

**NILE VALLEY REGIONAL PROGRAM  
PHASE II**

**Resource Management Series**

**Volume 13**

**RAPID RURAL APPRAISALS**

**Old Lands of Egypt**

*Editors*

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## Resource Management Rapid Rural Appraisals: Old 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 socioeconomics 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 the 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 corn = 157.5 kg

1 ardab sorghum = 140 kg

1 qentar (cotton) = 150 kg

## **Acronyms**

ARC = Agricultural Research Center

AERI = Agricultural Economics Research Institute

EU = European Union

ICARDA = International Center for Agricultural Research in the Dry Areas

LE = Egyptian Pound

NVRP = Nile Valley Regional Program

PBDAC = Principal Bank for Development and Agricultural Credit

RRA = Rapid Rural Appraisals

VC = Variable Cost

## **Executive Summary**

The Rapid Rural Appraisal (RRA) studies on resource management in the Old Lands are a tool to help design multidisciplinary activities under the Nile Valley Regional Program (NVRP). The purpose of the RRA studies is to collect information on current productivity and profitability limitations, and to study the current trends, constraints, threats, and opportunities in the utilization of soil, water, and inputs.

The studies took place between October and November 1994. Eight villages, located in Sohag, Beni Suef, Gharbia, and Dakahlia Governorates, were selected and surveyed. These governorates were chosen because of the existence of agricultural research stations in their areas. The villages were selected because they contained the largest cultivated areas of main crops such as wheat and/or faba bean. The selected villages are Awlad Dawoud, El Koum El Asfar, El Telt, Qemn El Arous, El Sheen, El Shoni, El Robi, and Satamoni.

RRA meetings for both women and men were held. Most meetings were held in the evening to accommodate the farmers' work schedule. A summary of findings follows.

### **Cropping Patterns**

In the summer season, cotton and corn are the dominant crops in seven of the eight surveyed villages. Awlad Dawoud, where the government prohibits the growing of cotton in the village, is the exception. Sorghum dominates Upper Egypt's cropping patterns, and rice is the main crop in northern Egypt (the Delta). In the winter season, wheat, berseem, and faba bean are the most important crops in most of the surveyed villages. In the *nili* season, corn is the dominant crop in all surveyed villages.

Recently, a trend toward the adoption of intercropping has emerged among farmers. Faba bean is grown with sugarcane in Awlad Dawoud. Onion is grown with cotton in El Sheen. This is done to improve land and water utilization and efficiency, in addition to increasing profitability.

### **Inputs**

The price of all inputs has increased 200–300%. Farmers state that this has not affected their cropping patterns, but has significantly influenced farming practices. Farmers tend to use more manure at the expense of chemical fertilizers and reduce the quantity of pesticides applied.

### **Labor**

The only agricultural activities that women do not participate in are plowing and the spraying of pesticides. Women participate in fertilizing, sowing, weeding, irrigating, and harvesting. The level of participation depends on the size of the family, the size of the landholding, and the amount of cash on hand.

Hired labor in the villages includes men, women, and children of both sexes, with the exception of Sohag Governorate, where women do not generally work as agricultural laborers. In general, men receive LE 5–6 for a five-hour day, and women and children receive half as much.

In all eight villages, men and women take on off-farm employment because income from agricultural production is not sufficient to meet family needs.

### **Credit**

The Principal Bank for Development and Agricultural Credit (PBDAC), which provides credit at interest rates ranging from 15 to 20%, was identified as the main source of credit in all villages. At all meetings, participants expressed the need for credit at a lower interest rate.

### **Marketing**

Two marketing channels were identified by the RRA survey:

- PBDAC.
- Wholesalers and traders.

Many farmers stated a preference for dealing with wholesalers and traders rather than PBDAC. Wholesalers and traders pay in cash right away, while PBDAC payments are often delayed.

### **Sources of Agricultural Information**

The main sources of agricultural information for farmers are their own experience and that of friends and neighbors, followed by information from extensionists.

Women currently have no access to extension and get information from more experienced neighbors. Farmers expressed a need for more extension services covering topics such as pest control, soil improvement programs, marketing, and irrigation and drainage systems.

### **Cooperatives**

All participants agreed that the role of the cooperative as a supplier of inputs and pesticides is shrinking. The farmers expressed their need for cooperatives to provide them with low interest loans as they did in the past.

### **Costs and Returns**

Costs and returns for agricultural production were calculated on the basis of the men's meetings in all villages. Estimates were calculated for the six major crops: wheat, faba bean, cotton, corn, sorghum, and rice. Net revenue and profitability for each crop in each of the eight villages were computed. The highest average income producer per feddan for winter crops was wheat, followed by faba bean. El Shoni was the leading village for wheat and faba bean. The highest average income producer per feddan for summer crops was cotton. El Telt ranked second for cotton and corn in terms of profitability.

### **Livestock**

Livestock, including cattle, buffalo, sheep, goats, and fowl, are kept to provide both food for the family and extra income through the sale of their products. Herd size is 1-2 animals. Cow and buffalo milk is either consumed in the household or sold at market. Cow and buffalo offspring are often sold as well. Sheep and goat herds are slightly larger, ranging

from 1 to 3 animals. Because of the importance of slaughtering sheep during religious feasts, even poor families try to raise at least one. The number of chickens and other poultry depends largely on family resources; flocks range from 10 to 35 birds. Poultry is often the most common type of meat consumed by the family. Surplus chickens and eggs are sold at the market.

Some small farmers share the ownership of cows or buffalo to reduce the financial risk in case of loss. One farmer buys the animal and the other is responsible for feeding it. The milk is given to the one who feeds the animal, and the income from the sale of its offspring is divided equally.

According to Nile Valley tradition, women are in charge of animal husbandry. They feed the animals and attend to their health. They are the managers of small-scale poultry production, deciding about the use of each animal, i.e., whether it will be used to feed the family, given to relatives or sold in the local market. With large animals, such as cattle, women are responsible for milk production, consumption, and sale. They manage the proceeds from the sale of the milk for the domestic budget. The husband usually decides whether or not to sell the animal.

### **Off-farm Income**

Farm income does not cover family needs, so off-farm work is performed by men and women to increase income. Men are usually hired as laborers, civil servants, and seasonal traders. Women work in food production (cheese, yogurt), processing of agricultural products (wheat and other cereals), and the sale of such items. Women heads-of-household and their daughters also work as hired laborers and small-scale traders. Women in Upper Egypt are not allowed to perform any duties outside the household.

### **Constraints**

The constraints facing the villagers can be classified into categories as follows: water and soil, pest control, income-generating opportunities, and other services. The men's meetings reported the following problems:

- Shortages of water for two months during the summer.
- High salinity and alkalinity in soil caused by the high water table.
- Low soil productivity due to inefficient drainage networks and the high water table.
- Inadequacy of the drainage system.
- Poor condition or lack of maintenance in unlined canals, resulting in blockage by weeds and seepage.
- Poor maintenance of irrigation canals.
- Inequitable distribution of water among heads and tails of the distribution canals and *mesqas*.
- Gypsum is not available when and where needed.
- New varieties are not available when needed.
- Pesticide quality is questionable and is not trusted by farmers.

- Vegetables are sold at low prices.
- The high price of inputs is a constant source of aggravation.
- Limited extension services.
- Limited social and cultural services.

**Recommendations**

Because they meet the low profitability criteria, and because of the severity of their problems, the following three villages are recommended as research sites for the next phase of the study:

- El Robi, Dakahlia Governorate.
- Qemn El Arous, Beni Sueif Governorate.
- El Koum El Asfar, Sohag Governorate.

## **Men's Meetings**

### **Introduction**

The resource management component of the second phase of the Nile Valley Regional Program (NVRP) is being implemented in two principal stages: preparatory studies and long-term research activities. The purpose of the preparatory studies is to collect data on the natural resource base and its agricultural utilization in each specified agro-ecological environment, and to analyze, synthesize, and interpret the information collected in order to identify problems in sustainable resource management. Meeting the objectives of the preparatory studies will set the stage for the design of the multidisciplinary research activities needed to tackle issues associated with the second stage. The preparatory stage consists of three steps:

- Inventory studies.
- Rapid Rural Appraisals.
- Multidisciplinary surveys.

This report is confined to the Rapid Rural Appraisal studies on resource management in the Old Lands. The Rapid Rural Appraisal is a qualitative approach that includes sampling the views of different farmers. The purpose of the Rapid Rural Appraisal is to collect information on current productivity and profitability limitations, and to identify current trends, constraints, threats, and opportunities in the utilization of soil, water, and other inputs.

### **Methodology**

The Rapid Rural Appraisal survey is a sociological survey technique designed to achieve a rapid assessment of conditions and constraints in particular areas or communities. A major advantage of the RRA survey is that it is less structured than a formal survey, therefore it is preferred when all answers to a particular question are not known.

The RRA survey consists of several group meetings with the target population. Group meetings are usually conducted with 20 participants or more and take about two hours. The participants are invited by key informants or by local leaders who maintain open communication channels with RRA groups. Data are collected during group meetings by teams of two or three trained personnel. The role of the team is not limited to data collection. Team members lead group discussions by using a list of topics and facilitate communication among group members. The open atmosphere encourages the participants to express their points of view, as well as the free exchange of information.

### **Procedures**

The procedures include RRA team identification, selection of villages, and topics to be discussed at group meetings.

### **RRA team**

In October 1994 an interdisciplinary RRA team was formed. The team, headed by Dr. Moussa Abdel-Azim of the Agricultural Economics Research Institute, included members

with backgrounds in agronomy, soil management, water management, and socioeconomics. A local professional staff woman in each governorate was asked to lead each of the women's meetings. Dr. Abdel-Azim conducted two-hour orientation and training sessions with each of the women's leaders before the RRA meetings and data collection.

### **Village selection**

The Old Lands in Egypt comprise five regions according to soil and climatic conditions. Each region has its own cropping pattern, differing from the other four. Therefore, the RRA study was keen to include a representative from each of the five regions in its survey. Those five regions are North Delta, South Delta, Middle Egypt, Fayoum, and Upper Egypt.

The presence of an agricultural research station was the sole criteria for the selection of the four governorates included in the survey. The governorates and villages selected are listed below.

**Sohag Governorate (Upper Egypt).** Sohag Governorate houses the Shandaweel Regional Agricultural Research Station. Two districts were selected from Sohag Governorate:

1. Tahta District. Tahta has the largest cultivated area of field crops in Sohag Governorate. It is located to the north of Sohag City. The problems in Tahta are representative of problems associated with both Assiut and Sohag Governorates.

*El Koum El Asfar Village.* This village was selected because it has the largest cultivated area of wheat and faba bean in the whole district.

2. Gerga District. Gerga's main crops are faba bean and wheat. It is located to the north of Sohag City. Its agricultural problems are representative of problems associated with both Qena and Sohag Governorates.

*Awlad Dawoud Village.* This village was selected because it is the largest in the district.

**Beni Sueif Governorate (Middle Egypt).** Beni Sueif Governorate houses the Sids Regional Agricultural Research Station. Two districts were selected from Beni Sueif Governorate:

1. El Wasta district. El Wasta, located in the north, has the largest cultivated area of wheat in the governorate. Its agricultural problems are representative of problems associated with both Beni Sueif and Giza Governorates.

*Qemn El Arous Village.* This village was selected because it is the largest village in the district.

2. El Fashn district. El Fashn has the largest cultivated area of faba bean in the governorate. It is located in the south of the governorate, and its agricultural problems are representative of problems associated with both Beni Sueif and Minya Governorates.

*El Telt Village.* This village was selected because it is the largest village in the district.

**Dakahlia Governorate (North Delta).** The Dakahlia Tag El Ezz Agricultural Research Station is under construction in this governorate. Two districts were selected from Dakahlia Governorate:

1. Tamai El Amdeed District: Tamai has the largest cultivated area of faba bean in the governorate. It is located in the southeastern portion of the governorate, and its agricultural

problems are representative of problems associated with both Dakahlia and Sharkia Governorates.

*El Robi Village.* El Robi was selected because it has the largest cultivated area of faba bean and wheat.

2. Belgas District: Belgas has the largest cultivated area of field crops, especially wheat, in the governorate. It is located to the north of the governorate. The agricultural problems of Belgas are representative of problems associated with Dakahlia, Damietta, and Kafr El Sheikh Governorates.

*Satamoni Village.* This village was selected because it is the largest village in the district.

**Gharbia Governorate (South Delta).** Gharbia governorate houses Gemmeiza Agricultural Research Station. Two districts were selected from Gharbia:

1. Qotour District. Qotour has the largest cultivated area of faba bean in the governorate. It is located close to Kafr El Sheikh Governorate. Gharbia's agricultural problems are representative of problems associated with Gharbia and Kafr El Sheikh Governorates.

*El Sheen Village.* El Sheen was selected because it is the largest village in the district of Qotour.

2. Tanta District. Tanta was selected because it has the second largest cultivated area in Gharbia Governorate.

*El Shoni Village.* El Shoni was selected because it is one of the largest villages in Tanta district. It is located in the south of the district. The agricultural problems of El Shoni are representative of problems associated with Gharbia and Menoufia Governorates.

RRA women's and men's meetings were held at each village. Most of the meetings were held in the evening to suit the farmers' work schedule.

### ***Issues discussed at the RRA meetings***

In all villages, meetings were arranged with the assistance of the agricultural research station personnel. In some cases, especially in Gharbia, extension agents were of great help.

For men's meetings, local contacts were specifically asked to recruit and solicit the participation of small farmers. Women's meeting participants were either wives of small farmers who are actively involved in agricultural production, and/or women who are primarily responsible for agricultural production because of the death or absence of their spouses.

The following topics were the topics of discussion during the RRA meetings.

#### ***Irrigation water***

- Sources of water.
- Canals.
- Wells.
- Drainage.
- Mixed.
- Irrigation systems.

- Water rotation.
- Impact of rainfall on irrigation needs.
- Irrigation projects.
- Drainage projects.
- Drainage systems.

#### *Soil*

- Soil classification.
- Soil improvement projects.

#### *Cropping patterns*

- Summer, winter and *nili* cropping patterns, especially field crops.
- Crop ranking by preference.
- Crop growing problems.
- Women's responsibilities in agriculture.
- Recent changes in cropping patterns.

#### *Agricultural information systems*

- Sources of agricultural information.
- The entrance of women into the field of extension.
- Types of additional information needed.

#### *Agricultural production*

- Summer, winter and *nili* cropping patterns, especially field crops.
- Availability of new varieties.

#### *Labor*

- Classification of labor by agricultural operation.
- Level of farm employment.
- Women as agricultural laborers.

#### *Inputs*

- Sources of inputs and their current changes.
- Changing input prices and impact on cropping patterns.

#### *Prices and costs*

- Summer and winter crop prices.
- Cost of inputs.
- Labor costs.

***Agricultural income***

- On-farm income.
- Off-farm income.

***Livestock***

- Types of animals owned and their feed.

***Marketing***

- Availability of transportation.
- Marketing channels.
- Availability of marketing institutions and their impact on crop choice.

***Credit***

- Formal and informal sources of credit.
- Credit and loans regulations.
- Credit needs.

***Cooperatives***

- Present and future role of cooperatives.

***Social services***

- Types of schools.
- Health clinics and medical services.
- Veterinary services.
- Efficiency and sufficiency of social services.

***Housing***

- Location, availability and quality of housing.

***Constraints and suggestions***

Production constraints raised by the participants are listed below.

***Water problems***

- Shortage of water supplies.
- Water quality.
- Canal maintenance.
- Inadequate drainage.

***Soil problems***

- Effects of salt:

- salinity
- sodicity
- Water table level increases.
- Low soil productivity.

#### *Input problems*

- Unavailability of new varieties.
- Misuse and abuse of fertilizers.
- Misuse and abuse of pesticides.

#### *Marketing problems*

- Low prices.

#### *Credit problems*

- High interest rates.

#### *Extension problems*

- Limited or unavailable services.

#### *Social service problems*

- Unavailability of social and cultural facilities and services.

### **Survey Site Descriptions**

Following is a brief description of each study site, including information on the landholders, machinery used, sources of water, soil type and classification according to productivity levels, drainage systems, major crops, and social services.

#### ***Awlad Dawoud, Gerga, Sohag***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 80 small and large farmers, whose ages ranged from 20 to 60 years. The average holding size was 1.8 feddans (0.75 ha).

The RRA team was able to collect the following background data from the village cooperative society:

- The population is about 30,000.
- The village area is about 2,239 feddans (940.7 ha).
- The cultivated area in the Old Land is 1,391 feddans (584 ha).
- The number of landholders is 781, of whom 84% are owners.
- Machinery includes 75 tractors, 155 irrigation pumps, and 64 threshing and winnowing machines.

- Twenty-five percent of the land depends on well irrigation, and the rest depends on Nile water, which is available most of the year except for two months during the summer. Twenty-five percent use a mixture of Nile water and drainage water for irrigation.
- Farmers use mainly surface irrigation.
- Thirteen percent of the land is classified as second class, 78% is third class, and 9% is fourth class.
- The soil texture is silty clay.
- The main winter crops are wheat and berseem. These two crops represent 49 and 24% of the cultivated area, respectively.
- The main summer crops are sorghum and corn. These two crops represent 58 and 27% of the cultivated area, respectively.
- Schools serving the village are: six primary schools, two preparatory schools, and one secondary school.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

***El Koum El Asfar, Tahta, Sohag***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 60 small and medium farmers, whose ages ranged from 20 to 55 years. The average holding size was 1.7 feddans (0.71 ha).

The RRA team was able to collect the following background data from the village's cooperative society:

- The population is about 60,000.
- The village area is about 1,349 feddans (566.8 ha).
- The cultivated area in the Old Land is 1,359 feddans (571.0 ha).
- The number of landholders is 817, of whom 60% are owners.
- Machinery includes 55 tractors, 122 irrigation pumps, and 45 threshing and winnowing machines.
- Forty-eight percent of the land depends on well irrigation, and the rest depends on Nile water, except for two months during the summer. Twenty-one percent of the farmers use a mixture of Nile water and drainage water for irrigation.
- Farmers use mainly surface irrigation.
- One hundred percent of the soil is classified as second class.
- The soil texture is silty clay.
- The main winter crops are wheat and berseem. These two crops represent 44% and 41% of the cultivated area, respectively.
- The main summer crops are sorghum, corn, and cotton. These three crops represented 46, 17, and 9% of the cultivated area, respectively.

- Schools serving the village are as follows: four primary schools, and one preparatory school.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

Refer to Table 1 for a further description of the two sites surveyed in Sohag Governorate.

#### ***El Telt, El Fashn, Beni Sueif***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 65 small and medium farmers, whose ages ranged from 20 to 50 years. The average holding size was 1.2 feddans (0.50 ha).

The RRA team was able to collect the following background data from the village's cooperative society:

- The population is about 60,000.
- The village area is about 2,247 feddans (944.1 ha).
- The cultivated area in the Old Land is 1,984 feddans (833.6 ha).
- The number of landholders is 1,725, of whom 29% are owners.
- Machinery includes 115 tractors, 180 irrigation pumps, and 45 threshing and winnowing machines.
- The irrigated areas depend on Nile water throughout the year.
- Farmers use mainly surface irrigation.
- Ten percent of the soils are classified as second class, 76% are third class, and 14% are fourth class.
- Soil texture is silty clay.
- The main winter crops are wheat and berseem. These two crops represent 45 and 30% of the cultivated area, respectively.
- The main summer crops are corn and cotton. These two crops represent 40 and 28% of the cultivated area, respectively.
- Schools serving the village are: two primary schools and one preparatory school.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

#### ***Qemn El Arous, El Wasta, Beni Sueif***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 55 small and medium farmers, whose ages ranged from 20 to 55 years. The average holding size was 1.7 feddans (0.71 ha).

The RRA team was able to collect the following background data from the village cooperative society:

- The population is about 50,000.
- The village area is about 6,450 feddans (2,710 ha).

- The cultivated area in the old land is 6,000 feddans (2,521 ha).
- There are 3520 landholders, of whom 70% are owners.
- Machinery includes 135 tractors, 620 irrigation pumps, and 72 threshing and winnowing machines.
- One hundred percent of the land depends on Nile water, except for two months during the summer. Twenty-five percent of the farmers use a mixture of Nile water and drainage water for irrigation.
- Farmers use mainly surface irrigation.
- Forty-two percent of the soil is classified as second class, 28% is third class, and 30% is fourth class.
- The soil texture is silty clay.
- The main winter crops are wheat and berseem. These two crops represent 45 and 30% of the cultivated area, respectively.
- The main summer crops are corn and cotton. These two crops represent 40 and 28% of the cultivated area, respectively.
- There are seven primary schools and three preparatory schools serving the village.
- There is one health clinic and one veterinary clinic for the village.
- Electricity is available in the village.

Refer to Table 2 for a further description of the two sites surveyed in Beni Sueif Governorate.

### ***El Sheen, Qutor, Gharbia***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 25 small and medium farmers, whose ages ranged from 20 to 65 years. The average holding size was 2.7 feddans (1.1 ha).

The RRA team was able to collect the following background data from the village's cooperative society:

- The population is about 40,000.
- The village area is about 2,667 feddans (1,120 ha).
- The cultivated area in the Old Lands is 2,095 feddans (880.2 ha).
- There are 989 landholders, of whom 53% are owners.
- Machinery includes 55 tractors, 220 irrigation pumps, and 25 threshing and winnowing machines.
- One hundred percent of the land depends on Nile water, except for two months during the summer season. Twelve percent of the farmers use drainage water for irrigation purposes.
- Farmers use mainly surface irrigation.
- Forty-eight percent of the soil is classified as second class, 32% is third class, and 10% is fourth class.

- The soil texture is clay.
- The main winter crops are wheat and berseem. These two crops represent 37 and 33% of the cultivated area, respectively.
- The main summer crops are rice, corn and cotton. These crops represent 39, 29, and 25% of the cultivated area, respectively.
- Schools serving the village are as follows: two primary schools, one preparatory school, and one secondary school.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

### ***El Shoni, Tanta, Gharbia***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 50 small and medium farmers, whose ages ranged from 20 to 55 years. The average holding size was 1.3 feddans (0.54 ha).

The RRA team was able to collect the following background data from the village's cooperative society:

- The population is about 50,000.
- The village area is about 3,274 feddans (1,375 ha).
- The cultivated area in the Old Lands is 2,787 feddans (1,168 ha).
- There are 2,600 landholders, of whom 79% are landholders.
- Machinery includes 80 tractors, 400 irrigation pumps, and 30 threshing and winnowing machines
- Farmers depend on Nile water for most of the year, except for two months during the summer. Twenty-one percent of the farmers use drainage water for irrigation.
- Farmers use mainly surface irrigation.
- Sixty-eight percent of the soil is classified as second class, 20% is third class, and 12% is fifth class.
- The soil texture is silty clay.
- The main winter crops are wheat, berseem, and faba bean. These three crops represent 29, 13 and 8% of the cultivated area, respectively.
- The main summer crops are corn and cotton. These two crops represent 20 and 19% of the cultivated area, respectively.
- Schools serving the village are: two primary schools, one preparatory, and one secondary school.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

Refer to Table 3 for a further description of the two sites surveyed in Gharbia Governorate.

***El Robi, Tamai El Amdeed, Dakahlia***

The men's meeting was held at the village agricultural cooperative society. The group consisted of 50 small and large land owners, whose ages ranged from 20 to 65 years. The average holding size was 1.4 feddans (0.58 ha).

The RRA team was able to collect the following background data from the village cooperative society:

- The population is about 15,000.
- The village area is about 2,127 feddans (893.6 ha).
- The cultivated area in the Old Land is 1,970 feddans (827.7 ha).
- There are 1,371 landholders, of whom 50% are owners.
- Machinery includes 55 tractors, 285 irrigation pumps, and 35 threshing and winnowing machines.
- Farmers depend on Nile water for most of the year, except for two months during the summer. Thirty percent of farmers use drainage water for irrigation.
- Farmers use mainly surface irrigation.
- Five percent of the soil is classified as second class, 44% is third class, and 51% is fourth class.
- The soil texture is clay.
- The main winter crops are wheat, faba bean, and berseem. These three crops represent 33, 31 and 22% of the cultivated area, respectively.
- The main summer crops are rice and cotton. These two crops represent 71 and 19% of the cultivated area, respectively.
- One primary school, one preparatory school, and one secondary school serve the village.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

***Satamoni, Belgas, Dakahlia***

The men's meeting was held at the Village Council. The group consisted of 60 small and medium farmers, whose ages ranged from 20 to 55 years. The average holding size was 5.5 feddans (2.3 ha).

The RRA team was able to collect the following background data from the village cooperative society:

- The population is about 40,000.
- The village area is about 8,132 feddans (3,416 ha).
- The cultivated area in the Old Land is 7,370 feddans (3,096 ha).
- There are 1,350 landholders, of whom 91% are owners.
- Machinery includes 150 tractors, 1300 irrigation pumps, and 150 threshing and winnowing machines.

- Irrigated land depends on Nile water for most of the year, except for two months during the summer. Five percent of the farmers use drainage water for irrigation purposes.
- Farmers use mainly surface irrigation.
- Fourteen percent of the soil is classified as second class, 59% is third class, 6% is fourth class, and 21% is fifth class.
- The soil texture is heavy clay.
- The main winter crops are wheat, berseem, and faba bean. These three crops represent 48, 28 and 10% of the cultivated area, respectively.
- The main summer crops are rice and cotton. These two crops represent 15 and 40% of the cultivated area, respectively.
- One primary school and one preparatory school serve the village.
- There is one health clinic and one veterinary unit for the village.
- Electricity is available in the village.

Refer to Table 4 for more description of the two sites surveyed in Dakahlia Governorate.

## **Survey Results**

The results of the RRA survey are organized by topic. Summary tables are provided where needed to allow quick comparisons among villages.

### **Cropping Patterns**

Farmers were asked to rank the field crops they grow according to importance. Their responses are presented in the following section.

#### ***Awlad Dawoud Village***

##### ***Winter crops***

Wheat was the crop cited by participants as the most important winter crop. It represents 49% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 7 ardab/fed to approximately 10 ardab/fed during the last ten years. New varieties, especially G155 and G164, have had a positive impact on yield and net returns. Participants indicated that berseem is the second most important winter crop. It represents 24% of the cultivated area. Faba bean ranked third, with 9% of the cultivated area. Vegetables are grown in small areas for household consumption.

##### ***Summer crops***

Sorghum was the crop most often cited by participants as the most important summer crop. It represents 58% of the cultivated area. It is a main source of food for both animals and people. Sorghum yield has risen from 10 ardab/fed to approximately 12 ardab/fed during the last ten years. New varieties, especially G15, have had a positive impact on yield and net returns. Participants said that corn is the second most important summer crop. It represents 27% of the cultivated area. Corn yield has risen from 9 ardab/fed to approximately 16 ardab/fed during the last 10 years. New hybrid varieties have had a positive impact on yield and net returns. Vegetables are grown in small areas for household consumption. Cotton is grown on only 2% of the area. The Egyptian Government has prohibited cotton farming in the village. Participants expressed a desire for cotton growing despite the governmental decree.

##### ***Nili crops***

Sorghum was the crop cited by participants as the most important *nili* crop, followed by corn.

##### ***Permanent Crops***

Sugarcane represents about 10% of the cultivated area.

##### ***Intercropping***

Recently there has been a growing trend for intercropping—especially faba bean grown as a secondary crop with sugarcane—as a mean of enhancing land and water utilization, and increasing productivity and profitability.

### ***El Koum El Asfar Village***

#### ***Winter crops***

Wheat was the crop cited by participants as the most important winter crop. It represents 44% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 9 ardab/fed to approximately 15 ardab/fed during the last ten years. New varieties, especially G164, have had a positive impact on yield and net return. Participants said that berseem is the second most important winter crop. It represents 41% of the cultivated area. Vegetables and faba bean are grown in small areas for household consumption.

#### ***Summer crops***

Sorghum was the crop cited by participants as the most important summer crop. It represents 46% of the cultivated area. It is a main source of food for both animals and people. Sorghum yield has risen from 9 ardab/fed to approximately 12 ardab/fed during the last ten years. New varieties, especially G15, have had a positive impact on yield and net returns. Participants said that corn is the second most important summer crop. It represents 17% of the cultivated area. Corn yield has risen from 9 ardab/fed to approximately 15 ardab/fed during the last ten years. New hybrid varieties have had a positive impact on yield and net returns. Vegetables are grown in small areas for household consumption. Cotton was cited as the third most important summer crop. It represents 9% of the total area.

#### ***Nili crops***

Sorghum was the crop considered by participants as the most important *nili* crop, followed by corn.

### ***El Telt Village***

#### ***Winter crops***

Wheat was the crop cited by participants as the most important winter crop. It represents 45% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 10 ardab/fed to approximately 15 ardab/fed during the last ten years. New varieties, especially G164, have had a positive impact on yield and net return. Participants said that berseem is the second most important winter crop. It represents 30% of the cultivated area. Vegetables and faba bean are grown in small areas for household consumption.

#### ***Summer crops***

Corn was the crop cited by participants as the most important summer crop. It represents 40% of the cultivated area. It is a main source of food for both animals and people. Corn yield has risen from 11 ardab/fed to approximately 17 ardab/fed during the last 10 years. New hybrid varieties have had a positive impact on the yield and net returns. Participants said that cotton is the second most important summer crop. It represents 28% of the cultivated area. Vegetables are grown in small areas for household consumption.

***Nili crops***

Corn was cited by participants as the most important *nili* crop.

***Qemn El Arous Village******Winter crops***

Wheat was cited by participants as the most important winter crop. It represents 32% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 10 ardab/fed to approximately 16 ardab/fed during the last ten years. New varieties, especially G164, have had a positive impact on yield and net returns. Participants said that berseem is the second most important winter crop. It represents 15% of the cultivated area. Faba bean is the third most important crop, with 8% of the total area. Vegetables are grown in small areas for household consumption and for the local market.

***Summer crops***

Corn was cited by participants as the most important summer crop. It represents 42% of the cultivated area. It is a main source of food for both animals and people. Corn yield has risen from 10 ardab/fed to approximately 16 ardab/fed during the last ten years. New hybrid varieties have had a positive impact on yield and net returns. Participants said that cotton is the second most important summer crop. It represents 25% of the cultivated area. Vegetables are grown in small areas for household consumption and for sale in the local market.

***Nili crops***

Corn was cited by participants as the most important *nili* crop.

***El Sheen Village******Winter crops***

Wheat was cited by participants as the most important winter crop. It represents 37% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 8 ardab/fed to approximately 12 ardab/fed during the last ten years. New varieties, especially Sakha 69, have had a positive impact on yield and net returns. Participants said that berseem is the second most important winter crop. It represents 33% of the cultivated area. Vegetables and faba bean are grown in small areas for household consumption and for sale in the local market.

***Summer crops***

Rice was cited by participants as the most important summer crop. It represents 39% of the cultivated area. It is a main source of food, and its yield has risen from 1.5 tons/fed to approximately 2.5 tons/fed during the last ten years. New varieties, especially G172, have had a positive impact on yield and net returns. Participants said that corn is the second most important summer crop. It represents 29% of the cultivated area. Corn yield has risen from 8 ardab/fed to 14 ardab/fed in the last ten years. New hybrid varieties have had a high positive impact on productivity and returns. Cotton is the third most important summer

crop. It represents about 25% of the area. Vegetables are grown in small areas for household consumption.

#### *Nili crops*

Rice was cited by participants as the most important *nili* crop, followed by corn.

#### *Intercropping*

Recently, there has been a growing trend towards intercropping—especially onion grown as a secondary crop with cotton—as a means for enhancing land and water utilization, and increasing productivity and profitability.

### ***El Shoni Village***

#### *Winter crops*

Wheat was cited by participants as the most important winter crop. It represents 29% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 10 ardab/fed to approximately 15 ardab/fed during the last ten years. New varieties, especially Sakha 69, have had a positive impact on yield and net returns. Participants said that berseem is the second most important winter crop, representing 13% of the cultivated area. Faba bean is third most important winter crop, with about 8% of the cultivated area. Vegetables are grown in small areas for household consumption and for sale on the local market.

#### *Summer crops*

Corn was cited by participants as the most important summer crop. It represents 20% of the cultivated area. It is a main source of food for both people and animals. Its yield has risen from 12 ardab/fed to approximately 20 ardab/fed during the last ten years. New hybrid varieties have had a positive impact on yield and net return. Participants said that cotton is the second most important summer crop, with 19% of the cultivated area. Vegetables are grown for household consumption and for sale on the local market.

#### *Nili crops*

Corn and vegetables were cited by participants as the most important *nili* crops.

### ***El Robi Village***

#### *Winter crops*

Wheat was cited by participants as the most important winter crop. It represents 33% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 8 ardab/fed to approximately 12 ardab/fed during the last ten years. New varieties, especially Sakha 69, have had a positive impact on yield and net returns. Participants said that faba bean is the second most important winter crop. It represents 31% of the cultivated area. Berseem is the third most important winter crop, grown on about 22% of the cultivated area. Vegetables are grown in small areas for household consumption.

**Summer crops**

Rice was cited by participants as the most important summer crop. It represents 71% of the cultivated area. It is a main source of food. Its yield has risen from 1.5 tons/fed to approximately 2.00 tons/fed during the last ten years. New varieties, especially G172, have had a positive impact on yield and net returns. Participants said that cotton is the second most important summer crop, with 19% of the cultivated area. Vegetables are grown in small areas for household consumption.

**Nili crops**

Rice was cited by participants as the most important *nili* crop, followed by *drawa* as a forage crop. Participants said that cropping patterns had not been changed, despite increases in the price of inputs.

**Satamoni Village****Winter crops**

Wheat was cited by participants as the most important winter crop. It represents 48% of the cultivated area. It is a main source of food for both animals and people. Wheat yield has risen from 9 ardab/fed to approximately 14 ardab/fed during the last ten years. New varieties, especially Sakha 69, have had a positive impact on yield and net returns. Participants said that berseem is the second most important winter crop, grown on 28% of the cultivated area. Faba bean is the third most important winter crop, with about 10% of the cultivated area. Vegetables are grown in small areas for household consumption.

**Summer crops**

Rice was cited by participants as the most important *summer crop*. It represents 51% of the cultivated area. It is a main source of food. Its yield has risen from 1.5 tons/fed to approximately 2.5 tons/fed during the last ten years. New varieties, especially G172, have had a positive impact on yield and net returns. Participants said that cotton is the second most important summer crop, with 40% of the cultivated area. Vegetables are grown in small areas for household consumption.

**Nili crops**

*Drawa* was cited by participants as the most important *nili* crop.

Refer to Table 5 for information on the productivity of new varieties for the main crops in the old irrigated land.

In all villages, group meetings reported the following:

- Cropping patterns have not changed, even with the increase of input prices.
- Faba bean productivity suffers from various biotic and abiotic stresses in different farming systems. Anticipated high yields for faba bean have only rarely been achieved, due to the use of unsuitable cultivars and inefficient crop management.
- The dominant crop rotation is a two crop rotation in Middle and Upper Egypt, and a three crop rotation in the Delta.

- Currently, irrigation water via canals follows a schedule of seven days on, and seven days off in the summer. In winter, the schedule is five days on, and 10 days off, except for rice areas, where it is four days on, and six days off.
- In recent years, pricing policy reforms have greatly increased the profitability of wheat and cotton, which in turn has had a negative impact on areas where other main winter forage crops, such as berseem, are grown.

### **Inputs**

At all eight meetings the following sources of inputs were identified:

#### **Seed**

Wheat, cotton, corn, and sorghum seed is bought from the cooperatives at higher-than-market prices. This is because seed from the cooperatives gives higher yields than seed bought from outside sources such as traders. If the farmer cannot find new varieties in the agricultural cooperative societies, he or she buys that seed from outside sources. Farmers sometimes use leftover seed from the previous year. Seed for vegetables and other crops can be bought from the market.

#### **Fertilizer**

Manure is produced on the farm by the farmer's own animals. If the farmer doesn't own any animals or more manure is needed, he or she can buy extra supplies from his or her neighbors.

Chemical fertilizers are bought on the open market or from the cooperative societies, although at a higher price.

#### **Pesticides**

Pesticides are bought from the market, although the price is high. Except for cotton pesticides, the Government provides the farmer with pesticides through the agricultural cooperative societies under the Integrated Pesticide Management program. However, many farmers expressed their dissatisfaction with such arrangements, especially in Gharbia and Dakahlia Governorates.

#### **Agricultural machinery**

Many farmers buy agricultural machinery for their own use and for rental to other farmers. Therefore, many farmers are able to rent machines from other farmers. As of today, most of the plowing is done by tractors, irrigation with water pumps, and harvesting with threshing and winnowing machines.

#### **Fodder**

Green fodder is bought from neighbors or cultivated on the farmer's own land. Fodder concentrates are bought from the market.

Refer to Table 6 for more information on inputs used for main crops in all surveyed villages.

**Price Changes**

Prices of inputs have been gradually but consistently increasing over the last ten years. All participants complained that input prices have doubled or tripled, especially pesticides and fertilizers.

***Effect of price increases***

Most of the participants in the meetings reported that, because of the increase in input prices, they have had to turn to new input sources to make ends meet. However, most of the participants stated that although they have changed their input practices, they haven't changed their cropping patterns. Participants from Awlad Dawoud, El Sheen, and El Robi were able to maintain their old cropping patterns by turning to manure and organic fertilizers.

**Wages**

Participants reported that there are two shifts a day for hired workers. The first shift starts early in the morning (7 or 8 a.m.) and lasts until noon or 1 p.m. The second shift starts at 2 or 3 p.m. and lasts until 5 or 6 p.m. All meetings reported that the rate of pay ranges from LE 5–6 for the morning shift, and LE 4–5 for the afternoon shift, for men. If women are permitted to work as hired laborers, they receive the same wage as a boy or a girl, which is less than the men.

Wages differ according to permanent versus temporary labor, and number of hours spent on the job. However, the work shift is usually 5 hours, except during harvest, when laborers work for 8–10 hours. During harvest, wages are higher: men get about LE 10, and women as well as boys and girls get about LE 6.

For permanent labor, men get about LE 200/month, women, boys and girls get around LE 100/month.

**The Cost of Agricultural Operations**

Tables 7 through 10 give brief descriptions of the different operational costs for the main crops in the surveyed villages. The following general remarks can be made:

- Plowing costs include the number of passes and the price of a single pass for each crop.
- Hoeing costs include the number of hoeings, and cost of labor required for one hoeing.
- Irrigation costs include the number of irrigations, and the pump costs for one irrigation.
- Harvesting costs include the number of laborers required for the operation, and the labor cost for each crop.
- Threshing and winnowing costs include the number of hours required for the completion of the process, per hour rental charges, number of laborers required for the operation, and wage rate.

**Labor Practices**

The data show that labor practices in the villages are the same. When husbands are absent, women and girls are more active, shouldering more of the agricultural work. However,

when farmers are affluent and able to afford hired labor, the participation of women is low. In Sohag, women are not allowed to participate.

All participants reiterated that men are fully responsible for hard work such as plowing, whether mechanized or not. If the men are absent, women hire someone to do the job.

#### *Fertilization*

Fertilization is done by men, women or boys.

#### *Sowing*

The majority of participants said that both genders participate in sowing.

#### *Weeding*

All family members, regardless of gender, participate in weeding.

#### *Irrigation*

By and large, men are responsible for irrigation. However, in certain situations, women do participate or assist.

#### *Harvesting*

All family members regardless of gender participate in harvesting. Picking cotton and vegetables is done mostly by women, girls, and boys.

#### *Pesticide spraying*

By and large, men are responsible for pesticide spraying. If the men are absent, the women hire someone to do the job.

#### *Threshing and winnowing*

By and large, men are responsible for threshing and winnowing. If men are absent, women hire someone to do the job.

#### *Household labor*

The division of household labor is a function of family size and income. Large families have more potential laborers available. Small families have a smaller available work force and therefore depend on outside labor to overcome shortages, especially if the holding is too big to be handled by family members alone.

All participants from El Koum El Asfar Village said that the family provides only 80% of the total labor needed, so that additional laborers must be hired. In Awlad Dawoud and El Shoni villages, the family was able to do only 70% of the work, with the other 30% being done by outside labor. In Qemn El Arous, Satamoni, and El Sheen villages, the family carries only 50% of the total workload, with the other 50% done by outside labor.

Throughout the survey villages, hired labor is sufficient. As has been seen, in Sohag Governorate women and girls are not permitted to participate in any agricultural operations. Elsewhere, women's participation fluctuates from one area to another. For instance, women make up 30% of the hired laborers in Beni Sueif Governorate, 40% in Satamoni and El

Sheen, and 60% in El Robi and El Shoni. Table 11 gives more details on each of the surveyed villages.

## **Livestock**

### ***Water buffalo and cows***

Animals are owned by small farmers as well as large. Small farmers usually own one or two buffaloes or cows, kept for their meat, milk, labor, and manure. In El Sheen Village, livestock is considered the most important possession of the farmer. This is reflected in the large area cultivated to berseem, surpassing other winter crops such as wheat.

Milk is sold fresh for domestic consumption, especially in El Sheen Village. In other villages, however, milk is processed for butter and/or cheese. This work is done mainly by the women. Usually, animal products are for family and farm needs first, with only the surplus sold. If the family is in dire need of money, products are sold in the local market.

A stock sharing system exists, wherein one farmer buys a cow or a buffalo and another farmer keeps and feeds the animal. The farmer who maintains the animal keeps the milk, and the two share on equal basis the profits of selling the calves.

### ***Sheep and goats***

Participants at the men's meetings said that each family owns an average of two sheep or goats. Sheep and goats are raised mainly for family consumption, with any surplus sold on the local market. Women are usually responsible for feeding small animals raised within the household.

## ***Poultry***

### ***Chickens***

All participants said that every family in the countryside raises chickens for family consumption. Other products, such as eggs and chicks, are sold on the local market.

### ***Ducks and geese***

Ducks and geese are not as popular as chickens, and their numbers are far lower. Ducks and geese are raised mainly for family consumption, with the surplus sold on the local market.

In almost all villages, women do most of the work of taking care of the livestock. Women, and sometimes girls, are responsible for herding and feeding the livestock. In Dakahlia and Gharbia, women take sick animals to veterinarians for medical treatment, especially when the husbands are busy with other chores.

Marketing of livestock products adds money to the family income. Selling eggs, cheese, chickens, chicks, milk, and many other products gives the family an extra source of income. Women are responsible for the production and marketing of livestock products.

## **Off-farm Income**

Many participants reported that farm income, in many cases, doesn't meet basic family needs. The participants noted that farm income generally covers about 70–80% of family

needs. Therefore, additional off-farm work is needed to make ends meet. Family members—men, women, and children—are hired by others to work as agricultural workers, or as tractor drivers, salespeople in grocery stores, butchers, construction workers, and restaurant workers. In addition to selling family products such as vegetables to their fellow farmers and neighbors, or to the local market, women are involved in such value-added activities as dairy processing.

Educated members of the family—sons and daughters—may work as teachers in the local schools or as agricultural engineers in the cooperative societies in the village or district.

As has been noted, in *Sohag*, women are not permitted to work outside the family. In the other villages, participants identified three conditions under which women may go to work:

- The death of a husband, and the absence of an adult son.
- The husband works outside the village.
- The husband is serving in the army.
- For more details refer to Table 11.

### Finance and Credit

The following sources of financing and credit were identified during the RRA survey:

- PBDAC loans.
- Wholesaler and trader loans.

PBDAC is considered the main source of agricultural finance throughout the country. If the farmer can present collateral to the bank, such as being listed on the cooperative society list, he or she can get a loan from the bank. Without a holding card or other collateral, it is not easy to get a loan from the bank.

The main complaints about PBDAC center around high interest rates. High rates discourage farmers, especially small farmers, from taking advantage of the financial facilities PBDAC offers. Interest rates range between 15 to 20% per annum according to loan type (short, medium, long).

Farmers from *Sohag* Governorate complained about PBDAC's financial loan options, as well as loan availability. Hindrances cited by farmers include red tape, extensive and tedious paperwork, documents shuffling from office to office, unwillingness to make decisions, and the need to obtain too many signatures for approval. However, all farmers agreed that the bank plays an essential role in protecting them from being exploited by wholesalers and traders.

The men's meeting from *Awlad Dawoud* Village reported that some of them were able to secure loans from traders using the future crop as collateral. In return, they had to deliver their vegetable produce to the traders, but at a lower price than market value.

All participants expressed the need for different sources of funding, whether from PBDAC or any other source that would offer low interest rate loans. They suggested the establishment of a cooperative bank to lend farmers money at real cost, as they had had in the past.

**Marketing**

Two marketing channels were identified in the RRA survey:

- PBDAC.
- Wholesalers and traders.

Marketing through wholesalers and retailers seems to be the channel most used by farmers. Many farmers showed a preference for dealing with retailers and wholesalers rather than PBDAC, because they receive cash right away, while bank payments are usually delayed. Some farmers in Qemn El Arous and Satamoni sell their vegetable produce to wholesalers from El Obour wholesale market in Greater Cairo. At two of the selected sites in Dakahlia Governorate, farmers dealt mainly with wholesalers from the Mansoura wholesale market.

Some farmers market rice and wheat through PBDAC. Flour mills were also mentioned as potential wheat purchasers.

The marketing of sugarcane and cotton is still under government control.

All farmers in the selected villages said that they sell their products at local markets and through regional wholesale markets. They rely on their own transportation to carry their produce to local markets. Small farmers from Satamoni, El Sheen, El Shoni, and Qemn El Arous asked for the development of agro-industries in their areas.

Refer to Table 12 for information on main field crops and seed prices in the eight villages, and Table 13 for information on fertilizer prices.

**Extension**

According to the RRA meetings, sources of agricultural information can be ranked as follows:

- Farmer's own experience.
- The media (television and radio).
- Demonstration fields, if available, and extensionists.
- Neighbors and friends.

At almost all sites, farmers stated that television programs are beneficial and relevant. However, they complained of the inconvenient broadcast times for most agricultural programs. The television programs "Land Secrets" and "Good Morning Egypt" were cited as the favorite programs in terms of content, timing, and quality.

Farmers said they were dissatisfied with the level of extension services provided for women. They want to have women extension agents who are able to communicate with their wives.

In Sohag Governorate, farmers complained that too few extension meetings are held. Furthermore, when meetings are held, they are scheduled at times when the farmers are in the field. In addition, meetings are held on specific practices after the appropriate season is over. Consequently, extension meetings are poorly attended. In Satamoni Village, there are no extension services at all.

Three villages, El Robi, El Sheen, and El Shoni, reported that extension services were adequate. The other five villages are dissatisfied with the extension services they are receiving.

All farmers in all villages asked for more extension services, covering topics such as pest control, soil improvement programs, marketing, post harvest techniques, and the maintenance of irrigation and drainage systems.

### **Role of Cooperatives**

All farmers said that the role of the cooperative in the past was more satisfactory than today. Previously, farmers bought inputs from cooperatives at low prices and were able to delay payments until the end of the season, after the sale of their crops. The cooperatives were also responsible for pesticide spraying of cotton, in addition to renting out agricultural machinery at reasonable costs.

Since that time, the role of cooperative has been greatly diminished. Seed prices are higher than the traders', while fertilizer prices are almost the same.

In the future, farmers would like the cooperatives to function as they did in the past, helping to solve financial problems by providing loans at lower interest rates.

### **Costs and Returns**

Costs and returns for agricultural production were calculated on the basis of information received at the men's meetings in the eight villages surveyed. Estimates were made for cultivated crops, namely wheat, faba bean, cotton, corn, sorghum, and rice. Detailed estimates for each crop are presented in Tables 14 through 19.

Gross revenues (LE/fed) were computed by multiplying farm gate prices for crop yield, seed, and straw. Variable costs per feddan (VC) were calculated by totaling the sowing, manure, N and P<sub>2</sub>O<sub>5</sub> application, pest control, hoeing, irrigation, harvesting, and threshing and winnowing costs. Net revenues were calculated for each crop by subtracting total variable costs from gross revenues. Profitability was calculated using the following formula:

$$\text{Profitability} = (\text{net revenue} \div \text{total VC}) \times 100$$

Wheat brings in the highest average income per feddan for winter crops. Faba bean productivity is constrained by various biotic and abiotic stresses in different farming systems.

When the different sites are ranked according to wheat profitability, El Shoni is the leading village, with El Telt second, Qemn El Arous third, El Sheen fourth, Satamoni fifth, El Koum El Asfar sixth, El Robi seventh, and Awlad Dawoud eighth.

When the different sites are ranked according to faba bean profitability, El Shoni is again the leading village, Satamoni is second, El Telt third, El Koum El Asfar fourth, Awlad Dawoud fifth, El Sheen sixth, El Robi seventh, and Qemn El Arous eighth.

The highest average income producer per feddan for summer crops is cotton.

When the different sites are ranked according to cotton profitability, Awlad Dawoud comes in first, despite the fact that its cultivated cotton area represents only 2% of the area. At Awlad Dawoud, participants reported that cotton is produced at the lowest variable cost and

gives the highest net revenue compared to other locations. They indicated a desire to grow cotton, but the government prohibits the planting of cotton in their village. There is, however, some suspicion that results have been altered to make Awlad Dawoud farmers appear as good producers, and therefore entitled to grow cotton. Next in order of cotton profitability comes El Telt, Qemn El Arous is third, El Sheen fourth, El Koum El Asfar fifth, El Robi sixth, Satamoni seventh, and El Shoni eighth.

When the different sites are ranked according to corn profitability, El Telt is the leader, Awlad Dawoud second, Qemn El Arous third, El Sheen fourth, El Koum El Asfar fifth, El Shoni sixth, Satamoni seventh, and El Robi eighth.

Sorghum is cultivated in Upper Egypt. Of the two sites that cultivate sorghum, Awlad Dawoud has the higher profitability, with El Koum El Asfar coming second.

Rice is cultivated in the Middle and the North Delta. Of the four sites that cultivate rice, El Shoni is the leader in rice profitability. At El Shoni, participants reported that rice is produced at the lowest variable cost and gives the highest net revenue compared to other locations. They indicated a desire to grow rice, but the government prohibits the planting of rice in their village, as a water saving measurement. There is, however, some suspicion that results have been altered to make El Shoni farmers appear as good producers, and therefore entitled to grow rice. El Sheen came in second, Satamoni third, and El Robi fourth.

## Problems and Suggested Solutions

At all meetings, participants were asked to identify the major constraints and problems affecting their agricultural and livestock production. According to the participants, the need for good services takes priority as the major problem. Services include providing potable water, electricity, and a good health care system, and the establishment of secondary schools in the five villages that don't have them, and a public transportation system at a reasonable cost. The lack of extension services, handicraft training, and credit for the initiation of small projects are among the constraints identified by small farmers.

The participants were asked to do more than just name constraints and problems by being actively involved in the suggestion of solutions. Following is a summary of their responses and suggestions.

### Awlad Dawoud

- There is a shortage of irrigation water for two months during the summer season, and about 25% of the cultivated area is irrigated by mixed water. Participants suggested the rearrangement of irrigation rotation as a solution.
- High salinity and alkalinity are due to the high water table and inefficient drainage system. Because of failures in the drainage system, about 14% of the cultivated area suffers from these problems. Participants suggested ongoing maintenance and repair of the drainage system to solve the problem.
- Low soil productivity is due to the inefficiency of the drainage system and high level of the water table.
- About 7% of the cultivated area suffers from the inadequacy of drainage services.
- The major maintenance problems in the drainage system are concentrated in the cleaning and removal of weeds, and seepage from the unlined channels. Removal of weeds from *mesqas* and repairing seepages is usually done by the farmers. Excessive weed growth causing blockages of irrigation canals, especially in crossing and interconnections segments, is not the only problem. The situation has been exacerbated by the use of irrigation canals by farmers and others as solid waste dump sites. In the absence of village planning, random building has taken over. When unplanned houses are constructed on cultivated land, the irrigation canals running amidst houses become an easy and cheap way for farmers to dispose of their waste.
- There is an inequality of water distribution among the heads and tail reaches of distribution canals and *mesqas*.
- The poor maintenance of the different irrigation canals was mentioned time and time again as one of the major constraints facing their productivity improvement efforts.
- Gypsum is not available when and where it is needed. Since it is applied in large quantities, the participants' solution is to increase extension services in the villages to advise farmers against the excessive use of gypsum.
- New varieties are not available when needed. Only 10% of the farmers are using new varieties.

- The quality of pesticides is not trusted by farmers.
- The farmers complained about the difficulties they face trying to market their vegetable produce, and the low prices they receive.
- The farmers complained about the high price of agricultural inputs, and the high interest rate for loans from the bank or traders. Their suggested solution is the establishment of a new cooperative bank to supply them with inputs at good prices, and at low interest rates.
- In addition to the limitations of extension services, farmers are very apprehensive about dealing with government employees.

### **EI Koum EI Asfar**

- There is a shortage of irrigation water for two months during the summer, and about 21% of the total irrigated area is served by mixed water. Participants suggested the rearrangement of irrigation rotation as a solution.
- Major drainage system maintenance problems center around the cleaning and removal of weeds, seepage from unlined channels, and the use of irrigation canals as dump sites.
- Poor maintenance of irrigation canals was mentioned time and time again as one of the major constraints preventing increases in productivity.
- The inequality of water distribution among the heads and tail ends of distribution canals and *mesqas* is another serious problem.
- Gypsum is not available when and where needed. It is applied in large quantities, so participants suggested an increase in extension services to advise farmers against the excessive use of gypsum.
- New varieties are not available when needed. Only 15% of farmers are able to use new varieties.
- The quality of pesticides is not trusted by the farmers.
- Farmers complained of the difficulties they face trying to market their vegetable produce, and the low prices they get.
- Farmers complained of the high price of agricultural inputs, and the high interest rates of loans from the bank and from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices and low interest rates.
- In addition to the limited extension services, farmers are very apprehensive about dealing with government employees.

Table 20 summarizes the constraints facing agricultural production in the two villages of Sohag Governorate.

### **EI Telt**

- High soil salinity and alkalinity are due to the high water table and an inefficient drainage system. Because of the failure of the drainage system, about 21% of the

cultivated area suffers from these problems. Participants suggested continuous maintenance and repair of the drainage system as a solution.

- Low soil productivity is due to the inefficiency of the drainage system and the high level of the water table for about 21% of the cultivated area.
- About 21% of the area suffers from nonexistent or inadequate drainage services and inadequate cleaning of irrigation canals.
- Water distribution is unequal among the heads and tail ends of the distribution canals and *mesqas*.
- Gypsum is not available when and where needed. It is applied in high quantities, so participants suggested an increase in extension services to advise farmers against excessive use.
- New varieties are not available when needed. Only 20% of the farmers have access to new varieties.
- The quality of pesticides is not trusted by farmers.
- Farmers complained of the high price of agricultural inputs, and the high interest rate for loans from the bank or from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices and low interest loans.
- In addition to the limited extension services, farmers are very apprehensive about dealing with government employees.
- Social services are not sufficient.

### **Qemn El Arous**

- There is a shortage of irrigation water for two months during the summer, and about 33% of the irrigated area is served by drainage water. Participants suggested the rearrangement of irrigation rotation as a solution.
- High soil salinity and alkalinity are due to the high water table and an inefficient drainage system. Because of failures in the drainage system, about 28% of the cultivated area suffers from these problems. Participants suggested continuous maintenance and repair of the drainage system as a solution.
- Low soil productivity is due to the inefficiency of the drainage system and the high level of the water table.
- About 28% of the area suffers from an inadequacy of drainage services.
- The major drainage system maintenance problems center around the cleaning and removal of weeds and seepage from unlined channels. Removal of weeds and repairing seepages are usually done by the farmers. Excessive weed growth causing the complete blockage of irrigation canals, especially in crossing and interconnection segments, is not the only problem. The situation has been exacerbated by the use of irrigation canals, by farmers and others, as solid waste dump sites. In the absence of village planning, random building has taken over. Unplanned houses have been built on cultivated land, and the irrigation canals running amidst houses have become an easy and cheap way for farmers to dispose of their waste.

- Poor maintenance of the different irrigation canals was mentioned time and time again as one of the major constraints impeding increased productivity.
- The water distribution among the heads and tail ends of distribution canals and *mesqas* is not equal.
- Gypsum is not available when and where needed. It is applied in high quantities, therefore, the participants' solution is to increase extension services to advise farmers against the excessive use of gypsum.
- New varieties are not available when needed. The percentage of farmers using new varieties is limited to 30%.
- The quality of pesticides is not trusted by farmers.
- Farmers complained about the difficulties they face trying to market their vegetable produce, and the low prices they receive.
- Farmers complained about high prices of agricultural inputs, and the high interest rates imposed by both banks and traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices, with low interest rates.
- In addition to the limited extension services, farmers are very apprehensive about dealing with government employees.

Table 21 summarizes the constraints facing agricultural production in the two villages of Beni Sueif Governorate.

#### **EI Sheen**

- There is a shortage of irrigation water for two months during the summer, and about 12% of the area is irrigated with mixed water. Participants suggested the rearrangement of irrigation rotations as a solution.
- High soil salinity and alkalinity are due to the high water table and inefficient drainage system. Because of the failure of the drainage system, about 21% of the cultivated area suffers from these problems. Participants suggested stepped-up maintenance and repair of the drainage system as a solution.
- Low soil productivity is due to the inefficiency of the drainage system and high level of the water table.
- About 21% of the area suffers from nonexistent or insufficient drainage services.
- The major drainage system maintenance problems center around the cleaning and removal of weeds, and seepage from the unlined channels. Removal of weeds from *mesqas* and repair of seepages is usually done by the farmers. Excessive weed growth causing the complete blockage of irrigation canals, especially in crossing and interconnections segments, is not the only problem. The situation has been exacerbated by the use of irrigation canals, by farmers and many others, as solid waste dump sites. In the absence of village planning, random building has taken over. Houses constructed on cultivated land between irrigation canals has resulted in the use of these canals as dump sites.
- The poor maintenance of irrigation canals was mentioned time and time again as one of the major constraints impeding increased productivity.

- Water distribution is unequal among the heads and tail ends of the distribution canals and *mesqas*.
- Gypsum is not available when and where needed. It is applied in high quantities, therefore, the participants' solution is to increase extension services to advise farmers against the excessive use of gypsum.
- New varieties are not available when needed. Only 50% of farmers have access to new varieties.
- The quality of pesticides is not trusted by farmers.
- Farmers complained about the difficulties they face trying to market their rice crop, and the low prices they receive.
- Farmers complained about the high prices of agricultural inputs, and the high interest rates they are charged for loans from the bank or from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices and low interest rates.

### **El Shoni**

- There is a shortage of irrigation water for two months during the summer, and about 21% of the irrigated area is served by mixed water. The participants suggested the rearrangement of the irrigation rotation as a solution.
- High soil salinity and alkalinity are due to the high water table and inefficient drainage system. Because of failures in the drainage system, about 12% of the cultivated area suffers from these problems. Participants suggested stepped-up maintenance and repair of the drainage system as a solution.
- Low soil productivity is due to the inefficiency of the drainage system and the high level of the water table.
- About 12% of the area is affected by the inadequacy of drainage services.
- The major maintenance problems center around the cleaning and removal of weeds and seepage from the unlined channels. Removal of weeds from *mesqas* and repair of seepages is usually done by the farmers. Excessive weed growth causing the complete blockage of irrigation canals, especially in crossing and interconnection segments, is not the only problem. The situation has been exacerbated by the use of irrigation canals, by farmers and many others, as solid waste dump sites. In the absence of village planning, random building has taken over. Houses constructed on cultivated land between irrigation canals has resulted in the use of these canals as dump sites.
- The poor maintenance of irrigation canals was mentioned time and time again as one of the major constraints impeding increased productivity.
- There is an inequality of water distribution among heads and tail ends of distribution canals and *mesqas*.
- Gypsum is not available when and where needed. It is applied in high quantities, therefore, the participants' solution is to increase extension services to advise farmers against the excessive use of gypsum.

- New varieties are not available when needed. Only 50% of the farmers have access to new varieties.
- The quality of pesticides is not trusted by farmers.
- Farmers complained about the difficulties they face trying to market their vegetable produce, and the low prices they receive.
- Farmers complained about the high prices of agricultural inputs, and the high interest rate from the bank or from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices, and low interest rates.

Table 22 summarizes the constraints facing agricultural production in the two villages of Gharbia Governorate.

### El Robi

The villages of the North Delta are different from those of the Middle Delta in areas such as soil fertility and salinity. One reason for this is the relative distance of the two regions from the sea. In addition to marine water intrusion, the inefficiency of the sub-surface drainage network causes a high degree of pollution contaminating irrigation water.

Participants at the men's meetings reported the following problems:

- There is a shortage of irrigation water for two months during the summer, and about 30% of the area is irrigated with mixed water. Participants suggested the rearrangement of irrigation rotation as a solution.
- High soil salinity and alkalinity are due to the high water table and inefficient drainage system. Because of failures in the drainage system, about 30% of the cultivated area suffers from these problems. Participants suggested stepped-up maintenance and repair of the drainage system as a solution.
- Low soil productivity is due to the inefficiency of the drainage system and the high level of the water table.
- About 30% of the area suffers from an inadequacy of drainage services.
- The major maintenance problems center around the cleaning and removal of weeds and seepage from the unlined channels. Removal of weeds from *mesqas* and repair of seepages is usually done by the farmers. Excessive weed growth causing the complete blockage of irrigation canals, especially in crossing and interconnection segments, is not the only problem. The situation has been exacerbated by the use of irrigation canals, by farmers and many others, as solid waste dump sites. In the absence of village planning, random building has taken over. The construction of houses on cultivated land between irrigation canals has resulted in the use of these canals as dump sites.
- The poor maintenance of irrigation canals was mentioned time and time again as one of the major constraints hampering increased productivity.
- There is an inequality of water distribution among the heads and tail ends of the distribution canals and *mesqas*.
- Gypsum is not available when and where needed. It is applied in high quantities, therefore, the participants' solution is to increase extension services to advise farmers against the excessive use of gypsum.

- New varieties are not available when needed. Only 40% of the farmers have access to new varieties.
- The quality of pesticides is not trusted by farmers.
- Farmers complained of the difficulties they face trying to market their vegetable produce, and the low prices they receive.
- Farmers complained of the high prices of agricultural inputs, and the high interest rates from the bank or from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices, and low interest rates.

**Satamoni**

- There is a shortage of irrigation water for two months during the summer, and about 5% of the area is irrigated with mixed water. Participants suggested the rearrangement of the irrigation rotation as a solution.
- High soil salinity and alkalinity are due to the high water table and the inefficient drainage system. Because of failures in the drainage system, about 2% of the cultivated area suffers from these problems. Participants suggested stepped-up maintenance and repair of the drainage system as a solution.
- There is an inequality of water distribution among the heads and tail ends of distribution canals and *mesqas*.
- Gypsum is not available when and where needed. It is applied in high quantities, therefore, the participants' solution is to increase extension services to advise farmers against the excessive use of gypsum.
- New varieties are not available when and where needed. Only 40% of the farmers have access to new varieties.
- Farmers complained of the high prices of agricultural inputs, and the high interest rates from the bank or from traders. Their suggested solution was the establishment of a new cooperative bank to supply them with inputs at good prices, and low interest rates.
- In addition to limited extension services, farmers are very apprehensive about dealing with government employees.
- Social services are not adequate.

Table 23 summarizes the constraints facing agricultural production in the two villages of Dakahlia Governorate.

## **Women's Meetings**

### **Introduction**

The Rapid Rural Appraisal survey was designed to investigate the role played by women in the Old Lands. The RRA included the wives of small farmers. Eight meetings were arranged at the following sites:

Awlad Dawoud Village	15 women
El Koum El Asfar Village	11 women
El Telt Village	10 women
Qemn El Arous Village	8 women
El Sheen Village	20 women
El Shoni Village	30 women
El Robi Village	10 women
Satamoni Village	20 women

### **Objectives**

The main objectives of the RRA survey of women in the Old Lands were as follows:

- To identify and define the role of women.
- To assess the degree of satisfaction women have with their role.

### **Procedures**

The following issues were included in the RRA survey:

- Satisfaction with housing.
- Travel patterns outside the village.
- Availability of transportation in and out of the village.
- Availability of social and cultural services.
- Participation in agricultural production.
- Participation in livestock production.
- Participation in poultry production.
- Participation in the decision making process.
- Off-farm income generation.
- On-farm income generation.
- Responsibility for household expenditure.
- Control over off-farm income.

## Survey Results

Responses to the above are summarized as follows:

### **Housing and services**

There were different levels of satisfaction about housing in the eight surveyed areas. Five groups were satisfied with both the size and quality of their houses. Housing quality ranged between good and fair, according to the standard of living of the family.

### **Travel patterns outside the village**

Most groups stated that they usually travel outside their villages once or twice a week. They travel for one or more of the following reasons:

- To visit the doctor.
- To buy medicine.
- To buy household necessities not available in the village.
- To sell their products at the market.
- For entertainment (higher income families).

### **Availability of transportation**

Transportation is adequate in three out of the eight surveyed villages. Public transportation at reasonable cost is available. Private transportation is expensive, especially in *El Koum El Asfar* and *El Telt*, where trucks are used as the main means of transportation.

### **Availability of social and cultural services**

There are no secondary schools in five out of the eight villages. Primary and preparatory schools are available in all villages. In the two villages of *Sohag Governorate*, the women reported that students had to travel to the district to attend schools. Therefore, many families send their boys to school and keep the girls at home.

Health care centers offer poor service. Medicines are not available and doctors are absent most of the time.

Despite of the fact that electricity is available, power failures are a daily occurrence for farmers. The power supply is available at night only.

Good roads were found in seven villages. *El Telt* lacks an asphalt road.

Potable water is of poor quality in the two villages in *Dakahlia Governorate*.

Veterinary clinics are not available in more than half of the villages. If animals get sick, farmers must transport them by truck to the nearest clinic, or pay a high charge for the veterinarian to visit the farm.

Security arrangements are considered good in all surveyed villages.

Table 24 provides a summary of services in the eight surveyed villages.

***Participation in agricultural production***

The wives of small farmers are active participants in all aspects of agricultural production, with the exception of plowing and hoeing. Only the meeting participants in Sohag Governorate said that women don't participate in agricultural production.

***Participation in livestock production***

In all meetings, most women said that all animal care is their responsibility. This includes feeding, cleaning, milking, taking animals to the field and sometimes to the veterinarian if their husbands were busy, taking care of animals during delivery, processing dairy products and collecting manure.

***Poultry raising***

All participants raise poultry in their homes. The cost of raising poultry is usually minor because they are fed with crop residue. The women raise poultry for family consumption as an inexpensive source of protein and as a source of family income in the local market.

***Participation in decision making***

The women said that they participate with other family members in discussions and decisions about the crop rotation. The final decision, however, is made by the men. Widows are the decision makers of the family.

***Off-farm income***

The women in the two villages of Sohag said that they don't work as hired laborers on other farms because of the prevailing customs in the area. On the other hand, in Satamoni, women are ready to work as hired laborers and to sell farm products in the market. They work on other farms when possible, to increase family income or get cash to cover household or farm needs. Women receive half the wage of men for doing the same job.

***On-farm income***

One of the main jobs carried out by women is selling farm products at the local market. These products include fresh and dry vegetables, cereals, small animals, poultry, eggs and dairy products. Women go to the markets to sell their produce once a week. The two groups from Sohag Governorate said that they do not sell products at the market, and that all produce is usually consumed by the family.

***Responsibility for household expenditures***

Only in Sohag Governorate are men responsible for household expenditures. In the other surveyed sites, women take on this responsibility.

***Control of off-farm income***

All of the surveyed women said that they don't have control of their off-farm income. Such income is usually spent on family and farm needs, with nothing kept back for personal needs. However, none of the women complained about this lack of control, considering this income an important contribution towards the family's well-being.

Table 25 gives a summary of women's activities in the old irrigated lands.

## **Recommendations**

Recommendations come from meeting discussions. To rank profitability for the main crops, an eight-point scale was developed that assigns different weights to different profitability levels. Analysis of the results, presented in Table 26, and of the constraints faced in all sites, shows that although the Middle and North Delta face similar problems, the North Delta faces these problems to a greater degree. For example, the two villages of the North Delta have more advanced soil degradation in terms of salinity and alkalinity than the two villages of the Middle Delta. The soil degradation in the North Delta is caused by marine intrusion, inefficiency of the sub-surface drainage network, and above all, by the highly polluted water used for irrigation. Furthermore, the profitability ranking was lower in the North Delta villages than in the two villages of the Middle Delta. There is, therefore, a greater opportunity for improvement in the North Delta. Of the two villages studied in Dakahlia Governorate, El Robi has a lower profitability than Satamoni, and is therefore more suitable for research directed towards improvement.

In Middle Egypt, Qemn El Arous ranked lower for profitability than El Telt. Therefore, the potential for productivity improvements and research opportunities is greater in Qemn El Arous.

In Upper Egypt, El Koum El Asfar ranked lower for profitability than Awlad Dawoud. Therefore, the potential for productivity improvements and research opportunities is greater in El Koum El Asfar.

The recommended villages for the Multidisciplinary Surveys, and for long-term trial sites, are as follows:

**El Robi, Dakahlia Governorate**

**Qemn El Arous, Beni Suef Governorate**

**El Koum El Asfar, Sohag Governorate**

Table 1. Description of the two sites surveyed in Sohag Governorate.

Item	Tahta District					Gerga District				
	El Koum El Asfar Village					Awlad Dawoud Village				
<b>General</b>										
Nearest research station	Shandaweel, 25 km					Shandaweel, 20 km				
Population	25,000					30,000				
Total area (feddan)	1,349					2,239				
Cultivated (feddan)	1,359					1,391 Old, and 1,725 New.				
No. of holders										
Owners	488	60%				657	84%			
Renters	329	40%				124	16%			
Total	817	100%				781	100%			
Average holdings	1.66 feddan					1.78 feddan				
No. of machinery										
Irrigation pumps	122					155				
Tractors	55					75				
Threshers and winnowing	45					64				
<b>Water</b>										
Sources										
Canals	418 feddan 31%					700 feddan 50%				
Wells	695 feddan 43%					345 feddan 25%				
Drainage										
Mixed	281 feddan 21%					346 feddan 25%				
Irrigation system	Surface					Surface				
Water rotation	5/10					5/10				
<b>Soil</b>										
Soil type	Silty clay					Silty clay				
Soil productivity										
Class	I	II	III	IV	V	I	II	III	IV	V
Area (feddan)	-	1,359	-	-	-	-	187	1,086	118	-
Percentage	-	100	-	-	-	-	19	78	9	-
<b>Soil improvement projects</b>										
Sub-soiler	Upon request					Upon request				
Laser leveling	Upon request					Upon request				
Drainage system	Surface/sub-surface					Surface/sub-surface				
<b>Field crops</b>										
<b>Winter crops</b>										
Wheat	600 44%					680 49%				
Faba bean	31 3%					120 9%				
Berseem	562 41%					332 24%				
Onion	14 1%					50 4%				
<b>Summer crops</b>										
Cotton	120 9%					34 2%				
Corn	231 17%					380 27%				
Sorghum	625 46%					815 58%				
Soybean	25 2%									
Intercropping						Faba bean/sugarcane				
<b>Social services</b>										
<b>Schools</b>										
Primary	4 schools					6 schools				
Preparatory	1 school					2 schools				
Secondary	none					1 school				
Health units	one					one				
Veterinary services	one					one				
Electricity	yes					yes				

Source: Village Agricultural Cooperative Society.

1 hectare = 2.38 feddans.

Table 2. Description of the two sites surveyed in Beni Sueif Governorate.

Item	El Fashn District					El Wasta District				
	El Telt Village					Qemn El Arous Village				
<b>General</b>										
Nearest research station	Sids, 15 km					Sids, 30 km				
Population	60,000					50,000				
Total area (feddan)	2,247					6,450				
Cultivated (feddan)	1,984					6,000				
No. of holders										
Owners	500 29%					2,464 70%				
Renters	1,225 71%					1,056 30%				
Total	1,725 100%					3,520 100%				
Average holdings	1.15 feddan					1.70 feddan				
No. of machinery										
Irrigation pumps	180					620				
Tractors	115					135				
Threshers and winnowing	45					72				
<b>Water</b>										
Sources										
Canals	1984 feddan 100%					4,000 feddan 67%				
Wells										
Drainage						1,500 feddan 25%				
Mixed						500 feddan 25%				
Irrigation system	Surface					Surface				
Water rotation	5/10					5/10				
Irrigation projects						USAID/Egypt Project				
<b>Soil</b>										
Soil type	Silty clay					Silty clay				
Soil productivity										
Class	I	II	III	IV	V	I	II	III	IV	V
Area	-	2,000	1,500	284	-	-	2,500	1,700	1,800	-
Percentage	-	10	76	14	-	-	42	28	30	-
Soil improvement projects										
Gypsum	TBD					TBD				
Sub-soiler	Upon request					Upon request				
Laser leveling	Upon request					Upon request				
Drainage system	Surface/sub-surface					Surface/sub-surface				
<b>Field crops</b>										
<b>Winter Crops</b>										
Wheat	900 45%					1,900 32%				
Faba bean	175 9%					500 8%				
Berseem	600 30%					900 15%				
Vegetables	100 5%					700 12%				
<b>Summer crops</b>										
Cotton	550 28%					1,500 25%				
Corn	800 40%					2,500 42%				
Inter Cropping										
<b>Social services</b>										
<b>Schools</b>										
Primary	2 Schools					7 Schools				
Preparatory	1 School					3 Schools				
Secondary	none					none				
Health units	one					one				
Veterinary services	one					one				
Electricity	yes					yes				

Source: Village Agricultural Cooperative Society.

Table 3. Description of the two sites surveyed in Gharbia Governorate.

Item	Qutor District					Tanta District				
	El Sheen Village					El Shoni Village				
<b>General</b>										
Nearest research station	Sakha, 15 km					Gemmeiza, 10 km				
Population	40,000					60,000				
Total area (feddan)	2,667					3,274				
Cultivated (feddan)	2,095					2,787				
No. of holders										
Owners	524	53%				2,024	79%			
Renters	465	47%				546	21%			
Total	989	100%				2,600	100%			
Average holdings	2.70 feddan					1.26 feddan				
No. of machinery										
Irrigation pumps	220					400				
Tractors	55					80				
Threshers and winnowing	25					30				
<b>Water</b>										
<b>Sources</b>										
Canals	2452 feddan 88%					1,664 feddan 79%				
Wells										
Drainage	431 feddan 12%					335 feddan 21%				
Mixed										
Irrigation system	Surface					Surface				
Water rotation	5/10 and 5/5 for rice					5/10				
Irrigation projects						USAID/Egypt Project				
<b>Soil</b>										
Soil type	Clay					Clay				
Soil productivity										
Class	I	II	III	IV	V	I	II	III	IV	V
Area (feddan)	-	1,006	670	209	210	-	1,895	557	-	335
Percentage	-	48	32	10	10	-	68	20	-	12
Soil improvement projects										
Gypsum	TBD					TBD				
Sub-soiler	Upon request					Upon request				
Laser Leveling	Upon request					Upon request				
Drainage System	Surface/sub-surface					Surface/sub-surface				
<b>Field crops</b>										
<b>Winter crops</b>										
Wheat	780	37%				800	29%			
Faba bean	75	4%				221	8%			
Berseem	670	33%				350	13%			
Vegetables	400	19%				290	10%			
<b>Summer crops</b>										
Cotton	515	25%				525	19%			
Corn	605	29%				555	20%			
Rice	820	39%				---	---			
Sorghum						153	5%			
Intercropping	Onion/cotton									
<b>Social services</b>										
<b>Schools</b>										
Primary	2 Schools					2 Schools				
Preparatory	1 School					1 School				
Secondary	1 School					1 School				
Health units	one					one				
Veterinary services	one					one				
Electricity	yes					yes				

Source: Village Agricultural Cooperative Society.

Table 4. Description of the two sites surveyed in Dakablia Governorate.

Item	Tamai El Amdeed District					Belgas District				
	El Robi Village					Satamoni Village				
<b>General</b>										
Nearest research station	Tag El Ezz. 5 km					El Serw. 25 km				
Population	15,000					40,000				
Total area (feddan)	2,127					8,132				
Cultivated (feddan)	1,970					7,370				
No. of holders										
Owners	682	50%				1,228	91%			
Renters	689	50%				122	9%			
<b>Total</b>	1,371	100%				1,1350	100%			
Average holding	1.44 feddan					5.46 feddan				
No. of machinery										
Irrigation pumps	285					1300				
Tractors	55					150				
Threshers and winnowing	35					150				
<b>Water sources</b>										
Canals	1370 feddan 70%					6,970 feddan 95%				
Wells										
Drainage	600 feddan 30%					400 feddan 5%				
Mixed										
Irrigation system	Surface					Surface				
Water rotation	5/10 and 5/5 for rice					5/10 and for rice				
<b>Soil</b>										
Soil type	Clay					Heavy clay				
Soil productivity										
Class	I	II	III	IV	V	I	II	III	IV	V
Area (feddan)	-	104	866	1,000	-	-	1,016	4,337	474	1,543
Percentage	-	5	44	51	-	-	14	59	6	21
<b>Soil improvement projects</b>										
Gypsum	TBD					TBD				
Sub-soiler	Upon request					Upon request				
Laser leveling	Upon request					Upon request				
Drainage system	Surface/sub-surface					Surface/sub-surface				
<b>Field crops</b>										
<b>Winter crops</b>										
Wheat	642		33%			3,525		48%		
Faba bean	606		31%			753		10%		
Berseem	428		22%			2,073		28%		
<b>Vegetables</b>										
<b>Summer crops</b>										
Cotton	370		19%			2,957		40%		
Hybrid	136		7%			377		5%		
Rice	1,369		71%			3,788		51%		
Sorghum										
Intercropping	Onion/cotton									
<b>Social services</b>										
<b>Schools</b>										
Primary	1 school					1 school				
Preparatory	1 school					1 school				
Secondary	1 school									
Health units	one					one				
Veterinary services	one					one				
Electricity	yes					yes				

Source: Village Agricultural Cooperative Society.

1 hectare = 2.38 feddans.

Table 5. Productivity of new varieties in the Old Lands (1994).

Crop/yard	Sohag Governorate		Beni Sueif Governorate		Dakahlia Governorate		Gharbia Governorate	
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Robi	Satamoni	El Sheen	El Shoni
Wheat	15 ard G. 167	10 ard G. 155	15 ard G. 164	16 ard G. 164	12 ard Sakha	14 ard Sakha	12 ard Sakha	15 ard Sakha
Faba bean	4 ard G. 402	4 ard Wally	4 ard G. 2	4 ard G. Local	4 ard G. 46	6 ard G. 2	3 ard G. 2	7 ard G. 2
Cotton (93)	7 Q	7Q	7 Q G. 80	8 Q G. 80	7 Q G. 75	7.5 Q G. 80	7 Q Giza	8 Q Giza
Com	15 ard hybrid	16 ard hybrid	17 ard hybrid	16 ard hybrid	10 ard hybrid	14 ard hybrid	14 ard hybrid	20 ard hybrid
Rice					2 t G. 172	2.5 t G. 172	2.5 t G. 172	2.5 t G. 172
Sorghum	15 ard G. 15	12 ard G. 15						

Source: RRA Survey.

Ard = ardab; Q = qentar.

Table 6. Inputs used for main crops in all surveyed villages.

Crop	El Koum El Asfar					Awlad Dawoud				
	Seed rate (kg/fed)	Fertilizer			Pesticide cost (LE)	Seed rate (kg/fed)	Fertilizer			Pesticide cost (LE)
		P <sub>2</sub> O <sub>5</sub> † (kg/fed)	N† (kg/fed)	Manure (m <sup>3</sup> /fed)			P <sub>2</sub> O <sub>5</sub> (kg/fed)	N (kg/fed)	Manure (m <sup>3</sup> /fed)	
Wheat	60	—	200	—	100	50	—	150	—	75
Faba bean	60	200 kg	—	—	70	—	250	—	—	70
Berseem	N/A	150 kg	—	—	—	24	—	—	—	—
Cotton	40	200	200	15	250	40	200	200	15	250
Corn	14	200	200	15	—	14	—	250	20	—
Rice	—	—	—	—	—	—	—	—	—	—
Sorghum	12	200	200	—	—	12	—	300	20	—

† P<sub>2</sub>O<sub>5</sub> (15%); N (31%).

Crop	El Telt					Qemn El Arous				
	Seed rate	Fertilizer			Pesticide cost	Seed rate	Fertilizer			Pesticide cost
		P <sub>2</sub> O <sub>5</sub>	N	Manure			P <sub>2</sub> O <sub>5</sub>	N	Manure	
Wheat	60	—	150	—	—	60	—	200	—	50
Faba bean	48	200	—	—	—	48	150	—	—	60
Berseem	24	—	—	—	—	24	—	—	—	—
Vegetables	—	—	—	—	—	—	200	500	10	—
Cotton	40	—	200	10	300	40	150	200	10	300
Corn	15	—	250	10	—	15	150	200	10	30

Crop	El Sheen					El Shoni				
	Seed rate	Fertilizer			Pesticide cost	Seed rate	Fertilizer			Pesticide cost
		P <sub>2</sub> O <sub>5</sub>	N	Manure			P <sub>2</sub> O <sub>5</sub>	N	Manure	
Wheat	50	100	100	—	30	50	100	100	—	30
Faba bean	50	150	—	—	70	50	100	—	—	60
Berseem	24	100	—	—	—	24	100	—	—	—
Cotton	40	300	300	—	300	40	200	200	30	350
Corn	15	150	200	—	40	15	200	200	30	30
Rice	60	—	200	—	70	60	—	200	—	55

Crop	El Robi					Satamoni				
	Seed rate	Fertilizer			Pesticide cost	Seed rate	Fertilizer			Pesticide cost
		P <sub>2</sub> O <sub>5</sub>	N	Manure			P <sub>2</sub> O <sub>5</sub>	N	Manure	
Wheat	60	150	150	—	30	60	100	150	—	45
Faba bean	50	200	50	—	135	50	200	—	—	95
Berseem	24	100	—	—	—	24	100	—	—	—
Cotton	40	200	200	20	350	40	100	200	20	350
Corn	15	200	200	20	50	15	100	200	20	65
Rice	60	150	150	—	75	60	100	100	—	60

Table 7. Agricultural operation costs in Sohag Governorate (1994).

Crop	El Koum El Asfar			Awlad Dawoud				
	Plowing							
	No. of passes	Price for one pass		No. of passes	Price for one pass			
Wheat	2	15		2	15			
Faba bean	3	15		3	15			
Berseem	2	15		2	15			
Cotton	3	15		3	15			
Corn	3	15		3	15			
Hoeing								
	No. of hoeings	No. of laborers for one hoeing	Wage (LE)	No. of hoeings	No. of laborers for one hoeing	Wage (LE)		
Wheat								
Faba bean	2	7	6	2	7	6		
Cotton	2	7	6	2	7	6		
Corn	2	7	6	2	7	6		
Irrigation								
	No. of irrigations	Cost of one irrigation		No. of irrigations	Cost of one irrigation			
Wheat	6	22		6	22			
Faba bean	5	22		5	22			
Berseem	10	22		10	22			
Cotton	10	22		10	22			
Corn	7	22		7	22			
Harvesting								
	No. of Laborers	Wage (LE)		No. of laborers	Wage (LE)			
Wheat	8-10	6		10	7			
Faba bean	11	6		11	6			
Berseem	24 for all cuts (4-5 cuts)			23 for all cuts (4-5 cuts)				
Cotton	50 boys	3		50 boys	3			
Corn								
Cutting	4 men	6		4 men	7			
Peeling	10 boys	3		8 boys	4			
Threshing and winnowing								
	No. of hours for machinery	LE/hour for machinery	No. of laborers	Wage (LE)	No. of hours for machinery	LE/hour for machinery	No. of laborers	Wage (LE)
Wheat	4	15	4	7	4	15	5	7
Faba bean	4	15	5	7	4	15	5	7

Source: RRA results.

Table 8. Agricultural operation costs in Beni Sueif Governorate (1994).

Crop	El Telt				Qemn El Arous			
	Plowing		Hoëing		Irrigation		Harvesting	
	No. of passes	Price for one pass	No. of passes	Price for one pass	No. of irrigations	Cost of one irrigation (LE)	No. of laborers	Wage (LE)
Wheat	2	15	2	15	6	15	9	10
Faba bean	2	15	2	15	5	15	9	10
Berseem	2	15	2	15	10	15	25 for all cuts	6
Cotton	3	15	3	15	10	15	50 boys	5
Corn	2	15	2	15	7	15	Cutting 4 men	6
							Peeling 8 boys	3
	No. of hoeings	No. of laborers for one hoe	Wage (LE)	No. of hoeings	No. of laborers for one hoe	Wage (LE)	Threshing and winnowing	
Wheat							No. of hours for machinery	LE/hour for machinery
Faba bean	2	8	6	2	8	5	No. of laborers	Wage (LE)
Cotton	3	8	6	3	8	5	No. of hours for machinery	LE/hour for machinery
Corn	3	8	6	3	8	5	No. of laborers	Wage (LE)
Wheat	4	15	4	6	4	15	5	6
Faba bean	4	15	5	6	4	15	5	6

Source: RRA results.

Table 9. Agricultural operation costs in Gharbia Governorate (1994).

Crop	El Sheen		El Shoni					
	No. of passes	Price for one pass	No. of passes	Price for one pass				
<b>Plowing</b>								
Wheat	2	20	2	15				
Faba bean	2	20	2	15				
Berseem								
Cotton	3	20	3	15				
Corn	3	20	3	15				
Rice	2	20	2	15				
<b>Hoeing</b>								
	No. of hoeings	No. of laborers for one hoeing	Wage (LE)	No. of hoeings	No. of laborers for one hoeing	Wage (LE)		
Wheat								
Faba bean	2	6	5	2	5	6		
Cotton	3	6	5	3	6	6		
Corn	2	6	5	2	6	6		
<b>Irrigation</b>								
Crop	No. of irrigations	Cost of one irrigation (LE)	No. of irrigations	Cost of one irrigation (LE)				
Wheat	5	15	5	20				
Faba bean	6	15	6	20				
Berseem	8	15	8	20				
Cotton	9	15	9	20				
Corn	7	15	7	20				
Rice	13	25	13	20				
<b>Harvesting</b>								
	No. of laborers	Wage (LE)	No. of laborers	Wage (LE)				
Wheat	9	10	8	8				
Faba bean	10	15	10	6				
Berseem	25 for all cuts	5	25 for all cuts	6				
Cotton	40 boys	4	45 boys	4				
Corn								
Cutting	3 men	5	4 men	6				
Peeling	10 boys	4	10 boys	4				
Rice	9	8	8	10				
<b>Threshing and winnowing</b>								
	No. of hours for machinery	LE/hour for machinery	No. of laborers	Wage (LE)	No. of hours for machinery	LE/hour for machinery	No. of laborers	Wage (LE)
Wheat	4	15	5	5	4	20	5	5
Faba bean	4	15	5	5	4	20	5	5
Rice	6	15	6	5	6	20	6	5

Source: RRA results.

Table 10. Agricultural operation costs in Dakahlia Governorate (1994).

Crop	El Robi			Satamoni		
	Plowing					
	No. of passes	Price for 1 pass		No. of passes	Price for 1 pass	
Wheat	2	15		2	20	
Faba bean	3-4	15		3-4	20	
Berseem						
Cotton	3-4	15		3	20	
Corn	3-4	15		3	20	
Rice	2	15		2	20	

	Hoeing					
	No. of hoeings	No. of laborers for one hoeing	Wage (LE)	No. of hoeings	No. of laborers for one hoeing	Wage (LE)
Wheat						
Faba bean	2	4	5	2	5	5
Berseem						
Cotton	2	6	5	3	6	5
Corn	2	4	5	2	6	5

Crop	Irrigation			
	No. of irrigations	Cost of one irrigation (LE)	No. of irrigations	Cost of one irrigation (LE)
Wheat	5	25	5	20
Faba bean	5	25	5	20
Berseem	8	25	8	25
Cotton	8	25	8	25
Corn	6	25	6	25
Rice	15	25	15	25

Crop	Harvesting			
	No. of laborers	Wage (LE)	No. of laborers	Wage (LE)
Wheat				
Faba bean				
Berseem	25 for all cuts	5	25 for all cuts	5
Cotton	50 boys	4	50 boys	4
Corn				
Cutting	4 men	7	4 men	6
Peeling	10 boys	4	10 boys	4
Rice	11	8	12	10

	Threshing and winnowing							
	No. of hrs for machinery	LE/hr for machinery	No. of laborers	Wage (LE)	No. of hrs for machinery	LE/hr for machinery	No. of laborers	Wage (LE)
Wheat	4	20	5	5	4	20	6	5
Faba bean	4	20	5	5	4	20	6	5
Rice	6	20	6	5	6	20	6	5

Source: RRA results.

Table 11. Labor, animals, and agricultural income in the Old Lands (1994).

Item	Sohag		Beni Sueif		Dakahlia		Gharbia	
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Robi	Satamoni	El Sheen	El Shoni
Labor								
Availability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family (%)	80	70	50	60	50	60	60	70
Hired (%)	20	30	50	40	50	40	40	30
Animals								
Buffalo	0.5	0.5	0.25	0.5	0.5	1	2	0.5
Cow	0.5	0.5	0.25	0.5	1	0.25	1	0.25
Sheep	1	1	0.5	0.5	1	1	1	—
Goat	—	—	0.5	0.5	0.5	—	—	—
Poultry	15	20	15	15	15	25	30	20
Income								
On-farm (%)	80	75	75	80	70	80	70	80
Off-farm (%)	20	25	25	20	30	20	30	20
Women's participation (%)	—	—	30	30	60	40	40	60

Source: RRA results.

Table 12. Main crop and seed prices in the eight villages.

Village	Wheat			Faba bean			Berseem		Corn		Sorghum		Rice			Cotton	
	Cr	St	S	Cr	St	S	Cr	S	Cr	S	Cr	S	Cr	St	S	Cr	S
<b>Sohag</b>																	
El Koum El Asfar	80	20	0.95	160	20	1.6	25	1.8	70	7	75	0.60				295	0.8
Awlad Dawoud	80	20	0.95	160	20	1.6	25	1.8	70	7	80	0.65				325	0.9
<b>Beni Sueif</b>																	
El Telt	75	20	0.95	130	20	1.4	20	2.0	65	7						340	1.0
Qemn El Arous	75	20	0.05	130	20	1.5	20	2.0	65	7						305	1.5
<b>Gharbia</b>																	
El Sheen	75	30	0.95	130	30	1.7	25	2.0	60	7			600	30	0.95	300	1.0
El Shoni	75	30	0.95	130	30	1.5	28	2.0	60	7			600	30	1.0	310	1.0
<b>Dakahlia</b>																	
El Robi	75	30	0.95	150	30	1.7	25	1.5	70	7			500	30	1.0	350	1.2
Satamoni	75	30	0.95	160	30	1.7	25	1.5	70	7			600	30	0.95	320	1.2

Cr = Crop; St = Straw; S = Seed.

Crops are measured by LE/ardab, straw is measured by LE/load, seed by LE/kg, rice is measured by LE/l, cotton is measured by LE/qentar.

Source: RRA survey, 1994

Table 13. Fertilizer prices in the eight villages (1994).

Village	Manure (LE/m <sup>3</sup> )	Chemical fertilizers	
		N (LE/kg)	P <sub>2</sub> O <sub>5</sub> (LE/kg)
<b>Sohag</b>			
El Koum El Asfar	10	0.50	0.24
Awlad Dawoud	8	0.50	0.24
<b>Beni Sueif</b>			
El Telt	10	0.50	0.24
Qernn El Arous	10	0.50	0.24
<b>Gharbia</b>			
El Sheen	10	0.50	0.24
El Shoni	10	0.50	0.24
<b>Dakahlia</b>			
El Robi	10	0.50	0.24
Satamoni	10	0.50	0.24

Source: RRA survey.

Table 14. Wheat costs and net revenue in the surveyed governorates.

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Telt	Qernn El Arous	El Sheen	El Shoni	El Robi	Satamoni
<b>Variable cost (LE/fed)</b>								
Sowing	93	76	93	92	93	84	92	102
Manure	---	---	---	---	---	---	---	---
N application	106	81	81	105	55	56	80	80
P <sub>2</sub> O <sub>5</sub> application	---	---	---	---	29	30	41	29
Pest control	100	75	---	50	30	30	30	45
Hoeing	---	---	---	---	---	---	---	---
Irrigation	138	138	96	95	80	106	130	105
Harvesting	54	70	90	80	90	64	80	90
Threshing/winnowing	88	95	84	90	85	105	105	110
<b>Total VC</b>	<b>579</b>	<b>535</b>	<b>444</b>	<b>512</b>	<b>462</b>	<b>475</b>	<b>558</b>	<b>561</b>
<b>Yield</b>								
Seed (ard/fed)	15	10	15	16	12	15	12	14
Straw (leaf/fed)	15	10	15	16	12	15	12	14
<b>Revenue (LE/fed)</b>								
Seed yield	1200	1800	1125	1200	900	1125	900	1050
Straw yield	300	200	300	320	360	450	360	420
Gross benefit	1500	1000	1425	1520	1260	1575	1260	1470
Net benefit	921	465	981	1008	798	1100	702	909
Profitability (%)	159	87	221	197	173	232	126	162

Profitability = Net revenue/Total VC × 100.

Source: Calculated from Tables 5 through 10 and 12 through 13.

1 hectare = 2.38 feddan.

Table 15. Faba bean costs and net revenue in the surveyed governorates.

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
<i>Variable (LE/fed)</i>								
Sowing	147	147	103	107	130	111	143	160
Manure	—	—	—	—	—	—	—	—
N application	—	—	—	—	—	—	—	—
P <sub>2</sub> O <sub>5</sub> application	54	66	54	41	41	30	53	53
Pest control	70	70	—	60	70	60	135	95
Hoeing	84	84	96	80	60	60	40	50
Irrigation	116	116	81	80	95	126	130	105
Harvesting	66	66	80	80	50	60	80	100
Threshing/winnowing	95	95	90	90	85	105	105	110
<b>Total VC</b>	<b>632</b>	<b>644</b>	<b>504</b>	<b>538</b>	<b>531</b>	<b>552</b>	<b>716</b>	<b>673</b>
<b>Yield</b>								
Seed (ard/fed)	4	4	4	4	3	7	4	6
Straw (leaf/fed)	4	4	4	4	3	7	4	6
<b>Revenue (LE/fed)</b>								
Seed yield	640	640	520	520	390	910	600	960
Straw yield	80	80	80	80	90	210	120	180
Gross benefit	720	720	600	600	480	1120	720	1140
Net benefit	88	76	96	62	(51)	568	4	467
Profitability (%)	14	12	19	12	(10)	103	1	69

Source: Calculated from Tables 5 through 10, 12 and 13.

1 hectare = 2.38 feddans.

Table 16. Cotton costs and net revenue (1994).

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
Variable (LE/fed)								
Sowing	109	116	111	141	105	91	94	101
Manure	150	—	—	100	—	300	200	200
N application	106	131	106	105	155	106	105	105
P <sub>2</sub> O <sub>5</sub> application	54	—	—	41	77	54	53	29
Pest control	250	250	300	300	300	350	350	350
Hoeing	84	84	144	120	90	108	60	90
Irrigation	160	160	156	155	140	186	205	205
Harvesting	150	150	250	225	160	180	200	200
Threshing/winnowing	—	—	—	—	—	—	—	—
Total VC	1063	891	1067	1186	1027	1375	1267	1280
Yield								
Seed (ard/fed)	2065	2275	2380	2440	2100	2480	2450	2400
Straw (leaf/fed)	—	—	—	—	—	—	—	—
Revenue (LE/fed)								
Seed yield	2065	2275	2380	2440	2100	2480	2450	2400
Straw yield	—	—	—	—	—	—	—	—
Gross benefit	2065	2275	2380	2440	2100	2480	2450	2400
Net benefit	1002	1384	1313	1254	1073	1105	1183	1120
Profitability (%)	94	155	123	106	104	80	93	88

Source: Calculated from Tables 5 through 10, 12 and 13.

Table 17. Corn costs and net revenue (1994).

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Sata- moni
<b>Variable (LE/fed)</b>								
Sowing	149	149	134	133	170	156	163	170
Manure	150	160	100	100	—	300	200	200
N application	106	131	131	105	105	106	105	105
P <sub>2</sub> O <sub>5</sub> application	54	—	—	41	41	53	53	29
Pest control	—	—	—	30	40	30	50	65
Hoeing	84	84	144	120	60	72	40	60
Irrigation	160	160	111	110	110	146	155	155
Cutting	24	28	24	30	40	40	40	40
Peeling	30	32	24	30	40	40	40	40
<b>Total VC</b>	<b>757</b>	<b>744</b>	<b>668</b>	<b>699</b>	<b>581</b>	<b>927</b>	<b>834</b>	<b>848</b>
<b>Yield</b>								
Seed (ard/fed)	15	16	17	16	14	20	12	14
Straw (leaf/fed)	—	—	—	—	—	—	—	—
<b>Revenue (LE/fed)</b>								
Seed yield	1050	1120	1105	1040	840	1200	840	980
Straw yield	—	—	—	—	—	—	—	—
Gross benefit	1050	1120	1105	1040	840	1200	840	980
Net benefit	293	376	437	341	259	273	6	132
<b>Profitability (%)</b>	<b>39</b>	<b>51</b>	<b>65</b>	<b>49</b>	<b>45</b>	<b>29</b>	<b>1</b>	<b>16</b>

Source: Calculated from Tables 5 through 10 and 12 through 13.

1 hectare = 2.38 feddans.

Table 18. Sorghum costs and net revenue in the surveyed governorates (1994).

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Teit	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamon
Variable (LE/fed)								
Sowing	58	59	---	---	---	---	---	---
Manure	---	---	---	---	---	---	---	---
N application	106	156	---	---	---	---	---	---
P <sub>2</sub> O <sub>5</sub> application	54	---	---	---	---	---	---	---
Pest control	---	---	---	---	---	---	---	---
Hoing	---	---	---	---	---	---	---	---
Irrigation	138	138	---	---	---	---	---	---
Harvesting	24	24	---	---	---	---	---	---
Threshing/winnowing	---	---	---	---	---	---	---	---
Total VC	380	377	---	---	---	---	---	---
Yield								
Seed (ard/fed)	12	12	---	---	---	---	---	---
Straw (leaf/fed)	---	---	---	---	---	---	---	---
Revenues (LE/fed)								
Seed yield	900	900	---	---	---	---	---	---
Straw yield	---	---	---	---	---	---	---	---
Gross benefit	900	900	---	---	---	---	---	---
Net benefit	520	523	---	---	---	---	---	---
Profitability (%)	137	139	---	---	---	---	---	---

Source: Calculated from Tables 5 through 10 and 12 through 13.

1 hectare = 2.38 feddans.

Table 19. Rice costs and net revenue (1994).

Cost/Benefit	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Tahta	Gerga	El Fashn	El Wasta	Qutor	Tanta	Tamai El Amdeed	Belgas
	El Koum El Asfar	Awlad Dawoud	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
<b>Variable (LE/fed)</b>								
Sowing	---	---	---	---	99	96	95	102
Manure	---	---	---	---	---	---	---	---
N application	---	---	---	---	105	106	809	55
P <sub>2</sub> O <sub>5</sub> application	---	---	---	---	---	---	41	29
Pest control	---	---	---	---	70	55	75	60
Hoeing	---	---	---	---	---	---	---	---
Irrigation	---	---	---	---	330	266	380	380
Harvesting	---	---	---	---	72	80	88	120
Threshing/winnowing	---	---	---	---	120	150	150	150
<b>Total VC</b>	---	---	---	---	796	753	909	896
<b>Yield</b>								
Seed (ard/fed)	---	---	---	---	2.5	2.5	2	2.5
Straw (leaf/fed)	---	---	---	---	2.5	2.5	2	2.5
<b>Revenue (LE/fed)</b>								
Seed yield	---	---	---	---	1500	1500	1000	1500
Straw yield	---	---	---	---	75	75	60	75
Gross benefit	---	---	---	---	1575	1575	1060	1575
Net benefit	---	---	---	---	779	882	151	679
<b>Profitability (%)</b>	---	---	---	---	98	109	17	76

Source: Calculated from Tables 5 through 10, 12, and 13.

1 hectare = 2.38 feddans

Table 20. Agricultural production constraints in Sohag Governorate (1994).

Item	El Koum El Asfar Village	Awlad Dawoud Village
<b>1. Water</b>		
- Shortage	20% of the area is irrigated by mixed water for two months yearly in the summer season.	25% of the area is irrigated by mixed water for two months yearly in the summer season.
- Quality		
Irrigation	good	good
Drinking	good	good
<b>2. Soil</b>		
- Salt effect		
Saline	O.K.	7% of the total area.
Sodic	O.K.	7% of the total area.
- High water table		7% of the total area.
- Low soil productivity		14% of the total area.
- Drainage system		
Surface		Inadequate coverage of 7% of the total area.
Sub-surface		Inadequate coverage of 7% of the total area.
- Soil improvement projects	Gypsum is available at any time and place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.	Gypsum is available at any time and place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.
<b>3. Inputs</b>		
- Seeds		
Availability of new varieties	15% are using new varieties, unfortunately they are not available at the proper time.	10% are using new varieties, unfortunately they are not available at the proper time.
- Fertilizer abuse	No.	No.
- Pesticide quality	Farmers don't harbor any trust for pesticide quality.	Farmers don't harbor any trust for pesticide quality.
<b>4. Marketing problems</b>	No.	Farmers were having problems marketing their vegetables.
<b>5. Credit</b>		
- High interest rates	The majority complained of the high interest rates PBDAC charges them.	The majority complained of the high interest rates of the PBDAC and traders as well. Traders buy their products at a lower price in return for their loans.
<b>6. Extension</b>		
- Limited services	Inadequate extension programs and services.	Inadequate extension programs and services.
<b>7. Social services</b>	Inadequate social programs and services.	Inadequate social programs and services.

Source: RRA survey.

Table 21. Agricultural production constraints, Beni Suef Governorate (1994).

Item	El Telt Village	Qemn El Arous Village
<b>1. Water</b>		
- Shortage	No.	33% of the area is irrigated by drainage water for 2 months yearly in the summer. The village is located at the tail end of the irrigation canal.
- Quality		
Irrigation	Good	Poor quality in the summer
Drinking	Good	Good
<b>2. Soil</b>		
- Salt effect	The village is located at a lower area, therefore it receives all drainage water from higher areas, causing a loss of productivity and increase in salinity concentration and other minerals as well.	
Saline	18% of the cultivated area.	20% of the total area.
Sodic	3% of the total area.	8% of the total area.
- High water table	8% of the total area.	8% of the total area.
- Low soil productivity	21% of the total area.	28% of the total area.
- Drainage system		
Surface	Inadequate coverage of 21%. Main surface drains are cleaned every three years by the government. Sub-main drains are cleaned once a year by farmers.	Inadequate coverage of 28%. Main surface drains are cleaned every three years by the government. Sub-main drains are cleaned once a year by farmers.
Sub-surface		
- Soil Improvement Projects	Gypsum is not available at the needed time or place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.	Gypsum is not available at the needed time or place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.
<b>3. Inputs</b>		
- Seed		
Availability of new varieties	20% are using new varieties, unfortunately they are not available at the proper time.	30% are using new varieties, unfortunately they are not available at the proper time.
- Fertilizer abuse	Despite the use of manure in great quantities, farmers use chemical fertilizers at higher unneeded rates.	Despite the use of manure, farmers use chemical fertilizers at higher unneeded rates.
- Pesticide quality	Farmers don't trust pesticide quality.	Farmers don't trust pesticide quality.
<b>4. Marketing problems</b>	No.	Farmers have problems marketing their vegetables.
<b>5. Credit</b>		
- High interest rate	The majority complained of the high interest rates the PBDAC charges them.	The majority complained of the high interest rates of the PBDAC and traders as well. Traders buy their products at a lower price in return for their loans.
<b>6. Extension</b>		
- Limited services	Inadequate extension programs and services.	Inadequate extension programs and services.
<b>7. Social services</b>	Inadequate social programs and services.	Adequate social programs and services.

Source: RRA survey.

Table 22. Agricultural production constraints in Gharbia Governorate (1994).

Item	El Sheen Village	El Shoni Village
<b>1. Water</b>		
- Shortage	30% of the area is irrigated by drainage water for four months yearly in the summer season. The village is located at the tail end of the irrigation canal.	5% of the area is irrigated by drainage water for two months yearly in the summer season. The village is located at the tail end of the irrigation canal.
- Quality		
Irrigation	Irrigation water has a high quality	Irrigation water is high quality
Drinking		
<b>2. Soil</b>		
- Salt effect		
Saline	21% of the cultivated area.	11% of the cultivated area.
Sodic		
- High water table	In 8% of the cultivated area.	In 12% of the cultivated area.
- Low soil productivity	21% of the cultivated area.	12% of the cultivated area.
- Drainage system		
Surface	Inadequate coverage of 21%. Main surface drains are cleaned every three years by the government. Sub-main drains are cleaned once a year by farmers.	Inadequate coverage of 21%. Main surface drains are cleaned every three years period by the government. Sub-main drains are cleaned once a year by farmers.
Sub-surface		
- Soil improvement projects	Gypsum is not available at the needed time or place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.	Gypsum is not available when or where needed; it can be used at higher application rates, and it is used for non-agriculture activities as well.
<b>3. Inputs</b>		
- Seeds		
Availability of new varieties	50% are using new varieties.	50% are using new varieties.
- Fertilizers abuse	Despite the use of manure in great quantities, farmers use chemical fertilizers at higher unneeded rates. Farmers don't harbor any trust for pesticide quality.	Despite the use of manure, farmers use chemical fertilizers at higher unneeded rates. Farmers don't harbor any trust for pesticide quality.
- Pesticides quality	Low price for rice at harvesting.	Farmers were having problem marketing their vegetables.
<b>4. Marketing problems</b>		
<b>5. Credit</b>		
- High interest rate	Yes	Yes
<b>6. Extension</b>		
- Limited services	Adequate extension programs and services.	Adequate extension programs and services.
<b>7. Social services</b>	Adequate social programs and services.	Inadequate social programs and services.

Source: RRA survey.

Table 23. Agricultural production constraints in Dakahlia Governorate (1994).

Item	El Robi Village	Satamoni Village
<b>1. Water</b>		
- Shortage	30% of the area is irrigated by drainage water for two months yearly in the summer season. The village is located at the tail end of the irrigation canal.	5% of the area is irrigated by drainage water for two months yearly in the summer. The village is located at the tail end of the irrigation canal.
- Quality Irrigation Drinking	Irrigation water has a poor quality Poor	
<b>2. Soil</b>		
- Salt effect Saline Sodic	30% of the cultivated area.	2% of the cultivated area.
- High water table	High	
- Low soil productivity	30% of the cultivated area.	2% of the cultivated area.
- Drainage system surface	Inadequate coverage of 30%. Main surface drains are cleaned every three years by the government. Sub-main drains are cleaned once a year by farmers.	Inadequate coverage of 21%. Main surface drains are cleaned every three years by the government. Sub-main drains are cleaned once a year by farmers.
- Sub-surface Soil improvement projects	Gypsum is not available at the needed time or place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.	Gypsum is not available at the needed time or place, it can be used at higher application volumes, and it is used for non-agriculture activities as well.
<b>3. Inputs</b>		
- Seeds Availability of new varieties	40% are using new varieties.	40% are using new varieties.
- Fertilizers abuse	Despite the use of manure in great quantities, farmers use chemical fertilizers at higher unneeded rates.	Despite the use of manure, farmers use chemical fertilizers at higher unneeded rates.
- Pesticides quality	Farmers don't harbor any trust for pesticide quality.	Farmers don't harbor any trust for pesticide quality.
<b>4. Marketing Problems</b>	Low price for rice at harvesting.	
<b>5. Credit</b>		
- High interest rate	Yes	Yes
<b>6. Extension</b>		
- Limited services	Adequate extension programs and services.	Inadequate extension programs and services.
<b>7. Social services</b>	Adequate social programs and services.	Inadequate social programs and services.

Source: RRA survey.

Table 24. Summary of services.

	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Awlad Dawoud	El Koum El Asfar	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
Housing	B	B	B	F	G	F	G	G
Transportation	G	B	B	F	F	B	F	G
Primary schools	B	F	B	F	F	F	F	F
Preparatory schools	B	F	B	F	F	F	F	F
Secondary schools	N/A	N/A	N/A	N/A	F	F	F	N/A
Health care	B	B	B	B	B	B	B	B
Electricity	F	F	F	F	F	F	F	F
Potable water	G	G	F	E	F	F	B	B
Roads	G	G	B	F	G	G	G	G
Security	G	G	G	G	G	G	G	G
Veterinary facilities	N/A	N/A	F	F	F	B	B	N/A

G = good; F = fair; B = bad; N/A = not available.

Source: Results of RRA women's group meetings, 1994.

Table 25. Summary of women's activities (% participating) in the Old Lands (1994).

Items	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Awlad Dawoud	El Koum El Asfar	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
Travel outside village	10%	---	30%	25%	50%	90%	80%	50%
Participation in agricultural production	---	---	30%	30%	40%	50%	50%	40%
Participation in livestock production	80%	95%	90%	80%	75%	100%	75%	75%
Raising poultry	90%	95%	90%	90%	100%	100%	100%	90%
Participation in decision making	10%	15%	30%	35%	60%	60%	65%	70%
Participation in off-farm income	5%	10%	15%	15%	25%	20%	25%	20%
Participation in on-farm income	No	No	15%	15%	20%	20%	20%	25%
Responsibility for household expenditures	5%	10%	15%	15%	25%	20%	25%	20%
Control of off-farm income	No	No	No	No	No	No	No	No

Source: Results of women's group meetings, 1994.

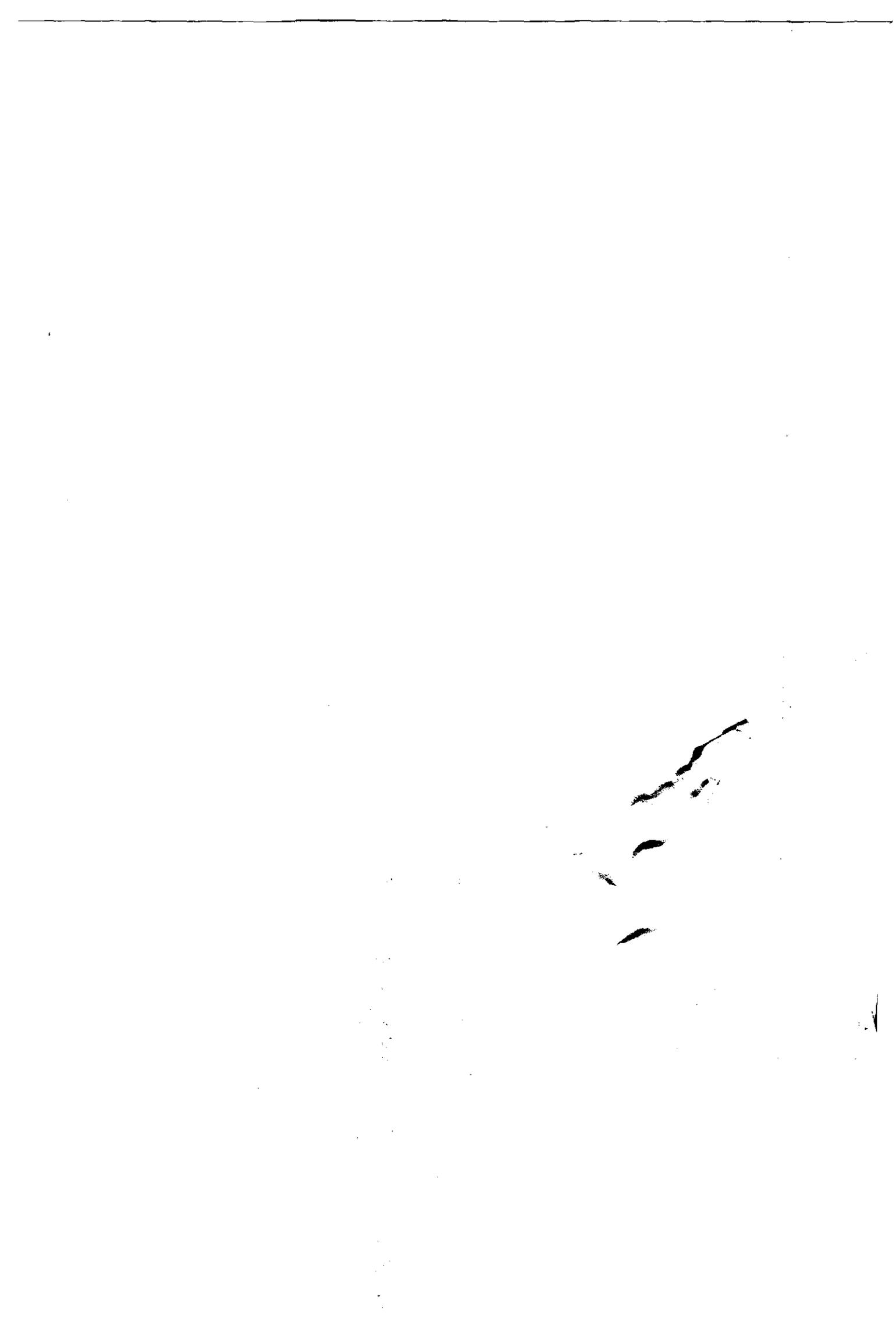


Table 24. Summary of services.

	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Awlad Dawoud	El Koum El Asfar	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
Housing	B	B	B	F	G	F	G	G
Transportation	G	B	B	F	F	B	F	G
Primary schools	B	F	B	F	F	F	F	F
Preparatory schools	B	F	B	F	F	F	F	F
Secondary schools	N/A	N/A	N/A	N/A	F	F	F	N/A
Health care	B	B	B	B	B	B	B	B
Electricity	F	F	F	F	F	F	F	F
Potable water	G	G	F	E	F	F	B	B
Roads	G	G	B	F	G	G	G	G
Security	G	G	G	G	G	G	G	G
Veterinary facilities	N/A	N/A	F	F	F	B	B	N/A

G = good; F = fair; B = bad; N/A = not available.

Source: Results of RRA women's group meetings, 1994.

Table 25. Summary of women's activities (% participating) in the Old Lands (1994).

Items	Sohag		Beni Sueif		Gharbia		Dakahlia	
	Awlad Dawoud	El Koum El Asfar	El Telt	Qemn El Arous	El Sheen	El Shoni	El Robi	Satamoni
Travel outside village	10%	---	30%	25%	50%	90%	80%	50%
Participation in agricultural production	---	---	30%	30%	40%	50%	50%	40%
Participation in livestock production	80%	95%	90%	80%	75%	100%	75%	75%
Raising poultry	90%	95%	90%	90%	100%	100%	100%	90%
Participation in decision making	10%	15%	30%	35%	60%	60%	65%	70%
Participation in off-farm income	5%	10%	15%	15%	25%	20%	25%	20%
Participation in on-farm income	No	No	15%	15%	20%	20%	20%	25%
Responsibility for household expenditures	5%	10%	15%	15%	25%	20%	25%	20%
Control of off-farm income	No	No	No	No	No	No	No	No

Source: Results of women's group meetings, 1994.

Table 26. Profitability ranking (eight point scale) for the main crops (1994).

Governorate/ village	Profitability %						Total
	Wheat	Faba bean	Corn	Sorghum	Rice	Cotton	
<b>Sohag</b>							
El Koum El Asfar	3	5	4	1	---	4	17
Awlad Dawoud	1	4	7	2	---	8	22
<b>Beni Sueif</b>							
El Telt	7	6	8	---	---	7	28
Qemn El Arous	6	4	6	---	---	6	22
<b>Gharbia</b>							
El Sheen	5	1	5	---	3	5	19
El Shoni	8	8	3	---	4	1	24
<b>Dakahlia</b>							
El Robi	2	2	1	---	1	3	9
Satamoni	4	7	2	---	2	2	17

Source: Calculated from Tables 14 through 19.



