million from the MALR for the unit to be managed by the cooperative.

Samir Shihatta of APRP has also recently issued Memoranda of Understanding to the Italian and Danish government development organizations in a request for soft loans for the facility. APRP is in the process of arranging meetings among stakeholders in Ismaleya and representatives of the Italian and Danish governments in order to explore the possibility of funding the unit through low interest loan arrangements from Europe.

The local and national government have been supportive of the endeavor. As has been mentioned, the Undersecretary is requesting a grant of LE 5 million for the construction of the facility. Additionally, the Governor of Ismaleya has allocated three feddan to the cooperative to establish the packinghouse, as well as a grant of LE 10,000 to

Services of the packinghouse will include:

- sorting and packing;*
- field supervision to ensure complete fulfillment of the GAP requirements;*
- field receiving and inspection for exportable crops;*
- sorting, selecting, sizing, and packing under the export's representative supervision;*
- issuing the full documentation and traceability data on every shipment label including producer's name, production date and other required information.*

After-packing steps will include:

- pre-cooling;*
- cold storage;*
- transportation by reefer containers;*
- product delivery;*
- contracting with exporters;*
- providing an agricultural quarantine unit, customs office, and export and import supervision agency;*
- and*
- establishing an arbitration system.*

construct the wall which will surround the center.

As previously discussed, the packinghouse plans to hire ten recent graduates to work exclusively for the center, and receive an additional ten governmental extensionists. The eventual target is to have 50 specialist extensionists working for the packinghouse, all trained by HEIA.

There continues to exist some tension between the parties involved in negotiations. Several issues concerning the management of the packinghouse and control of the funding of the facility have arisen, and APRP is in the process of ironing out disagreements and misunderstandings.

On-site grower visits

The horticulture cooperative is preparing a training trip with the Director, the Board, and at least 20 farmers to visit farms dedicated to export-oriented cultivation in Syria at the end of October. They plan to learn about improved harvesting and post-harvesting techniques from horticultural farmers engaged in successful trade with exporters. The cooperative also plans to include several farmers from Sinai to learn about cultivation techniques used in the dry areas of Syria. The cost of the educational tour will be shared between members and the cooperative fund for education and extension training.

The farmers who will accompany the cooperative on the tour have agreed to hold information sessions with farmers in their villages about what they have learned and new ideas on horticultural cultivation when they return. These farmer-to-farmer extension activities have proved successful in the past for the cooperative. Ten years ago a group of farmers made a trip to Jordan under the auspices of the cooperative, and as a result started greenhouses and nurseries which are now exported all over Egypt.

LUXOR

Following the successful implementation of the first research and extension pilot project in Ismaleya, APRP began preparations for the second pilot project in Upper Egypt. Luxor and Qena provide ideal growing conditions for horticultural produce during winter due to their early harvest season (two weeks earlier than Ismaleya), as well as their access to the Luxor airport.

Research and Extension in Luxor/Qena

In Luxor and Qena Governorates, there are approximately 145 governmental extension workers, with nine extension service centers located throughout the Governorates. Statistics on the number and size of farms owned and extension workers responsible for them are at this time difficult to surmise accurately. From what estimates we can make, however, it appears that each extension worker in Luxor/Qena is on average responsible for 6 hood (making up generally 400 to 500 feddan), and the average farm size in the area is 2 feddan. This means that, on average, each extension worker is responsible for 200 to 250 farms.⁵

Training Governmental Extension Workers

Preparations are under way for a training course for ten agricultural extensionists from Luxor/Qena chosen by APRP-RDI to be trained in the Good Agricultural Practices (GAP). HEIA is ready to provide training for agricultural extensionists to be specialized in growing early varieties with the potential of achieving early exports. The training has been delayed due to funding difficulties, but HEIA and APRP-RDI are ready to begin training once funds have been released.

The Governorates of Qena and Luxor also now have a list of sixty extension workers ready to be trained by HEIA (after the initial training of the ten). The list comprises 10 from Aswan, 10 from Sohag, and 40 from Luxor/Qena.

In-country observation tours of grape farms

APRP has been working in conjunction with HEIA to sponsor grower site visits of grape farms in Egypt. The in-country observation visits are financed by the DT2 project while HEIA, through its Technical Service Department, implements the program of visits.

The objective of the visits, born out of a series of meetings with growers and exporters, is twofold. First, to promote transfers of technology and new methodologies of cultivation to farmers in Upper Egypt through first-hand exposure to modernized farms in the country; and second, to promote the cultivation of new crops (in this case, table grapes)

⁵ There is, however, likely a significant amount of variation in the workload among extension workers in different areas.

which have not previously been grown in Upper Egypt but which would be an advantage to both growers and exporters.

Exporters are hoping to take advantage of the trade window agreed upon in the European-Egyptian trade agreement which allows for the importation of exports duty free from the beginning of April to the end of June. While near Cairo, table grape harvesting begins in the last week of May, in Upper Egypt harvest time will be two weeks earlier, meaning that table grape exports can make it into the European market the first week of May. Table grape cultivation in Luxor/Qena would therefore increase the amount of goods exported to Europe in this duty-free window. Additionally, the presence of the Aswan and Luxor airports makes the prospect of exporting goods directly to Europe a viable option.

From the growers' perspective, grapes provide an attractive alternative to sugarcane, a major crop of Upper Egypt. Governmental regulations no longer allow the production of sugarcane within 200 meters of railways and major roads. Therefore, farmers are looking for a high-yield crop that will also provide a high return on their investment to replace sugarcane in select areas, and for a crop to be cultivated in newly reclaimed desert land areas. Table grapes satisfy both needs.

Farmers, however, are generally reluctant to grow new crops without first seeing farms already engaged in table grape production. HEIA had previously sent a group of farmers from Alexandria on observation tours to vineyards in California and Chile with funding from ATUT. The new methodologies learned and implemented in Egypt have led to increases in yields on these farms, as well as a 20 percent increase in exports last year. Therefore, APRP and HEIA decided to conduct a similar observational tour for farmers in Upper Egypt, this time to learn from the farmers who had traveled to California and Chile and who had successfully applied these modern methods of cultivation to their own farms in Egypt. APRP selected eleven farmers (three from Isna, three from Luxor, three from Qift, and two from Qena) to visit table grape farms along the Alexandria Desert Highway.

On June 24, the first day of the three day program, the Head of the Technical Services Department of HEIA discussed with the Upper Egyptian farmers the different varieties of grapes and the modern methods of growing adopted by growers in accordance with the European export standards. The next two days were dedicated to visiting seven farms, accompanied by the HEIA technical team.

APRP is now working with HEIA to send another sixty farmers to visit the vineyards in order to further disseminate information on grape cultivation. APRP and HEIA also hope to extend their technical services to include other horticultural crops such as melons. They plan to expand beyond Luxor/Qena to other Upper Egyptian cities in a bid to promote horticultural exports in this important area in general. They are awaiting funding

Converting to Grape Cultivation... Mahmoud El-Farkhani, one farmer from Isna who attended the farmer-to-farmer working session, was convinced of the viability of cultivating grapes, and has already successfully planted an experimental area of grapes in his farm in Isna. He plans to dedicate forty feddan to grape cultivation in December, and has worked with farmers in the area to demonstrate the methods and advantages of grape cultivation. As a leader in his community, other farmers are following his lead and are beginning the process of converting their sugarcane fields to vineyards.

for training for these activities to begin.

In addition to farmers convinced of the viability of cultivating table grapes in Upper Egypt, the on-site visits have also led several larger-scale farmers in Isna to contract a grape farmer from the Alexandria Desert Highway to come in December to train them in proper methods of cultivation and production. They will pay for his services. A new area of private extension service workers is therefore slowly forming around table grape production in response to the demands of the farmers in Upper Egypt who are willing to pay for up-to-date information that is not provided at this time by governmental extension workers.

Grower-exporter negotiations

APRP and HEIA are working with Upper Egyptian farmers to cultivate several horticultural crops in addition to grapes for the European market. An initial meeting was set up between HEIA, Governorate representatives, and local farmers earlier this year to discuss the possibility of growing cantaloupes and several other horticultural crops for export. Aayed Thabet of APRP followed up with those farmers who expressed interest in cultivating cantaloupe on their private holdings, and organized meetings with representatives from the Ministry of Agriculture and growers in order to determine which farmers would produce how much of each crop for export. While cantaloupes have been the primary focus, the exporters-growers agreement also stipulates experimental trials on growing table grapes, cherry tomatoes, onions, garlic, green beans, and peppers which yield successful results in these areas and are increasingly demanded for export. The technical staff of HEIA have committed to coming in order to give technical assistance and advice on farming and cultivation techniques, as well as information on quality control, transport, preparation, etc.

There are, however, still agreements to be worked out. A sufficient level of trust has not been developed between the exporters and the growers, which has led to a reluctance on both sides to make firm commitments as to amounts cultivated and the explicit terms of the contract. While farmers have agreed to growing a significant amount of cantaloupes and other horticultural crops⁶, they want price guarantees on how much they will get per kilo of harvested produce. The exporters, on the other hand, are holding back on providing exact price figures because they are not sure of the quality of the fruits and vegetables to be harvested and are wary that the farmers will not honor the terms of the contract.

HEIA member Methat Miligui insists that he will not provide exact price guarantees for grapes specifically. Due to the sensitivity of the plant, quality can vary significantly, impacting the value of the harvest. Additionally, Mr. Miligui predicts that grape prices in the local market may be higher than what these farmers can command abroad, and therefore that it behooves the farmer to cultivate without being saddled into price guarantees as well. Sherif Beltagui, however, has indicated that he is interested in contracting with growers of

⁶ Eng. Thabet has secured guarantees of 549 feddan of grapes, 595 feddan of cantaloupes, 261 feddan of onions, 8 feddan of garlic, 32 feddan of peppers, 23 feddan of tomatoes, and 5 feddan of green beans.

Expectations of farmers...

In recent meetings attended by the consultant in Upper Egypt, several key concerns of the farmers were raised.

- Farmers want to know the exact price they will be paid for these crops before they sign. There is no incentive to switch crops if, for example, tomatoes will end up commanding a higher price in the market than cantaloupes.*
- Farmers are anxious to visit the export-oriented farms themselves. While growers listened attentively while those farmers who had gone to Alexandria explained the system, they were still reticent to engage in new practices which they have yet to see in person*
- Finally, they want to know*

grapes, and guarantee prices, if they are done properly. He will need to visit the farms first to make the decision to invest.

Both Eng Thabet and Mr. Milligui concede that farmers will most likely not honor their contracts with price guarantees if the price in the local market is higher than that of international markets. From the perspective of the exporters, this would break the trust between the exporters and the growers, and exporters would therefore be wary of working with Upper Egyptian farmers in the future. From the perspective of the growers, grapes are a big investment, and growers thus desire a certain level of security before they will be willing to convert their fields to grape production. Negotiations are currently now under way to provide some written guarantees that may have stipulations guaranteeing the going market rate for grapes.

In terms of cantaloupes, exporters are willing to take 30 to 40 tons per week for 1 LE/kilo, but Eng. Thabet and the growers think that that price is too low. HEIA agrees, but the question now is how to establish the level of trust necessary to reach a mutually agreeable contract.

There also remains some level of miscommunication between growers and exporters concerning what agreements have been reached on price and contract guarantees. It appears that more direct and open discussions are needed in order to clarify expectations of all parties involved.

At this point, exporters are interested in contracting for trial areas of each crop with potential price guarantees. By mid October, several HEIA members are planning on traveling to Upper Egypt with Hani Kolaly in order to speak with the growers directly about the needs of the exporters and to discuss contracting possibilities, answer questions, address any concerns, etc.

Sameh Abeid, a local exporter and council member of HEIA, is also working on establishing export contracts with growers in Upper Egypt. Eng. Abeid is working in coordination with Singenta, who last year conducted a detailed

Expectations of Exporters:

- Farms must be located in the same area in order to effectively apply GAP principles (including fertilizer and chemical control, etc).*
- Farmers must enter into contracts in good faith, meaning that they cannot sell their produce to other buyers at harvest time.*
- Exporters wish to start with smaller pilot projects of one village, measuring between 12 to 20 feddan or above, to see if production is*

feasibility study of growing melons for export in Aswan. Last year they exported two containers of melons to England which were favorably received by British importers.

Abeid has been working with Singenta to promote the cultivation of melons year-round in order to take advantage of exporting windows to Europe. While traditionally cantaloupes are harvested in early December, they have now achieved harvesting through the winter months to March. These melons are oriented specifically towards international markets, because local demand for melons in the winter in Egypt is very low. Abeid's goal is therefore to increase the percentage of export-quality melons.

Eng. Abeid has now contracted with approximately 220 farmers in Wadi Saaida in Aswan to cultivate 250 feddan of cantaloupe for export. Wadi Saaida is part of the Mubarak project for recent graduates to promote the cultivation of newly reclaimed land and provide income to young people in the area. This will be the first time that newly reclaimed land is cultivated specifically with the goal of exporting the yield. Eng. Abeid has guaranteed written contracts stipulating purchase prices of the melons.

In coordination with Singenta, Abeid will provide seeds and technical assistance both to governmental extension workers and to the farmers in Wadi Saaida. One month ago Singenta had the first training session of 18 extension workers, and the next phase of training will be for the farmers themselves to begin in the next couple of weeks.

Eng. Abeid plans to transport the cantaloupe via refrigerated trucks to Alexandria, and then to ship the goods to Europe. Abeid is now in the process of building a packinghouse with pre-cooling facilities in Wadi Saaida, and the unit should be finished by mid-November.

Eng. Abeid plans to contract five feddan of grape this year from farmers working with APRP to establish a preliminary relationship with the growers near Wadi Saaida. Abeid is interested in working with APRP to contract with more farmers for next year, and hopes to subcontract 500 feddan of land for melon exports. He would be willing to sign contracts with price guarantees of perhaps 1 LE/kilo plus or minus 20 percent depending upon the yield quality and prevailing market prices.

Loans for export-oriented cultivation

In Aswan, Agricultural Undersecretary Soliman has reached an agreement with the Director of the Credit Bank to give a loan of LE 3000/feddan of cantaloupe and LE 8000/feddan of grape cultivated.⁷ Agricultural Undersecretary in Qena, Kamel El-Sheikh, has reached a similar agreement for grape loans. Both agreements are being forwarded to the Director of the Credit Bank Yusef Abdel Rahman in Cairo in order to lobby for the same decision to be made for all Governorates in Egypt.

⁷ There are approximately 500 feddan of grapes and 500 feddan of cantaloupes planted in Upper Egypt.

Promoting the establishment of horticultural cooperatives

Specialized and multipurpose cooperatives have enormous potential to support the growth and prosperity in the export-oriented agricultural economy. In Luxor and Qena, APRP has worked with the Undersecretary and groups of farmers to establish cooperatives specializing in horticulture. Through a series of meetings held beginning in May 2001, grower groups came together to discuss their vision of private farmer associations oriented toward horticultural exports. As a result of these meetings, horticultural cooperatives have been formed in virtually every district in Qena and Luxor.

APRP is now in the process of negotiating with the MALR to streamline the process of registration for the cooperatives, which at this point has been stymied in bureaucratic red tape.

Cold Storage Facility for Export

The lack of a complete cold chain from packinghouse to the aircraft hold contributes to product losses and quality degradation as horticulture products must be handled and stored in areas lacking climate control. In January, a HEIA delegation paid a visit to Qena and Luxor where they held a series of meetings with growers in Isna and Qeft to discuss these issues with Eng. Thabet of APRP, Luxor Governor Dr. Mahmoud Khalaf, the Egyptian Airport Authority Chief, the Luxor Airport Manager, a Civil Aviation Authority Representative, and the Director of the Horticultural Research Institute.

The push for the new facility came from Luxor-area farmers who have organized a new, private horticultural cooperative to produce high quality, high value fruits and vegetables for export and for the domestic tourist industry. APRP sponsored the series of meetings, and also brought a group of horticultural product exporters from HEIA to Luxor to meet with the members and managers of the new cooperative. The focus of discussion was the possibility of using the Luxor Airport to export vegetables and fruits and take advantage of available cargo space in charter planes flying directly into Europe.

As a result of this meeting, Luxor governor Dr. Mahmoud Khalaf issued directives to the Luxor Airport Authority to allocate a 450 square meter plot of land to establish the cold storage facilities and facilitate the export of perishables. The Authority identified an area for this facility and began planning and conducting studies necessary for establishing the cold facility. The construction of the facility within the customs area at the Luxor airport will enable the quick transit at proper temperatures of fresh fruits and vegetables bound for direct flights to Europe and elsewhere. With the parallel construction of a similar facility in Cairo, trans-shipment of such produce via Cairo will also become possible. The new transit facility in Luxor will spread the effects of the Egyptian export boom to farmers in Upper Egypt and increase the flow of Egyptian output to external markets. Moreover, five daily international airlines fly directly from Luxor to Europe. These airlines have excess cargo space which can be used by exporters.

Plans have therefore been put in motion to build a 40-100 ton capacity perishables terminal inside the cargo village at Luxor airport similar to the perishables terminal currently planned for Cairo International Airport. However, complications have arisen concerning funding. From the perspective of the Governorate and cooperatives, HEIA has not been demonstrating sufficient initiative concerning the unit. Negotiations have taken over two years for the construction of a similar unit at the Cairo airport, and there appears to be an unwillingness on the part of HEIA to undergo the same process without guarantees that the facility will be worth the time and monetary investment. HEIA has not yet made plans to conduct feasibility studies to assess the cost of constructing the unit. However, at a recent meeting HEIA members did say that they could build temporary prefab cooling facilities. This would not be a costly project and would enable exporters to gauge the value of constructing a permanent cooling facility.

Following recent negotiations with Eng. Thabet in Luxor, recently appointed Governor Al-Benna has given permission to conduct a feasibility study. The Governor appears willing to support the construction of the facility as long as funding is secured. APRP is working with growers, manufacturers and processors to locate sources of investment. It is envisioned that the recently formed horticultural cooperative will own and manage the unit, and will thus take on the responsibility of loan repayments. Details of this have yet to be clarified.

Facilitating Transportation for Export

Mohamed El-Sadawy of the Delta Express shipping company is researching the possibility of providing refrigerated transport units for farmers to transport their crops from the fields to the cold storage facility to be set up in Luxor. This company, however, is waiting to see the results of the agreement between exporters and growers to assess if the number of feddan produced for export covers the cost of running the cold transport units. This company is working with the Director of Venus Cargo, Samia Sayed, and the Government in order to negotiate some form of compensation for the investment.

The Luxor Governorate has additionally just agreed to pave six kilometers of road in order to facilitate transportation, and have agreed to provide electricity to the farms in Isna which are now currently powered by diesel. This will significantly lower costs of production and transportation for the farmers, making their prices more competitive in the world market and increasing profits. This will also enable farmers to prepare the horticultural commodities in their farms and transport them to the airport directly. This work has been done by the exporters up until this point.

GIZA

APRP has recently begun to implement the third research and extension pilot project in Giza, taking account of lessons learned from their progress in Ismaleya and Luxor/Qena. Giza's proximity to the Cairo airport and to exporters, as well as the farmers' previous experience in horticultural production, provide favorable conditions for the promotion of export-oriented cultivation.

Research and Extension in Giza

Giza began an experimental method of educating farmers about modern techniques of cultivation and harvesting field crops in 1998. With this program of participatory extension, the extension agents have monthly meetings with farmers organized into groups, generally under the auspices of the local multipurpose cooperative. This form of information dissemination now reaches 105 groups, each of which is composed of 15 to 20 members. This means that between 1575 to 2100 farmers receive extension information about field crops through this service. During the month, extension workers also make follow-up visits to individual farms.

The success of this method of information transfer has made Undersecretary of Agriculture Said Mansour confident about APRP's research and extension pilot project in Giza. Eng. Mansour hopes to continue to use this form of group learning when discussing horticultural crops for export cultivation with small- and medium-scale farmers.

Training Governmental Extension Workers

Earlier this year, a meeting was held involving growers, HEIA, the horticultural cooperative, APRP, and Undersecretary Mansour in order to discuss strategies of cooperation and to clarify expectations. Akin to decisions made in Ismaleya and Luxor, stakeholders decided to establish a team of specialist governmental extensionists in horticulture, to be trained by HEIA specifically in green bean cultivation. The committee compiled a list of 25 agricultural engineers, and as with the other pilot projects, APRP and HEIA are waiting on funding.

HEIA recently decided to go ahead with the training sessions in Giza in spite of funding delays. Giza's proximity to Cairo is enabling HEIA to reach the extensionists without concern for housing and transportation costs. HEIA is offering basic amenities such as meals and coffee breaks. The first training sessions were held 25 and 26 September in Giza, where Amr Rizkana of HEIA discussed the interpretation of the GAP requirements with the extension workers. At the end of the second day, a test was administered to

Government Initiatives to Improve Extension Agent Services

Because HEIA training has started later than planned, Undersecretary of Agriculture Mansour began to prepare a group of extension workers in August with the resources available.

Governmental research centers sponsored special training sessions in proper methods of green bean production for specialist extension agents. These trainings, however, did not provide specific information about GAP requirements.

the 19 extension agents in order to pick the top 10 scorers to continue with a four day training session in mid-October. Mr. Rizkana is now in the process of coordinating this second set of trainings to discuss implementation of GAP procedures.

Grower-Exporter Negotiations

APRP has begun to work with growers, the Giza horticultural cooperative, and exporters to establish mutually satisfactory export agreements in Giza. While discussions with the exporters have been relatively positive from the viewpoint of all involved parties, the main sticking points continue to be questions of trust on both sides.

Meetings coordinated by APRP have been designed to elucidate what the exporters and growers want and expect from each other. The concerns of each group mirror the experiences of those involved in the pilot projects in Ismaleya and Luxor/Qena. The growers prefer to have a clear agreement detailing what the exporters will purchase, how much of each crop, and at what price. The exporters, for their part, have been wary to establish written contracts. In the past, exporters have had experiences where they have supplied seeds and some level of technical assistance to growers with an agreement that they would purchase the crops at harvest. However, growers at times disregarded these agreements and sold the produce to either the local market or to another exporter, depending upon the highest prices they received. Exporters therefore prefer to have oral agreements to start with until a more familiar relationship is established with the farmers. Exporters also want to see the results of HEIA's training sessions with the extension workers. According to the exporters, an additional problem in the past has involved the substandard quality of the produce due to the growers' lack of knowledge about the correct technical treatment of crops following GAP standards. Giza's extension workers, farmers, and exporters therefore stand to benefit significantly from HEIA training.

Currently, therefore, there are no price or quantity agreements established directly between exporters and growers. Written contracts, however, have begun to sprout up between specialized cooperatives and growers. Many medium-scale farmers (and perhaps some smaller-scale farmers) now have written contracts with the cooperatives including price guarantees and the provision of seeds, fertilizers, and some technical assistance. These cooperatives then engage in direct contract negotiations with the exporters. Farmers interviewed preferred this type of transaction rather than ones involving middle men, because they feel that the middle men take an unfair profit from the negotiations.

The majority of smallholders, however, continue to deal directly with the traders in export negotiations. Specialized cooperatives appear to have been relatively unsuccessful in reaching smaller farmers, and multipurpose cooperatives at the village level do not yet emphasize export-oriented production. These traders enter into informal agreements with the farmers (with no written or price guarantees), and provide the farmers with seeds and assistance throughout the growing cycle. However, growers do recognize that they would be unlikely to enter into exporting markets were it not for the traders who compile groups of farmers to sell their produce abroad. What they would like to see in the future, as mentioned above, is that the cooperatives (who have a stronger vested interest in working for the needs of the grower in their opinions) take over the function of the middle men.

At this point, therefore, many growers do cultivate the crops for export in spite of the lack of a written contract. Large-scale growers interviewed stated that they were confident that they would be able to find buyers at harvest time. Their close proximity to Cairo (and hence to exporters) puts them in the fortuitous position of being able to work with several different exporters in negotiating prices. Additionally, the seed varieties of green beans demanded in foreign markets are now available in the local market, so growers do not have to rely on exporters to provide them with the necessary materials ahead of time. Medium-sized farmers who worked through the specialized cooperatives were generally satisfied with the relationship. Although they stated that they were usually paid less than market price for their produce, the cooperatives were obliged to buy the entire crop (even if part of the crop was not high quality), meaning that the coops absorbed a significant amount of risk. Smaller-scale farmers, for their part, continue to orient their production primarily to the local market, with less than ten percent reaching export quality production at this point.⁸ Those who do export work almost exclusively through middle men.

The role of cooperatives

The horticultural cooperative of Giza and the multipurpose cooperatives are important players in promoting crops for export. However, multipurpose cooperatives in particular now focus solely on the local market and need training in export orientation. APRP has therefore been working with the Undersecretary of Agriculture in Giza to plan workshops and seminars for the cooperatives in order to educate them in the benefits and logistics of export-oriented cultivation. They had their first workshop the second week of September, and progress is being made, albeit slowly.

There appears to be a resistance to reform and change on the part of many cooperative leaders, and awareness campaigns are being planned by the Undersecretary to promote horticultural export production involving cooperatives.

⁸ This estimate of ten percent was provided by the small farmers interviewed themselves.

BENI SWEYF

Beni Sweyf is one of the two newest research and extension reform pilot projects. Beni Sweyf's extensive cultivation of aromatics, a major product in demand in European markets, has already provided growers in Beni Sweyf with some access to external markets. However, poor quality post-harvesting methods has limited Beni Sweyf's ability to export, and indicates that farmers and exporters will benefit significantly from extensionists trained in GAP.

Research and Extension in Beni Sweyf

7000 extension workers are currently employed by the Governorate of Beni Sweyf. On average, each agent is responsible for 200 to 300 feddan, which generally equals between 100 to 150 farms.

APRP activities

On 20 August, APRP sponsored a meeting between growers and exporters held in Cairo. All parties agreed that two key points are: 1) extension and technical assistance needs to improve and be reoriented toward export production; and 2) new equipment is needed for drying aromatics. APRP is working with the stakeholders to identify funding sources for the aromatic drying equipment.

Training Extension Workers

In spite of the fact that growers in Beni Sweyf have focused on aromatic production in recent years, extensionists have had no special training in the cultivation and post-harvest handling of aromatics up to this point. APRP-RDI is therefore focusing on extensionist training in aromatics in order to promote export-quality aromatic production.

A list of 20 extension workers has been submitted to HEIA in anticipation of the first training session. Amr Rizkana of HEIA met with the Director of Extension in Beni Sweyf on 27 September, and plans are in the works for training to begin as soon as funding comes through.

Export-oriented cultivation

Beni Sweyf has been engaged in exporting aromatics for five years. In the past few years, however, exports have decreased and distillation plants have closed down. In response, some growers have converted their lands from aromatics to more profitable crops.

With demand for aromatics in Europe high, difficulties in getting these plants to the export market relate to the lack of specialized extensionists. Exporters have often rejected the aromatics due to poor processing practices on the part of the farmer, meaning that growers run the risk of significant losses if the plants are not processed properly. The delicacy of the aromatics, however, also provides opportunities for growers.

Because the processing of aromatics is relatively complicated, exact specifications of how the plant is grown, harvested, and dried are needed in order to secure the rights of both parties in contracts. This has meant that both parties have been interested in forming detailed contracts, and exporters and a couple of large-scale farmers have recently reached written agreements.

Contracts have also been forged due to the low local market demand. Exporters have been more willing to negotiate written contracts because there is no risk of farmers renegeing on agreements to sell the aromatics in the local market. Additionally, farmers have greater incentives to agree to certain demands because they know that they will not be able to sell their goods at the local level. Hence, both sides have had greater incentives to reach solid, written agreements.

APRP is therefore building on a past of exporter-grower cooperation in aromatics. At this point APRP is needed to work with farmers and exporters to improve the terms of the contracts and reach agreements on the technical assistance necessary and inputs required.

A few contracts also exist with potatoes, onions, green beans, and tomatoes between large growers and exporters. In no contract, however, do price guarantees exist. APRP will be working with the specialized cooperatives in order to promote contract agreements between them and exporters. As with growers in other areas, farmers are interested in acquiring price guarantees and written agreements with exporters for their horticultural crops.

Cooperatives

According to Undersecretary Salem, specialized cooperatives in Beni Sweyf have had very limited contact with exporters, and no official contracts exist between exporters and cooperatives at this time. Traders have taken over the role of cooperatives particularly with aromatics, and contract arrangements between farmers and exporters of aromatics have involved middle men. While specialized cooperatives exist for aromatics and horticulture, their reorientation toward privatized, export-oriented agriculture has been slow. Undersecretary Salem is interested in working with APRP to strengthen extant cooperatives in order to promote their service provision to members.

BEHEIRA

Beheira is APRP's most recent research and extension pilot project. Beheira's primary horticultural crops are green beans and artichokes, and exporters and growers have a history of working together to sell the produce to external markets. As with other pilot areas, the major obstacle confronting growers in Beheira has been poor quality harvesting methods and a lack of up to date information on export-oriented production techniques.

APRP activities

On 1 December, APRP sponsored a meeting involving growers, cooperatives, exporters, and the Undersecretary of Beheira in Cairo. This meeting was designed to facilitate negotiations between growers, cooperatives, and exporters, and to lay the groundwork for HEIA training of extensionists.

At this meeting, all parties agreed that there is great potential for grower-exporter agreements of green beans and artichokes in Beheira. However, problems which took place in the past need to be resolved, and all parties have demonstrated a willingness to work together to overcome these obstacles. Specifically, meeting participants decided: 1) extension and technical assistance needs to improve and be reoriented toward export production; and 2) grower-exporter agreements of horticultural produce should be pursued.

Perspective of the grower

Similar to other pilot Governorates, growers in Beheira have traditionally faced a difficult time reaching the export market for their horticultural produce. Farmers have lacked information on modern production techniques, limiting their ability to produce export-quality produce. In response to this concern, farmers would like to receive inputs from the exporter as well as specific information from exporters and extensionists on production standards and techniques for the export market.

Perspective of the exporter

Exporters have worked in the past with growers in Beheira, and these arrangements have often not led to satisfactory results. According to exporters, growers have often disregarded previous contracts and sold to other exporters who offered higher prices. This has led to a lack of trust on the part of exporters. Also, in concurrence with farmers' concerns, exporters have often not been able to purchase produce from Beheira due to low quality produce. Exporters therefore share the majority of the producers' concerns: they desire export quality produce, they wish to enter into business agreements with the growers, and they agree that the growers need additional training.

Next steps

As a result of this meeting, the Undersecretary of Agriculture in Beheira has agreed to offer a list of twenty extensionists to be trained in export-production techniques, and HEIA has committed to training the extensionists as soon as the list is compiled.

Additionally, cooperatives, growers, and exporters have now begun the process of dialogue and negotiation, and all stakeholder groups have committed themselves to pursuing mutually beneficial contracts. Representatives from HEIA plan to return to Beheira within the coming month to discuss possibilities for contracting arrangements for artichokes, green beans, peas, guava, and lemons. All stakeholders are interested in pursuing written contracts with some form of price guarantee. Furthermore, HEIA members have offered to conduct study tours of farms engaged in modern systems of cultivation of green beans and peas, and farmers are anxious to make the visits.

SUMMARY: POSITIVE INDICATORS OF RESEARCH AND EXTENSION REFORM

As this report has indicated, the research and extension system has become better coordinated and more effective as private sector organizations and end-users have begun to participate directly. Working extensively with the government, growers, cooperatives, and exporters, APRP has laid the groundwork for public and private sector cooperation in gathering, analyzing, and disseminating critical information to farmers. Success has been evident in exporter-extensionist training programs and in the establishment of private farmer associations decoupled from government control. Additionally, within the push to make research and extension responsive to market demands, APRP is successfully linking small growers to international markets through the promotion of horticultural production and the improvement of post-harvest packaging and transport facilities.

EXPORT-ORIENTED CULTIVATION

Research and extension reform has established relations among growers, farmer associations, and exporters, all of whom share the goal of increasing horticultural exports. Aggregate figures underscore the success of this program in stimulating the engine for economic growth in the agricultural sector. Additionally, examples from pilot Governorates demonstrate how local governments are taking the initiative in supporting export-oriented production. This is taking place through the allocation of loans for export crop cultivation and the conversion of lands to pesticide- and chemical-free areas in response to GAP requirements.

The value of horticultural exports has tripled across Egypt since 1998.

HEIA estimates that small growers now account for half of all production for export in Egypt.

Ismaleya has witnessed a 160 percent increase in export-oriented cultivation since 1998.

In Ismaleya, the number of feddan dedicated for potato export cultivation has doubled in the past year.

In Luxor, the Governorate has secured loans of LE 3000/feddan of cantaloupes grown and LE 8000/feddan of grapes. This will not only assist farmers in converting their land to high-profit crops, but also indicates that the government is supporting the shift towards export orientation.

In an effort to respond to the needs of exporters and external markets, the Governorate in Ismaleya has established areas of pesticide-free cultivation for strawberries and mangos. This indicates a significant reorientation of government concerns toward private sector interests. It has also worked to the benefit of the growers, as they have been successful in selling these crops to exporters.

EXTENSION WORKER TRAININGS AND INFORMATION DISSEMINATION

The research and extension reform program has instilled in the minds of both public and private sector employees the importance of making the extension system a demand-driven process oriented toward the profitable cultivation of high yield exports. The success of this initiative has been demonstrated by the work of HEIA in training agents in GAP and through initiatives undertaken by the Governorates themselves to reorient extensionist training and information dissemination to the needs of exporters. Furthermore, training programs are encouraging cooperation between the private and public sectors in an effort to improve the quality and yield of export crops.

- In Giza Governorate, HEIA has begun training extension agents in spite of funding difficulties.
- Recognizing the importance of having extensionists oriented towards the needs of exporters, the Giza Governorate took the initiative to train extensionists in green bean production for export when HEIA funding was delayed.
- In a similar display of initiative, the government in Ismaleya has worked with the horticultural cooperative to conduct training sessions on horticultural export-oriented production for extensionists while they are waiting for HEIA training to begin.
- Responding to the needs of the farmers with the advent of market liberalization, the Ismaleya Governorate is arranging marketing training sessions for extensionists.
- In addition to training extensionists, the Ismaleya Governorate has also begun a farmer-to-farmer program for export-oriented production in order to further disseminate essential information to growers at the local level.
- Growers themselves have made efforts to provide themselves with essential information on export-oriented cultivation when the information is not yet available from the extension system. Grape farmers in Isna have contracted a large grower from Alexandria to provide extension training in November.
- Efforts to incorporate market demands into information dissemination has also led to grower site visits of Luxor farmers to the Alexandria Desert Highway. The visits were very successful, and several farmers are now planning on converting portions of their land to table grape cultivation.
- The extension worker trainings are also successfully building bridges between the public and private sector. In Ismaleya, the packinghouse will hire an initial ten extensionists as private sector employees who will be trained by HEIA.
- Profitable coordination between the public and private sector is furthermore evident in the plans to hire ten governmental extensionists to work for the packinghouse in Ismaleya, to be paid by the government and receive bonuses from the packinghouse.

ESTABLISHING RELATIONSHIPS BETWEEN GROWERS AND EXPORTERS

Reorienting research and extension programming towards market-driven concerns also entails facilitating business relationships between exporters, growers, and cooperatives. Small growers, the primary beneficiaries of extension services, and exporters, the primary source of information for extensionist trainings, both desire a formal, mutually beneficial partnership to sell Egyptian horticulture abroad. This partnership entails not only reaching written agreements on the purchase of horticultural crops from growers. It also requires the formation of effective working relationships to improve post-harvesting practices and the transportation of produce from the fields to international markets. APRP has laid the groundwork for successful cooperation between stakeholders through a series of meetings held in Cairo and in the pilot Governorates. Through this work, a basis of trust has been established. Contracts are being negotiated and signed, and plans to build post-harvest facilities are moving forward.

In Ismaleya, written contracts for potatoes including price guarantees have been drawn up for the second year in a row, and all parties are satisfied with the terms of the contract.

In Aswan, a contract has been signed for 250 feddan of cantaloupe with price guarantees. This agreement is particularly significant because it is the first of its kind to cultivate newly reclaimed land with the explicit purpose of export.

Contract agreements are nearing completion in Luxor for cantaloupes and for strawberries and mangos in Ismaleya.

Packinghouse preparations in Ismaleya are under negotiation, and APRP is working to clarify the lines of communication among all parties. The government is in the process of securing funding.

Plans are under way for the cold storage facility in Luxor. Land has been allocated by the Governorate for this unit.

COOPERATIVES

In Egypt's newly liberalized economy, cooperatives have become integral players in the export process. They are easing the burden on exporters by collecting groups of farmers to sell their produce collectively, and they are supplying small farmers with access to international markets. Cooperatives have shed many aspects of government control and now feel they are part of the private sector. Due to negotiations facilitated by APRP, cooperatives have entered into commercial contracts with private firms for the marketing of their agricultural products. Cooperatives are furthermore experiencing rapidly increasing revenues and employment needs as a result of expanded products and services in extension.

APRP successfully brought together groups of farmers to form horticultural cooperatives in Luxor/Qena.

Specialist and multipurpose cooperatives are now being oriented toward export production through activities such as training programs sponsored by the Governorates and the influence of awareness raising brought about by APRP meetings.

Cooperatives in Ismaleya and Giza are now working on being more functional in privatizing seeds, fertilizers and agro-industries, as well as in their marketing of commodities.

- The horticultural cooperative in Ismaleya is planning a grower visit to farms dedicated to export in Syria in order to train their own members in export-oriented cultivation.

SUMMARY: OBSTACLES TO REFORM

While APRP has witnessed many improvements in its pilot districts, certain key obstacles are slowing down further reform. Below is a distilled summary of the key obstacles, and the following section will offer suggestions to address these problems.

EXTENSION WORKER TRAININGS

The hold up of funding on the part of DT2 has essentially shut down progress on training extension workers. APRP and HEIA are both ready to begin the training sessions, but lack the funds to carry out the training themselves.

Governorates, cooperatives and growers have emphasized the need for marketing training in all pilot Governorates, but no marketing information is included in HEIA extensionist training sessions.

RELATIONSHIPS BETWEEN GROWERS AND EXPORTERS

Clear and effective communication directly between growers, cooperatives, and exporters could be improved both in contract negotiations and with plans to construct packinghouse facilities in Ismaleya and Luxor. This has led to a lack of trust on all sides, and is slowing down progress on export agreements as well as the construction of packinghouses.

Luxor has yet to secure funding for the establishment of the cold storage facility. As has been emphasized, this facility is essential for the transportation of crops to international markets. It is also important in convincing exporters of the viability of working formally with growers in Upper Egypt.

COOPERATIVES

Difficulties in registering the horticultural cooperatives in Luxor is stymieing their ability to provide the full range of services to their members who are anxious to begin cultivating produce for export.

DIRECTIONS FOR THE FUTURE

Important lessons have been learned from APRP's experiences in research and extension reform which should contribute to improving extant pilot projects and to planning even more effective projects in the new pilot Governorates.

EXTENSION WORKER TRAININGS

APRP and HEIA need to push for the release of funds for extensionist training

APRP's efforts to create cooperative relationships among farmers, the private sector, and the government have reaped favorable results with the extensionist training program. Rather than bypassing the government altogether, HEIA has collaborated with local Governorate officials and horticultural cooperatives in order to plan training sessions for governmental extension workers and respond to the needs of local farmers.

This has established a basic level of trust among the government and the private sector, which will work to the advantage of both farmers and exporters in future contract negotiations. Conversations with Undersecretaries of Agriculture indicated that they are satisfied and are looking forward to further collaboration with HEIA. The government and HEIA share the same goal of removing a significant portion of the burden of extension work from the government, and have therefore successfully worked in concert to accomplish this.

The primary sticking point, however, has been with the delays of DT2 funding for the trainings. While excited by the prospect of the training program, public sector employees as well as farmers are frustrated by what they perceive to be a lack of initiative on the part of HEIA.

HEIA, however, is ready to begin training. Currently, they are considering bringing together four or five extension workers from each Governorate to do a collective training session if DT2 funding is too slow in coming. HEIA prefers, however, to conduct the sessions by region rather than as a collective to address context-specific needs.

HEIA should send the trainers to the extensionists in the pilot Governorates

Continuing to wait for DT2 funds runs the risk of extensionists and Governorates losing enthusiasm for the program. HEIA should take the initiative and send the Integrated Management Systems Program Manager to the Governorates to train the extensionists. APRP can afford to send down one individual to the pilot areas, but cannot afford to send ten to twenty extensionists from each area to Cairo. Because Mr. Rizkana was able to carry out the training sessions in Giza, there appears to be no obvious reason that he cannot do the same in the other Governorates.

□ HEIA should provide marketing information in its training of extension agents

The central role of extensionists for export oriented production is the provision of information on post-harvest handling and quality control to growers. HEIA has responded to this need and developed comprehensive training courses in GAP for extension agents.

However, basic marketing information is also important to extensionists and growers, and they are requesting additional training courses in marketing for export. With marketing knowledge, extensionists will be able to help farmers judge the relative returns to different rotations, and to identify potential external markets for their goods.

HEIA has given mixed signals as to their intention to include this information in their training sessions, and APRP should emphasize to HEIA that marketing is important to the stakeholders. Human resources are available to fulfill this need. The Integrated Management Systems Program Manager for HEIA has indicated that he is in contact with experts in marketing for export, and these people could serve as a valuable addition to HEIA training programs.

□ Promote On-site Grower Visits

Several extension agents commented on the fact that farmers often do not listen to the advice provided by the extensionists. Part of the solution must come from farmers learning through doing, with farmer participation in the entire process. One way that this problem has been successfully addressed is through the on-site grower visits sponsored by HEIA. Study tours have helped increase technical knowledge, broaden clients' vision, and gain important contacts.

Those farmers from Upper Egypt who have visited the grape farms near Alexandria are convinced of the viability of grape production in the south. Additionally, many farmers who did not go on the visit, but have spoken with those who did, are now also undertaking grape cultivation for export. Study tours thus have a "demonstration effect" both directly on farmer participants as well as on others in the community.

APRP should work with HEIA to promote more grower visits. The only major obstacle is funding. As stated previously, APRP should work with HEIA to lobby for the release of these funds.

CONTRACT NEGOTIATIONS

APRP and MALR have been working to encourage contract farming agreements among farmers, farmer groups, and exporters. The end goal of contract negotiations between exporters and growers has been to cultivate high-quality produce for export while ensuring justice to both parties, safeguarding their rights, and sustaining transaction continuity for future harvesting cycles.

APRP has been successful in getting all sides to the negotiating table to begin to discuss the feasibility of contract promulgation for various horticultural goods. Experiences have varied between successful contracts with clear prices established such as with potatoes in Ismaleya to no agreement reached such as with grapes in Luxor. Reasons for the success of certain contracts over others are not entirely straightforward, due to idiosyncrasies in the experiences of specific growers, the parties involved, the crops grown, and the location of the farms in question. Several trends, however, have emerged from stories of successful (and not-so-successful) contracting.

□ Negotiations involving all parties prior to the beginning of cultivation is key.

Due to the newness of many of the pilot projects, exporters and growers did not come together until late in the growing cycle, making agreements more difficult to reach. For example, cantaloupe planting in Luxor has already begun without guaranteed contracts or prices, which may act as a disincentive for farmers to invest additional money in making the harvests export quality. Additionally, because farmers have already planted the melons, there is now a lack of incentive for exporters to guarantee prices on crops that are already being grown. Growers are therefore put at a disadvantage at the negotiating table. Hence, *early negotiations should lead to more favorable results.*

□ APRP needs to define clearly its role in contract negotiations.

A solid level of trust between exporters and growers has yet to be established, and fractured lines of communication have led to a misrepresentation of expectations on both sides. Part of the problem has arisen when APRP has been put in the position of speaking for either the grower or the exporter in their absence. This compromises the position of APRP, as well as creates a level of distrust among the parties to the contract. APRP is not a party to these contracts, nor does it officially represent any of the stakeholders. APRP should be careful to facilitate bringing exporters, growers, and cooperatives together without actually speaking for any particular group involved.

□ Strong cooperatives actively involved in negotiations are important.

Egyptian farmers have to overcome the disadvantages inherent in the country's pattern of small landholdings, where the average farm size is under three feddan and a great majority of farmers have less than one feddan under cultivation. The most effective tool small producers can utilize is to organize themselves into groups of sufficient size to achieve significant market presence. Ismaleya's success in acquiring written contracts with price guarantees stems in part from the fact that the horticultural cooperative is strong and presents a united front to the exporters. This means that exporters have had a less dominating position in contract negotiations and more equitable conditions have been delineated. In Luxor, where the horticultural cooperative is nascent, some exporters are of the opinion that they will be able to find enough farmers with whom to engage in informal agreements so as to obviate the need for written agreements. It is therefore important that horticultural cooperatives are strengthened, decoupled from governmental control, and established in areas where they do not already exist.

- APRP should work with the Luxor Governorate to submit a grant proposal to the MALR for construction of the cold storage facility.

According to estimations submitted by Sameh Abeid, an exporter working in Upper Egypt, the construction of the facility (not including the land) would cost approximately LE 400,000. This is not a significant amount of money given the benefits derived from its construction, and the Undersecretary in Luxor should submit a grant proposal to MALR for the facility. Given the likelihood that MALR will grant the LE five million to Ismaleya for the packinghouse, a request of LE 400,000 to open up Upper Egypt to international markets (as well as to take advantage of Europe's duty-free window due to Luxor's earlier harvesting cycle) would likely be well-received at the Ministry.

CONCLUSION

Liberalization of the agricultural sector now gives all farmers the chance to invest in their own production, to choose the products they grow, the form in which they will sell their goods, and the markets into which they sell their output. These reforms, however, have brought new challenges and needs, as millions of small holders in the countryside now require the dissemination of large volumes of information. The government cannot meet all the needs of millions of decision-makers, and has therefore been working with APRP-RDI to redefine and focus the responsibility of Ministry research and extension staff.

Working in pilot projects in Upper, Middle, and Lower Egypt, APRP has successfully brought the government, growers, cooperatives, and exporters together to establish effective symbiotic working relationships. The public and private sectors are now cooperating to improve farmers' access to information while promoting export production. This has included working in the crucial areas of: training governmental extension workers; negotiating grower-exporter contracts; facilitating horticulture post-harvesting and transport; and promoting the formation of private commodity-based associations.

Successful elements of the pilot projects in Ismaleya and Luxor/Qena are now being replicated in Giza, Beni Sweyf, and Beheira. While the process of reform cannot be accomplished overnight, progress is being made. And as this system becomes more refined and regularized, productivity in the agriculture and agribusiness system will be enhanced as farmers, traders, processors and other market participants make better investment and management decisions. These reforms should lead to benefits for the government, private sector, individual farmers, and the nation as a whole.

ADDENDUM

The 11 September terrorist attack on the US has affected agricultural exporters in Egypt. Because tourism has dropped propitiously in the past month, airlines are decreasing flights. This has meant that airspace in planes has decreased, and costs of air freight are increasing dramatically along with insurance rates. This may have serious implications for export-oriented agriculture in Egypt in the near future. Sea shipment rates are being affected as well. As of 1 October, the price of sea shipment increased 35 percent.

APPENDIX I

Horticultural Export Improvement Association

In 1996, a group of horticultural exporters recognized the need for a forum to share information on technology, equipment, and packaging. In response to this need, these exporters created the Horticultural Export Improvement Association (HEIA) with a grant from USAID to promote horticultural exports out of Egypt. HEIA now has over 140 members, and serves producers, exporters, suppliers of horticultural products, as well as affiliated companies such as equipment and packaging manufacturers.

HEIA's mission is "to support the Egyptian horticultural industry to increase exports of fresh and processed produce through continuous improvement in quality production, marketing, policy advocacy, training and management, and assuring Egypt's international quality reputation and raising agriculture labor standards for a sustainable national economy."

Within this mandate, HEIA works to guarantee grower and exporter access to modern production technology and state of the art post-harvest handling practices. HEIA additionally aims to provide exporters with the necessary market information to enable the horticultural industry to export high-quality, high-yield produce to external markets.

Specifically, HEIA is engaged in the following activities:

- Commodity Support Programs to provide the production technology and post-harvest handling practices necessary to guarantee export-quality produce.
- Management and Worker Training necessary for complying with export standards of production.
- Quality Control Awareness to assist members in applying up-to-date production practices.
- Provision of Technical and Marketing Information to keep producers aware of the most recent industry developments.
- Advocacy Committee to ensure that the Egyptian regulatory environment is appropriate for the expansion of exports.
- Establishment of Linkages to the Transportation Sector to ensure the availability of appropriate ocean and air freight cold-chain transportation.

Because HEIA's work is demand driven, the majority of clients have expressed satisfaction with the quality of HEIA's services. Technical assistance has increased productivity and sales, and helped change the production and management practices of Egyptian produce farmers. Additionally, seminars and workshops have helped disseminate technical information to a wide spectrum of groups and individuals in the sector.

APPENDIX II

List of Interviews

Ismaleya

Names of Interviewees

- Eng. Ali Mosad, Undersecretary of Agriculture (16 September)
- Mustafa Heba, Chairman of Ismaleya Cooperative of Horticulture, (16 & 17 September)
- Chair of MPC central coop (MPCs work with farms in the village, offer services on any crop) (17 September)
- 3 farmers involved in growing horticulture for export (green beans) (16 & 17 September)
- Local grower-exporter (17 September)

Upper Egypt (Luxor, Qena, Aswan, Sohag)

Names of Interviewees

- Eng. Aayed Thabet, RDI Branch Manager, Luxor (1 September to 5 September)
- Eng. Onsi, General Director of Extension Services for Qena, Luxor, Aswan, and Sohag (1 September to 5 September)
- Eng. Shafree, Director of Administration, Isna (1 September, Isna)
- Eng. Boutros, Director of Armant District (1 September, Isna)
- Rifaat Mohamed Omran, Member of Qena City Council, Agricultural Engineer, farmer (2 September, Qena)
- Eng. Kamel El-Sheikh, Agricultural Undersecretary for Qena (2 September, Qena)
- Eng. Hamdy, sugarcane farmer (2 September, Qena)
- Eng. Mostafa Mitwelli, Director of 2000 feddan farm (3 September, Luxor) (farm belongs to Spring Tours Company)
- Eng. Mahmoud Zeki, Government Extension Worker for Spring Tours farm (3 September, Luxor)
- Ahmed Soliman, Agricultural Undersecretary for Aswan (4 September, Aswan)
- Magdi Nekhla Maharib, Director of Horticultural Extension (4 September, Aswan)
- Eng. Al-Hosini, Director of Public Relations (4 September, Aswan)
- Said Samak, Director of Africare Mubarak Mashrua li Shibebe Kherigin (4 September, Aswan)
- Kamel El-Sherif, Undersecretary of Agriculture of Sohag (5 September, Sohag)

Cairo

Names of Interviewees

- Samir Shihatta, APRP
- Richard Magnani, APRP
- Steve Joyce, APRP
- Jane Gleason, APRP

Hani Kolaly, HEIA (10 and 20 September)

Amr Rizkana, Integrated Management Systems Program Manager, HEIA (14 and 20 September)

Methat Miligui, exporter, HEIA member (20 September)

Sameh Abeid, cantaloupe exporter (HEIA council member) (20 September)

Ahmed Rushdie, Singenta company (HEIA member) (20 September)

Sherif Beltagui, HEIA (1 October)

Conrad Fritsch, Chief of Party, ATUT (8 October)

Kelly Harrison

Giza

Names of Interviewees

Eng. Said Mansour, Undersecretary of Agriculture of Giza, (11 & 26 September)

Eng. Ahmed Maher, Chief of Giza Agricultural Directorate (26 September)

Eldara Walty Ibrahim, Director of Horticultural Crops of Giza Undersecretary (26 September)

Seven farmers engaged in horticultural production (26 September)

Beni Sweyf

Names of Interviewees

Mohammed Rabia Mohammed Salem, Undersecretary of Agriculture, (27 September)

Director of Agriculture, (27 September)