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**EGYPT
FARMER-TO-FARMER PROGRAM**

FINAL REPORT

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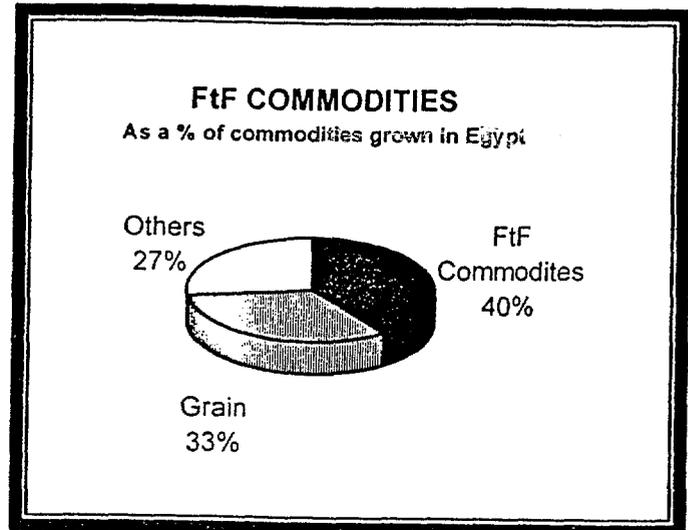
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Note: The cover photograph was taken during a farm visit by ACDI President Michael Deegan (far left) to a New Lands greenhouse owned by core farmer Mr. Shoukry Soliman (left). They are shown here with Alexandria FtF Field Coordinator Adham El Sherbiney (far right), and neighboring farmers, Mr. Mohamed Abd El-Fatah and Mr. Hosni Hamsa.

EXECUTIVE SUMMARY

The Farmer-to-Farmer (FtF) Program, with its goal of increasing private sector agricultural investment, productivity, and income, used a unique combination of U.S. volunteer technical assistance, U.S. and local participant training, and outreach activities to provide Egyptian farmers and extension agents with improved farming technologies and farm management techniques. Operating in 12 governorates, the program transferred 543 new technologies to more than 12,000 Egyptian farmers.



Working directly with a core group of 703 leader-farmers, FtF reached another 15,421 farmers indirectly. These figures exceed the LOP targets of 600 core farmers and 12,000 non-core farmers and this is due, in great part, to the fact that both groups, in becoming aware of the program and of the training opportunities it offered, made a special effort to become involved.

To ensure maximum impact of program interventions, FtF staff first conducted a thorough analysis of national agricultural production to determine focus. They reviewed Ministry of Agriculture data to identify the most important horticultural commodities and looked at governorate data to select areas of significant production. In some cases, the program targeted cultivation methods such as high and low greenhouse production rather than a specific commodity. By project end, volunteers had worked with Egyptian farmers to improve the production methods of twelve commodities including, tomatoes and potatoes, grapes and citrus, tropical fruits such as mangoes, sheep and goats, and aquaculture. FtF also provided information on cooperatives and associations and how they benefit farmers.

A key component of the program was the *technical assistance provided by U.S. volunteers* - farmers, researchers, and extension agents recruited by the project subcontractor, Volunteers in Overseas Cooperative Assistance (VOCA). Over the life of the project, 125 volunteers spent an average of four weeks working directly with Egyptian farmers and extension agents, and conducting special, on-farm training sessions. Usually, volunteers worked in pairs, enabling the skills and knowledge of each to complement and enhance the work of both.

The second major component comprised *observational study tours to the U.S.* for forward-looking, innovative farmers and extension agents willing to work with FtF by teaching and

promoting good farming practices to their neighbors and clients. A total of 124 Egyptian farmers and extension agents visited American farms, packing and processing facilities, universities, research centers, local trade shows, and produce and livestock markets. Many of the American volunteers who worked in Egypt also played a role in the U.S. by helping to coordinate these visits and by hosting the Egyptian visitors on their own farms.

In the third major component, *outreach*, FtF staff built on the other components to help ensure that the process of transferring technologies was a continuous activity. Throughout the life of the project, staff visited and worked with farmers and extension agents to follow up on volunteers' recommendations and reinforce the lessons participants learned during their stay in the U.S. Core farmers were encouraged to share their newly acquired information with neighboring farmers by hosting demonstrations on their own farms, by visiting neighboring farmers, and by conducting village meetings. Over the LOP, U.S. volunteers, FtF field staff, and core farmers conducted nearly 1,000 training sessions. In addition to supporting logistics, FtF staff carried out Training-of-Trainers programs designed to upgrade the core farmers' ability to share information with others. A total of 220 core farmers received this TOT training.

Another important outreach activity, launched in 1995, was an in-country training program to facilitate the exchange of information between groups of farmers from different regions. The initial meeting took place when sheep and goat farmers from the Delta and North Sinai went to Matrouh governorate, which has the highest number of sheep and goats in Egypt, to learn about the nutrition, vaccination, and herd management practices of their Bedouin hosts. The farmers also discussed trading and some even exchanged animals at that time. This exchange marked the beginning of several trading arrangements between governorates.

FtF also produced a series of practical manuals which compiled recommendations from the final reports of all the volunteers who worked on a particular commodity in Egypt.

Finally, under the VOCA subgrant, FtF provided specialized equipment to existing cooperatives and member-owned associations in three major areas: bee and honey production, aquaculture, and sheep and goat raising. A honey cooperative received an analysis laboratory, bee disease diagnostic unit, and queen insemination unit; an aquaculture association received a water quality testing laboratory; and a sheep and goat group was provided with a disease diagnosis laboratory, and hay baling and shearing units. Volunteers and local consultants conducted seminars on the use of this equipment.

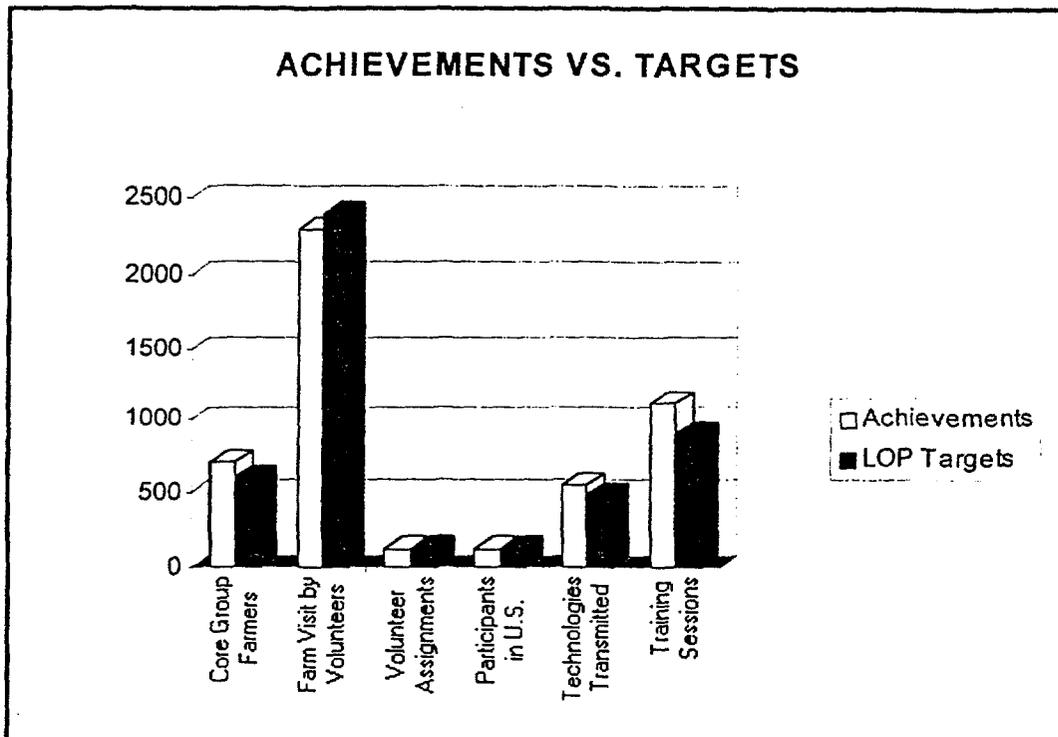
Program History

ACDI launched the Egypt FtF program as a pilot activity in 1987. At that time, the major thrust of the program was U.S. volunteer technical assistance and follow-up activities by FtF staff, with no participant training to complement the technology transfer process. From October 1987 through May 1990, 51 volunteers undertook assignments in Egypt in the areas of diary herd management and grape, citrus, and vegetable production.

Recognizing the benefits of this hands-on technical assistance from U.S. agriculturalists, in mid-1990, USAID approved a new three-year FtF project which included a participant training component. This component, based on the importance of "seeing is believing," aimed to enhance the technology transfer process initiated by the U.S. volunteers by providing Egyptian farmers with firsthand experience of a private sector-oriented agricultural production system. From June 1990 through August 1993, 105 volunteers undertook assignments in Egypt, and 170 Egyptian farmers and extension agents participated in U.S. study tours.

In addition, a number of small projects provided farmers with more training in specialized areas of interest, such as agriculture-related enterprise development, and also introduced beekeeping in recently reclaimed desert areas. A mid-term evaluation of the program concluded that *"the FtF technical assistance program has been exemplary."* The report cited examples of significant financial impact, and highlighted the impact of the program on the Egyptian agricultural sector as a whole, stating that new technologies introduced by FtF *"are definitely changing the way farmers are looking at their production systems."*

With this positive assessment and with an array of effective technology transfer activities in place, USAID awarded ACIDI yet another Cooperative Agreement for the period September 1993 through August 1996. In August 1996, USAID extended the program through December 1996.



Since 1987, Farmer-to-Farmer has exceeded many goals. Initially, staff had to travel into the countryside and villages to convince farmers to participate in the program. However, once word of it reached them, farmers began showing up at the field offices asking to be involved. The opportunity to learn new ways of doing what they had always done, and of improving their farms and their lives, provided a tremendous incentive for Egypt's farmers to become part of FtF.

An impact assessment conducted in 1996 showed, beyond a doubt, that the FtF methodology was a cost-effective and highly efficient approach to the rapid transfer of appropriate technology. It demonstrated that the Farmer-to-Farmer program showed a return on investment of nearly \$3 for every \$1 of USAID grant funds, and this just for core farmers. If one adds non-core farmers to the equation, the return is raised significantly. It also proved that FtF's person-to-person approach, coupled with multiple interventions, enabled Egyptian farmers to increase their yields, decrease their costs, and improve the quality of their produce. Most importantly, it became quite clear that Farmer-to-Farmer helped to enhance the overall quality of their lives.

A key to the program's success was that the farmers trusted their peers - fellow farmers who gave them sound advice that worked. In addition, close cooperation between FtF staff and farmers provided the continuity so important to such a program and encouraged farmers to ask questions about implementing volunteer and core farmer recommendations.

There is no doubt that the Farmer-to-Farmer Program has helped advance sustainable agriculture in Egypt. By helping to improve water quality and demonstrating new irrigation methods to conserve water; by recommending reduction of pesticides and fertilizers and introducing integrated pest management and organic farming techniques to reduce chemicals in food; and by inspiring cooperation between neighbors, these projects have contributed greatly to the health and welfare of all Egyptians. ACDI and VOCA are pleased to have been chosen by USAID and the GOE to carry them out and to be a part of Egypt's agricultural revolution.

I. Introduction

1. Program Objectives

The objectives of the Farmer-to-Farmer Program were to:

- Provide Egyptian farmers with new and improved farm system production and on-farm, postharvest handling technologies;
- Reduce the isolation of Egyptian farmers to sources of international production technologies;
- Encourage greater free enterprise in the production and marketing of cash crops, primarily fruits and vegetables;
- Provide expertise aimed at attaining suitable quality standards for accessing expanding markets; and
- Design and implement a system of information sharing for production and on-farm, postharvest handling technology in a critical mass of agriculturalists to eliminate constraints of sourcing technology for growth in the sector.

2. Program Outputs

The technologies *imported* by FtF were linked directly to the program goal of increasing private sector agricultural investment, productivity, production, and income. New technologies imparted by U.S. volunteers or through participant training were to result in cost savings, higher quality products, increased yields, and new investment opportunities. Given this link between goal and technologies, the success of the program was measured by: 1) the number of improved technologies adopted by targeted farmers and 2) the number of farmers who adopted these *imported* technologies.

3. Program Strategy

In working to achieve the goal and objectives of the FtF Egypt Program and to address USAID's country strategy, U.S. farmers and agricultural specialists worked directly with Egyptian farmers and extension agents using a proven people-to-people methodology that operated entirely within the private sector. In the process, Egyptian agriculturalists not only gained access to improved technologies but they also acquired experience with private agricultural sector operations in Egypt and in the U.S.

In addressing the technological constraints in Egyptian agriculture, FtF helped introduce new techniques and practices in production and on-farm postharvest by focusing on areas and crops where the impact would be greatest. The project facilitated relationships between Egyptian and U.S. farmers, scientists, and organizations, to their mutual benefit, and encouraged a sharing of technologies and information.

FtF also encouraged alliances that would lead to the application of research results by including Egyptian extension agents in volunteers' field visits and U.S. participant training activities. In addition, the program provided them relevant information about research which might be applicable to particular field problems.

Under the program, Egyptian agriculturalists were enabled to establish relationships that would give them access to information resources and technologies that would help ensure long-term project sustainability. Core farmers were selected based on the interest of the farmer and his/her willingness and ability to apply recommendations. Field staff first visited potential core farmers to assess their needs and problems. Volunteers, accompanied by field staff made a second visit. After receiving a translated copy of the volunteer's report, the farmer was bound to apply the recommendations. Periodic follow-up visits by field staff determined if this was being done. If the farmer was applying recommendations and requested additional volunteer visits, the farmer could become a core farmer.

The Farmer-to-Farmer project strategy is *demand driven*, responding directly to farmers' own requests for technical assistance, rather than determining what should be provided. When requests for assistance were received, field staff worked with them to identify their specific needs and develop a scope of work. Staff then categorized them according to commodity and the time frame appropriate for the TA. Requests are often seasonal, resulting in many similar ones at about the same time. Once several requests have been received, a Scope of Work form is submitted to the Cairo office which reviews the SOWs for appropriateness and the passes it on to VOCA in Washington for processing and volunteer recruitment.

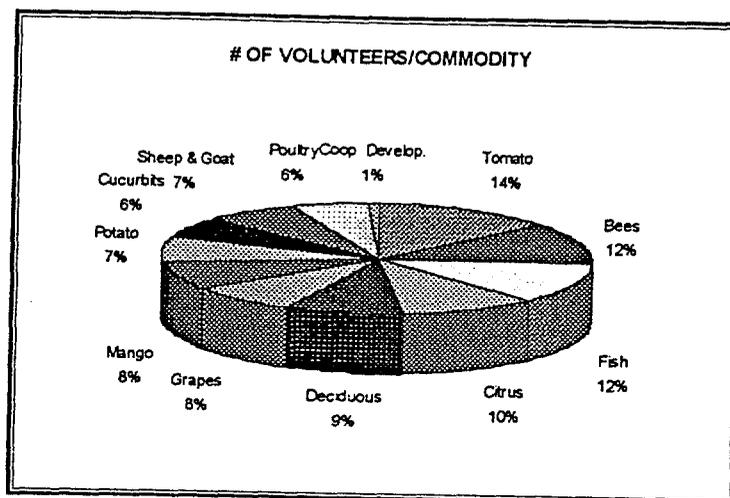
II. Progress Achieved During the Program

1. U.S. Volunteer Technical Assistance

During the 40-month grant period, Volunteers in Overseas Cooperative Assistance sent 125 volunteers to Egypt, exceeding the LOP target of 120. These assignments totaled 2,269 technical assistance days, 3,181 farm visits, and 928 training sessions. A surplus in the VOCA budget made these extra assignments possible. *Appendix E contains a list of volunteer assignments.*

These volunteer assignments covered the following commodities:

COMMODITY	TOTAL
Tomato	17
Potato	9
Cucurbits	8
Citrus	13
Grapes	10
Deciduous	11
Tropical	10
Beekeeping	15
Sheep & Goat	9
Aqua-culture	14
Poultry	7
Co-operatives	1



As indicated by these statistics, projects in fruit and vegetable production predominated, comprising 62% of the assignments. The remainder was divided between aquaculture and beekeeping, with 12% each, and livestock with 13%. It should be noted that among the fruit and vegetable assignments, tomato production accounted for 16% and citrus production for 10%.

This FtF program initiated an Annual Plan Chart indicating suggested assignments for the year, by month and by commodity. This greatly facilitated recruitment by giving

prospective volunteers advance notice of assignments so they could arrange their busy schedules.

FtF also established a *team assignment* system under which two volunteers, each specializing in the same commodity but in different areas such as production and diseases or extension and IPM, worked as a team. This proved very successful, with volunteers providing complementary information that gave the Egyptian farmers a more complete picture of their problems and the possible solutions. In addition, volunteers could travel and go sightseeing and shopping together.

In Cairo, volunteer assignments began with staff conducting a technical briefing on the commodity and accompanying volunteers on visits to the Ministry of Agriculture, Agricultural Research Centers, and universities. Prior to visiting farms, volunteers received copies of relevant reports written by other volunteers, giving them an opportunity to review others' recommendations so they could provide additional guidance and a sense of continuity which would help farmers improve their knowledge of, and experience with, new technologies and practices.

Once in the field, volunteers visited two to three farms a day to observe field operations and offer recommendations. They also held daily village meetings/farm demonstrations and conducted weekly seminars. Volunteer visits were to core farmers who invited neighboring farmers (non-core) to join them. Training sessions and seminars were conducted for all the farmers and extension agents.

Working with a broad spectrum of farmers, the volunteers gave technical advice resulting in the successful transfer of 543 technologies to Egyptian farmers, thus exceeding the LOP target of 480. At least one new technology was adopted by 77% of all farmers - core and non-core - who participated in this FtF program. Recommendations were not the only benefits provided by U.S. volunteers who also donated substantial quantities of brochures, manuals, and other reading materials, video tapes, and slides that have been helpful for FtF staff and the Egyptian farmers they serve.

By accompanying the volunteers, FtF staff and MOA extension agents received practical agricultural training that helped to ensure the continuation of technology dissemination after volunteers left Egypt.

Volunteers wrote daily farm visit reports recording problems they encountered and the recommendations they gave each farmer. These reports were used for follow-up farm visits by FtF staff and subsequent volunteers.

Before returning to the U.S., volunteers were requested to assess the assignment from both technical and logistical perspectives so VOCA and ACDI could continually improve the program and ensure the effective transfer of new technologies and recommendations. Each

volunteer also submitted a final report summarizing the visit and detailing his or her recommendations.

Special Assignments:

In Year Three, five special projects were undertaken to help and ensure the sustainability and continued impact of the FtF program. These projects were:

- 1) *Bee Disease Diagnosis Lab and Honey Analysis Unit* - to help beekeepers in Minya diagnose bee diseases accurately, improve honey quality, and reduce the use of chemicals. This was to assist them in improving their marketing and export activities. FtF provided all supplies and hired a local consultant to train managers and staff to use the equipment.
- 2) *Bee Queen Insemination Unit* - to provide beekeepers in Middle-Egypt (Fayoum, Bani-Suef, Minya, and Assiut) with high quality queens. FtF supplied the equipment and hired a local consultant to conduct training on bee insemination, queen rearing, and royal jelly production.
- 3) *Aquaculture Lab Development* - A volunteer assisted fish growers establish a water quality lab in Fayoum and provided the needed training in the different analyses and tests needed to determine water quality. The volunteer, a former USDA employee, provided handouts for all test methodologies, results analysis, and report writing, as well as information on water quality management and pond fertilization. Lab staff conduct routine weekly analyses for each farm are available for emergency visits. This equipment allowed farmers to have a comprehensive history of water quality for the first time.
- 4) *Sheep and Goat Lab Development* - A volunteer helped sheep and goat farmers establish a disease diagnostic lab in the New Lands area outside Alexandria. He provided training for staff as well as information on all test methodologies, results analysis, and report writing. Supplies provided by FtF included mobile analysis tools that allowed technicians to make farm visits.
- 5) *Hay Baler* - FtF provided a local farmers' association with a hay baler so their livestock would have good quality feed during those months when there is a shortage of green feed. A local consultant was hired to train them in its use.

The following comments from VOCA volunteers, extracted from their final reports, highlight the value of the FtF program, and emphasize the project's impact on Egyptian agriculture and farmers.

The FtF program is successful in Egypt and I was able to see very positive results and changes in a short period. This program benefits both the Americans and the Egyptians.
Dr. F.M. Zeitoun

I am sold on the merits of the FtF program. The results that I have seen in the fields and the animated responses from the farmers themselves have convinced me that the FtF program merits continuation.
William Pat Rowe

... Having said the above, I can categorically say that comb quality HAS improved and the beekeepers deserve all the credit.

Daniel G. Pesante, PhD and Michael Sayers

The number of times spray was applied by growers had decreased dramatically and now averaged only twice per season. This rate of spraying is an excellent improvement from the application frequency earlier volunteers had reported.

Robert Bullock and Robert Pelosi

There are a variety of problems related to fish production on the farm. The specific technical problems have not changed but we are encouraged by the efforts of the farmers who have begun implementation of the previous recommendations.

Agnes Spicer and Bruce Kahn

2. Participant Training in the U.S.

FtF provided opportunities for 124 Egyptian farmers and extension agents to participate in one-month observational study tours in the U.S. The participants were core farmers who were selected from all the governorates in which FtF worked and the programs for these groups were designed especially to meet their needs. Where feasible, they focused on several aspects of a single commodity, e.g., production, research, postharvest handling, processing, packaging, transport, marketing, and other relevant topics. *Appendix F provides a list of participant training groups.*

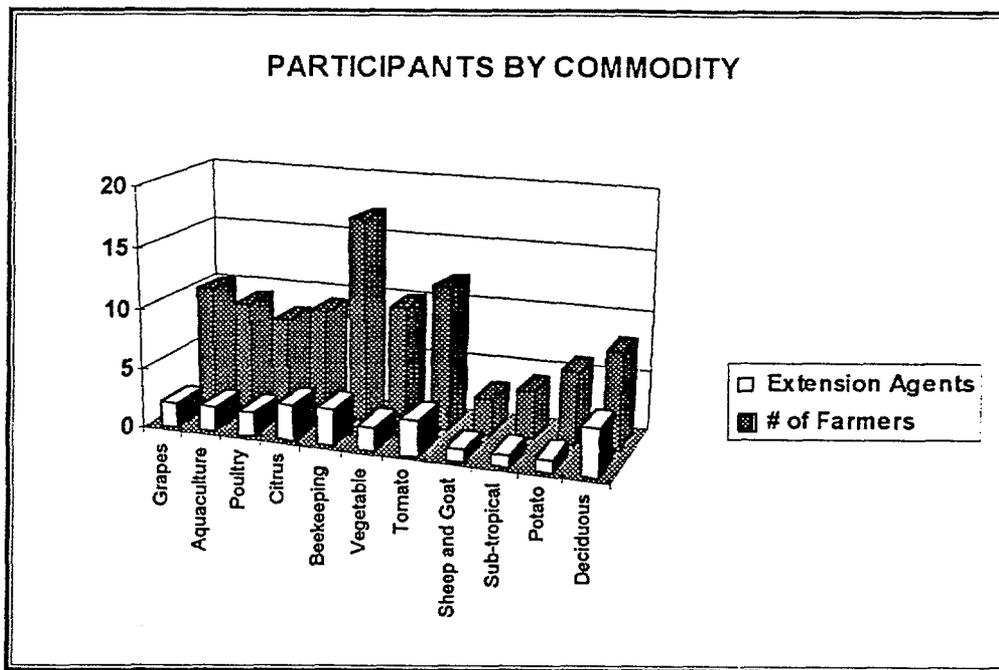
This component provided Egyptian farmers with new ideas, technologies, practices, and cultural awareness and allowed them to compare U.S. and Egyptian agricultural practices and methodologies so they could choose the most appropriate approach to follow on their farms in Egypt. However, the Egyptian participants were not the only ones to profit from this exchange, American farmers also benefitted from this introduction to another culture and to different ways of doing things which they sometimes found very practical and worth trying on their own farms.

During the U.S. program, participants visited farms, nurseries, packing houses, processing and storage facilities, research stations, and marketing operations. They worked with U.S. farmers, extension agents, and researchers to learn American techniques and methods and

to get a better idea of how American farmers live and go about the daily business of feeding themselves and their nation.

Of the 124 Egyptians who traveled to the U.S., 100 were farmers and 24 were extension agents. Of these participants, 15 were women (12 core farmers and three extension agents), representing 12.5% of the total. Each of the 20 groups was accompanied by an FtF staff escort/interpreter. Training in the following commodities was provided:

- grapes ● tomatoes ● sheep and goats ● mangoes ● vegetables
- poultry ● citrus ● potatoes ● apiculture ● deciduous
- peaches ● apples ● aquaculture ● cucurbits



The training helped participants understand their own situations and how this might be affecting their progress. And, the recommendations they applied after returning home varied, depending on what they could afford and on what they thought made the most sense. In addition, if problems were common to their area, such as marketing or transportation, they often worked with their neighbors to form an association and tackle the problem communally.

Returning participants became leaders in their communities and fellow farmers often came to them for advice and ideas. Using their new knowledge and skills, participants worked to change their own farms and to help their neighbors by teaching them their newly acquired

techniques through demonstrations on their farms, and by holding seminars and village meetings. To reinforce their teachings, they stressed the importance of forging links between farmers, extension agents, and universities and worked closely with everyone to help facilitate this cooperation. Once non-core farmers saw how participants had benefitted from the program, they asked to become involved. *Appendix B contains letters written by individual farmers, farmer cooperatives and associations, and government agencies requesting Technical Assistance from Farmer-to-Farmer.*

The following activities were conducted by the participants upon their return from the observational training tours in the U.S.

- | | | | |
|---------------------------|-------|-------------------------------|-------|
| ● No. of Village Meetings | : 118 | ● No. of Farm Visits | : 384 |
| ● No. of Seminars | : 243 | ● No. of Field Demonstrations | : 23 |

The comments by U.S. training participants' provided here demonstrate how they felt the Farmer-to-Farmer program helped them:

When Mohamed Hegazy visited U.S. poultry farms, he said that "it came alive for me and I really understood what I needed to do when I returned to Egypt." and from an FtF evaluation of the U.S. Poultry Production Program he was a part of in 1994, "The computer program for feed formulation has been very successful for Mr. Hegazy. The formulae he now uses based on the computer have the highest nutritional content at the lowest price. As a result, his feed costs have decreased significantly."

I am the son of the FtF program in Egypt. It has provided me with technical assistance since 1988. Through the U.S. volunteers' recommendations for up-to-date farming techniques and staff and volunteer follow-up visits to my orchard, I was able to produce high quality grapes which allowed me to access the international market easily.

Mohamed El Wahsh, Grape Farmer

Mr. Abaza attributes his most recent changes to the combination of access to ACIDI's field libraries, volunteer recommendations, and new technologies observed during his U.S. tour. He found that his trip to the U.S. often confirmed what he had read and learned from the volunteers and provided him with the opportunity to observe the importance of these practices.

Citrus Program Evaluation, 1994

Mr. Mohamed spoke of the shift in his thinking regarding beekeeping. Before his trip to the U.S., he thought only of increasing the quantity of hives, not the quality. In the U.S., he met beekeepers who emphasized the importance of raising both the quality and quantity of hives. As a result, Mr. Mohamed has reduced the number of his hives which are now much stronger and healthier. He also separated honey production from the brood, which has resulted in higher quality honey.

Beekeeping Program Evaluation, 1994

Core Farmers

The FtF program worked with 703 core group farmers, exceeding the target of 600 by 17%. Under this program, FtF increased its efforts to reach women farmers, selecting 22 women representing 3% of the total number of core farmers. This number may seem small but, given the cultural constraints in Egypt on women working and traveling, and most particularly on women working in the field of agriculture, this is actually a very good percentage rate.

FtF had used set criteria to determine a farmer's eligibility to be considered as a part of the core farmer group. He or she had to: ♦ own or work more than 5 feddans of land; ♦ be ambitious and willing to take risks; ♦ be inclined to learn, accept and apply new techniques and systems; ♦ be leaders in their communities; ♦ have substantial experience and expertise with a particular commodity; ♦ be willing to accept visits from other farmers and FtF staff so they can observe the progress resulting from applying U.S. volunteer recommendations; and ♦ agree to teach at least 20 other farmers the techniques and methodologies they had learned.

Husny Hamza said that FtF was the only source of practical information that helped him reduce his costs and increase his production.

Ghenewa Abdel Sadek reported that FtF improved the quality of his figs and that buyers were now traveling to his farm to buy his fruit.

Non-Core Farmers

FtF worked with 15,421 non-core farmers, 28.5% more than the stated goal of 12,000. This is due to the fact that core farmers were much more active than anticipated and attendance at training sessions by non-core farmers was higher than expected.

Non-core farmers learned about the program from neighboring core farmers who invited them to join sessions, through publicity generated by the FtF field offices, and by direct contact with FtF field staff. Although volunteers did not visit their farms, these farmers benefitted greatly from the program by attending farm demonstrations held on core farms by both volunteers and core farmers and by follow-up visits from extension agents and FtF staff. The comments printed below show just how much they appreciated having FtF operating in their areas.

Sayed Abdu Mohamed applied core farmer recommendations in part of his greenhouse and got a substantial increase in yield. In his view, FtF "is the difference between someone eating and not eating."

Shahat Ahmed Aly said that a volunteer recommendation to spray micro-nutrients saved his entire greenhouse crop - worth an estimated LE 4,000 - for a cost of only LE 300.

3. Outreach

During this Farmer-to-Farmer Program, a total of 1106 training sessions were conducted - 614 by U.S. volunteers and 492 by FtF Field Assistants and core group farmers. These numbers exceed the LOP targets of 900.

a. In-country Participant Training

Following approval from USAID, FtF initiated this new activity during Year III. Working closely with core farmers, project staff designed a week-long program for one of the targeted governorates and arranged for core farmers from another governorate to also participate. The program provided farmers with information on local conditions and practices, and facilitated a lively exchange of experiences among the participating farmers.

In all, sixteen training sessions were conducted for a total of 85 core farmers and 12 extension agents). The seminars focused on sheep, goat, and poultry production, beekeeping, grape and tomato production, and farm management. Participants from Alexandria, Matrouh, Ismailia, Minya, Sharkia, Dakhalia, Qalubia and Fayoum shared their experiences and knowledge.

b. Training of Trainers

The Training of Trainers sub-component was designed to upgrade the capability of core farmers to transfer information and techniques they learned through FtF to other farmers. It helped them improve their ability to deliver the information and also to develop situation management skills. The program, comprised of two three-month cycles, one each in 1994 and 1995, trained a total of 220 participants. Trainers were university professors specializing in business administration, marketing, and agricultural and extension training. Outreach activities carried out by FtF staff during the first cycle included:

- Follow-up and monitoring of core farmers' activities to evaluate performance and offer suggestions for improvement;
- Linking leader-farmers with agricultural product suppliers, agents and research institutes to provide them with up-to-date information; and
- Organizing *exchange of experience* programs between core farmers on specific topics, e.g., white fly containment/eradication. These activities helped upgrade their technical capabilities and experience and increased competition among farmers.

c. Training Resources

FtF produced one video on tomato production. In light of the fact that The National Agricultural Research Project and other development organizations produced numerous educational videos on the same agricultural commodities that FtF targeted, it was decided that it would not be efficient to produce the twelve videos required by the grant agreement. Subsequently, the USAID Project Officer approved ACDI's request to use these funds to make copies of the videos that these other organizations had already produced. By project end, FtF had copied 300 video tapes on 10 topics and distributed them to core farmers and extension agents to use in their educational programs.

4. Monitoring

a. Internal Evaluation - Year One

An evaluation of the program was conducted in Year Two to determine the efficiency of project management, assess the impact of the project, and identify areas where the implementation strategy needed to be modified. The study was carried out in six governorates in mid-1994.

The consultant found that the project was transferring new technologies to farms at all levels and that these technologies and recommended farm management practices were appropriate and relevant to the Egyptian farming environment. He also found that adoption of the technologies by farmers was resulting in improved farm operations, reduced costs, and increased incomes. In his own words, *The American farmers are having a remarkable impact on farmers, FtF staff and MOA extension agents. Well-trained farmers and staff are a key result of the volunteer missions... The human factor represented by FtF staff is playing a vital role in the effectiveness of project implementation.* He also found that the project strategy for crop selection focused on the most economically important crops for Egypt.

b. Impact Assessment - Year Three

Early in Year Three, ACDI hired a U.S. agro-enterprise development specialist, an Egyptian agricultural economist, and an Egyptian computer specialist to assess the effectiveness of the program. The survey of a 10% sample of core farmers and 1% of non-core farmers represented a cross section of all governorates and commodities targeted by Farmer-to-Farmer.

The study showed a return on investment of nearly \$3 for each \$1 of USAID grant funds for the 703 direct beneficiaries (core farmers). If the indirect beneficiaries (15,421 non-core farmers) are also considered, the return is significantly higher. It also showed that FtF's person-to-person approach using multiple interventions enabled Egyptian farmers to

increase yields, decrease costs, and improve the overall quality of their lives. In other words, it proved that the FtF methodology was a cost-effective, highly efficient approach to the rapid transfer of appropriate technology. Specifically, it mentioned:

Financial Impact on Core Farmers: The median financial increase per farmer was LE 17,000 or \$ 5,000.

Financial Impact on Non-Core Farmers: The median annual financial increase was LE 3,200 or \$941.

Social Impact: Farmers reported major improvements in their quality of life - 55 % made home improvements, 25 % sent their children to better schools, and for all, their standing in the community improved dramatically.

Environmental Impact: When asked to comment on which volunteer recommendations they had adopted, farmers cited those on pest and weed control, fertilizers, and micro-nutrients most often and said they were using a variety of IPM techniques. Some had even begun farming organically.

c. Management Information System (MIS)

The FtF computerized management information system tracked information on core and non-core group farmers and farms, volunteers and farm visits, participant training, the transfer of technologies, and outreach activities. During this three-year program, the system was modified to simplify data input and report retrieval. The system produces a total of 51 reports and forms comprising a wide range of statistics useful in managing the program and helpful in determining the needs of the Egyptian agricultural sector.

In addition, FtF staff used system data to create a slide show to demonstrate certain aspects of the program for visitors and evaluators. The presentation included graphical slides which can be displayed on either the computer monitor or on a data show and it served as a useful summary of project activities and impact. Staff also developed an MIS technical manual providing detailed instructions on how to use the system. Modifications made to the management information system under this program included: ● Creation of capture screens and the ability to save to files; ● The ability to print and edit hard-copies manually; and ● Re-design and linking of screens to provide more useful information.

5. Linkages

The FtF Program strengthened and expanded its links with Egyptian and U.S. government agencies, Agricultural Research Centers, ACIDI member organizations, and other NGOs and development projects in Egypt. This was achieved through volunteer visits and participant training in the U.S. and through the participation of MOA and other

staff and officials in training sessions and farm visits. In addition, university professors, research specialists, and others involved in agriculture were kept informed of volunteer findings and recommendations through meetings with volunteers and FtF staff.

6. Technology Transfer

U.S. volunteers transmitted 543 recommendations and improved technologies to farmers, exceeding the LOP targets of 480. Of these technologies, 374 were adopted. The Impact Assessment found that 77% of all core and non-core farmers had adopted at least one new technology. However, FtF field staff estimate that up to 85% of FtF participating farmers adopted some new technology or volunteer recommendation. Field assistant follow-up visits to assess the impact of FtF on core farmers indicated an increase in yield and income. Examples of benefits gained by farmers follow:

Mahmoud El Ghabosh - owner of 400 feddans of tropical fruits and a participant in the Tropical Fruit Production Program, August 1995: After returning, he dug a compost ditch to improve his fertilizer, using fallen leaves and other formerly discarded materials. He also dug circles around the trunks of the trees for better irrigation - this technique uses less water, less fertilizer, and results in fewer weeds. He saved LE 30,000/year on cultivation and LE 1,000/month on electricity (water pump.) He also minimized fungicide and fertilizer use, saving LE 30,000/year. The only increase in cost, approximately LE 7,000, was incurred to encircle the trees. In addition, his annual yield increased by 25% and he received a higher price for his mangoes because of their excellent quality, getting LE 5,000/ton for a total increase of LE 937,500 (\$276,548) per year.

He shared his knowledge with 25 neighbors, 15 of whom applied his recommendations. He also added 30 feddans of new mango trees, hired 20 permanent workers, and 30/day seasonal workers, a third of them women. He planned to start organic farming.

Mohamed Gouda - owner of a 28 feddan fish farm, and a participant in Aquaculture Production, 1994: Following his return, Gouda added red and green tilapia to his ponds and improved his irrigation. He began using a seiche disk to determine fertilizer needs and added chicken manure to his feed. His production increased by 20% (LE 300/feddan/year).

Mr. Salah Mohamed: Beekeeper and a participant in the June 1995 Beekeeping Program: After his return, Mr. Mohamed extracted only half his honey to strengthen his hives. In addition, he united the weak colonies, replaced all of his queens, and increased the number of worker bees. After spacing his hives better and feeding his bees more, he realized an increase in production and subsequent increase in income.

7. Association Development under FtF

The development of private, member-owned and managed associations was something completely new to Egyptian farmers but the emphasis of the FtF program on the New Lands helped concentrate efforts in an area where privatization was already being encouraged by the government and had a better than average chance of success. With the assistance of FtF, a number of core farmers succeeded in forming member-owned and managed associations.

One volunteer assignment focused solely on introducing the U.S. cooperative system to Egyptian farmers. However, as evidenced by the quote below, other volunteers also discussed with farmers the benefits of working together and of forming associations that would help them cut costs and market their commodities. Those who traveled to the U.S. were able to see even more clearly the benefits that American farmers realize by belonging to a cooperative.

We tried to encourage farmers to work together in farmer associations as far as crop improvement, chemical and fertilizer purchasing, insect and disease identification, and marketing. This was not an area we came prepared to promote, but it seems to us that this could be another way to help improve the infrastructure pertaining to agriculture here in Egypt.

Terrill Christensen and Ivan Hopkins: Potatoes & IPM, 1995

Following is a list of associations formed by FtF farmers.

- The Graduates Association for Meat and Milk Production, Alexandria
- The Fruit and Vegetable Marketing Cooperation, Alexandria
- The Egyptian Association for Exchanging Farmers' Experience, Alexandria
- The Marketing Association for Graduates, Bangar El Sokar
- The Dairy Producers, Bangar El Sokar
- El Fatah Association for Agricultural Production and Development
- Fayoum Aquaculture Association
- The Honey Producers Association, Gharbia
- The Honey Bees Association, Gharbia
- The Horticultural Exporters Association, Gharbia
- The Productive Cooperative for Silk Producers and Processors and Apiary Products, Minya
- Minya Junior Businessmens' Association
- The Fisheries Cooperative, Siwa Oasis

III. Conclusion

The Farmer to Farmer Program accomplished what it set out to do. It provided low-cost, short-term technical assistance to Egyptian farmers, transferred appropriate and sustainable technologies from the U.S. to Egyptian farms through hands-on training in Egypt and by sending selected Egyptian farmers and extension agents to the U.S. It formed a core group of farmers and extension agents able to apply newly learned farming techniques and to disseminate them. The established monitoring system was modified to track the adoption rate of improved practices by farmers as well as the increase in yields resulting from them.

FtF was very popular with both U.S. and Egyptian farmers. Many Egyptian farmers requested a repeat volunteer visits and most agreed to set aside a portion of their land and experiment with techniques recommended by the volunteers. A real appreciation for each other's culture and the dispelling of some stereotypes were major social byproducts of the program. *Appendix D contains sample letters of appreciation.*

The program established stronger links with Ministry of Agriculture research facilities and staff with the U.S. volunteers acting as liaisons by identifying problems experienced by the farmers and working with MOA staff to find solutions.

FtF helped change Egyptian farmers' attitudes. Consultant's notes taken during the Impact Assessment stated that *He is taking the initiative to solve his own problems rather than writing complaints to government officials. Using a list of diseases prepared by a volunteer, he can recognize potential problems early, which reduces his costs for treatment and increases production. Also, He recognizes the value of Integrated Pest Management as a way to reduce costs, improve health and environment, and meet a growing demand for organically-grown product for export.*

FtF field staff were a key factor in the successful implementation of volunteers' recommendations and, ultimately, the sustainability of the program. They worked closely and diligently with farmers - answering questions, finding sources of materials and equipment, and acting as liaisons between the farmers and the U.S. volunteers.

In conclusion, the Farmer-to-Farmer program successfully ■ Transferred new technologies to more than 15,000 Egyptian farmers; ■ Increased the emphasis on on-farm, postharvest techniques; ■ Highlighted investment opportunities in agriculture; ■ Established links with other agricultural development activities in Egypt; ■ Involved women farmers and extension agents; ■ Stressed the need, and the benefits, of working in the New Lands; ■ Worked with core farmers and agribusinesses to establish demonstration plots; ■ Opened up new opportunities for aquaculturalists in Siwa and sheep and goat producers in the North Sinai; ■ Developed an environmental awareness in the Egyptian farmer and extension agent, and ■ Raised awareness of the benefits of cooperatives and associations.

APPENDIX A

SAMPLE FTF REPORTS

Volunteer Final Report
Volunteer Farm Visit Report
Participant Final Report
FtF Evaluation of Participant Training

Final Report on the Mango Production for Egypt

Volunteers: Dr. Ralph Vorhies and Mr. Stan Michelini
Assignment Term: April 6, 1996 until May 1, 1996
Areas visited: Ismailia, Giza, El Fayoum, and Alexandria

Executive Summary

Mango growing in Egypt is a highly variable operation, due to different climatic conditions, varieties which are preferred by individual growers, a variable level of expertise, and because orchards are of highly variable ages.

We encountered farms which were well managed. These farmers or their managers were well trained and highly technical in their knowledge of sprays and diseases and most management practices. These orchards must have been profitable, given the reported yields achieved and the price received for their mangos.

Other farms had many problems, the most serious being soil related problems and progressing up the trunk involving tree shape and leaf and flower panicle diseases.

Despite the variations which we found on the farms, many of the problems were similar except in the degree to which the trees were affected. These variations can be examined on a regional or tree age basis, or they can be related to farm manager experience and training.

The chief problems which we encountered, not listed in order of importance, were:

- 1.) Soil pathogens, including Verticillium sp., Pythium sp., Phytophthora sp. and possibly others of lesser importance.
- 2.) Irrigation practices which tend to exacerbate levels of soil pathogens, lead to uneven water potentials in trees during the fruiting season, and leach the N and K out of the soils. At the drip irrigated farm, trees were not responding as should be expected.
- 3.) Tree shape, including trunk and main branch structure and overall tree height. Multiple trunks were all too common, and poorly chosen branches tended to complicate all management operations, and excessive tree height was evident in every planting.
- 4.) Nutritional problems, while not clearly evident on all of the orchards, were bound to occur as farm managers did not utilize any leaf tissue analysis services. These nutritional problems included micronutrient deficiency, over-fertilization, under-fertilization, and unbalanced application of nutrients.

5.) Foliage and flower diseases especially Powdery Mildew and Anthracnose, were found in every orchard.

6.) "Nursery" problems including varietal selection, minimal utilization of grafted trees, poor early tree structure for optimum later production, poor aftercare of topworked trees.

7.) While each farmer knows which varieties he is growing, the planting scheme is chaotic. This complicates all orchard management operations, including pruning, spraying, harvesting, and greatly complicates the management decision making process with regard to optimum production and marketing.

8.) There are no fruit which can be seen, or harvesting operations to be observed. However, it is obvious that packing facilities, if they exist, are insufficient to properly treat and pack fruit for markets.

Several of the orchards had crops being produced under contract, which meant that the owner had little say in production, rather the buyer of the crop was responsible for the production practices. While this arrangement may suit the owner, in no case encountered did it suit the trees.

Generally good production practices, the fact that most of the orchards were of bearing age, generally good growing conditions, and the high prices received for fruit by the farmers indicate that the future of the industry is good and will continue to be profitable for the farm owners.

Each of the issues brought forth in the summary will be examined in some detail in the following pages. Regional issues will be identified in a mini summary for each district which we visited. Specific recommendations for production problems will be given to the farmers on an individual basis, as an accompaniment to the farm report.

Soil Pathogens as a hinderance to Mango Production

Evidence of a number of soil pathogens were observed in the plantings. In some cases, the manager informed us that the government laboratory had sampled roots and found evidence of infection.

The most likely organisms involved are Pythium, Rhizoctonia, Phytophthora, and Verticillium sp. The first three fungal genera are pathogens whose excessive presence is related to water conditions, typically overwatering or waterlogging of soils. Verticillium sp. are associated with poor production practices or a prior growing of cotton or tomatoes. Verticillium can also attack olive trees.

The signs of pathogens include tree decline, the apparent inability of the tree to take up soil applied nutrients sudden death of all or part of the tree, and generally poor growth.

Ridomil is the preferred fungicide for the watermold fungi. Growers report using a "cocktail" of Ridomil, Dithane M45, and Benomyl to control root rots. This "shotgun" approach is OK when specific identification of the pathogen(s) is not possible. It is recommended that the farmer be encouraged to have root samples tested for per cent infection when soil pathogens are suspected, and applying specifically recommended control chemicals.

Phytophthora is characterized by short, stubby roots and the outer section (cortex) of the root separating easily from the inner root area. Ridomil is specifically recommended for this.

Pythium is characterized by dieback of terminal branches, and a proliferation of shoots re-sprouting following the dieback. In the soil, a general decay of the lower feeder root system occurs. The roots turn brown and die, and this death may encroach into the main root system and into the crown of the tree.

If Verticillium is present, and we saw several orchards where clear and distinct evidence was found, there is no one good specific fungicidal treatment which can be recommended. Verticillium occurs naturally in soils, and exists quite well as a saprophyte, living with the root system but not causing major root damage. However, when conditions are right for its speading, it can turn pathogenic and casue major damage to the tree root system.

This condition can be recognized by the rapid wilting of all or part of the tree, with the leaves drying on the tree and persisting beyond the normal length of time for leaves.

The best solution for this condition is to cut off the affected part and burn it. Look for vascular discoloration, that is, black or dark brown streaking along the wood of the stems. This is specific for Verticillium. If it can be easily accomplished, dig tree out and fumigate the soil with Chloropictin, often found in Methyl Bromide preparations.

All these pathogens can be spread using the flood irrigation system. When these problems reach epidemic proportions, as they do in some of the older orchards, an emergency program should be considered. The components of this system include the following steps:

- 1.) Identify the areas or blocks of trees which exhibit the worst symptoms.
- 2.) Get root samples analyzed for percent infection of roots. Get the causal organism identified by the laboratory.
- 3.) Initiate treatment for the specific soil fungus as recommended by the labels of generally available soil fungicides.
- 4.) Increase organic material to the maximum available amount. Applications should be 2 to 4 cubic meters per tree, spread around under the tree drip line. Apply frequently to build soil and beneficial soil micro-organisms.
- 5.) If leaf analysis indicates deficiencies, spray a corrective mixture as the roots may not be in condition to take up nutrients.
- 6.) As clean roots begin to grow and nutrient uptake is allowed, apply N to increase growth and to rebuild the tree health.
- 7.) Avoid contamination of adjoining land with the infected land. The chief way to contaminate is with flood irrigation. This practice not only gives ideal growing conditions for the fungus (water saturation of soil, greater movement of fungus through the soil, oxygen deprivation), but allows movement of spores in the irrigation water.

Farmers who have ongoing pathogen problems should consider changing their irrigation system to more modern methods, such as drip or microspray systems. These can be installed for less than EL 2000 per feddan.

In addition to minimizing the above mentioned flood irrigation associated problems, the fertilizer weeding, and other farm management operations can be made easier.

Irrigation practices in Mango Production.

The majority of farmers in Mango production use flood irrigation. This system makes good utility of free water and familiar practices. However, with the advent of charges for water, or the increased demand as new lands are opened up and require ever increasing amounts of water, changes will be forthcoming.

Flood irrigation can often lead to increased levels of soil pathogens. This is accomplished mostly through the waterlogging of soils, and reduced oxygen in the soils. While this is not often a serious problem in sandy soils, there is often an underlying loam soil layer which traps water and does not allow for rapid percolation.

Excessive soil pathogen levels are evidenced by the trees looking and performing poorly, especially with regard to nutrient uptake, despite the adequate application of nutrients.

Flood irrigation can contribute to the spreading of pathogens, due to the heavy and consistent water bridge between trees.

Flood irrigation can lead to excessive leaching of nutrients especially N and K, which are readily water soluble. This can cost the farmer money in terms of less than full utilization of nutrients.

If flooding water is allowed to get up to the tree trunk, additional crown rots can occur.

Drip irrigation is difficult to implement in large, mature orchards, due to the lack of coverage given roots in the predominately sandy soils.

It is recommended in the older orchards, that under the tree irrigation be installed. Typically, this means microjets or microsprinklers. These will not add materially to the humidity, as they are only on less than one hour and wind should dissipate most of the extra water. In desert environments, they could contribute to tree cooling during the hottest months, and lead to decreased heat stress.

Tree shape as a factor in Mango Production.

Seedlings are predominately used in mango production. This impacts upon tree shape by each variety having a distinctive shape and by the typical situation whereby seedlings are taller and less full than grafted trees. Grafted trees also bear earlier than seedlings, so that the later start in fruit production leads to a taller, slimmer tree.

Additionally, it is common to find trees which have multiple trunks, as the tree is allowed to grow as it wishes in the early stages, and as the tree ages and grows in diameter, the grower is increasingly reluctant to cut large limbs from the tree.

There is a common perception that different from most other trees popular in Egyptian culture, that the mango is not supposed to be pruned. These popular beliefs lead to a further reluctance of the grower to prune for shape or efficiency.

Tall trees are more difficult to spray, to harvest, and to keep from the perils of wind damage, and increasing shade on the lower branches.

When branches are allowed to grow too close together, or to have narrow crotches, they will tend to trap bark and cause eventual rubbing of the main trunks, as well as can split under stresses of heavy fruit load or strong winds. Narrow crotches also lead to a confusion in the branch network.

In order to correct all the above problems, and to increase the accessibility of the tree bearing structure to all management exercises, the problem needs to be corrected from the nursery in young plantings, to early growth in the orchard, to top-worked trees, and on to the mature orchards which we have found to be uniformly too tall for optimum production.

First, the grower must be convinced that the pruning will be beneficial.

In order to assess when growth is good or bad, the experienced grower will look at the tree early in its life and see where that tree will be in 20 years. That is, he will be able to tell at the present moment, which branches and what structure will serve the tree best during the next 20 years of growth and bearing. When decisions are made for the long term, the best overall look and performance will be the result.

Sometimes, branches may be left on the tree for the moment, for the season, with the understanding that they may very well be removed eventually, as the final tree shape takes place.

This is a program of training trees individually from the very first, or doing corrective pruning to get the tree back in shape for its bearing life. It is recommended that one good man with an eye for symmetry and an understanding of the principles of pruning be selected from the staff and be responsible for making pruning choices.

The program consists of training for concentrated growth, straight trunks, open centers for light and air penetration, smooth flowing of main branches and side branches, and an overall reduction of the height to width ratio currently encountered.

1.) Concentrated growth means that the tree will only direct energy in growing where the orchardist wants the tree to grow. No energy is wasted in growth in the wrong position.

this is the "baby pruning", simple, early, non wasteful correction of mistaken direction before it has had a chance to complicate tree structure. This is undertaken in the nursery and in the first year of orchard growth.

2.) Branch selection is the second step. Mango tends to grow in spurts, not in a steady extension of branches. There is a growth spurt, followed by a mini-rest period, then another growth spurt. During this rest period, several buds may become ready to burst out upon the resumption of growth. If all these buds are allowed to grow, the tree becomes clogged with its own branches, and the survival of the strongest dictates that a few will grow strongly, and the rest will only detract from the final good shape.

Prune off any misdirected branches as early as it becomes apparent that they are in the wrong position or that they are too weak to support the eventual full growth of the trunks.

This is the same as correcting a child once while he is young, instead of many times after the bad habits have been formed. This again concentrates the growth in the desired position and direction, with the least waste of energy.

Branch angle should be between 45 degrees and 90 degrees, measured from the main trunk. Angles of less than 45 degrees are undesirable.

3.) Height control is best started with the use of grafted trees. Grafted trees tend to be more spreading than seedling trees, even when the same variety is being compared; seedling to grafted tree. Secondly, the main growing terminal should be kept in check so that it is not allowed to grow uncontrollably towards the sky. If it is kept from indiscriminate growing, and side branching is encouraged, the overall tree shape will require less drastic corrective pruning as the tree matures.

It is recommended that trees be about as tall as they are wide. This will have numerous advantages, including easier spraying, easier harvesting, less effort expended by the tree in transporting sugars to the roots and nutrients from the roots to the tips, lessen wind damage, and increase sunlight penetration to the bearing surfaces. The overall tree height should be no more than 7 meters, which means the width should be about the same, and therefore planting distances a minimum of 7 meter spacing.

4.) Branches growing parallel to the ground, or nearly so with the general trend away from the ground at an angle of about 30 degrees, will leave more sugars in the trunks than branches growing straight up. Encourage side growth early and fruiting should be improved.

5.) Growers should apply the "Mercedes Principle" of pruning. Using this method, branches, usually no more than three, should be radially arranged as in the shape of the Mercedes Star, when the tree is viewed from above. This leaves branches which are well spaced and balanced. Additional tiers of branching are allowed to grow as the tree trunk grows taller.

6.) Trees which are already too tall to fit within the shape as described, can be brought back into a better shape with some effort. The best way is to select main trunks which are to be left as the structure for the tree, and to cut them back, one time, severely. When a few large cuts (cutting large diameter trunks) are performed, the tendency is for the tree roots, the ultimate source of the strength of the regrowth, and the main supporting structure, to spread the excess strength around the tree equally. This means less disruption to the fruiting process.

Contrarily, if many smaller cuts are made, the effects are more localized, and it tends to add vigor to the tree, less fruiting wood and more vegetative growth in localized areas.

7.) Aftercare is essential after any major pruning. The resulting sprouts must be trained as if a young tree were placed on top of a large trunk. That is, the resulting sprouts must be chosen for position and orientation, so that the resulting growth is what the grower wants. This typical is well spaced branches, probably no more than 3 to 5 on a trunk, radially arranged, and not allowing any one of them to take command of the branch and overshadow all other new sprouts.

These same principles can be used when cutting back large trees and top-working them to new varieties.

The pruner should idealize a Mango tree shape, and continually work towards realizing that shape. Sometimes it must be accomplished gradually, sometimes dramatically. It is best, if in doubt, to test a few trees in the orchard with the methods described above.

Final fruiting surface should not exceed 7 meters in height.

Nutritional Problems as a factor in Mango Growth and Production

Nutritional programs have been recommended by previous volunteers, and the programs which they offered are quite thorough.

The nutritional status of mango trees in Egypt is variable. Most orchards had relatively good programs, although there is a tendency to apply nutrients in the wrong amounts.

The key to proper fertilization is knowledge. The German organization, GTZ, an organization which lends technical advice and expertise to farmers, has a program which will perform a leaf analysis on orchard samples which will give percentages of N, K, P, Fe, Mg, Mn, Cu, and Zn found in the leaves. This analysis is better than soil analysis, as it gives an accurate picture of what is being absorbed by the roots and translocated to the bearing surfaces.

It cannot be too strongly recommended that all serious growers utilize the service. The cost is EL90 per sample, which will include enough spray material to correct micro-nutrient deficiencies found in one feddan of Mango. Only one grower was found to use this service.

It is important not only to pinpoint any deficiency, which may have detrimental effects on yield way beyond the cost of application, but also to pinpoint any excess or imbalance in the nutritional program. Simply by comparing the results obtained with recommended levels of nutrients, the grower can decide levels of fertilization, whether or not he is using some fertilizers in excess of necessary amounts, and whether or not what he is applying is getting into the leaves.

The literature says that the timing for mango fertilization is relatively unimportant. The only observation which is to be made is that when trees have a heavy crop load, they should receive an extra application of fertilizer.

The total amount of N to be added to mature trees is recommended to be around 100 grams actual N (or 5 times that amount of Ammonium Sulfate) per 25 Kg of fruit removed from the tree that bearing season. This would amount to 500 grams Ammonium Sulfate per 25 Kg of fruit removed.

The total amount of K to be added is about 25 % more than the N amount. So, if 100 Kg of fruit is removed from a mature tree, then the amount of Ammonium Sulfate to be added is 2 KG and the amount of Potassium Sulfate to be added is 1 Kg.

It is OK to supply up to 25 % more of the nutrients and still be within safe limits.

Otherwise, it is imperative to know what the nutritional status is in the leaves, and to only apply fertilizers as necessary to preserve good growth and promote optimum fruiting.

Foliage and flower diseases found in Mango

Every orchard had evidence of powdery mildew found on the blossoms, and many had it on the leaves. This may have been due in part to the early bloom reported this year, in conjunction with the cool night time temperatures and warm days.

While all orchards had some evidence of powdery mildew, they varied considerably in the severity of the infection. Trees which started the program early had less occurrence. Trees which were sprayed with micronized Sulfur tended to have good control.

Other products seemed to have variable results. This could be due to differences in the severity of the beginning infection, the differences in the larger area (Ismailia tended to have more mildew found than other areas) or the microclimates, the differences in the cultivars, variable spray practices, different tree heights, or other local variables.

It is recommended that each farmer choose one or more of the locally available treatments and judge for himself which gives him the best results. Whichever chemical control is used, the most important point is to begin pre-bloom to lower inoculum levels, and to continue throughout the blooming period to control its effect on loss of fruit set.

It appeared to us that the major problem in early fruit set this year, in all areas except Faiyoum, was to powdery mildew.

Anthracnose is the other major problem encountered. Again, every orchard had some evidence of Anthracnose on the leaves and most had some evidence of it on the blossoms. Pictures of the Anthracnose effect were shown to all growers, and all accepted that they had some in their fields. However, the severity and the overall effect of anthracnose on this year's crop was variable.

Different spray programs have been recommended by previous volunteers, and the programs are concise and complete. To quote Dr. Robert Knight:

For Powdery Mildew, use Trimidal (20 ml), Tilt (50 ml), Rubigan(300 ml), or Bayleton(25 grams) each dissolved in 1 liter of water, and used with Superfilm spreader sticker, on 15 day intervals. Alternate control by spraying with a different chemical each time, until fruit set is complete.

Prior to flowering, when it is evident that flower panicle will soon emerge from terminal bud, to control leaf spot, Anthracnose stem infection and scab, apply a combination spray of the following:

Copper at 1/2 the recommended rate

Any on the carbamates, M45, Maneb, Dithane, at recommended rate

Sulfur at the recommended rate

Zn either Zn So₄,

Zn Oxide, or Zn chelate at recommended rate

Spray Grade Potassium Nitrate at 2 KG/ 400 liters water

Spreader Sticker at the recommended rate.

During entire flowering, into fruit formation apply any of the carbamates 12 to 15 days apart for Anthracnose and blossom blight control.

Fruit at pea size to 3 cm across, apply copper plus any one of the carbamates at the recommended rate, plus spreader-sticker.

Once fruit has set, apply copper at recommended rate plus spreader -sticker.

Top-working trees is a form of nursery work. It is generally found that growers are good at top-working, with a high percentage of "takes" in the field.

It is to be remembered with either nursery or top-worked trees, that aftercare (see the pruning section) is of the utmost importance in maintaining a good program and in achieving the goal of healthy, disease free trees which give high yields of good quality fruit.

When grafting, both trees should be actively growing. The rootstock should be pushing new leaves at a rapid rate. The budwood should be just beginning to push new growth, with the bud not yet burst from under the leaf scales.

It is important to line up the actively growing regions of both rootstock and scion wood, so that the meristematic areas, which contributes callous tissue (the healing tissue) match leading to a rapid healing of the graft union.

There are many techniques of grafting. However, it is recommended that under the best nursery conditions, trees are treated with systemic fungicides, are actively growing, and have just emerged from the seed. This tender growth heals rapidly, accepts small graftwood, and gives a tree ready to plant out sooner than any other method. In case the union does not heal, then the tree can be regrafted at a later date on the harder wood.

Orchard management of planting material (cultivated varieties) and record keeping.

Record keeping is selectively practiced in the orchards we visited, except that spray programs are rather well documented and the yield seem to be well known to the grower.

Records of planting schemes do not exist at most orchards. Coupled with the practices of multiple varieties, seedlings, replants at any age and stage, selective top-working, roguing of bad trees, and standard practices given to all trees in the planting, it is impossible to know how any one variety is performing.

The best farmers intuitively know what is going on, but it is unlikely that any has the ability to give specific information about any one variety with any degree of certainty. This is detrimental not only to the mango industry, but to the farmers themselves.

With proper record keeping, the farmer will know from which tree to obtain budwood or seed, will know which if any variety is consistently out-performing or under-performing the rest of the planting, which variety is making the most money for his effort, which are susceptible to which diseases under changing climatic conditions, and other management issues which are cultivar specific.

Joining with proper record keeping, a planting plan should be started so that information may be gathered and recorded in some organized fashion.

More importantly for new plantings, varieties should be planted together, in rows, so that cultural management practices can be uniform. The same varieties will have similar spray programs, tree shapes, and fruiting season, and should be planted together. They may also have pest and disease properties which may be different from other cultivars. Planting all the trees in a row or block will also facilitate record keeping with regard to yields and other performance.

Planting records will facilitate information on any spray trials, which are recommended for the farmer to perform for his own circumstances.

With proper records and documentation of results, the farmer has much more information with which to work, and with which he can make business decisions.

It may be beneficial to form cooperative working arrangements with one farmer in each mango growing region, to establish a Model Farm where information and assistance is given to the farmer at no cost, with the understanding that planned visits to the farm by other growers are to be allowed and encouraged, to share the information and the results of good orchard management.

Harvesting of the Mango Crop

While there are no fruit on the trees at this time, it is obvious from the facilities observed and the general fruit handling which was observed all throughout the country, that fruit handling is problematic.

For the grower to have incentives to grow quality fruit, he needs to know that the fruit will be properly handled and marketed. There are several ways to go about this.

Previous volunteers have made suggestions to fabricate mesh baskets for picking. Between that method and the pickers using cloth bags, this is not where the chief problems will occur.

Pre-packing treatments may be necessary to keep anthracnose under control. While it is reported that anthracnose is not a problem on the fruit, there ought to be an awareness of how to treat for it and a method of following the fruit into the marketplace to ensure that the anthracnose really does not occur, or maybe it occurs after it leaves the farm.

More to the point, it may be beneficial for the best or the largest growers to invest in individual fruit labels to identify their fruit as superior to the ordinary. A small investment in stickers will give prestige value to the best growers, and build consumer recognition and support for that farm grower.

There are many large and small foreign based growers with much experience in the orderly harvesting, packing, and marketing of fruits. It is possible that one of their staff may be willing to devote some time during the harvest seasons for various fruits to develop procedures for up-marketing of their produce.

Some education needs to take place, however informally, with the various vendors of produce. They tend to have no great concern for appearance or avoiding bruising or presentation of their produce. In many instances, the fruit is carelessly dropped and casually replaced on the shelf, for the next consumer to have the bruised fruit. It is easy to imagine losses in the range of 30 %. For Egypt to provide better local produce, and to compete on the international export market, this awareness has to become more of a concern for everyone in the food industry.

Following is a Returning Participant report. Marwan Mohamed Marwan was one of the participants in the Beekeeping group, June - July 1995.

In this report, Marwan describes the training program, laboratories, universities, extension bureaus, and research centers that the group visited. He also makes comparisons between the practices used in both countries, and how some of the techniques & methodologies can be adapted to improve Egyptian Apiculture.

Mr. Marwan emphasized the importance of increasing the efficiency of the beehive through the early discovery of disease and by keeping bee food available and using pollen substitutes. He also talked about using natural compounds for disease control, and how he intends to maximize his income by producing honey and collecting pollen.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

acdi

المنظمة الدولية

لتنمية التعاون الزراعي

تقرير زيارة الولايات المتحدة الأمريكية

من خلال تبادل خبرات المزارعين

عن الفترة

من ٢٩ / ٦ إلى ٢٩ / ٧ / ١٩٩٥

مقدم الى

المنظمة الدولية لتنمية التعاون الزراعي

acdi

إعداد

مروان محمد مروان

مقدمة

* أبدأ كتابة تقريرى هذا بالحمد والثناء على الله باسط الأرض ورافع السماء وكذلك صلاةً وسلاماً على المبعوث رحمة للعالمين محمد وعلى آله وصحبه أجمعين .

* أتوجه بالشكر إلى كل من ساهم فى إعداد برنامج الزيارة وتذليل الصعاب للوصول الى الفائدة المرجوة من برنامج تبادل خبرات المزارعين

* سوف أقوم فى هذا التقرير بالعرض لما شاهدت خلال أيام الزيارات المختلفة وكذلك الاستفادة من البرنامج ككل وكذلك تقييم برنامج الرحلة . .

أولاً : المشاهدات اليومية :

الخميس ٢٩ / ٦ / ١٩٩٥

(الوصول الى Washington D. C مساءً وذهبنا الى فندق Carlyle Suites حيث كان حجز الغرفة مرتب مسبقاً .

الجمعة ٣٠ / ٦ / ١٩٩٥

* فى صباح ذلك اليوم قمنا بالتوجه الى مكتب المنظمة وقابلنا كل من Ms. Eta & Ms. Tame حيث وجدنا كل ترحاب وحفاوة . وقامت Ms. Tame بعرض مخطط الرحلة وتوضيح أهداف الزيارة وكذلك إعطاؤنا فكرة بسيطة جداً عن كيفية التعامل مع المواطن الأمريكى لحين مقابلة Ms. Lobna التى قامت بتغطية تلك النقطة .

* وقامت كذلك Ms. Tame بإعطائنا المستحقات المالية كالاتى :

\$ ٢٧٥٠ شيكات سياحية ، \$ ١٦٠ نقدية .

(تناولنا طعام الغداء فى مبنى المنظمة وفى نهاية المقابلة تمنوا لنا الاستفادة من برنامج الزيارة .

السبت ١ / ٧

(١) حضرت الى الفندق الساعة التاسعة صباحاً Ms. Lobna Ismail التى قامت بإعطائنا محاضرة فى الثقافة الأمريكية ومقارنتها بالتقافات الأخرى .

قامت بشرح أسلوب التعامل مع المواطن الأمريكى وكيفية حرصه على الوقت وكذلك قدسيته للعمل وعدم الخلط بين وقت العمل ووقت الترفيه والراحة وكذلك بعض الأسئلة التى يجب ألا توجه للمواطن الأمريكى مثل (السن - مقدار الدخل بالتحديد - الديانة)

(٢) بعد المحاضرة إصطحبنا Mr. Hany Abou Ali وقمنا بزيارة لمعالم المدينة وكذلك عمل جولة حرة .

الأحد ٢ / ٧

جولة حرة وزيارة معالم المدينة .

الاثنين ٣ / ٧

زيارة الى مركز أبحاث النحل في ميرلاند ومقابلة Dr. Shimanuki.. الذى رحب بنا فى أمريكا وفى مركز الأبحاث وتحدث معنا فى أول محاضرة له فى الآتى :

المحاضرة الأولى Dr. Shimanuki

١ (النحالة فى أمريكا : عرض فى هذه الجزئية الآتى :

- أكبر نحال على مستوى الولايات فى فلوريدا ويملك ٦٠,٠٠٠ خلية
- محترف النحالة لا يقل عن ١٠٠٠ خلية .
- النحال فى أمريكا يعتمد بنسبة ٥٠ ٪ من دخل الخلية على موسم التلقيح حيث أن إيجار الخلية الواحدة فى موسم التلقيح (عبارة عن شهرين أو ثلاثة) \$ ٣٥ ومحصول التلقيح الأساسى هو التفاح .
- متوسط إنتاج الخلية فى السنة (٢٠ - ٢٥) كيلو على مستوى الولايات المتحدة الأمريكية .
- يوجد ٤,٥ مليون خلية على مستوى الولايات المتحدة .
- يوجد ٢,٠٠٠ نحال محترف ليس لديه أى عمل آخر .
- يوجد ١٠٠,٠٠٠ نحال يعمل بجانب وظيفته .
- أفضل مناطق إنتاج العسل كاليفورنيا - فلوريدا .

٢ (رفع كفاءة الخلية .

- (أ) يجب ان نعد الخلية قبل بداية الموسم لتصل الى ٦٠,٠٠٠ نحلة عبارة عن ٢٠ برواز نحل من الوجهين وذلك من خلال التغذية بمحلول سكرى وذلك قبل موسم الفيض بستة أسابيع وذلك مع وجود العسل الكافى لتغذية النحل مع إستعمال بدائل حبوب اللقاح .
- (ب) الإكتشاف المبكر للأمراض

المحاضرة الثانية

معالجة الطفيليات

Dr. Calderone

* كيفية معالجة الفاروا

- ١ - المعالجة الكيماوية إستخدام ٢ شريط ابستان لكل خلية أى شريك لكل ٥ برواز
- ٢ - المعالجة الطبيعية (تحت التجارب)

* وكذلك بين لنا ان شهور نوفمبر وديسمبر ويناير فترة راحة للملكة لانه لا يوجد كمية نحل كافية في الخلية .

* وكذلك بين لنا طريقة عمل خلطة بديل حبوب اللقاح عبارة عن عجينة وزن نصف كيلو تحتوى على :

مقدارين سكر + مقدار (١) زيت فول سودانى
أو (٢) زيت عباد الشمس
أو (٣) زيت فول الصويا

المحاضرة الثالثة

Dr. Bruce

* تحدث عن الفاروا وعرف الفاروا بأنه حيوان ويحتاج الى الماء داخل جسمه ويفقد كمية كبيرة من الماء لذلك يتطفل هذا الحيوان على النحل وخاصة على اليرقة لعمل التوازن المائى داخل جسمه .

* حيوان استوائى وانسب فترة للعلاج هي فترة اختفاء الحضنه .

* وزن الطفيل الأنثى ٣٠٠ ميكرو جرام

* كلما كان الجو بارد والرطوبة عالية يكون الطفيل حى .

* عندما يفقد حيوان الفاروا نسبة ٥٠ ٪ من المحتوى المائى يعتبر فى عداد الموتى .

المحاضرة الرابعة

Dr.Kuenen

تحدث Dr.Kuenen عن سلوك الفاروا وبين هذا السلوك فى النقاط التالية :

* الفاروا يفضل النحل الصغير الحاضن لأنه دم جديد .

* عندما توجه تيار هواء فى اتجاه حيوان (طفيل) الفاروا نجد انها عندها قدرة التحرك ضد الهواء .

* الفاروا لها رجلين أماميتين وهذا يعتبر بمثابة قرون إستشعار للتمييز بين النحل الصغير والكبير ويوجد نوع من الكيماويات داخل دم النحل الصغير يفضلها الفاروا .

* تبدأ أنثى الفاروا فى وضع البيض بعد ٣٠ ساعة من دخولها العين السداسية .

* ٥٠ ٪ من الطفيل يفضل البقاء على جسم النحلة ، ٥٠ ٪ يفضل الإنتقال من نحلة الى أخرى .

* فى حالة وجود عيون سداسية مفتوحة بعدد كبير نتوقع وجود الفاروا .

المحاضرة الخامسة

Dr. Hung

قسم أمراض النحل الى :

- * فيروسى - بكتريا - عناكب - نيماتودا - فطريات .
- * هناك ١٤ فيروس مختلف يصيب النحل منها ١٠ فى أمريكا مثل أركنساس - الجناح الغير واضح - الحضنة المتحجرة - الشلل الذكى - فيروس حرف Y - إسوداد الخلية الملكية - كشمير .
- * طريقة التعرف على الفيروسات باستخدام الميكروسكوب الإلكتروني .
- * قمنا بدخول المعمل وشاهدنا أمراض الأكارين والنيوزيما أسفل الميكروسكوب وكذلك تعرفنا على برواز حضنه مصاب بمرض تعفن الحضنة الأمريكى وكذلك الحضنة الطباشيرية .

الثلاثاء ٧ / ٤

أجازة بمناسبة عيد الإستقلال

الأربعاء ٧ / ٥

عودة مرة أخرى الى مركز ابحاث النحل .

المحاضرة الأولى

Dr.Suzane Batra

هذه المحاضرة تناولت انواع نحل التلقيح وليس نحل العسل ومن الممكن ان نلخص المحاضرة فى النقاط التالية :

- * نحل يتعامل مع حبوب اللقاح وليس مع العسل .
- * ليس به ملكة وشغالة بمفهوم نحل العسل بمعنى انه فى الغالب حوالى ٩٠ ٪ من نحل التلقيح يحتوى على اناث (الحشرة الواحدة عبارة عن ملكة وشغالة)
- * هناك نحل متخصص فى تلقيح البرسيم الحجازى لان زهرته اكبر ويحتاج الى نحل ذو خرطوم اكبر ويعيش فى بلوك خشب (صناعى) وينشط فى الصيف وبقى السنة فى بيات .
- * فى اوربا روضوا النحل الطنان واستخدموه فى التلقيح فى الصوبات .
- * نحل التلقيح المصرى يعيش فى الأخشاب وكذلك فى البيوت الطينية ويوجد كذلك النحل القارض الذى يعيش فى ورق الأشجار بعد ان يقوم بقرض الورقة وعمل جحور بها .

المحاضرة الثانية

Dr. Schijy

عرض Dr. Schijy فى هذه المحاضرة الصفات الوراثية للنحل فى الولايات المتحدة الأمريكية ولعمل تحليل للصفات الوراثية للنحل بأنواعه المختلفة بحيث نمرر أنواع النحل محل الدراسة على المعايير الآتية (طول الجناح - الأرجل - زاوية ميل التعاريج فى الجناح)

ووضع تاريخ دخول النحل الى الولايات المتحدة الأمريكية .

الإيطالى	١٦٢٠
المصرى	١٨٦٦
قبرص - الشرق الأوسط	١٨٨٠
الأفريقى	١٩٩٠

المحاضرة الثالثة

Dr. Shimanuki

تحدث فى هذه المحاضرة عن أمراض النحل ومن الممكن ان نلخص المحاضرة فى الآتى :

* أن الأمراض تؤثر على منحنى الخلية ويحدث دمار وبالتالي ان النحال عليه المعول الأساسى فى الإكتشاف المبكر للأمراض وكذلك سرعة العلاج للحفاظ على قوة الخلية وهناك علامات لمعرفة المرض بمجرد النظر مثل :

- (١) الزحف على فتحة السراحة .
 - (٢) وجود نحل ميت أسفل الخلية .
 - (٣) وجود يرقة متحجرة أسفل الخلية .
- * الحركة السريعة من والى الخلية ليس دليل على قوة الخلية ومن الممكن ان يكون هناك سرقة .

* تعفن الحضنة الأمريكى

علامات المرض :

- (١) حضنه مقفوله لها شكل محدب ومخرمه .
- (٢) وجود عيون سداسية مفتوحة .
- (٣) قد تصل درجة لزوجة اليرقة الى ٢ سم .
- (٤) وجود شيء مثل اللسان فى داخل العين السداسية وذلك بعد موت الحضنة .
- (٥) وجود رائحة فى البرواز مميزة وقد قاموا فى بعض الولايات بتدريب الكلاب على هذه الرائحة .

العلاج :

لايوجد علاج لهذا المرض وكل مايمكن عمله هو حرق الخلية بالكامل وفى بعض الولايات يكتفوا بتعقيم الخشب مع حرق النحل .

* التعفن الأوربى

علامات المرض :

الحضنة مفتوحة واليرقة تموت أسرع من التعفن الأمريكى
اليرقة فى حالة الموت تأخذ جنب فى العين السداسية .

* الحضنة الطباشيرية

علامات المرض :

رائحة مشابهة مع رائحة الخضار

اللون الأبيض : حامل لجنس واحد

اللون الرمادي : حامل للجنسين ذكر وانثى على اليرقة الواحدة لذلك يعطى اللون الرمادي .
الخلية المصابة بالحضنة الطباشيرية تفرز رائحة (حامض اللوريك) يمنع الإصابة بالتعفن الأوربي - الأمريكى .

* الأكارين

العلاج :

(١) كيماموى : عن طريق المنتول يوضع فى صرة من القماش ويوضع فى الجزء الخاص بالحضنة من اعلى عبارة عن ٥٠ جرام للخلية . ويلاحظ ان المنتول حساس جداً لدرجة الحرارة بمعنى إذا زادت درجة الحرارة عن ٢٦ ° يبدأ النحل فى الهيجان .

(٢) الطبيعى : عجينة نصف كيلو للخلية تحتوي على

سكر بودره + زيت نباتى غير مهدرج

١ + ٢

* النيوزيما

معناه الغير مرئى No see them

يعمل هذا المرض على قصر عمر النحل البالغ ومسئول عن تخفيض ناتج العسل بنسبة ٤٠ % .

ينتشر فى الخريف والشتاء وبداية الربيع ويصل الى القمة فى ابريل .

العلاج :

يتم السيطرة عليه باحد المضادات الحيوية (فيومى جيل)

١٠٠ مجم فيومى جيل + المحلول السكرى بنسبة ١ : ١

يضاف ٨ لتر للخلية

* الشلل

علامات المرض : وراثى

* سقوط شعر النحل وهذا ناتج عن شعور النحل بأن النحلة المصابة غريبة عن الخلية فيبدأ فى خلع شعرها .

* يلاحظ النحل فى حالة زحف امام فتحة السراحة .

العلاج :

تغير الملكة على ان يكون مصدر الملكات من مكان بعيد لأن السبب فى هذا المرض هو التزاوج الداخلى .

المحاضرة الرابعة

Dr.Shimanuki

في هذه المحاضرة بين Dr.Shimauki كيفية استخدام التراميسين في علاج امراض الحضنة ووضح في البداية ان المرض يعتمد على العائل بالإضافة الى الجرثومة

مرض	←	عائل + جرثومة
التحكم في الجرثومة عن طريق	✓	↓
- العلاج الكيماوى		النحل ويمكن التحكم في
- التعقيم والتبخير		العائل بانتقاء سلالات
		ملكات مقاومة للأمراض

* استخدام التراميسين في علاج امراض الحضنة

- طريقة العلاج مرة واحدة في السنة وذلك في فترة الربيع .

طريقة (١) :

للخلية ⇒ زيت نباتى متجمد غير مهرج + سكر بودره + تراميسين
١٥٠ جرام + ٣٠٠ جرام + ١٢,٥ جرام

وتشكل على هيئة فطيرة توضع على برواز الحضنة

طريقة (٢) : التعفير

خلط التراميسين مع سكر البودرة والتعفير الدائرى على حزام الحضنة

سكر بودرة + تراميسين
٢,٨ جرام + ٣,٨ جرام

طريقة المعالجة : ٣ معالجات بين كل مرة واخرى من ٣ الى ٤ أيام وذلك في فترة الربيع

الخميس ٦ / ٧ OHIO STATE

السفر الى ولاية أوهايو OHIO STATE حيث كان في استقبالنا في المطار المنسق المحلى

في الولاية Mr. Michael Sayers

* ذهبنا بعد ذلك الى فندق Red Roof Inn وتم تسكيننا في الغرف وذهبنا بعد ذلك الى مكتب منظمة VOCA وقابلنا Ms. Diana التى قامت بالترحيب بنا وشرحت لنا اسلوب عمل المنظمة فى ترتيب زيارات المتطوعين .

* توجهنا بعد ذلك الى منزل والد مايكل الذى رحب بنا بدوره وتعرفنا من خلال الزيارة على طبيعة المنزل الأمريكى وطبيعة السلوك داخل المنزل .

الجمعة ٧ / ٧

- * توجهنا فى الصباح الى مركز بحوث النحل فى كولمبس وقابلنا Dr Suzan Colby التى قامت بشرح عملية التلقيح الصناعى وعرضت الأجهزة المستخدمة لذلك . وقمنا بمشاهدة خلايا النحل الخاصة بالتجارب كما شاهدنا تجربة وجود ملكتين فى خلية واحدة .
- * وتوجهنا بعد ذلك الى المركز الإسلامى فى كولمبس وأدينا صلاة الجمعة .

السبت ٧ / ٨

جولة حرة

الأحد ٧ / ٩

جولة حرة

الإثنين ٧ / ١٠

- * فى صباح ذلك اليوم توجهنا الى زيارة مركز بحوث النحل وشاهدنا هناك تاريخ حياة النحل وتطور النحلة من خلال متحف المركز . وكذلك شاهدنا بعض الخلايا القديمة والتى اعيد تشغيلها ويرجع عمر الخلية الى عام ١٨٦٣ .
- * وكذلك شاهدنا فكرة التغذية المكشوفة وهى عبارة عن برطمان زجاجى يوضع على احد اجناب فتحة السراحة مقلوب ومتقب الفوهه حيث يبدأ النحل فى سحب المحلول السكرى عن طريق الثقوب الموجودة فى فوهه الغذائية .
- * كذلك توجهنا الى منحل الأبحاث الخاص بالمركز .
- * وكان المركز فى حالة تأهب واستعداد لإستقبال المؤتمر السنوى للنحالين وكذلك شاهدنا وحدة الفرز الآلى الخاصة بالمركز .

الثلاثاء ٧ / ١١

- زيارة الى مصنع تعبئة عسل Bruce Bdlinger وعملية التعبئة تتم كالاتى :
- * دخول العسل فى براميل أو حاويات بلاستيك زنة ١٢٧٠ ك تقريبا من (الأرجنتين - الصين - كندا - محلى)
- * يمر العسل (براميل) على غرفة التسخين المبدئى فى درجة حرارة ٣٥°
- * وبعد ذلك تمر براميل العسل بسعة ١٠٤٣ ك على غرفة التسخين النهائى فى درجة حرارة ٥١,٦° وهى عبارة عن مواسير بخار ساخن يوضع فوقها البراميل .
- * بعد عملية التسخين يترك العسل ١٢ ساعة لإزالة المخلفات والشوائب ويسخن مرة أخرى فى درجة حرارة ٦٠ م
- * يتم اضافة بودرة عبارة عن محار بحر مطحون قدم مكعب لكل ٦٠٠٠ رطل عسل فى درجة حرارة ٦٠ م وذلك لحفظ العسل من التجميد .
- * بعد ذلك يدخل العسل فى درجة حرارة ٧٣,٨ م استعدادا للفلتره .
- * يمر العسل فى عملية الفلتره على ورق ترشيح سمك ١مم بأبعاد ٤٠ X ٤٠ سم

* بعد عملية الفلترة يرفع العسل من خلال خط انابيب الى تلك سعة ٧,٥ طن ويترك لمدة يومين وذلك لاتمام عملية الإيضاج وبعد ذلك تبدأ عملية التعبئة ويوجد خطين تعبئة :

(١) التعبئة فى براميل سعة ٣١٢ ك فى درجة حرارة نهائية ٤٦,١ ° م

(٢) التعبئة فى عبوات زجاجية فى درجة حرارة ٤٦,١ ° م

الأربعاء ١٢ / ٧

زيارة الى معرض بيع أدوات نحالة

* فى تلك الزيارة شاهدنا ادوات النحالة من (برواز - عتله - قناع - مدخن - صارف نحل)

* وتم عمل مقارنة بين طرق تصنيع أدوات النحالة فى امريكا مقارنة بمصر .

* وجدنا ان صناعة شمع الإنارة باشكاله المختلفة هى صناعة رائجة حيث تستخدم تلك الشموع فى المناسبات وطريقة تصنيعها بسيطة وغير مكلفة حيث تعتمد على مخلفات شمع النحل .

الخميس ١٣ / ٧

فى ذلك اليوم توجهنا الى زيارة مركز ارشاد جامعة اوهايو وتعرفنا على الآتى :

* انواع الحشرات الإقتصادية ومن ضمنها النحل الذى يقوم بعملية جمع الرحيق وحبوب اللقاح .

* تعرفنا على كيفية انشاء المناحل والضوابط المنظمة لذلك .

* طريقة رش المبيدات وان هناك فريق متخصص فى ذلك وهذا الفريق مسئول عن اختيار المبيد المناسب لمقاومة نوع الإصابة .

* وعلمنا الدور الذى يلعبه الإرشاد فى رفع التوعية الزراعية بوجه عام للوصول الى أعلى انتاجية .

الجمعة ١٤ / ٧

* فى صباح ذلك اليوم توجهنا من الفندق الى مقاطعة ليما وبحثنا عن المركز الإسلامى فى المقاطعة وادينا صلاة الجمعة وقد قام المنسق المحلى بجهد مشكور فى هذا المجال وحرصه على العثور على هذا المركز لتؤدى المجموعة صلاة الجمعة .

* بعد صلاة الجمعة توجهنا الى مصنع تعبئة عسل Stoller Honey

* شاهدنا عملية التسخين المبدئى للعسل فى غرفة تحتوى على مواسير بخار يوضع فوقها براميل للعسل . وكذلك شاهدنا عملية الفلترة والتعبئة فى براميل .

* يقوم المصنع بعمل كريمة العسل من خلال مزج العسل والفاكهة الطبيعية فى وعاء كبير مع التسخين والدوران السريع (آلى) وبعد ذلك تعبأ الكريمة وتحفظ فى ثلاجات .

السبت ١٥ / ٧

زيارة الى حديقة الحيوان

الأحد ١٦ / ٧ Washington State

السفر الى Washington State

* وصلنا الى المطار وكان في استقبالنا المنسق المحلى فى الولاية Mr. James Bach وبعد ذلك ذهبنا الى الفندق .

الاثنين ١٧ / ٧

* تنفيذاً للبرنامج الموضوع إجتمع بنا Mr. Bach فى حديقة الفندق وعرض لنا خطة العمل وكيفية تنظيم برنامج الرحلة فى الولاية ، وفى خلال اللقاء نفسه تم طرح بعض الأسئلة ومائتمنى مشاهدته من خلال الزيارات ، وبعد ذلك تحركنا لعمل جولة حرة .

* فى مساء ذلك اليوم ذهبنا لحضور تجمع النحالين السنوى بدعوة من رئيسة الجمعية وبترتيب من المنسق المحلى وتقابلنا مع النحالين وتم طرح الأسئلة من كلا الطرفين للوقوف على مستوى النحالة فى كل من مصر وامريكا .

الثلاثاء ١٨ / ٧

* فى صباح ذلك اليوم حضر الى الفندق Mr. Robert Zahler وتوجهنا بالسيارة لزيارة مصنع مستلزمات نحالة (Beez Need) وشاهدنا عملية تصنيع البرواز وكيفية تشميع البرواز وتثبيت الشمع من خلال آلة لحام شمع تعمل على (١٢ فولت - ٢ امبير) وطريقة وضع الشمع من خلال سلك البرواز وهذه الطريقة - المتبعة فى أمريكا - من شأنها المحافظة على الشمع ولايوجد نسبة تالف وكذلك توفر الوقت والجهد .

* بعد ذلك توجهنا لزيارة نحال Mr. Ron Babcock

- هذا النحال يقوم بجمع حبوب اللقاح وكذلك شاهدنا ماكينة تنقية حبوب اللقاح من الشوائب وهى من ابتكاره . وكذلك شاهدنا خلايا نحل خاصة به أعلى قمة جبل وهو يعتمد فى هذه المنطقة على الحشائش الجبلية مثل زهرة حشائش النار .

- تعرفنا من هذا النحال اننا فى حالة التعامل فى انتاج عسل القطاعات نضع فى الدور الأول للخلية جميع براويز الحضنه مع وضع حاجز ملكات ثم بعد ذلك نقوم بوضع الدور الثانى ونضع ١٠ برواز قطاعات مرة واحدة وذلك دون التدخل منا فى نفض النحل فى الدور الثانى ونترك النحل يعمل دون الحاجة الى التدخل فى شئون عمله .

- عدد الخلايا ١٥٠ خلية

- الإنتاج ٣٠٠ x ١٦ برميل = ٥٤٠٠ ك

- متوسط انتاج الخلية ٥٤٠٠ ك ÷ ١٥٠ = ٣٦ ك / خلية

- متوسط انتاج الخلية فى الأسبوع من حبوب اللقاح

١,٥ ك x ٨ \$ = ١٢ \$ / اسبوع / خلية

- توضع مصيدة حبوب اللقاح من شهر مايو الى شهر اكتوبر

- يستخدم هذا النحال برواز القطاعات البلاستيك .

الأربعاء ١٩ / ٧

* زيارة الى نحال Mr. Jim Pefely

- عدد الخلايا ٦٠٠ خلية
- الانتاج ٣٠٠ كيلو x ٦٠ برميل = ١٨٠٠٠ ك
- متوسط انتاج الخلية = ٦٠٠ ÷ ١٨٠٠٠ = ٣٠ ك / خلية
- لديه تلك مرفوع على شاسيه عربيه سعة ٣٠٠ جالون ١٢ م ٣ لتغذية الخلايا لحفظ المحلول يضيف مادة Tar tar حيث يمكث المحلول السكرى فى التلك لمدة شهر .
- يقوم هذا النحال بتأجير خلاياه فى موسم الخيار حيث ذهبنا الى مكان الخلايا فى ارض الخيار وذلك لرفع القيمة الإنتاجية للخلية حيث يتقاضى مبلغ ٣٥ دولار لكل خلية فى موسم التلقيح..

الخميس ٢٠ / ٧

- * زيارة مصنع تعبئة يملكه Mr. Ron Knopp ويعمل هذا المصنع لتعبئة انتاج العسل خاصة Mr. Knopp ولايعمل لحساب الغير..
- قام Mr. Knopp بشراء هذا المصنع من حوالى عام بعد ان كاد يوشك على الإفلاس لسوء ادارة من المالك السابق . وبدأ Mr. Knopp فى اعادة بناء وتجديد المصنع وبدأ فى بناء جسور الثقة بينه وبين المستهلك..
- لم نشاهد عملية الفرز والتعبئة لأن عملية الفرز سوف تبدأ بعد حوالى اسبوعين من هذا التاريخ..

- وكذلك شاهدنا المنحل الخاص Mr. Knopp

عدد الخلايا ١٥٠٠

الانتاج ٣٠٠ ك x ١٥٠ برميل = ٤٥٠٠٠

متوسط الإنتاج ٤٥٠٠٠ ÷ ١٥٠٠ = ٣٠ ك

- * فى ذلك اليوم ايضاً توجهنا الى زيارة مصنع تعبئة عسل Silverbow Honey Co. وشاهدنا الآتى :

- عملية التسخين المبدئى لبراميل العسل وذلك فى غرفة التسخين عبارة عن مواسير بخار يوضع فوقها براميل العسل
- وكذلك شاهدنا عملية الفلترة وتعبئة المنتج النهائى فى جراكن بلاستيك سعة ٢ ك حيث وجد من الدراسة ان هذه العبوة اكثر قبولا فى السوق .
- وكذلك شاهدنا جهاز قياس كثافة العسل ويميز بين درجة لون العسل المطلوب من خلال عينة ثابتة فى الجهاز كمعيار .
- وشاهدنا اسلوب عمل كريمة العسل واسلوب حفظها بالتبريد .

الجمعة ٢١ / ٧

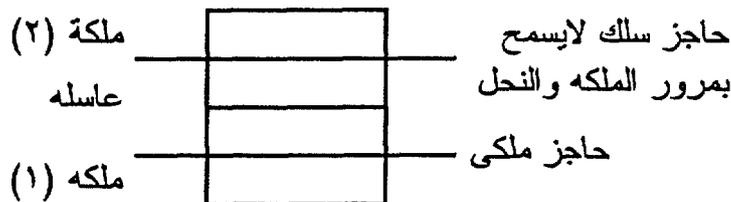
* زيارة لنحال Mr. Glen McCabbins

- يعتبر اكبر نحال فى الولاية وكذلك يمتلك ١٣٠٠ فدان منزرعة برسيم حجازى
- عدد الخلايا ٥٠٠٠ خلية
- الانتاج ١٢٥ ك / خلية x ٥٠٠٠ = ٦٢٥,٠٠٠ ك
- قمنا بمشاهدة المنحل الخاص به وطريقة إدارته للمنحل حيث لايدخل فى الشئون الخاصة بالملكة (السير خلف الملكة) وليس العكس . وشاهدنا اسلوب التغذية بمحلول سكرى عبارة عن ١٢ لتر / خلية تركيز ٧٠ ٪ فى السنة
- يقوم بتغيير الملكات بنسبة ١٠٠ ٪
- يستخدم البرواز البلاستيك بكامل قوة المنحل لأن اسلوب الفرز لديه كله آلى .

- لديه نحل تلقيح فى بلوك خشب يوجد فى ارض برسيم حجازى ١٣٠٠ فدان .
- شاهنا اسلوب التعبئة النهائية فى براميل وكذلك اسلوب الفرز الآلى ولديه فى المصنع سعة ٩٥٠٠ ك / يوم - ٢ عمال فقط ولايقوم بتعبئة عسل للغير بل قاصر على العسل الخاص به فقط .

* بعد ذلك توجهنا الى زيارة نحال Mr. Lee Massey

- عدد الخلايا ١٥٠٠ خلية
- الإنتاج ٤٥ ك / خلية x ١٥٠٠ = ٦٧٥٠٠ ك
- شاهدنا فكرة الخلية ذات الملكتين حيث ان رائحة العطر الملكى للملكتين تشجع النحل على العمل وبالتالي زيادة المحصول حيث يصل انتاج الخلية الواحدة بهذه الفكرة الى ٧٥ ك .



- (بعد موسم الفيض تقوم بضم الخليتين دون التخلص من اى من الملكتين بل نترك الصراع بين الملكتين والبقاء للأفضل .

* ملحوظة :

فى حالة تغير ملكة قديمة نضع العذراء مع الملكة فى الخلية فى وقت واحد البقاء للأفضل.

* الفكرة :

إن القتال يبدأ بين العذراء والملكة وغالباً ما يكون الإنتصار للعذراء لأن جسمها لين ومرن .

* مفهوم خاطيء :

هناك مفهوم خاطيء يعتقد فى أن القتال يكون بين الملكة + النحل من جهة والعذراء من جهة أخرى .

السبت ٧/٢٢

أجازة - جولة سياحية

- (شاهدنا The Grand Coulee Dam وعلمنا معلومات عن عملية إنشاء السد من خلال مركز البيانات الموجود فى منطقة السد .

الأحد ٧/٢٣

زيارة لمصنع تعبئة يملكه Mr. . Eric Olson .

- شاهدنا طريقة الفرز الآلى والتعبئة فى عبوات وتحدث معنا Mr.Olson عن طريق تسويق المنتج من خلال البيع إلى سلسلة محلات (Fred Mayer) حيث أنه متعاقد مع هذه المحلات لتسويق العسل الخاص به .

الاثنين ٧/٢٤

قمنا بزيارة إلى شاطئ المحيط الهادى .

الثلاثاء ٧/٢٥ Washington D.C

السفر إلى Washington D.C

توجهنا إلى فندق Carlyle Suites

الأربعاء ٧/٢٦
جولة حرة في الولاية .

الخميس ٧/٢٧

- ذهبنا في الصباح إلى مكتب المنظمة وتم من خلال المقابلة مع MS. Mona M'rd , MS. Tame
- تقييم برنامج الرحلة والوقوف على نقاط القوة والضعف في البرنامج .
- تسلم كل منا شهادة إتمام برنامج تبادل خبرات المزارعين وكذلك تسلمنا مبلغ \$ ٥٠ .

التقييم

برنامج ولاية واشنطن

- * الاستفادة كانت رائعة وبرغم أن التنقل كان بصفة يومية للإنتقال من زيارة إلى أخرى وبرغم الإرهاق البدني والذهني إلا أن البرنامج كان موفق للغاية حيث كانت الزيارات مشتملة على (زيارة المناحل - معاهد البحث - مصانع التعبئة - أدوات النحالة) وبالرغم من تكثيف البرنامج إلا أنه لم يخل من الترفية .
- * أشكر للمنسق المحلي Mr. James غزارة معلوماته وأدبه الجم في التعامل وحرصه على الاستفادة المجموعة الكاملة .

برنامج ولاية أوهايو

- * لم يكن على المستوى الجيد حيث ركز البرنامج على زيارة معاهد البحث ومصانع تعبئة العسل و لم نقم بزيارة المناحل في الولاية .
- * أشكر المنسق المحلي في الولاية لما أبداه في الحرص على راحة المجموعة من حيث البحث عن المراكز الإسلامية لأداء صلاة الجمعة .

برنامج Washington D.C

- تعتبر أكبر استفادة في برنامج الرحلة زيارة مركز أبحاث النحل حيث تعرفنا على أمراض النحل وكيفية العلاج .
- لم نشاهد عملية تربية الملكات طبيعياً .
- بالنسبة للفنادق كانت على مستوى جيد و الأسعار كانت مناسبة .
- بالنسبة لمنسقى البرنامج في مكتب واشنطن قاموا بمجهود مشكور في توفير المستحقات المالية و كذلك تنسيق حجز الفنادق و تنسيق برنامج الرحلة و كذلك أشكر لهم حسن الضيافة .
- بالنسبة للمترجم أ . هانى أبو على قام بدوره على أكمل وجه ولم يبخل على المجموعة بالمجهود سواء في عمله الرسمي أو في الجولات الحرة شاكرين له حسن تعاونه معنا .
- بالنسبة للمستحقات المالية كانت كافية جداً ولم أتخيل هذا المبلغ (٢٩١٠,٠٠ \$) شيكات سياحية + نقدية . بل كنت أتوقع أقل من هذا .
- بالإضافة إلى \$٥٠ في واشنطن D . C بإجمالى ٣٠١٠ \$

الإستفادة من البرنامج

- كيفية الإدارة الصحيحة للمنحل مع مراقبة وكيفية التكيف مع النحل وليس العكس مع عدم المساس بعسل تغذية النحل .
- كيفية تغطية ربحية المنحل من خلال تنوع مصادر الدخل مثل إنتاج حبوب اللقاح .
- رؤية تجربة الخلية ذو الملكتين .
- الإهتمام بالكيف وليس بكم الخلايا .
- رؤية مصانع تعبئة العسل وإسلوب التغليف - كيفية معالجة الأمراض .

إمكانية التطبيق في مصر

- رفع كفاءة الخلية عن طريق الاكتشاف المبكر للأمراض و المحافظة على غذاء النحل إن امكن ذلك و كذلك المحافظة على وضع بدائل حبوب القاح و استخدام الوسائل الطبيعية لمقاومة الأمراض .
- الأهتمام بتنوع مصادر دخل المنحل (إنتاج عسل - إنتاج حبوب القاح) .

المنيا في ١٢ من ربيع الأول ١٤١٦ الموافق ٩ من أغسطس ١٩٩٥ .

مروان محمد مروان


٩٥/١١/٩

**FARMER-TO-FARMER PROGRAM EVALUATION
VEGETABLE PRODUCTION PROGRAM
October 18 to November 13, 1995**

Program Summary

Six vegetable producers, one extension agent, and an ACDI escort/interpreter arrived in Washington, D.C. on October 18, 1995 to study vegetable production in the United States. The participants learned about vegetable farming including drip irrigation, soil conservation, and integrated pest management.

Washington, D.C.

In Washington, D.C., the participants attended a program orientation to explain the focus of their U.S. training and an evaluation to learn how they benefited from the training. They also met with Ms. Lobna Ismail who conducted a cultural briefing.

Arizona

Mr. Joseph Hickey who is a former VOCA volunteer arranged the Arizona program. Participants attended a workshop on the use of farm by-products and participated in demonstrations on intensive gardening techniques. They were also received at the Arid Land Studies and Research Center at the University of Arizona. While in Arizona, the group visited the Maricopa Agricultural Center for Farming and Research as well as a large drip irrigation farm where participants discussed the benefits of drip irrigation for cotton and vegetable production. Near Tubac, Arizona, Mr. Hugo Samueza of the "La Mirage" farm and Institute for Animal Traction and Non-Mechanized Farming demonstrated watermelon harvesting operations to the participants. The training program in Arizona also included meetings with the Cactus Seed Company to discuss seed production; SouthWest Transplants Corporation to discuss farming with transplants; the Arizona Biological Control Company to study integrated pest management and biological controls for pest management as well as University of Arizona Agricultural Extension Dairy Farm.

Missouri

Ms. Jeannie Schwaller, an independent consultant, organized the Missouri program. While in Missouri, participants visited the Missouri Botanical Garden Research facility conducting research on new vegetable varieties. The group visited Wholesale Product Market in St. Louis where participants observed how vegetables are transported, stored, and distributed to the St. Louis area's retail and restaurant businesses. Participants visited Hummert International, a large horticulture supply firm doing business in Egypt, to discuss the products available to them as well as a variety of vegetables that do well in Egypt. They also learned about drip irrigation. In Missouri, the group visited also Monsanto - the world's largest research

company in genetic engineering. Monsanto staff discussed with participants how both chemicals and genetic alteration affect production.

Training Impact

Mr. Bashah owns a 10-feddan farm, 5 feddans of tomatoes, 4 feddans of cucumbers. He has 35 years of experience in agriculture. Mr. Bashah has had two visits from U.S. volunteers and 3 follow-up visits from FTF staff. While in the U.S., Mr. Bashah wanted to learn about integrated pest management. He was impressed with biological controls applied to vegetable farming protecting against different diseases. He has been using mostly chemical controls but plans to contact research centers in Egypt in order to implement wide scale biological controls. He observed various climate control techniques in greenhouses.

Mr. Amer owns a 6 feddan farm. He grows tomatoes, peppers, and cucumbers, and also has a greenhouse. He has six years of experience in agriculture. Mr. Amer has received 3 visits from U.S. volunteers and 5 follow-up visits from FTF staff. To some extent, he uses biological controls in his vegetable production. Mr. Amer benefited from observing integrated pest management.

Mr. Elsayed owns and manages a six feddan farm, 3 feddans of which are tomatoes. He has been involved in agriculture for 10 years and has received visits from 2 VOCA volunteers and 3 follow-up visits from FTF staff. During his U.S. training, Mr. Elsayed focused on integrated pest management (IPM) during his U.S. training. He plans to organize an association in Egypt to introduce IPM on a wide scale. Mr. Elsayed also learned natural methods for crop development.

Mr. Ali owns a 30-feddan farm. He grows tomatoes, eggplant, and cucumbers and has 30 years of experience in agriculture. Mr. Ali has received 3 visits from U.S. volunteers, and 5 follow-up visits from FTF staff. Mr. Ali's objective in the U.S. training was to learn how to control white fly. He observed various natural techniques to control the white fly. He observed that in the U.S. yellow sticker traps and the use of beneficial insects are some examples of these techniques. The yellow sticker traps are used in Egypt. Mr. Ali is planning to implement the use of beneficial insects.

Mr. Ghattas supervises 10 extension agents who cover an area of 10,000 feddans of vegetables (mostly tomatoes). He has 20 years of experience in agriculture. Mr. Ghattas has accompanied 4 U.S. volunteers on their farm visits and 9 FTF field assistants on follow-up visits. Mr. Ghattas learned a great deal about integrated pest management, namely the decrease in useage of chemicals. Mr. Ghattas was able to see first hand how IPM methods are utilized by American farmers.

Mr. Temraz owns a 40-feddan farm. He grows tomatoes, potatoes, grapes, and mandarins. Mr. Temraz has thirty years of experience in agriculture and has received 4 visits from U.S. volunteers as well as 6 follow-up visits from FTF staff. Mr. Temraz has a small laboratory in Egypt which he uses for tissue culture in bananas. He visited similar facilities in the U.S. and now plans to expand his lab work to other varieties of fruits and vegetables.

Mr. Khalifa owns and manages 11 greenhouses. He grows peppers, tomatoes and cucumbers and has 20 years of agricultural experience. Mr. Khalifa has received two visits from U.S. volunteers and three follow-up visits from FTF staff. Mr. Khalifa also learned new integrated pest management methods utilized in the U.S. He is planning to decrease the useage of chemicals in his own production.

Conclusions/Recommendations

Overall, the group was very pleased with the U.S. training. In addition to the above listed experiences, participants observed management, production, marketing, packaging, and distribution of vegetables. Participants were especially impressed with the marketing system in the U.S., the balance between production and consumption, as well as post-harvest handling (sizing, packaging, distribution). The group was introduced to new varieties of apples, tomatoes, and lettuce which could be introduced in Egypt.

FARM VISIT REPORT

FARM OWNER NAME: Essam Amir El-Taweel
DATE OF VISIT: 09/18/1995
VISIT NO: 1
GOVERNORATE: Minya
VILLAGE: Bany Saied
CROP: Beekeeping
U.S. VOLUNTEER: Anne Harman & Ernest Miner
EXTENSION AGENT:
TRANSLATOR/F.A.: Hany M. Abou Ali

Problem 1: The erratic and frequent spraying of insecticides on cotton, forage and honey plants, greatly reduces the field population of bees. In addition, beekeepers receive no warning of spraying.

Recommendation: Build up and keep colony strength high so that the loss of field bees will not significantly decrease the colony numbers of bees. The bees also will recover from spraying loss faster.

Problem 2: Frames are broken and missing parts and frame wires are loose. Comb contains too much drone cell area with the result that the available brood area is only 1/2 to 2/3 of the comb. This problem produces many fewer bees.

Recommendation: In the spring, during heavy nectar flow, repair frames and make them fit into the hive correctly. Tighten wires to remove all slack and install new foundation. Turn in the old foundation and use comb as wax.

Problem 3: Low hive population in September, winter months and entering spring.

Recommendation: Feed bees 1:1 sugar syrup immediately to simulate brood rearing. Feed 1:1 sugar syrup in spring to increase brood. Feed 1:1 sugar syrup whenever bee population is low. Add second brood chamber in spring for increased brood, provided the queen is laying well.

- Problem 4:** The wasp, *Vespa Orientalis*, appears to be a major pest during winter months.
- Recommendation:** Attempt bait stations, with pesticides, near hives. A literature survey may give information on suitable means of preventing wasp predation. High colony strength can withstand wasp predation.
- Problem 5:** Loss of queens and low queen acceptance prevents good colony build up.
- Recommendation :** Requeen during heavy nectar flow. Requeen with mated queens if possible. Use minimal disturbance after queen introduction for about 3 - 4 weeks. Use marked queens for identifying supersedure queens.
- Problem 6:** Wax moths invade weak colonies and comb left in empty hives
- Recommendation:** Keep colony number of bees high to prevent damage by wax moth. Don't leave comb in empty hives.
- Problem 7:** Large colonies need to be able to ventilate the hive to maintain proper hive humidity and temperature.
- Recommendation :** Give large colonies full-width entrances and provide ventilation at top of the hive.
- Problem 8:** A few hives were tilted several centimeters from level. Colonies have difficulty making and using comb with this condition.
- Recommendation:** Place colonies level from side to side, with rear of hive one centimeter (maximum) higher than front.
- Other comments:** In the future, cooperation between cotton growers, spraying operations and beekeepers should benefit beekeepers in the vicinity of cotton fields.

APPENDIX B

**LETTERS REQUESTING
TECHNICAL ASSISTANCE FROM FTF**

H.E Dr. Youseff Walli
Deputy Prime Minister
and Minister of Agriculture
and Reclaimed Land

The National Mubarak Project for the new graduates cooperates with many projects in the fields of development and agriculture. I would like to inform you that it is very essential for the new graduates to acquire knowledge from all related projects, specially the Farmer to Farmer Program, which we have been dealing with ever since 1991 in Bangar El Sokar, Nubaria and Boustan.

During your cooperation with FtF program, 34 new graduates out of 250 farmers had the opportunity to travel to the United States to receive on-farm training in the production of vegetables, fruit, livestock and beekeeping. The participant training program played an effective role on strengthening and developing the new graduates' agricultural knowledge, information and technical skills. It also left a positive effect on the agricultural production of the graduates and their colleagues.

This encouraged other graduates to improve their farming, due to the social and educational training that was gained from the participant training program. The FtF program helped in developing rural core leaders out of the new graduates.

The graduates also benefited from the training sessions and farm visits that were conducted by U.S. volunteers and the follow up visits that were carried out by FtF Field Assistants. The amount of graduates involved in the activities of the FtF program is very little compared to the large amount of new graduates in Egypt.

They are capable of responding to new technologies and technical recommendations, therefore, we need to duplicate and intense our efforts to help the graduates to benefit from the FtF program.

Yours sincerely,

Hosney Mohamed Koraem
Executive Director

(H.E. Dr. Youseff Wallie's comments: " Mamdouh Reyad, kindly help the graduates to join the participant training program to the States to gain more from the FtF Program.")

بسم الله الرحمن الرحيم

وزارة استصلاح الأراضي
مشروع مبارك القومى لتنمية وخدمة
أراضى شباب الخريجين

مذكرة للعرض على

السيد الأستاذ الدكتور / نائب رئيس الوزراء
وزير الزراعة واستصلاح الأراضي

متممة
بمتممة

تعاون مشروع مبارك القومى لشباب الخريجين مع العديد من البرامج والمشروعات المشتركة الطامحة لتطوير
مجال الزراعة والتنمية فى إطار توجيهات سيادتكم بضرورة استفادة شباب الخريجين من جميع المشروعات وسن
بين هذه المشروعات مشروع تبادل خبرات المزارعين (مزارع الى مزارع) والذي بدأنا التعاون معه فى
مناطق بنجر السكر والتوبارية والبتان منذ عام ١٩٩١ .

ومن خلال هذا البرنامج اتاحت الفرصة لحوالى ٢٤ خريج من احدى حوالى ٥٠ مزارع فئات أخسرى
للسر الى الولايات المتحدة الأمريكية للتدريب فى مجالات انتاج الخضر والفاكهه والأشجار الحيوانى والسحر
بالإضافة الى عقد الندوات التدريبية والتي استفاد منها الخريجون فضلا عن زياره المزارعين الأمريكىين
المبداية لمزارع الخريجين فى هذه المناطق وكذلك زيارات السابعة لمهندسى المشروع .

الأمر الذى اتاح الفرصة للخريجين لتسليم معارفهم ومعلوماتهم الزراعية وتطوير مهاراتهم الفنية وقد كان
لسفر هؤلاء الخريجين كبير الأثر فى زيادة إنتاجيتهم ونتاجية زملائهم الخريجين وعاطفياً بغيرهم لتدعيم ونسب
زراعاتهم فضلا عن الأثر الاجتماعى والتماعى النامول من هذه الرحلات التدريبية وكذلك تعاون هذا المشروع مع
اعداد كوادى ريفية من بين هؤلاء الخريجين .

الا أن حجم مشاركة الخريجين فى أنشطة المشروع (مزارع الى مزارع) لا تتناسب مع اعداد ومساهمات
ومناطق الخريجين على مستوى الجمهورية ونظراً لأن هؤلاء الخريجون هم الأنداء والأكثر تطوراً واستجابتهم
تقنيات الضد والتفنية الحديثة .

فقد تروون سيادتكم تكثيف ومضاعفة اعداد الخريجين المستفيدين من المشروع ما أمكن .

وتتفضلوا بقبول فائق الاحترام ،،،

المدير العام

مهندس زراعى / محمد كرم

(حنى محمد كرم)

الهيئة العامة
لتنمية واستصلاح
الأراضي
مكتب مدير عام
القاهرة

تخريج الخريجين بمفردهم في يوم السبت ١٠/٤/٩٦
مستورع ١٩٦٢
مستورع ٩٦
مستورع ٩٦
مستورع ٩٦

AGRICULTURE RESEARCH CENTER
Office of
International Research Programs

Mr. Mahmoud H. Kamel
Project director
F to F/ ACDI

Dear Mr. Kamel :

I am pleased with F to F Program, the way it's conducted and the achievements reached during the first phase.

We are equally pleased with the impact of program on the farmers and the production. In order maximize benefits we wish to see that the program be expanded and to increase the areas of focus. Therefore, it's our pleasure to propose some ideas concerning this program which would be developed for the next phase. We will be glad to discuss these ideas further in our next meeting.

In waiting to hear from you, please accept our regards.

Sincerely Yours,


Dr. Youssef Hamdi 18/2/93
Director of

International Research Programs

PROPOSALS FOR F to F PROJECT
FUTURE PHASE

- 1 - Seminars: Asking US experts to give seminars for Egyptian specialists, private sectors...etc.
- 2 - Data Base: Data base about producers and ortres (general & private sector).
- 3 - In Country Training:
Experts from US to give in country training to the farmers....possibly through training the trainers. Also, Egyptian research centers can carry training for small farmers in a special technology.
- 4 - Additional Offices:
Increase the number of offices to cover wider range of farmers and also regions e. g. additional office in Ismaelia (including Saini area) and Menya or Assuit for Upper Egypt.
- 5 - Introduction of both Plant and Animal Germplasms,:
Plant Varieties and animal breeds to be tested and promoted in Egypt.
- 6 - Production-in Egypt for a third party Farmers are encouraged :
to produce certain comodoty in Egypt. The products are exported either to US or other country.
- 7 - Research Projects:
It is possible that small project contracts are carried with Egyptian University and agricultural research centers to solve certain problems.
- 8 - Women in Developments:
Attention should be given to women farmers and also women workers to develop special skills.
- 9 - Special Subprojects:
This may include workshops, seminars, special services...etc.

ALEXANDRIA UNIVERSITY
Faculty of Agriculture
Dept. of Economic Entomology

Att.: Mr. Abel Razik Helmy
Farmer to Farmer Program Director

The Association of Beekeeping Production is a newly established association, whose members are interested in the field of honey production.

As we need technical support to develop and activate the association's methods, regarding modern equipment as bee Insemination, we request your kind aid if possible.

CHAIRMAN
Dr. Mohamed Abbass Abdel El-Latif
Professor Economic Entomology and Beekeeping
Faculty of Agriculture - Alexandria University

HEAD OF ECONOMIC ENTOMOLOGY DEPARTMENT
Professor Economic Entomology
Faculty of Agriculture - Alexandria University

بسم الله الرحمن الرحيم

ALEXANDRIA UNIVERSITY
Faculty of Agriculture
Dept. of Economic Entomology



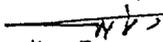
جامعة الاسكندرية
كلية الزراعة
قسم الحشرات الاقتصادية

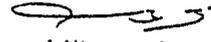
السيد المهندس / مدير مشروع مزارع الى مزارع

تحية طيبة وبعد

جمعية مربى النحل ومنتجاته جمعية وليدة اعضاؤها من المهتمين في مجال تربية نحل العسل
رجاء التكرم بمساعدة الجمعية بامكانيات المشروع وذلك لتنمية وتشغيل عمل الجمعية خاصة بالاجهزة
الحديثة مثل جهاز التلقيح الصناعي لمكات نحل العسل • رجاء التكرم بمساعدة الجمعية بما يتوفر
لديكم من امكانيات •

ولكم بذلك جزيل الشكر ، ، ،

رئيس مجلس قسم الحشرات الاقتصادية

دكتور فاروق محمد حلمي الجيار
استاذ الحشرات الاقتصادية
كلية الزراعة - جامعة الاسكندرية

رئيس الجمعية

دكتور محمد عباس عبد اللطيف
استاذ الحشرات الاقتصادية وتربية النحل
كلية الزراعة - جامعة الاسكندرية

ATT.: AGRICULTURAL CO-OPERATIVE DEVELOPMENT INTERNATIONAL:

FARMER TO FARMER PROGRAM

The Aqua-culture Co-operative in Fayoum Governorate, (Under Co-operatives Law, announced in the official newspaper No. 227 in 10/10/1993, registered in the Aqua-culture General Association No. 102 on 15/9/1993), would like to express to your goodselves thanks and appreciation. As the influence of your effort and support in the agricultural development sector in the Governorate was highly appreciated by the members of the Co-operative who admired the great technical assistance you provided them in their private farms which was of a great help in developing these farms technically and administratively.

The Aqua-culture Co-operative in Fayoum is a non-governmental, non-profitable association, which is funded only by members contribution. This is not adequate to finance the development activities we would like to do.

The Co-operative works in the field of establishing and developing aqua-culture farms and aims to:

- 1- Follow-up the different activities in establishing and developing the aquaculture farms, and offering the needed assistance to the members.
- 2- Carry-out social development in the area surrounding of the Co-operative.
- 3- Improve the social and financial standards of the Co-operative's members.
- 4- Issue the industries which rely on the aqua-culture.
- 5- Improve the systems and ways of production for aqua-culture farms and nursery ponds.

The Co-operative aims at assisting the members in developing their farms which represent 700 feddans from the aqua-culture farms. In addition the production of the aqua-culture is increasing year after the other, and to achieve these objectives, we are looking forward for the assistance of the Organization in supplying some tools and materials that helps in improving this activity in the Governorate, and these equipment are as follows:

- 1- Aeration Equipment for ponds.
- 2- Equipment needed for establishing Talapia Hatchery
- 3- Water quality analyzing equipment (temperature, dissolved oxygen....etc.)

The Co-operative is ready to prepare the suitable locations for training on these equipment and a special place to be as a center for members services.

The Co-operative again thanks the Organization, hoping that this co-operation will have a great influence on aqua-culture industry in Fayoum Governorate, which will help in enriching and enhancing the agricultural activities in Egypt.

نسادة المنظمة الدولية لتنمية التعاون الزراعى

برنامج تبادل خبرات المزارعين

حياة طيبة وبعد،،

تقدم الجمعية التعاونية للإستزراع السمكى بمحافظة الفيوم والتي تعمل من خلال قانون التعاونيات (والمشهرة بالجريدة الرسمية بالعدد رقم ٢٢٧ فى ١٠/١٠/١٩٩٣ والمسجلة بالهيئة العامة للثروة السمكية برقم ١٠٢ فى ١٥/٩/١٩٩٣) بأن تعبر عن شكرها لسيادتكم على مجهوداتكم المبذولة فى قطاع التنمية الزراعية بالمحافظة والذي ظهر بصورة ملموسة مع بعض أعضاء الجمعية الذين أشادوا بمدى تقديم المعلومة الفنية التي قدمتموها لسيادتكم لهؤلاء الأعضاء فى مزارعهم الخاصة بما انعكس على تطور هذه المزارع فنياً وكذلك من حيث إدارة هذه المزارع وحيث أن جمعية الإستزراع السمكى بمحافظة الفيوم هى أحد الجمعيات الأهلية الغير حكومية وتعتمد فى تمويلها على اشتراكات الأعضاء فقط الامر الذى يصعب معه تمويل الخدمات ذات التنمية الحديثة.

وحيث أن الجمعية تعمل فى مجال انشاء وتطوير وتنمية المزارع السمكية وتهدف إلى:

- ١- مباشرة أوجه النشاط المختلفة فى مجالات إنشاء وتنمية الثروة السمكية وتقديم الخدمات المستحقة لأعضائها.
- ٢- التنمية الإجتماعية فى منطقة عمل الجمعية.
- ٣- رفع مستوى أعضاء الجمعية إقتصادياً واجتماعياً.
- ٤- القيام بالصناعات القائمة على الإستزراع السمكى.
- ٥- تحسين نظم وأساليب إنتاج المرابى والمزارع السمكية.

وبما أن الجمعية ترمى إلى خدمة أعضائها فى تطوير مزارعهم والتي تبلغ إجمالى مساحاتهم ٧٠٠ فدان من المزارع السمكية وكذلك فإن نشاط تنمية الثروة السمكية فى ازدياد ملموس عام بعد آخر ولكى نوفى ونحقق هذه الأهداف فإننا نأمل فى تقديم المساعدة من قبل الهيئة فى توفير بعض الأدوات والخامات التى من شأنها الارتفاع بمستوى هذا النشاط بالمحافظة وتمثل هذه الأدوات فيما يلى:

- ١- المعدات الخاصة بعمليات التهوية لأحواض التربية.
 - ٢- المعدات الخاصة بإنشاء مفرخ سمكى لأسمك البلطى.
 - ٣- المعدات الخاصة بأعمال تحاليل المياه وتحديد درجات الحرارة ونسبة الاكسجين داخل أحواض المزارع.
- هذا والجمعية على استعداد تام لتوفير أماكن التدريب على هذه الأدوات مع توفير مقر ليكون بمثابة مركز لخدمة الأعضاء. هذا وإذ تكرر الجمعية شكرها للهيئة أملين توحد القوى بما يرفع شأن هذه الصناعة بمحافظة الفيوم وانعكاس ذلك على تطور وتقدم الأنشطة الزراعية بمصرنا الحبيبة.

وتفضلوا بقبول فائق الاحترام،

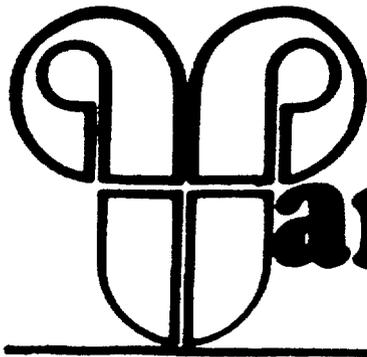


رئيس مجلس إدارة الجمعية

مهندس / محمد جودة السيد

APPENDIX C

**ARTICLES PUBLISHED IN
U.S. NEWSPAPERS**



Maryland sheep news

Published bi-monthly by the Maryland Sheep Breeders Association



Sheep and goats in Egypt, see page 8

Sheep and goats in Egypt

by Susan Schoenian
Salisbury, Maryland

I caught a full glimpse of the pyramids as my plane landed in Cairo on July 26, 1996. I was about to embark on a month-long, volunteer assignment with ACDI/VOCA. Needless to say, I was filled with excitement and anticipation, as I had always wanted to go to Egypt, ever since I was a small child. It took almost an hour to get from the airport to our hotel in Giza, within walking distance of the pyramids. Cairo, a city of fourteen million people was bustling with activity. I enjoyed the ride. I couldn't wait to get to work.

—Sheep and goat project—

Egypt is the second largest recipient of U.S. foreign aid. Some of the aid is directed towards agriculture. ACDI's Farmer-to-Farmer program targets core farmers in different provinces and commodity areas, with the goal of increasing private investment and improving productivity and profitability in the agricultural sector. ACDI, "Agriculture Cooperative Development International" and VOCA, "Volunteers Overseas Cooperative Assistance," are non-profit, sister organizations that cooperate to send U.S. volunteers on short-term assignments.

My job with ACDI was to serve as a sheep and goat nutrition specialist. My partner was a "retired" veterinarian from Minnesota. Together, with our field representatives/translators, we

made two to three farm visits per day, offering our expertise and recommendations. We conducted seminars and village meetings for farmers, veterinarians, extension agents and university professors. We made recommendations for a quarantine/veterinary clinic that was to be built between the Delta and the Western Desert.

—Land, water and people—

From the Nile River, sprang one of the world's greatest civilizations. In fact, ninety-five percent of Egypt's sixty million people live along its banks. It is their lifeline. The High Dam in Aswan, built with the help of the Soviets, made it possible to grow three crops in a year. Most of Egypt is covered by desert. Rainfall is sparse. Only four percent of the land is cultivated; however, each year, additional desert land is brought under the plow. There is a special program where college graduates receive a small parcel of land and a house to begin farming. There is even a program to start women in farming.

We spent our first two weeks in the Delta, staying in Ismailia—on the Suez Canal—and Tanta—in the heart of the Delta. When the Nile River flows north through Cairo it splits into two branches before it empties into the Mediterranean. Between the two branches is the Delta region, where you'll find fertile farm land and among the highest crop yields in the world. The Delta is served by a conglomeration of irrigation ditches and canals. Everything is irrigated. It is quite common to see fields of green in the middle of the desert—an oasis. Some of the crops include cotton, rice, corn, wheat, barley, sorghum, tomatoes, cucumbers, mangos, figs, dates, bananas, melons and cactus. Berseem clover, grown in the winter, is the primary forage crop.

My favorite place in Egypt was Mersa Martruh, 180 miles west of Alexandria, on the north coast en route to Libya. We spent two weeks making farm visits from Alexandria and Mersa Martruh. Eighty percent of the sheep are raised in the Matrouh governorate (province) in the Western Desert. Bedouins, "semi-nomadic" Arabs who trace their roots to the hordes who fought alongside Lawrence of Arabia, are the shepherds in this area. It is their tradition to tend livestock in the desert.

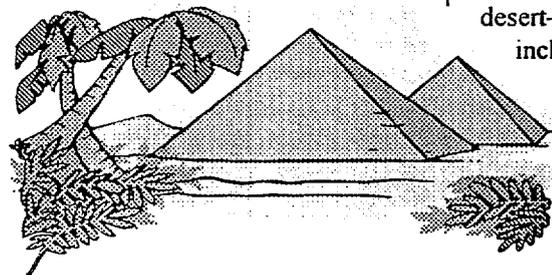
While farmers in the Delta and graduate areas struggle with their sheep and goats, Bedouins have a special knack for raising animals. Their sheep, goats, buffalo and cattle are generally healthy and well-fed. In fact, I'll always remember a group of lambs in the desert that handled as good as any "blue" lambs I had handled as a grader.

I enjoyed the time we spent with the Bedouins, discussing sheep, breaking bread and drinking tea. I gained a special appreciation for their culture and simple way of life. The family unit is strong. All of the sons and their families farm together. They are a fiercely independent people. Unfortunately, many Bedouins have been re-settled by governments and their culture is slowly slipping away.

—Sheep breeding—

The three main breeds of sheep in Egypt are Rahmani, Osseimi and Barki. They are all fat-tailed breeds. What distinguishes fat-tailed sheep from other breeds is their long tail which is filled with fat and has a function similar to the camel's hump. Fat-tailed sheep are hardy and able to withstand the challenges of desert life. When feed is ample and parasites are not burdensome, fat-tailed sheep are impressive in size, growth, and conformation. Carcass

Egypt, continued on page 14



—Egypt—
continued from page 8

quality is good, with most of the fat in the tail region. Their meat is preferred by Moslems.

The wool from fat-tailed breeds is coarse and would be of limited value in world markets. It is used primarily for rug making and other cottage-type industries. Shearing is done once or twice a year with hand clippers. There is a reluctance to use electric shears because of wool quality and the difficulty in getting cutters and combs.

Sheep and goats breed year-round, typically producing three crops in two years. Twinning is common in goats, but quite variable in sheep, with considerable room for improvement. Rams typically run with ewes all year round, making it difficult for farmers to plan breedings, flush ewes and feed according to production.

Sheep are severely inbred. Excessive inbreeding depresses performance and fixes negative traits in the flock, whereas cross breeding results in hybrid vigor. Our recommendations were for farmers to swap rams and increase cross breeding among the three local fat-tailed breeds. We also suggested crossing with outside breeds such as the Awassi (an improved Israeli breed), but only if animals were adapted to the environment. The Ministry of Agriculture is doing some (ill-advised, in our opinion) crossing with Finn sheep and Romanov to increase lambing rate.

—Goats—

I must confess to all of my sheep-loving friends that I have become a real advocate for goats. I didn't just threaten to put a picture of goats on the front cover of the *Sheep News*, eventually I will! I have found that raising sheep and goats for meat and fiber is very similar, which each species having certain advantages over the other. Lamb and goat marketing is strikingly similar, and

producers should cooperative to tap the ethnic markets in our area.

Most farmers run sheep and goats together, but unlike sheep, goats are not considered an economic enterprise. They are "clean up" animals, kept primarily for the family's benefit. Meat production is the primary goal, though some milking is done, to provide fresh milk for children. Many farmers have no interest in improving their goat production. This was frustrating, as is working with U.S. sheep producers who have no interest in the bottom line.

Nubian is the most common breed. However, they are different from the Nubians that we raise here. Other goats are local, desert breeds. Some crossing is being done with the Damascus, a big goat from Syria. In general, the goats are large-framed, rough-looking, and of good meat type. Like sheep, the goats are severely inbred. We encouraged crossing with the Anglo-Nubian and the Swiss breeds to improve milk production and create an additional source of income for the family. We felt that many of the farmers, especially the Bedouins, had the management skill necessary to raise dairy goats.

—Nutrition and health—

The major problem facing sheep and goat farmers is the lack of feed resources. Egypt must import feed grains. During the winter when it rains, the sheep graze the open desert. I bet the desert comes "alive" then; I'd love to see it. In the Delta, berseem clover provides ample grazing. There are no fences. During the summer, feed resources are scarce and concentrate feeding is common. Sheep are brought from the Western Desert to the Delta to graze crop aftermaths, ditches and any other forage or fodder they can find. Egyptian farmers are adept at utilizing feed resources. Purchased feedstuffs are expensive and not readily available. There is an over-reliance on low-quality, "one-kind-fits-all" pellets. I had these pellets analyzed and will make

feeding recommendations based on the results. It was our assertion that the farmers could feed their sheep better and more economically by mixing whole grains (corn, barley and sorghum) with protein supplements. Grain is very expensive, relative to here, but it provides more nutritive value for its cost than the pellets. Cottonseed meal is available and reasonably priced. Fava beans can also be used to increase protein. Berseem clover, cut at the proper stage, is an excellent source of protein.

Health problems are similar to what we experience here, internal parasites being the most common problem in all livestock. The Delta provides a fertile breeding ground for stomach worms. Anti-parasitic drugs are expensive, but generally available. Liver flukes are a problem, even with humans. Coccidiosis is fairly common.

We recommended vaccinating for enterotoxemia, a worldwide problem with sheep. Since ewes lamb more often than once a year, they need vaccinated before each lambing. We recommended vaccinating lambs at six and eight weeks of age. Some producers had experienced problems with white-muscle disease. Most were not feeding a vitamin/mineral supplement to their animals. We recommended they do so to prevent white muscle disease and other possible deficiencies. If mineral supplementation was not available, we suggested injections of Bo-Se. Some flock owners had experienced high levels of abortions. Brucellosis was diagnosed in one flock and vibriosis (campylobacter) was probable in others. We recommended vaccination in these cases.

I saw my first case of foot and mouth disease. This disease has been absent from the United States for several decades. Sheep with foot and mouth disease have lesions on their hooves, mouths and gums. They are lame and have high temperatures. Eventually, the disease runs its course.

Deworming, vaccinating and artificial insemination (for buffalo and cattle) is done mostly by veterinarians.

Most villages have pharmacies that carry both human and animal medicines. All the farmers in the village share farm equipment.

—Marketing and economics —

Islam is the official religion in Egypt, although a ten percent minority of Christians and Jews peacefully co-exists. Because Egypt is an Islamic country, sheep and goat marketing is influenced to a large extent by religious traditions. While goats seemed to be eaten year round, lambs are consumed primarily at holidays. The "feast" marking the end of Ramadan (month of fasting) accounts for sixty percent of total lamb consumption. Lambs are also exported to other Gulf nations.

The typical market sheep in Egypt is a live animal weighing 40 to 50 kg (88 to 110 lbs.). It ranges in age from five to twelve months, depending upon its diet. Some lambs are fed concentrate, while others are range fed. Rams are seldom castrated. Docking is not necessary with fat-tailed sheep.

Lambs and goats are sold in open air village markets, herded to market or brought in pick-up trucks or donkey carts. Prices are determined by the bartering system. There are no auctioneers. In fact, most prices in Egypt are negotiable. The taxis have meters, but the drivers don't use them. You have to haggle over price. When you buy sheep or goat meat along side the highway, it may take twenty minutes to arrive at a price. It's very important to negotiate the price of getting off a camel before getting on. I must confess that after

spending a month in Egypt, I got pretty good at bargaining. Does anyone want to sell me something?

Lamb prices average over a dollar a pound, so despite high feed prices, sheep raising can be profitable. Like in the U.S., some farmers purchase feeder lambs and fattened them out for market. Because the cost of living in Egypt is so much less than in the U.S., it is possible for families to survive off of the income produced from a small flock and small land holdings.

—Fond memories—

It's been my privilege to travel to many different countries. While I have found people everywhere to be friendly and gracious, nothing can match the hospitality, sense of humor and fun-loving spirit of the Egyptian people. I don't remember ever having laughed so hard. Not having vodka constantly pushed at me was a welcomed relief. Moslems don't drink alcohol. In fact, they don't seem to have many of the same social problems as we have in the United States.

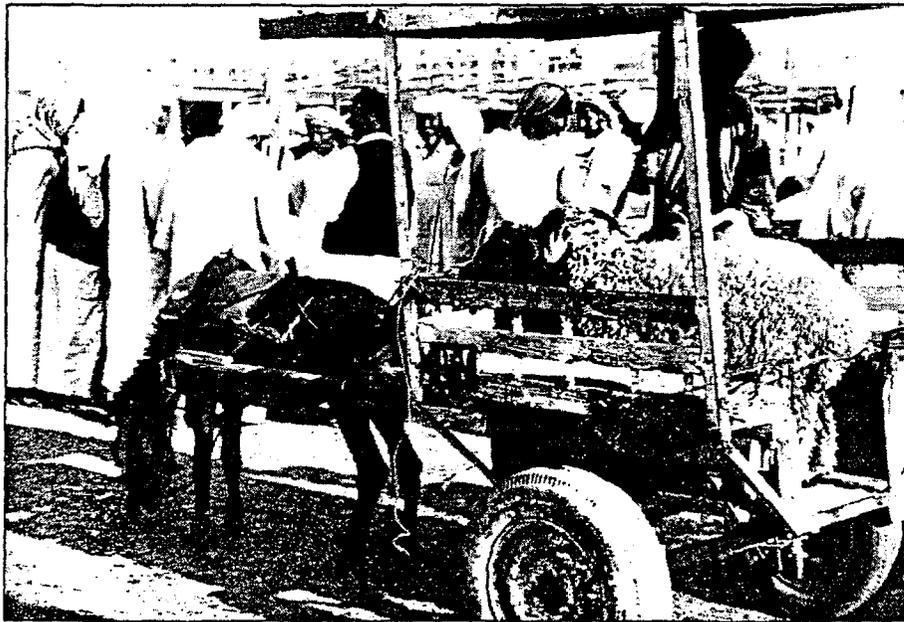
I did the tourist thing and rode a camel around the pyramids. I visited museums and saw some of Egypt's

most famous antiquities. I rode a donkey. I fell off a donkey. I rode another donkey. I counted donkeys. In fact, I've never seen so many donkeys in all my life. I was a willing participant in a donkey cart race (we won). In Matrouh, the donkey carts are registered as taxis.

I got a chance to set foot in Asia. The Sinai is the Asian part of Egypt. It was once occupied by Israel. We saw the monument to the 1973 October War. Believe it or not, an extension agent was a famous war hero. We drove through El-Alamein, where the Allies handed the Germans one of their worst defeats during World War II. I steered a boat through the Suez Canal. I swam in the Mediterranean Sea. I realized that I could become a beach bum, if only the Atlantic Ocean was as clear and blue as the Mediterranean.

Last but not least, I fell in "love" with an elevator boy named Mohamed (Incidentally, half of Egyptian males are named Mohamed.) Mohamed was sixteen and "perfect." I couldn't decide whether to marry him or adopt him. Anyhow, I got discouraged when he told me his mother was my age. I did leave him a good tip, though, equivalent to half his month's salary. What the heck—maybe he wants to go to medical school someday.

As with all previous international assignments, I came home with a sense of accomplishment. As always, I gained as much as I gave. I have an appreciation for another country, its people, language, culture and religion. This will serve me well in life and work. When can I go back? Where can I go next?



Lambs at the market place in Mersa Matruh (Bedouin area)

LIFESTYLE

One tomato, two tomatoes

It was difficult for Greg and me to comprehend the tremendous amount of agriculture only an hour away from the



DARRELL BLACKWELDER

deep sands of the desert and the Great Pyramids of Egypt. Vast averages of tomato, wheat, rice, cotton, Irish potato and other crops were only a short drive from metropolitan area

of 16 million people.

Greg Hartsell, a tomato producer from China Grove, and I volunteered to exchange information on production and cultural practices with Egyptian tomato producers through a joint exchange program sponsored by the United States and Egypt. We visited three Egyptian tomato production areas: Alexandria near the Mediterranean, New Lands or desert lands and the Delta region near Cairo, and production areas near Ismailia and the Suez Canal.

The tomato is a staple in the Egyptian diet. This vegetable is served in some form with every meal. The Egyptians produce over 350,000 acres of tomatoes year round, to meet the demand for fresh market. The areas we visited are the same latitude as Jacksonville, Fla., providing a suitable climate for year-round production.

Shipping and handling dictated tomato producers grow small, firm, "Roma" type tomatoes. "Castlerock" is the major tomato variety grown in Egypt. Very few producers deviated from this variety as a major crop, though a few producers are beginning to experiment with different varieties.

Producers near the Suez Canal in Ismailia are growing an Israeli tomato variety called "Orit" during the cool season. This variety sets fruit in cold weather during January and February. These growers transplant tomato plants from plugs produced in plastic foam trays, much like Rowan County tomato producers. The newly set plants were grown under plastic tunnels, protecting fragile plants from the constant wind and cool temperatures.

Tomato transplants are usually produced by local farmers on bare ground. Transplants are hand-pulled and sold in bare-rooted bundles as transplants were done in America years ago, before plastic trays and soilless r...



TOMATO PICKERS: Egyptian women, with straw baskets, hand pick tomatoes.

DARRELL BLACKWELDER

Tomatoes are grown on the ground, with no staking using a combination of chicken or pigeon manure and ammonium nitrate as a source of fertilizer. Soil testing is non-existent for most growers, so most producers make an educated guess as to what type and how much fertilizer should be applied.

Women and small children hand-pick the small, ripe tomatoes in straw baskets and stock-pile them in the field. The tomatoes are packed into split palm crates. The hand-made construction of the crate often bruises and punctures the fruit, rendering a large percentage of the pack unfit for sale.

The fruit is graded and packed under a nearby shade tree or at the end of a row in the field. The stems and calyx are left on the tomato, an Egyptian tradition to denote freshness.

Tomato yellow virus was a tremendous problem in all of the fields we observed. This virus is transmitted by the silverleaf whitefly. The mild climate of Egypt coupled with a large host range aid in accelerating its large population. The infected tomato plants we observed were yellow and stunted. Production was reduced 50 percent in most fields. Some fields were a total disaster with a 100 percent loss. Rowan County producers would plow these fields and cut their losses, but the shortage, due primarily to the virus, has driven the price up to where it is profitable to harvest scarce and inferior fruit. All the fields we observed had infections of the tomato yellow virus.

Nematode infestations add more production problems. "Castlerock" has no resistance to nematodes as do most var-



YOUNG HELP: Children work in fields under adult supervision.

producers in the United States.

The Egyptian growers have problems with disease and insect control. Many producers receive bad information from untrained Egyptian extension agents. It was not uncommon to see workers spraying restricted pesticides with bare hands and feet, not properly protected from hazardous pesticides. Few understood the serious ramifications of pesticide exposure. Egyptian farmers often have access to new and untested pesticides, whereas the EPA in the United States requires years of testing under very close scrutiny before releasing the product.

Farm labor is cheap and plentiful in Egypt. The average tomato worker makes about 5 Egyptian pounds a day, or about 1½ dollars a day. Most begin work at 9 a.m. and work until dark. It takes about two hours for farm laborers to find their way to work because of transportation problems.

Transportation is scarce and

back of a small pick-up truck, on a donkey or in mini vans. I counted more than 20 people unloading from a 10-passenger van one day.

The Egyptian growers have massive problems, but there is a ray of hope. The soils of the Delta region are fertile with seemingly ample water supplies. Growers in this region use flood irrigation to supply water to the crops. The Egyptians have a good attitude and are eager to learn, welcoming any information that may help them.

The Egyptians were gracious and kind as you would expect a farmer to be. Greg commented that "these guys were like Southerners with a funny accent." All had faith that the crisis caused by the tomato yellow virus was only a small stumbling block that they would soon conquer.

Darrell Blackwelder is an agricultural extension agent in charge of horticulture with the N.C. Cooperative Extension

APPENDIX D

**LETTERS OF APPRECIATION
FOR THE FTF PROGRAM**

**MINYA GOVERNORATE
HORTICULTURE AND VEGETABLE PLANT PROTECTION DEPARTMENT**

**Att.: Mr. Mahmoud Kamel
Farmer to Farmer Program Director**

The field visit to Minya Governorate, held on Wed. October 25 & Thu. October 26, 1996 by Mr. Thomas Dyson the US Volunteer and Eng. Hany Abou Aly the Field Assistant in ACDI, had a great influence in solving many problems in tomatoes cultivation in the Governorate.

Since the Governorate cultivates large areas of Nile potatoes, we hope that we can arrange a field visit for the farms of cultivated potatoes to provide the needed technical recommendations and practical experience in this field.

And we thank you for your co-operation and support in increasing the agricultural production in the field of vegetables crops.

Best Regards

**UNDERSECRETARY OF ESTATE
Eng. Osman Ahmed Awad**

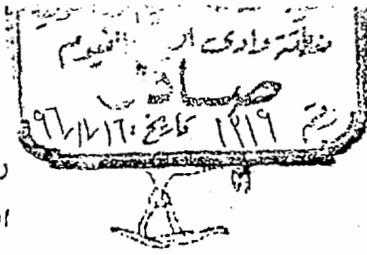
**GENERAL ASSOCIATION FOR AQUA-CULTURE DEVELOPMENT
WADY EL-NIL AREA - FAYOUM**

**Att.: Farmer to Farmer Program Director
Date: 14/11/1996
Subject: Farmer to Farmer Program**

Please be informed that reference to your letter dated 5/6/1996, addressed to the Aqua-culture Co-operative concerning providing the association with water quality analyzing unit for the aqua-culture farms, we would like to express our thanks and appreciation for your successful efforts in serving the aqua-culture field. We wish that this would take place in co-ordination between the Co-operative, the ACDI and the Association.

Best Regards

Eng. Nagiub Abbas Tolba
General Manager



المهينة العامة لتنمية الثروة السمكية
منطقة وادي النيل بالفيوم
قسم الإنتاج والتشغيل

رقم القيد :
التاريخ : ١٩٩٦/١١/١٤
الموضوع : بخصوص برنامج تبادل خبرات

السيد الاستاذ / مدير برنامج تبادل خبرات المزارعين

بجد التحية ...

نتشرف بالافادة اياماً الى كتابكم المؤرخ في ١٩٩٦/٦/٥ والمبلغ للجمعية
التعاونية للاستزراع السمكي بالفيوم بخصوص امداد الجمعية بوحده تحاليل مياه
متطوره للمزارع السمكية ان نتقدم لسيادتكم بخالص الشكر على جهدكم الموفق في
خدمه قطاع الثروة السمكية والمنطقه تأمل ان يتم ذلك بالتنسيق مع الجمعية
والمنظمه والمنطقه حرصاً على الصالح العام

وتفضلوا بقبول وافر الاحترام ..

المدير العام
نجيب

بباني

تحويلاً في : ١٩٩٦/١١/١٤

مرفقات : ()

(مهندس / نجيب عباس طلبه)

سبب

Central Agricultural Cooperative Union
Office of Chairman

Dear Mr. Mahmoud Kamel
Director of Agricultural Cooperative Development International

I highly appreciate receiving your kind letter and the attached achievement report. The report is a significant sign of your, as well as your organization's, achievements in various aspects of interest. They greatly help -- from a non-governmental point of view -- in the development of Egyptian agriculture, the support of small projects, and the increase of the economic effectiveness of the farmers to run their business successfully. This is due to your providing them with various programs and valuable assistance.

I have the pleasure to take this opportunity to insure the gratitude of the Central Agricultural Cooperative Union, as well as my sincere personal appreciation and gratitude.

Again congratulations to you brothers and sisters, Egyptians and Americans, residents and visitors, working in this project for the achievement which is considered a landmark in the history of the Organization in Egypt.

Best regards.

Mohamed Idris

President of the Central Agricultural Cooperative Union

Dated: 4/8/1994

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



مكتب رئيس مجلس الإدارة

السيد الأخ المهندس / محمود كامل

مدير منظمة التعاون الزراعي الدولي

تحية وتقديرا واحتراما ومعسدا

تلقيت بعزير من الشكر والتقدير خطابكم الرقيق العرفق به تقرير الانجازات والتي حسات
صفحة ناصعة البياني لانجازكم وانجاز المنظمة في كافة المجالات التي تتطلع بها والتي تسهم
الى حد كبير من منظور غير حكومي نحو تطوير الزراعة المصرية ودعم امكانيات المشاريع الصغيرة
وزيادة فاعلية الكفاءة الاقتصادية لدى المزارعين لادارة أعمالهم بنجاح بفضل ما توفره لهم
من برامج متنوعة ومساعدات قيمة .

ويسعدني أن أختتم هذه الفرصة لتأكيد شكر الاتحاد التعاوني الزراعي المركزي وتعزير
عمق تقديري وامتناسي شخصيا .

ومرة أخرى هنئكم وكن الاخوة والاخوات العاطلين معكم في المشروع مصريين وأمريكيين
زائرين ومقيمين على هذا الانجاز الذي يمثل علامة بارزة في تاريخ عمل المنظمة في مصر .

وتفضلوا بقبول عبارتي التحية
والصية
محمد ادريس

رئيس الاتحاد التعاوني الزراعي المركزي

تحريراً في : ٤/٨/١٩٩٤م

Alexandria Governorate
Agricultural Administrative Department, Alexandria
Technical Section

Postal Code Agriculture/21511

Eng. Mahmoud Kamel
Director of Farmer To Farmer Project

I would like to express my greatest appreciation for the intensive efforts that you exerted in setting and preparing special training sessions for the Farmer To Farmer Project.

Therefore, I hope that your efforts to arrange for more training sessions in this field continues to enable the majority of farmers of benefiting from these sessions.

God help you.

Best regards.

Dated 14/8/1994

Director
Agriculture Administrative Department, Alexandria

Eng. Saeed Abdel Wahab

محافظة الاسكندرية
سد هيرة الزراعة بالاسكندرية
الادارة الفنية

بسم الله الرحمن الرحيم

رقم بریدی زراعة / ٢١٥١١

السيد المهندس / محمود كامل
مدبر برنامج تبادل خبرات الزراعيين

تحية طيبة وودع

بشرفنى أن أتوجه لسيادتك بعظيم شكرى وتقديرى للمجهودات
المعظمة التي تهذلوها سيادتك في مجال عقد وتنظيم الدورات التدريبية
الخاصة ببرنامج تبادل خبرات المزارعين .

* ومن هذا المنطلق أتمنى أن تستمر مجهوداتكم لعقد المنسـد
من الدورات في هذا المجال ليتمكن أكبر عدد من الاخوة المزارعين
من الاستفادة من هذه الدورات .

وتحفظكم الله وسدد خطاكم دائما
وتفضلوا بقبول فائق الاحترام

تحياتي /
١٩٩٤ / ٨ / ١٤
سنة / ٠٠



السيد
سد هيرة الزراعة بالاسكندرية

مهندس / مسعود عبد الهادي الزمر

ACDI
53 Manial Street, El Roda, Cairo

I would like to thank the people of ACDI in Cairo and Washington for the opportunity they provided me to visit the US for a study tour on apiaries & honey production. Undoubtedly, the exchange of expertise among farmers increasingly develops the production and therefore the development and prosperity of peoples. I will spare no effort to transfer this expertise to the beekeepers in the Minia Governorate. In the meantime, we are welcoming the visit of any US apiaries or livestock expert.

Special thanks to Mr. Hany Abu Aly, the Escort, for his efforts on both professional and personal levels, the thing which positively affected the results of the trip.

I wish all of you more success and progress.

Eng. Mostafa Abdel Zaher Mohamed, Beni Mazar, Minia, Production
Under Secretary at the Secondary Agricultural School, Beni Mazar

الجمهورية العربية السورية - دمشق - ١٩٦٤

تذكر واحب اشكر المنظمة الامريكية ورجالها بالقاهرة وواشنطن علي
اتاحتهم لي هذه الفرصة الطيبة لزيارة الولايات المتحدة للوقوف علي احدث
نظم تربيته وانتاج نحل العسل ومما لاشك فيه ان تبادل الخبرات
بين المزارعين سوف يودي الي زيادة انتاج وعليه تحدث التنمية
ورثقي الشعوب والامم وسوف ابذل قصاري جهدي لنقل هذه الخبرات الي جموع
النحالين بمحافظة المنيا ونرحب في اي وقت بزيارته السادة خبراء
النحل والانتاج الحيواني بالولايات المتحدة شكره والي مزيد من
التعاون شكر حام اشكر السيد هاني ابو علي المترجم والمرافق للرحلة علي
مباذله من جهد علي المستوى الوظيفي وخارجه مما كان له عظيم
الاشرف في نتائج هذه الرحلة ايجابية واتمنى لسيادتكم مزيدا من التوفيق
والتقدم

مهندس /مصطفى عبدالظاهر محمد بنهي مزار المنيا وكيل الانتاج

بمدرسة الزراعة الثانوية ع ٦٩٦٥٧ بنهي مزار

Matrouh Governorate
Agriculture Administrative Department

Mr. Director of Farmer To Farmer Project

Reference is made to the fruitful cooperation between Matrouh Agriculture Administrative Department and Farmer To Farmer Project in various agricultural aspects, e.g., livestock production, fig, apple, pear, cucurbits, fishery.

This had a great effect on the development and the increase of production and led to the increase of the farmer's income. The training visits of some of the breeders, specially in the domain of livestock (sheep and goats), and that of the (agricultural) engineers to the United States, had great influence on some of the breeders. This was through the transfer of American experience to the Egyptian breeder.

We look forward to increasing the cooperation between the Project and the Department in many other agricultural aspects, and to expanding in new territories in Matrouh Governorate along with the increase of the number of visits to the States for training and gaining experience.

Thank you for your cooperation.

Best regards.



Dated: 9/8/1994

General Manager
Agriculture Administrative Department, Matrouh
Agricultural Eng. Ali Saber Hamad

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

بخدمت : _____

٢٢٨
٩١/١١٨

عائفة مطروح

مديرية الزراعة

مرفقات : _____

تاريخ ١٩٩١ / ١ / ١٩

السيد المهندس / مدير مشروع تبادل خبرات المزارعين المصريين الامريكيين

تحية طيبة

تشرف بالا حاطه باله لينا على التعاون المشـر ما بين مديره زراعه مطروح ومشروع تبادل خبرات المزارعين المصريين الامريكيين في مختلف المجالات الزراعيه وتذكر منها على سبيل المثال الانتاج الحيواني والتمين والتفاخ والكثرى والقرعيات ، والثروة السمكيه ، وما كان له عظيم الاثرى تطوير وزيادة الانتاج الامر الذى ادى الى زيادة دخل المزارع وللولايات المتحده الامريكه للتدريب في هذا المجال الامر الذى انعكس بدوره على بعض المزارعين من خلال نقل الخبرات الامريكه للمزارعين المصريين

وتأمل مستقبلا في زيادة حجم التعاون بين المشروع والمديرية في العديد من المجالات الزراعيه الاخرى والتوسع في المناطق الجديده في محافظه مطروح مع زيادة عدد لدارك المزارعين للولايات المتحده الامريكه للتدريب واكتساب الخبرات

شاكرين لسياادتكم صداق تعاونكم

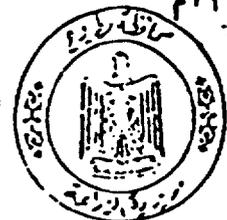
وتفضلوا واثبتوا قول فائق الاحترام

تحريرا في : ١٩٩١ / ١ / ١٩

مدير عام مديرية الزراعة بمطروح

عيسى صابر حقا

مهندس زراعى



عيسى صابر حقا

مديرية زراعة مطروح - ١٩٩١ - ١٢ / ١١ / ١٩٩١

APPENDIX E

**LIST OF VOLUNTEER ASSIGNMENTS
BY COMMODITY**

APPENDIX E

FARMER TO FARMER PROGRAM

VOLUNTEERS/COMMODITY LIST

I. TOMATO:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. ARDEN KASHISHIAN	POST-HARVEST SP.	09	06	17 DAYS
2. FRED ZEITOUN	NURSERY SPECIALIST	19	11	17 DAYS
3. CONRAD KRASS	PATHOLOGIST	10	08	11 DAYS
4. FRED ZEITOUN 5. JESUS VALENCIA	PATHOLOGIST EXTENSION AGENT	29	20	18 DAYS 14 DAYS
6. DARRELL BLACKWELDER 7. GREGORY HARTSELL	EXTENSION FARMER	52	16	19 DAYS 19 DAYS
8. NORI AOKY 9. MICHAEL MURRAY	FARMER EXTENSION AGENT	56	12	19 DAYS 19 DAYS
10. ROBERT KORTSEN 11. DAVID HOWELL	EXTENSION AGENT PRODUCTION SPECIALIST	52	18	18 DAYS 18 DAYS
12. ALFRED SKALA 13. BOBBY HATCHCOCK	EXTENSION AGENT PATHOLOGIST	52	16	20 DAYS 20 DAYS
14. THOMAS DYSON	EXTENSION AGENT	28	18	20 DAYS
15. DAVID CURTIS 16. JAMES JASINSKI	EXTENSION AGENT IPM SPECIALIST	52	14	20 DAYS 20 DAYS
17. TERRY GARWOOD	EXTENSION AGENT	27	06	20 Days
TOTAL		386	145	309 DAYS

II. POTATO:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. EUGENE HESS 2. DOULESS HESS	PRODUCTION SP. FARMER	46	18	20 DAYS 20 DAYS
3. THOMAS OBOURN	EXTENSION AGENT	20	05	18 DAYS
4. TERRILL CHRISTENSEN 5. IVAN HOPKINS	EXTENSION AGENT PRODUCTION SP.	46	14	20 DAYS 20 DAYS
6. ROGER BRINKMAN 7. LELAND CLINGER	EXTENSION AGENT PRODUCTION SP.	50	04	20 DAYS 20 DAYS
8. MIR-MOHAMED SEYEDBEGHERI 9. DOUGLAS NEWBOLD	EXTENSION AGENT POTATO SPECIALIST	32	10	16 DAYS 16 DAYS
TOTAL		194	51	154 DAYS

III. CUCURBITS

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. PAUL JENNINGS 2. GEORGE HUGHES	PRODUCTION SP. EXTENSION AGENT	58	20	18 DAYS 18 DAYS
3. ROBERT LAMB 4. CONRAD WEISER	PATHOLOGIST PHYSIOLOGIST	46	14	19 DAYS 19 DAYS
5. GEORGE HUGHES 6. HERBERT MORGHAN	EXTENSION AGENT PHYSIOLOGIST	48	12	21 DAYS 21 DAYS
7. BRUCE HIKES 8. BRIAN MORAGHAN	EXTENSION AGENT PHYSIOLOGIST	40	16	20 DAYS 20 DAYS
TOTAL		192	62	156 DAYS

IV. CITRUS:

VOLUNTEER	SPECIALIZATION	TRAINING SESSIONS	FARM VISITS	WORKING DAYS
1. SADEK AYOUB	PATHOLOGIST	29	10	22 DAYS
2. ROBERT BULLOCK 3. ROBERT PILOSE	PRODUCTION SP. EXTENSION AGENT	56	18	19 DAYS 19 DAYS
4. IRVING EAKS 5. ABDALLA FALAH	POST-HARVEST EXTENSION AGENT	46	08	18 DAYS 18 DAYS
6. CRAIG BOVEE 7. HARLAN BENTZINGER	EXTENSION AGENT PRODUCTION SP.	52	12	18 DAYS 18 DAYS
8. MARTIN KRIEG 9. LIONEL STANGE	PRODUCTION SP. EXTENSION AGENT	54	26	20 DAYS 20 DAYS
10. BRIAN BOMAN 11. EDGAR HOLCOMB	PRODUCTION SP. CITRUS EXTENSION	52	12	20 DAYS 20 DAYS
12. ROBERT BULLOCK 13. ROBERT PELOSI	PRODUCTION SP. EXTENSION AGENT	56	06	19 DAYS 19 DAYS
TOTAL		345	92	250 days

V. GRAPES:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. MARTIN KRIEG	PRODUCTION SP.	30	09	19 DAYS
2. STEPHAN BARN	POST-HARVEST	26	06	19 DAYS
4. HENRY BOWDEN 5. JOHN HENRY	EXTENSION AGENT PRODUCTION SP.	74	10	18 DAYS 18 DAYS
6. ARDEN KASHISHIAN 7. MYRON KERBAJIAN	EXTENSION AGENT PRODUCTION SP.	54	12	20 DAYS 20 DAYS
8. MOHAMED ABDEL RAHMAN 9. GEORGE ROHRBACHER	IMP SPECIALIST PRODUCTION SP.	44	10	20 DAYS 20 DAYS
10. NORMAN STAKKELAND 11. RODERICK SHIPPEY	EXTENSION SP. POST HARVEST SP.	58	10	20 DAYS 20 DAYS
TOTAL		286	57	194 DAYS

VI. DECIDUOUS:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. RAYMOND LOCKARD	PEACHS EXTENSION	23	10	20 DAYS
2. MILTON SCHILDE 3. CAROL SCHILDE	APPLE POST-HARVEST APPLE PROCESSING	55	08	20 DAYS 20 DAYS
4. GEORGE NEILSON 5. ALVIN HAMSONE	PRODUCTION SP. EXTENSION AGENT	58	18	18 DAYS 18 DAYS
6. AMOS BOURGO 7. RALPH DUNLAP	IPM / DRUYING PRODUCTION SP.	56	08	19 DAYS 19 DAYS
8. ROBERT KRASSWELLER 9. ROBERT BOWERS	DECIDUOUS EXT. DECIDUOUS PROD. SP.	52	14	20 DAYS 20 DAYS
10. GERALD BROWN 11. WILLIAM MIZELLE	EXTENSION AGENT EXTENSION AGENT	48	14	18 DAYS 18 DAYS
TOTAL		292	72	170 DAYS

VII. TROPICAL:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. ROY NELSON 2. ROBERT KNIGHT	MANGO PRODUCTION MANGO EXTENSION	54	16	19 DAYS 19 DAYS
3. ROBERT FAUST 4. MICHAEL HOWDEN	MANGO EXTENSION MANGO PRODUCTION	74	12	19 DAYS 19 DAYS
5. BENJAMIN MAHELIUM 6. JACK ROSS	MANGO PRODUCTION SP. MANGO EXTENSIONIST	55	11	20 DAYS 20 DAYS
7. STAN MICHELINI 8. RALPH VORHIES	EXTENSION AGENT MANGO PRODUCTION SP.	36	04	15 DAYS 15 DAYS
9. FRED VOIT 10. MALCOLM MANNERS	MANGO PROCESSING SP. MANGO EXTENSION	64	08	20 DAYS 20 DAYS
TOTAL		283	51	186 DAYS

VIII. BEEKEEPING

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. DANIAL PESANTE 2. MICHEAL SAYERS	BEE DISEASE SP. BEEKEEPER	68	22	20 DAYS 20 DAYS
3. RAYMOND NABORS 4. JAMES PASWATER	BEEKEEPER BEE DISEASE SP.	60	22	19 DAYS 19 DAYS
5. DANIAL PESANTE 6. MICHEAL SAYERS	BEE DISEASE SP. BEEKEEPER	92	24	20 DAYS 20 DAYS
7. JAMES BACH 8. ROBERT ZAHLER	BEE DISEASE SP. BEEKEEPER	82	16	20 DAYS 20 DAYS
9. HAWARD BLACKBURN	BEEKEEPER	28	05	21 DAYS
10. ANN HARMON 11. ERNEST MINER	BEEKEEPER BEEKEEPING DISEASES SP.	64	12	19 DAYS 19 DAYS
12. EARL LEE 13. WILLIE COLE	BEEKEEPING BEEKEEPING	60	20	20 DAYS 20 DAYS
14. BOB BERTHOLD 15. MARREN BERTHOLD	BEEKEEPER BEEKEEPER	52	12	18 DAYS 18 DAYS
TOTAL		506	133	293 DAYS

IX. POULTRY:

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. MAHMOUD EL-BEGEARM 2. DAVID MITCHELL	NUTRITION VET.	48	26	20 DAYS 20 DAYS
3. GEORGE ARSCOTT 4. DANIEL ANDREWS	NUTRITION EXTENSION	54	16	19 DAYS 19 DAYS
5. DAVID KRADEL 6. JOHN BLAKE	POULTRY VET. POULTRY NUTRITION	48	08	19 DAYS 19 DAYS
7. ROBERT STRICKLER	POULTRY SP.	16	00	16 DAYS 16 DAYS
TOTAL		166	50	132 DAYS

X. AQUA-CULTURE

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. THOMAS WELLBORN	DISEASE SP.	16	04	12 DAYS
2. CHRIS HYDE 3. ANN GANNAM	PRODUCTION SP. NUTRITION SP.	44	14	13 DAYS
4. RICHARD KASTNER 5. MICHEAL FRINSKO 6. JAMES REYNOLDS	WATER QUALITY SP. NUTRITION SP. PRODUCTION SP.	71	31	18 DAYS 18 DAYS 18 DAYS
7. CHRIS HYDE 8. DAVID SAWNN	PRODUCTION SP. WATER QUALITY SP.	46	14	15 DAYS 15 DAYS
9. AGY SPICER 10. BRUCE KANN	EXTENSIONIST WATER QUALITY SP.	54	26	17 DAYS 17 DAYS
11. PHILIP GIOVANINI 12. STEVEN GABEL	AQUACULTURE AQUACULTURE	46	13	20 DAYS 20 DAYS
13. GUY MATTEI 14. EILEEN MATTEI	FISH PRODUCTION SP. FISH PRODUCTION SP.	44	14	20 DAYS 20 DAYS
TOTAL		305	112	227 DAYS

XI. SHEEP & GOAT

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. CHARLES LINDBORG 2. JEAN NEW	VET. NUTRITION SP.	46	28	20 DAYS 20 DAYS
3. MARY GESSERT 4. MONTE BELL	VET. SH & GO NUTRITIONIST	60	12	19 DAYS 19 DAYS
5. ARNOLD MCCLAIN 6. KATHLENE COLVERSON	RANCH MANAGEMENT NUTRITION SP.	62	22	20 DAYS 20 DAYS
7. SUSAN SCHEONIAN 8. EARL THOMPSON	NUTRITION VET.	60	12	19 DAYS 19 DAYS
TOTAL		228	74	156 DAYS

XII. OTHERS

VOLUNTEER	SPECIALIZATION	FARM VISITS	TRAINING SESSIONS	WORKING DAYS
1. EUGENE INGALSBE	COOP. DEVELOPMENT SP.	00	16	18 DAYS
TOTAL		00	16	18 DAYS

APPENDIX F

**LIST OF PARTICIPANT GROUPS
BY COMMODITY**

Appendix F

Farmer to Farmer Program Participant Training Program September 1993 - December 1996

Technical Focus	Participant Name	Places Visited in the U.S
Pruning 1/19 - 2/12/1994	Khalid El Gawahery Ahmed Zeitoun Mohamed Idris Mohamed Shehata Ahmed Moustafa	WASHINGTON, D.C. ACDI, Egyptian Embassy, USDA Research Center CALIFORNIA Farms, University, Agribusiness
Aquaculture 3/21 - 4/15/1994	Mohamed Abdel Gawad Abdel Bary Shaawat Mahmoud Abdel Kareem Ibrahim Sharaf El Din Nageeb Mohamed	WASHINGTON, D.C. ACDI, Egyptian Embassy, USDA Research Center TEXAS University, Farms, Agribusiness MISSISSIPPI Farms, Research Center BALTIMORE Farm, USDA National Agricultural Library
Aquaculture 6/3 - 6/29/1996	Gaber Abdallah Abdel Aziz Fahmy Samra Rozyka Nadia Saber Tarek Shehab El Din Sami El Baz	WASHINGTON, D.C. ACDI, Egyptian Embassy, USAD CALIFORNIA Farm, University ALABAMA Farm, Research center
Poultry 4/26 - 5/20/1994	Amgad Zayed Ashraf Sayyoun Mohamed Hegazy Joseph Saad	WASHINGTON, D.C. ACDI, Egyptian Embassy ALABAMA Farms, Agribusiness MISSOURI University, Farms, Agribusiness, USDA
Poultry 4/22 - 5/18/1996	Saed Gebrel Nabil El Hew Mohamed Salah El Din Abdel Hakem Ahmed Adel Metwaly Abdel Rahman Attia	WASHINGTON ACDI, USDA, Egyptian Embassy ALABAMA University
Citrus 5/2 - 5/28/1994	Abdeen Negem Mohamed Abdel Kader Hassan Abaza Maged Youseff Mohamed El Sharawy	WASHINGTON, D.C. ACDI, Egyptian Embassy ARIZONA Farms, Agribusiness, University
Citrus 11/16 - 12/13/1994	Khalid Khalil Mohamed Zeen Eddin Hassan El Matty Ali Abou Rabh Abdel Nasser Messad Mohamed Karim Mohamed El Zaafarany	WASHINGTON, D.C. ACDI, USDA Center, Egyptian Embassy CALIFORNIA Farms, University, Research centers, Extension Services

Technical Focus	Participant Name	Places Visited in the U. S.
<p>Beekeeping 6/21 - 7/19/1994</p> <p>Beekeeping 6/29 - 7/29/1995</p> <p>Beekeeping 7/24 - 8/20/1996</p>	<p>Moustafa Mohamed Mohamed Zedan Mahmoud Sakr Hamada Okda Ismail El Gendy Nabil Basouni Fouad El Assal</p> <p>Ahmed Meligy Nazeh Selem Salah Malek Hamdy Gawad Marawan El Badry Abdel Atty El Hady Reda Hassan</p> <p>Gamal Abdel Rahman Ahmed El Khouly Maamoun Othman Sobhi Deif Abdel Hakem El Emam Mohamed Habboun</p>	<p>WASHINGTON, D.C. ACDI, USDA center, Egyptian Embassy MERRYLAND Research center NORTH CAROLINA Farm, University</p> <p>WASHINGTON ACDI, USDA, Egyptian Embassy NORTH CAROLINA Agribusiness GEORGIA University, Research center</p> <p>WASHINGTON ACDI, USDA, Egyptian Embassy NORTH CAROLINA University, Agribusiness</p>
<p>Vegetable 8/3 - 8/24/1994</p> <p>Vegetable 10/18 - 11/14/1995</p>	<p>Nadia Hussien Nagwa Ahmed Amal Darwish Samira Amer Mona Hamdy</p> <p>Ahmed Khalifa Hassan El Sayed Hamdy Bashah El Shohat Amer Mohamed Ali Abdel Salam Temraz Hanna Ghattas</p>	<p>WASHINGTON D.C. ACDI, Egyptian Embassy VIRGINIA USDA NEW JERSEY Farms MISSOURI Farms</p> <p>WASHINGTON ACDI, Egyptian Embassy ARIZONA Farm, University COLORADO Agribusiness, Research center</p>
<p>Tomatoes 8/15 - 9/13/1994</p> <p>Tomatoes 3/16 - 4/14/1995</p>	<p>Mohamed Soliman Khasem Ghali Abdalla El Ahmedi Mohamed El Sayed Mohamed Saïam Gouda Ghanem Abdel Basset Moussa</p> <p>Fatma Saleh Azza Diab Hala Farag Nemat Harby Nabila Abdou Lubna Ziedan Faiza Youssef</p>	<p>WASHINGTON, D.C. ACDI, USDA center, Egyptian Embassy CALIFORNIA Farms, University, Cooperative Extension NORTH CAROLINA Farms, University</p> <p>WASHINGTON, D.C. ACDI FLORIDA Farms, University, Extension Service ARIZONA Farms, University, Agribusiness</p>

Technical Focus	Participant Name	Places visited in the U.S
Deciduous 10/5 - 11/1/1994	Moustafa El Koury Mohseen El Beltagy Mohamed Salama Moustafa Kareem Moustafa Sekeen	WASHINGTON, D.C. ACDI, Extension Service COLORADO Farm, University CALIFORNIA Farms, University, USDA center
Deciduous 2/29 - 3/23/1996	Fawzy Abdel Maksoud Faysal Hashem Sameh El Makawy Ahmed Sayed Salem Seliman El Sayed Yassen Mohamed Abdel Fatah	WASHINGTON ACDI, USDA, Egyptian Embassy CALIFORNIA Farm, University, Agribusiness
Sheep and Goat 1/5 - 2/2/1995	Medhat Kotab Mohamed Gebreel Kowela Omar Kowela Taher Kaseh	WASHINGTON ACDI, Egyptian Embassy OKLAHOMA University, Farm UTAH Farm, University
Grapes 4/1 - 4/29/1995	Khalaf Ibrahim Refaat Hanna Mohamed Salam Mohamed Kamal Fouad Amer Amin Tawfiq Gamal Abou Khriba	WASHINGTON, D.C. ACDI CALIFORNIA Farms, Extension Service ARKANSAS Farms
Potato 10/30 - 11/22/1995	Hussien Othman Mohamed Fisal Ahmed Abdallah Diaa El Din Dabbous Ibrahim El Oraby Nasser El Oraby Omar Khedr	WASHINGTON ACDI, USDA, Egyptian Embassy FLORIDA Farm, Agribusiness, University NEW MEXICO Farm, University
Sub-tropical 8/20 - 9/13/1995	Hassan Abdel Gawad Mahmoud El Ghabosh Ibrahim Ghounim Zakaria Shehata Seoudi Hamed	WASHINGTON ACDI, USDA, Egyptian Embassye FLORIDA Farm, University, Research center CALIFORNIA Agribusiness

Participants by Governorate

Governorate	Farmers	Extension Agents
Giza	6	1
Alexandria	26	8
Behera	4	1
Fayoum	2	2
Matrouh	3	2
Sharkia	11	1
Gharbia	14	2
Qalubia	4	2
Menia	8	0
North Sinaa	2	2
Ismailia	12	3
Kafr El Sheikh	0	1
Dameyta	2	0
Tanta	1	
Total	95	25

Participants by Commodity

Commodity	Farmers	Extension Agents
Grapes	10	2
Aquaculture	9	2
Poultry	8	2
Citrus	9	3
Beekeeping	17	3
Small Scale Vegetable	10	2
Tomato	12	3
Deciduous	8	4
Sheep and Goat	3	1
Sub-tropical	4	1
Potato	6	1
Total	95	24

APPENDIX G

MIS REPORTS AND FORMS

APPENDIX G

MIS Reports and Forms

- 1- Governorates
- 2- Districts
- 3- Villages
- 4- Fruits & Vegetables
- 5- Livestock
- 6- Poultry
- 7- Fish
- 8- Bees
- 9- Problem Categories
- 10- Problems
 - Fruits & Vegetables
 - Greenhouses
 - Tunnels
 - Livestock
 - Fish
 - Poultry
 - Beekeeping
 - Other
- 11- Recommendations
 - Fruits & Vegetables
 - Greenhouses
 - Tunnels
 - Livestock
 - Fish
 - Poultry
 - Beekeeping
 - Other
- 12- Reasons for not applying recommendations
- 13- Pesticides (Insect)
- 14- fertilizers
- 15- Nutrition
- 16- Irrigation
- 17- Farm Survey
- 18- Core Farmers
- 19- Non-Core Farmers introduced to FtF by a Core Farmer
- 20- Independent Non-Core Farmer
- 21- Extension Agent information form
- 22- Field Assistant information form
- 23- Volunteers information form
- 24- Participant information form
- 25- Farm Vists
- 26- Training Sessions
 - Fruits & Vegetables
 - Greenhouses
 - Tunnels
 - Livestock
 - Fish
 - Poultry
 - Beekeeping
- 27- In kind contribution