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Reform Design and Implementation

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STUDY ON NEW LANDS STATISTICS

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In collaboration with
Economic Affairs Sector/MALR
And
Reform, Design and Implementation Unit/APRP

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Finally, any errors and omissions should be attributed to the author and not to APRP, USAID, or MALR.

Abdel-Hamid Youssef Saad

TABLE OF CONTENTS

Background 1
Objectives 1
Locations of New Lands 2
Study Approach 4
Training 4

Sampling Technique 6
Sample Allocation 7
Questionnaire Formats 8
Data Editing and Verification 14
Data Entry 14

Main Findings 14
- **Sample Size** 14
- **Land Tenure** 14
- **Cropping Pattern** 15

- **Costs of Production** 19
  - Wheat 20
  - Maize 20
  - Short Berseem 21
  - Long Berseem 21
  - Barley 22
  - Fava Beans 23
  - Tomatoes 23
  - Potatoes 24
  - Green Pepper 25
  - Cucumber 25
  - Watermelon 26
  - Cantaloupe 27
  - Olives 27
  - Navel Oranges 28
  - Grapes 28
  - Peaches 29

- **Gross Margin** 30
  - Wheat 30
  - Maize 30
  - Short Berseem 31
  - Long Berseem 31
  - Barley 32
  - Fava Beans 32

Tomatoes..... 33
Potatoes..... 34
Green Pepper..... 34
Cucumber..... 35
Watermelon..... 35
Cantaloupe..... 36
Olives..... 36
Navel Oranges..... 37
Grapes..... 37
Peaches..... 38

Marketing Channels..... 39
Wheat..... 39
Maize..... 40
Short Berseem..... 41
Long Berseem..... 41
Barley..... 42
Fava Beans..... 42
Tomatoes..... 43
Potatoes..... 43
Green Pepper..... 44
Cucumber..... 44
Watermelon..... 45
Cantaloupe..... 45
Olives..... 46
Navel Oranges..... 47
Grapes..... 47
Peaches..... 48

Problems Encountered..... 49
Lessons Learned..... 51

Background

Statistics published by the General Authority for Rehabilitation Projects and Agricultural Development **(GARPAD)** indicate that about 2.7 million feddans of mainly desert land have been reclaimed during the period from 1952 to 1997. Several studies have indicated that small farmers and graduates operating on the New Lands face crucial problems in producing and marketing their crops. These study results differ according to the location studied and the system of farming used. In reclamation projects with reliable water resources and favorable marketing conditions, small farmers and small investors receive relatively favorable returns. Otherwise, small farmers in the New Lands tend to suffer in production and in marketing.

The lack of adequate and reliable statistics on the New Lands encouraged the Agricultural Policy Reform Program **(APRP)** and the Monitoring, Verification and Evaluation **(MVE)** Unit to conduct a study on the **"Availability and Quality of Agricultural Data for the New Lands in Egypt,"** Impact Assessment Report No. 12. Among the report's various recommendations is that EAS should develop a comprehensive, nationwide sampling frame based on the census-reporting cluster used in the Agricultural Census **(AC)**. This should include selecting the necessary critical information. The Economic Affairs Sector **(EAS)** of the Ministry of Agriculture and Land Reclamation **(MALR)** produces and publishes annual and seasonal agricultural statistical data covering mainly the Old Lands and selected parts of the New Lands. This well-established system of data collection and reporting is relatively objective and efficient. Up until now there has been no similar system for the regular collection and tabulation of the agricultural statistics for the New Lands. Large areas of the New Lands produce horticultural crops mainly for export and are considered "clean agriculture." Government policy makers and investors cannot study or plan for agricultural development in the New Lands due to the lack of a regularly scheduled objective collection and tabulation of agricultural statistics.

This activity will establish a database for agricultural statistics of the New Lands based on sampling and crop-budgeting techniques. The database that is established for the Old Lands of the valley proves its importance and validation. Establishing a database for the New Lands according to the same or modified scientific methodologies would help complete the database for the Egyptian agricultural sector.

Objectives

The study's main objective is to help EAS/MALR in implementing the recommendations reported in the MVE Unit study. The Reform Design and Implementation Unit **(RDI)** will assist EAS in regularly preparing and providing adequate statistical data of the New Lands through pilot trials in four desert governorates: North Sinai, Ismaelia, Fayoum, and the Nobarya region. This will include preparing the sampling form and procedures for regular collection of field data in addition to tabulating, analyzing, and publishing these data in a statistical book.

Two phases of this project have been conducted:

1. The first phase included sampling and field data collection, along with training the EAS staff who are responsible for field data collection.
2. The second phase included data entry and tabulation in addition to the analyses and publishing.

Tasks:

1. Preparing the sampling frame for the New Lands.
2. Selecting the sample for data collection.
3. Preparing the different formats for collecting the data related to cropping pattern, inputs and outputs, as well as production and marketing for the various agricultural commodities produced in the New Lands.
4. Preparing data entry procedures to establish a database for the New Lands.
5. Tabulating and analyzing the data.
6. Preparing the statistical book for publication by EAS/MALR.
7. Conducting workshops in governorates for training local staff as well as conducting workshops for the Government of Egypt (GOE) and MALR staff and investors to evaluate the plan and its outcome.

Locations of New Lands

For the first time, the 2000 census collected data on the New Lands in Egypt. A summary of this data is presented in Table 1. The table indicates that the total area of the New Lands amounted to 2.5 million feddans distributed among approximately 253,000 farm holdings. The largest proportion of these New Lands is located in lower Egypt, accounting for 53.7% of land and 56.1% of the total number of holdings. Upper Egypt and the desert lands include approximately 29.9% and 16.4%, respectively, of the number of farms and 21.2% and 22.8%, respectively, of the total area of the New Lands.

TABLE 1
LOCATIONS OF THE NEW LANDS IN EGYPT

	Governorate	Holdings			Area		
		Number	Percent of Region	Percent of Total	Feddan	Percent of Region	Percent of Total
1	Cairo	1498	1.1	0.59	16106	1.2	0.65
2	Alexandria	9879	7.3	3.90	80011	5.8	3.23
3	Port Said	4539	3.3	1.79	58095	4.2	2.35
4	Suez	2363	1.7	0.93	9851	0.7	0.40
5	Damietta	1855	1.4	0.73	25010	1.8	1.01
6	Dakahliah	16350	12.0	6.45	119587	8.6	4.83
7	Sharkia	19390	14.3	7.65	240746	17.4	9.73
8	Qaliobia	207	0.2	----	5704	0.4	0.23
9	Kafr El-Sheikh	23307	17.1	9.20	129923	9.4	5.25
10	Gharbia	.....	.....	------	.....	.....	.....
11	Menoufia	1478	1.1	0.58	80121	5.8	3.24
12	Beheira	49209	36.2	19.42	524690	37.9	21.20
13	Ismaelia	5935	4.4	2.34	96303	6.9	3.89
Total Lower Egypt		**136,010**	**100.0**	**53.66**	**1386147**	**100.0**	**56.01**
14	Giza	4624	6.1	1.82	211641	40.3	8.55
15	Bani Sweif	3077	4.1	1.21	27928	5.3	1.13
16	Fayoum	4377	5.8	1.73	27728	5.3	1.12
17	Minia	9194	12.1	3.63	45516	8.7	1.84
18	Assyout	4384	5.8	1.73	24312	4.6	0.98
19	Sohag	10543	13.9	4.16	30698	5.9	1.24
20	Qena	14902	19.7	5.88	44378	8.5	1.79
21	Luxor	774	1.0	0.31	1786	0.3	0.01
22	Aswan	23804	31.5	9.39	110668	21.1	4.47
Total Upper Egypt		**75679**	**100.0**	**29.86**	**524655**	**100.0**	**21.20**
23	North Sinai	17116	41.0	6.75	148310	26.3	5.99
24	South Sinai	1302	3.1	0.51	11817	2.1	0.48
25	Matrouh	19812	47.4	7.82	285916	50.7	11.55
26	New Valley	3493	8.4	1.38	117543	20.8	4.75
27	Red Sea	44	0.1	----	589	0.1	.....
Total Desert		**41767**	**100.0**	**16.48**	**564175**	**100.0**	**22.80**
Grand Total		**253456**	**100.0**	**100.0**	**2474977**	**100.0**	**100.0**

Source: The 2000 Agricultural Census, EAS, MALR.

Study Approach

Through coordination between the Economic Affairs Sector (EAS) of the Ministry of Agriculture and Land Reclamation (MALR) and the (RDI) of the APRP, a local consultant (the study's author) was hired and assigned the responsibility of preparing and supervising all the steps involved in the study's execution. Two groups, one located centrally and the other in the field, assisted the consultant. The central group (14 persons) included the heads of the EAS, CAAE, general directors of the GDAS and Sampling, the chiefs and technicians of the various departments of the EAS, and the data entry and processing specialist. The group's main tasks were as follows:

- Participating in preparing the questionnaire formats.
- Participating in the different steps of selecting the sample units.
- Participating in the pre-test visits to the study areas selected.
- Supervising and verifying field data collection.
- Reviewing, editing, verifying and correcting the questionnaire formats after data collection.
- Participating in data entry along with reviewing and verifying the data entry placed in the computer.

Participation of the central staff of the EAS' various departments was essential to effectively implement this activity and in order to continue and extend the activity after the APRP program is terminated.

A list of the central staff is included in Annex 1.

The second group (104 persons) consisted of the enumerators in the field. This group was composed of the heads of the agricultural statistics areas in the various governorates under study, as well as statistics technicians. Under the direction and supervision of the EAS, the technicians' main responsibility was to collect agricultural statistics from the field.

A list of the field staff is included in Annex 1.

Training

Two training sessions were provided for the field staff of each region. The first session was for two full days after which the formats were prepared in collaboration with the central staff. The main objectives of this first training session were as follows:

1. To acquaint the field staff with the different questionnaire formats.
2. To train the field staff on collecting and recording the data.
3. To obtain their reactions and recommendations concerning any changes required in the various formats.

On the second day of this session, the field staff were asked to make a pre-test of the formats under the supervision of the consultant and members of the central staff. The main objective of this pre-test was to identify any changes that were required in the

tables of the formats, as well as to provide practical training for field staff,. A blank copy was left with the enumerators so they could give it more thought and discuss any difficulties or any changes during the second session.

The second training session lasted one day for each group after making the necessary modifications to the formats. The main objective of this session was to receive final feedback from field staff concerning the formats and to discuss the steps that would be taken for data collection.

Members of the central staff participated in both training sessions. Their participation was essential for the success of this activity.

During several meetings with the head of the EAS, and due to limited time and resources, we decided to collect data and report in only four regions of the New Lands. These regions follow:

1. Nobarya Region, which covers New Lands located in four governorates: Alexandria, Beheira, Menoufia, and Giza
2. Fayoum Governorate
3. Ismaelia Governorate
4. North Sinai Governorate.

The EAS publishes agricultural statistics of the Old Lands on three administrative levels: district, governorate, and national. In some regions of the New Lands (e.g., Nobarya) such administrative units are not available. Accordingly, this region was classified into the districts and the governorates to which each area is administratively associated. Therefore, Nobarya data is recorded under the districts of Alexandria, Beheira, and Menoufia. The Giza area was excluded from this pilot study since some of its New Lands parcels have objectives other than agriculture, due to its close proximity to the urban sites of Cairo. Therefore, this study aimed at collecting data on the New Lands in six governorates: Alexandria, Behira, Menoufia, Fayoum, Ismaelia, and North Sinai. Percentages of the total New Lands, as recorded by the agricultural census and presented in Table 1, the number of holders and the area covered by this study in the six governorates are as follows:

New Lands Under Study	Holdings		Area	
	Number	Percent	Feddan	Percent
Alexandria	9879	3.9	80011	3.2
Beheira	49209	19.4	524690	21.2
Menoufia	1478	0.6	80121	3.2
Subtotal Nobarya	**60566**	**23.9**	**684822**	**27.6**
Fayoum	4377	1.7	27728	1.1
Ismaelia	5935	2.3	96303	3.9
North Sinai	17116	6.8	148310	6.0
Grand Total	**87994**	**34.7**	**957163**	**38.6**

The total New Lands area selected for this study includes 34.7% of the total number of farms in the New Lands and 38.6% of the total area of the New Lands in Egypt, according to the 2000 census.

Sampling Technique:

Multi-stage stratified random sampling was used in selecting the sample units in this study. The sample unit was the farm. Based on several considerations and with a confidence level of 0.90, we decided to select a sample of 1,170 farms out of the total number of farms in the New Lands, which according to the 2000 census, was 253,000. This sample number was selected through several stages:

- First Stage: Governorate Selection. Six governorates were selected as a pilot study for data collection in the New Lands.

- Second Stage: District Selection. Due to the unavailability of detailed information and statistics on the New Lands, we decided to cover all of the districts in the selected governorates. However, some governorates (i.e., Behira and Menoufia) contained districts that included Old Lands as well as New Lands. Only the districts that included New Lands were selected for this study. The following is a list of the districts in the six governorates that were included in this study:

  - Alexandria Governorate:
    - Borg El-Arab

  - Behira Governorate:
    - Kome Hamadah
    - Abou El-Matameer
    - El-Delingat
    - Housh Eisa
    - Wadi El-Natroun

  - Menoufia Governorate:
    - El-Sadat

  - Fayoum Governorate:
    - Fayoum
    - Ibshawai
    - Tamia

  - Ismaelia Governorate:
    - Ismaelia
    - El-Tall El-Kibeer
    - El-Qantarah Gharb
    - El-Qantarah Shark

  - North Sinai Governorate:
    - El-Areesh
    - El-Sheikh Zowaid

- Rafah
- El-Hasanah
- Elkosiemah
- Nekhel
- Beer El-Abd
- Rommanah

- Third Stage: Village Selection. A list of all villages in each district with New Lands was obtained from the 2000 census. A random sample of villages (25% of the number of villages in each district) was selected from that list using the tables of random numbers.

- Fourth Stage: Farm Selection. A list of all farm holdings in the selected villages was obtained from the 2000 census. At the time of selecting the sample for this study, the census data was not yet on the computer files; the data was still on the data collection formats. Entry of this data into the computer was made for all of the farms in the selected villages. Such data was still in its raw form without any classification for farm size. Therefore, these farms were classified by size into the following six categories:

  - Less than five feddans
  - Five to less than 10 feddans
  - 10 to less than 20 feddans
  - 20 to less than 50 feddans
  - 50 to less than 100 feddans
  - More than 100 feddans.

  A computer program randomly selected the sample farms from each of the six farm-size categories in the villages under study.

As some villages could be operated by military forces or government farms (i.e., agricultural research stations), or contain land allocated to veterans or absentee farmers, additional randomly selected villages and farms were selected for substitution if necessary.

Farm size is considered among the most important factors affecting production and costs in the New Lands. Although classifying farmers in the New Lands into the various categories of farm size would have been preferable from the beginning, the complete sampling frame was not on the computer at the time of sample selection. Due to the limited time available, only data related to the villages selected randomly in the sample were entered into the computer and classified according to farm size. Classification according to farm size was not possible at the first stage of sampling but was available at the end.

Sample Allocation:

The total sample size of 1,170 observations was allocated to the governorates, districts and villages according the number of New Lands farmers in each. Table 2 presents

the allocation of the total sample among the various governorates, districts and villages. The sample size that was determined from the beginning amounted to 1,170 observations. However, during the selection of farms from the farm-size categories, the computer was instructed to select a minimum of one observation from each category. This resulted in increasing the sample size to 1,200 observations. The sample units in some villages were very small, making it possible to combine the small numbers in some villages with other villages to reduce the effort of the data collection (especially transportation to the different villages). However, we found it would make no difference whether we kept the sample as is or consolidated the villages, because the New Lands are located far from urban areas, thus making transportation to the area more difficult than moving within it. Therefore, we kept the sample as it had been selected randomly.

Questionnaire Formats

The questionnaire formats that were used for field data collection were prepared in collaboration with the central team of the MALR. These questionnaires were based on the questionnaires and formats currently used by GDAS/CAAE for the collection of data on plant production from the Old Lands. The collection of data on livestock production was postponed until the next round of those activities in the Old Lands. The formats were discussed twice with the field staff and modified according to local conditions. The unified final formats consisted of five different formats, each designed for specific information about the farm. These formats are as follows:

- First Form: Farm General Information. In this format, the following data are recorded: total land tenure, non-agricultural land, unused agricultural land, and the legal method for operating on the land (i.e., owned, rented, allocated, squatters, and others). One such form was to be completed for each farm in the sample.

- Second Form: 1999-2000 Cropping Pattern. In this form the following data are recorded: a list of crops cultivated during the agricultural year 1999-2000 with crops listed in the sequence of the farm's crop rotation (i.e., winter, summer, and nili crops) in addition to the permanent crops that include fruit trees and the sum of the cropped area. The information recorded for each crop includes the variety of the crop cultivated, the area, the method of cultivation (whether single crop or inter-planted), the type of system (open or protected), source of irrigation water, and the volume of the main product and the by-product. One such form was to be completed for each farm in the sample.

- Third Form: Cost of Power Inputs. This form classifies the sources of power in agricultural production into three categories:

  - Human Power.
    This category includes the amount and cost of the labor of children, women and men. All labor input was recorded on the basis of man-days where the labor of men and women was transferred to man-days on the basis of 1:1, while the labor of children was transferred on the

basis of 1:½. Conversely, labor input was classified into family labor and hired labor. The costs of hired labor and family labor were treated alike based on the market wage rate for each of the farming activities. The technical coefficient and the cost of each type of labor were recorded separately so that both financial and economic analysis of farming could be made with the data.

- Animal Power.

The type of farm animal, the number of working days and the cost per day were recorded for each of the farming activities. No classification of animals from the farm or from outside the farm was made due to the limited amount of farm animals being used in agricultural production in the New Lands, where farming depends mainly on machinery.

- Machinery Power.

Similar to animal power, the input of farm machinery in each farm operation was classified as type of machine, time and cost. The cost of the owned farm machinery was treated the same as the hired farm machinery. A tremendous amount of information is required to determine the actual cost of owned machinery, which was not necessary for this pilot study since its primary purpose is to present information about land tenure and cropping patterns in the New Lands.

One such form was to be completed for each crop recorded on the second form concerning the cropping pattern.

- Fourth Form: Cost of Material Inputs. This form includes the amount and cost of all different material inputs including seeds and seedlings, chemical fertilizers by type and concentration, organic fertilizers, insecticides, packing materials, and other materials and expenses. For each type of input, data on the source, variety, unit, amount used, and the price per unit were to be recorded. Some types of organic fertilizers and packing materials generally benefit and are used in different crops. Accordingly, the amount and cost of such inputs are divided over the number and types of crops benefiting from that input. Due to the long distance between the New Lands and the urban centers where farm inputs are sold, large costs are involved in transporting these inputs to the farm. Therefore, the column for the price per unit of any input was subdivided into two columns: one for the price at the store and the other for the price at the farm. The difference here is the procurement cost, which would be paid by the farmer at any rate, either through a higher price at the farm when the input is delivered or through a relatively lower price at the retail store, but with the farmer incurring the cost of transporting the input to the farm. Both types of procurement could be used by the same farmer or by different farmers for different crops. Because of this situation, a space for recording these two prices was made available on this form.

A copy of this form was to be completed for each crop recorded in the second form concerning cropping pattern.

- Fifth Form: Production and Marketing Channels. In this form, the main product and the by-product of each crop listed in the second form (cropping pattern) was to be recorded in the same sequence. For each crop listed and for the main and by-product, the following information was to be recorded: unit of output, amounts kept for home use (whether for consumption, gifts, payments in kind, use as animal feed, or retained for next year's seeding), amount sold with details about each of the marketing channels for a given crop, amount and price for each channel, and total value of the amounts sold. The amounts kept for home use are valued according to the average price of the quantities of the same crop sold. The total value of each crop is the sum of the value of the main product and the value of the by-product.

  A copy of this form was to be completed for a number of crops depending on the number of marketing channels involved in the marketing of any crop from the farm under consideration. Additional copies could be used in the case of large farms or large number of commodities and marketing channels.

  An Arabic copy of the questionnaire formats is included in Annex 2.

Detailed instructions were prepared to explain the terminology used in the various formats of the questionnaire, along with instructions relating to details of the data to be collected from the farmers and the correct recording of the data.

A copy of these instructions is included in Annex 3.

As previously mentioned, the central committee participated in preparing the different formats of the questionnaire as well as the instructions and definitions. Several sessions were held for that purpose. Each group of field staff attended two training sessions for these formats at different times before data collection. The consultant and the central team visited the different regions under study during the period of data collection to meet with the enumerators and discuss and solve any problems they faced regarding data collection or recording in order to ensure accuracy of the data.

TABLE 2
TOTAL NUMBER OF HOLDINGS AND SAMPLE UNITS

Administrative Unit	Total Number	Sample units
Alexandria Governorate:	**9879**	**173**
Borg El-Arab:	**9516**	**173**
Saidna Noman 21	174	16
Salama Higazi	153	14
Saidna Ishaq	306	27
Tanmia Village	479	43
Abou El-Sooud	466	42
Saidna Ayoub 4	344	31
Behira Governorate:	**39432**	**618**
Kome Hamadah District:	**13286**	**206**
Omar Makram	323	14
Bagdad	247	10
Nabeel El-Wakkad	687	29
Abou Bakr El-Siddik	613	26
25th. January Village	368	16
El-Maarakah	1081	46
El-Takwa Village	202	9
Al-Okhowwa Village	91	4
Al-Iman Village H	667	28
Omar Ibn El-Khattab	320	14
Khlid Ibn El-Waleed	239	10
Abou El-Matameer District:	**8083**	**128**
El-Sadakah	272	16
El-Tasehah Bothour	214	13
El-Amal	365	22
Elaashirah Madrasah	248	15
El-Lohoum	498	30
El-Izzah	538	32
El-Dilingat District:	**2083**	**32**
Ahmad Rami	618	32
Housh Eisa District:	**4104**	**66**
El-Shaashaey	137	10
Abdel-Monem Ryad	350	25
Ali Ibn Abi Talib	436	31
Wadi El-Natroun District:	**11876**	**186**
Aziz	590	26
Taha Hussein	177	8

Al-Imam Malik		1604		72
Sons & Youth of Gharbia		725		32
Salah El-Abd		511		23
El-Safa & El-Marwa		532		25
Menoufia Governorate:	**1090**		**18**	
Sadat District:	**1090**		**18**	
New Khatatba		362		11
Sadat City		435		7
Fayoum Governorate:	**3385**		**54**	
Fayoum District	**94**		**2**	
Green Wealth Coop		44		2
Ibshawai District	**3056**		**48**	
Koutah		465		11
Saidna El-Khedr &Rayan		1723		37
Tamia District	**235**		**4**	
Kome Aushim		151		4
Ismaelia Governorate:	**4635**		**74**	
Ismaelia District:	**331**		**6**	
El-Salam Coop		185		6
El-Tall El-Kibeer District:	**1024**		**16**	
El-Kamal		46		2
Amoun		33		2
Wadi Elmoullak		433		12
El-Kantarah Gharb District:	**1243**		**20**	
Al-Islah		178		9
Al-Alameen		200		11
Elkantarah Shark District:	**2037**		**32**	
Sinai Working Abroad		134		14
East First Lakes		31		5
Sinai Heroes		131		13
North Sinai Governorate:	**17116**		**262**	
El-Sheikh Zowaid District:	**5021**		**76**	
El-Sheikh Zowaid		843		37
El-Kilo 8		359		16
El-Toumah		173		8
El-Thaheer		357		15
Rafah District:	**4624**		**70**	

Rafah	1769	52
El-Mahdia	230	11
El-Tayrah	368	7
El-Hasanah District:	**199**	**4**
El-Gifgafah	8	2
El-Mafarik	5	2
Elkosiemah District:	**399**	**6**
El-Maghfar	27	1
Wadi El-Omr	139	5
Nekhel District:	**197**	**4**
Sadr El-Heitan	37	2
El-Timid	6	1
El-Brouk	18	1
Beer El-Abd District:	**1557**	**24**
El-Nagah	103	5
Beer El-Abd	421	19
Rommanah District:	**3247**	**50**
El-Salam	74	5
El-Shouhadaa	131	8
El-Ahrar	42	3
El-Nakhilah	516	34
El-Areesh District:	**1872**	**28**
El-Taweelah	148	12
El-Sabeel	189	16

Data Editing and Verification

The data collected for this study was reviewed and verified three times:

1. After collecting the data from the farms, the heads of the statistics offices in the different regions reviewed the formats and verified the data to assure appropriate completion of the formats.

2. After receiving the completed questionnaires, the central staff checked and verified that the questionnaires were complete and consistent.

3. After data entry into the computer units, the central committee reviewed and verified the different data on the computer files.

Data Entry

For the last few years the EAS entered the data for "Farm Income" activity in the Old Lands into the computer network of the EAS, where a specific program was available for analyzing data collected in that activity (Statistical Package for Social Sciences – SPSS). Part of the "farm income" data related to land tenure, cropping pattern and the costs of production for each farm under study. This program was made available for the analysis of the data collected on statistics for the New Lands. The staff of the computer section of the EAS was responsible for the entry and the output of the results under the supervision of the consultant and the central team.

Main Findings

Sample Size:

Table 3 presents the number of farms and the land area included in the sample selected for this study. The total number of farms included in the study amounted to 1,198 farms covering an area of 20,300 feddans. The farm size category of less than 5 feddans accounted for 43.1% of the sample farms covering 6.13% of the sample area. The second category (from 5 feddans to less than 10) included 32.64% of the farms and covered 12.12% of the sample area. The third category (from 10 feddans to less than 20) included 13.56% of the farms and covered 10.15% of the area. The fourth category (from 20 feddans to less than 50) included 2.67% of the farms and covered 9.12%. The fifth category (from 50 feddans to less than 100) included 2.67% of the farms and covered 9.58% of the area. The largest category (more than 100 feddans) included 1.67% of the farms and covered 52.9% of the area.

Land Tenure:

A summary of land tenure data is presented in Table 4, which indicates that the land tenure system varies among the governorates under study in size, percentage of cultivated land, and legal type as follows:

- Regarding size, the largest average size of farm (44.3 feddans) was in Menoufia, where about 35% of the sample farms was in the fifth category (between 50 and 100 feddans) and approximately 18% of the farms were more than 100 feddans. The smallest size of farms was in North Sinai (12.4 feddans) and Fayoum (8.3 feddans).

- The percentage of the cultivated area out of the total size of the farms in the sample was the highest in Alexandria (99.5%) and Behira (92.2%); the lowest ratio was in North Sinai (61.8 %).

- Owned land is dominant in Menoufia, accounting for 100% of the farm holdings, and in Ismaelia, accounting for 91.5% of the sample farms.

- Squatters are dominant in North Sinai (93.3% of holdings), while this type of farming is practically nonexistent in the other governorates.

- Land rent in the sample farms is negligible in Alexandria and North Sinai and does not exist in the other governorates under study.

- Allocated land (especially for graduates) is the highest ratio of the sample farms in Alexandria, accounting for 61.3%, followed by Behira (47.6%) and Fayoum (45.9%), 5.3% in Ismaelia, 0.1% in North Sinai, and does not exist in the sample farms of Menoufia.

- Land ownership increases continuously from 4.1% in the second category (5-10 feddans) to 94.5% in the largest category (over 100 feddans).

- In Alexandria, allocation of land existed for all farm-size categories, with more concentration in the first three (up to less than 20 feddans). In Fayoum, no concentration appears to exist among the different categories. In Behira, allocation is made for the largest category (more than 100 feddans) only.

Cropping Pattern:

Annex 4 presents detailed information about the crops produced on the study's sample farms and the area of each crop in each of the governorates. Table 5 presents a summary of the cropping pattern for the sample farms and indicates the following:

- The permanent crops (mainly fruit trees) represent the main cropping pattern as they account for 70-76% of the cropped area in Menoufia, Fayoum, and North Sinai. In these governorates, winter crops account for 16-25% of the cropped area, with the summer season accounting for less than 8%.

- In Behira and Ismaelia, permanent crops account for 33-36%, while winter and summer crops account for about one-third each of the cropped area.

Being close to consumer centers, the farms in these two governorates concentrate on horticultural crops, especially perishable vegetables.

- In Alexandria, permanent crops are nearly nonexistent, with the cropped area divided nearly equally between winter and summer vegetables.

- In Behira and Ismaelia, the ratio of permanent crops increases with farm size (from 3-8% in the smallest size category to 71-95% in the largest category). Accordingly, winter cropped area decreases from 46-48% in the smallest category to 5-15% in the largest category.

- No specific cropping pattern was found among the different farm size categories in Menoufia, Fayoum and North Sinai.

- The cropping pattern is nearly the same for all farm size categories in Alexandria.

Table 6 indicates that permanent crops account for approximately 40% of the crops in the New Lands. These crops are mainly oranges, grapes, peaches and olives. These crops are most suitable for drip irrigation, which is recommended for New Lands' cultivation. Field crops (e.g., wheat, maize, and long berseem) occupy about 25.12% of the cropped area in 1999-2000.

TABLE 3
SAMPLE SIZE AND AREA

Governorate	< 5 Fed.		5 to < 10		10 to < 20		20 to < 50		50 to < 100		Over 100		Total	
	No.	Av.	No.	Av.	No.	Av.	No.	Av.	No.	Av.	No.	Av.	No.	Av.
Alexandria	5	3.60	125	5.74	16	10.38	2	28.50	1	50.00	2	218.00	151	9.57
Behira	339	2.57	179	5.39	60	12.53	31	24.71	8	56.25	7	1163.07	624	19.14
Nenoufia	3	1.39	2	7.48	3	15.56	....	....	6	63.33	3	102.67	17	44.34
Fayoum	43	2.45	3	7.42	4	12.40	3	24.36	1	68.00	1	140.00	55	8.33
Ismaelia	21	2.48	17	6.07	14	12.29	10	28.4	7	62.17	3	183.33	73	28.50
N. Sinai	105	1.84	65	6.76	69	12.68	26	25.82	9	62.57	4	176.51	278	12.4
Total	516	2.41	391	6.30	166	12.42	32	57.86	32	60.81	20	537.28	1198	16.95

TABLE 4
LAND TENURE IN THE NEW LANDS

Governorate	Average size of farm (Fed)	Cultivated area		Owned		Squatters		Rent		Assigned		Other	
		Fedd.	%	Feddan	%	Fedd.	%	Feddan	%	Feddan	%	Feddan	%
Alexandria	9.57	9.52	99.52	3.65	38.28	0.00	0.00	0.04	0.42	5.84	61.30	0.00	0.00
Behira	19.14	17.65	92.2	9.25	52.39	0.01	0.02	0.00	0.00	8.40	47.58	0.00	0.00
Menoufia	44.34	32.57	73.45	32.57	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fayoum	8.33	7.24	86.91	3.79	52.39	0.09	1.19	0.04	0.53	3.33	45.92	0.00	0.00
Ismaelia	28.50	85.08	98.54	77.82	91.47	2.77	3.25	0.00	0.00	4.49	5.28	0.00	0.00
North Sinai	12.40	7.66	61.80	0.41	5.37	7.15	93.34	0.00	0.00	0.01	0.14	0.09	0.15

TABLE 5
CROPPING PATTERN IN THE NEW LANDS

Governorate	Cropped Area (Feddan)	Winter Season		Summer Season		Nili Season		Permanent Crops	
		Fedd.	%	Fedd.	%	Fedd.	%	Fedd.	%
Alexandria	18.71	9.52	50.87	9.14	48.85	0.00	0.00	0.05	0.28
Behira	15.04	5.04	33.50	4.89	32.51	0.02	0.15	5.09	33.84
Menoufia	30.39	7.59	24.97	1.41	4.65	0.00	0.00	21.39	70.38
Fayoum	7.87	1.28	16.29	0.51	6.47	0.11	1.39	5.97	75.86
Ismaelia	16.87	6.00	35.59	4.72	27.97	0.00	0.00	6.15	36.44
North Sinai	7.67	1.70	22.12	0.19	2.42	0.00	0.00	5.79	75.47

TABLE 6
MAIN CROPS PRODUCED IN THE NEW LANDS
(1999-2000 season)

Crop	Area (feddans)	Percent of Total
Wheat	2680	13.13
Maize	1390	6.81
Long Berseem	1057	5.18
Olives	706	3.46
Tomatoes	709	3.47
Navel Oranges	5401	26.46
Watermelon	727	3.56
Mandarins	500	2.45
Grapes	658	3.22
Peaches	884	4.33
Other Crops	5697	27.92
Total	20409	100.0

Costs of Production:

Production costs has been defined to include only the variable costs, which are the costs associated with the production of a given commodity. They include items such as seed, fertilizer, insecticides, machinery inputs and human labor that are not incurred when there is no production. They do not include any fixed costs such as land taxes, insurance, interest, and depreciation on buildings and machines, which are incurred whether there is production or not.

The value of production is calculated by multiplying the total volume of the final product by its average farmgate price. The revenue is consequently the difference between costs of production and the value of production.

Data on cost of production was collected using the questionnaire formats previously discussed, with an Arabic copy attached in the annex of this report. In calculating the costs of production, the following points were taken into consideration:

- Costs estimated in this report are the direct variable costs associated with the production of each specific crop. No attempt was made to collect data on the overhead costs of the farm and allocate them to the different crops produced on the farm during the 1999-2000 agricultural season. We decided on this method in order to have data comparable to the data on production costs for the Old Lands that have been published by MALR since 1934.

- In calculating the cost of human labor, labor of women and men was converted to man-days using the ratio of 1.0:1.0, while child labor was converted to man-days using the ratio of 0.5:1.0.

- Power inputs include human labor, animal power and machinery input into the farming operation of each crop.

- Inputs from the farm were identified separately to differentiate between financial and economic analysis of the farming system if necessary.

- The cost of family labor in any farming operation was based on the wages of hired labor in that operation at the village level.

- The land cost was estimated as the land rent on the farm level for the period of the growing season for each crop.

- The value of production for each crop was based on the price for the raw agricultural commodity at the farm gate at the time of harvest.

- Costs and value of production for the majority of field crops are very low in North Sinai governorate. The crops grown there on rain-fed lands have suffered from severe droughts within the last few years.

The following paragraphs present the cost estimates of producing some selected main crops grown in the New Lands and the revenue per feddan. The detailed data for the other crops grown in the New Lands are available in the second volume of this report.

Wheat:

The lowest cost and value of wheat production was in North Sinai, where wheat is grown on rain-fed lands. North Sinai has faced drought within the last few years, which severely affected crops grown there. Most of the wheat was grazed by sheep and goats. No land rent was estimated for wheat, as most of the land in North Sinai is operated by squatters with no ownership rights. In the other governorates where wheat was grown, there was a large difference in costs and in the value of wheat produced in the different regions. Most of the difference in costs was due to the great difference in land rent, which was highest in Alexandria. Consequently, the revenue per feddan varied from a positive value (LE 95 in Behira) to a negative revenue in three regions (about LE -208 in Alexandria) as indicated in Table 7. Farm size had no relation to the costs and value of wheat production in the New Lands.

TABLE 7
PRODUCTION COST AND VALUE OF PRODUCTION
WHEAT (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	276.4	483.5	789.3	1549.1	1341.3	- 207.8
Behira	271.4	416.7	359.2	1047.3	1142.4	95.1
Menoufia	....	....	....	....	...	....
Fayoum	360.4	339.8	257.5	957.6	870.1	- 87.6
Ismaelia	314.1	382.7	339.7	1036.5	906.9	- 129.6
North Sinai	28.1	24.9	0.0	53.1	61.9	8.8

MAIZE:

Great differences were seen in the production of maize in the New Lands, most of which was due to the differences in the material inputs and land rent. Even though little difference was realized in the value of production among the different New Land regions, the large differences in the variable costs of production caused great differences in the revenue per feddan of maize (from a positive value in two regions reaching LE 100 in Behira to a negative value in three regions, reaching LE -206 in Alexandria) as indicated in Table 8. Farm size did not show an effect on costs of production or the value of production.

TABLE 8
PRODUCTION COST AND VALUE OF PRODUCTION
MAIZE (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	275.6	469.7	517.5	1262.8	1056.8	- 206.0
Behira	347.3	370.9	340.2	1058.4	992.5	- 65.9
Menoufia	....	....	....	....	....	....
Fayoum	324.5	221.5	333.3	879.3	980.0	100.7
Ismaelia	348.1	380.6	233.7	962.4	873.2	- 89.2
North Sinai	342.0	503.8	0.0	845.7	927.5	81.8

Short Berseem:

As all agriculturists know, short berseem (Alfa Alfa) is grown for a short period of time before land preparation for cotton growing. That is why it is common in cotton growing areas. Similar to maize, there were great differences in the costs of production but little differences in the value of production between the different regions under study in the New Lands. As a result, a very small positive revenue per feddan was realized in Ismaelia (LE 7) and a negative value in another two regions, (LE -268 in Alexandria and LE -4 in Behira) as indicated in Table 9. Examination of the differences among the alternative farm size categories show that production costs seems to have a negative relationship with farm size and consequently a positive relationship with the revenue per feddan.

TABLE 9
PRODUCTION COST AND VALUE OF PRODUCTION
SHORT BERSEEM (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	169.7	151.2	516.4	837.3	569.8	- 267.5
Behira	176.3	105.4	408.7	690.4	694.3	- 3.9
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	315.7	174.3	103.0	593.0	600.0	7.0
North Sinai	....	....	....	....	....	....

Long Berseem:

Long berseem (Alfa Alfa) is grown as a single crop in the rotation providing the farmer with several cuts and ultimately with seeds at the end of the growing season. Long berseem was grown in four out of the six regions of New Lands in this study. Little differences were realized in the variable costs of production between the

regions, but greater differences were realized in the value of production, which caused great variations in the revenue per feddan. Even though all regions producing long berseem realized positive returns, these returns varied (from a minimum of about LE 67 per feddan in Alexandria to about LE 807 per feddan in Fayoum) as indicated in Table 10. Similar to short berseem, farm size seems to have a negative relationship with costs of production but not with value of production, therefore having a positive effect on net returns per feddan.

TABLE 10
PRODUCTION COST AND VALUE OF PRODUCTION
LONG BERSEEM (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	92.3	171.0	668.8	932.1	999.0	66.9
Behira	278.7	180.7	362.7	822.1	1292.4	470.2
Menoufia	....	....	....	....	....	....
Fayoum	321.1	171.9	155.6	648.6	1455.6	807.0
Ismaelia	292.5	239.8	203.0	735.3	831.6	96.3
North Sinai	....	....	....	....	....	....

Barley:

The costs and value of production of field crops grown in rain-fed lands in North Sinai realized the lowest value due to the drought within the last few years. Among the other three regions producing barley, smaller differences existed in costs of production than the differences in the value of production, with great variation in the revenue per feddan (from a small positive value of about Le 38 in Behira to a negative value in the other two regions, reaching about LE -521 in Ismaelia) as indicated in Table 11. Examining the effect of farm size on costs and value of production did not show any relationship.

TABLE 11
PRODUCTION COST AND VALUE OF PRODUCTION
BARLEY (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	309.6	394.3	318.4	1022.3	1060.2	37.8
Menoufia	....	....	....	....	....	....
Fayoum	229.2	116.7	323.5	669.4	386.0	- 283.5
Ismaelia	228.0	376.2	400.6	1004.8	483.7	- 521.2
North Sinai	30.3	30.5	0.0	60.8	59.9	- 0.9

Fava Beans:

Fava beans are grown in four out of the six governorates under study. Great differences were realized in both the costs and value of production of fava beans among the four regions. Most of the differences in costs were due to the large differences in land rent. As a result, great differences were realized in the net revenue per feddan (from a positive value of LE 158 in Behira to a negative value in the other three governorates reaching about LE -479 in Fayoum governorate) as indicated in Table 12. Examining the effect of farm size on costs and value of production did not show either a negative or positive relationship.

TABLE 12
PRODUCTION COST AND VALUE OF PRODUCTION
FAVA BEANS (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	290.8	434.7	649.7	1375.2	1200.7	- 174.4
Behira	293.5	270.5	298.4	862.4	1020.3	158.0
Menoufia	....	....	....	....	....	....
Fayoum	562.2	441.6	84.0	1087.9	608.5	- 479.4
Ismaelia	338.4	258.9	257.2	854.4	578.3	- 276.1
North Sinai	....	....	....	....	....	....

Tomatoes:

Tomatoes, an important vegetable crop, are produced in all six regions of the New Lands under study. The crops presented previously in this study are mainly low-value crops in both costs and value of production per feddan. However, the following crops (including tomatoes) are mainly high-value crops in both costs and revenue per feddan. Great differences were realized in both the costs and the value of tomato production among the different regions. Most of the difference was due to the differences in land rent (from about LE 847 in Menoufia to about LE 17 in North Sinai). Value of production per feddan varied from the lowest (LE 2,820 in Alexandria) to the highest (LE 5,448 in Menoufia, which has highly specialized farms). All regions under study realized positive revenue in the production of tomatoes, varying from a minimum of about LE 619 in Fayoum to a maximum of about LE 2996 in North Sinai, as indicated in Table 13. There appears to be a negative relationship between farm size and costs and value of production. Small farms are able to give more care to such sensitive crops (especially in harvesting) than are large farms. This might explain the high cost and high value of the tomato crop per feddan on small farms.

TABLE 13
PRODUCTION COST AND VALUE OF PRODUCTION
TOMATOES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	408.8	966.0	541.5	1916.3	2820.0	903.7
Behira	564.2	846.5	270.2	1680.9	3188.4	1507.5
Menoufia	375.8	1375.9	846.6	2598.2	5448.3	2850.1
Fayoum	818.0	1101.2	365.4	2284.5	2903.9	619.3
Ismaelia	620.7	1671.7	326.5	2618.8	4806.2	2187.4
North Sinai	359.7	1147.8	16.9	1524.4	4520.7	2996.3

Potatoes:

Potatoes are produced on the farms in only Behira and Ismaelia. Variable costs per feddan in Ismaelia were greater than the cost in Behira due to Ismaelia's high costs of material inputs. With little difference in the value of production, revenue per feddan of potatoes was higher in Behira, (LE 1,767 as compared to LE 503 in Ismaelia) as indicated in Table 14. Large areas of Behira's New Lands produce potatoes mainly for export under "clean agriculture" (i.e., without using any chemical fertilizers or insecticides but only organic matters). Similar to tomatoes, there appears to be a negative relationship between farm size and costs and value of production. Again, small farms might provide more care to the crop than large farms with higher costs and revenue per feddan.

TABLE 14
PRODUCTION COST AND VALUE OF PRODUCTION
POTATOES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	341.4	1529.5	226.0	2096.9	3863.8	1767.0
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	425.0	2972.5	100.0	3497.5	4000.0	502.5
North Sinai	....	....	....	....	....	....

Green Pepper:

Great variations were realized in the costs of production of green pepper among the governorates under study in the New Lands (from LE 1,031 in North Sinai to LE 2,717 in Ismaelia). This difference in costs is due mainly to the difference in both material inputs and land rent. Less variation was realized in the value of production. The end result was greater variation in the revenue per feddan (from a negative value of about LE -817 in Ismaelia to a positive value of about LE 1,548 in North Sinai) as indicated in Table 15. Similar to tomatoes and potatoes, a negative relationship appeared between farm size and the costs and value of green pepper production. Small farms seem to provide more care to such crops with higher costs, value of production, and revenue per feddan.

TABLE 15
PRODUCTION COST AND VALUE OF PRODUCTION
GREEN PEPPER (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	482.2	1165.1	672.6	2319.9	2785.7	465.8
Behira	496.7	548.8	222.7	1268.3	1796.3	528.0
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	995.01	1030.8	691.7	2717.4	1900.0	- 817.4
North Sinai	198.9	831.6	0.0	1030.6	2578.7	1548.1

Cucumber:

Cost for producing cucumber was about 80% higher in Ismaelia than in Alexandria due to the large difference in material inputs. However, the value of production in Ismaelia was more than three times the value per feddan in Alexandria. Behira realized higher costs but lower value of production than Alexandria. As a result, the revenue per feddan varied (from LE 58 in Behira to LE 4,517 in Ismaelia) as indicated in Table 16. In the three regions that produce cucumber, only farms with less than five feddans produced that crop.

TABLE 16
PRODUCTION COST AND VALUE OF PRODUCTION
CUCUMBER (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	520.0	623.9	250.0	1293.9	2133.3	739.4
Behira	556.0	780.0	58.3	1394.3	1451.8	57.5
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	688.0	1460.0	175.0	2323.0	6840.0	4517.0
North Sinai	....	....	....	....	....	....

Watermelon:

Watermelon seems to be a minor crop in North Sinai, realizing lower production cost, production value, and revenue per feddan among the four governorates producing watermelon under this study. Production costs in Behira were nearly double those in Fayoum, while the value of production was two-and-one-half times as much. The difference in costs was due mainly to the difference in both material inputs and land rent. Ismaelia was higher than Fayoum in both production costs and value of production. Therefore, the revenue per feddan in Behira was three-and-one-half times as much as that in Fayoum, as indicated in Table 17. A positive relationship appears to exist between farm size and the costs, value of production, and revenue per feddan. Larger farms incur higher costs in the production of watermelon but realize higher value of production and revenue per feddan.

TABLE 17
PRODUCTION COST AND VALUE OF PRODUCTION
WATERMELON (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	318.2	394.6	295.8	1008.6	2006.1	997.6
Menoufia	....	....	....	....	....	....
Fayoum	259.8	175.2	85.7	520.7	806.9	286.2
Ismaelia	318.5	255.1	239.1	812.6	1118.3	305.7
North Sinai	37.1	27.6	0.0	64.7	110.0	45.3

Cantaloupe:

Little variation was realized in the costs of production between governorates due mainly to the large difference in material inputs (from LE 309 per feddan in Fayoum to LE 1,795 in Ismaelia). In addition, land rent varied from LE 940 in Alexandria to LE 7 in North Sinai (where squatters operate most of the land). Greater differences were realized in the value of cantaloupe production (from LE 1,800 in Ismaelia to LE 5,289 in North Sinai). It seems that North Sinai is a major cantaloupe-producing area. Tremendous variation appeared in the revenue per feddan (from a negative value of about LE -957 in Ismaelia to a positive revenue of about LE 3,646 in North Sinai) as indicated in Table 18. No relationship appeared to exist between farm size and costs and value of production.

TABLE 18
PRODUCTION COST AND VALUE OF PRODUCTION
CANTALOUPE (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	299.5	870.8	940.2	2110.5	2960.7	850.3
Behira	....	....	....	....	....	....
Menoufia	....	....	....	....	....	....
Fayoum	1020.0	309.0	90.0	1419.0	2120.0	701.0
Ismaelia	796.0	1794.7	166.7	2757.3	1800.0	- 957.3
North Sinai	245.8	1390.0	6.8	1642.7	5288.8	3646.1

Olives:

Olive production costs varied considerably (from about LE 574 in North Sinai to about LE 2,652 in Menoufia), due to some differences in the costs of material inputs and in land rent. At the same time, great differences were realized in the value of production (from about LE 1,408 in North Sinai to about LE 5,088 in Fayoum). The high production cost and relatively low value of production in Menoufia led to a negative revenue per feddan of about LE -464 while the high value of production in Fayoum led to a high revenue of LE 4,157, as indicated in Table 19. There was no clear relationship between farm size and costs and value of production.

TABLE 19
PRODUCTION COST AND VALUE OF PRODUCTION
OLIVES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	....	....	....	....	....	....
Menoufia	398.7	617.7	1635.3	2651.6	2187.4	- 464.2
Fayoum	304.8	290.4	335.3	930.5	5087.5	4157.0
Ismaelia	233.9	802.2	454.8	1490.9	2045.9	555.0
North Sinai	162.9	398.6	12.4	573.9	1408.4	834.5

Navel Oranges:

Among the governorates under study, only Behira and North Sinai produced navel oranges. The cost of power inputs in North Sinai is nearly three times as much as that in Behira, but the cost of material inputs in Behira is more than four times that in North Sinai. The value of production in Behira is more than double that in North Sinai, resulting in much higher revenue per feddan in Behira than in North Sinai, as indicated in Table 20. No relationship appeared to exist between farm size and the costs and value of production.

TABLE 20
PRODUCTION COST AND VALUE OF PRODUCTION
NAVEL ORANGES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	250.9	824.8	434.9	1510.5	4558.7	3048.2
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	....	....	....	....	....	....
North Sinai	732.0	198.0	300.0	1230.0	2100.0	870.0

Grapes:

The cost of power inputs and material inputs (and consequently, production costs) in Ismaelia are much higher than the other two governorates where grapes are produced. Production costs in North Sinai were the lowest. Due to the high value of production in Ismaelia, farmers were able to realize much higher revenue than farmers in the

other two governorates. Due to the lowest value of production in North Sinai, revenue per feddan was the lowest, as indicated in Table 21.

TABLE 21
PRODUCTION COST AND VALUE OF PRODUCTION
GRAPES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	75.1	126.0	478.4	679.6	1890.3	1210.7
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	1263.6	1604.7	483.9	3352.1	7193.6	3841.4
North Sinai	75.7	30.0	0.0	105.7	360.0	254.3

Peaches:

Great variations were realized in the cost of producing peaches in the New Lands due to the great variations in the power and material inputs. The minimum costs of both components were realized in North Sinai. Menoufia realized higher power costs, material costs and land rent than Behira. The value of production was a positive value (LE 219) in Menoufia as compared with a negative revenue in Behira (LE –109). North Sinai, with the lowest production costs, had the highest revenue per feddan (LE 719), as indicated in Table 22. There seems to be small rate of decline in the production costs as farm size increases, but a much higher rate of decline was indicated in both the value of production and the revenue per feddan.

TABLE 22
PRODUCTION COST AND VALUE OF PRODUCTION
PEACHES (LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Revenue
Alexandria	....	....	....	....	....	....
Behira	316.7	845.3	613.8	1775.8	1667.1	- 108.8
Menoufia	542.8	1170.8	1786.0	3499.5	3718.1	218.5
Fayoum	....	....	....	....	....	....
Ismaelia	....	....	....	....	....	....
North Sinai	161.8	120.7	15.5	298.0	1016.8	718.8

Gross Margin:

Labor used on the farm can be supplied by the family members or can be hired. In the previous calculations on the costs of production, an imputed cost for family labor (equivalent to the hired labor wage rate) was added to the cost of the hired labor. Family labor does not constitute a cost in the conventional accounting systems. It is considered a non-expenditure cost. In the following calculations, crop gross margin is defined as the difference between the value of output and the costs of production excluding the imputed cost for the family labor. Accordingly, the crop gross margin would be considered as the returns to the farmer and his family for managing the crop farming activities and for their work in the field. It should be remembered that the power input and the variable costs columns do not include the imputed cost for family labor but only for that of hired labor.

Wheat:

Production costs for wheat varied greatly among the governorates under study, with North Sinai showing the lowest cost components. Alexandria had the highest production costs but also the highest value of production. The gross margin was positive in only two governorates and negative in the other three wheat-producing governorates, as indicated in Table 23.

TABLE 23
GROSS MARGIN FOR WHEAT
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	262.8	483.5	789.3	1535.5	1341.3	- 194.3
Behira	236.3	416.7	359.2	1012.2	1142.4	130.2
Menoufia	....	....	....	....	....	....
Fayoum	271.2	339.8	257.5	868.5	870.1	1.6
Ismaelia	283.9	382.7	339.7	1006.3	906.9	- 99.4
North Sinai	19.3	24.9	0.0	44.2	61.9	- 17.6

Maize:

Power input cost was the highest in Behira followed by Ismaelia, Alexandria, and North Sinai. However, the cost of material inputs and land rent in Alexandria resulted in the highest production cost, followed by Behira, Ismaelia, and North Sinai. Maize did not realize a positive gross margin in any of the producing governorates under

study. The negative gross margin was the highest in North Sinai followed by Alexandria, Ismaelia, and Behira as indicated in Table 24.

TABLE 24
GROSS MARGIN FOR MAIZE
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	266.6	469.7	517.5	1253.8	1056.8	- 197.0
Behira	309.4	370.9	340.2	1020.4	992.5	- 27.9
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	301.3	380.6	233.7	915.6	873.2	- 42.4
North Sinai	177.0	503.8	0.0	680.7	927.5	- 246.8

Short Berseem:

The costs of power and material inputs were highest in Ismaelia followed by Alexandria and Behira. However, land rent and production costs were the highest in Alexandria followed by Behira and Ismaelia. Gross margin was a negative value in Alexandria but showed a small positive value in both Behira and Ismaelia, as indicated in Table 25.

TABLE 25
GROSS MARGIN FOR SHORT BERSEEM
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	157.2	151.2	516.4	824.8	569.8	- 255.O
Behira	144.9	105.4	408.7	659.0	694.3	35.3
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	315.7	174.3	103.0	593.0	600.0	7.0
North Sinai	....	....	....	....	....	....

Long Berseem:

The cost of power inputs and material inputs were the highest in Ismaelia, but land rent was highest in Behira. Production costs were the highest in Alexandria followed

by Behira, Ismaelia, and Fayoum. Gross margin was positive overall, but varied greatly (from a minimum of LE 76 in Alexandria to a maximum of LE 959 in Fayoum) as indicated in Table 26.

TABLE 26
GROSS MARGIN FOR LONG BERSEEM
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	83.3	171.0	168.8	923.1	999.0	75.9
Behira	176.4	180.7	362.7	719.9	1292.4	572.5
Menoufia	....	....	....	....	....	....
Fayoum	169.6	171.9	155.6	497.0	1455.6	958.6
Ismaelia	242.6	239.8	203.0	685.4	831.6	146.2
North Sinai	....	....	....	....	....	....

Barley:

Barley, like wheat, has been grown in the last few years as a forage crop for sheep and goats because of the drought. That is why all cost components for the production of barley are the minimum in North Sinai. The costs of power inputs and material inputs were the highest in Behira, leading to the highest production cost level. However, because of the highest value of barley production in that governorate, a positive value for gross margin was realized in that region while a negative gross margin was realized in both Fayoum and Ismaelia, as indicated in Table 27.

TABLE 27
GROSS MARGIN FOR BARLEY
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	295.9	394.3	318.4	1008.6	1060.2	51.5
Menoufia	....	....	....	....	....	....
Fayoum	215.4	116.7	323.5	655.7	386.0	- 269.7
Ismaelia	200.12	376.2	400.6	976.9	483.7	- 493.3
North Sinai	20.8	30.5	0.0	51.4	59.9	8.5

Fava Beans:

With the exception of Fayoum governorate, there were very little differences in the cost of power inputs. The high land rent in Alexandria made production costs the

highest among the governorates under study. In the four governorates where fava beans were produced, a negative gross margin was realized, (varying from LE –15 in Fayoum to LE -235 in Ismaelia), as indicated in Table 28.

TABLE 28
GROSS MARGIN FOR FAVA BEANS
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	267.0	434.7	649.7	1351.4	1200.7	- 150.7
Behira	267.3	270.5	298.4	836.2	1020.3	- 184.1
Menoufia	....	....	....	....	....	....
Fayoum	97.6	441.6	84.0	623.2	608.5	- 14.8
Ismaelia	297.5	258.9	257.2	813.6	578.3	- 235.2
North Sinai	....	....	....	....	....	....

Tomatoes:

Power input costs were highest in Fayoum and lowest in North Sinai. The costs of material inputs and land rent were highest in Menoufia, which made production costs the highest in that governorate. With the lowest production costs, North Sinai realized the highest gross margin per feddan, with Fayoum realizing the lowest gross margin, as indicated in Table 29.

TABLE 29
GROSS MARGIN FOR TOMATOES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	388.6	966.0	541.5	1896.1	2820.0	923.8
Behira	539.1	846.5	270.2	1655.8	3188.4	1532.6
Menoufia	375.8	1375.9	846.6	2598.2	5448.3	2850.1
Fayoum	784.8	1101.2	365.4	2251.3	2903.9	652.5
Ismaelia	562.6	1671.7	326.5	2560.8	4806.2	2245.5
North Sinai	233.7	1147.8	16.9	1398.4	4520.7	3122.4

Potatoes:

With higher costs of power and material inputs, Ismaelia realized a higher production cost than Behira, the other producing governorate. With lower value of production, Behira realized a higher gross margin than Ismaelia due to its lower cost, as indicated in Table 30.

TABLE 30
GROSS MARGIN FOR POTATOES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	308.5	1529.5	226.0	2064.0	3864.0	1800.0
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	425.0	2972.5	100.0	3497.5	4000.0	502.5
North Sinai	....	....	....	....	....	....

Green Pepper:

Power input cost was highest in Ismaelia, but the costs of material inputs and land rent were highest in Alexandria. With the highest production costs, Ismaelia realized a negative gross margin while Alexandria and Behira realized positive gross margins due to lower costs, as indicated in Table 31.

TABLE 31
GROSS MARGIN FOR GREEN PEPPER
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	417.9	1165.1	972.6	2255.7	2785.7	530.1
Behira	441.4	548.8	222.7	1312.9	1796.3	583.3
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	905.0	1030.8	691.7	2927.4	1900.0	- 727.4
North Sinai	....	....	....	....	....	....

Cucumber:

The costs of power inputs indicated small variations as compared to variations in the costs of material inputs and land rent. Menoufia, with the highest costs of material inputs, land rent, and production costs, did not realize the highest gross margin. Ismaelia, with the highest value of production, realized the highest gross margin, while Alexandria realized the lowest gross margin, as indicated in Table 32.

TABLE 32
GROSS MARGIN FOR CUCUMBER
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	383.3	623.9	250.0	1257.3	2133.3	876.1
Behira	479.0	780.0	58.3	1314.3	1451.8	137.5
Menoufia	547.5	1336.7	825.0	2709.2	5277.8	2568.6
Fayoum	....	....	....	....	....	....
Ismaelia	568.0	1460.0	175.0	2203.0	6840.0	4637.0
North Sinai	....	....	....	....	....	....

Watermelon:

Watermelon is not a basic agricultural commodity in North Sinai. All cost components and value of production (and consequently the gross margin) are the least among the governorates producing watermelon included in this study. All production cost components were highest in Alexandria. However, with the highest value of watermelon production, Alexandria realized the highest gross margin, as indicated in Table 33.

TABLE 33
GROSS MARGIN FOR WATERMELON
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	311.9	800.5	579.4	1691.8	2950.1	1258.4
Behira	298.3	394.6	295.8	988.7	2006.1	1017.4
Menoufia	....	....	....	....	....	....
Fayoum	80.8	175.2	85.7	341.7	806.9	465.1
Ismaelia	276.1	255.1	239.1	770.3	1118.3	348.1
North Sinai	2.0	27.6	0.0	29.6	110.0	80.4

Cantaloupe:

The costs of power and material inputs in the production of cantaloupe were highest in Ismaelia. However, land rent was highest in Alexandria. North Sinai realized the highest value of cantaloupe production, while Ismaelia realized the lowest value of production. As a result, a negative gross margin was realized in Ismaelia while the maximum gross margin was realized in North Sinai, as indicated in Table 34.

TABLE 34
GROSS MARGIN FOR CANTALOUPE
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	246.0	870.8	940.2	2056.9	2960.7	903.8
Behira	....	....	....	....	....	....
Menoufia	....	....	....	....	....	....
Fayoum	300.0	309.0	0.0	609.0	2120.0	1511.0
Ismaelia	796.01	1794.7	166.7	2757.3	1800.0	- 957.3
North Sinai	203.3	1390.0	6.8	1600.2	5288.8	3688.6

Olives:

The costs of power and material inputs, land rent, and production costs were the highest in Menoufia. With moderate value of production, Menoufia realized a negative gross margin. Fayoum with the highest value of olive production realized the maximum gross margin, as indicated in Table 35.

TABLE 35
GROSS MARGIN FOR OLIVES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	....	....	....	....	....	....
Menoufia	389.3	617.7	1635.3	2642.2	2187.4	- 454.8
Fayoum	295.6	290.4	335.3	921.3	5087.5	4166.2
Ismaelia	....	....	....	....	....	....
North Sinai	133.9	398.6	12.4	544.9	1408.4	863.6

Navel Oranges:

The production costs of navel oranges and all of its components were higher in Behira than in North Sinai. Behira, with a higher value of production, was able to realize a higher gross margin, as indicated in Table 36.

TABLE 36
GROSS MARGIN FOR NAVEL ORANGES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	249.0	824.8	434.9	1508.7	4558.7	3050.0
Menoufia	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....
Ismaelia	....	....	....	....	....	....
North Sinai	72.0	198.0	300.0	570.0	2100.0	1530.0

Grapes:

The costs of power and material inputs were the highest among the different governorates that produced grapes in 1999-2000. Land rent was the highest in Menoufia. Production costs were the highest in both Ismaelia and Menoufia. However, due to the highest value in both governorates, farmers were able to realize the highest gross margin in Ismaelia, followed by Menoufia. North Sinai farmers realized the lowest gross margin in the production of grapes, as indicated in Table 37.

TABLE 37
GROSS MARGIN FOR GRAPES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	75.1	126.0	478.4	679.6	1890.3	1210.7
Menoufia	538.3	1170.8	1786.0	3495.1	3718.1	223.0
Fayoum	....	....	....	....	....	....
Ismaelia	1263.6	1604.7	483.9	3352.1	7193.6	3841.4
North Sinai	16.8	30.0	0.0	46.8	360.0	313.2

Peaches:

The costs of power and material inputs in the production of peaches were the highest in Behira. Land rent was highest in Menoufia, resulting in the highest production cost in that governorate. North Sinai, with the lowest production costs and lowest value of production, had the highest gross margin followed by Menoufia, which realized the highest value of production. Behira, with moderate costs of production and moderate value of production, had a negative gross margin, as indicated in Table 38.

TABLE 38
GROSS MARGIN FOR PEACHES
(LE Per Feddan)

Governorate	Power Input	Material Inputs	Land Rent	Variable Costs	Value of Production	Gross Margin
Alexandria	....	....	....	....	....	....
Behira	316.7	845.3	613.8	1775.8	1667.1	- 108.8
Menoufia	232.5	667.8	2200.0	3100.3	3750.0	649.8
Fayoum	....	....	....	....	....	....
Ismaelia	....	....	....	....	....	....
North Sinai	101.5	120.7	15.5	237.7	1016.8	779.1

Marketing Channels:

The use of agricultural commodities is generally through one or more of the following channels:

1. Home Use:
   This includes all quantities of the agricultural commodity kept for home consumption, given as gifts to relatives, given as payment in kind for any home or farm services, used for animal feeds, or kept as seeds for the next growing season.

2. Sold on the Farm:
   This includes all quantities sold directly on the farm to any buyer.

3. Sold ***Kilalah.***
   This includes all quantities sold to a merchant before maturity of the crop where the buyer will take responsibility for the remaining farm activities (e.g., irrigation, guarding, picking, packing and transporting to market) until the end of the harvest season of the crop sold.

4. Sold under Contracts:
   This includes all quantities sold under contracting. This contract normally determines the variety of the crop to be grown, the quantity and quality of the final product to be delivered, the prices to be paid, and the timing of delivery.

5. Sold in the Market:
   This includes all quantities sold by the farmers or members of his family in the market.

6. Delivered for Processing:
   This includes all quantities delivered to any factory for processing whether sold to the factory for processing and then for marketing or on behalf of the farmer, where the farmer will receive the processed commodity and take the responsibility for its marketing.

The following sections present the percentage of the value of the major commodities that has been marketed through any of the previously mentioned channels. It should be noted that the percentages presented in the tables represent those of the value—not quantity—delivered through the various marketing channels. This is the result of the expected difference in prices in the different channels. Quantities kept for home use were valued at the price of the raw quantities sold on the farm at harvest time.

Wheat:

The highest proportion of wheat kept for home use is in North Sinai. This is due to the limited amount produced, since its production is concentrated on rain-fed lands that

have been suffering from drought the last few years. With the exception of North Sinai, the amounts of wheat kept for home use varied from 5% in Alexandria to 25% in Fayoum and Ismaelia. In both Alexandria and Fayoum, over half of the quantities produced are sold in the market, as indicated in Table 39. Amounts kept for home use and amounts sold in the market decreased as farm size increased, while the amounts sold through contracting increased with the increase in farm size.

TABLE 39
MARKETING CHANNELS FOR WHEAT

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	5.0	11.0	0.0	34.0	50.0	0.0	100.0
Behira	13.0	44.0	0.0	13.0	29.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	25.0	7.0	0.0	8.0	60.0	0.0	100.0
Ismaelia	25.0	42.0	0.0	6.0	27.0	0.0	100.0
North Sinai	68.0	20.0	0.0	12.0	0.0	0.0	100.0

Maize:

Similar to wheat, the highest proportion of maize kept for home use was in North Sinai and was kept for the same reasons. In the other governorates, home use varies from 19% in Ismaelia to 0% in Fayoum, where the entire crop was sold in the marketplace. Generally, maize was marketed through the four main marketing channels: on the farm, by contracts, in the market, and kept for home use, as indicated in Table 40. Amounts kept for home use and amounts sold in the market decreased with the increase in farm size. Conversely, amounts sold through contracting increased with the increase in farm size.

TABLE 40
MARKETING CHANNELS FOR MAIZE

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	3.0	2.0	0.0	47.0	47.0	0.0	100.0
Behira	11.0	42.0	7.0	19.0	21.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Ismaelia	19.0	37.0	2.0	21.0	22.0	0.0	100.0
North Sinai	66.0	34.0	0.0	0.0	0.0	0.0	100.0

Short Berseem:

Generally, most of the short berseem was produced for home use and sold on the farm. In Ismaelia, short berseem was produced for home use only, while the other two governorates mainly used three marketing channels: sold on the farm, sold in the market, and kept for home use, as indicated in Table 41. Very small amounts were sold by either ***kilalah*** or by contracting. Small farmers sold their product through four different channels, while large farms concentrated on only two channels: on the farm and home use.

TABLE 41
MARKETING CHANNELS FOR SHORT BERSEEM

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	26.0	25.0	8.0	9.0	33.0	0.0	100.0
Behira	30.0	47.0	2.0	2.0	18.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....	....
Ismaelia	100.0	0.0	0.0	0.0	0.0	0.0	100.0
North Sinai	....	....	....	....	....	....	....

Long Berseem:

Most of the long berseem was produced for home use and for selling in the marketplace by both small and large farmers. The highest proportion of long berseem kept for home use was in North Sinai followed by Behira, while the lowest proportion was in Alexandria. Even though ***kilalah*** is a normal practice in fruit trees, a high proportion of long berseem was sold by this method in Alexandria. In Ismaelia, 72% of the crop was sold in the market, as indicated in Table 42.

TABLE 42
MARKETING CHANNELS FOR LONG BERSEEM

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	6.0	13.0	67.0	10.0	4.0	0.0	100.0
Behira	71.0	18.0	4.0	3.0	5.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	28.0	0.0	0.0	0.0	72.0	0.0	100.0
Ismaelia	85.0	4.0	0.0	0.0	10.0	0.0	100.0
North Sinai	....	....	....	....	....	....	....

Barley:

The highest proportion of barley kept for home use was in North Sinai, like wheat and maize, and kept for the same reasons. The highest proportion sold on the farm was in Behira while the highest sold in the market was in Fayoum. In Fayoum and Ismaelia, a considerable amount was sold through contracting. In general, four marketing channels were used for barley: sold on the farm, sold through contracting, sold in the market, and kept for home use, as indicated in Table 43. Selling barley in the market was primarily practiced by small farmers, while selling on the farm increased with the increase in farm size.

TABLE 43
MARKETING CHANNELS FOR BARLEY

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	2.0	85.0	0.0	2.0	11.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	0.0	0.0	0.0	19.0	81.0	0.0	100.0
Ismaelia	40.0	37.0	0.0	17.0	5.0	0.0	100.0
North Sinai	72.0	28.0	0.0	0.0	0.0	0.0	100.0

Fava Beans:

Fava beans were sold mainly on the farm and in the market. Relatively small amounts were kept for home use. The highest proportion of the product sold on the farm was in Behira, while the highest proportion sold in the market was in Ismaelia, as indicated in

Table 44. Small farmers primarily sold through the market, while selling on the farm increased with the increase in farm size.

TABLE 44
MARKETING CHANNELS FOR FAVA BEANS

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	4.0	38.0	0.0	9.0	49.0	0.0	100.0
Behira	13.0	68.0	0.0	3.0	16.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	9.0	17.0	0.0	29.0	45.0	0.0	100.0
Ismaelia	14.0	20.0	0.0	0.0	66.0	0.0	100.0
North Sinai	....	....	.....	....	....	....	....

Tomatoes:

Tomatoes were sold mainly on the farm and in the market. Very small amounts were kept for home consumption. The majority of tomatoes were sold on the farm in Ismaelia, while the entire crop in Menoufia was sold through ***kilalah***, as indicated in Table 45. In Menoufia, the farms in the New Lands are relatively large. Most of the farmers are absentee farmers who do not want the burden of marketing the product. They arrange with traders to handle the picking and marketing. Amounts sold on the farm decline with the increase in farm size. On the contrary, selling in the market increases with the increase in farm size.

TABLE 45
MARKETING CHANNELS FOR TOMATOES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	0.0	13.0	36.0	16.0	34.0	0.0	100.0
Behira	0.0	53.0	0.0	0.0	47.0	0.0	100.0
Menoufia	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Fayoum	10.0	90.0	0.0	0.0	0.0	0.0	100.0
Ismaelia	2.0	43.0	0.0	7.0	48.0	0.0	100.0
North Sinai	1.0	39.0	0.0	0.0	59.0	0.0	100.0

Potatoes:

In Ismaelia, all of the potato crop was sold in the market while in Behira potatoes were marketed through different channels, the most important of which were selling in the market and through contracting, as indicated in Table 46. Very small amounts were

kept for home use. The proportion of the crop sold in the market increased with the increase in farm size.

TABLE 46
MARKETING CHANNELS FOR POTATOES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	2.0	17.0	6.0	36.0	39.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....	....
Ismaelia	0.0	0.0	0.0	0.0	100.0	0.0	100.0
North Sinai	....	....	....	....	....	....	....

Green Pepper:

Green pepper was mainly sold either on the farm or in the market. Very small amounts were kept for home use. In Alexandria and Fayoum, selling on the farm was the main channel used for marketing green pepper while selling in the market was the main channel used in North Sinai and Behira, as indicated in Table 47. Small farmers normally sold their product on the farm while large farmers sold their product in the market.

TABLE 47
MARKETING CHANNELS FOR GREEN PEPPER

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	0.0	63.0	0.0	0.0	37.0	0.0	100.0
Behira	1.0	26.0	0.0	3.0	70.0	0.0	100.0
Menoufia	....	....	....	....	...	....	....
Fayoum	....	....	....	....	....	....	....
Ismaelia	2.0	61.0	0.0	0.0	37.0	0.0	100.0
North Sinai	0.0	0.0	0.0	0.0	100.0	0.0	100.0

Cucumber:

Each governorate used only one single marketing channel for cucumber. The entire crop produced was marketed on the farm in both Alexandria and Ismaelia. The entire crop was sold through contracting in Menoufia and in the market in Behira, as indicated in Table 48.

TABLE 48
MARKETING CHANNELS FOR CUCUMBER

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Behira	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Menoufia	0.0	0.0	0.0	100.0	0.0	0.0	100.0
Fayoum	....	....	....	....	....	....	....
Ismaelia	0.0	100.0	0.0	0.0	0.0	0.0	100.0
North Sinai	....	....	....	....	....	....	....

Watermelon:

Small amounts of watermelon produced were kept for home consumption while a large proportion of the quantities was sold either on the farm or ***kilalah***. The majority of watermelon produced in North Sinai was marketed on the farm, followed by Ismaelia, Fayoum, Behira and Alexandria. ***Kilalah*** was the main channel used in the marketing of watermelon in Alexandria, followed by Behira and Fayoum, as indicated in Table 49. There was no preference shown for a specific marketing channel by either small or large farmers.

TABLE 49
MARKETING CHANNELS FOR WATERMELON

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	3.0	4.0	78.0	12.0	2.0	0.0	100.0
Behira	1.0	14.0	64.0	18.0	31.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	5.0	16.0	28.0	28.0	23.0	0.0	100.0
Ismaelia	1.0	58.0	0.0	41.0	0.0	0.0	100.0
North Sinai	5.0	95.0	0.0	0.0	0.0	0.0	100.0

Cantaloupe:

Various marketing channels for cantaloupes were preferred by the different governorates. The entire crop was sold through ***kilalah*** in Alexandria and through

contracting in Ismaelia. The majority of the crop was sold on the farm in North Sinai and in the market in Fayoum, as indicated in Table 50.

TABLE 50
MARKETING CHANNELS FOR CANTALOUPE

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Behira	....	....	....	....	....	....	....
Menoufia	....	....	....	....	....	....	....
Fayoum	9.0	0.0	0.0	0.0	91.0	0.0	100.0
Ismaelia	0.0	0.0	0.0	100.0	0.0	0.0	100.0
North Sinai	1.0	74.0	0.0	0.0	26.0	0.0	100.0

Olives:

Kilalah and contracting were the two main marketing channels used for olives. The entire crop produced in Menoufia was sold through ***kilalah*** while the majority of the crop produced in Fayoum was sold through contracting. Over half of the olives produced in Ismaelia were sold on the farm, as indicated in Table 51. In each governorate, neither small nor large farmers showed a preference for a specific marketing channel.

TABLE 51
MARKETING CHANNELS FOR OLIVES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	....	....	....	....	....	....	....
Menoufia	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Fayoum	0.0	0.0	3.0	83.0	13.0	0.0	100.0
Ismaelia	0.0	56.0	15.0	1.0	28.0	0.0	100.0
North Sinai	3.0	2.0	39.0	46.0	9.0	0.0	100.0

Navel Oranges:

All navel oranges produced in Ismaelia were marketed through ***kilalah***, while the majority of the crop produced in North Sinai was sold on the farm. In Behira the largest proportion of the crop was sold in the market, as indicated in Table 52. No preference for a specific marketing channel was made by either small or large farmers.

TABLE 52
MARKETING CHANNELS FOR NAVEL ORANGES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	0.0	1.0	4.0	27.0	68.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....	....
Ismaelia	0.0	0.0	100.0	0.0	0.0	0.0	100.0
North Sinai	23.0	77.0	0.0	0.0	0.0	0.0	100.0

Grapes:

Preferences were shown for governorates to market their grapes through specific channels. In Behira the majority of grapes were sold through contracting while the majority of the crop produced in Ismaelia was sold through ***kilalah***. In North Sinai, farmers preferred to sell their grapes on the farm, as indicated in Table 53.

TABLE 53
MARKETING CHANNELS FOR GRAPES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	0.0	0.0	0.0	99.0	1.0	0.0	100.0
Menoufia	....	....	....	....	....	....	....
Fayoum	....	....	....	....	....	....	....
Ismaelia	0.0	0.0	93.0	7.0	0.0	0.0	100.0
North Sinai	15.0	85.0	0.0	0.0	0.0	0.0	100.0

Peaches:

Behira marketed all of the peaches produced through ***kilalah***, while Menoufia marketed peaches through contracting. The majority of North Sinai peaches went to the market, as indicated in Table 54.

TABLE 54
MARKETING CHANNELS FOR PEACHES

Governorate	Home Use	On the Farm	Kilalah	Contract	In the Market	For Processing	Total
Alexandria	....	....	....	....	....	....	....
Behira	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Menoufia	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Fayoum	....	....	....	....	....	....	....
Ismaelia	....	....	....	....	....	....	....
North Sinai	2.0	10.0	3.0	6.0	78.0	0.0	100.0

Problems Encountered

The following is a summary of the problems encountered in implementing this activity:

- Lack of transport vehicles
  The New Lands in Egypt are located mainly in the desert in remote areas far from urban centers. Transport vehicles were a necessity, especially in the absence of public or private transport vehicles. With the large number of enumerators involved in this activity and with scattered and remote holdings in the New Lands, it was very difficult to achieve the required data collection in a timely manner.

- Absence of farmers
  Farmers who operate the holdings in the New Lands are not chiefly settled farmers like those who operate farms in the Old Lands. Operators of both of the small and big farms are actually absentee farmers. This factor led to more than one visit to the farm to interview the farmer.

- Lack of farmer response
  During the period of central planning and production and marketing plans, the employees of the Ministry of Agriculture (mainly extension agents) had already established personal contact with the farmers, since they had previously approved the farmers' production plans. This situation had enabled the farmers to receive the required farm subsidized inputs and credit (either from the village cooperative or the agricultural credit bank). Therefore, farmers had some willingness to provide information to Ministry employees as long as they received some services from the Ministry. The situation in the New Lands is now different. Thus, it was difficult for the enumerators to obtain the detailed and required data necessary from the farmers, and it became a time-consuming process. This lack of response was due to the following factors:

  - The lack of government or cooperative institutions in the New Lands led to very few available services or to a lack of assistance provided to farmers by the MALR or the public sector.

  - The liberalization of the agriculture sector in 1986 with the removal of production plans, forced deliveries of output, and the elimination of subsidies on agricultural inputs in the early 1990s left farmers dependent on the private sector to procure agricultural inputs and to market their products.

- Difficulty in identifying some cost or revenue items.
  In some cases, it was impossible for farmers to provide the required detailed data for the following reasons:

  - Some farmers depend on contracting certain farm operations out to others. These others in turn will hire the required labor or machinery

to perform the work. Such practices are often followed in land preparation, planting, irrigation, and harvesting. In such cases the farmer was unable to provide the details of the labor force involved in these activities but was able to provide the cost that he paid for each of the activities. This is also the case when the product of a given crop is sold in the field before maturity. In such a case, the buyer will generally take on the responsibility for the remaining farming activity; thus, the farmer will lack detailed information about these activities.

- Some crops are sold before maturity (e.g., fruit orchards) when they are sold ***kilalah.*** In this case, the farmer was unable to provide the required data on the quantities of the main product produced or marketed or the by-product, if any.

Lessons Learned From This Study

From the planning and execution of this study, the following recommendations are made to improve the accuracy of the data related to the New Lands:

- More training is required for the field staff with regard to collecting and recording statistical data. Even though all of them had two training sessions and some of them attended three, many errors were found in the recorded data.

- Data for this study was collected in one visit to the farm, approximately eight months after the end of the agricultural season. The farmer's recollection of the data at that time was not very precise, resulting in some data inaccuracies. If this activity is expected to be continued by the EAS, we recommend that data be collected in two visits. The first would be in the middle of the growing season to collect the data on land preparation and seeding, while the second would be immediately after the end of the growing season.

- Field enumerators should be made very aware of using the same unit in recording quantities and prices, whether for inputs or outputs. Many mistakes were made in recording quantities in centimeters (i.e., in the case of liquid insecticides) or in kilograms while recording price per liter or ton. This caused big mistakes in costs and values of production. Some field enumerators made similar mistakes when they were confused between the establishment costs in the case of permanent crops (considered fixed costs) and the annual production costs (considered variable costs).

- Special care should be given to editing the data collected in the regional offices before submission to the central office. Many mistakes could be avoided if careful editing of the data was made in the regional offices.

- More effort should be made by the central staff to check the accuracy of the data before entering it into the computer. This effort would save a lot of time afterward, since many mistakes were found after the data was entered into the computer.

- In this study, members of the computer section participated after the data was collected and edited by the central staff of statistics. Great effort was made to explain to them the different formats of the questionnaire and the type of tabulation and analysis required. Members of the computer section should participate in all of the steps involved in carrying out this activity.

Annex 4
MAIN CROPS PRODUCED IN THE SAMPLE FARMS OF THE NEW LANDS (Feddans)

Crop/Gov.	Alexandria	Behira	Menoufia	Fayoum	Ismaelia	N. Sinai	Total
Wheat	651.5	1768.2	....	37.4	156.1	67.0	2680.2
Maize	316.5	991.5	....	4.0	75.6	2.0	1389.6
Sorghum	....	....	....	11.3	1.5	....	12.8
Barley	....	137.8	....	7.1	26.0	128.0	298.9
Rice	....	....	....	....	9.7	....	9.7
Fava Beans	232.0	116.8	....	3.0	18.0	....	369.8
Soya Beans	....	9.0	....	....	....	....	9.0
Sesame	....	5.0	....	....	40.2	....	45.2
Sunflower	....	97.0	....	....	....	....	97.0
L. Berseem	501.5	395.8	....	9.0	150.7	....	1057.0
S. Berseem	28.0	310.8	....	....	7.0	....	345.8
P. Berseem	....	....	5.0	....	....	....	5.0
Drawa	....	10.5	....	3.8	71.5	....	85.8
Other G. Forage	....	....	....	....	7.0	....	7.0
Peanuts	....	1425.1	....	....	71.0	....	1496.1
Fenugreek	....	....	....	0.5	7.5	....	8.0
Lupins	....	....	....	....	10.0	....	10.0
Onion	....	18.5	10.0	9.8	1.8	2.5	42.6
Garlic	....	3.0	....	....	....	....	3.0
Tomatoes	375.5	99.7	116.0	6.5	45.6	65.3	708.6
Potatoes	....	70.2	....	....	2.0	....	72.2
G. Peas	....	156.2	....	....	3.0	....	159.2
G. Beans	....	18.8	....	....	19.0	....	37.8
Squash	72.0	12.4	....	....	2.8	....	87.2
G. Pepper	14.0	22.8	....	2.8	2.0	3.5	45.1
Eggplant	6.0	3.0	9.0	....	4.0	....	22.0
Cabbage	3.0	....	....	....	5.0	....	8.0
Cucumber	3.0	0.5	18.0	....	0.5	....	22.0
Olives	....	....	46.3	166.7	220.0	273.0	706.0
Watermelon	499.0	195.0	....	4.4	24.0	5.0	727.4
Seed Melon	....	83.1	....	....	5.0	....	88.1
Sweetmelon	....	....	....	1.0	5.0	20.0	26.0
Cantaloupe	53.0	....	....	0.3	3.0	153.5	209.8
Strawberry	....	20.0	....	....	....	....	20.0
Navel Oranges	....	684.0	....	....	4717.5	....	5401.5
Baladi Oranges	....	163.5	....	....	....	....	163.5
Other Oranges	....	422.5	....	....	....	3.1	425.6
Mandarins	....	499.8	....	....	....	....	499.8
Sour Lemon	....	153.1	....	....	....	....	153.1

Grapes	....	432.5	157.0	....	62.0	6.8	658.3
Mango	....	87.2	33.0	....	126.5	1.1	247.8
Banana	....	289.2	....	....	....	....	289.2
Guava	....	106.5	....	....	....	0.3	106.8
Apricots	....	5.0	25.0	....	53.0	....	83.0
Apples	3.0	47.5	76.0	....	....	....	127.5
Peaches	....	7.0	20.0	....	....	856.6	883.6
Pears	....	....	....	....	30.0	....	30.0
Dates	....	....	....	90.0	28.0	95.3	213.3
Figs	....	....	....	....	....	93.0	93.0
Pommes	....	....	....	....	....	32.0	32.0
Other	....	....	1.3	2.1	1.0	15.5	19.9
Total	**2758.0**	**8868.5**	**516.6**	**359.7**	**6082.5**	**1823.5**	**20408.8**