

**NILE VALLEY REGIONAL PROGRAM
PHASE II**

Resource Management Series

Volume 14

RAPID RURAL APPRAISALS

New Lands of Egypt

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Resource Management Rapid Rural Appraisals: New Lands of Egypt

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Foreword

Limited soil and water resources and threatened sustainability of agricultural production call for an effective resource management strategy and farming systems approach in agricultural research. Implementing a long-term research program where more emphasis would be on systems-oriented rather than commodity-oriented agricultural research would represent such a strategy. Therefore, the Resource Management Component of the Nile Valley Regional Program (NVRP) of the International Center for Agricultural Research in the Dry Areas (ICARDA) was developed. The Component, which started in 1994 in one of the Nile Valley countries, Egypt, and is expected to be extended to the others, aims at achieving sustainable production at a high level, based upon the need to protect the resource base (land and water) through good management. This would be achieved through basic intensive technical research (long-term on-station trials) and on-farm extensive monitoring of resources in farmers' fields and farmers' decision making logic.

Preparatory studies were carried out prior to conducting the trials and monitoring activities. The objectives of these studies were to define and characterize the major farming systems of the main agroecological environments; to identify and prioritize—with respect to the natural resources—the constraints to optimum utilization and the threats to sustainable production; and to provide an outline for the strategy, design and implementation of the long-term research activities.

The preparatory studies involved three procedures for information collection: **Inventory Studies**, in which existing information and details of the ongoing research and development, related to soil and water management, agronomy and cropping systems, and socioeconomic were collected; **Rapid Rural Appraisals**, which included qualitative sampling of farmers and extension views concerning current limitations, constraints, dangers, and opportunities in the utilization of soil, water, and inputs; and **Multidisciplinary Surveys**, which employed short-focused questionnaires to fill some important information gaps. In general, information collected in the preparatory studies dealt with resource description, resource utilization and management, productivity, and threats to sustainability. This knowledge was used in planning the long-term research activities at selected locations by identifying high-priority researchable resource management problems, in the context of realistic cropping sequences and farm level economics.

The outcome of these studies is hence presented in what is called the **Resource Management Series**. The series includes a total of 18 volumes on **Inventory Studies**, **Rapid Rural Appraisals**, and **Multidisciplinary Surveys** in the **Old Irrigated Lands**, **New Lands**, and **Rainfed Areas**. In the **Inventory Studies**, five volumes on the research and development activities and findings in each of the **Old and New Lands** were compiled. These volumes were on **Agronomy**, **Soil Fertility and Management**, **Water Management**, **Socioeconomic Studies**, and a **Synthesis** of all the latter. The **Inventory Studies of the Rainfed Areas** included two volumes, one on the **Northwest Coast** and the other on **North Sinai**.

These studies were conducted in Egypt with the involvement of the **Agricultural Research Center (ARC)**, **Desert Research Center (DRC)**, **National Water Research Center (NWRC)**, **National Research Center (NRC)**, **Ain Shams University** and **ICARDA** within **NVRP** with financial support from the **European Commission**. Appreciation is expressed to all those who contributed to these important reviews and studies.

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Weights and Measures

1 feddan (fed) = 0.42 hectare = 1.037 acres

1 hectare (ha) = 2.38 feddans

1 ardab wheat = 150 kg

1 ardab barley = 120 kg

1 ardab faba bean = 155 kg

1 ardab lentil = 160 kg

1 ardab maize = 157.5 kg

1 ardab sorghum = 140 kg

1 qentar (cotton) = 150 kg

1 LE = 100 piasters

Acronyms

ACDI = Agricultural Cooperative Development International

ARC = Agricultural Research Center

AERI = Agricultural Economics Research Institute

EU = European Union

ICARDA = International Center for Agricultural Research in the Dry Areas

IFAD = International Fund for Agricultural Development

ILO = International Labor Organization

LE = Egyptian Pound

NVRP = Nile Valley Regional Program

PBDAC = Principal Bank for Development and Agricultural Credit

RRA = Rapid Rural Appraisals

VC = Variable Cost

WFP = World Food Program

Executive Summary

The Nile Valley Regional Program (NVRP) focuses on increasing long-term research on farming systems and rotations to improve the practical value and economic feasibility of its recommendations. The project's objective is to promote agricultural sustainability.

The present report contains the results of the Rapid Rural Appraisal (RRA) study in the New Lands, one of the three agro-ecological environments in Egypt.

RRA was designed to collect and assemble information about the conditions and problems prevailing in the selected areas of the study. It assesses general feelings and values and identifies issues for deeper investigation by means of a questionnaire. RRA is followed by a multidisciplinary survey.

The RRA team was made up of scientists from the fields of socioeconomics, agronomy, soil, and water management.

Three localities were selected for the study, namely the Sugar Beet area, El Bustan (both in Nubaria region), and El Hamoul (in Kafr El Sheikh Governorate). Seven villages were selected to host RRA meetings from the three areas. Twelve meetings were conducted, nine with male graduates or beneficiaries, and three with wives of beneficiaries.

Sugar Beet Area

- El Tanmia Village (graduates).
- Village No. 1 (graduates, beneficiaries, wives).

El Bustan Area

- Ali Ebn Abi Taleb Village (graduates, beneficiaries, wives).
- Abdel Moneim Riad Village (graduates).

El Hamoul District

- Khaled Ebn El Waleed Village (graduates).
- Village No. 42 (beneficiaries, wives).
- El Mostakbal Village (graduates).

Two scripts were developed, one for men's meetings, and one for women's meetings. The script for men included topics dealing with available water, land, inputs, labor, livestock, credit, cooperatives, agricultural information, services, off-farm income, and cropping pattern. Detailed descriptions of the selected sites are included in the report.

Fresh irrigation water from the Nile is used in the Sugar Beet area and El Bustan, while mixed (drainage and fresh) water is used in El Hamoul. Surface irrigation systems prevail in the Sugar Beet area and El Hamoul, while modern irrigation systems are prevalent in El Bustan.

The soil was identified as calcareous in the Sugar Beet area, and sandy in El Bustan. The soil was identified as heavy clay in the south of El Hamoul, and sandy in the north. Various levels of soil salinity were mentioned at the meetings. Alkalinity was mentioned in some parts of El Hamoul.

No specific cropping patterns were reported in the Sugar Beet area and El Bustan. Cultivated crops are selected according to anticipated profitability, available financing, and market demand. In the heavy clay soil of El Hamoul, the crop pattern follows a cotton/rice rotation. Wheat and berseem are cultivated in all three areas in the winter. In summer, the main crops are watermelon and tomato in the Sugar Beet area, peanuts and watermelon (seed) in El Bustan, and rice, cotton, and watermelon in El Hamoul. Average yields and profitability of the main crops are included in the report.

Pests and diseases were found throughout the three areas. They are controlled by chemicals or, in El Hamoul, by using insect traps. Various types of weeds are spread via irrigation water or manure. They are controlled either by chemicals or manual removal.

Marketing channels include cooperatives, wholesalers, traders, sugar companies (in El Hamoul), and exporters. Market problems include the malpractice of traders, lack of marketing facilities and information, and the high cost of transportation.

All types of inputs are available. Quality is, in general, good, with the exception of chemicals, which have no quality control. All meeting attendees complained about recent increases in the price of inputs.

Livestock, including cows, buffaloes, sheep, and goats, are kept by beneficiaries and occasionally by graduates. They are raised for milk and meat production for family consumption and marketing. All types of poultry are raised by both beneficiaries and graduates, mainly for family consumption.

Hired labor is available at various wage rates, according to the area and the season. Such labor comes from neighboring areas.

The main sources of credit are the Principal Bank for Development and Agricultural Credit (PBDAC), the International Fund for Agricultural Development (IFAD) project, wholesalers, traders, and relatives.

The role of the cooperative in supplying inputs is shrinking as a result of policy reform. Beneficiaries tend to have more trust in—and conduct more business with—the cooperative than graduates.

The main sources of agricultural information include extension agents, the farmers' own experience, demonstration fields and field days, extension bulletins, and the media.

Services differ from site to site, but in general, they are more available in the Sugar Beet area and El Bustan than in El Hamoul.

Off-farm income is important, as agricultural income does not cover family needs. Various agricultural and non-agricultural jobs were mentioned as sources of supplementary family income.

Various foreign projects are ongoing in the Sugar Beet area and El Bustan, while no foreign projects were reported in El Hamoul. All attendees expressed their willingness to cooperate with any project aimed at increasing yield and income.

Shortages of irrigation water, poorly functioning or nonexistent drainage systems, soil salinity or alkalinity, lack of financing, lack of marketing channels and information, high prices of inputs, and low prices of outputs are some of the problems faced in the New Lands.

Investigation of the role of women in the New Lands shows that beneficiaries' wives share in all agricultural operations except plowing and hoeing. In addition to their household duties, they are responsible for raising livestock, processing dairy products, marketing farm products, and also work as hired laborers on other farms to generate more income. Women graduate farmers who settle in the area must bring their families with them. They rarely share in agricultural operations or in raising animals, as they usually come from urban areas and are not familiar with rural conditions.

In general, the beneficiaries, with their extensive agricultural experience in the Old Lands, manage their available resources in the New Lands better than the graduates.

This study recommends that three of the seven sites studied be selected for future study by NVRP. These three villages are: Village No. 1 in the Sugar Beet area, Ali Ebn Ali Taleb Village in El Bustan, and Khaled Ebn El Waleed Village in El Hamoul.

Rapid Rural Appraisals: Introduction and Methodology

Introduction

Consultants from the EU prepared a Project Proposal and Financial Plan for NVRP-Phase II/Egypt. They concluded that threats to the sustainability of Egypt's agricultural production demand a resource management strategy and farming system approach for agricultural research which take the following into consideration:

- More long-term research in the area of farming systems and rotations in order to improve the practical value and economic feasibility of recommendations.
- A change from commodity-oriented to system-oriented agricultural research.

The long-term resource management component of NVRP-Phase II/Egypt was formulated to meet these demands. Activities will be conducted in two main stages, namely, preparatory studies and long-term research.

The objective of the preparatory studies is to formulate a baseline of information about the selected sites in the three agro-ecological environments: the Old Lands, the New Lands, and the rainfed areas. Information gathered from the preparatory studies involves: resource descriptions, resource utilization and management, productivity, and threats to sustainability. This information will help monitor improvements within the life span of the project.

The preparatory studies comprise the following:

- The inventory studies.
- The Rapid Rural Appraisals.
- The multidisciplinary surveys.

The inventory studies were completed and presented at the national coordination meeting of the project in October 1994. The Rapid Rural Appraisals began immediately after that meeting.

The Rapid Rural Appraisals

Objectives

The RRA was designed to collect and assemble information for the following purposes:

- To provide project developers with an understanding of the conditions under which rural people work and live.
- To determine the resources, farming systems, problems, limitations and needs of the study areas.
- To provide an understanding of rural institutions, organizations, relationships, and linkages between the community and society.
- To facilitate monitoring and evaluation of project impact.

Methodology

The RRA is a sociological survey technique, or type of research, which is designed to provide timely, relevant and beneficial information. It can achieve a rapid assessment of conditions and problems in a particular area or community. In addition to its speed, the major advantage of the RRA survey is its informal structure. The survey consists of group meetings of 15–25 attendees lasting approximately two hours. The RRA involves investigators from different disciplines along with key informants or community leaders who invite the attendees to the meetings. Different types of data from different resources are used in the study.

Traditionally, this technique is used prior to a formal survey to assess general feelings and values and to identify issues for deeper investigation. Table 1 outlines some of the differences between the RRA approach and the standard survey technique.

Table 1. Conventional versus Rapid Rural Appraisal approach.

Techniques Employed	Conventional	Rapid Rural Appraisal
Statistical analysis	Often a major part	Little or none
Formal questionnaires	Often included	Avoided
Interviews with local farmers and key informants	Through format questionnaires if at all	A major component, using semi-structured interviewing
Qualitative descriptions & diagrams	Not as important as the hard data	Considered at least as equally important
Sampling	Statistically important	Often small sample size, selecting key areas, households, etc. Statistical requirements are not always adhered to.
Consulting secondary data sources	Yes	Yes
Measurements	Detailed, accurate	Qualitative indicators are used
Group discussions	Informal unstructured sessions	Via semi-structured workshops and brainstorming techniques

Procedure

In October 1994, a multidisciplinary RRA group was formed to conduct meetings for the New Lands.

One meeting was held with each social group represented in each area. The meetings were held with graduates, beneficiaries (small farmers), and the wives of beneficiaries. Two scripts or outlines were developed: one for the meetings with men and another for the women's meetings. The team was trained on how to conduct the meetings.

The following topics for the men's meetings were discussed and agreed upon by the Technical Follow-up Committee for the project:

Irrigation water and drainage

- Water sources.
- Type and quality of water.
- Water rotation and sufficiency of available water.

- Water distribution.
- Irrigation systems.
- Drainage system.
- Problems and constraints.

Land

- Land resources.
- Changes in soil fertility over time.
- Problems and constraints.

Cropping patterns

- Winter, summer and *nili* crops.
- Times of planting and harvesting.
- Average yield/feddan.
- Average price/unit of production.
- Permanent crops.
- Recent changes in cropping pattern.
- Crops farmers would like to grow but cannot.
- Pests, diseases, and weeds in the area and their control.
- Problems and constraints.

Marketing

- Different marketing channels.
- Marketing problems.

Inputs

- Input sources, and recent changes in sources.
- Changes in input prices and the effect on cropping pattern.

Labor

- Division of labor by agricultural operation.
- Available hired labor throughout the year.
- Average wages for laborers.

Livestock

- Animals.
 - Types of animals owned and their feed.
 - Responsibility for animal care.
 - Dairy products.
- Poultry.

- Beehives.

Credit and finance

- Sources of credit (formal and informal).
- Regulations for credit.
- Credit needs.

Cooperatives

- The role of the cooperative.

Agricultural information

- Sources of agricultural information.

Available services

- Available services in the area.

Off-farm income

- Sources of off-farm income.

Foreign projects working in the area

Description of the Areas under Study

Three areas were selected for the RRA study: the Sugar Beet area, El Bustan (both in Nubaria), and El Hamoul (Kafr El Sheikh Governorate). Soil type was the main criterion for selecting the areas for study. Because of the difference in soil type, each area has a specific type of farming system.

Table 2 summarizes the general characteristics of each area, and Map 1 shows their locations.

Sugar Beet area

This area is located along the extension of El Nasr Canal, west of the Delta. Most of the soils are calcareous clay loam and silty clay loam. The soils of the area are characterized by the presence of high calcium carbonate content throughout the soil profile. Calcic and gypsum horizons are present in many parts of the area, which may be indurated in some locations.

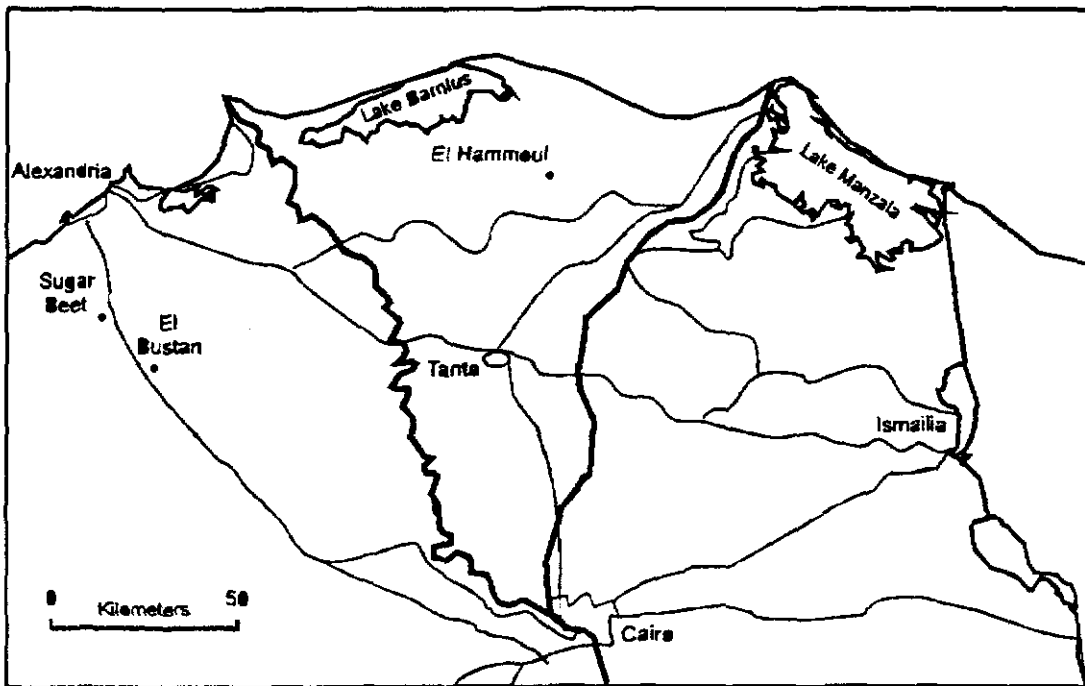
The main source of water is the River Nile, via El Nasr Canal. Irrigation systems include surface, drip and sprinkler.

The Sugar Beet area occupies 52,110 feddans (21,895 ha) to the east of El Nasr Canal. The study covered a cultivated area of about 36,563 feddans (15,362 ha), inhabited by several different social groups. There are 6,226 holders in the study area. This includes 5,025 graduates (including 603 women and 602 graduates from technical secondary schools) and 1,201 beneficiaries. The cost of the land for graduates is LE 1,000 per feddan (1 feddan = 0.42 ha), in addition to LE 6,000 for the house. Payment is over 30 years with a five-year interest-free grace period.

Table 2. General characteristics of the selected areas.

Item	Nubaria		El Hamoul	
	Sugar Beet	El Bustan	El Mansour	El Zahraa
Total area (fed)	52,110	15,6450	36,690	15,300
First development (year)	1982	1985	1970	1,985
Type of soil	Calcareous	Sandy	Heavy clay	Sandy
Total cultivated area (fed)	36,563	23,290	19,866	15,237
Number of villages	27	11	12	7
Total No. of holders	6,226	4,230	4,057	2,458
Type of holders				
Graduates	5,025	3,496	288	734
Beneficiaries	1,201	580	3,769	1,418
Investors	-	-	-	301
Other	-	154	-	-
Area of main crops in 1993/94 (%)				
Winter crops				
Wheat	63	37	15	30
Berseem (long)	15	5	35	20
Faba bean	11	3	4	-
Pea	1	25	-	-
Barley	1	5	7	3
Tomato	4	1	-	-
Berseem (short)	-	-	25	16
Sugar beet	-	-	9	3
Onion	-	5	1	-
Flax	-	-	3	-
Other vegetables	3	6	2	2
Summer crops				
Watermelon	16	-	-	12
Tomato	29	2	-	3
Maize	21	5	12	15
Cantaloupe	7	-	-	-
Sunflower	3	-	-	-
Peanuts	-	47	-	-
Watermelon (seed)	2	18	-	15
Sesame	1	3	-	-
Cotton	-	-	21	23
Forage sorghum	-	-	41	-
Rice	-	-	35	26
Vegetables	1	10	18	-
Fruit trees	2	15	-	-

Source: Agricultural departments in the different areas.
1 hectare = 2.38 feddans.



Map 1. Locations of the three selected areas for RRA study.

Winter crops cultivated in 1993/94 were wheat, berseem, faba bean, pea, barley, tomato, and other vegetables, and in summer, watermelon, tomato, maize, cantaloupe, sunflower, watermelon (seed), and sesame. Fruit trees represented 2% of the cultivated area.

There are 27 villages in the area. Villages selected for RRA study were Village No. 1 and El Tannia Village. Map 2 shows their location.

Foreign projects operating in the area are:

The International Labor Organization (ILO) Project

This project conducts two activities: cooperative training, and activities for Egyptian rural women. The former is responsible for teaching the skills necessary to undertake cooperative work. The latter is responsible for creating new activities for rural women in order to generate more income for the family through various small industries.

The International Fund for Agricultural Development (IFAD) Project

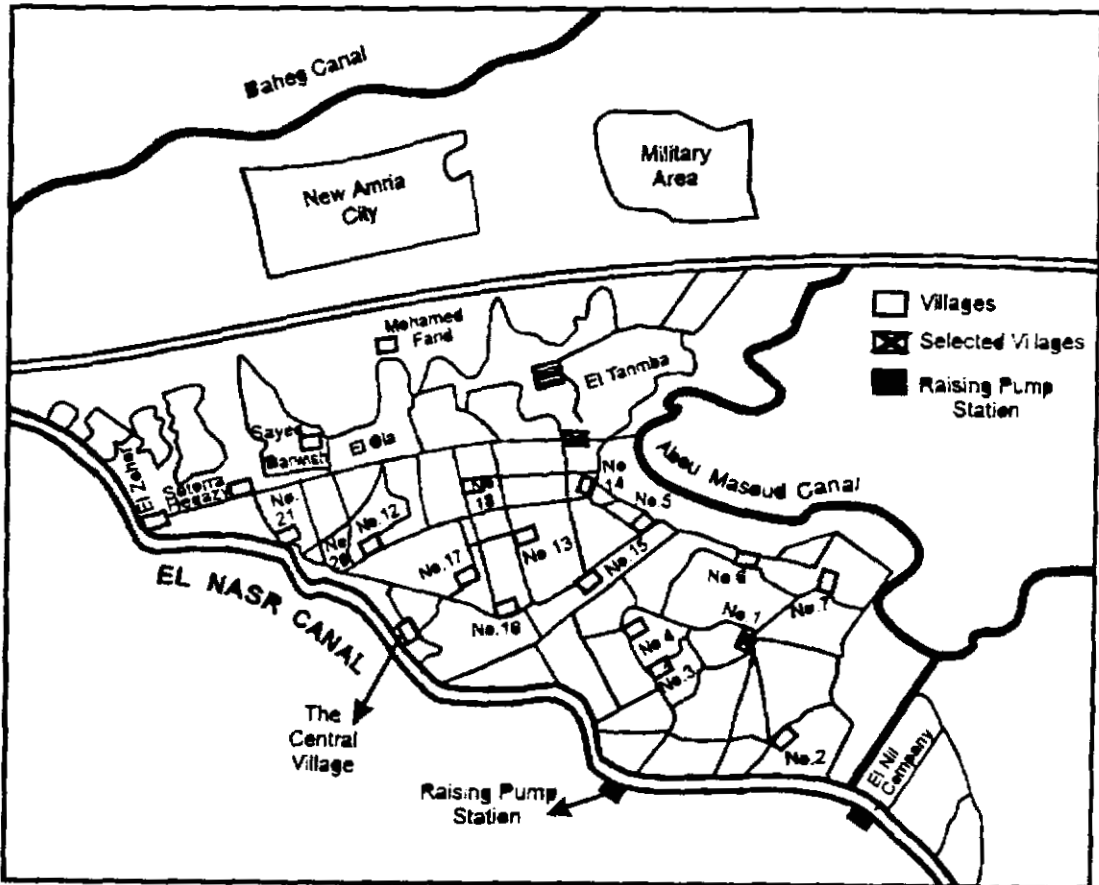
This project works in the field of credit. It provides loans to graduates and small farmers for investment in plant production, animal production, irrigation systems and rural women's activities.

The World Food Program (WFP) Project

This project covers all activities needed for the development of new communities in the New Lands. It supports graduates for four years after settlement by supplying flour, cheese, and ghee free of charge. It finances the furnishing of the mosques, clubs, small projects for animal production, veterinary units, health care units, and schools. In addition, it pays 50% of the cost of cooperative machinery.

Agricultural Cooperative Development International (ACDI)

This project has two activities, namely, the Farmer to Farmer program, and the Rural Cottage for Industrial Development program. The former provides training by sending participants to the US and by bringing US experts to Egypt. The latter is responsible for the training of graduate women and for providing them with loans for small industry.



Map 2. Locations of selected villages for the RRA study in the Sugar Beet area.

El Bustan area

El Bustan is located south of the Nubaria Canal. It comprises an area of 156,450 fed (65,735 ha). Land reclamation and distribution have taken place in three stages as follows:

- The first and second stages covered 50,000 fed (21,008 ha), of which 25,000 fed (10,504 ha) were distributed to graduates and beneficiaries. The other 25,000 fed were distributed to investors (companies). First stage settlement lasted from 1986 to 1988, while the second stage lasted from 1988 to 1990.
- The third stage (El Bustan extension area) will cover 75,000 fed (31,512 ha). Settlement of this stage began in August 1994, with 4,000 feddans (1,680 ha) distributed as of this writing.

The area under study covers land reclaimed in the first stage, a total cultivated area of 23,290 fed (9,785 ha). There are 4,230 holders, of which 3,496 are graduates, 580 are beneficiaries and 154 represent other social groups.

The soil is deep and sandy. There are low to medium dunes and sand sheets that can be divided into coarse sandy soils of low moisture-holding capacity, and medium to loamy soils of moisture holding capacity over 5% by volume. Interdunal, flat sandy soils are found. Moving sands can cause damage to crops.

The main source of irrigation water is the Nile via El Bustan canal. The whole area is irrigated by modern systems, including sprinkler (moving and fixed) and drip irrigation.

Winter crops cultivated in 1993/94 were wheat, berseem, faba bean, pea, barley, onion, and other vegetables, and in summer, tomato, maize, peanuts, watermelon (seed), and sesame. Fruit trees comprised 15% of the total cultivated area.

There are 11 villages in the selected area, as shown in Map 3. Two villages, namely Ali Ebn Abi Taleb and Abdel Moneim Riad, were selected for the RRA meetings.

Foreign projects operating in the area are (a) the French Project, which financed the establishment of 300 greenhouses in the area and training on greenhouse production. The greenhouses were distributed to graduates, who received a plot of just under 5 fed (2.1 ha) each, and (b) the World Food Program Project.

El Hamoul

El Hamoul is one of the Kafr El Sheikh governorate districts. It is located to the north of the Delta. The main source of irrigation water is mixed water from the Bahr Tera Canal and Ketsner Drain. The total reclaimed land in the district is about 95,000 fed (39,915 ha), divided into six areas. The two areas selected for RRA study were El Mansour and El Zahraa.

El Mansour

A total of 36,690 fed (15,415 ha) has been reclaimed in this area, distributed among 12 villages. The soil is heavy clay, a natural extension of the Delta's clay soil. It is very deep silty clay, which may include thin to moderately thick layers of bluish clay or loamy sand. The water table is high, and the soil is poorly drained. The soil is saline to moderately saline, with sodium chlorides as the dominant salt. The main limitations are the high salt content, alkalinity and low hydraulic conductivity.

There are 4,057 holders, including 288 graduates and 3,769 beneficiaries.

In 1993/94, winter crops were wheat, berseem (long and short), faba bean, barley, sugar beet, flax, and vegetables, and in summer, maize, cotton, forage sorghum, rice and vegetables. There are no fruit trees in the area.

Two villages were selected for the RRA study, namely, Khaled Ebn El Waleed and Village No. 42 (Mostafa Kamel Cooperative).

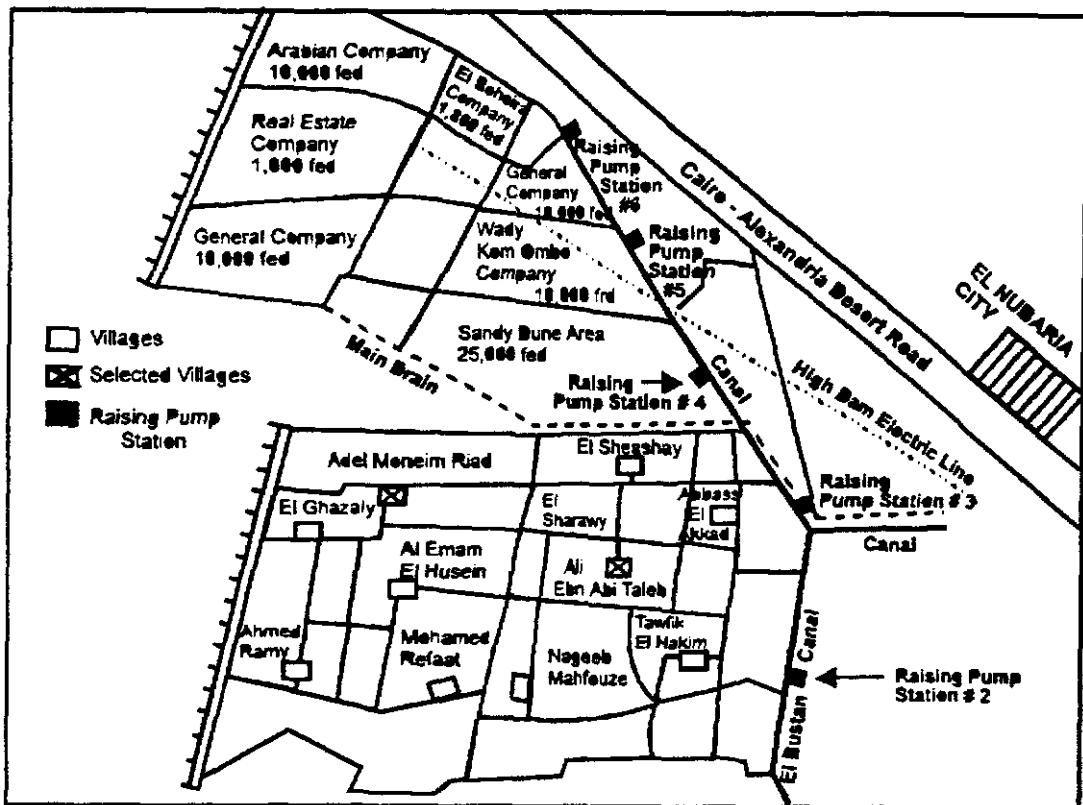
El Zahraa

This area is located to the north, close to the Mediterranean Sea. Northern soils are sandy, while southern soils are heavy clay. High salinity levels were found in the soil.

There are 2,453 holders in El Zahraa, including 734 graduates, 1,418 beneficiaries, and 301 investors.

The main winter crops are wheat, barley, berseem (short), sugar beet, and vegetables, and in the summer, tomato, maize, watermelon (fruit and seed), and rice.

There are seven villages in the area. El Mostakbal Village was selected for the RRA study.



Map 3. Locations of selected villages for the RRA study in El Bustan area.

Criteria for Site Selection

Sugar Beet area

Village No. 1

This village was selected because it includes both graduates and beneficiaries. In 1993/94, about 70% of the cultivated area was planted to wheat. Faba bean was cultivated in about 8% of the area.

El Tanmia Village

This village is larger than the other villages in the area, and contains a larger number of graduates (about 500). Almost 32% of the cultivated area in 1993/94 was under wheat, with 3% under faba bean.

The two villages are close to the Nubaria Research Station.

El Bustan area

Ali Ebn Abi Taleb Village

This village includes both graduates and beneficiaries. Wheat occupied the largest area among winter crops in 1993/94. Berseem, faba bean and pea were also important crops in

the village. The number of permanently settled graduates in the village is the largest among the villages in the area.

Abdel Moneim Riad

This village has a high percentage of settled graduates. Wheat represented 41% of the winter crop in 1993/94. There are also greenhouses in the village for alternative types of production.

The two villages are close to the Nubaria Research Station.

EL Hamoul district

Khaled Ebn El Waleed

This is the only graduate village in El Mansour. It is located on the main asphalt road. Wheat, berseem, faba bean and barley are the major crops grown.

Village No. 42

This is one of the beneficiary villages affiliated with the Mostafa Kamel Cooperative. It is located on the main asphalt road. Because of the absence of paving, roads become slippery during winter rains, and transportation is very difficult. Wheat, berseem, and faba bean are the important crops.

El Mostakbal

This is one of two graduate villages in El Zahraa. The village is close to the Mediterranean Sea. Soils are sandy and salinity is high, representing a challenge for agricultural sustainability.

The three villages are close to the Sakha Research Station.

Results

General Characteristics of the Selected Villages

Table 3 summarizes the general characteristics of the seven selected villages in which RRA meetings were conducted. Reclamation began between 1982 and 1986, except for Village No. 42 in El Hamoul, where it began in 1970. Accordingly, the first six villages can be considered "new" New Lands and the seventh "old" New Lands. In the Sugar Beet area and El Bustan, villages are inhabited either by graduates only, or by a mix of graduates and beneficiaries. El Hamoul villages are inhabited either by graduates or beneficiaries separately.

Three men's meetings were conducted in each selected area, two with graduates and one with beneficiaries. The results of the RRA study were organized by topic. Summary tables are provided for some sections to allow quick comparison across villages.

Resources and Resource Management

Water resources and drainage systems

Fresh Nile water is the main source of water for farmers in the Sugar Beet area and El Bustan, while mixed water is used in El Hamoul. El Nasr Canal irrigates the Sugar Beet area while El Bustan Canal irrigates El Bustan. The mixed irrigation water in El Hamoul comes from the Bahr Tera Canal and the main Gharbia Drain (Ketschner Drain). This mixed water is 70–80% drainage water and 20–30% freshwater. It is highly polluted because it includes agricultural drainage water, industrial waste water and sewage water.

Surface irrigation is prevalent in the Sugar Beet area and El Hamoul. In the Sugar Beet area, graduates were supposed to use drip irrigation, but because of the problems they faced, the majority reverted to a surface irrigation system. In El Bustan, modern irrigation systems, including moving and fixed sprinkler and drip irrigation, are used.

Night irrigation is practiced in all villages under study. This system is followed to overcome the chronic shortages of irrigation water, which were reported at all meetings, and ranked first among all problems facing settlers in newly reclaimed lands. Night irrigation also avoids the heat of the day during summer months.

Tile drainage is used in the Sugar Beet area and El Hamoul, where surface irrigation is officially sanctioned. Open drains are also found in Village No. 42 in El Hamoul. On some of the graduate farms in the Sugar Beet area, where drip irrigation must be used, there is no drainage system. There is no drainage system in El Bustan either, as modern irrigation systems are used. The Ministry of Public Works and Water Resources is responsible for both the quantity and timing of water supply. In the graduate areas of Village No. 1, Ali Ebn Abi Taleb, Abdel Moneim Riad and El Mostakbal Village, where modern irrigation systems must be used, there is no irrigation rotation, but a continuous flow of water. Where surface irrigation is used, an irrigation rotation is followed, but depends on the available supply of water and the climatic conditions of each area.

Attendees at all meetings expressed their dissatisfaction with the winter canal closure. These 15 days, in which no irrigation water is available, adversely affect crop yield, especially for wheat and berseem.

Table 3. General characteristics of the RRA villages.

Item	Sugar Beet		El Bustan		El Hamoul		
	Village No. 1	El Tanmia	Ali Ebn Abi Taleb	Abdel Moneim Riad	Khaled Ebn El Waleed	Village No. 42	El Mostakbal
Beginning of reclamation (year)	1982	1986	1985	1985	1985	1970	1985
Land distribution (year)	1986-1991	1988-1990	1986-1988	1990	1990	1972	1988
Total area (fed)	1,678	2,614	1,990	1,460	1,402	1,704	1,689
No. of farmers:							
Graduates	103	450	150	292	282	-	334
Beneficiaries	195	-	180	-	-	237	-
Average holding size (feddan):							
Graduates	5	4.5-7	5 or 10	4-5	4-5	-	5
Beneficiaries	6	-	5	-	-	6-12	-
Type of soil	Calcareous	Calcareous	Sandy	Sandy	Heavy clay	Heavy clay	Sandy
Source of water	El Nasr Canal	El Nasr Canal	El Bustan Canal	El Bustan Canal	Bahr Tera Canal and Ketchner Drain		
Type of water	Fresh	Fresh	Fresh	Mixed	Mixed	Mixed	Mixed
Irrigation system	Surface	Surface & drip	Sprinkler & drip	Sprinkler	Surface	Surface	Surface
Drainage system	No drainage and tile drainage are mutually exclusive	No drainage system	No drainage system	No drainage system	Tile drainage	Tile & open drainage	Tile drainage

Sources: RRA meetings and agricultural departments in the different areas.
1 hectare = 2.38 feddans

Land resources

Soil types differ in the three areas. Soils are calcareous in the Sugar Beet area, sandy in El Bustan and heavy clay with some sandy areas in El Hamoul. Though the attendees of the meetings in the Sugar Beet area were generally content with their soils, they complained about the high salinity. In El Bustan the attendees complained about the large differences in land elevation, the low level of nutrition, salinity, and low soil water holding capacity. In El Hamoul both salinity and alkalinity were reported.

Characteristics of land holdings are shown in Table 3. Five to six fed (2.1 to 2.51 ha) holdings are the average. In Ali Ebn Abi Taleb Village, some graduates received 10 fed (4.2 ha) each.

At all meetings, attendees reported that soil fertility is improving over time because of the use of manure and fertilizers. In the heavy clay soil areas such as El Hamoul, attendees reported that manure is not used, because it is not suitable for the soil in the area.

Cropping patterns

In general, no specific crop rotation is used in the study villages—except in Village No. 42 in El Hamoul, which can be considered an extension of the Old Lands. A cotton/rice rotation is followed in that village. Crop returns hinge upon market facilities and the choice of crops cultivated.

Table 4 shows the cultivated area in 1993/94 and the main crops in the villages under study. In general, wheat was the most widely planted winter crop in 1993/94. This can be attributed to its guaranteed price, its easy marketing system and the seed subsidy for graduates. In Village No. 42, berseem was the most widely planted winter crop because of the large number of animals raised in that area. The most popular summer crops were tomato in the Sugar Beet area, peanut in El Bustan, rice in El Mansour, and watermelon in El Zahraa.

Table 4. Cultivated area (fed) in the study villages (1993/94).

Item	Sugar Beet		El Bustan		El Hamoul		
	Village No. 1	El Tanmia	Ali Ebn Abi Taleb	Abdel Moneim Riad	Khaled Ebn El Waleed	Village No. 42	El Mostakbal
Winter crops							
Wheat	1,098	1,833	300	586	200	188	360
Berseem	403	26	150	12	132	828	100
Faba bean	98	69	60	38	13	24	-
Peas	58	-	150	613	-	-	-
Onion	-	-	50	141	-	-	-
Egg plant	-	-	20	23	-	-	-
Barley	-	-	15	-	10	-	80
Berseem (short)	-	-	-	-	52	422	-
Sugar beet	-	-	-	-	24	129	29
Vegetables	-	-	-	10	-	24	291
Summer crops							
Forage	-	-	-	-	145	150	-
Sorghum	-	-	-	-	-	-	-
Maize	393	82	N/A	24	-	-	-
Watermelon	22	-	-	-	60	170	250
Watermelon (seed)	-	136	-	412	-	-	800
Cantaloupe	71	-	-	-	-	-	462
Peanut	-	-	N/A	895	-	-	-
Cotton	-	-	-	-	20	378	-
Rice	-	-	-	-	120	650	-
Sesame	-	-	N/A	56	-	-	-
Tomato	547	852	-	-	-	-	-
Other	-	259	-	19	100	295	-
Vegetables	-	-	-	-	-	-	-
Sunflower	-	58	-	-	-	-	-
Lupines	-	-	-	42	-	-	-

The areas in Village No. 42 represent the total area of Mostafa Kamel Cooperative.
Source: Agricultural departments in the three areas, unpublished data.

Table 5 summarizes the range of average yield reported at the meetings. Attendees reported that the average yield per feddan fluctuated widely, due to the following factors:

- The availability of water in sufficient quantities and at appropriate times.
- The availability of ready money to buy sufficient inputs.
- The price of inputs.
- The expected selling prices and marketing facilities.

The profitability of some main crops in the villages is shown in Table 6. As can be seen, profitability fluctuated, even for the same crop, from village to another.

Interplanting was rarely used. Faba bean was interplanted with tomato in El Tanmia and peanut was interplanted with onion in Abdel Moneim Riad.

Fruit trees in the RRA villages were reported as follows: 163 fed (68.5 ha) in El Tanmia Village, 6 fed (2.52 ha) in Village No. 1, 28 fed (11 ha) in Abdel Moneim Riad, and 62 fed (26 ha) in Ali Ebn Abi Taleb. No fruit trees were reported in El Hamoul district.

Table 5. Average yield per feddan of cultivated crops.

Item	Sugar Beet		El Bustan			El Hamoul			
	Village No. 1 Grad. Ben.	El Tanmia	Ali Ebn Abi Taleb Grad. Ben.	Abdel Moneim Riad	Khaled Ebn El Waleed	Village No. 42	El Mostakbal		
Winter crops									
Wheat (ardab)	10-17	10-15	6-12	4-8	6-8	5-8	5-7	8-12	7-10
Berseem (cuts)	4-5	4-5	4-5	4	4-5	4-5	4	5	4-5
Faba bean (ardab)	3-4	4-5	3-5	4-6	5-6	1-1.5	-	-	6-7
Peas (tons)	-	-	0.5-1	1-1.5	2-3	-	-	-	-
Lentil (ardabs)	-	-	2.5-3	-	-	-	-	-	-
Barley (ardabs)	-	-	-	-	-	-	5-8	-	8-10
Cabbage (heads)	3,500	-	-	-	-	-	-	-	-
Onion (tons)	-	-	-	6-8	-	5-10	-	2-3	-
Sugar beet (tons)	-	-	-	-	-	-	8-10	15-18	12-15
Summer crops									
Tomato (tons)	4-7	8-10	5-10	-	-	-	-	6-12	4-8
Watermelon (tons)	5-9	5-8	6-10	-	-	-	-	4-5	4
Watermelon (seeds) (kg)	-	-	-	-	-	250-300	100-150	3-5	4-6
Sunflower (kg)	-	-	600-800	-	-	-	-	500-1,000	1,000-1,500
Squash (tons)	3-5	8-10	5-6	-	-	-	-	2.5-3	-
Eggplant (tons)	-	-	15	-	-	15	-	-	-
Maize (ardabs)	10-20	10-15	-	8-10	10-15	-	-	-	-
Cotton (qentars)	-	-	-	-	-	-	2-4	-	-
Rice (ton)	-	-	-	-	-	-	0.5-1.5	-	-
Peanuts (ardabs)	-	-	-	13-15	8-15	10-15	-	-	-
Sesame (kg)	-	-	-	250	-	240-360	-	-	-
Cantaloupe (tons)	-	-	4-5	-	-	-	-	-	-

Source: RRA meetings.
1 hectare = 2.38 feddans.

Table 6. Average return, cost, gross margin (LE/fed), and profitability (1993/94).

Item	Sugar Beet		El Bustan		El Hamoul		
	Village No. 1	El Tanmia	Aji Ebn Abi Taleb	Abdel Moneim Riad	Khaled Ebn El Waleed	Village No. 42	El Mostakbal
Winter crops							
Wheat							
Average return	1105	765	680	595	510	935	680
Average variable cost	490	471	433	300	350	465	390
Gross margin	615	294	247	295	160	470	290
Profitability %	126	62	57	98	46	101	74
Barseem							
Average return	1,000	750	1,100	1,320	600	1,250	1,200
Average variable cost	411	311	365	390	215	225	200
Gross margin	589	439	735	930	385	1,025	1,000
Profitability %	143	141	201	238	179	455	500
Faba bean							
Average return	620	775	775				910
Average variable cost	474	520	479				500
Gross margin	146	255	296				410
Profitability %	31	49	62				82
Pea							
Average return		800	1,000	825			980
Average variable cost		512	600	590			390
Gross margin		288	400	235			590
Profitability %		56	67	40			151
Sugar beet							
Average return					720	1,020	
Average variable cost					300	572	
Gross margin					420	448	
Profitability %					140	178	
Summer crops							
Watermelon							
Average return	1,400	1,600					5,600
Average variable cost	893	950					1,500
Gross margin	507	650					4,100
Profitability %	57	68					273
Maize							
Average return	750		585				750
Average variable cost	410		426				290
Gross margin	340		159				460
Profitability %	83		37				159
Peanut							
Average return			1,300	1,200			
Average Variable cost			450	500			
Gross margin			850	700			
Profitability %			189	140			
Cotton							
Average return					975	1,980	
Average variable cost					680	780	
Gross margin					295	1,200	
Profitability %					43	154	

Rice			
Average return		700	1,400
Average Variable cost		460	700
Gross margin		240	700
Profitability %		52	100
Tomato			
Average return	2,400	4,000	3,500
Average variable cost	1,200	1,561	1,550
Gross margin	1,200	2,439	1,950
Profitability %	100	156	126
Watermelon (seed)			
Average return		1,000	375
Average variable cost		350	200
Gross margin		650	175
Profitability %		186	88

Gross margin = average return - average variable cost.

Profitability = (gross margin ÷ average variable cost) x 100.

Source: RRA meetings and secondary data from agricultural departments in each area.

Pests and diseases

Pests and diseases are found throughout the cultivated areas in the different study regions. Nematode, white fly, borer, aphid, rust disease, and red spider were reported at all meetings. Furthermore, blood worm, blight disease, and cotton worm were reported in El Hamoul. Chemicals are used for pest and disease control, but it was clear during the meetings that most of the attendees did not have enough information on types of infection, and how to control them. Attendees used a trial and error approach to fight pests and diseases.

Weeds

Weeds were reported at all meetings as being present in all study areas. Irrigation water, manure, and soil are the main sources of weeds. Weeds include mallow, bindweed, wild oat, bermuda grass, and *Orobanche*. Weeds are controlled either manually or with chemicals.

Marketing

Marketing was reported at most RRA sites as a major problem. Only two sites reported that they had no problems marketing their products: Khaled Ebn El Waleed and Village No. 42 in El Hamoul.

The different marketing channels mentioned were:

- The agricultural cooperative. This is a major channel for rice and cotton in El Hamoul, and for wheat in most sites under study.
- Sales to wholesalers before harvesting (*kelala*). Under this system the farmer receives a certain price per *feddan* and the wholesaler pays for harvesting, packing and transportation.
- Sales to traders at the farm gate. With this system, the price per unit of production is usually less than the market price, but farmers are saved the cost and effort of crop transportation. Farmers pay for harvesting and packing.
- Sales to wholesalers at markets in El Nuzha in Alexandria and El Obour in Cairo. Farmers pay for harvesting, packing, transportation and marketing.

- Sales to traders in local or district markets. El Delengat, Damanhour and Amria are the district markets for Nubaria, while El Hamoul is a district market for the villages in El Hamoul.
- Direct sales of sugar beet to the Sugar Company in El Hamoul.
- Exports through export agencies.

Market problems

The following are general problems reported by attendees at the meetings:

- Malpractice by traders who manipulate market prices to their own advantage.
- Absence of collection centers.
- Lack of marketing information.
- High cost and occasional shortages of product transportation to markets.
- High marketing fees.
- Poor roads combined with long distances to markets.

Inputs

In line with the national policy reform of the agricultural sector, subsidies on inputs such as seed, fertilizer, and chemicals have been eliminated. The role of PBDAC in supplying inputs on credit has also been eliminated. The new policy has opened the door for the private sector to play the main role in supplying different agricultural inputs.

In all RRA meeting, the following sources of inputs were identified.

Seed

Seed for major field crops such as cotton, rice, wheat and maize is bought from the cooperatives. All attendees agreed that seed supplied from the cooperative is of higher quality, though also higher in price. Wheat seed is supplied by the cooperatives to graduates at a subsidized price. Other seed is bought from the private sector from either traders or companies. In El Hamoul the Sugar Company supplies farmers with sugar beet seed. Another source of seed is the previous year's crop.

Fertilizer

Beneficiaries reported that manure produced by their own animals is used as an organic fertilizer. If more is needed they buy it from their neighbors or from the market. Graduates rarely raise animals, consequently they depend mainly on manure bought either from their neighbors (the beneficiaries) or from the nearest market. Chemical fertilizers are bought either from the cooperatives or from the private sector.

Pesticides

Attendees at all meetings stated that pesticides are bought from the private sector. Cotton pesticides are provided by the cooperative in El Hamoul.

Machinery

Machinery is rented either from the cooperative, if available, or from other farmers. In Nubaria there is a company which specializes in machinery rentals. Costs do not vary significantly between sources.

Animal feed

Green fodder (berseem, elephant grass) is cultivated by the farmers. If needed, more can be bought from neighbors or from the market. Feed concentrates are bought from traders.

Input availability, quality and price

Attendees reported that all types of agricultural inputs are available at all times. Input quality is generally good, except for chemicals, due to a lack of quality control, resulting in a deterioration of active ingredients.

The increase in input prices does not affect the choice of crops. It does, however, adversely affect the rate of use, and can lead to a decrease in the area under production as farmers have to cope with financial constraints.

Labor force

Beneficiaries who have experience farming Old Lands bring with them large families, all of whom settle in the neighboring area. Accordingly, these land holders depend on their family members to meet most of their agricultural labor needs. They hire laborers only when needed, usually in peak times.

However, only 20–40% of graduates actually settle on their land. When they do settle on the land, they either live alone or are accompanied by only a small family. They depend mainly on hired laborers for all agricultural operations.

Attendees reported that hired labor is almost always available. The graduates in Abdel Moneim Riad Village in El Bustan said that they face shortages in hired labor in March, April, and September. Because of cash shortages, they hire help for irrigation in return for one third of the crop. El Tanmia village faces a shortage in hired labor during summer harvest. Graduates from El Mostakbal Village in El Hamoul cooperate in performing agricultural operations.

Hired laborers usually come from neighboring governorates or from the families of small holders settled in the area.

Table 7 summarizes the average daily wage for various types of labor at the sites under investigation. Average wages depend on local supply and demand.

Table 7. Average wage per day (LE).

Site	Men	Women	Boys/Girls
Sugar Beet area			
Village No. 1			
Graduates	8-12	7-8	5-7
Beneficiaries	8-12	7-9	5
El Tanmia	7-12	8	7-7
El Bustan			
Ali Ebn Abi Taleb			
Graduates	7		5
Beneficiaries	7-5	5-7	4-5
Abdel Moneim Riad	6-7	4-5	4-5
El Hamoul district			
Village No. 42	5	3	3
Khaled Ebn El Waleed	10	7-8	5
El Mostakbal	10	7	5

Source: RRA meetings

Livestock

Animals

Beneficiaries are accustomed to raising animals for meat, milk and manure. The women and girls of the family are usually responsible for animal care and dairy processing.

Graduates rarely raise animals. This is because they have not settled permanently on their land, or due to the lack information about animal production, or because there is a lack of security.

Small farmers usually keep two to more buffaloes or cows. It was reported that cows prosper better than buffaloes in newly reclaimed areas.

Sheep and goats, which are preferred by graduates, are raised for family consumption or for sale. The graduate himself is responsible for animal care, with some help from his wife.

Poultry

Both beneficiaries and graduates raise various types of poultry, mainly for family consumption but sometimes for sale to increase family income. The size of the flock varies according to the ability of the family to feed it.

Beehives

Only Village No. 42 in El Hamoul District reported beekeeping. Honey is sold at LE 10/kg. Table 8 summarizes the average livestock ownership per family at the study sites.

Table 8. Average number of livestock per family.

Site	Cow/buffalo	Sheep/Goats	Donkeys	Poultry
Sugar Beet area				
Village No. 1				
Graduates	6-12†			10-15
Beneficiaries	3-5	1-2	1-2	20-50
El Tanmia	5-10‡	1-2		5-10
El Bustan				
Ali Ebn Abi Taleb				
Graduates	1-2	3		10-15
Beneficiaries	2-3	2-3	1-2	20-30
Abdel Moneim Riad	2-3	5-7	1	30-40
El Hamoul district				
Village No. 42	2	10-20	1-2	30-50
Khaled Ebn El Waleed	1-2§	2-3		5-10
El Mostakbal		4-5		10-15

† Only a few graduates raised calves for fattening (this is not the average per village).

‡ Only two graduates raise these animals for meat.

§ Five percent of graduates raise these animals.

Source: RRA meetings.

Credit

The following sources of finance were identified by the attendees.

PDAC. Types of loans offered by the bank are:

- Short-term loans for a single growing season (6 months). Loan amounts range from LE 400-3,000. Interest rates ranged between 14-18% per year.
- The beneficiaries at Ali Ebn Abi Taleb Village reported that they got loans up to LE 8,000 to buy animals. Loans must be paid back within five years at a 10% interest rate.
- Beneficiaries in Village No. 42 reported that they got loans to buy machinery. Loans are paid back within three years at a 22% interest rate.

An official certificate of settlement and land holding is needed to guarantee the loan. In addition, recipients have to sign checks for the total amount.

The IFAD project provides loans for buying animals, leveling land, establishing trees, and irrigation systems, and buying machinery at a 10% interest rate. The project operates only in the Sugar Beet area and El Bustan.

Wholesalers provide loans, especially for vegetable production. To get a loan, farmers must sign a blank check. If the farmer does not deliver his or her produce to the wholesaler, the wholesaler will fill in the check with an amount higher than the actual loan, and go to court to get it. The commission rate is about 10%. Wholesalers usually buy the delivered produce at the going market price.

In El Tanmia Village attendees reported that there is a specific loan for women.

Relatives were also referred to as a main source of loans, especially in Khaled Ebn El Waleed and El Mostakbal Villages in El Hamoul. There are no other sources of credit in these two villages.

Cooperatives

The role of the cooperative has been limited by the liberalization of the agricultural sector. In the past, these organizations sold all types of subsidized inputs on credit and received obligatory crops quotas. During the RRA meetings, attendees reported that graduates are still able to buy wheat seed from the cooperatives at subsidized prices. Other fertilizers or machinery cost the same as in the private sector. Due to their previous experience, beneficiaries were able to deal with the cooperatives better than the graduates. Some cooperatives, such as in Village No. 42, sell inputs on credit at a 3% rate of interest. The Abdel Moneim Riad cooperative defers payment until the end of the season. The other cooperatives take payment in cash. In El Mostakbal and Khaled Ebn El Waleed Villages, graduates were not satisfied with the performance of their cooperatives.

Field crops such as wheat, rice, and cotton are sold to the cooperative if no higher price can be obtained through other marketing channels. The graduates complained about the grading system and the fees that have to be paid to the cooperatives when they sell their wheat.

Agricultural Information

The different sources of information mentioned by the attendees include:

- Extension services.
- Farmers' own experience.
- Demonstration fields and field days.
- Extension bulletins.
- Agricultural radio and TV programs.

Extension services are completely absent in El Hamoul. Graduates there either get information from their neighbors (the beneficiaries), or from the head of the cooperative. They lack the information needed for all agricultural practices. Though beneficiaries can rely on their experience in the Old Lands, New Lands cultivation has its own specific practices. Where extension is available in the Sugar Beet area and El Bustan, attendees complained about the inconvenient timing of extension meetings, which are conducted either too late in the season to be useful, or in the morning, when they are working. Consequently, holders rarely attend extension meetings or even trust extensionists.

Researchers from the Agricultural Research Center are conducting research in both the Sugar Beet area and El Bustan. They are trusted by the holders, who usually attend their field days to gain more experience. Farmers in El Hamoul reported that there is no research being conducted in their area.

Extension bulletins are usually designed for the Old Lands rather than for the New. In Khaled Ebn El Waleed Village, graduates said that they were in great need of agricultural bulletins.

Some agricultural TV and radio programs were mentioned as sources of information by graduates in the Sugar Beet area.

Available Services

Table 9 summarizes the available services in the study sites. Nubaria enjoys more facilities than El Hamoul. In El Mostakbal Village there are no available services. Primary schools are usually available, preparatory schools can be found at some sites, but secondary schools are not available in any RRA sites. There is no electricity in Khaled Ebn El Waleed and El Mostakbal Villages. There is an electrical generator in each village, which operates for limited hours each day. There is a shortage in fuel for these two generators. The flow of electricity at the other sites is irregular. Though potable water is available, the majority of the attendees complained about its poor quality. In El Mostakbal Village potable water is brought in by a tanker from the nearest village. Sanitary services are absent at all study sites. Only the main roads are paved. In El Hamoul, the heavy clay village roads become slippery and dangerous for walking, riding, or driving. Transportation facilities at all sites are not adequate, and public transportation facilities are rarely found. Transportation costs were considered expensive by attendees. Lack of security was reported in the Sugar Beet area and El Bustan.

Table 9. Available services.

Type of service	Sugar Beet		El Bustan		El Hamoul		
	Village No. 1	El Tanmia	Ali Ebn Abi Taleb	Abdel Moneim Riad	Khaled Ebn El Waleed	Village No. 42	El Mostakbal
Schools							
Primary	A	A	A	A	A	A	N/A
Preparatory	A	A	A	N/A	N/A	A	N/A
Secondary	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Health care units	A	A	A	A	A	N/A	N/A
Veterinary units	A	N/A	A	N/A	A	N/A	N/A
Electricity	A	A	A	A	N/A	A	N/A
Potable water	A	A	A	A	A	A	N/A
Sanitary services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roads†	A	A	A	A	A	A	A
Police stations	A	N/A	A	N/A	N/A	N/A	N/A
Phone & telegram	A	N/A	A	N/A	A	N/A	N/A

† Only main roads are paved; village roads are unpaved.

A = Available; N/A = Not available.

Source: RRA meetings.

Off-Farm Income

At all meetings farm income was reported to be insufficient to meet family needs. Agricultural income covered only 40–70% of family needs. Beneficiaries stated that all members of the family work as hired laborers on other farms, especially graduates' farms, to generate more income for the family. They reported too, that they sometimes lease the graduates' holdings or share their land. Graduates in the Sugar Beet area and El Bustan take other non-agricultural jobs such as driver, grocery clerk, hairdresser, hired laborer, equipment and house maintenance worker, carpenter, and traders. In Ali Ebn Abi Taleb Village, graduates with holdings of 10 fed (4.2 ha) are not able to cultivate all their land.

They either lease out a part of it or share it with others. Graduates in El Mostakbal Village lease their land in summer to farmers coming from El Borollos to cultivate watermelon. Relatives were mentioned as a source of financial support for the graduates to meet their daily needs.

Foreign Projects Operating in the Area

Nubaria has received the most attention from foreign projects. The World Food Program (WFP), IFAD, ILO, ACDI, and the French Project were mentioned as foreign projects supporting settlers in the area. Project efforts include:

- Training.
- Credit for plant and animal production.
- Sharing in the establishment of infrastructure and social services.
- Establishing small industries to increase family income.
- Supplying food for graduates (WFP).

Presently there are no foreign projects working in El Hamoul. Graduates in that district receive food supplies from the WFP.

Attendees at all RRA meetings expressed their willingness to cooperate with any project that aimed at increasing yield, either by leasing or sharing a part of their farm or by their own effort. Attendees said that the only condition would be that the project must guarantee against losses.

Problems and Constraints

Following are the main problems mentioned during the nine men's meetings at the selected sites:

- Shortages in irrigation water were always mentioned first. The severity of the shortage differs at each site. It is severe in El Tanmia Village, Khaled Ebn El Waleed Village, and Village No. 42. Long dry spells in the irrigation rotation were also reported.
- Inefficient functioning of the tile drainage system, leading to an increase in underground water, was reported. Accordingly, soil problems are becoming more complicated, especially salinity and alkalinity.
- The absence of drainage systems in areas that were supposed to use modern irrigation systems has caused a reversion to surface irrigation which causes waterlogging.
- Lack of finance was cited by the attendees as one of the most important constraints. This leads to the inability to afford the inputs to achieve soil improvement. Consequently, average yields are relatively low. The money lending practices of wholesalers and traders badly affects the level of family income.
- The absence of marketing channels and information adversely affects the choice of crops.
- High prices of inputs and low prices of outputs were a constant complaint.
- Due to a lack of information, pests, diseases, and weeds cannot be identified and therefore cannot be effectively controlled.

- The quality of chemicals is very low due to the absence of quality control.
- Extensive canal closure in winter destroys crops, especially wheat and berseem.
- There is a need for land-leveling, especially in the areas with high differences in land elevations.
- Extension services are absent or ineffective. Accordingly, farmers are not aware of the newly recommended technologies that suit conditions in the New Lands.
- The absence or the low quality of available services causes many problems.
- The irrigation water in El Hamoul District is polluted.

Women's Meetings: The Role of Women in the New Lands

Introduction

The role played by rural women in the development of rural communities has long been either unrecognized or undervalued. Consequently, women have not been included in research studies and extension in projects in rural areas.

In a study conducted by the Central Agency for Public Mobilization and Statistics in 1988, it was found that rural women represented 41% of the rural labor force, 50% of the labor force engaged in agricultural activities, and 71% of the unpaid family labor force.

In light of previous omissions, the RRA was designed to investigate the role played by women in the New Lands.

Objectives

The main objective of the study was to identify and define the role of women within the farming system of the New Lands.

Procedure

The team leader conducted the meetings with women in both the Sugar Beet area and El Bustan. A team member, who is an extension agent, conducted the women's meeting in El Hamoul.

The following issues were included in the RRA survey:

- Participation in agricultural operations.
- Participation in livestock production.
- Off-farm income generation.
- Control of off-farm income.
- Responsibility for household expenditures.
- Participation in decision making.
- Traveling pattern outside the village.
- Satisfaction with available services.

Survey Sites

Interviews were carried out with the wives of beneficiaries. Because there are only a few women graduates and wives of graduates settled in the survey areas, their meetings were conducted separately during the graduates' meetings.

Meetings were conducted with beneficiaries' wives in the following villages:

- Village No. 1 in the Sugar Beet area.
- Ali Ebn Abi Taleb Village in El Bustan.
- Village No. 42 in El Hamoul.

Meeting Results

Because of the different role played by beneficiaries' wives and graduates' wives, the two groups will be presented in separate sections.

Beneficiaries' wives

The beneficiaries wives generally came to the New Lands from villages in the Old Lands. Those who were engaged in various agricultural activities in the Old Lands have continued the same activities in the New Lands.

The results of the three meetings can be summarized as follows:

Participation in agricultural operations

Women reported that with their extensive experience in the Old Lands, it was not difficult for them to share the work on their new holdings. The women consider their new holdings large in comparison with their holdings in the Old Lands. Accordingly, all family members have to work hard on the farm to provide the necessary labor force and to save money needed to hire additional labor. The women at the three meetings said that they share in all agricultural operations except plowing and hoeing. A few of them reported that they also, when there are labor shortages, help with the hoeing. In Ali Ebn Abi Taleb Village, a woman related that she was sharing a graduate's land. The women in Village No. 42 in El Hamoul said that they provided the main labor for transplanting rice. They even work with the men to clean the canals and drains. All women reported that their work on the farm was a part of their duty toward their families in addition to their household duties. These include cleaning the house, washing clothes, preparing food, baking, raising the children, etc. The condition of the women's hands showed that they are all doing hard manual work.

Participation in livestock production

Traditionally, rural women and girls are responsible for raising all types of livestock. This was reported in all three women's meetings. Beneficiaries, due to their background in the Old Lands, consider raising animals a must. Feeding, cleaning, milking, helping in delivery, and collecting manure are the responsibility of the beneficiaries' wives and daughters. Dairy processing (producing butter and cheese) is also the job of women. The women reported that production is mainly for family consumption and sometimes for sale in the market. Attendees explained that taking the animals to the field for grazing is the job of the men, but women do it if needed. They also sometimes lead animals to the veterinarian if the men are busy in the field.

Poultry raising was reported by women at all three meetings, as the main source of protein for the family. Women are also responsible for marketing poultry and eggs.

Off-farm income

Only the women from Ali Ebn Abi Taleb Village said that they rarely work as hired laborers on other farms to generate additional income. Rather, the women in this village share, alone or with their husbands, graduates' land. In the other two villages, the women reported that working as hired laborers in other farms is a good source of additional income, or ready cash money to cover school fees and house or farm needs.

Marketing farm products is one of the main jobs of rural women in the three areas. These products include vegetables, small quantities of wheat or maize, dairy products, poultry, eggs, and sometimes small animals. Women in the Sugar Beet area reported that girls were trained in making handicrafts by the ILO. Some girls worked in a small carpet factory.

Women's wages are usually less than men's when performing the same agricultural operation. In peak periods, when there is a shortage in labor, women sometimes receive the same wage as men.

Some women reported that they sew women's and children's clothes as another source of family income.

All women at the three meetings reported that they have no control over their off-farm income. This income is used exclusively to cover family and farm needs. Women don't save a part of this income to buy jewelry, clothes, or personal items. None of the women complained about this, considering increasing the family income a part of their duty.

Responsibility for household expenditures

Women reported that, in general, they are responsible for purchasing family necessities, whether from their own off-farm income or from money received from their husbands. Women attributed this responsibility to their superior knowledge of the quantity and quality of goods to be purchased. Sometimes, if they are free from field work, men make some of the family purchases.

Participation in decision making

Women reported that, as family members, they participate in discussions about crop choices or crop rotation. Women also participate in discussions concerning the children. The final decision is usually made by the man. Some women in Village No. 42 reported that, after the death of their husbands, and because their children were young, they were completely responsible for decisions related to both the family and the farm.

Traveling pattern outside the village

Women in the three surveyed sites reported that they travel outside the village for the following reasons:

- To visit their relatives in the Old Lands.
- To visit the doctor.
- To travel to nearby markets to sell farm products.
- To buy family items such as clothes, medicine, or household goods which are not available in the village.

Women in the Sugar Beet area reported that they travel to New Amria once or twice a week. In El Bustan women said they travel to El Delengat and Abou El Matameer to sell farm products. In El Hamoul women said they travel to Balteem or El Hamoul City once a week to buy flour and household goods.

Satisfaction with housing and available services

Women in the Sugar Beet area and El Bustan were satisfied with their housing conditions. In the Old Lands, housing was very limited. Extended families shared one dwelling, with one family in a single room. In the New Lands, the women are quite satisfied with the size and quality of their houses. They have a large yard, in which the majority have built extra rooms for family members and shelters for livestock. In Village No. 42, however, the beneficiaries' houses are not in good condition. These houses were built in the early Seventies, and are of poor quality. Under the heavy rains which characterize the area, the houses have deteriorated. High-income families have built new, good-quality houses at their own expense.

Public transportation at a reasonable cost is either absent or available on an irregular basis. In Village No. 1, public transportation ends at 5 p.m. After that, travelers must use private transportation to Amria at LE 3 per round trip. In El Bustan, the most common transportation is by truck. The cost varies from LE 1.25 to LE 2 according to the distance. In Village No. 42 women reported that they either use trucks or walk the 3 km to reach Abou Sikeen, where transportation can be found. The one way cost of the truck ride ranges between LE 0.60–0.75.

Primary and preparatory schools are available in each of the three villages, but they are badly equipped. Secondary schools are not available. In Village No. 1, secondary school students go to Amria or Alexandria. In Ali Ebn Abi Taleb Village, students go to Delengat City. Parents lease houses for secondary school students to live in to eliminate the daily journey.

In both Village No. 1 and Ali Ebn Abi Taleb, there is a health care unit, but for Village No. 42 the nearest health care unit is 12 km distant. In general, all women at the three meetings expressed their dissatisfaction with the health care services they were receiving.

Electricity and potable water are available. Sanitary services are unavailable.

All women at the three meetings said they have no access to extension services.

Women graduate farmers and graduates' wives

Settled women in these two categories are very few in number. Women graduates who hold land generally come from urban areas. They are not familiar with the type of life experienced in rural areas. Traditionally, it is unusual for women graduates to live alone on their land. If they are settled in the area, they bring their families with them. Their role in agricultural operations and crop cultivation decisions is very limited, rather they depend on husbands, fathers or brothers.

Sometimes women holders share or lease their land with a beneficiary.

Neither women graduate farmers nor graduates' wives work on the farm. Only one graduate reported that she was temporarily working in the field with the help of hired laborers from neighboring beneficiaries.

Men's Meetings: Sugar Beet Area

El Tanmia Village, Graduates

Region: Nubaria
Date: 28 November 1994
Attendees: 28 graduates

Resources and resource management

Water resources

The main source of water is freshwater from El Nasr Canal, Branch No. 15. No mixed or drainage water is used for irrigation. The village is at the tail end of the canal, and faces severe problems in water supply. Some of the graduates have tried to establish wells to access underground water. One well costs approximately LE 20,000 and ranges between 45–90 meters deep. However, the graduates have found that the water from such wells is saline.

At first, graduates used a drip irrigation system. But because of the poor design of the drip network and the high cost of maintenance, the majority reverted to surface irrigation.

As there are differences in elevation within the village, some areas must lift the irrigation water as much as seven meters. Graduates must pay LE 60 per year for electricity, in addition to about LE 750 per year, to maintain the drip irrigation system for each plot.

The present irrigation rotation is three days wet and 17 days dry. Accordingly, water is neither sufficient in quantity nor available at the proper time. Attendees stated that they are not on good terms with the people responsible for water supply. In addition, they don't cooperate with each other: each one wants to get as much irrigation water as possible, regardless of his neighbors' needs.

Attendees employ flood irrigation, and irrigate mainly at night. They would like the winter canal closure to be canceled. Last year's dry period of 67 days led to a drastic drop in crop yields.

No drainage system is available in the village, since graduates are supposed to use drip rather than surface irrigation.

Land resources

Land reclamation began in 1986, and the graduates received their land between 1988 and 1990. The average holding size is 5–6 feddans. The village is divided into four parts: No. 9, No. 10, No. 11, and No. 12. The elevation of No. 11 is high compared to the other parts of the village. To change from drip irrigation to surface irrigation they had to level the land on their own.

The soil of the village is calcareous. The characteristics of the soil are improving over time, and the attendees expressed their contentment. They believe that land can produce higher yields if they have sufficient irrigation water and financial resources. Two-faced plowing is the system followed in preparing the land for cultivation.

Crops

Crop yield fluctuates extensively in this village, according to the amount of irrigation water received. Table 10 shows the main cultivated crops in the area.

Table 10. Crops cultivated in El Tanmia.

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Early Nov.	May	6–12 ardabs	75/ardab
Berseem	Sept.	–	4–5 cuts	150/feddans
Lentil	Early Nov.	April	2.5–3 ardabs	0.9/kg
Faba bean	Mid Oct.	Late April	3–6 ardabs	150/ardab
Pea	Oct.–Nov.	Dec.–Jan.	500–1000 kg	0.8/kg
Main summer crops				
Tomato	April–Aug.	June–Oct.	5–10 ton	300–500/ton
Watermelon (seed)	April–Aug.	June–July	6–10 tons	200/ton
Squash	June–Sept.	Aug.–Oct.	5–6 tons	150–600/ton
Cantaloupe	March–April	May–June	4–5 tons	220/ton
Sunflower	June	Sept.	600–800 kg	900–1000/ton
Eggplant	April–July	Within one year	150 ton	250/ton
Main nill crops				
Tomato	July	Oct.	8–20 tons	600–650/ton
Squash	July	Sept.	6 tons	150–900/ardab
Maize	June	Aug.–Sept.	4 ardabs	55/ardab
Green beans	July	Sept.–Oct.	400–500 kg	2/kg

1 hectare = 2.38 feddans.

The majority of the area (about 90%) is cultivated with tomato in summer. Graduates have begun to cultivate fruit trees to avoid the effects of water shortages. Interplanting is practiced on only a small area (faba bean with tomato). Yields are improving over time, but only when water is available.

The attendees expressed their wish to expand the area planted to tomato and use improved varieties, but are hesitant due to the shortage of irrigation water. They would like to cultivate potato and medicinal herbs but lack experience.

Marketing: Crops are marketed via the following channels:

- Traders buy field crops, and sometimes vegetables, at the farm gate.
- Vegetables are transported to markets at Amria, Cairo, Alexandria, and Damanhour. The average costs of transportation are: LE 30 to Amria, LE 100 to Cairo, LE 40 to Alexandria, and LE 70 to Damanhour.

There is no local market. The choice of crops depends on the marketing system. Graduates grew a lentil crop last year but failed to sell it.

Weeds: Weeds are widely spread throughout the area. They are carried in with the irrigation water or are found in the land. Bermuda grass and bindweed are the main weeds. Weeds are controlled by hoeing or chemicals.

Pests and diseases: White fly, American bollworm, and maize borer are the main pests in the area. Rats also cause vegetable losses.

Inputs

Seed: Cooperatives supply only wheat seed; other seed comes from traders.

Fertilizer: Traders in Amria are the source of fertilizer. Foliar fertilizers are also used.

Manure: Manure is bought from beneficiaries or from companies specializing in animal products. The cost of manure is LE 220 per 10 cubic meters for animal manure and LE 600 per 10 cubic meters of poultry manure (*katkout*). The cost includes delivery.

Machinery: Machinery is rented from the cooperative or other farmers. The average costs are as follows:

- **Plowing :** LE 10/fed/one face.
- **Furrowing:** LE 10/fed.
- **Sub-soiling:** LE 40/fed.
- **Leveling:** LE 16–36/hour, according to the size of the machine. The average cost per feddan ranges between LE 500 to 1500 according to the difference in elevation.
- **Harvesting:** LE 120/fed (combine).
- **Threshing:** LE 15/hour.

Animal feed: This is purchased from traders in Amria. The cost of concentrates is LE 27/50 kg.

All inputs are available at Amria, which is close to the village. Quality is good, except for chemicals, which lack quality control.

The increase in the price of inputs affects the application rate of these inputs and, consequently, crop yield. It does not, however, affect crop choice.

Livestock

Animals: Only a few graduates raise limited numbers of cows or buffaloes for milk, which is mainly for family consumption and sometimes for sale. The average price of milk is LE 1.5 per liter for buffalo milk and LE 1 per liter for cow milk. Those who raise animals also benefit from their manure, which is added to the land. Only two graduates in the village raise cows or buffaloes (10–15 each) to sell the meat. Cows are more adaptable to this area than buffaloes. A small number of sheep are also raised for sale.

Berseem and elephant grass are cultivated for animal feed. The residues of maize and tomato are also used.

Poultry: Only married graduates raise poultry. The wives are responsible for their care. The production is used exclusively for family consumption.

Beehives: There are no beehives in the village.

Labor force

Hired labor is available in the village. Laborers come from Abu Homos and Abu El Matameer in Beheira Governorate, and from Menoufia Governorate. There is a shortage of labor at harvest, especially in summer. The graduates consider the efficiency of the hired laborers to be low.

Average wages are:

Men: LE 10/day on average.

LE 7/day in winter.

LE 12/day in summer.

Women: LE 8/day.

Children: LE 6-7/day.

In addition, the graduates offer food and tea to the laborers. For threshing, laborers receive LE 2/hr.

Agricultural operations are conducted as follows:

Plowing:	Machinery and men.
Manure:	Men.
Fertilizers:	Men.
Planting:	Men.
Weed control:	Men, women, and children.
Chemical spray:	Men.
Harvesting:	Men, women and children.
Animal care:	Men and women.
Marketing:	Men.

Other information**Credit**

- PBDAC offers a short-term loan for six months (one season) of LE 600. Recipients must pay back LE 650.
- Traders loan money for tomato production under the condition that all produce is delivered to them at market prices, plus a 10% commission. The graduate must sign a blank check, and if the produce is not delivered, the trader will add an extra amount to the check and seek settlement in the courts.
- The IFAD Project provides loans as follows:
 - For the cultivation of trees. The interest rate is 10%, 2% during a three-year grace period.
 - For land leveling. The loan is LE 3,500 per plot for one year at a 10% interest rate.

- To buy machinery. Loans are a maximum of LE 7,000. Three graduates must guarantee each other. The project gives a three-year interest-free grace period, with the loan repaid over four years at a 10% interest rate.
- Special loans are available from PBDAC for women to fund small projects or for animal raising.

Cooperative

The cooperative currently plays a very limited role in the graduates' life in El Tanmia. It only supplies graduates with wheat seed and some machinery.

Sources of agricultural information

- Extensionists and researchers come to the village but the graduates refuse to meet with them because they do not trust their knowledge.
- Graduates receive information from agricultural radio and TV programs.

Available services

Schools:	One elementary and one preparatory schools have been built in the village but are not yet open for students.
Health care unit:	Available; the doctor is irregularly available.
Veterinary unit:	Not available.
Potable Water:	Available.
Electricity:	Available.
Sanitary service:	Not available.
Police station:	Not available.

Off-farm income

Agricultural income covers 50–75% of the graduates' needs. To make ends meet, graduates take on additional jobs as hired laborers, grocery store workers, automobile or tractor drivers, or mechanics.

Foreign projects

Foreign and international projects in the village are:

- The World Food Program supplies food to graduates for four years in addition to other services.
- The Small Rural Development Project works with graduates' wives. The project offers a loan of LE 3,000 for one year at a 13% interest rate. Animal fattening projects receive six month loans.
- The ILO provides loans for productive projects such as animal fattening, rabbit raising, and other small rural projects.

The attendees said that they are ready to cooperate with any project aiming at increasing productivity, but are unwilling to lease their land to the project or face any losses.

Problems and constraints

- The severe shortage of irrigation water.
- The long period of dry days in the irrigation rotation.
- The bad design of the drip irrigation network.
- Canal closure in winter, which destroys crops.
- Lack of agricultural and marketing information.

Village No. 1, Graduates

Region: Nubaria

Date: 29 November 1994

Attendees: 17 graduates

Resources and resource management

Water resources

The main source of water is freshwater from El Nasr Canal. Graduates do not use mixed water, drainage water, or underground water for irrigation.

When the graduates arrived on their land, a drip irrigation system was in place. They were forced to revert to surface irrigation because of the following:

- The high level of soil salinity.
- Key components of the drip system were stolen because of the lack of security.
- The drip irrigation system had been badly designed.

The available water would be sufficient if the slopes of the lining canals were adjusted.

There is no irrigation rotation. There is a continuous flow of water, but the flow rate shifts between high and low levels. The high level meets all irrigation needs. The low level turn is not sufficient to meet the village's needs, especially for tail enders.

Graduates practice night irrigation, often continuing to dawn.

The attendees consider the winter canal closure to be a mistake. Crops are badly affected by this system, especially wheat and berseem. The winter canal closure lasts as long as a month in their area. Irrigation canals are cleaned once a year during winter closure. No official maintenance for canals and branches is carried out. The graduates cooperate together to maintain their canals and branches. There is no equity in water distribution between the head and tail end of the canals.

Lifting stations are responsible for water supply. Problems are limited.

The attendees felt that rain is sufficient to replace one irrigation. In their opinion, the quality of available water is not suitable for animals to drink, but they use it because it is essential to keep their animals alive.

There was no drainage system in the area. Graduates do not face any drainage problems, because their land is higher in elevation than neighboring areas.

Land resources

The soil in Village No. 1 is calcareous. Soil salinity is a problem. Another problem is land leveling. When graduates who began with drip irrigation systems reverted to surface irrigation, they had to pay for land leveling. The soil is improving over time because of the addition of manure and fertilizers. Graduates received their lands in 1991. To prepare the soil they plow, then level, the land. Plowing is carried out once or twice per crop.

The average holding is 5 fed (2.1 ha). Graduates cultivate all or part of their land, depending on the available financing for inputs. They can share their land with others to avoid leaving the land fallow, which causes soil deterioration.

Crops

The main crops cultivated by the graduates are summarized in Table 11.

Graduates do not employ an interplanting system. Fruit trees, such as apple, pear, and olive have been cultivated since 1991. These trees have not yet produced fruit.

No specific crop rotation is followed in the area. Crops are selected for profitability or ease in marketing, regardless of the effect of rotation on the properties of the soil.

Crop yields are increasing due to the plowing of crop residues into the soil, continuous irrigation, and the addition of manure.

Table 11. Main crops in Village No. 1 graduates.

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Mid Oct.–Mid Nov.	Mid May–Mid June	10–17 ardabs	75/ardab
Berseem	Aug.–Sept.	–	4–5 cuts	300–350/fed
Faba bean	Mid Oct.–Mid Nov.	Mid April–Mid May	3–4 ardabs	140–150/ardab
Cabbage	Aug.	Nov.–Dec.	3500 heads	700–800/fed
Main summer crops				
Tomato	June	Sept.–Oct.	4–7 tons	200–1,000/ton
Watermelon (seeds)	Early May	Aug.	5–9 tons	200/ton
Maize	Early May	Sept.	10–15 ardabs	50/ardab white 60/ardab yellow
Squash	Mid March	May	3–5 tons	200/ton
Main nili crops				
Maize	August	Dec.	5–8 ardabs	40/ardab white 55/ardab yellow

1 hectare = 2.38 feddans.

When the attendees were asked about the crops they would like to cultivate, they had only limited responses:

- Forage beet and soybean (unfortunately, the graduates don't have enough information about these crops to plant them).
- Potato, because of its high market value.
- Sugar beet, for sale to the Sugar Company.

Marketing: Crops are sold via the following marketing channels:

- Traders, who buy crops at the farm gate. Prices are usually low.
- Transport of produce to a wholesale market, or, if the quantity is small, to the local market.
- Advance contract with traders (*kelala*). Prices are usually undervalued.

Marketing problems include the low prices paid by traders, which affect the choice of future crops to be cultivated.

Pests and diseases: The most dangerous pest is the white fly. Aphids and cut worms are also found. They are controlled by insecticides.

Weeds: Weeds are not widely spread. There is a minor problem with Bermuda grass and common sedge. The source of these weeds is the clay surrounding the tree seedlings. They are controlled either by hoeing or manual pulling.

Inputs

Seed: Wheat seed is available from the cooperative. Other seed can be purchased from the private sector, either in the village or further away.

Fertilizer: Purchased from the private sector.

Chemicals: Purchased from the private sector.

Machinery: Rented from the cooperative or other farmers. Machinery available from the cooperative includes:

- 2 tractors.
- 1 hoeing machine.
- 2 disc plowers.
- 1 sub-soiling plower.
- 2 threshers.
- 2 sprayers.
- 1 milling machine.

Average costs of hiring machinery are:

- Plowing: LE 9/fed.
- Hoeing: LE 25/fed.
- Leveling: LE 15/hr.
- Spraying: LE 8/one filling of sprayer.
- Threshing: LE 15/hr.
- Milling: 5 piasters/kg of wheat or maize.
- Harvesting: LE 110–130/fed.

Manure: Manure is bought from the private sector at the following prices:

- Animal manure LE 15/m³.
- Poultry manure (*katkout*) LE 40/m³.

Attendees said that most inputs are available within the village, all the time and in good qualities. They feel that the price of inputs is increasing, which affects the following:

- The cultivated area, but not the recommended rate of inputs.
- The same rate of chemicals is used regardless of their price.

- The choice of rotation.

Attendees are aware of integrated pest management and the effect of chemicals on soil, water and human beings. They do the best they can to follow IPM practices.

The main problems faced by attendees in crop production are shortages of financing and the unavailability of improved seed varieties.

Livestock

Animals: Some of the graduates in the village fatten calves for sale. The average herd is 6–12 head per holding. Attendees are also thinking of keeping the females to produce milk. Some sheep and goats are raised for family consumption or for sale.

Animals are fed with berseem in winter and short maize (*drawa*) in summer, in addition to wheat straw. Animal manure is added to the soil, and bought if additional quantities are needed. Fattened calves and sheep are sold in the market to generate income for the family.

Poultry: Attendees raise chickens and ducks, for family consumption only.

The graduate is responsible for animal care, while his wife takes care of the poultry.

Beehives: There are no beehives in the area.

Labor force

The graduates depend mainly on hired laborers to conduct agricultural operations on their farms. Hired laborers, men, women, and children, are available throughout the year. The different operations are distributed as follows:

Plowing:	Machinery and men.
Planting:	Men.
Fertilizing:	Men and women.
Weed control:	Women and children.
Manuring:	Men.
Harvesting:	Men and women.

The average wages are:

Men:	LE 8–12/day.
Women:	LE 7–8/day.
Children:	LE 5–7/day.

Other information

Credit

The different sources of credit are:

- PBDAC (LE 500–1000/season) at 14% interest/year.
- IFAD Project at 10% interest rate.
- Commercial banks at 10% interest rate.

- Relatives.

To get a loan, graduates must provide a guarantee in the form of a settlement certificate. Getting repeat loans depends on previous credit history. The attendees complained about the complicated administrative requirements, and the short repayment time. Graduates said they don't borrow from traders.

Cooperative

Attendees are not pleased with the role played by the cooperative in the village. There has been no improvement in that role, and the cooperative's services do not adapt to change. The cooperative supplies only wheat seed and machinery.

Sources of agricultural information

- There are no extension services in the area.
- Researchers from the Agricultural Research Center visit the village to provide guidance and to give lectures.
- Radio and TV programs provide some information.
- Agricultural bulletins are available, supplied by the village's agricultural engineer.

Off-farm income

Agricultural income does not satisfy family needs. Graduates work in outside jobs, mainly trading, to generate more income.

Foreign projects

There are several foreign projects working in the area, including the World Food Program, IFAD and ILO. These projects help improve production.

The attendees said that they are ready to share their land or their efforts with any research project as long as they are guaranteed against losses.

Problems and constraints

- Shortages of irrigation water.
- Lack of security.
- Bad design of the original drip irrigation network.
- Bad practices by traders.
- Lack of marketing information.
- The spread of pests and diseases.
- The shortage of financing.
- The high cost of inputs.

Village No. 1, Beneficiaries

Region: Nubaria
Date: 29 November 1994
Attendees: 22 beneficiaries

Resources and resource management**Water resources**

The main source of irrigation water is freshwater from El Nasr Canal. No underground or drainage water is used in irrigation.

Surface irrigation is used exclusively in Village No. 1. There is no modern irrigation system. The water rotation is seven days wet and 13 days dry. Meeting attendees stated that *there is not enough water to irrigate the area*. In addition, distribution of water between the head and the tail end of the canal is unequal. Attendees suffer from irrigation water shortages, especially in summer. Night irrigation is employed, taking about 6 hours on average.

The attendees complained about the lack of canal cleaning over the last nine years. To avoid water shortages, they have had to finance the cleaning of canals themselves. They are against the winter canal closure because it adversely affects crop yield, especially wheat. Last year, the closure lasted for 40–55 days. Attendees have received only limited cooperation with irrigation officials.

Land leveling has helped to decrease the amount of water needed for irrigation and increase efficiency. Attendees believe that they must irrigate their land even if rains are heavy.

The cross sections of the canals (lined canals) are sufficient, but the problem of water shortage remains. Tile drainage is used in the village. The only open drain is the main one. The efficiency of the tile drainage system is low because some of the connections are closed.

The canal water is suitable for animal drinking.

Land resources

The average holding is 6 feddan (2.5 ha) per farmer. The soil is calcareous. Due to a design fault, drainage water runs from the main drain into the tile drainage network. Consequently, the water table is rising.

The attendees said that when preparing the soil for cultivation, they use the same practices they employed in the Old Lands. Dry cultivation (*afeer*) and sometimes wet cultivation (*heraty*) are employed. None of them transferred soil from the Old Lands to their newly reclaimed land.

The attendees believe that the soil in their area is fertile, and that if enough irrigation water is coupled with a good technology package, they could produce higher yields than in the Old Lands. The fertility of the soil is increasing over time because of good land preparation and the addition of manure.

Soil analysis has not been conducted.

Crops

The choice of which crops to cultivate is made by the individual. No specific crop rotation is followed. In addition, various vegetables are grown.

The main cultivated crops are summarized in Table 12.

Table 12. Main crops in Village No. 1 (beneficiaries).

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Oct.-Nov.	May	7-15 ardabs	75/ardab
Faba bean	Sept.-Oct.	April-May	3-4 ardabs	120-140/ardab
Berseem	Sept.-Oct.	March-April	4-5 cuts	5/cut/kirat
Main summer crops				
Maize	April-May	Aug.-Sept.	10-12 ardabs	50/ardab
Tomato	March (first season) May (second season)	Aug.-Sept. Aug.-Oct.	10-12 tons 8-10 tons	250-300 ton
Squash	March	May	8-10 ton	200-250/ton
Watermelon	April	July-Aug.	5-6 tons	250-300/ton
Main nili crops				
Squash	Mid Sept.	Oct.-Nov.	6-8 tons	200/ton
Maize	Aug.	Dec.	4 ardabs	45-50/ardab

1 hectare = 2.38 feddans.

The attendees said that the factors that affect crop yield are:

- The widespread infestation of nematodes.
- The shortage of irrigation water.
- The subsoil is hardpan in some areas.
- Increases in the price of inputs leads to decreases in the amount of fertilizers used and a delay in chemical spraying.

Interplanting is not practiced in the village. There are no permanent crops. Planting is sometimes late because of the limited supply of irrigation water. The delay in planting also affects the cultivation of the next crop. The standard crop rotations in the village are as follows:

- Wheat followed by summer tomato followed by berseem or faba bean.
- Wheat followed by squash followed by berseem or faba bean.
- Wheat or faba bean followed by maize followed by berseem.

These rotations have not changed due to the increase in input prices.

Attendees said they would like to cultivate fruit trees, but do not have the necessary financing.

Marketing: Crops are marketed via the following channels:

- The wheat cooperative.
- The wholesale vegetable market.
- Traders, who buy the crops at the farm gate.
- Crops are sold in the field before harvesting (*kelala*), for an advance payment.

In general there are no problems marketing crops. Marketing systems do not affect the choice of crops.

Pests and diseases: The main pests are nematode, white fly, and red spider. They are controlled by chemicals. Vegetables are sprayed eight times per season.

Though they know the bad effects of chemicals on human health and water pollution, attendees said they are unable to avoid using them, because they must protect their crops.

Weeds: Weeds are spread via irrigation water and manure. The principal weeds are wild oat and mallow bindweed.

Inputs

The sources of inputs are:

Seed: Wheat and maize seed is bought from the cooperative for cash. Vegetable seed is bought from traders in the market.

Fertilizers are bought mainly from the cooperative and sometimes from traders.

Chemicals are bought from traders in the market.

Manure comes from the beneficiaries' own animals or from the market, if needed.

Machinery is hired from the cooperative, the machinery company or from neighbors. The cost of hiring machinery is as follows:

- Plowing: LE 12/fed/one face.
- Leveling: LE 20/hr.
- Threshing: LE 20/hr.
- Harvesting: LE 120/fed with a combine.

Some inputs are bought from Amria (30–88 km from the village). If chemicals cannot be found in nearby markets, they are bought from Alexandria. Attendees said they don't normally use trace element fertilizers.

The price of inputs has increased dramatically during the past few years. Accordingly, attendees said they cannot use the recommended rates for inputs or, sometimes, the recommended types of fertilizer.

Livestock

Animals: Small farmers in the village raise various animals:

Kind	Average heads/family	Type of utilization
Cows	2-3	Milk production
Buffaloes	1-2	Milk production
Sheep	1-2	Family consumption
Donkeys	1-2	Draft animals

Goats are not raised in the village. Maize and berseem, in addition to crop residue, are grown to feed the animals. The wives and children are usually responsible for the care of animals. Dairy products, such as cheese and butter, are produced for family consumption. Excess production is sold at the weekly local market, at LE 2-3/kg for cheese and LE 8-10/kg for butter. Manure is added to the land to improve its quality and is not sold.

Poultry: Different types of poultry are raised (5-10/family), mainly for family consumption and only rarely for sale.

Beehives: There are no beehives.

Labor force

The family is the main source of labor. The wives and children work with the farmer in the field. Hired labor is always available, usually from neighboring governorates (mainly Beheira). Hired laborers are used for fertilizing, hoeing, irrigating or harvesting.

The average wages are:

- Men: LE 8-12/day
- Women: LE 7-9/day
- Children: LE 5/day

Attendees feel that hired laborers are only moderately efficient. The average working day is eight hours. Wages increase during peak demand.

Attendees in Village No. 1 employ a system in which the farmer helps his neighbor in return for his neighbor's help.

Other information

Credit

Attendees receive loans from the Principal Bank for Development and Agricultural Credit as follows:

- Short-term (six-month) crop loans are available at a 14% interest rate. The average loan is LE 2,500-3,000.
- Medium-term (three year) loans for buying machinery and equipment are available. Compound interest rates reach 35-38%.

The IFAD Project also provides various types of loans to be paid back within 5-7 years. These loans are for raising animals, land leveling, agricultural equipment, cultivating trees,

and establishing modern irrigation systems. In addition, short-term loans are given to buy inputs. The average interest rate for IFAD loans ranges between 5–10%.

Signed checks and a land ownership contract are the guarantees needed to borrow money from either PBDAC or IFAD.

Attendees can also borrow from the businessmen's society at a 10% interest rate.

Wholesalers provide loans to the farmers for a 10% commission. Farmers must deliver their produce to the wholesaler at the market price.

In general, attendees don't face problems in borrowing money to finance their agricultural activities.

Cooperative

The cooperative supplies only wheat and maize seed, in addition to machinery for hire. It also receives the wheat crop. The attendees believe that the role of the cooperative has not changed much in recent years.

Sources of agricultural information

- Extension symposiums.
- Field days with researchers.
- Agricultural bulletins.

Off-farm income

Agricultural income is not sufficient to meet family and farm needs. Wives and children work as hired laborers on neighboring farms to increase family income. Crop-sharing between the beneficiaries and the graduates takes place, or the beneficiaries lease the holdings from the graduates. All beneficiaries are settled in the village in their own houses.

Foreign projects

IFAD is operating in the village with four components, namely credit, irrigation, extension, and development. ILO has established small projects to train villagers on how to produce clothes and carpets. Beneficiaries are ready to cooperate with projects as long as the project will pay all the costs and let them keep the production. They are also willing to lease or share.

Problems and constraints

- Shortage in available irrigation water.
- Inefficient tile drainage accompanied by high water table.
- Pests and diseases.
- The high cost of inputs.
- The high interest rate for loans.

Men's Meetings: El Bustan Area

Ali Ebn Abi Taleb Village, Graduates

Region: Nubaria
Date: 30 November 1994
Attendees: 17 graduates

Resources and resource management

Water resources

The main source of irrigation water is freshwater from El Bustan Canal. No mixed drainage water or underground water is used in irrigation.

Available water is sufficient, although there is less in summer than in winter. There is no irrigation rotation. Water is available every day except Tuesday, when maintenance is performed on irrigation equipment. Water is distributed equally among holders. Night irrigation is practiced in summer to avoid the heat of the day.

The main irrigation system is moving sprinkler, with a few drip irrigation systems. The attendees complained of the following:

- The moving irrigation system needs much time and effort.
- The four-inch surface pipes have a high rate of loss.
- Many problems are created when the sprinklers are moved, including the breaking of some pipes and water losses.
- The motors which operate the irrigation station are too old to function properly, which causes many failures in the system. This affects 72 holders in an area of 450 fed (189 ha).
- The irregular flow of electricity in the irrigation station causes low water pressure. The main electrical network is in bad condition and there are no plans for repair.

The winter canal closure has a bad effect on wheat and berseem yield, the main winter crops. The winter irrigation rotation is five days wet and 10 days dry. The available water during wet days does not meet the needs of the entire village.

Canal cleaning is conducted every two years. The irrigation employees responsible for water flow in the canal are efficient and cooperate with the holders. Pump raising stations are responsible for the availability of water. The graduates cooperate with each other on irrigation and there are no problems taking turns.

Although the sprinkler irrigation system is used, land leveling is important to assure uniformity of water distribution and decrease water losses.

Good rainfall can take the place of one irrigation. The quality of water is good and can be used as drinking water for animals.

The graduates face high electricity costs. They are asked to pay LE 300/fed/yr, which is, in their opinion, a very high rate. They would prefer to pay only LE 80/fed/yr.

There is no drainage system in the area.

Land resources

The soil is sandy, with a shortage of trace elements. The graduates have seen an improvement in soil fertility over time due to the addition of manure and other fertilizers. Average crop yields are increasing, with the exception of the peanut crop, which is badly affected by the spread of pests such as nematode.

The water table has begun to rise due to the absence of a drainage network, leading to increases in soil salinity. Some areas are now out of production due to this problem.

Subsoil plowing with two faces is used in land preparation. Some of the graduates use a disc plower in summer.

Crops

The main crops produced by the graduates are summarized in Table 13.

Table 13. Main crops in Ali Ebn Abi Taleb Village (graduates).

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Nov.–Dec.	April–May	4–8 ardabs	75/ardab
Pea	Sept.–Oct.	Dec.	1–1.5 tons	400–600/ton
Onion	Dec.	Mid April	6–8 tons	150/ton
Berseem	Sept.	Nov.	4 cuts	275/cut
Faba bean (green)	Oct.	April	4–8 ardabs	130–150/ardab
Main summer crops				
Peanuts	March–April	August	13–15 ardabs	75–90/ardab
Sesame	April	July	250 kg	1–1.6/kg
Maize	April	August	8–10 ardabs	60–65/ardab

1 hectare = 2.38 feddans.

Maize is also cultivated as a *nili* crop in some areas, with lower yield than in summer. Peanut is interplanted with onion, when onion is cultivated for family consumption only.

Fruit trees such as mandarin, guava, apple, orange and lemon are cultivated, and have recently begun to produce. The average return per feddan for fruit trees is as follows:

Crop	LE/feddan
Mandarin	1,000–1,500
Guava	1,500
Apple	2,000–3000
Orange	1,000
Lemon	1,200

There is no specific rotation, except that wheat is cultivated in winter followed by peanut in summer. Planting time affects the yield of the following crop in the rotation. Graduates tried

planting watermelon (seed) before rotating with wheat, but gave it up when disease infections appeared.

The attendees said that they would like to expand the area planted to vegetables but cannot because of high costs, the irrigation system, and lack of information about how to protect plants against frost.

Marketing: Crops are marketed via the following channels:

- Wholesalers buy the crop at farm gate.
- Produce is transported to wholesale markets in Alexandria or Delengat.

Marketing problems:

- The high cost of transportation and marketing. Graduates don't have any choice but to cultivate the same crops, because the soil conditions are very limiting.
- Low prices for produce.

Pests and diseases: Pests and diseases present are:

- Nematode in peanut, pea, and cucurbits.
- Mildew in onion, pea, and cucurbits.
- Fusarium, which spreads via manure and seed.

Weeds: Weeds are widespread throughout the area, especially in permanent species. The most important kinds are Bermuda grass, mallow bindweed, common sedge, and *Orobanche*.

Weeds are spread via manure and irrigation water. They are controlled either by hoeing or by chemicals. Despite the problem of infestation, graduates cannot stop using manure, as it is essential for the sandy soil.

Inputs

The main sources of inputs are:

Seed: Only wheat seed is available from the cooperative. Other seed is purchased from the private sector.

Fertilizers are available from the cooperative or the private sector.

Chemicals are purchased from the private sector.

Machinery is hired from the cooperative or from other farmers. The average costs of hiring machinery are:

- Plowing: LE 8–9/fed/face.
- Disc plower: LE 30–40/fed.
- Combine: LE 85/fed.

Good quality inputs are available in the area. Though input prices have been increasing, this has not affected fertilization rate, chemical use or crop selection.

Graduates know about the integrated pest control system, but have not applied it. They also know of the bad effect of chemicals on human beings, but have no choice but to use them to produce higher yields.

Livestock

Animals: The main animal raised by settled graduates is sheep. On the average, there are three head per family. Sheep are raised either for family consumption or for sale. A few graduates raise 1–2 cows or buffaloes for milk and meat.

Berseem and elephant grass around the farm are cultivated for animal fodder. In addition, crop residue, especially from peanut and pea, is fed to the animals.

Those who have cows or buffaloes sell milk at LE 1/liter, cheese at LE 2-2.5/kg, butter at LE 8.5/kg, and meat at LE 14-15/kg.

Poultry: Chickens and ducks are raised for family consumption only. The graduate and, if he is married, his wife, are responsible for the care of animals.

Labor force

Hired labor is essential for the graduates. Laborers are available from neighboring areas. The average wages are:

Men: LE 7/day.

Boys: LE 5/day.

Women do not share in agricultural operations.

The different agricultural operations are distributed as follows:

Plowing:	Machinery and men
Sowing:	Men
Manuring:	Men and boys
Weed control:	Men and boys
Chemical spraying:	Men
Irrigating:	Men
Harvesting:	Men and boys

Other information

Credit

The main source of credit is PBDAC. The average loan is LE 400/feddan at an 8% interest rate for a six-month loan, or 16% per year.

To receive a loan, graduates must produce a settlement certificate and signed checks. Problems encountered when applying for a loan are:

- The complicated administrative process.
- The high rate of interest.

- In the case of wheat, loans come due just before harvest.

Cooperatives

There is no cooperative in the village. The graduates are split among four cooperatives in other areas: El Shaarawy, Tawfik El Hakeem, Abbas El Akad, and El Bustan Youth. The role of these cooperatives is to sell wheat seed and fertilizers and help graduates get loans.

Sources of agricultural information

- Extension bulletins.
- Field days and demonstration fields.

Available services

- Schools: A primary and a preparatory school are available.
- Health care unit: Available.
- Veterinary unit: Available.
- Electricity: Available.
- Potable water: Available.
- Sanitary service: Not available.
- Police station: Available.
- Roads: Only the main asphalt road.
- Transportation: Private transportation.

Off-farm income

Agricultural income is not enough to cover family needs. Graduates must take other non-agricultural jobs such as irrigation network worker, electrician, mechanic, etc. Frequently, they are not able to cultivate all their land, especially those who received 10 fed (4.2 ha). Graduates either share or lease a part of their land. The majority of the graduates have settled in the area.

Foreign projects

- IFAD Project.
- The French Project.

Graduates are ready to share with any project, whether they are asked to do the work, or lease a part of the holding.

Problems and constraints

- Lack of marketing information.
- Irregular electric power.
- Lack of extension efforts.

- The absence of a drainage system.
- The unlevelled land.
- The absence of a local market.
- High prices of inputs.

Ali Ebn Abi Taleb Village, Beneficiaries

Region: Nubaria
Date: 30 November 1994
Attendees: 19 beneficiaries (small farmers)

Resources and resource management

Water resources

The main source of water is freshwater from El Nasr Canal via the New Bustan Canal. Mixed or drainage water is not used in irrigation. Irrigation is by the moving sprinkler system.

There is no irrigation rotation. There is a continuous flow of water daily except on Tuesdays. Attendees feel that the water supply is not sufficient. They face water shortages in summer and the winter canal closure. The attendees said that during the winter closure, irrigation is five days wet and 10 days dry.

Irrigation takes place only in the daytime. One person is designated to attend the pumps and the pressure in the network. Land leveling is not important, as it does not affect the efficiency of the sprinkler irrigation system.

The quality of water is good and is given to animals.

The main canal is lined. It is cleaned once a year during the winter canal closure. The cost of cleaning is paid by either the cooperative or the beneficiaries.

There are three irrigation stations. Each is responsible for supplying water to 90 beneficiaries on 450 fed (189 ha). The main pump raising stations are responsible for the general supply of water in the area. They are working efficiently. Farmers cooperate in taking turns to irrigate.

The attendees said that rains can take the place of one or more irrigations.

The annual cost of irrigation per holding is estimated as follows:

- Changing an average of three sprayers: LE 30–35/sprayer per year.
- Maintaining pipes and connections: LE 200/yr.
- Electrical system maintenance: LE 50–60/yr.
- Pump maintenance: LE 100–150/yr.
- Cost of electricity: LE 350/yr.

There is no drainage system in the village, except one open drain supplied by irrigation water from Pump Raising Station No. 5. The drain design is backwards, running from low ground to high.

In general, the only problem beneficiaries face in irrigation is the shortage of water during winter closure.

Land resources

The soil is sandy. Fertility is improving over time due to the addition of manure and continuous cultivation. The average size of each holding is 5 fed (2.1 ha).

Problems beneficiaries face regarding their land are summarized as follows:

- Some soils have hard pan at a depth of 1–1.5 meters, leading to the non-drainage of irrigation water.
- Some plots suffer from rising underground water levels, which sometimes come within 10–50 centimeters of the soil surface.
- There is an increase in salinity in some plots.

Beneficiaries follow the normal systems of land preparation. Adding manure is essential to the type of soil found in Ali Ebn Abi Taleb Village.

Crops

Crops were chosen according to the type of soil in the area. The main cultivated crops by the beneficiaries are summarized in Table 14.

Table 14. Main crops in Ali Ebn Abi Taleb Village (beneficiaries)

Crop	Planting date	Harvesting date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Nov.	Early May	6-8 ardabs	75/ardab
Pea	Sept.	Dec.	2-3 tons	350-400/ton
Faba bean	Dec.	May	5-10 tons	420/ton
Berseem	Oct.	April - May	2-3 ardabs	150-170/ardab
Main summer crops				
Peanut	March- April	Aug.	8-15 ardabs	90-100/ardab
Maize	May-June	Sept.	10-15 ardabs	50-60/ardab

1 hectare = 2.38 feddans.

No *nili* crops are cultivated, and there is no interplanting system. No specific crop rotation is used. Beneficiaries prefer to cultivate early in the season. Crop yields are increasing over time.

Some attendees cultivate mandarin trees, but no fruit has yet appeared. The attendees expressed a wish to cultivate tomato and potato, but cannot do so because the sprinkler system is not suitable for tomato, and the high costs and unavailability of seed prevent potato cultivation. Manure is added mainly to wheat and maize.

Marketing: Beneficiaries sell all their products to traders at the farm gate.

The main problem with marketing is that traders pay lower-than-market prices. Beneficiaries would like to have a local market where products could be sold at better prices.

Pests and diseases: Beneficiaries all complained about destruction by disease of the peanut crop, which is their main summer crop. They could not identify the type of infection, although some believe it is caused by nematodes. This situation reflects the absence of agricultural information. Beneficiaries control pests and diseases by chemical spraying or manually. Sometimes there is no pest control.

Weeds: Weeds are widespread throughout the area and are increasing with time. Weeds, such as *Orobanche*, mallow bindweed, and Bermuda grass, are controlled manually. The source of weeds is irrigation water and manure. Beneficiaries cannot stop adding manure, as it improves soil quality, leading to an increase in yield.

Inputs

The sources of different inputs are:

Seed: Wheat seed is the only seed bought from the cooperative. Other crop seeds are bought from traders in the market.

Fertilizer: A small percentage of fertilizers is bought from the cooperative. The majority is bought from the private sector.

Chemicals: These are bought from the private sector.

Machinery: Machinery is rented from both the cooperative and other farmers. The average rental costs are:

- Plowing: LE 8–10/face/fed.
- Leveling: LE 12/hr.
- Hoeing: LE 30/fed.
- Threshing: LE 20/hr.

Manure: Manure is bought from local farmers at LE 180/8 m³. Inputs are bought from El Delengat, 50–55 km from the village. The quality is good.

Prices of inputs have been increasing. This has led to a decrease in the quantity of chemicals used. Sometimes beneficiaries don't use any chemicals at all.

Attendees said they do not have enough information about integrated pest management. Though they know the bad effect of using chemicals on human beings and animals, they feel they have to use them.

No soil analysis had been conducted to recommend appropriate fertilizers.

Livestock

Animals: All beneficiaries have settled in the village with their families. Raising animals is a must for them. The animals raised are:

Type	Number of heads/family	Type of use
Cows	1–2	For milk
Buffalo	1	For milk
Sheep	2–3	For meat
Donkeys	1–2	For draft

Milk is consumed by the family or sold at LE 1–1.5/L. Sheep are consumed by the family or sold in the market. Dairy products such as cheese and butter are produced for family consumption only.

Poultry: All types of poultry are raised, mainly for family consumption.

Berseem and short maize (*drawa*) are cultivated for animal fodder. Elephant grass is cultivated on the borders of the fields.

The wife and the children are responsible for animal care.

Beehives: There are no beehives in the village.

Labor force

The family is the main source of labor on the farm. Farmers also cooperate with each other to conduct all agricultural operations on an exchange basis. Hired laborers are also available. Laborers come from neighboring villages. The average wages are:

Men: LE 5–7/day.

Women: LE 4–5/day.

Children: LE 4–5/day.

Hired labor is available when needed. The wife and the children work in the house and on the farm in all operations. A hired laborer works from 9 a.m. to 4 p.m. with a one hour break. The attendees prefer to conduct agricultural operations manually rather than by machinery.

Other information

Credit

Attendees borrow money from the following sources:

- PBDAC gives two types of loans to beneficiaries. The first is a loan for crop cultivation, a maximum of LE 2,000–3,000 per holding at 7% interest for six months. The second is a loan to buy animals, a maximum of LE 8,000 per holding at 10% annual interest rate for five years. Beneficiaries must provide their certificate of land ownership and signed checks in the amount of money borrowed as a guarantee.
- Traders give loans against the crop in return for the right to purchase the crop.
- Relatives.

Cooperative

The role of the cooperative is to provide wheat seed and fertilizer, and to rent out machinery. Fertilizer usually arrives at the cooperative later than the proper time for use.

Sources of agricultural information

- Extensionists.

- Limited symposiums with researchers.
- TV programs.

Available services

Schools:	One primary and one preparatory school.
Health care unit:	Available.
Veterinary unit:	Available.
Electricity:	Available.
Potable water:	Available.
Sanitary service:	Not available.
Police station:	Available.

The attendees expressed their contentment with the available services in the village.

Off-farm income

The agricultural income from their own holding covers only 50–60% of the family needs. For additional income, beneficiaries share or lease the land of the graduates in the village. Members of the family also work as hired laborers on other farms. Some work in non-agricultural jobs, such as grocer, tailor, hairdresser, etc.

Foreign projects

The IFAD Project recently began activities in the village.

Attendees expressed their willingness to work with any project aiming at increasing yields, either by doing the work themselves or by leasing their land.

Problems and constraints

- No local market is available.
- Low prices are paid by traders for their products.
- Lack of market information.
- High input prices.

Abdel Moneim Riad Village, Graduates

Region: Nubaria

Date: 1 December 1994

Attendees: 16 graduates

Resources and resource management***Water resources***

The main source of water is freshwater from El Nasr Canal via the New Bustan Canal. Underground water is found at an average depth of eight meters. The system of irrigation is moving sprinkler.

The quantity of water available for irrigation is sufficient. There is a continuous flow of water in the canal, which is closed once a week, on Tuesdays, for maintenance. Each graduate receives water to irrigate his land three days a week.

Graduates irrigate at night under the following conditions:

- Stoppage of electricity.
- Technical problems in the pump raising station.
- Hot weather.
- High land elevation.

To avoid the spread of fungi, graduates don't use sprinkler irrigation when cultivating maize, sunflower, or vegetables. They have not received any training on the use of the irrigation system, but have learned how to use it by experience. The water quality is good and is used to water the animals.

Under the winter canal closure, the rotation is 10 days dry and five days wet. Wheat is the crop most affected.

The pump raising station and the person who operates the gates are responsible for water availability in the canals. Attendees have no complaints about this arrangement.

Graduates cooperate among themselves in irrigation by taking turns. They face two occasional problems, namely, power outage, which results in the loss of a turn, and the low quantity of water received on elevated land. They said that with good rains, they are able to save one irrigation.

There is no drainage system, but the soil does not currently suffer. Graduates believe that they can avoid the raising of the water table by increasing the mechanical ability of the pump raising station and/or by changing the fixed sprinkler system.

Land resources

All the land is sandy. There is a continuous improvement in the properties of the soil with time. Attendees attribute this to the addition of manure, and the continuous cultivation.

The graduates said that they have no problems with their land. They practice the normal system of land preparation, as well as dry cultivation (*afeer*), except for the current year's wheat crop, due to extensive rain before cultivation.

Some graduates transferred soil from the Old Lands to improve the quality of their newly reclaimed soil.

The average graduate's holding is 5 fed (2.1 ha). Those who received less than this were compensated with a greenhouse under a French loan.

The main land problem in the village is the large variation in elevation. Elevated land receives less irrigation water, while lower elevations suffer from a rising water table.

Crops

The type of soil, irrigation system, costs of production, and marketing dictate the cultivated crops in the area. The main crops cultivated by the graduates are shown in Table 15.

Table 15. Main crops in Abdel Moneim Riad Village (graduates).

Crop	Planting date	Harvesting date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Nov.	Late April	5-8 ardabs	75/ardab
Pea	Oct. - Nov.	Dec.-Jan.	1-1.5 tons	500-600/ton
Onion	Dec.	May	5-10 tons	420/ton
Berseem	Oct.	March-April	4-5 cuts	300/cut
Main summer crops				
Peanut	April-May	Sept.- Nov.	10-15 ardabs	70-90/ardab
Sesame	April-May	Aug.-Sept.	240-360 kg	2/kg
Watermelon (seed)	March	Mid July	250-300 kg	4-5/kg
Main nili crops				
Eggplant	July-Aug.	All year	15 tons	300-350/ton

1 hectare = 2.38 feddans.

Peanut is interplanted with onion at onion harvest time. This system adversely affects peanut yield.

There are some fruit trees in the village, such as apple, guava, and mandarin. The attendees said that late planting resulted in lower yield.

Graduates follow a double rotation (pea/peanut). They would like to cultivate more vegetables, but cannot because of the irrigation system and lack of financing. They expressed a desire to produce maize, but because of its bad effect on soil fertility, have decided not to.

Marketing: No crops are sold to the cooperative. Crops are sold via the following channels:

- Traders buy produce at the farm gate, either wholesale or retail.
- Some crops are transported to wholesale markets at Alexandria or El Delengat.

Marketing problems include:

- Low prices.
- Transportation to market.
- Lack of market information.

Pests and diseases: The pests and diseases found in the area are: nematode, white fly, red spider, aphid, pea rust, fungi, and Fusarium. Graduates spray with chemicals for control. Sometimes, however, they do nothing because of the following:

- Lack of information on types of infection.
- The unavailability of training courses, or lack of interest in the type of training received.
- No specialized extensionists are available, and there is a shortage of bulletins.
- Shortages in financial resources.
- Low anticipated price of affected crops.

Weeds: Weeds were widespread in the area, via irrigation water and manure. They are controlled either by chemicals or hoeing. There is a shortage of hired labor for hoeing.

Graduates feel that adding manure is a must, despite the spread of weeds, because the soil is sandy.

Inputs

Following are the sources of inputs:

Seeds: Only wheat is bought from the cooperative. Other seed is bought from traders.

Fertilizer: Limited types of fertilizer are available from the cooperatives, but the majority of fertilizers are supplied from the private sector.

Chemicals: Purchased from the private sector.

Machinery: There is no machinery in the cooperative. Graduates hire machinery from local farmers. The average cost of the various rentals is:

Plowing:	LE 8/fed.
Disc Plower:	LE 15/fed.
Leveling:	LE 8–14/hr.
Harvesting:	LE 75/fed (combine).

Animal feed: Purchased from traders.

Manure: Purchased from local farmers at LE 15/m³.

All inputs are available in the village. The quality of inputs is good, except for chemicals, which are considered only moderately effective. Price increases have led to a decrease in the amount of inputs used, especially manure. Some of the graduates use trace element fertilizers.

Attendees said they are aware of the bad effects of chemicals on soil, water, and human beings. They utilize integrated pest control (IPM) in the greenhouses. No soil analysis is done before fertilizing.

Livestock

Animals: The settled graduates in the village raise the following animals:

Type	Average heads/family	Use
Cows	1-2	For milk production
Buffalo	1	For milk production
Sheep	3-4	For meat production
Goats	2-3	For meat production
Donkeys	1	For draft

Cow and buffalo milk is either consumed by the family or sold. Sheep and goats are also fattened for family consumption and for sale. The price of milk is 90-100 piasters per liter. Animal manure is added to the soil.

Poultry: Chickens, ducks, geese, and pigeons are raised. Rabbits are also raised. The average number per family was as follows.

Type	Number/family
Chicken	10
Ducks	5
Geese	2-3
Pigeons	10
Rabbits	4-5

Poultry is raised for family consumption only.

Berseem, short maize, and elephant grass are cultivated for animal fodder. The graduate and his wife take care of the animals. Crop residue from peanut and pea are also used as animal fodder.

Beehives: There are no beehives in the village.

Labor force

Although the graduates work on their farms, they depend mainly on hired labor to conduct all agricultural operations. The graduate's wife rarely shares in agricultural work. The hired laborers come from areas such as El Delengat and Etay El Baroud. Hired labor is available most of the time, but there is a shortage in March, April and September. A hired laborer's day is 6-7 hours long. Laborers are considered only moderately efficient. The average wages are:

Men: LE 6-7/day.

Women: LE 4-5/day.

Children: LE 4-5/day.

Wages increase in peak periods, when there is a shortage of available hired labor.

The average wage of irrigation labor is LE 80/month. Because of the shortage in financing, an irrigation laborer works for an entire season in return for one third of the crop.

Other information

Credit

The main sources of finance are:

- PBDAC, which is the only place where graduates can get a loan of LE 2,000 at a 14% interest rate. They are asked to sign a check and produce an official certificate of land ownership as a guarantee for the loan.
- Traders, who loan money against the expected crop.
- Wholesalers, who loan money in return for a promise to sell the crop at market price plus a commission of 6–8%. They require a signed blank receipt as a guarantee.
- Relatives.

Cooperative

The role of the cooperative has decreased recently. Cooperatives are now limited to providing wheat seed and some fertilizers on credit.

Sources of information

- Occasional symposiums.
- Agricultural bulletins.
- TV and radio programs.

Available services

Schools:	One primary school.
Health care unit:	Available, but not functioning.
Veterinary unit:	Not available.
Electricity:	Available.
Police station:	Not available, resulting in a lack of security.
Potable water:	Available.
Roads:	Only the main asphalt roads.

Off-farm income

Because agricultural production doesn't meet their needs, graduates sometimes take on non-agricultural jobs such as hairdresser, carpenter, maintenance worker, tailor, or trader. Agricultural income represents 90% of the family income, and off-farm income the remaining 10%.

Sometimes graduates lease their land for one season, or share with others.

Greenhouses

The French Project provided some graduates with greenhouses. The greenhouses are 540 m². Graduates who received them are characterized by the following:

- The size of their holding is less than 5 fed (2.1 ha).
- Recipients attended a training course on how to manage greenhouse production.
- Recipients must be permanently settled in the village.

The price of each greenhouse is LE 7,500. Payment is LE 900 annually for 5 years, followed by LE 500 annually for another 5 years. Cucumber has been the only crop cultivated in the greenhouses for the first two years. The average production is 8–12 ton/greenhouse. Sale price ranges between LE 600-1,800/ton.

Problems and constraints

- Lack of agricultural and marketing information.
- The spread of pests and diseases and the high cost of control.
- High cost of inputs.
- The spread of weeds.

Men's Meetings: El Hamoul District

Khaled Ebn El Waleed Village, El Mansour Area, Graduates

Governorate: Kafr El Sheikh

Date: 17 December 1994

Attendees: 12 graduates

Resources and resource management

Water resources

The main source of irrigation water is Katea El Zalat Canal, a branch of El Mansour Canal. The water is mixed composition of the following:

- Fresh Nile water from the Bahr Tera Canal, which represents about 25% of the water resource.
- Drainage water from the Ketsner Drain (main Gharbia drain), which begins in Gharbia Governorate and runs to the Mediterranean Sea. This water includes agricultural drainage, untreated sewage and industrial waste water from El Mehalla Textile Company and the Sugar Beet Company in El Hamoul District. Water is mixed via raising Pump Station No. 5 at the head of El Hamoul/Balteem road. Drainage water represents about 75% of the water resource.

Irrigation is carried out by lifting water. Surface irrigation is the system employed. The cost of irrigation per feddan is about LE 200/year.

Irrigation can be done during the day or night according to water availability. The rotation is seven days wet and seven days dry in winter and four days wet and four days dry in summer. Availability of water is irregular, even on wet days.

The attendees made the following comments:

- Canal water is not suitable for animal drinking.
- Winter canal closure is not appropriate. Last year it lasted approximately 50 days, causing damage to the wheat crop. During closure, the main canals are cleaned but not the branches. Canal cleaning is not done properly, and does not reach an appropriate depth.
- Graduates cooperate in distributing available water.
- Land leveling improves the irrigation system, but there has not been enough of it.
- Rain can replace one irrigation, but because rainfall is unpredictable it is not of much practical use.
- A tile drainage system is in place. Because it was not set up properly, there is a partial blockage in the system which leads to a raising of the water table, which is now within a meter of the surface. Underground water is saline. No maintenance has been carried out on the drainage system since its installation.

Land resources

The graduates do not have a clear idea of the value of their houses and land. They do not have certificates of ownership. Graduates were supposed to receive 5 fed (2.1 ha) each, but some received only 4 fed.

The soil is heavy clay and suffers from salinity and, occasionally, alkalinity. The water table is high (one meter below the surface). There has been a slight improvement in the characteristics of the soil over time due to the addition of gypsum, leaching, and chemical fertilizers (super phosphate and nitrates). Manure is not added to the soil because it has an adverse effect on soil salinity.

Sub-soiling is followed by leaching to improve soil quality. No analysis of soil or irrigation water has been conducted in the village. Land improvement via sub-soiling, addition of gypsum, and land leveling has been conducted in the area free of charge. Sub-soiling has been undertaken throughout the whole area, while the addition of gypsum has been intermittent. Unfortunately, tile drains were installed following improvement, which nullified the gains made by land leveling.

Crops

Crops are selected according to the availability of irrigation water, potential drainage problems and salinity levels. The main cultivated crops are summarized in Table 16.

Table 16. Main crops of Khaled Ebn Waleed Village (graduates).

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Nov.	May	5-7 ardabs	75/ardab
Berseem (long)	Oct.		4 cuts	100/cut/fed
Barley	Dec.	May	5-8 ardabs	50/ardab
Sugar beet	Aug.-Sept.	March-April	8-10 tons	80/ton
Main summer crops				
Rice	May (nursery)	Oct.	0.5-1.5 tons	600/ton
Cotton	April	Oct.	2-4 qentars	325/qentar
Watermelon (seed)	March	June-July	100-150 kg	2.5-3.5/kg

1 hectare = 2.38 feddans.

There are no fruit trees in the village. Intercropping is not followed. The attendees said that they prefer early planting rather than late.

Graduates cultivated rice for the first four years as a form of soil leaching. Currently, a two-year rotation is followed (cotton/rice). Graduates would like to cultivate vegetables and fruit, but they cannot because of the shortage in irrigation water and the high soil salinity.

Marketing: Crops are delivered to the cooperative or sold to traders at the farm gate. There is no local market in the area. The nearest one is 30 km away. In general, there are no marketing problems.

Pests and diseases: Various pests and diseases are in the area, namely, white fly, aphid, cotton worm, borer, and cricket.

Weeds: Weeds are widespread in the area. Graduates believe that the sources of weeds are the soil and irrigation water. Some weeds grow in the saline soil. Weeds are controlled either manually or by chemicals.

Integrated pest management is known and applied when possible. Spraying by chemicals is conducted after infection, rather than earlier for protection. Though the attendees are aware of the poisonous effect of chemicals on humans, they apply them to obtain higher yields regardless of their bad effects.

Inputs

Different inputs are available from the following sources:

Seeds: Winter crop seed is bought from the cooperative, while summer seed is bought from traders. Wheat seed is the only subsidized seed. Graduates usually ask for new seed varieties to guarantee higher yield and better quality.

Chemical fertilizers: Graduates buy fertilizers from the cooperative or from traders in El Hamoul. Attendees complained about the unavailability of fertilizers in the cooperative. Available fertilizers are of good quality.

Manure: Manure is not available, and not used.

Chemicals: These are bought from traders. The attendees felt that there are no quality controls on chemicals, and that consequently, they are not to be trusted.

Animal feed: Berseem and *drawa* are cultivated. Dry feed (straw and concentrates) is bought from the market.

Machinery: Different machinery is available from the cooperative as follows:

- 3 tractors with plows
- 1 threshing machine
- 1 motor sprayer
- 3 water trailers

Rental costs are as follows:

- Plowing: LE 10/one face/feddan, LE 20/two face/feddan
- Hoeing: LE 12/hour
- Threshing: LE 15/hour
- Irrigation pumps: LE 3.5/hour. Not available in the village.

Because combines are not available in the area, harvesting is carried out manually.

The price of inputs has recently increased about 30%, which has adversely affected their use rate. Trace elements are not used.

Livestock

Animals: There are only about 40 settled graduates in the area. The others visit their holdings only during times of agricultural operations, or lease their land. Thus, raising animals is not a widespread activity in the village. Only about 5% of the holders own

animals, usually cows and buffaloes, which are raised for milk production. Sheep and goats are sometimes raised for fattening. Animals are kept mainly for milk production or fattening and are rarely used as draft animals.

Poultry: All kinds of poultry are raised by the graduates' wives, exclusively for family consumption.

Berseem and short maize are produced as fodder for animals and poultry.

Beehives: There are no beehives in the area.

Labor force

Graduates depend mainly on hired labor to carry out agricultural operations. Hired laborers are available throughout the year. The attendees believe that the wage rate per hired laborer is high. Wages differ according to the season. The average wages are as follows:

Men: LE 10/day

Women: LE 7-8/day

Children: LE 5/day

The graduates' wives do not help in agricultural operations. They conduct the household duties in addition to raising poultry for family consumption.

Different agricultural operations are conducted as follows:

Plowing:	Machinery
Planting:	Men and woman
Adding fertilizers:	Men
Pest control:	Men, women and children
Irrigation:	Men
Harvesting:	Men and sometimes women
Animal Care:	Women

The attendees prefer using machinery because it is effective and time saving.

Other information

Credit

The graduates in the village cannot borrow from PBDAC because they don't have a certificate of ownership as a guarantee. The cooperative cannot help them get loans from the PBDAC. The only source of loans is relatives.

Cooperative

The cooperative in this village was established very recently. Its financial facility is very poor. Graduates have to pay the cost of inputs from the cooperative in cash, because the cooperative will not take credit.

Sources of agricultural information

There are no extension services. Graduates seek the help of beneficiaries or the local agricultural engineer when they have problems. No research trials have been conducted in the area.

Off-farm income

Agricultural income does not meet the graduates' needs. Graduates do not work as hired laborers or in any other additional jobs. They do not share their land with other farmers. The number of settlers changes from time to time according to the availability of financial support.

Foreign projects

There are no foreign projects in the area now that World Food Program activities are over. Graduates would welcome any research project that would improve yields, and are ready to cooperate with any project.

Problems and constraints

- Shortage of irrigation water.
- Serious lack of financial support.
- Soil salinity.
- Inefficient drainage system.
- There is a need for small industries in the area with financial support.
- Lack of agricultural information.

Village No. 42 (Moustafa Kamel Cooperative), El Mansour Area, Beneficiaries

Governorate: Kafr El Sheikh

Date: 18 December 1994

Attendees: 18 beneficiaries (small farmers)

Resources and resource management***Water resources***

The main source of irrigation water is mixed water from El Mansour Canal. It is about 80% drainage water from the Keshner Drain and 20% freshwater from Bahr Tera. The drainage water is made up of agricultural drainage, untreated sewage and industrial waste water from different companies. Even the freshwater includes some agricultural drainage water.

The attendees said that this kind of water badly affects crop yield and destroys seedlings in nurseries. They also believe that the water carries worms, bacteria and fungi which have a bad effect on human health. However, no water analysis has been conducted.

The irrigation rotation is four days wet and four days dry in summer and seven days wet and seven days dry in winter. Surface irrigation is employed. The level of water in canal branches is low and becomes lower in summer during the rice season. Accordingly, beneficiaries irrigate directly from the main canal. There are problems among farmers because of the low level of water in the canals, which is not sufficient for everyone's needs even during wet days.

Irrigation is conducted either during the day or at night according to the availability of water in the canals. Lifting water costs about LE 200/fed for rice and about LE 100/fed for cotton. The Ministry of Public Works and Water Resources is responsible for supplying irrigation water. It is also responsible for canal cleaning during the winter closure. Farmers have to pay to clean the branches but not the main canals. However, cleaning does not go deep enough.

The attendees feel that winter closure does not affect yield if it does not exceed 15 days. If it lasts longer, crops are affected badly, especially wheat and berseem.

Canal water is not suitable for animal drinking because of pollution. The attendees said that Rainwater can replace one or more irrigations.

Two types of drainage are used in the cooperative area namely, open drainage and tile drainage. Tile drainage represents a problem because the system was not properly established. Consequently, tile drainage pipes are blocked, causing the rise of the water table.

Land resources

Land reclamation began in the late Sixties. The beneficiaries in this area received their holdings between 1972 and 1986. The average holding is 5 fed (2.1 ha) for small farmers and 5-12 fed (2.1-5.0 ha) for reclamation company employees, according to the length of time they served the company.

The majority of the soil is saline heavy clay, with some alkaline heavy clay. There has been a continuous improvement in soil quality because of the following:

- Soil leaching.
- Improvement in drainage system.
- The addition of chemical fertilizers, especially P and N.

Usually, manure is not used in this type of soil. The only exception is with farmers who received their lands in the early Seventies, who add manure at a rate of 10 m³/fed. Some farmers transferred soil from the Old Lands and mixed it with their New Land soil.

The underground water level is high—only one meter beneath the surface—and the water is saline.

Beneficiaries prepare the land for cultivation by three-face plowing.

All the beneficiaries are settled in the area. They cultivate their own holding and never lease or share it.

Crops

The main cultivated crop in the area are berseem, wheat and sugar beet in winter and cotton and rice in summer. These are summarized in Table 17.

Table 17. Main crops of Village No. 42 (beneficiaries).

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Berseem	Sept.	5 cuts	12-15 tons	250/cut
Sugar beet	Mid Aug.	Late March	15-18 tons	40-60/ton
Wheat	Early Nov.	Mid May	8-12 ardabs	95/ardab
Onion	Nov.	May	2-3 tons	100/ton
Main summer crops				
Cotton	March	Oct.	4-8 qentars	330/qentar
Rice	May	Oct.	2 tons	550-750/ton

1 hectare = 2.38 feddans.

Maize, forage sorghum and vegetables are also cultivated. Cotton is interplanted with onion. Onion nurseries cannot succeed in this area because of the high level of salinity in the irrigation water.

A two-year rotation (cotton/rice) is followed. The attendees said that this rotation leads to improvement in soil quality because cultivating rice leaches the saline soil thus increasing yield.

Early planting is preferable. The choice of crop depends on suitability to the soil and market price. Crop yield has been increasing over time, in parallel with soil improvement. There are no horticultural trees in the area.

The attendees expressed their wish to cultivate potatoes, but they cannot because of the high cost of seed. They would also like to cultivate flax.

Marketing: The different marketing channels in the area are as follows:

- Cotton and rice are marketed via the cooperative.
- Wheat is not marketed, it is produced for family consumption.
- Other crops are sold to traders at the farm gate. There are no advance contracts between farmers and traders.

Critical marketing problems include the lack of marketing information. Unfamiliarity with market prices allows traders to buy crops at low prices.

Pests and diseases: There are many pests and diseases throughout the area, such as white fly, cotton worm, blood worm in rice, blight disease, nematode, and rust diseases.

Weeds: Weeds are not widespread in the area. Beneficiaries can control them either manually, by hoeing or with chemicals.

Attendees don't believe that manure causes the spread of weeds on the farm. However, they rarely use manure because it does not suit the type of soil in the area.

Inputs

Available sources of different inputs in the area are as follows:

Seed: Field crop seed is bought mainly from the cooperative and sometimes from traders. Sugar beet seed is obtained from the sugar company. Vegetable seeds are bought from traders.

Fertilizers: These are bought from the cooperative on credit. Sometimes they are bought from traders.

Chemicals: Chemicals are bought from the cooperative on credit.

Animal feed: This is bought from either the cooperative or traders.

Machinery: Machinery is rented from the cooperative or from local farmers. Plowing 1 feddan (0.42 ha) costs LE 20/one face. Cotton land preparation costs LE 120/fed. Rice harvesting is conducted manually. Each feddan needs eight people. The average wage for a hired laborer is LE 5/day.

The price of all inputs has recently increased. This has led to a decrease in the rate of fertilizer application, and to restrictions in crop choice, but has not affected the use of chemicals.

Inputs are available and the market is close to the area. The attendees said that they prefer to buy seed from the cooperative because of its quality.

Beneficiaries said they understand that biological and manual pest control is better than using chemicals. Integrated pest management is a very successful system, but they need more insect traps (they receive only one trap/5 fed). The attendees are well-aware that chemicals have a bad effect on humans as well as animals, but they must use them, especially in the event of widespread infection.

Livestock

Animals: All small farmers keep animals. The average number of head per family is:

- 2 cows and/or buffaloes.
- 5–10 sheep.
- 5–10 goats.
- 1–2 donkeys.

Cows and buffaloes are raised for their milk, meat, and as draft animals. Sheep and goats are fattened for sale, particularly for special occasions. The average price of milk is LE 0.3–0.4/lr. Animal manure is not added to the soil.

Berseem and short maize are grown as fodder. Crop waste is also used in addition to concentrates. Concentrates are sold at LE 3.50/kg.

Poultry: All types of poultry are raised mainly for family consumption and rarely for selling.

Beehives: There are beehives in the area for honey production. The average price of honey is LE 10/kg.

Labor force

The family is the main source of labor in the area. Hired laborers are available throughout the year. Average wages are:

Men: LE 5/day

Women: LE 3/day

Children LE 3/day

All attendees believed that women are very important in both the field and household activities.

Agricultural operations are carried out as follows.

Plowing: Men

Manuring: Men or women

Planting: Men for broadcasting, women for sowing in hills

Fertilizing: Men and women

Chemical spraying: Men

Irrigating: Men

Harvesting: Men and women

Weed control: Women and girls

Animal care: Women and girls

Marketing: Women and men

Other information

Credit

The main source of credit is PBDAC. A certificate of ownership is needed as a guarantee for borrowing. Loans are given per season, for raising animals or for buying beehives. Animal-fattening loans must be paid back within six months. The average annual interest rate is 17-18%.

Cooperative

The present role of the cooperative can be summarized as follows:

- Selling inputs on credit at an interest rate of 3% per season.
- Buying field crops from the farmers.

The cooperative's role in renting out machinery has ended.

Sources of agricultural information

There are no extension services in the area. Beneficiaries benefit from agricultural TV programs, but they are not broadcast at the proper time of year to be useful.

Available services

Schools:	Only one unequipped primary school.
Health unit:	Not available.
Veterinary unit:	Not available.
Electricity:	Available.
Potable water:	Available.
Sanitary services:	Not available.
Roads:	Only main asphalt road.

Off-farm income

Agricultural income represents about 70% of the total family income. All members of the family (men, women, and children) work as hired laborers on other farms to increase income to the family.

Foreign projects

There are no foreign projects currently in the area. All attendees expressed their willingness to share in research projects that lead to increases in yield without causing financial losses.

Problems and constraints

- Shortages in irrigation water.
- Lack of financing.
- Soil salinity.
- Inefficient drainage system.
- Lack of agricultural information.

El Mostakbal Village, El Zahraa Area, Graduates

Governorate: Kafr El Sheikh

Date: 19 December 1994

Attendees: 19 graduates

Resources and resource management

Water resources

Irrigation water is mixed. It includes freshwater from Bahr Tera (30%) and drainage water from the Ketsner Drain (70%). The drainage water includes agricultural drainage, industrial waste, and untreated sewage water. In summer, the flow is 100% drainage water.

There is no irrigation rotation. Water is available in the canal at all times. The water level in the canal is low. This is because the raising pumping station design is incorrect, causing the water to return back toward Dakahlia Governorate. The attendees have asked for a separate source of water to solve the problem.

Surface irrigation is used in the village. Farms No. 5 and 6 do not receive any water in summer because of the high elevation of their holdings and the low water level. There is no problem with water distribution at the head or the tail end of the canal. Irrigation is carried out during the day or night according to the availability of water in the canal.

Rainwater can take the place of one or more irrigations. The attendees have no problem with the winter canal closure as long as it is for a limited time and the canals are cleaned during that time. The Ministry of Public Works and Water Resources is responsible for water distribution and for cleaning the main canals. Unfortunately, canals have not been cleaned in the last five years.

The attendees consider land leveling a way to improve the effectiveness of irrigation.

Irrigation water salinity contributes to low average yields. The high pollution levels make the water unsuitable for animal drinking.

There are open drains in the area. These drains have not been cleaned for the last five years, which has hampered the effectiveness of the drainage system.

Land resources

The soil of this village is saline sandy. The graduates received their holdings, an average of 5 feddans (2.1 ha) per graduate, in 1989. The level of soil fertility is increasing over time because of the addition of manure and irrigation.

Because the land has not been leveled, underground water differs in depth from place to place. It is far beneath the surface in elevated lands and it covers the soil in low areas. The average depth of underground water is about 1.5 meters. This water is saline because of the proximity to the Mediterranean Sea.

Crops

The main cultivated crops in winter are wheat, berseem, faba bean, barley, sugar beet, and vegetables. These are summarized in Table 18.

Table 18. Main crops for El Mostakbal Village (graduates).

Crop	Planting date	Harvest date	Average yield/fed	Average price (LE)
Main winter crops				
Wheat	Mid Nov.	May	7-10 ardabs	75/ardab
Berseem	Mid Oct.		4-5 cuts	100/cut
Faba bean	Mid Oct.	April	6-7 ardabs	120/ardab
Sugar beet	Sept.-Oct.	March-April	12-15 tons	50-70/ton
Barley	Nov.-Dec.	Late April	8-10 ardabs	60/ardab
Tomato	March-April	June-July	5-8 tons	400-500/ton

1 hectare = 2.38 feddans.

Other vegetables such as tomato, eggplant, pepper, and pea are cultivated. The attendees said they produce vegetables mainly for family consumption. They also produce vegetables to be sold in El Hamoul market. The graduates listed watermelon as their main summer crop, but they could not give any information about the crop. In fact, graduates were afraid to admit that they lease their land for LE 2,000/fed to other farmers from El Borollos to cultivate watermelon. They are prevented by law from leasing their land. They also mentioned that, apart from short maize, they do not cultivate the land in summer because of the shortage of water. The official data state that they cultivate maize and vegetables in summer.

There is no interplanting. Fruit trees are not found in the area.

Graduates prefer to cultivate early. They do not follow a specific crop rotation. They cultivate the same crop in the same area every year. They would like to add more manure to the land to improve its fertility, but manure is not available because there are so few animals and the cost of transportation is very high.

When asked about the crops they would like to cultivate, and why they were prevented, their answers were as follows:

- Potato: Graduates lack the money.
- Watermelon: Production costs are high. Watermelon is affected by many diseases and is difficult to market. In addition, graduates lack experience and there are no extension services.
- Fruit trees: Soil salinity prevents cultivation.

Marketing: Wheat is the only crop which is delivered to the cooperative. Graduates sell other crops to traders because they are in debt to the cooperative and cannot pay back their loans. Vegetables are transported to the wholesale market. Marketing problems include:

- Traders pay low prices for crops.
- Transportation to market is both difficult and costly.

Pests and diseases: There are many pests and diseases in the area. Graduates have identified white fly, borer, cutworm, and various fungi. There are other pests and diseases they cannot identify because of the lack in information.

Weeds: Weeds are spread throughout the area via irrigation water and manure. They are controlled either manually or by chemicals.

Inputs

The sources of inputs are as follows:

Seeds: Only wheat seed, because it is subsidized, is available from the cooperative. Other seed is bought from traders. Graduates prefer to buy improved seed varieties even if they are expensive.

Fertilizer: Fertilizer is bought from traders. The attendees expressed their hope that they will be able to buy fertilizers from the cooperative on credit. They also use foliar fertilizers.

Manure: Manure is not available in the area. It is transported from other areas, which leads to high costs. The average cost of animal manure is LE 50–70/4 m³. The average cost of poultry manure (*katkout*) is LE 500–600/11 m³.

Machinery: Machinery is rented from local farmers and sometimes from the cooperative. Rental costs are as follows:

Plowing:	LE 15/hr
Hoing:	LE 20/hr
Harvesting:	LE 100–120/fed

Concentrates: These are bought at LE 1/kg.

The various inputs are available, but only at Balteem, a long distance away. The price of inputs has been increasing, sometimes as much as 100%. This has led to a decrease in the amount of fertilizer applied as well as yield. Graduates feel that the seed they receive is of good quality, but chemicals are not, due to the lack of controls.

Graduates know about integrated pest management, but they do not yet apply it. Though they are aware of the bad effect of chemicals on human beings, they use them regardless of the result.

Livestock

Animals: The number of settlers in the village is low. Consequently, very few animals are raised. Cows and buffaloes are very rare, because the local conditions are not suitable. Goats are more common. Some settlers fatten animals for sale.

Berseem and short maize are cultivated for animal fodder. In addition, concentrates are bought from the private sector.

Poultry: The settlers raise all types of poultry. The graduates' wives are responsible for their care. Poultry is raised only for family consumption.

Beehives: There are no beehives.

Labor force

Hired laborers from neighboring areas do most of the work in the area, and are available throughout the year. Graduates sometimes cooperate amongst themselves to conduct agricultural operations.

The average wages for hired laborers are:

Men:	LE 10/day.
Women:	LE 7/day.
Children:	LE 5/day.

Agricultural operations are conducted as follows:

Plowing:	Machinery.
Sowing:	Men and women.
Weed control:	Men and women.
Chemical spraying:	Men.
Irrigating:	Men.
Harvesting:	Men and women.
Animal care:	Men and women.
Marketing:	Men.

Other information

Credit

Graduates cannot get loans from PBDAC because they don't have certificates of ownership. They can get loans from traders at a 10% rate of interest, but they must sign blank receipts to guarantee repayment. They also get loans from relatives.

Cooperative

The role of the cooperative is very limited. Graduates buy only wheat seed from the cooperative, because it is subsidized. They deliver their wheat production to the cooperative.

Source of agricultural information

Extension is not available and there are no other sources of information.

Off-farm income

Agricultural income represents only 40% of the family income. Graduates lease their land or borrow from the family to meet their needs.

Available services

Schools:	Not available.
Electricity:	Not available, but there is a generator which operates for a limited time daily.
Sanitary services:	Not available.
Health care units:	Not available.

Potable water: Not available. Graduates use a tanker to get potable water from the nearest village.

Veterinary unit: Not available.

Foreign projects

The World Food Program operated in the area for three years. Presently, there are no foreign projects. Graduates are ready to cooperate with any project if it will increase crop yield and income.

Problems and constraints

- Shortage of irrigation water and poor quality.
- Soil salinity.
- Lack of agricultural information and extension.
- Shortage in financial facilities.
- The need for land leveling.
- Low prices for production due to malpractice by traders.
- High input prices.

Conclusions

The results of the RRA study in the New Lands lead to the following conclusions:

- The performance of the beneficiaries in the newly reclaimed lands is better than that of the graduates because of the following:
 - The beneficiaries have generally come from villages in the Old Lands. There they worked as hired or family laborers, or owned a small piece of land. Accordingly, they have a good background in agricultural practices and are familiar with rural conditions. The graduates, who are generally from urban areas, don't have any experience in farming systems and are not familiar with rural conditions. The graduates must learn through trial and error due to the lack of available agricultural information. The meetings showed that graduates who are having success in the New Lands come from rural areas.
 - Because of the relatively large holdings received by beneficiaries, compared to what they had farmed in the Old Lands, they bring with them a large family, including wife, children, brothers, and other relatives. Those family members represent the main labor force needed to conduct agricultural operations. In addition to saving the cost of hiring help, those family members work as hired laborers on other farms as well—especially graduates' farms—and so earn more income for the family. The graduate, however, is either single or accompanied only by a small family. Therefore, he depends mainly on hired labor to conduct agricultural operations which represents a heavy burden on his limited financial resources.
 - All beneficiaries have permanently settled on their farms and cultivate the entire holding. In addition, some of them either lease or share the graduates' farms. Only a few graduates have settled permanently on their farms. Their limited sources of financing rarely permit the full utilization of the farm.
 - Beneficiaries' wives, with their previous experience in the Old Lands, share in most of the agricultural operations on their farms. They take care of the livestock, sell farm products in the market and work as hired laborers on other farms. Graduates' wives, if they are settled in the area, have no background in agricultural operations, and thus cannot help their husbands on the farm or raising animals.
- Though beneficiaries have had more success than graduates in the New Lands, they are still using the same farming methods they were familiar with in the Old Lands. There is a great shortage of available information about practices suitable to the environmental conditions of the New Lands. This is a major challenge to NVRP in these areas.
- Shortages of irrigation water, lack of marketing facilities, lack of information, and shortages in funds to finance agricultural production are the main obstacles to attaining higher yields.
- Essential services for comfortable settlement in the New Lands are either nonexistent or of mediocre quality.

Recommendations

Three sites among the seven studied through the RRA study in the New Lands are recommended for further study in the second stage of NVRP. These sites are:

- Village No. 1 in the Sugar Beet area
- Ali Ebn Abi Taleb Village in El Bustan.
- Khaled Ebn El Waleed Village in El Hamoul.

These villages are recommended because of the following:

- They have three different types of soils, namely, calcareous, sandy, and heavy clay, representing three different farming systems.
- The institutional problems they face, such as shortages in the water supply and malfunctioning drainage systems, which NVRP cannot tackle, are less severe when compared to other villages in the area.
- The first two sites have both types of holders—graduates and beneficiaries. They are located in the middle of other villages in the area, which will facilitate the spread of recommendations made by NVRP.
- Khaled Ebn El Waleed Village is the only graduate village in El Mansour, El Hamoul District. It is “new” New Lands, while the other villages in that area are “old” New Lands, reclaimed before the Eighties. There is a great shortage of agricultural information in this village.
- The three villages have access to the asphalt road.
- The villages face various problems such as salinity, alkalinity, and polluted water. This represents a good opportunity for NVRP to succeed in improving crop yield.
- Settlers in these areas have only a vague idea of crop rotation.
- The interviewees expressed their willingness to cooperate with any project aiming at increasing yield and, consequently, income.