AgLink Final Report

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Acronym List

AgLink	Agribusiness Linkages for Egypt
ALEB	Agriculture-Led Export Business
ARRI	Animal Reproduction Research Institute
BoD	Board of Directors
BVDA	Buffalo and Veal Development Association
DPDA	Dairy Processors' Development Association
DVS	Department of Veterinary Services
EMFTA	Egyptian Meat and Farm Technology Association
EMPA	Egyptian Milk Producers Association
FMMPDA	Fayoum Meat & Milk Producers' Development Association
GOVS	General Organization for Veterinary Services
IR	Intermediate Results
KSA	Kingdom of Saudi Arabia
LE	Egyptian Pounds
LEA	Livestock Extension Agent
LEC	Livestock Extension Council
MOALR	Ministry of Agriculture and Land Reclamation
MAWDA	Minya Animal Wealth Development Association
NGO	Non-Governmental Organization
PBDAC	Principal Bank for Development and Agricultural Credit
PRA	Participatory Rural Appraisal
STTA	Short Term Technical Assistance
UAE	United Arab Emirates
US	United States
USAID	United States Agency for International Development
WTO	World Trade Organization

Project Summary

Introduction: The Evolution of Agribusiness Linkages for Egypt (AgLink)

Started in 1996, Agribusiness Linkages for Egypt (AgLink) was a seven-year initiative which made an impressive contribution to transforming and strengthening the Egyptian livestock sector at all levels, increasing the quality and availability of milk and meat for local consumption, creating a substantial rural employment base, and stimulating trade linkages with the U.S. Project activities focused on three sub-sectors of Egypt's livestock sector: dairy production and processing, meat production and processing, and feed and farm supply. AgLink increased the productivity, efficiency and sustainability of large (commercial), medium and smallholder clients by providing technical assistance and training in basic technologies—such as animal nutrition, health, and farm management; trade development; association development; and facilitating access to credit.

AgLink met or exceeded all of its original goals and objectives. Its success is indicated by the results of specific project activities and the consequent impact both on project beneficiaries and on the Egyptian livestock industry as a whole. Key to AgLink's success was its flexible approach, adapting in response to clients' needs and priorities for an evolving market within Egypt's shifting economic and political environment. Over the life of the project, the AgLink team integrated new components, employed new methodologies, and fine-tuned techniques based on lessons learned, expanded staff capacity, and heightened awareness of industry trends. Simple technologies were introduced in order to address newly identified constraints and opportunities, and continually adjusted to reflect the changing realities of the industry.

Evolution of AgLink: 1997 to 2003

Phase One: 1997-2001

Component A (1997)
- ⇒ *Livestock Industry Development*
  - o *Technology Transfer*
- ⇒ *Trade Linkages and Development*
  - o *U.S. « Egypt*

Component B (1998)
- ⇒ *Association Development Launched*

Component C (1999)
- ⇒ *Export Development Launched*
  - o *Sheep and Goats*
  - o *Dairy Processed Products*

Phase Two: 2001-2004

- ⇒ *Smallholder Component Launched*
- ⇒ *Geographical Expansion to Upper Egypt*

Smallholders Veterinary Campaign in Sohag

AgLink's overall goal was to stimulate dramatic growth in the livestock industry through direct technical assistance targeting select, high-potential livestock clients. By carefully screening participants in the program based on key indicators of receptiveness to change[1], the project was able to maximize its success in disseminating new technologies to farmers. Seminars and farmers' meetings further expanded the effects of AgLink's direct consultations by leveraging the good

[1] *See page 4 for specific criteria.*

will, reputation, and participation of core clients, who regularly took the initiative to disseminate new technologies and practices to neighboring farmers. These successful farms became the 'model farms' for other farmers in the area to emulate.

The interventions originally proposed to achieve AgLink's objectives evolved over the life of the project from a narrow focus on 1) technically enhancing efficiency and productivity, and 2) establishing trade linkages, to a broader, more flexible methodology hinged on developing livestock industry associations with the capacity to participate in a long term strategy of addressing key challenges within the livestock industry. The associations were formed by groups of AgLink clients at all levels of the value chain, enabling a vertically integrated approach incorporating production, processing, marketing, and advocacy.

Other changes in AgLink's strategy were made in response to USAID's recommendations. Based on USAID-Egypt's changing priorities, the project added an export component that proved to be successful for processed dairy products targeting the Gulf markets, but more challenging for the sheep and goat industry. This component was later transferred to the newly awarded Agriculture Led Export Businesses (ALEB) project, a strong foundation having been laid through AgLink for the project and its subsequent successes.

Table 1: AgLink Final Impact – Commercial Clients and Livestock Industry

Core Clients' Revenue		$72,768,881
Non-Core Clients' Revenue		$196,475,979
Trade with US		$26,339,000
Investment		$11,024,242
Processing Clients Export		$18,532,263
Jobs Created		13,414
by Core Clients	*On-Farm*	*838*
	Off-Farm	*2,515*
by Non-Core Clients	*On-Farm*	*2,515*
	Off-Farm	*7,546*
Technologies Adopted		16,792
by Core Clients	*Fully*	*3,937*
	Partially	*893*
by Non-Core Clients	*Fully*	*10,461*
	Partially	*3,411*

In its final period, AgLink expanded to Upper Egypt and extended its client base to include medium and small-scale commercial and smallholder clients. In this new phase, AgLink utilized its proven and effective methodology of introducing simple technologies while tailoring its method of technical assistance to meet the needs and capabilities of the new clientele. The AgLink team also integrated a sustainability strategy to ensure that these services would continue beyond the life of the project. AgLink worked in conjunction with local governmental and non-governmental partners and institutions to enhance their capacity to continue to implement AgLink's proven techniques and methodologies.

The AgLink project led to a revolutionary change in the practices prevalent within the Egyptian livestock sector, in particular:

⇒ A dramatic transformation in the application of and approach to animal nutrition, health care and farm/herd management.

⇒ Introduction to and application of sophisticated livestock-related computer software programs and other technologies in Egypt.

⇒ A cohesive network among key stakeholders at all levels of the lvestock industry, which has led to the rapid dissemination of information and farming practices beyond the project's target group, as well as the formation of important new business and trade relationships.

Phase One: 1997-2001

I. Phase One – Component A: Technology Transfer and Trade Linkages (1997)

A. Goals, Objectives, and Expected Results

Goal: *To increase production output, improve processing quality, and expand marketing in Egypt's livestock sector.*

Objective: *To facilitate Egyptian/U.S. linkages to improve planning, operations and profitability among selected farmers and agribusiness firms within the Egyptian livestock subsector.*

Expected Results: *Increased contribution of the agriculture sector to Egypt's GDP and increased employment in the agricultural sector.*

B. Livestock Industry Development Activities

The AgLink project design targeted the entire livestock sub-sector, which was identified as having the greatest potential within Egyptian agriculture for impact, synergism and broad applicability of lessons learned. AgLink aimed to capitalize on the many opportunities that existed for expansion within the industry at that time, focusing initially on enhancing the efficiency and productivity of livestock producers, processors and feed/input suppliers.

1. Short Term Technical Assistance

In order to achieve the objective of enhanced efficiency and increased productivity of private enterprises, AgLink utilized U.S. based short term technical assistance (STTA), including consultations, training, and exchange programs. In Phase One, 162 firms and individual firm clients were selected from the various stakeholder groups—dairy producers and processors, meat producers and processors, feed and farm supply, and other agribusinesses—to receive direct one-on-one consultations from U.S. experts in the field. Project staff carefully screened potential participants based on location; their willingness to take risks and to share new technologies and practices; and their openness to having their farms used as resource and information centers for the industry, immediate farming community, and associations. These strict selection criteria ensured that the project could efficiently and effectively disseminate new technologies beyond core participants to thousands of other farmers.

Field Officer Abdel Basset El Sarawy provides a technical recommendation to one of AgLink client near Mansoura

Table 2: AgLink Commercial Client Activities – Technology Transfer (cumulative)				
	Proposed	***Achieved***	***Variance***	***%***
STTA	*55*	119	64	116
U.S. Consultants	*17*	*60*	*43*	*253*
U.S. Volunteers	*20*	*22*	*2*	*10*
Local Consultants	*18*	*37*	*19*	*106*
Seminars / Forums	-	162	162	-
Seminars	-	*147*	*147*	-
Forums	-	*15*	*15*	-
Staff Conducted Video Presentations	-	54	54	-
Farm Excursions/Exchanges	-	49	49	-
Third Party / In-country Training Programs	36	10*	(26)	-72
Total Participant Training Days	-	8,961	-	-

**See below for explanation of variance.*

Table 3: Technology Transfer – Commercial Clients Selected				
	Proposed	***Achieved***	***Variance***	***%***
Phase One	30	162	132	440

a. Direct Technical Assistance through Consulting Assignments

During the initial phase of the project, AgLink utilized both paid consultants and volunteers to provide the required STTA. AgLink staff and consultants provided follow-up on an ongoing basis to reinforce the viability of this technology transfer. The measures of success for this component were the number of recommendations partially or fully adopted by the target core clients and firms (see Table 5 below), and the impact of these newly adopted practices on production and income levels.

b. Seminars and Workshops

As one component of their consultancy assignments, ACDI/VOCA's U.S. experts conducted seminars and training sessions on topics identified as key issues during their visit with clients. These more in-depth sessions embraced the participation of key industry stakeholders—such as representatives from the Ministry of Agriculture and Land Reclamation (MOALR), research institutions, veterinarians, and university lecturers—thereby further facilitating the diffusion of information.

Smallholder clients receive technical training during a village meeting near Minva

c. Third-Party Training Programs

Due to AgLink's success in stimulating self-sufficiency among its clients, the full number of ACDI/VOCA-managed third-party training programs originally planned was not required. Clients assumed control of the Ag Forum from an early date. Two associations (the Egyptian

Milk Producers Association—EMPA, and the Egyptian Meat and Farm Technology Association—EMFTA) graduated early from the AgLink program, and their subsequent third-country training activities were not included in project totals. Some activities which would have constituted third-party trainings as a result of in-kind contributions by research institutes were replaced by AgLink activities. Therefore, while the objectives for training were exceeded, this was not reflected in the indicator specified during project design.

Table 4: Technology Transfer – Numbers of Recommendations/Client (Phase 1)

	Proposed	*Achieved*	*Variance*	*%*
No. Clients	120	223	103	86
Average No. per Client	6	16	10	167

Table 5: Technology Transfer – Status of Recommendations (Phase 1)

	# Recommendations	*% of Total*
Total Recommendations Provided	3563	
Fully Implemented	*2377*	*66.7*
Partially Implemented / In Progress	*387*	*10.9*
Not Implemented / Not Applicable	*733*	*20.6*
Not Tracked	*66*	*1.9*

2. International Trade Linkages

Towards the end of year one, the second component of the original project strategy—*trade linkages*—commenced. The purpose of this set of activities was to establish sustainable agricultural linkages between U.S.-based private sector specialists (farmers, extension agents, researchers, and agribusiness experts) and Egyptian agribusiness firms and primary producers. AgLink's trade promotion efforts were primarily targeted towards making improved technologies and management practices from the U.S. available to Egyptian farms and agribusinesses, with the aim of enhancing Egypt's ability to export and/or offset imports. This was accomplished through trade trips to the U.S. and U.S. firm visits to Egypt.

AgLink participating at trade fair in Dubai

These exchange activities helped to form a bond between U.S. and Egyptian firms, and to facilitate networking to ensure sustainable technology transfer, access to information and training, and the establishment of trade partnerships.

The U.S. trade trips created appreciation of and demand for new technologies, equipment, and supplies. U.S. experts, who raised awareness of the benefits of new technologies and management practices, further supplemented this demand. In addition, AgLink project resources were harnessed to identify unmet demand in the Egyptian market for U.S. products, equipment and services. AgLink was able to connect Egyptian importers and agribusiness firms with U.S.

firms to meet the needs of the Egyptian producers and processors. AgLink's approach of facilitating linkages between private sector agribusiness firms in the U.S. and Egypt as a means of disseminating new technologies avoided market distortions and ensured sustainability.

Table 6: AgLink Activities – Trade Linkages and Development

	Proposed	*Achieved*	*Variance*	*%*	*Impact*
Trade Trips					>$26m in trade with U.S.
No. Participants/Firms	*83*	*74*	*-9*	*-11*	
No. U.S. Trade Trips/Study Tours	*73*	*61**	*-12*	*-16*	
No. Firm Exchanges: U.S. Firms to Egypt	*10*	*13*	*3*	*30*	
Trade Linkages					
No. Trade Inquiries	-	*32*	*32*	-	

**Due to problems with obtaining visas and lack of attendees because of the events of September 11,2001, the U.S. tours for commercial clients during the extension phase were cancelled.*

3. Domestic Trade Linkages

AgLink provided opportunities to improve Egyptian agribusinesses by promoting domestic trade linkages between producers and their associations, and input retailers and firms. These linkages improved information flows, and assisted producers in standardizing and raising the quantity and quality of meat and dairy inputs. This networking activity also facilitated the formation of trade linkages, enabling Egyptian agribusinesses to respond effectively to market demand both during and after the life of the project.

Examples of Domestic Trade Linkages

Egyptian Meat and Farm Technology Association
EMFTA secured a bulk contract with feed supplier Rovi Egypt for grain which it retailed to its members at reduced prices, saving them 38 LE per ton. 2000 metric tons were purchased during Phase 1 of the project.

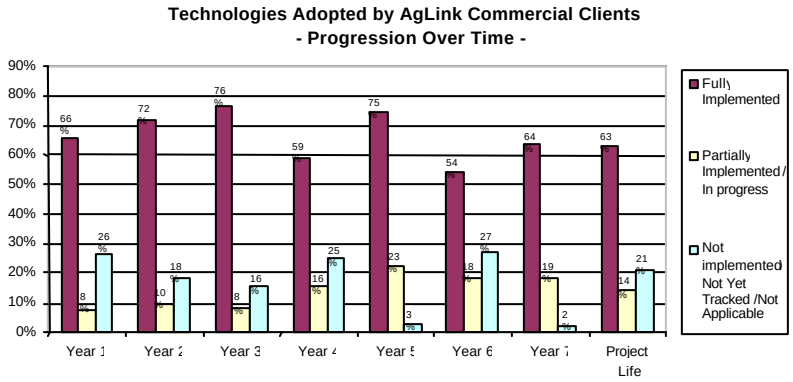
Egyptian Milk Producers Association
EMPA was linked with the MOALR for access to low priced, high quality cottonseed—a feed input. EMPA obtained permission from the MOALR for a 500 ton quota of cottonseeds, which was then distributed to members at 635 LE per ton, enabling the association to compete with large traders. EMPA also successfully advocated for the MOALR to pass a law to tax raw milk to combat cheap imports, increasing the price from 38 to 95 piasters per liter.

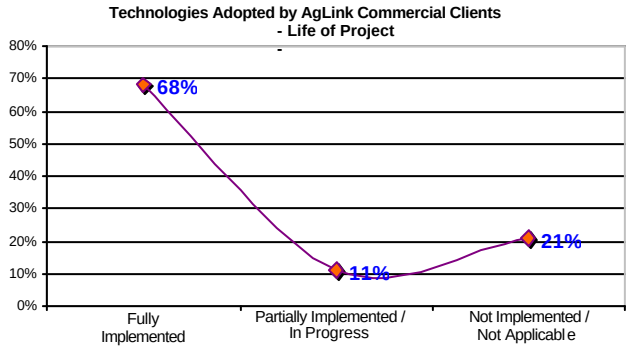
In 1997, AgLink established a trade inquiry system to link Egyptian farmers and agribusiness firms interested in U.S. products with U.S. farms, agribusinesses, and manufacturers specializing in specific equipment, supplies and services demanded by livestock producers and processors.

C. Results and Impact

By the end of year one, AgLink had successfully improved the efficiency and productivity of target farms and processors through the application of recommendations made by U.S. and local consultants, coupled with the seminars and training sessions that helped to raise awareness among targeted clientele and key stakeholders about the livestock industry as a whole.

The inclusion of key stakeholders—representatives from MOALR, research institutions, veterinarians, university lecturers, etc.—in so many of the seminars resulted in the emergence of a new class of consultants and organizations who would serve as resources for the project, consolidating widespread institutional support for AgLink project activities.





1. Short Term Technical Assistance

STTA achieved results in the following areas:

- *Increased Productive Capacity* – 80 percent of the 3,497 recommendations provided were fully implemented, demonstrating positive results on target producer and processor core clients' productivity levels.

> Client Impact: Increased Productive Capacity
>
> **El Hak Feedlot Cooperative** – as a result of adopting four new practices and three new technologies, El Hak reduced feed costs by 15%, increased feed conversion rates by 22%, and raised the overall firm capacity by 50%.
>
> **Animal Wealth Cooperative** – Implementing new silage technologies allowed AWC, a dairy production cooperative, to computerize its record keeping and Total Mixed Ration practices, and increase its milk production by 30% (from 6 to 7.8 tons per day).
>
> **Farm Cheese** – This cheese-processing firm purchased a mozzarella shredding machine, adopted a new laboratory and quality control techniques, as well as nitrogen-gas vacuum packing technology. As a result, the firm was awarded a contract with Little Caesar's Pizza to supply the restaurant chain with mozzarella, worth an estimated $400,000 in new annual revenues.

- *Stakeholder Buy-In* – Key industry stakeholders viewed AgLink's achievements in transforming practices within the livestock sector as revolutionary, encouraging them to contribute financial and human resources to become part of this success. The project also increased key stakeholders' awareness of challenges facing the industry, and strengthened the skills needed to confront these challenges.

- *Improved Input Supply* – Feed/farm suppliers benefited from seminars resulting in demand for and use of improved feed ingredients, in particular vitamins and minerals. Suppliers began providing new products recommended by U.S. experts, including a vitamin additive

formula that was specifically developed for the Egyptian dairy and beef market. Manufacturing, packaging, and selling of the new product were all stimulated by consultants' recommendations.[2]

Client Impact: Improved Input Supply

Silege: Fakher Mineral Production Company – Mohamed Kasem and Mohamed Nunu rented eight pivots (150 feddans) which they cultivated with corn for silage. They then contracted 10-15 AgLink client farmers as well as other non-AgLink clients, creating a new market-driven silage industry.

Chelated Minerals: Tower Vets – This new input, introduced by AgLink consultant Dr. Richard Patton, prevents minerals from interacting with each other during digestion, and significantly increases dairy productivity. The introduction of chelated minerals has resulted in rapid and widespread adoption and a strong new market for U.S. goods. For example, Tower Vets imported over $480,000 in chelated minerals in 1999 alone.

- *Best Practices* – AgLink identified a set of 'best practices'—recommendations by U.S. experts, modified to suit the local context and conditions—which became a trademark for AgLink's technology transfer methodology. This set of best practices formed the foundation for training materials on critical topics such as bulk tank analysis, mastitis management, calving management, ration formulation, etc. which were introduced by AgLink and adopted by the dairy industry as a whole.

- *Business Development Services Facilitation* – AgLink's approach facilitated the development of a cadre of local consultants with expertise in a range of technical and business skills corresponding to the multifaceted challenges facing the domestic livestock industry, and with the capacity to serve as independent service providers to help industry players confront these needs. Over a dozen private sector local consultants emerged from AgLink's trainings.

AgLink Commercial clients participating in Sahara Agricultural Exhibition in Cairo

- *Industry Linkages* – AgLink established linkages and business partnerships among key stakeholders, and between stakeholders and its client base. Networking among key players created a market-driven input supply industry. As a result of AgLink's activities, researchers at the Animal Production Research Institute and Cairo University Veterinary College established private consulting services. In addition, some AgLink clients also became volunteer technical service providers to promote their businesses, such as silage marketing.

[2] *The feed supply clientele—specifically pellet manufacturers—did not respond positively to the recommendations made by consultants to improve the quality of pellets as it was not seen to be cost effective or profitable to their business. In addition, commercial farmers were reluctant to purchase locally produced pellets as they did not trust the quality.*

- *Customer Satisfaction* – AgLink was awarded first place ranking for three consecutive years by Price Waterhouse Cooper based on the number of recommendations adopted, services delivered and trade linkages facilitated, and on competitiveness criteria.

2. Client Impact

Throughout Phase One, approximately **68 percent** of recommendations were fully implemented, while **12 percent** were partially or in the process of being implemented. By the end of the project, **64 percent** of recommendations were fully implemented, and **15 percent** were partially implemented or were in the process of being implemented.

The application of recommendations contributed to a significant and highly visible impact in terms of efficiency, improved products (quality and quantity), and improved management style and infrastructure. Over the life of the project, **282 core clients** benefited from U.S. **$72.7 million in increased revenue** as a result of improved farm operations. Furthermore, **13,414 new jobs** were created as a result of these improvements.

3. Trade Linkages

The Trade Linkages component resulted in the following:

- Access to new U.S. technology, equipment, and supplies, improving the overall quality and productivity.

- New and improved agribusiness equipment and supplies made available on the Egyptian market through Egyptian agribusiness firms. Equipment included mixer wagons, animal fans, silage choppers, artificial milking parlor equipment, and artificial calf milking equipment. Supplies included vitamin and mineral additives, medicines, ear tags, and bypass fats. These newly available technologies were based on U.S. technology adjusted for compatibility with the local context. E.g. Silage choppers were adjusted to meet the technical and cost requirements of Egyptian farmers.

Trade Linkages Impact

⇒ More than U.S. $26 million in trade with the U.S.
⇒ Access to U.S. technology
⇒ U.S. equipment and supplies made available through Egyptian agribusiness firms
⇒ Huge profits realized by agribusiness firms as a result of increased sales, for example:
  - *American Breeders Services, Global, Inc. and World Wide Sires doubled their sales in sires*
⇒ U.S. technologies made compatible with the local context

Þ OVERALL IMPROVED QUALITY AND QUANTITY OF LIVESTOCK PRODUCTS

- Increased importation of U.S. agricultural equipment and supplies, worth $1.5 million per trade trip, for a total of total $26 million. The trade trips also established the concept of farms as businesses.

- Dramatic increases in sales among Egyptian agribusiness firms, resulting in $24.5 million in increased revenues among core clients, and $66.15 million in increased revenues among non-core clients during Phase One.

- Long term business relationships established between Egyptian and U.S. agribusiness firms and farmers.

- New contracts signed between U.S. and Egyptian firms valued at an average of $70,000 per trip. Items purchased included 20 mixer wagons from farm supply company NASCO, meat processing equipment from Koch Company, veterinarian medicines, and other equipment.

- Five trade trips made to the U.S., serving 73 Egyptian participants.

D. Lessons Learned

1. Industry Development

⇒ *Model Farms* – Successful clients became model farms, convincing their peers to adopt new technologies and techniques, proving an effective method of disseminating information to indirect beneficiaries.

Open system farm design provided by AgLink

⇒ *Industry-wide approach* – Macro-level objectives required moving beyond a narrow operational approach to increased productivity, to target the entire production-processing-marketing chain in order to positively impact the industry as a whole.

⇒ *Capacity building* – Staff members of target farms and firms were trained to become actively involved in operation and management.

⇒ *Sustainability* – Local entities were identified or established, that were capable of addressing the challenges and constraints impeding progress towards the optimal output of livestock producers and processors.

⇒ *Tailored approach to achieving widespread change* – One-on-one technical assistance was highly effective for select clients, and other approaches were employed for the sake of cost-effectiveness with larger groups of clients.

⇒ *Payment for services* – clients were willing to pay for quality services, and effective recommendations made by local consultants led to the privatization of local consultancy services.

2. Trade Linkages

The main lesson that emerged from the original component of AgLink's Phase One was the need to be flexible in approach in order to ensure that project interventions were consistently driven by the demands of the clients and the market.

U.S. Expert Dr. Richard Patton explains technical recommendations to AgLink Dairy Sector Coordinator El Bayoumi Awad

E. Modifications to the Project

1. Short Term Technical Assistance

Based on lessons learned from the first year of implementation, AgLink modified and improved the project's approach to be more responsive to its clients and key stakeholders. Modifications to the project approach were as follows:

- *Local Consultants* were utilized to deliver one-on-one technical assistance to AgLink commercial clients, providing dual benefits: clients were introduced to varied techniques and experiences, while local consultants honed their skills and improved their knowledge by observing first-hand the results of recommendations by U.S. experts. Local consultants also passed along the new techniques and technologies as recommendations to other clients beyond the scope of the AgLink project, and consultants associated with universities incorporated these ideas into their teaching curricula. Local consultants thus became renowned in their field of expertise, inducing commercial farmers to utilize their services for a fee.

Top Local Consultants
Kamil Metias – Health & Reproduction
Mohammed Hegazy – Beef Nutrition
Adel Abdel Azim – Protective Medicine
Waael Abu el Fadel – Animal Surgery
Rashad Osman – Dairy Herd Management

- *New Curricula and Training Courses* were developed to train key staff from the core clients' farms and firms. These trainings focused on technical skills and specialized techniques, such as hoof trimming and artificial insemination.

- *Local Resources and Institutions* became service providers. AgLink successfully established linkages and partnerships with livestock sector key stakeholders—including MOALR and research institutions—to take on the role of direct service providers for AgLink activities. Services included providing in-house resources such as equipment, venues, demonstration farms, and consultants; organizing and facilitating seminars; and other activities as requested by the project.

- *The Feed Supply* component that specifically supplied pellets was dropped from the program as it was determined that this did not contribute to the improved productivity of the dairy and meat sectors. Instead, commercial farmers were encouraged to start

producing their own quality feed based on recommendations from U.S. consultants (e.g. silage and Total Mixed Ration).

2. Trade Linkages

Two main modifications were made to the project after the first year of Phase One. First, based on the AgLink team's realization of the need for increased organization and collaboration among Egyptian farmers and agribusiness owners, an Association Development component was explored, designed and introduced. Second, in order to respond to clients' needs for increased information regarding technologies and resources available from the U.S., a trade inquiry system was established and maintained.

II. Phase One – Component B: Association Development (1998)

A. Context

1. Background

In its first phase, AgLink was successful in achieving the expected results of enhanced efficiency and increased productivity in the Egyptian livestock sector. Yet by the end of year one, AgLink management realized the need to address several newly identified constraints to livestock producers' and processors' ability to conduct business and maximize profits. These constraints included:

⇒ Reduced milk prices for producers – prices dropped from 90 piasters/liter to 38 piasters/liter, while the cost of production remained at 68 piasters per liter.

⇒ Market saturated with inexpensive, imported powdered milk, causing a reduction in raw milk prices – powdered milk tended to be preferred by Egyptian consumers because it offered consistent quality, often lacking in fresh milk.

Livestock Industry Constraints and Challenges

⇒ Low selling price for milk
⇒ Imports competing with local products
⇒ Milk producers not organized, therefore unable to secure fair market prices
⇒ Shortage of inputs in market
⇒ High tariffs

⇒ Conflict between producers and processors over the selling prices of raw milk and live animals – through their membership with the Dairy Industry Development Association, dairy processors were able to demand lower prices for raw milk, in obvious conflict with the priorities of milk producers.

⇒ Shortage of input supplies, in particular, key ration ingredients such as cottonseeds and molasses.

⇒ High tariffs on farm products and services.

2. Rationale for Association Development Component

AgLink began by working with a number of existing associations[3], but it became apparent during Year One that associations representing the interests of livestock farmers and producers were vital to address the constraints listed above. The AgLink team therefore facilitated the establishment of livestock associations to advocate for the interests of meat and dairy producers and processors, respectively, and to provide input supplies and other services, particularly technical assistance. By facilitating direct service provision by associations, AgLink ensured that project services would continue after the project ended. Associations also helped to form the foundation for maintaining international and domestic trade linkages established under the project. AgLink launched the new component in 1998 by hiring three fulltime staff members to coordinate and manage association development activities.

Members of FMMPDA Association in Fayoum receiving training on association management

3. Goals, Objectives, and Expected Results

The goals, objectives, and expected outcomes articulated under this component were as follows.

> ***Goal:*** *To increase agricultural exports by 1) increasing the production of raw inputs; 2) increasing the quality and standardization of processed meat and dairy products; and 3) strengthening industry associations.*

AgLink's primary objective under the Association Development component was to establish and strengthen livestock sector associations to advocate on behalf of their members, and to ensure that associations remained inclusive and representative of constituency needs.

> ***Objectives****:*
> 1. *To address constraints and challenges faced by livestock producers and processors.*
> 2. *To design the project's exit strategy, based on sustainability through strengthened livestock associations.*
> 3. *To promote industry associations that fulfill the following criteria:*
> - *Create and maintain industry standards,*
> - *Promote the industry's goods and services domestically and internationally, and*
> - *Serve as a united voice in public policy formation.*

The three results anticipated under the Association Development component were as follows.

[3] *See "Existing Associations" section below for more details.*

Expected Results:

- *Increased use of improved products, technologies, and management practices.*
- *Increased access to market information.*
- *Increased private participation in policy dialogue.*

B. Livestock Associations Target Groups

The first phase of AgLink worked with three distinct categories of livestock association: existing associations, large commercial client associations, and community development associations.

1. Existing Associations

In accordance with the original proposal, AgLink worked with a number of existing associations to strengthen their capabilities, in some cases also assisting in the registration process to formalize the organization according to Egyptian law. These associations were involved in seminars and training events, and contributed to AgLink dairy publications (e.g., training on *Hoof triming* and *Silage Making* seminar).

In 1999, AgLink expanded its consulting, training and support services to the existing associations to raise the profile of these groups and to foster organizations, which would:

- ⇒ Serve as a democratic industry voice,
- ⇒ Be financially self-sufficient and self-governed,
- ⇒ Continue to expand membership,
- ⇒ Participate in public policy dialogue, and
- ⇒ Enrich and modernize the livestock industry.

Existing Associations Assisted by AgLink

EAFN - Egyptian Association for Feed & Nutrition
⇒ contributed to AgLink publications
GCAW - General Cooperative for Animal Wealth
DIDA - Dairy Industry Development Association
SAC - Shanshour Agricultural Cooperative
⇒ model farm used for silage videos
ESMA - Egyptian Small & Micro-Enterprise Association
⇒ assisted in formal registration process
SBWA - Sharkia Businesswomen's Association
AAHE - Alexandria Association for Home Economics
Governorate-level farm groups

AgLink's aim of developing association members' capabilities and skills was furthered by establishing a link with the Center for International Private Enterprise, which provided training opportunities for board members.

2. Large Commercial Client Associations

Members of FMMPDA, MAWDA, DPDA and BVDA Associations

AgLink's initial goal was to establish an association for Egyptian milk producers to counteract the uneven playing field within the domestic milk industry. To this end, AgLink sponsored a three-day strategic planning workshop for influential dairy farmers. Participants agreed to form an independent, private and self-sustaining association that

would promote and represent the interests of the dairy production industry while seeking to form strategic alliances with processors. The Egyptian Milk Producers Association (EMPA) was formed in 1997, and officially registered the following year. EMPA's mandate was defined by the founders and members based on immediate needs, in particular related to advocacy, input supply services, and technical assistance for members.

In its first year of operation, EMPA successfully negotiated favorable prices for feed inputs such as whole cottonseed and molasses, and actively lobbied for lower tariffs on grain and veterinary supplies. In addition, EMPA began investigating ways to increase supplies of various farm inputs in Egypt.

EMPA's success encouraged meat producers to form their own association. In 1998, AgLink assisted in establishing the Egyptian Meat and Farm Technology Association (EMFTA), an independent association of meat producers with 23 founding members, which was officially registered in 1999.

AgLink worked very closely with these two associations during their first five years, focusing on strengthening their role in the livestock sector, improving membership capabilities and skills, and strengthening their relationships with the MOALR. U.S. experts were recruited and fielded to train and mentor EMPA and EMFTA in successful association management, strategic planning, and membership development, with the goal of ensuring sustainability.

AgLink then modified its role from that of a direct service provider to a facilitator of service delivery by the associations. The project initiated capacity building activities to help the associations effectively provide a range of key services to their members, including market information, input supply, and advocacy. AgLink's relationship with these two newly formed associations evolved into a partnership: member training programs were co-sponsored with the associations, which contributed to the costs and provided logistical support.

In addition to EMPA and EMFTA, two additional large scale industry associations were established. In both cases, AgLink clients took the initiative to establish these associations themselves, recognizing the value of such organizations and providing the leadership and strategic vision needed. In response to the unique needs of Egypt's veal and buffalo industries, the third livestock association—the Buffalo and Veal Development Association (BVDA)—was established in 2001. The fourth association—the Dairy Processors' Development Association (DPDA)—was established as a result of the new law requiring all dairy products to be produced using pasteurized milk.

3. Community Development Associations

Under Component C of AgLink's Phase One, seven community development associations were established for sheep grazing, primarily among Bedouin clients in the Marsah Matrouh Region.

Association Development Methodology

- ⇒ Bottom-up Approach
- ⇒ Practical / Hands-on Technical Training
- ⇒ Participation in Trade Shows
- ⇒ Facilitation of Business Oriented Approach

C. Association Development Intervention Strategy

AgLink's association development activities focused on building capacity through the provision of training to the association management, boards of directors and general membership. Assistance in advocacy, technical services and management enabled the nascent associations to deliver the support services required by their members, while training provided to association members encouraged them to be active participants in order to ensure the sustainability of the associations within the livestock industry, to increase the influence of the associations, and to inculcate democratic values with a strengthened civil society. The project's target was to establish and develop six livestock associations: four of which were established under Component B of Phase One of the project, and an additional two associations were formed under Phase Two.

The primary method of intervention under the Association Development component was training in the following areas:

Initial Training:

- ⇒ Training on Law 32
- ⇒ Financial Management and Business Planning
- ⇒ Sector Analysis
- ⇒ Strategic Planning

2nd Stage Training:

- ⇒ Grant Development
- ⇒ Project Design and Proposal Writing
- ⇒ Advocacy
- ⇒ Business Concepts

Table 7: AgLink Activities – Association Development

	Achieved
Short Term Technical Assistance	11
U.S. Consultants	*5*
U.S. Volunteers	*4*
Local Consultants	*2*
Seminars/Farmers Meetings	189
Seminar	*174*
Forums	*15*
Association Excursions and Exchanges	6
Trade Shows and Exhibitions	3
Third Party Training	14
AgLink Staff Conducted Training	6
U.S. Consultant Conducted Training	11
Total Participants	737

1. Participatory/Practical Training

AgLink found the most effective method of training to be participatory and practical training: "learning by doing". Participants found such training sessions to be applicable to their own situations, enabling them to take ownership of the association's development.[4] The sector analysis training, in particular, gave the Boards of Directors (BoDs) more insight into the constraints and opportunities in their own industry, placing them in a better position to strategize for both the short and long term. The participatory approach employed in this activity instilled the BoDs with a clear understanding of the importance of responsiveness to members' needs, as well as a greater appreciation for new ideas from association members and key stakeholders.

[4] *This sentiment is apparent in the Client Satisfaction Survey, in which AgLink ranked first for three consecutive years, from 1999-2001.*

2. Business Oriented Approach

A business approach to association management is essential for sustainability. AgLink staff and training programs inculcated sound business and market-oriented principles through training seminars so that the associations would be well equipped to independently manage their operations, and continue to offer quality products and services to their members, non-member clients, and communities after the life of the project.

3. Trade Shows and Exhibitions

In line with this practical experience and business-oriented approach, AgLink facilitated the engagement of associations and their member in activities that would further promote and expand the associations and improve the marketability of members' products. Over the life of the project, AgLink was involved in several trade shows and exhibitions, including Milk Expo, Agro Expo, and Agrena. AgLink encouraged the associations to participate in the exhibitions as presenters, and this helped in their transformation from nascent groups into established business entities with strong connections to powerful industry players. Initial association skepticism about the value of these events soon dissipated, and the participants found them to be highly beneficial opportunities to network with industry specialists and to market members' products. After being introduced to the exhibitions through the project, the associations enthusiastically continued to participate in similar expos and trade shows on an annual basis. The results of participation included numerous business linkages as well as dramatically increased membership.

Aglink clients present their products at the Dubai Expo

D. Community Development Associations – Sheep Growers

The sheep growers' community development association was established in response to the unsuccessful sheep export initiative carried out in 1999.[5] The absence of effective associations for sheep and lamb producers and exporters was a major factor in the fragmentation of the sheep and lamb rearing industry, leading to high production and transaction costs, and making technical service delivery cost and time prohibitive. Associations were therefore developed to maintain export readiness by promoting technical transfer through member-based outreach and marketing activities.

Sheep Association members at weekly market

[5] *See III. Phase One – Component C: Export Development (1999) below for details.*

Trade Expo Profile: Agrena

Agrena is an international livestock exhibition started in 1999 with 120 participants (companies, organizations and consultancy firms) on 4,000 square meters of land. In 2003, the 5TH Agrena Expo was attended by 430 participants and 135,000 visitors, and covered 17,000 square meters of land, making it the world's fourth largest international livestock exhibition. Agrena participants included international companies in the fields of animal health care, poultry feeding, farm machines and equipment.

Five AgLink associations participated in both the open and closed areas of the Agrena Expo with the following objectives:

- ⇒ New marketing channels for members' products
- ⇒ Membership promotion
- ⇒ Partnerships with other organizations and/or the private sector
- ⇒ Access to modern input supplies, farm machinery, concentrate and additives
- ⇒ Strengthened relationships with national and international livestock stakeholders
- ⇒ Promotion of buffalo in the exhibition

Agrena Results

Buffalo and Veal Development Association

- o Opportunity for association boards and staff to introduce the association's mission, objectives and activities to a large number of visitors—attracted 17 new members (5 of whom paid membership fees on the spot).
- o Promotion at the national level through an interview on the Nile TV channel—BVDA chairman presented the association's vision and achievements, and promoted association membership.
- o Two written reports on BVDA—one in "Alahram Almassei" newspaper and one in "Sheep & Goat' international magazine.
- o Opportunity for BVDA to develop relations with the marketing manager of the Egyptian Soci Fund for Development and the chairman of the Principal Bank for Development and Agricultur Credit (PBDAC) in Alexandria, resulting in a meeting for the BVDA board to discuss the association's possible role in facilitating funding and credit for livestock businesses.
- o Facilitated contact between 50 farmer members and 200 future clients.
- o Contacted a number of beef farms and companies to provide healthy calves meeting established beef standards.

Dairy Processors' Development Association

- o New market channel for DPDA members' products, with about LE 15,000 worth of sales in white and hard cheese. The expo also provided an opportunity for members deal directly with consumers as a wholesaler.
- o Five deals between associations and major traders, including one for exportation of Egyptian dairy products to Saudi Arabia.
- o Opportunity to promote the association mission and objectives.

Fayoum Meat and Milk Producers' Development Association

- o Association promotion, and strong relations initiated with more than 30 major companies working in the fields of veterinary medicine, rations and farm machines—resulting in immediate deals with three firms.
- o Five board members acquired practical presentation and negotiation skills through direct contact with association site visitors.
- o 70-80 serious visitors were interested in making business connections, resulting in 10 contracts for members' farm products.

Minya Animal Wealth Development Association

- o Its first expo, MAWDA board members took the opportunity to market their products and build relationships with other players in the same field.
- o MAWDA identified modern techniques and current information re. the livestock sector through direct contact with more than 20 companies and firms participating in Agrena.

AgLink focused its initial efforts on facilitating the registration process and strengthening the capacity of the associations through various training programs. As the main economic activity in Matrouh is sheep and goat grazing, AgLink also provided technical assistance in small ruminant nutrition and health care. While Matrouh sheep growers were responsive to this technical assistance, the component was introduced too late in the project to realize substantial impact within the project timeframe. This component did, however, succeed in creating awareness of and the desire for further technical assistance, laying a strong foundation for emerging service providers in this area.

AgLink phased out the export component of the program in 2001, at which point assistance to associations in Matrouh ceased. The transitional phase was gradual and ensured that the associations continued to receive appropriate technical assistance from the Agricultural Research Center and Matrouh-World Bank project. In addition, AgLink facilitated the establishment of business relations with private sector enterprises that provide input supplies, as well as providing technical assistance on why and how to use the products. Furthermore, the project succeeded in establishing market linkages with Alexandria's sheep and goat market. At the close of the project, the associations continued to show signs of sustainability with membership growing to 347 and incomes having increased by 5 percent.

Table 8: Accomplishments – Institutionalization of Associations

	Proposed	***Achieved***	***Variance***	**%**
Establishment of Industry Associations	6	13	7	117
Livestock Associations	*6*	*6*	*0*	-
Community Development Associations	*0*	*7*	*7*	-
Viability of Associations				
No. Receiving Technical Assistance	*6*	*6*	*0*	-
No. Achieving Policy Changes	*2*	*7*	*5*	*250*
Membership Increase (from registration to end of project)	*50%*	*77.6%*	*22.6%*	*45*
Technical Staff Employed	*6*	*4*	*-2*	*-33*
Grant Development: No. Awards	*3*	*1*	*-2**	*-67*
No. MOALR Committees with Association Representation	-	*5*	-	-
No. Association Member Representatives in MOALR Committees	-	*17*	-	-

**Multiple grant proposals had been submitted by the end of the project, but had not been awarded or rejected.*

E. Results and Impact

The associations made up of AgLink commercial clients proved successful in addressing critical policy issues, and managed to influence policy makers. For example, DPDA was successful in curtailing the application of the pasteurization law until processors have had enough time to make the changes necessary to meet its requirements while maintaining their quality and price competitiveness. EMPA was successful in increasing the duty placed on imported milk powder, and in enforcing product labeling on all milk and dairy products to state the source of milk

(*powder* versus *real* milk), as well as in negotiating favorable prices for its members for feed inputs such as whole cottonseed and molasses. The BVDA and DPDA combined forces to create business linkages for their members by networking among their own membership bases, participating in trade exhibitions, and making contact with raw milk processors.

AgLink's activities and initiatives in the area of association development led to the following accomplishments:

Association Establishment and Capacity Building

- ⇒ Six livestock associations serving both commercial producers and processors were established. Illustrative examples of association accomplishments include:
  - o EMFTA – a contract to purchase ten mixer wagons successfully negotiated.
  - o EMTA – a database for Price Exchanger, Market Trends, and Price Expectations of livestock established.
  - o EMPA/EMFTA – feed grains obtained directly from the free zone area at a reduced price.
  - o EMPA/EMTA – attended seminar on WTO Agreements on Sanitary and Phytosanitary Measures and Technical Barriers to Trade.
- ⇒ Seven Community Development Associations for sheep grazers in Matrouh were established. This component was phased out during the extension phase.
- ⇒ In 1998, total association membership increased to 57 with dues of $73,529.

Advocacy

- ⇒ Efforts of nascent associations to address public policy issues:
  EMPA and EMFTA
  - o Requested and gained membership to national agricultural committees which oversee agricultural legislation.
  - o Received membership to the Ministry of Agriculture and Ministry of Economics Commodity Council.
  - o Succeeded in reducing tariffs on grains, feed ingredients and veterinary supplies.
  - o Addressed quarantine, insurance and tariff issues on imported animals and animal genetics.
  - o Succeeded in restructuring the system of farm taxation to allow for greater flexibility and for re-investment credits for farms investing in new technologies.
  - o Succeeded in reversing a new importation policy that encouraged the importation of powdered milk, negatively impacting the local milk producers' market and

Policy Issues Addressed by AgLink Associations

1. Powder Milk Importation Policy: Increased duty - EMPA (1999)
2. Set Policy on Milk Pricing: EMPA to provide monthly market data to Animal Wealth Sector - EMPA (1999)
3. Product Labeling on all Milk and Dairy Products: *Real* or *powder* milk - EMPA (1999)
4. Reduced Cost of Cottonseed for Producers through MOALR - EMPA (1998)
5. Associations Permitted to Import Semen - EMPA (1999)
6. Animal Slaughtering Standards: Age and weight limit of calves - BVDA (2002)
7. Application of Pasteurization Law: Deferred for two years - DPDA (2002)

drastically reducing the price of milk. Milk products packages must now clearly state source of product from *powder* or *real milk*.

BVDA and DPDA

- Deferred the full application of the milk pasteurization law to provide adequate time for processors to make the necessary modifications.

Technical Assistance

⇒ 11 short term technical assignments were conducted.
⇒ 189 seminars, forums and farmer meetings were held.
⇒ 6 association exchanges took place.
⇒ 14 third-party trainings were conducted.

Trade Shows and Exhibitions

⇒ AgLink facilitated participation in three international trade shows: Tulare, California; Madison, Wisconsin; and the National Meat Association Conference in Nevada.

Service Provision

⇒ FMMPDA contracted with Alpha Chemicals to buy inputs at 15 percent discount for the benefit of its members.

Coordination

⇒ A cost-sharing price table was agreed upon with EMPA, EMFTA and AgLink. This table set the level of cost sharing required for the associations to co-sponsor AgLink technical assistance training, and for individual association members to receive specific AgLink interventions.

Sustainability Efforts

⇒ AgLink employed techniques and approaches that enhanced the skills of the associations necessary for self-reliance. AgLink took on the role of an advisor and provided guidance to the associations to carry out what were originally considered to be AgLink activities. The association therefore became responsible for service delivery, financial viability, and institutionalization.

F. Lessons Learned

1. Training Methodology

Training must be tailored to the clientele's needs and qualifications. AgLink's standard training modules for association development were developed for beneficiaries with limited educational and technical experience. They were highly structured and employed a participatory approach emphasizing team building. While this approach was effective with many communities and individuals, it was not appropriate for professional entrepreneurs. Most of the members of EMPA, for example, were highly successful entrepreneurs who recognized the benefits of association, and were ready to invest time and financial resources. The key lessons learned for implementers were as follows:

1. *Flexibility* – The training approach must be adjusted to fit the needs and level of education and experience of clients. Not all modules are necessarily applicable for all clientele.

2. *Recommendations for business-minded commercial clients:*
   - Provide the basic background to how an association functions.
   - Train board members in their roles as leaders versus managers. Encourage the hiring of a manager from inception, in order for board members to disengage from a management role.
   - Train board members in strategic planning, and on the role and function of the hired manager.
   - Train managers in how to run a financially viable association, how to be responsive to members needs, and how to provide services to members.
   - Focus technical training on association staff instead of the board.
   - Listen and learn from the board, as they are highly successful business people.

DPDA Association members in "Strategic Planning" workshop

3. *Recommendations for less business-minded commercial clients:*
   - <u>Take a bottom-up approach.</u> From the outset of the association development component, association formation was based on the interest of a group of participants who were introduced to the concept at local informal farmers' meetings. At these meetings, the group's motivation was assessed. Interested and committed individuals became the founding members, and started developing the association from the grassroots with AgLink's assistance and training. Therefore:
     - The immediate task is to create awareness and promote the idea of associations to clients and indirect beneficiaries through seminars and workshops, taking into consideration the gender balance.
     - Boards of directors need to be familiar with the role of associations and their operating principles, so as to be able to request appropriate technical assistance. The board needs to be encouraged to take ownership of the association from the outset.

   - <u>Use a participatory approach.</u> The initial step is a needs assessment through participatory rural appraisal (PRA) methodologies to identify the needs of the constituents, and at the same time to create team ownership of the approach and the development of the association.

   - <u>Establish a collaborative partnership with the government.</u> It is important to work closely with the relevant ministry—in this case, the Ministry of Social Affairs—to ensure compliance with local policies and regulations. For AgLink, this included:
     - the initial training program on Law 32 to potential boards of directors;
     - how to draft the by-laws of the newly established association; and
     - guidance in the registration process of the association.

4. *Recommendations for smallholder clients:*
   - Start the promotion of associations from day one of smallholder activities.
   - Make association development an integral part of the smallholder development process, not a separate project component.
   - Use a "phased approach", starting with small informal groups meeting around a common objective—e.g. collective buying, direct marketing, etc. Such informal groups allow members to focus their efforts on implementing activities to achieve objectives, and concurrently to understand the value of working with others.
   - Utilize the success of an activity of an informal group to increase membership, and through continued strengthening and capacity building, begin the association formalization process.

Female smallholder clients receive technical training from an AgLink extension agent at a village meeting

2. Business Association Development versus Advocacy

One key lesson learned from this component was the importance of revenue generation for business oriented associations to become financially viable. A business association can address issues critical to farmers—such as affordable quality input supplies and market access—on a fee basis. The first step in association development should therefore be service provision in response to members' needs, before encouraging additional roles, such as advocacy.

G. Modifications to the Project

Based on experience gained under this component of the project, AgLink utilized an increasingly business oriented approach within its association development activities, with the aim of building associations more responsive to members' needs, and more likely to be sustainable after the conclusion of the project.

III. Phase One – Component C: Export Development (1999)

A. Context

In the second year of the project, the USAID Mission in Cairo revised its IR to emphasize exports and policy reform over productivity enhancement through accelerated technology and practice adoption. With Mission encouragement, and in order to be responsive to this revised IR, AgLink focused on export initiatives. USAID's directive to the project was to minimize work in the dairy and meat production sectors in favor of developing lamb for export.

B. Revised Goals and Objectives

Goal: *To stimulate economic growth through increased private-sector exports and import substitution in the livestock (dairy, beef and sheep) industries, through a holistic approach that addresses the entire production, processing and marketing chain.*

Objectives:

- *Increase quality control and standardization for producers and processors;*
- *Strengthen industry associations across the supply and production chain;*
- *Increase participation in public policy formulation;*
- *Facilitate new trade relationships for input supplies and machinery;*
- *Increase the volume and variety of meat and dairy export goods;*
- *Expand exports to new target markets, and;*
- *Increase domestic employment opportunities.*

C. Export Development Activities

To achieve the newly emphasized objective of export development, AgLink commissioned market studies, conducted by the Arab Marketing and Finance, Inc, to determine the magnitude of the export potential for Egyptian meat and dairy products, and to assess opportunities for aquaculture and lamb exports to the Middle East and Gulf countries. The market survey indicated that there was sufficient export potential for both Egyptian sheep and lambs and dairy products to other Middle Eastern and Gulf countries, in particular, to Saudi Arabia.

An AgLink client makes a business deal with trader at Dubai Expo

Table 9: Accomplishments – Export Development

	Proposed	*Achieved*	*Variance*	*%*	*Impact*
Target Market	2	6	4	300	$18,532,263
Dairy Processing Firms	*1*	*6*	*5*	*500*	*total*
Sheep Export Farmer Groups	*1*	*0*	*(1)**	*-100*	*revenue*
Export Market Study/Trade Trips	17	8	(9)	-53	*generated*
Market Studies	*1*	*1*	*0*	*-*	*by AgLink*
Trade Trips / Trade Shows	*16*	*7*	*(9)***	*-56*	*activities*

**See Sheep Export below for explanation.*
***Trade missions were conducted as needed to achieve the project objectives. The project achieved its objective of tapping into the export market, as indicated by the impact total. Of the seven trips, five included attendance or participation in trade expos.*

1. Dairy Processed Products Export

AgLink's export component helped to address a critical constraint in the Egyptian dairy industry: the lack of strong marketing strategies and linkages. AgLink had until this point utilized a vertically integrated approach, targeting all aspects of the dairy industry—from production through processing and marketing. This approach allowed the project to improve the industry's overall competitiveness domestically and in target export markets. The dairy export component was launched at a time when the dairy processor clients were seeking to expand their businesses, and looking to capture a share of the Gulf markets where over six million Egyptians lived. Based on previous market surveys, staff gathered information on processed food exporters and importers in the target market countries in order to plan effective marketing assessment missions. The main export products for all the clients were soft cheese (70 percent) followed by hard cheeses such as *gruyere* and *emmental*. These products were predominantly directed at the Egyptian population in the Middle East and Gulf region.

AgLink clients' products displayed at a trade fair

Six dairy processors were selected to participate in the project's effort to increase exports and improve overall productivity and quality in the dairy sector, namely: Katilo, el Massrien, Greenland, Arab Dairy, Prima, and Farm Cheese. Prior to AgLink's assistance, they together totaled $7 million per year in exports. AgLink offered these companies a range of services aimed at enabling the companies to meet market standards and cater to consumer preferences. Services included strategic marketing assistance (domestic and international) and technical assistance related to product development, quality control, and packaging and labeling. The overall objective of this component was to improve production efficiencies and plant capacity in an effort to increase exports to the regional markets. Through AgLink's assistance, these companies secured trade agents who pursued relationships with established clients and identified new markets. As of September 2002, processing clients had experienced a dramatic increase of over 70 percent in annual export sales, amounting to more than $18.5 million.

Table 10: AgLink Dairy Processing Clients – End of Project Export Levels

	Export Value*						
	Baseline (9/99)	***Year 1 10/99-8/00***	***Year 2 10/00-9/01***	***Year 3 10/01-9/02***	***Total Value 10/99-9/02***	***% Increase***	***Export Markets***
Arab Dairy Company	-	$798,000	$941,640	$599,592	$2,339,232	-36	KSA, UAE, Jordan, Iran, Oman
Farm Cheese	-	$203,700	$232,218	N/A	$435,918	-	KSA
Katilo Dairy Products Co.	$80,480	$360,960	$541,440	$837,456	$1,739,856	55	KSA, USA
Middle East Co. for Food Industries (Green Land)	$1,164,240	$1,552,320	$2,483,712	$8,658,009	$12,694,041	249	KSA, UAE, Libya, USA
Prima Foods Inc.	-	$129,720	$233,496	$390,000	$753,216	67	KSA
El Masrieen	$168,000	-	$246,000	$324,000	$570,000	32	Lebanon, KSA
TOTAL	**$1,512,720**	**$3,044,700**	**$4,678,506**	**10,809,057**	**18,532,263**	**73**	

**The above information is based on proprietary information provided by the clients, and should therefore be treated as confidential.*

2. Sheep Export

a. Start-Up and Implementation

Based on its success in the dairy sector, AgLink conducted analyses which indicated that the Egyptian livestock sector would benefit from expanding the project's export development activities to the sheep and lamb industry. In 1999, AgLink opened an office in Marsah Matrouh. Home to a high concentration of sheep and lamb growers, Matrouh served as an ideal base for this additional activity. Based on its market survey, AgLink developed a two-pronged approach, targeting both the production/supply side and the consumer/demand side of the sheet market.

b. Direct Technical Assistance to Sheep Producers

At the sheep producers' level, AgLink employed the same technical assistance methodology and curriculum used successfully with the project's dairy and beef commercial farmers. Components of this curriculum included nutrition, animal health and farm management. For example, AgLink trained 14 producers in sheep first-aid: these producers are now providing first-aid as independent private sector service providers.

As they had done with their beef and dairy clients, the AgLink team provided both U.S. and local experts for one on one consultations followed by in-depth seminars. Unlike the beef and dairy farmers, however, the sheep farmers were slower to adopt these new recommendations, primarily as a result of cultural differences. Sheep farmers, particularly in the Marsah Matrouh region, were all Bedouins with deeply held traditional practices, who had not previously been exposed to technical assistance in the same capacity and to the same extent as other farmers in the Nile Delta region. With limited extension and veterinary services, they were less familiar with and

adaptable to new practices. The target population was also 95 percent illiterate, making it more difficult to keep the records necessary to make and track improvements. Furthermore, the farms were highly scattered, making it logistically problematical to reach sheep farmers on a scale which would make the component effective.

c. Export Market Development

At the market level, based on the extensive studies conducted that indicated a demand for Egyptian sheep and goats in the Middle East and Gulf countries, AgLink attempted to identify potential importers in target countries as well as national exporters, to establish linkages between the producers and the export market. AgLink staff compiled a network of lamb exporters, pursued leads based on the market study, and attempted to establish business relationships with potential importers. However, AgLink was not successful in identifying a potential importer due to the dynamics of the market, as discussed below.

D. Results

Results of the technical assistance component were limited and difficult to measure, but included an increase in the number of mother sheep by 7 percent and the facilitation of contracts with ration formulation firms and grain suppliers. Informed by AgLink's technical assistance, the sheep producers' association took the initiative to hire a market information specialist in Alexandria to provide daily market information, enabling the farmers to secure a fair market price for their livestock. As a result of AgLink's technical assistance under this component, target communities of sheep producers in Marsah Matrouh realized an increase in income of 8-10 percent depending on their distance from the market.

The sheep export component of the project was not successful due to market forces beyond AgLink's control. The project faced significant barriers in developing a new export product under challenging marketing conditions and a highly fragmented sheep production sector. Constraints included:

- *Market Fluctuation:* The market dynamics for sheep changed by of the end of the year in which the analysis was conducted. The market data report of 1998 which indicated export potential for lamb was obsolete by the time implementation of the lamb export component was underway.

- *Market Barriers:* The primary barrier was the high domestic pricing versus low pricing in foreign markets. Specifically:
  - Domestic prices were 40 percent higher than export prices;
  - Egypt's lamb production was on a steady decline;
  - Shipping costs increased by over 20 percent within a one year period; and
  - Competing markets (Australia, New Zealand and Somalia) were "dumping" low priced lambs in the Gulf markets, and Saudi Arabia's import ban on Australian sheep was dropped.

- *High Production Costs:* The situation on the ground indicated that efforts to export would be challenging both because of high production costs and as a result of the process of gathering the required number of heads for one shipment. In order for the transaction to be cost effective, three to four thousand heads of animals would be needed per shipment. The project would therefore require at least 300 clients to meet the needs of a single export shipment. In order to compete with other countries, it would be necessary to maintain a sustainable supply for export on a regular basis: an impossible scenario due to the geographically dispersed nature and nomadic life style of the Bedouin sheep growers.

E. Lessons Learned

Sheep Export

1. *Client-driven project design* – The project design must be based on identifying and understanding the needs of the client. Export development may not be the right starting point, depending on the client base, and their needs, experience, and capacity.

2. *Sub-sector analysis* – The sub-sector needs to be thoroughly investigated and analyzed in the context of local economic, social and market conditions. Interventions must then be designed based on this analysis.

3. *Flexible approach* – There is a need to be flexible in the approach and methodology used to assist clients within a specific geographical context and industry. Objectives have to be modified to reflect changing circumstances.

4. *Pilot project* – New components should be introduced as pilot project, to assess their suitability for the target group before expanding as appropriate. This is crucial for an untested territory or a new market.

5. *Tailored approach* – Successful modules or interventions should not be replicated in different conditions or industries with an expectation of the same results.

The most important lesson learned from this component was the need to fully understand the local conditions and context before approaching a new territory. In the case of the sheep export component, it became clear that the market study did not fully explore all aspects of the situation on the ground, as the sample of people interviewed did not represent the general Bedouin population. This sample group lived close to Alexandria and was exposed to urban ways of thinking and doing business, while for most Bedouin, contact with NGO projects has been in the form of relief assistance, rather than business-oriented industry development.

F. Modifications to the Project

Sheep Export

⇒ The export focus for the sheep component was shifted to association development and strengthening of the lamb industry. AgLink opted to work in a more comprehensive manner to position the industry as a whole to take advantage of export opportunities once economic factors allowed.

⇒ The project continued to monitor domestic prices and the economic climate in order to take advantage of export opportunities when market factors became more favorable.

⇒ The sheep export component was discontinued and replaced with an integrated association development program. The new strategy was for associations to maintain export readiness by promoting technical transfer through member-based outreach and marketing activities. A Regional Association was to be AgLink's main conduit to work with the lamb producers in order to:

- Allow the project to work with the producers in a more cost and time effective manner.
- Make the lamb and sheep sector more competitively positioned to supply both the domestic and export markets more efficiently.
- Be the unifying presence in the industry that would continue to exist well beyond the life of the project.

To this end, seven Community Development Associations were established, as discussed above.

Under the two-year extension period, the AgLink export component was transferred to the ALEB project at the request of USAID to permit emphasis on smallholders and expansion to Upper Egypt.

Phase Two: AgLink Extension 2001-2004

A. Rationale

Smallholders' seminar in Minya

In its first five years, AgLink addressed only a small segment of livestock stakeholders—primarily large commercial farmers with the capacity to have a major impact on the sector, in a limited geographic area (the Nile Delta). Based on the project's impact with commercial clients, it was proposed to apply this proven methodology to smallholder farmers, who constitute 94 percent of livestock producers in Egypt. The need for technical assistance was much greater for this target group as the extension services they received were limited in both quality and availability. Therefore, a 28-month extension was granted to bring AgLink's services to this critical client base, while continuing to build the capacity of the project's commercial clients. Since the majority of Egyptian smallholders and 44 percent of livestock are based in Upper Egypt, it was necessary to focus the smallholder component in this region.

B. Revised Goals, Objectives and Expected Results

Goal: *To continue to stimulate the economic growth of the Egyptian livestock industry, and to institutionalize project activities to ensure sustainability.*

Objectives:

- *Increased quality control and standardization for meat and dairy producers and processors.*
- *New and strengthened industry associations across the livestock industry supply and production chain.*
- *Increased participation of livestock industry stakeholders in public policy formulation.*
- *New trade relationships for input supplies and machinery.*
- *Increased domestic employment opportunities in the livestock sector.*
- *Strengthened local institutions ensuring sustainability of AgLink interventions.*
- *Enhanced skill set of local government entities.*
- *Improved livestock markets.*
- *Increased access to agriculture loans.*
- *Widespread business and market oriented principles infused in the livestock industry.*
- *Expanded geographical base of clients in Upper Egypt.*

Expected Results:

- *Continued economic growth of commercial clients, including dairy and meat producers, dairy and meat processors, and feed and farm suppliers through direct technical assistance.*
- *Integration of smallholder and small-scale commercial clients into the livestock value chain through technical assistance interventions addressing the entire production, processing and marketing chain.*
- *Increased incomes of smallholder client base.*
- *Increased capacity of local livestock industry organizations and associations to ensure sustainability of improved practices.*
- *Improvements in poverty alleviation and gender equity among target smallholders.*

C. Methodology of Smallholder Component

The AgLink extension was designed to further diffuse and perpetuate the body of best practices identified during the first five years of the project. New pilot activities were designed to test approaches to transferring skills and technologies to smallholders, while developing local organizations as long term transmitters of these improved practices. Extension phase components included:

1. Extension of client base
    a. Small and medium commercial farmers
    b. Smallholder farmers
2. Geographic expansion to Upper Egypt (including opening an office in Minya)
3. Institutionalization of AgLink services through Livestock Extension Councils (LECs), MOALR extension agents, and associations
4. Inclusion of a poverty alleviation and gender equity objective for Upper Egypt smallholders
5. Facilitation of access to credit for smallholders through PBDAC
6. Establishment and development of smallholder livestock associations according to the objectives of AgLink's Phase One Component C.

The project continued its successful work with commercial clients, expanding its reach to target small commercial farmers, providing direct technical assistance to help Egypt's livestock sector meet competitive international standards, and strengthening the associations established under Phase One. Two associations were established in Upper Egypt: Fayoum Meat and Milk Producers' Development Association

Smallholder Pilot Program Objectives

Sustainability through:

⇒ Access to Local Resources and Information – through research centers and training institutes
⇒ Awareness – create demand for new services that increase smallholders' income
⇒ Technical Training – for new skills to address essential services
⇒ Entrepreneurship and Job Creation – develop fee-based service providers of quality essential services for underserved villages
⇒ Gender Equity – identify opportunities for targeting women

(FMMPDA) and the Minya Animal Wealth Development Association (MAWDA). These associations recruited members primarily from small to medium clients, and focused on providing services to smallholders. At the termination of AgLink, FMMPDA and MAWDA were still in their infancy, requiring continued technical assistance from USAID supported programs and other service providers.

Since AgLink interventions with commercial clients are discussed at length in the first half of this report, and since they were not significantly modified under the extension phase, this section of the report will focus on the pilot activities that were conducted under the smallholder component of the project. Results achieved under the other components of Phase Two are included in the final section of this report.

The objective of the new component was to increase the revenues of smallholder clients - defined as farmers with less than six head of cattle or buffalo - in Minya (Upper Egypt), and in Alexandria and Mansoura in the Delta region. The methodology employed so successfully with commercial farms had to be tailored to fit the smallholders' situation. AgLink proposed utilizing MOALR extension staff to deliver technical interventions tailored to smallholders' interests and capacity levels as a sustainable approach to reaching large numbers of smallholders. Extension agents would therefore serve a similar function for smallholders as AgLink project officers continued to perform for commercial clients.

Live Animal Market in Minya

During the two-year extension phase, the project developed and piloted interventions for smallholders to be implemented through MOALR extension staff and through informal and formal associations. AgLink identified and introduced a series of basic technologies related to animal nutrition and health. In order to achieve a significant economic impact on smallholder farmers, the technologies proposed were simple to grasp, as well as easy and inexpensive to adopt. In addition, the project emphasized the idea of *farming as a business*, introducing proper farm management systems through training in simple business and marketing skills and record keeping. While basic technologies in animal nutrition and health lead to significant impact in the short term, proper management of the smallholder farmer's overall operation ensures sustainable growth and viability in the future.

D. Smallholder Component Activities

1. Technical Assistance

a. Livestock Extension Agents Training Activities

At the heart of AgLink's strategy to reach smallholders was the training of livestock extension agents (LEAs). AgLink training enabled extension staff to provide technical assistance to smallholder farmers on a regular basis, thereby institutionalizing the new technologies within the MOALR.

Table 11: Accomplishments – Technology Transfer: LEAs Selected and Trained*

	Proposed			Achieved			Total Variance	%
	Male	Female	Total	Male	Female	Total		
Governorate	75	75	150	113	41**	154	4	3
Alexandria	*25*	*25*	*50*	*38*	*16*	*54*	*4*	*8*
Dakhalia	*25*	*25*	*50*	*34*	*15*	*49*	*(1)*	*-2*
Minya	*25*	*25*	*50*	*41*	*10*	*51*	*1*	*2*

**100 percent of the selected LEAs completed the AgLink training program and provided technical training to at least 10 smallholders or other LEAs.*

***This represents the total number of available female LEAs meeting the selection criteria for the three governorates.*

Table 12: Accomplishments – Technology Transfer: STTA and Other Activities

	Proposed	Achieved	Variance
Short Term Technical Assistance	*A demand driven approach addressing key issues and employing effective methodologies based on approximately 55 training days for each LEA and a project total of 8,250 LEA trainings days*	3	-
U.S. Consultants		*3*	-
Local Consultants		*0*	-
Seminars and Farmers' Meetings		25	-
Seminars		*25*	-
Forums		*0*	-
Staff Conducted Video Presentations		2	-
Farm Excursions and Exchanges		8	-
Third Party Training		58	-
AgLink Staff Conducted Training		31	-
Total Number of Participants		3,079	-
Total LEA Training Days*	**8,250**	**9,237**	**987**

**Training days vary from one day to ten days per session. The total number of participants is based on one-day sessions. Total training days are calculated using a modest average of three days per session multiplied by the total number of participants.*

In the Phase Two extension proposal, AgLink anticipated 55 training days per LEA. The initial LEA training program was composed of PRA, extension principles and communication skills conducted by AgLink staff, followed by technical training conducted by Sakha Dairy Training Institute. The former training introduced a participatory approach to extension services and enabled the LEAs to conduct a needs assessment of the farmers in the districts in which they would work, and to design an intervention strategy based on this assessment. The technical Training of Trainers program focused on the basics of animal nutrition, health and farm management, and on how to effectively deliver this training to smallholders. The second phase of the training program provided additional technical training in areas such as silage making, animal husbandry, animal health diagnosis and treatment, ration formulation, nutrition, calf raising, artificial insemination awareness, cattle feeding, and gender awareness.

This training curriculum equipped the LEAs with the knowledge, tools and techniques to carry out their preliminary extension duties, and effectively communicate with smallholders. These duties included selecting clients, conducting farmers' meetings, providing simple recommendations, and facilitating training activities. LEAs continued to receive ongoing instruction in relevant technical areas, thereby improving their capacity to deliver quality training to the smallholders.

Result: Characteristics of Empowered LEAs

- ✓ *Team Work*
- ✓ *Good Communication Skills*
- ✓ *Technical Knowledge*
- ✓ *Flexibility and Improvisation*
- ✓ *Business Oriented*
- ✓ *Facilitator*
- ✓ *Change Agent*
- ✓ *Decision Maker*

⇒ ***QUALITY INTERVENTION***

AgLink staff, in collaboration with the LECs, provided follow-up supervision and mentoring to the LEAs as a means of continuing on the job training, and of ensuring that appropriate technical assistance reached the smallholders. As a result of site visits, field officers were able to monitor the performance of the LEAs and provide guidance on the extension services provided.

Table 13: Technology Transfer – Smallholder Clients Selected

	Proposed			*Achieved*			*Variance*	*%*
	Male	*Female*	*Total*	*Male*	*Female*	*Total*		
Governorate	750	750	1500	1,222	331	1,553	53	4
Alexandria	*250*	*250*	*500*	*390*	*157*	*547*	*47*	*9*
Dakhalia	*250*	*250*	*500*	*424*	*72*	*496*	*(4)*	*-1*
Minya	*250*	*250*	*500*	*408*	*102*	*510*	*10*	*2*

Table 14: Technology Transfer – Status of Recommendations

	Proposed	*Achieved*	*% of Tota*	*Variance*	*%*
Total Recommendations Provided by LEAs	-	18,767			
Fully Implemented	-	*11,973*	*63*		
Partially Implemented or In Progress	-	*3,014*	*23*		
Not Implemented or Not Applicable	-	*2,151*	*14*		
Not Tracked	-	*15*	*0*		
Average No. Recommendations per Client	6	7		1	15
Awareness of Loan Process and Products*	375	666		291	78

**See section D. 6. "Facilitating Access to Credit" below.*

b. Smallholder Farmers' Meetings and Forums

After selecting their smallholder clients, LEAs conducted meetings to establish small farmers' groups and to assess and prioritize their needs. These small farmers' groups provided a forum for technological information to be shared and disseminated among smallholders. During group meetings, smallholders received technical assistance from LEAs, AgLink staff and technical specialists, which helped them to increase the level and improve the quality of production, allowing

LEAs conducting Smallholders needs assessmnet excersise in Minya

them to raise their income by 25 percent, and to expand employment. LEAs also exposed their clients to the benefits of small group formation, explaining that groups were an effective means of overcoming a wide range of constraints. In addition, LEAs provided ongoing "one on one" consultations with their smallholder clients to monitor their implementation of recommendations and to provide additional assistance to ensure maximized rates of adoption.

In addition to direct technical assistance through LEAs, AgLink also facilitated other activities including STTA from local consultants, video presentations, farm excursions, veterinary campaigns, and third-party training activities in conjunction with research institutes and other entities. LEAs also benefited from several seminars and training sessions conducted by U.S. consultants, whose expertise was cost effectively utilized by dovetailing assignments with commercial client consultancies.

Table 15: Smallholder Technical Assistance Activities

	Proposed	***Achieved***
Seminars / Farmers Meetings		179
Staff Conducted Video Presentations	*Demand*	11
Veterinary Campaigns	*Driven*	16
Other Campaigns	*approach*	11
Farm Excursions and Exchanges	*addressing*	22
Third Party Training	*key issues and*	13
AgLink Staff Conducted Training	*employing*	4
LEA Conducted Training	*effective*	133
Total Participants Training Days	*methodologies*	22,214
Average No. Training days per Smallholder		6

c. Veterinary Campaigns

AgLink's veterinary campaigns made a substantial impact in the areas of animal health and reproduction. The campaigns brought qualified local veterinarians into target communities to provide basic critical services at minimal cost to smallholders who otherwise had little or no access to such services. These campaigns created an awareness of the importance of health care and the economic benefit of veterinary services including increased fertility. More importantly, this service helped to further cement relationships between smallholders and LEAs and among governmental, non-

Veterinary Campaigns – Results

⇒ Potential for INCREASED INCOME – treated animals were at optimal health resulting in:
- Increased meat daily gain – up to 10%
- Increased milk production – 4% to 25%
- INCREASED FERTILITY RATE.

⇒ JOB CREATION – veterinarians viewed farmers as potential clients for their private fee-based services.

⇒ EXPANDED HEALTH CARE – veterinarians provided more services at village levels.

⇒ RECEPTIVITY – smallholders received demonstrably beneficial services from the LEAs, and were then open to information and services for regular animal health care.

⇒ CREDIBILITY – LEAs offered farmers tangible services which helped to increase trust between farmers and extension agents.

⇒ 16 VET CAMPAIGNS – served 34 villages in three governorates.

governmental, and private sector veterinary stakeholders.

This innovative activity brought together key players in the livestock sector—the Animal Reproductive Research Institute (ARRI), the Government Veterinary Services Organization (VSO), and the two pharmaceutical companies Pfizer and ADWIA—each contributing to the effort through in-kind contributions of livestock medicines, veterinarian services, essential equipment, and transportation. The total contribution at project's end was valued at LE 212,125.55.

All of the stakeholders benefited from this collaborative effort: smallholder livestock farmers' animals were treated, resulting in increased revenues; the pharmaceutical firms created a potential new market for their products; ARRI gained a valuable opportunity for direct contact between farmers and researchers; veterinarians gained more experience and credibility with a new target population; and LEAs received additional practical training as veterinarian assistants, which further strengthened their relationships with smallholders.

2. Pilot Business Development Services Program

AgLink initiated additional pilot activities which contributed towards increased income, improved production quality and scale, employment generation, gender equity and sustainability. The activities were designed to deliver services identified by project staff and LEAs as lacking and in demand by the target population, and with the potential for becoming viable fee-based business services. In order to stimulate demand for the new services, AgLink fostered awareness and developed the technical capacity of target smallholders through seminars and practical training. The project concurrently provided technical and business skills training to entrepreneurial LEAs to enable them to provide these new services for a fee.

3. Increased Access to Local Resources

a. Local Veterinary Campaigns

Based on the success of the national veterinary campaigns, a similar local program was introduced in Alexandria in collaboration with the Department of Veterinary Services (DVS). The primary purpose was to establish better relations between local veterinarians and smallholders. Veterinarians participating in the program visited smallholder clients to conduct diagnosis and treatment of animals. This service was free, but the farmers were responsible for medication costs. The veterinarian then facilitated an *ad hoc* discussion for clients and non-clients in the village on livestock issues relevant to the community.

Local Veterinary Campaigns
- Inception to Project's End -

- ⇒ 10 veterinary campaigns
- ⇒ 127 AgLink smallholder clients received veterinary services
- ⇒ Approximately 190 animals treated
- ⇒ 69 non-clients benefited from seminars

This program proved to be highly effective, as the farmers saw results very quickly, and were therefore more apt to apply recommendations from the veterinarian in the future. The DVS decided to take the lead in continuing this activity post-AgLink, in response to considerable local demand.

b. Veterinary Training

In addition to the significant and quick impact of the campaigns on smallholders' livestock, local veterinarians also benefited from "on the job" training while assisting veterinarians from research institutes. However, it became evident that local veterinarians required additional training in specialized procedures in order to provide continuous quality services to their smallholder clients beyond the life of the project. AgLink therefore developed intensive training programs for local veterinarians in all three regions that were conducted by GOVS/VSO and ARRI as part of the veterinary campaigns. The training—which included on the job mentoring and seminars on subjects relevant to the communities' needs—focused primarily on calf raising, artificial insemination, nutrition, and reproductive health. Local veterinarians were also exposed to new technologies that optimized reproductive efficiency. The veterinarians commented that the training was responsive to their needs, and that they found the practical on the job training to be invaluable.

c. Sakha Training Program

AgLink effectively utilized the methodology of practical training and demonstration through its relationship with the Sakha Dairy Institute to continuously update the technical skills of LEAs in animal nutrition, health care, and farm management. The training included the following components:

- *Technical Training:* The Sakha training program consisted of interactive classroom sessions in a select subject area followed by practical demonstrations at one of the many demonstration sites. These demonstrations were carefully orchestrated to address practical issues faced by smallholders, and give the participants an opportunity to practice improved techniques themselves.

- *Herd Improvement*: Smallholders were able to purchase high quality bulls with documented genetic profiles directly from Sakha. In the long term, this will improve the quality of their herd.

- *Institutional Linkages and Sustainability*: LEAs facilitated smallholders' direct access to Sakha's technical resources both during and after the life of the project. LEAs established good relations with Sakha's trainers and had direct and open communication, enabling further technical consultation.

4. Entrepreneurship and Job Creation

Hoof Care Pilot Program
Expected Impact:

⇒ Provide Hoof Trimming Service at the Village Level
⇒ Increase Milk Production up to 15%
⇒ Increase Daily Gain Substantially
⇒ Generate Employment – *Hoof Trimmers*

a. Hoof Care Pilot Program: Hoof Trimming

AgLink conducted several training sessions on hoof trimming for both LEAs and smallholders in a number of villages in the three governorates. Hoof trimming is an essential maintenance activity that sustains optimal productivity by eliminating the

stress caused by limping due to worn out hoofs. Studies have shown that a lack of hoof care directly affects productivity in dairy animals by up to 15 percent, and dramatically reduces daily weight gain in beef animals. Hoof trimming is very simple and inexpensive procedure to apply. Yet, this service was not available at the village level, and smallholders were not aware of this need. AgLink's approach to this problem was to create awareness and build technical capability through video presentations and practical training for both LEAs and selected smallholders. The objective was to have a hoof trimming service available at the village level while at the same time creating employment.

This pilot program was launched in 15 villages, and the campaigns were successful in creating awareness of the importance of hoof care, as well as motivating some smallholders to pursue a hoof trimming business. Two or three smallholders per village were selected to participate based on their interest, age, desire to help smallholders, and entrepreneurial spirit. These smallholders attended an intensive four-day practical training at the Sakha Dairy Institute, followed by practical experience at the village level. Upon completion of their internship, the participants returned to Sakha to sit for exams. Successful candidates were awarded certificates that enabled them to operate as official hoof trimmers in their community. By the conclusion of the program, 50 hoof trimmers had been trained and certified.

b. Home Milk Processing

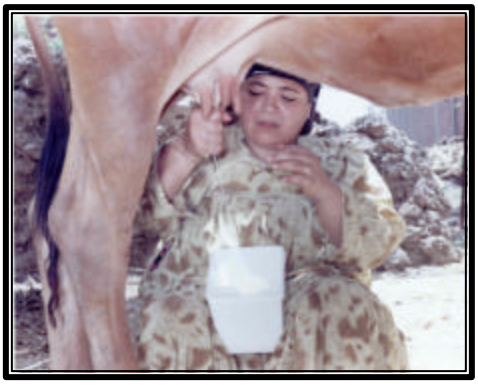
With a poverty alleviation objective, AgLink addressed gender inequity issues by targeting tasks specifically associated with women, and assisting women smallholders through technical assistance to generate greater household income. AgLink conducted training seminars facilitated by LEAs for smallholder women primarily involved in home processing. In general, these women had very limited processing capabilities and produced only one product—butter. The seminars played a significant role in training women in proper milk handling and processing procedures to produce hygienic and high quality (better tasting) products. The women were shown how to maximize their production as well as how to process other types of products, for example, yogurt and *karish* (lightly salted cheese). They were made aware of the economic benefits of proper milk handling and of diversifying their product line. The women marketed their new products in their neighborhoods, realizing more than a four-fold increase in sales revenues. Approximately 300 smallholder women participated in this program with great

Home Milk Processing: Potential Impact

⇒ Increase yield – minimum 28%
⇒ Improved quality → better tasting products
⇒ Increase income - minimum LE 30 monthly as savings from loss and increased production from processing (based on utilizing 5 kg raw milk per day).

" ....since I started to use heat treatment, I no longer have losses of milk due to burning... with my increased income due to this savings, I have purchased a second separator as production has increased and so has my business..."

Mrs. Refqa Isaac Shehafa, Smallholder, Minya



An AgLink smallholder client demonstrates proper milking technique as a result of AgLink training

success. At the end of the project they were proudly selling their homemade cheese and yogurt in their communities.

5. Small Informal Group Organization

Small group formation is the first step toward sustainable association development. Under this second phase, AgLink encouraged small group formation among smallholder farmers to enable them to overcome many of their constraints collectively. Through participation in AgLink training activities and with the encouragement of LEAs, smallholders gained an understanding of the concepts and benefits of group action. At their own initiative, smallholders formed groups to benefit from collective buying, joint management of resources, and raising animals together.
Participating smallholders realized the following results from the increased bargaining power inherent in small group formation:

⇒ *Cost of feed reduced by 16 percent;*
⇒ *Feed quality improved – Total Mixed Ration;*
⇒ *Daily weight gain (beef) increased by 200 gram; and*
⇒ *Daily milk production increased by 0.5 liter.*

By the end of the project, there were 12 informal groups serving 107 smallholders (66 of which were women). The rate of growth in group membership increased as other farmers observed the benefits derived from collective action.

Examples of Smallholder Informal Groups

Alexandria
20 smallholder women collectively bought medicines to disinfect the navels of new born calves.
- The LEA facilitated the purchase of medicines at a reduced cost → 40% savings.
- The women applied the new calf raising techniques soon after the LEA training and saw immediate results – *seeing is believing*.

Mansoura
20 smallholders in Awesh Elhagar collectively bought ingredients to make their own rations, leading to:
- Savings of LE 50 (7%) per ton of cotton seed ;
- Improved quality of feed; and
- Increased production (increased daily gain → increased milk production).

Three farmers in Mansoura are raising their animals together as one farm in an open system. This has:
- Reduced overall farm operation costs;
- Led to increased production; and
- Enabled the farmers to sell their final products together.

6. Facilitating Access to Credit

While AgLink was not successful in tracking the numbers of smallholders who actually received small loans as a result of the project's facilitation, the team did achieve widespread awareness of the loan process and accessible loan products within its client base. By project's close, 666 smallholder clients had become aware of the loan process, against a proposed number of 375. It is hoped that as Egypt's rural financial infrastructure develops and a network of business service

providers emerges to facilitate appropriate credit mechanisms, the awareness created by AgLink will translate into widespread access to credit among Egypt's rural smallholders.

Table 16 – Smallholder Clients' Access to Loans

Access to Loans	*Proposed*	*Achieved*	*Variance*	*%*
Awareness of Loan Process and Products	*375*	*666*	*291*	*78*

E. Results of Smallholder Pilot Component

1. Livestock Extension Agents

The result of AgLink's LEA training component was the emergence of a cadre of LEAs committed to their jobs and capable of effectively transferring new techniques and methodologies to their smallholder clients. These LEAs constituted a cohesive network capable of facilitating smallholder access to local resources. Several LEAs also emerged as models of entrepreneurship.

LEAs took the lead in implementing activities, with AgLink staff monitoring progress and providing guidance as necessary. By the end of the project, most LEAs were fully capable of carrying out their duties as extension agents with confidence, and were effectively serving their smallholder clientele. Furthermore, their relationship with the smallholders had evolved to that of a mentor, consultant and friend. LEAs conducted training sessions and seminars, organized events, and ensured high levels of participation by the target group. The results of a recent training evaluation conducted in Alexandria showed an overall increase of 22 percent (from 63 percent to 85 percent) in LEAs' technical skills and extension abilities. This improvement was evident from the volume and quality of services they provided, and from the impact these services were having on smallholders. (See text box above.) 57 percent of all activities for smallholders were conducted by LEAs, of which 45 percent were direct training events. In addition, LEAs facilitated 43 percent of the third-party conducted activities including training sessions, seminars, and veterinary campaigns serving approximately 4,000 smallholders.

Smallholders' Benefit From AgLink LEA Interventions

Overall Impact:

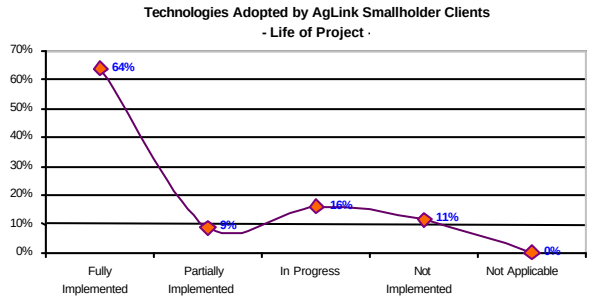
- ⇒ Increased Production
  - o 10% increase in daily weight gain
  - o 17.5% increase in milk production
- ⇒ Improved Quality Products
- ⇒ Diversification – *processed products*
- ⇒ Improved Feed – *ration formulation, silage*
- ⇒ Reduced Costs of Input Supplies
  - o Feed costs down by 30%
  - o Medication costs down by 40%
- ⇒ 12 Informal Groups formed for Collective Action
- ⇒ Entrepreneurship and Job Creation
  - o Hoof trimming
  - o Home milk processing
  - o Animal trading business
- ⇒ Healthier Animals
  - o Higher fertility rate
  - o 20% reduction in calf mortality

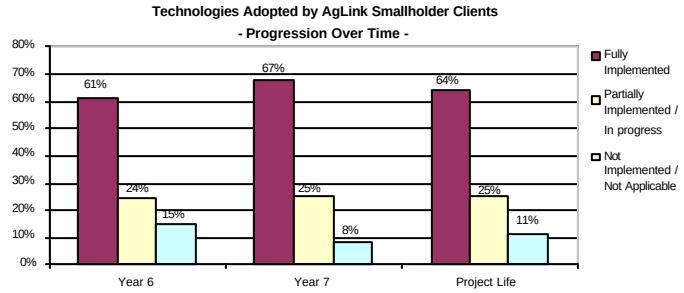
In general, the overall impact of LEA interventions led to improved quality, increased production (increased daily weight gain and increased milk production), reduced costs, and hence increased income through collective action and market linkages.

2. Smallholder Client Satisfaction

Table 17 – Status of Recommendations		
	Total	**%**
Monitored Recommendations	18,752	
Fully Implemented	*11,973*	*64*
Partially Implemented	*1614*	*9*
In Progress	*3014*	*16*
Not Implemented	*2146*	*11*
Not Applicable	*5*	*0.02*
Recommendations not yet tracked	15	0.08
Total Recommendations	18,767	

LEAs effectively transferred new techniques and methodologies to their smallholder clients, and smallholders used LEAs as sources of information. They respected the advice they received from the extension agents, recognizing that they had experienced significant positive results as a consequence of following the LEAs' recommendations. This is confirmed by the number of recommendations that were adopted by smallholders. By June 30, 2003, 64 percent were fully implemented while 25 percent were partially or are in the process of being implemented. It was also apparent from the progression over time that smallholders were most convinced by AgLink's simple technologies: the full implementation of recommendations rose from 61 percent in the first year to 89 percent in the final year.





3. LEA Entrepreneurship

Animal Trading Business

Prognosis of Animal: Poor Nutrition, Lacks Minerals and is Limping

Purchase Price = LE 2,700
Maintenance & Rations
(14 Days) = LE 98
Sale Price = LE 2,983
Profit = LE 185

The impact of AgLink's training of LEAs was further realized through various LEA initiatives in the business arena. LEAs established agribusinesses that extended quality services to smallholders, in some cases providing these services in collaboration with other smallholders.

LEAs applied their newly acquired skills and expertise in the business sector early on in the program. Examples of LEA business ventures are included below.

⇒ *Animal Trading* – A group of three LEAs in Semelout Village and two smallholders in Minya formed a small profitable business trading damaged animals. The group bought animals with minor problems, usually related to hoof or nutritional issues, at a reduced price—generally LE 100-200 below the market price. Using the technical knowledge gained from AgLink training courses in animal nutrition, fattening, hoof trimming, and other topics, they were generally able to cure animals within 5-6 days with proper treatment and feeding. The group then resold the animals 1-2 weeks later at a higher price, drawing on the skills gained from AgLink's business training. By the close of the project, this new business enterprise had succeeded in buying and reselling 12 animals, generating a profit of approximately LE 2,220.

⇒ *Ration Formulation* – In Minya, an extension agent and five female smallholder clients purchased ration ingredients separately and mixed them according to recommendations made at AgLink training courses on cow nutrition and minerals. By bulk purchasing 1,000 kg of ration ingredients as a group, they were able to get a better than market price, enabling them to increase their yield by three liters per head, and giving them a net profit of LE 420 for 10 milking cows over a 20-day feeding period.

Ration Formulation Business

Ration Cost	= LE 6 / Day
Milk Yield	= 9 Liters/Day
# Heads	= 10 Milking Cows
Feeding Days	= 20
Price of Milk	= LE 0.9
Net Profit	= (9*10*20*0.9)–(6*10*20)
	= LE 420

⇒ *Feed Supply* – A female LEA in Alexandria pursued a feed business for which she was purchasing a grinder and mixer. She planned to offer customized feed—a balanced ration—based on smallholder customers' needs, and on ration formulae established by AgLink consultants specifically for smallholders.

⇒ *Consulting Firm* – In Alexandria, three LEAs were establishing a consultancy business to serve smallholders for a modest fee. Based on client satisfaction with AgLink technical assistance, there was a demand for qualified private extension agents, for which farmers were willing to pay. At the close of the project, the LEAs were exploring the registration process to formalize the business as a legal entity.

Buffalo at a an AgLink client's farm in Giza

F. Lessons Learned

1. ***LEAs*** are effective in a favorable environment where they are empowered and provided with the appropriate training and tools to carry out their extension duties directly with their target clients.

2. ***Veterinarian campaigns*** provide the impetus for a successful smallholder activity. The veterinary services encourage all farmers in the community to participate. Baseline information is collected as part of the registration process. Follow-up seminars are more effective as they are tailored to address the prevalent issues encountered during the campaign.

3. ***Simple and low-cost technologies*** are the most effective. These methodologies achieve significant positive impact, and convince smallholders that there are alternative methods and techniques which can be easily and inexpensively applied.

4. ***Learning by doing*** is the most appropriate method of intervention for smallholders. Practical training should be chosen over classroom or theoretical teaching.

5. ***Farm excursions*** are highly effective as "seeing is believing." These excursions also establish relationships between smallholders and commercial clients, allowing for an exchange of experiences and business services.

6. ***Small groups*** are preferable over one-on-one technical assistance for smallholders. Working with small groups is more efficient and effective, as groups are conducive to disseminating knowledge and motivating others to try new approaches. A participatory approach encourages farmers to share their experiences with others.

7. ***Business and technical skills*** are equally important. Sustainability in the long term is achieved by addressing both the technical aspects of an operation as well as the overall business management. Smallholders were found to be more receptive to applying recommendations when they were aware of the economic implications.

8. ***Local veterinarian skills*** need to be enhanced and updated to ensure that they can provide quality services to smallholders. Veterinary campaigns are most effective in providing the on the job training. At the same time, they re-establish credibility between veterinarians and the smallholder clients.

9. ***Linkages with all stakeholders*** in the public and private sectors are essential to sustainability. Collaborative efforts with key stakeholders on specific activities—such as veterinary campaigns—achieve optimal impact as local resources are utilized in an efficient manner.

10. ***Stakeholder committees*** such as the LECs have proven successful in establishing the benefits of collaboration among the various government entities. The next step is to change the balance of power by increasing the number of private sector representatives. This will ensure that the approach to supporting livestock smallholders is private sector and market driven.

11. ***Smallholder loans*** are difficult to facilitate in the absence of rural financial infrastructure. PBDAC was found to be ineffective in providing loans to smallholders.

12. ***Utilization of local resources*** should be maximized. It is important to conduct a detailed market study of the services and resources available to smallholders before designing a program component to promote access to these services.

AgLink Final Results

I. Institutionalization of AgLink Activities

The project was successful in establishing linkages with key stakeholders, resulting in effective collaboration among MOALR, research institutions, and the private sector to carry out training programs and campaigns that benefited all participants. This led to the institutionalization of AgLink activities within the participating institutions.

AgLink in Milk 3 Expo

A. Livestock Extension Councils

Livestock Extension Councils—established at the governorate and district levels, and composed of senior public and private livestock and finance stakeholders—played a crucial role in facilitating and overseeing smallholder activities. In line with AgLink's strategy to institutionalize project services, the LEC participants were updated on current activities and discussed next steps at monthly meetings. These fora created awareness among industry decision makers of new techniques and methodologies, and mobilized their assistance in making these available within the industry. Examples of LECs' impact on AgLink's interventions include:

- ⇒ Bureaucracy was dramatically reduced. LECs efficiently and effectively facilitated and coordinated activities and services recommended by the councils, and provided local resources in support of training and campaigns.
- ⇒ LECs helped establish linkages and strengthened relationships between the key livestock sector stakeholders.
- ⇒ LECs created awareness of the PBDAC loan process and loan products available for smallholders.
- ⇒ LECs continuously promoted private sector support for smallholder activities, such as fodder chopper services.

B. MOALR

Several organizations under the auspices of the MOALR (the Animal Health Research Institute, ARRI, GVSO and the National Research Institute) and AgLink associations collaborated to carry out many activities such as veterinary campaigns, training programs for smallholders, and market linkages through the associations, which made a definitive impact on the livestock industry in general and on smallholders in particular. These various initiatives also led to new partnerships among the private sector, ensuring continued services for smallholders beyond the life of the project.

C. Associations

One of the primary objectives of AgLink was to promote business associations that were financially viable and that provided essential member-driven income generating services such as access to input supplies, training and seminars, market linkages, and advocacy. AgLink's promotion of associations, along with capacity building and training activities, led to the start up of six new associations, four of which were capable by the close of the project of designing interventions and writing proposals based on a sector analysis. The associations were linked to various donor funding sources, including the NGO Support Center. By the end of AgLink, the BVDA had been awarded a grant of LE 350,000, and the other associations were pursuing grants from the NGO Service Center, World Bank and other donor sources.

Accomplishments: Member Driven Associations

- ⇒ Lowered Feed Prices
- ⇒ Successfully Lobbied for Lower Tariffs
- ⇒ Addressed and Mobilized around Policy Issues
- ⇒ Initiated Networking Activities

Successful entrepreneurs who help found an association and take on the role of an investor, bring an overt business orientation to the management of the association. Of the four industry associations established under Phase One of AgLink, EMPA was the most effective and successful association at the close of the project. EMFTA, BVDA and DPPDA were also founded by commercial clients, but did not posses the same high degree of entrepreneurial and business experience. The more traditional farmers in the Community Development Associations in Bedouin Marsah Matrouh and the Upper Egypt smallholder associations tended to be slower in developing a business focus. However, by the end of AgLink, the smallholder associations were making significant progress in providing needed services to their members, and had registered according to Egyptian Law.

Association member from Matrouh meets with ACDI/VOCA Country Representative

Illustrative results of AgLink's association development interventions follow:

- ***Networking*** – The associations work very closely with other associations, research institutions, and the private sector to share experiences, collaborate in efforts to achieve common objectives, advocate for issues of mutual interest, and establish market linkages between their members and potential clients. Participation in exhibitions—for example, Milk 3 and AgroFood—further promoted the associations, established business linkages for members, and improved the marketability of members' products.

Milk 3 Exhibition: Business Linkages (2003)

- Þ Three association members marketed their own products netting a profit of approximately LE 4,000.
- ⇒ Other participants negotiated the purchase of dairy equipment and tools at discounted prices.
- ⇒ Two BVDA members negotiated long-term contracts valued at LE 2,004,000 for their products .and services.

- ***Service Delivery and Financial Viability*** – Most of the associations were capable of facilitating member driven activities such as seminars. Some established linkages with input suppliers and potential markets for their members. Associations focused their efforts on income generating activities that were both beneficial to their members and ensured the financial viability of the association.

- ***Institutionalization*** – By project's end, most of the associations were capable of carrying out activities that were previously coordinated by AgLink.

D. Commercial Client Components

In addition to the new smallholder component, Phase Two continued the interventions designed under Phase One, with greatly increased results, as shown below.

Table18: Outputs – Technology Transfer: Commercial Clients Selected

	Proposed	*Achieved*	*Variance*	*%*
Phase One	*30*	*162*	*132*	*440*
Phase Two	*120*	*119*	*1*	*<1*
Cumulative	150	281	131	87

Table 19: Outputs – Technology Transfer: No. Recommendations/Client (Cumulative)

	Proposed	*Achieved*	*Variance*	*%*
No. Clients	120	223	103	86
Average No. Recommendations/Client	6	16	10	167

Table 20: Results – Technology Transfer: Status of Recommendations

	Phase 1		**Phase 2**		**Cumulative**	
	No.	***%***	***No.***	***%***	***No.***	***%***
Total Recommendations Provided	3563		2755		6318	
Fully Implemented	*2377*	*67*	*1560*	*57*	*3937*	*62*
Partially Implemented/In Progress	*387*	*11*	*506*	*18*	*893*	*14*
Not Implemented/Not Applicable	*733*	*21*	*586*	*2*	*1319*	*21*
Not Tracked	*66*	*2*	*103*	*4*	*169*	*3*

Table 21: Illustrative Results – Export Development

AgLink Clients	***Target Location***	***Accomplishments***
1. Arab Dairy 2. El Misrieen Dairy 3. Farm Cheese 4. Greenland 5. Katilo 6. Prima Foods	Gulf Countries: Saudi Arabia, UAE, Jordan, Iran, Libya	⇒ Conducted market survey. ⇒ Sponsored / facilitated trade trips to Gulf countries. ⇒ Trade trips: 1. Processing firms attended International Food Exposition (Sharjah) and Dammam International Food Shows. 2. Escorted 4 firms (Prima, Katilo, Arab Dairy and Greenland) to Jeddah, Saudi Arabia to participate in the Egyptian Products Fair. ⇒ Processing clients experienced a dramatic increase (an average of

		>40%) in export sales. This translates to approximately $600,000 per month in new export contracts.
Katilco Dairy Products Company	Saudi Arabia	⇒ Negotiated with El Sharja Trading Co. based in Saudi Arabia to export two containers products valued at $75,000 on a monthly basis. ⇒ Negotiated with El Fars Group and El Kousaby Association (two Saudi importers) for future shipment of products to Saudi Arabia. ⇒ Established new business contacts in Saudi Arabia and immediately secured a $35,000 sample order.
Middle East Co. / Greenland Products	Saudi Arabia, Libya, Italy	⇒ Negotiated with Soliman Rasheed, an importer from Saudi Arabia, for shipping five containers of processed cheese products to Saudi Arabia per month: each container valued at $35,000. ⇒ Negotiated with Soliman Rasheed for an exclusive distribution agreement to distribute products to United Arab Emirates. Exported LE 68,750 worth of products. ⇒ Negotiated with MASA Trade Company to export Green Land products to Libya (an average of three containers per month valued at LE 1,780,000. ⇒ Began importing plastic packages from Saudi Arabia to improve packaging and labeling. ⇒ Met with existing clients and negotiated a $315,000 increase in monthly sales volume. ⇒ Gained new export clients in Libya, Italy and Saudi Arabia.
Prima Foods, Inc.	Saudi Arabia	⇒ Signed an agreement with Al Assad Group for distributing Prima Foods products in Saudi Arabia. ⇒ Finalizing contract to supply cheesecake to a grocery chain. ⇒ Negotiated contracts with two distribution firms—L El Joussaby Corporation and Alassad Group.
Arab Dairy	Dubai, Qatar, Oman, UAE	⇒ Negotiated a contract with the Egyptian Exports Center in Dubai to present its products to two Gulf food distributors. ⇒ Exploring export possibilities in Qatar and Oman. ⇒ Secured new contracts with Damam distributor and added $80,000 in monthly sales to the contracts the firm secured during the International Food Fair in UAE.

II. Illustrative Client Profiles

A. The Gebril Veal Farm

Said Gebril's Veal Farm is located about 48 kilometers south of Alexandria off the Alexandria-Cairo Desert Road. In 1988, when Said Gebril, a graduate in agriculture engineering, started his farm to fatten 40 buffalo calves of various ages, he was convinced he knew all he needed to know to undertake any farm project. He soon discovered that his academic education was only the start. Thanks to techniques he learned from AgLink field representatives and through AgLink sponsored U.S. tours—including visits to livestock farms in California, Wisconsin, Colorado and Pennsylvania—his farming operation succeeded well beyond his initial expectations.

When he began his buffalo-calf operation, Mr. Gebril hoped to double his herd of 40, or perhaps even increase it to a maximum of 100 animals. At the close of the project, his farm produced 2,500 heads annually. Within the following three years, Mr. Gebril expected to expand his pens to accommodate 10,000 heads. As another measure of his success, when Mr. Gebril began his work with AgLink he had five employees. By the end of the project, Mr. Gebril employed 30 workers from his rural community south of Alexandria.

AgLink Project Director reviews implementation of technical recommendations with client Ali Mahran at his farm in Giza.

Said Gebril started his operation using a farm management method prevalent in Egypt involving small closed pens which were kept in the dark with poor ventilation and inadequate sanitation. The original pens cost more than the animals themselves. In 1997, Mr. Gebril first met with an AgLink representative. He said, "We discussed the project services and activities. To be honest, I looked at him, but paid no attention to what he was saying. I did say to myself: 'Leave the door open and give it a try.'"

One of the first steps was to develop an action plan for farm development. AgLink provided regular consulting visits by American and Egyptian specialists, with an emphasis on animal health care and farm management. Said Gebril participated in a number of seminars and training courses provided by AgLink, and participated in four U.S. study tours to learn new techniques. Mr. Gebril replaced the pens for the calves with hutches from a design he saw in California. The hutches provided adequate ventilation, shade, access to feed and water, and concrete slabs underneath that could be hosed down for proper sanitation. In addition to changes made in the way the animals were housed, Mr. Gebril also concentrated on nutrition: using milk replacers, a total mixed ration, free choice of water and food, and vitamin and mineral additives. Following recommendations from AgLink, he also started a vaccination program as part of the receiving process for all incoming calves.

Mr. Gebril successfully modified the entire design of his farm and improved calf rations, resulting in a dramatic increase in the average daily weight gain of calves—from 250 g per calf per day to 700 g. The calves' shorter growth period enabled Mr. Gebril to achieve four cycles per year instead of two. Beyond adopting virtually all of AgLink's formal recommendations, Mr. Gebril also applied many of his own ideas gained from his trips to the U.S. He credited AgLink with the strides he has taken with his farm: "Working with AgLink," Mr. Gebril said, "that's when the farm changed, and my success story began."

B. Inter Meat

Inter Meat is an animal fattening company owned and managed by General Hamza Kamel. The company had a total of 120 fattening buffaloes on ten feddans (4.2 hectares). General Kamel needed technical assistance in the areas of record-keeping, pest control, farm design, herd management, nutrition, and feed bunk management, and turned to AgLink for help. Over a

period of four years, Inter Meat received seven consultant visits and five follow up visits, and farm managers attended a training course in beef cattle nutrition and farm management, as well as eight seminars in various aspects of nutrition, veterinary services, and farm management conducted by AgLink staff.

Open System designed Farm

Inter Meat received 34 recommendations, of which 29 were fully implemented. The farm was converted from a closed system with two daily feedings to an open system with free choice water and feed. Cattle were grouped and penned by body weight, in accordance with efficient farm management methodology. Shade was extended over the feed bunks and water troughs, to prevent animals from expending excessive energy keeping cool. Inter Meat also began formulating its own feed rations according to AgLink's recommendations, and produced and incorporated chopped silage and forage as part of a modern Total-Mixed Ration program. The buffaloes' daily weight gain rose from 1.0 to 1.4 kg per head per day, which reduced the fattening cycle and improved the farm's capacity. Meat production increased by 17.5 tons per year, and annual revenues by $36,690.

In addition to the impact exhibited at Inter Meat, surrounding small farms also benefited, as did the EMFTA. General Kamel took it upon himself to help surrounding farmers improve production, using Inter Meat as a place to host farmers' meetings, and providing small farmers with opportunities to see new technologies and practices in operation. This kind of enthusiasm and commitment rarely goes untapped, and General Kamel was recently elected treasurer of EMFTA—an association he helped form to facilitate linkages between meat producers and processors.

C. Negm Farm

When Mr. Ossama Negm attended his first AgLink village seminar in 1998, Negem Dairy Farm had a low production rate of about 20 liters per head per day for its 150 Friesian and Brown Swiss dairy cows. In the intervening years, Negm Farm managers attended numerous seminars and training events provided by AgLink; they received six consultant visits and nine follow-up visits by AgLink Field Officers; and the farm implemented 25 new technology and practice recommendations.

Negm Farm near Mansoura

Mr. Negm purchased a mixer wagon to implement a recommendation on the use of Total Mixed Ration; a Berseem clover mower for better fieldwork mechanization and silage production; 20 cooling fans to combat bovine heat stress; and a spare three-ton cooling tank to accommodate increased herd capacity. He also adopted modern artificial insemination techniques and purchased 110 semen straws from U.S. genetics dealers.

On Negm Farm, the pens and feed bunks were redesigned to accommodate free choice feeding, shade areas, and improved waste removal techniques. In addition, a computerized record keeping system has been adopted that tracks individual animal productivity and costs.

The results were astounding. As a result of these new technologies and practices, milk production increased by five liters per head per day; the fat content of the milk rose by 23%; calf mortality rates decreased from 7 percent to 1 percent, and the farm's herd capacity increased from 150 to 275 milking heads. Annual production increased by 1,414 tons per year, and revenues by $414,000. With these increased revenues, Mr. Negm planned to expand the area of the farm to 2.5 Feddan (1.05 hectares) and increase the number of milking cows to 150 heads.

D. Smallholder Farmers

Mr. Eid Mohamed Ali—from El-Salam village, Khorshid district, in Alexandria Governorate—was interested in improving his dairy animals' genetics. Through AgLink, he received training in artificial insemination and reproduction issues at the Sakha Dairy Training Unit. Because artificial insemination was not available in his area, he bought a Holstein bull from Sakha, which cost him LE 2,250. He used the bull for his animals and for those of other smallholders in his village, which provided him with a net profit of LE 40 per day.

Ms. Refka Es'hak Shahatah implemented AgLink recommendations made to her through an LEA and has consequently increased the milk production of her two animals by 10 percent. After attending an AgLink dairy processing seminar, she decided to produce and sell pasteurized milk and *karish*, which has increased her income by LE 150 per month. Ms. Shahatah used these additional funds to purchase a new animal to increase the size of her herd. At the close of the AgLink project, Ms. Shahatah was meeting regularly with her female neighbors, talking about her experience, and trying to convince others to copy her example.