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# **AGRICULTURAL DEVELOPMENT SYSTEMS EGYPT PROJECT**

**UNIVERSITY OF CALIFORNIA, DAVIS**

**THE SELECTION OF THE SAMPLE FOR THE FOOD  
CONSUMPTION ACTIVITY OF 1981-82**

**by**

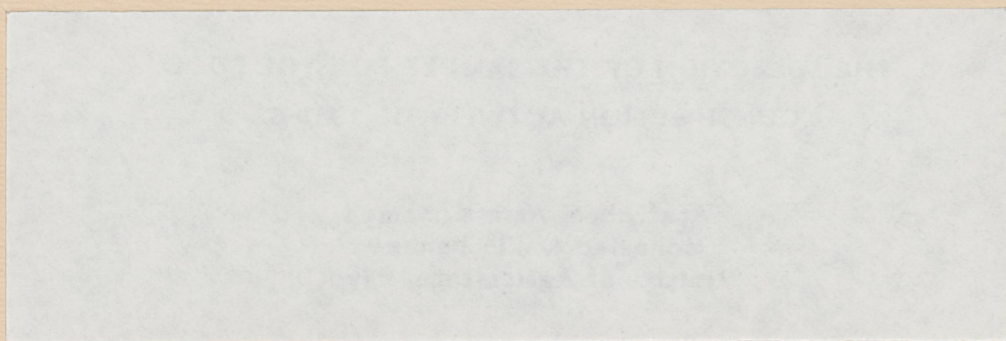
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**WORKING PAPER**

**USA/EGYPT** 



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**by**

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**August, 1982**

**Agricultural Development Systems:  
Egypt Project  
University of California  
Davis, Ca 95616**

THE SELECTION OF THE SAMPLE FOR THE FOOD  
CONSUMPTION ACTIVITY SURVEY OF 1981-82

by

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and

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The principle purpose of this activity is to depict, as accurately as possible, consumption patterns of rural landholders' households which rely on their own farm production and/or purchased commodities to fill their needs. A multi-staged stratified random sample was chosen for this purpose. Financial and manpower limitations dictated limitation of the sample size to 249.

Selection of the Larger Sample

Two previous studies, Egypt, Major Constraints to Increasing Agricultural Productivity (U.S.D.A.) and the Farm Management Survey of 1977, were utilized in delineating agricultural zones for the study. In the Major Constraints Study, Egypt was classified into 14 agricultural zones based on cropping patterns, physical properties of the soil and geography. In the Farm Management Survey zones including new lands were excluded and the old land was reclassified into 18 agricultural zones. In this study the land area of Egypt was reclassified into five zones. Criteria used in the reclassification were the cropping patterns and the geographic distribution of the villages. The geographic distribution of the 56 villages surveyed in the Farm Management Survey and the proportion of the area in each zone to the total agricultural area of Egypt are apparent from Table 1. The Farm Management Survey provided detailed data on the landholding structure according to holding classes at the village level, especially for the classes of interest in this study. In/a

TABLE 1. The Distribution of Villages (56 villages) in the Farm Management Survey  
Sample Among the 18 Agricultural Zones and the Relative Weight of Each Zone

Zone Number <sup>a</sup>	Number of Districts in Each Zone	Number of Villages in Each Zone	Total Holding Area in Feddans	Percentage of Holding Area to Total for 56 Villages	Number of Villages Selected
1	4	162	276,174	4.69	8
2	1	18	84,137	1.43	1
3	4	232	22,583	0.38	2
4	7	292	280,456	4.76	2
5	1	18	66,824	1.13	1
6	3	57	236,408	4.01	2
7	9	393	457,358	7.78	3
8	21	56	1,332,661	22.63	10
9	5	192	315,157	5.35	3
10	6	248	262,863	4.46	2
11	8	164	200,958	3.41	5
12	5	161	361,485	6.14	3
13	32	997	1,247,804	21.19	6
14	6	149	173,990	2.96	2
15	1	20	36,507	0.62	1
16	4	117	174,248	2.96	1
17	1	30	49,868	0.86	2
18	8	137	308,754	5.24	2

<sup>a</sup>Zones delineated for Farm Management Survey of 1977.

sense then, the sample for the study is a subsample of that used for the Farm Management Survey. The five major zones used in this study were (1) The Rice Zone, (2) The Delta Traditional Crop Zone, (3) The Fruit and Vegetable Zone, (4) The Middle Egypt Traditional Crop Zone, and finally, (5) The Sugar Cane Zone.

#### First Zone - The Rice Zone

This zone is in the northern part of the Delta. The dominant cultivated crop is rice which comprised 27.12 percent of the total cropped area and about 50.24 percent of the total holding area in 1977. Berseem was next, comprising 18.8 percent of the total cropped area.<sup>1</sup> This zone included 14 villages (from the Farm Management Survey Sample which included 56 villages) from 12 districts. There are six governorates in the zone (Table 2 and map).

#### Second Zone - The Zone of Traditional Crops in the Delta

This zone is located in the mid-delta area. Traditional crops are cultivated in proportionate areas with no dominant crops. Major crops are maize (16.2 percent of the surveyed area in 1977) cotton (13.9 percent), rice (13.5 percent), Berseem (13.4 percent) and wheat (13.2 percent) (Table 2). This zone included 14 villages from the Farm Management Survey sample located in ten districts as indicated on the map.

#### Third Zone - The Fruit and Vegetable Zone

This zone includes Qualubia, Giza, and the villages near Cairo and Alexandria. The major cultivated crops in this zone are vegetables and fruit

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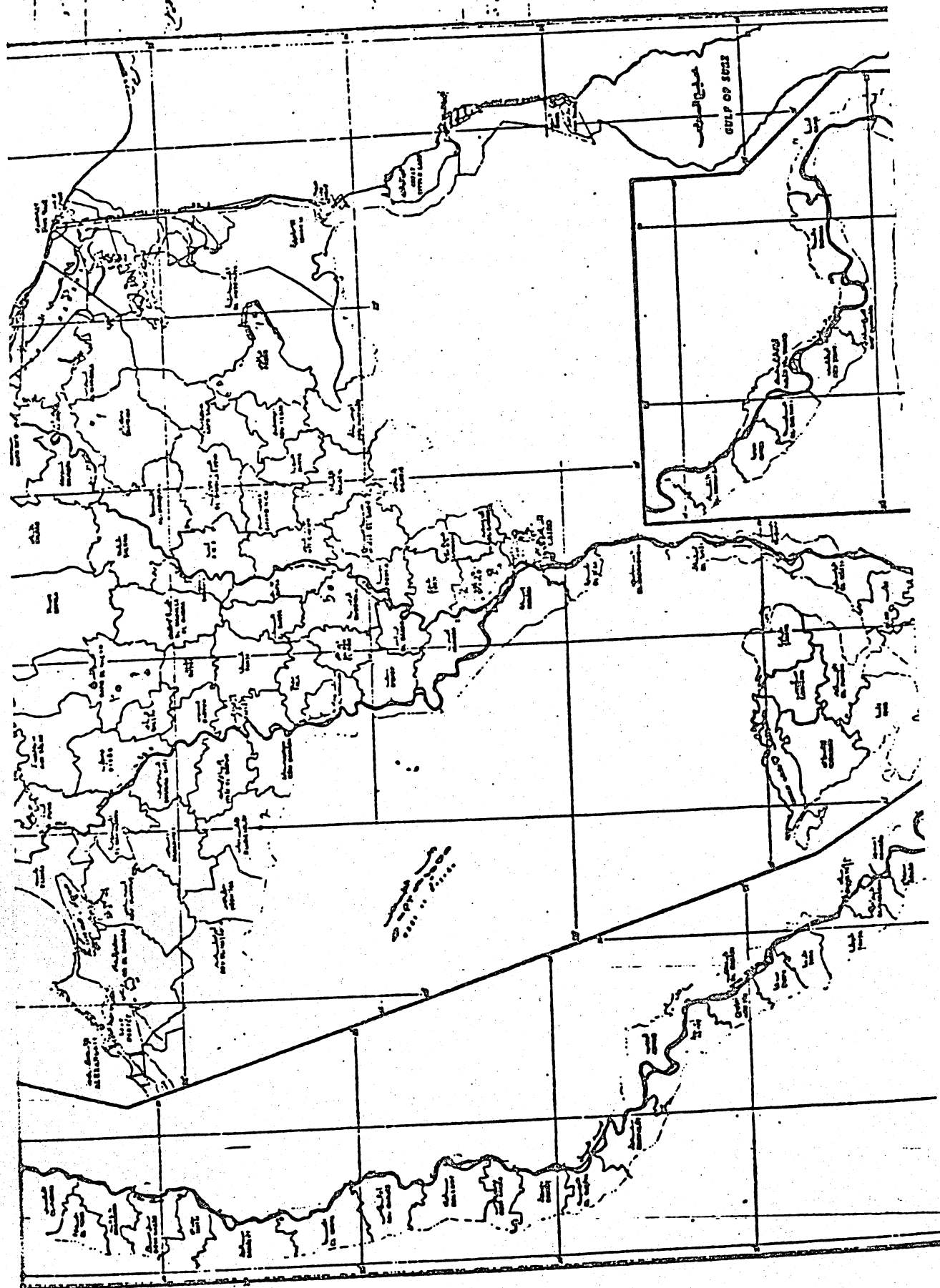
<sup>1</sup>Percentages for all five zones are based on calculations using data gathered in the Farm Management Survey of 1977.

TABLE 2. Principal Zones and the Percentage of Crops Relative to Cropped Area and Holding Area in Each Zone

Zone	First Zone			Second Zone			Third Zone		
	Rice			Traditional Crops			Fruits and Vegetables		
	Area (feddans)	Percentage of Cropped Area	Percentage of Holding Area	Area (feddans)	Percentage of Cropped Area	Percentage of Holding Area	Area (feddans)	Percentage of Cropped Area	Percentage of Holding Area
Crops									
Wheat	12,862	11.38	21.08	5,816	13.17	24.32	3,282	5.31	9.75
Beans	3,013	2.67	4.94	1,383	3.13	5.78	886	1.43	2.63
Berseem	21,263	18.81	34.85	5,936	13.44	24.82	8,467	13.70	25.16
Barley	340	0.30	0.56	213	0.48	0.89	3,911	6.32	11.62
Rice	30,652	27.12	50.24	5,954	13.48	24.89	1,514	2.45	4.50
Zea. Maize	5,858	5.18	9.60	7,160	16.21	29.94	11,638	18.82	34.58
Sorghum	1,122	0.99	1.84	—	—	—	—	—	—
Vegetables	3,811	3.37	6.25	2,843	6.44	11.89	16,849	27.25	50.06
Sugar Cane	129	0.11	0.21	160	0.36	0.67	171	0.28	0.51
Cotton	18,504	16.37	30.33	6,138	13.90	25.66	3,324	5.38	9.88
Fruit Orchards	581	0.51	0.95	2,023	4.58	8.45	4,385	7.09	13.03
Total Crop Area	113,038			44,157			61,837		
Total Holding Area	61,008			23,917			33,655		

TABLE 2 (Continued)

Zone	Fourth Zone			Fifth Zone		
	Traditional Crops			Sugarcane		
	Area (feddans)	Percentage of Cropped Area	Percentage of Holding Area	Area (feddans)	Percentage of Cropped Area	Percentage of Holding Area
Crops						
Wheat	3,201	15.30	22.19	4,506	20.13	35.44
Beans	861	4.11	5.97	328	1.47	2.58
Berseem	2,321	11.09	16.09	878	3.92	.91
Barley	337	1.61	2.34	286	1.28	2.50
Rice	293	1.40	2.03	--	--	--
Zea. Maize	2,062	9.85	14.29	3,307	14.78	26.01
Sorghum	863	4.12	5.98	2,592	11.58	20.39
Vegetables	1,776	8.49	12.31	611	2.73	4.81
Sugar Cane	35	0.17	0.24	2,885	12.84	22.61
Cotton	3,263	15.59	22.62	995	4.45	7.83
Fruit Orchards	738	3.53	5.12	262	1.17	2.0
Total Crop Area	20,925			22,381		
Total Holding Area	14,428			12,715		



trees which were 34.34 percent of the cropped area, or 63.09 percent of the total holding area in 1977, as indicated in Table 2. This zone included 11 villages surveyed in the Farm Management Survey in ten districts (as shown on the map).

#### Fourth Zone - The Traditional Crop Zone in Mid-Egypt

This zone is located in Middle Egypt. This is a traditional crop zone where the cropping percentages were: cotton 15.59 percent, wheat 15.23 percent, berseem 11.09 percent, and maize 9.8 percent of the total crop area in the zone as shown in Table 2.

This zone included seven villages from the Farm Management Survey sample which were located in seven districts as shown on the map.

#### Fifth Zone - The Sugarcane Zone

This zone is located in Upper Egypt and included ten villages from the Farm Management Survey sample located in nine districts. The dominant cultivated crop is sugarcane cultivated on almost 22.69 percent of total holding area in the zone in 1977, but other cultivated crops have higher percentages than sugarcane in the specific villages selected (Table 2).

#### Selection of the Villages

Since the purpose of this study was to ascertain how to improve food consumption among the rural poor, logic dictated selecting the sample from among the rural poor. However, there was no existing sample frame for the landless and the mathematical model for this study requires data concerning farm production and consumption from the landholder's own crops. Therefore, it was decided to largely limit the sample to landholders holding five feddans or less.

It was decided, when selecting sample villages from the different zones, to select principal villages and an alternate back-up in each case to be used if difficulties impeded the use of the principal villages. The weights of the zones and the distribution of the villages selected from each zone (Table 3) were arrived at by using the Farm Management Survey sample data. Only the data on the landholders having five feddans or less was used. The ten villages selected to represent all of the zones were about 18 percent of the 56 villages in the Farm Management Survey sample.

The percentage that the holding area of five feddans or less was to the total area in the village was calculated. The percentages were listed in rank order and using a table of random numbers, villages were selected from each of the zones if their percentage was the next random number on the list.

#### Selection of the Landholders

The cooperative in each of the selected villages prepared a list of the names of the landholders in that village. They were then classified into landholding-size classes.

Financial and manpower costs were taken into consideration in defining the sample size. It was agreed that the total number of sample observations would be 249. Their distribution was made on the basis of the proportion of landholders in each holding class in the ten selected villages with the constraint that the number of selected holders in any village not be less than ten, in order to assure representation of the holding classes. The landholders selected were chosen randomly using a table of random numbers. In each case, the household to be surveyed was chosen and an alternate also chosen.

TABLE 3. Weights of Zones, and the Distribution of the Villages Selected From Each Zone

Zone Type	Total Holding Area of the Zone	Total Holding Area of Five Feddans or Less in the Zone	Weight Ratio (percent)	Number of Villages Selected In Each Zone
Zone 1 Rice	61,008	36,845	43	4
Zone 2 Traditional Crops Lower Egypt	23,917	15,511	18	2
Zone 3 Fruit and Vegetables	33,655	16,674	20	2
Zone 4 Traditional Crops Middle Egypt	14,428	7,467	9	1
Zone 5 SugarCane	12,715	8,624	10	1
Total	145,723	85,121	100	10

In addition, 26 households were chosen to be interviewed in detail. They were from two villages chosen at random from the ten villages in the larger sample. One of the villages was in Upper Egypt, one in Lower Egypt. One-half of the landholders in each of the villages and members of their families were interviewed.

#### Qualifications

The small size of the sample obviates the results of this study being generalized to be representative of all of Egypt. This is a pilot study. The sample for the Farm Management Survey was a representative sample and this subsample is representative of that larger sample.

TABLE 4. Relative Weight for Each Village in Zone 1 (Rice)

Governorate	District	Village	Total Holding Area in the Village	Total Holding Area of 5 Feddans or less	Relative Weight Percentage	Approximate	Accumulative Ascending	Remarks
Kafr El Shiek	El Hamorel	El Kafr El Sharki	6,741	4070.0	11.05	11	11	
	Kafr El Shiek	Shenou	1,417	1312.0	3.56	4	15	
		El Abbassa	11,735	6294.0	17.08	17	32	
		El Arimon	3,071	1629.0	4.42	4	36	
	Fowa	Kabrit	1,980	947.0	2.57	3	39	
	Desouk	El Safia	2,781	1596.0	4.33	4	43	
Garbia	El Mahala El Kobra	El Gabria	1,872	1411.0	3.83	4	47	
Daniatta	Kafr Saad	Kafr El Wastani	881	4908.0	13.32	13	60	
Dakahlya	El Mahmoudia	Bani Ebeed	8,389	5464.0	14.83	15	75	
	Dekernis	Manshaat El Gamal	4,239	2256.0	6.12	6	81	
	El Manzala	El Gammalia	4,869	3184.0	8.64	9	90	
	Aga	Manshaat El Ekwa	1,316	1308.0	3.55	4	96	
	Talka	El Manakla	1,767	1758.0	4.77	5	101	
El Behera	El Delengat	Kanha	2,030	708.0	1.92	2	92	

TABLE 4. Relative Weight for Each Village in Zone 2 (Traditional Crops - Lower Egypt)

Governorate	District	Village	Total Holding Area in the Village	Total Holding Area of 5 Feddans or less	Relative Weight		Accumulative Ascending	Remarks
					Percentage	Approximate		
El Monoufia	Shebien El Kom	Kafr El Shiek	450	444	1.86	3	3	
	Guesna	Damhoug	1,700	1309	8.--	8	11	
	Manouf	_____	234	236	_____	2	13	
El Sharkia	Belbast	_____ El Dahashna	_____	880	_____	6	19	
		El Shagabna	_____	_____	_____	4	23	
	Aba Kebier	Manshat Radwan	_____	930	_____	6	29	
		Kafr El _____	101	973	_____	6	35	
	Fakour	El Samana	1,774	1309	_____	8	43	
		El Katavia	_____	_____	_____	9	52	
		El Seghra	3,173	1328	_____	9	52	
	El Zazazirk	_____	2,158	1510	1.14	10	62	
		Kafr Denehia	1,180	1132	7.30	7	69	
		El Ekrewa	3,573	2174	14.02	14	83	
	Kafr Sakr	El Seflea	2,589	1411	9.10	9	92	
	Diab Negn	Shambard Mankala	1,395	1192	7.68	8	100	
			23,917	15511	100.--	100		

TABLE 4. Relative Weight for Each Village in Zone 3 (Vegetables and Fruits)

Governorate	District	Village	Total Holding Area in the Village	Total Holding Area of 5 Feddans or less	Relative Weight Percentage	Approximate	Accumulative Ascending	Remarks
El Kalubia	Kaluib	Balaks	1,113	1,215	4.29	4	7	
		Shebin El Kanater	641	627	3.76	4	36	
		El Khanka	944	798	4.79	5	12	
		Tookh	1,113	1,098	6.56	7	43	
El Giza	Embaba	Kafr Hakin	2,757	1,525	9.15	9	21	
		Nahia	2,494	1,871	11.22	11	32	
Alexandria	Alexandria	Ezab Nobar	1,696	1,094	6.56	6	49	
El Behera	Abd El Matameer Kom Hamada	Kom El Farag	9,634	2,467	14.80	15	64	
		Mahalet Ahmed	992	198	4.19	4	68	
El Gharbia	Kafr El Zayat	El Dalgamoun	3,612	2,308	13.84	15	82	
El Sharkia	Fakous	El Salhia	8,159	2,978	17.11	18	100	
Total			33,655	16,674		100		

TABLE 4. Relative Weight for Each Village in Zone 4 (Traditional Crops - Middle Egypt)

Governorate	District	Village	Total Holding Area in the Village	Total Holding Area of 5 Feddans or less	Relative Weight Percentage	Approximate	Accumulative Ascending	Remarks
El Faium	Sanours	Bani Osman	1,881	1,045	13.99	14	14	
	El Bshway	El Shawashna	2,860	1,436	19.23	20	34	
	Tanya	El Mazatly	4,053	1,377	18.44	18	52	
Bani Seif	Smasta El Wakf	Mazoura	2,631	1,928	25.82	26	78	
El Minya	Malawy	Kasr hour	1,660	822	11.00	11	89	
	Abo Karkas	Asmanl	1,017	703	9.41	9	98	
	Bani Mazar	Hamada	326	156	2.08	2	100	
Total			14,428	7,467		100		

TABLE 4. Relative Weight for Each Village in Zone 5 (Sugar Cane - Upper Egypt)

Governorate	District	Village	Total Holding Area in the Village	Total Holding Area of 5 Feddans or less	Relative Weight Percentage	Approximate	Accumulative Ascending	Remarks
Assuit	El Gusiya	Dier El _____	1,344	1,014	11.____	18	12	
	Satul Selim	El Malmas	472	329	_.81	4	16	
Souhag	Saquth	El Haradna	383	314	_.64	4	20	
	El Yanshah	El Rashaida	1,059	957	11.10	11	31	
	Awlad Tork	Awlad Tork Gharb	1,415	1,132	13.13	13	44	
Kena	Kena	El Toyairat	1,752	1,262	14.63	15	59	
		El Dier El Sharki	711	499	5.79	6	65	
	Gues	Khuzam	2,552	1,081	12.53	13	78	
	Abu Tesht	Kem Yaaqub	862	772	8.95	9	87	
Aswan	Kom Ombe	El Sabeel	2,115	1,264	14.66	15	102	
Total			12,715	8,624		102		

TABLE 5. Names of Selected Villages in the Sample

Zone	PRINCIPAL			ALTERNATE		
	Name of the Village	District	Governorate	Name of the Village	District	Governorate
First	Manshaat El Gamal	Dekernis	El Dakahlia	El Gageria	El Mahala El Kobra	El Gharbia
	Kamha	El Delengat	El Behera	El Abassia	Kafr El Shiekh	Kafr El Shiekh
	Shenou	Kafr El Sheikh	Kafr El Sheikh	Beni-Ebid	El Mahmoudia	El Dakahlia
	El Arimon	Kafr El Sheikh	Kafr El Sheikh	El Kafr El Sharki	El Harmoul	Kafr El Sheikh
Second	El Solheia	Kafr Sakr	El Sharkia	Damhoug	Kewesha	El-Minofia
	Kanteer	Fakous	El Sharkia	El Ekhewa	El Hessenia	El Sharkia
Third	El Salhia	Fakous	El Sharkia	Mahalt Ahmed	Kom Hamada	El Behera
	Balaks	Kaloub	El Kalubia	Nahia	Embaba	El Giza
Fourth	Mazoura	Semesta El Wakf	Beni Suef	El Maratly	Tamia	El Faium
Fifth	El Haradna	Sakulta	Souhag	Kom Yaakub	Abu Tesht	Kena

TABLE 6. Selected Numbers of Holders for Each Village in Sample Villages According to Different Sizes of Holdings

Zone	Name of the Village	District	Governornate	Number of Holders With 5 Feddans and Less					Total	More than 5 Feddans	Total Number
				1 Feddan and Less	More than 1 Feddan -2	More than 2 Feddans -3	More than 3 Feddans -4	More than 4 Feddans -5			
1	Manshaat El Gamal	Dekernis	Dakahlia	11	9	7	2	2	31	4	35
	Kamha	Delengat	El-Behera	2	4	3	1	1	11	4	15
	Shenou	Kafr El Sheikh	Kafr El Sheikh	7	6	8	2	1	24	1	25
	El Arison	Kafr El Sheikh	Kafr El Sheikh	8	7	7	1	1	24	2	26
	Subtotal			28	26	25	6	5	90	11	101
2	Damhoug	Quesha	Minofia	8	8	4	2	1	23	1	24
	Kanteer	Fakous	Sharkia	12	9	7	1	1	30	1	31
	Subtotal			20	17	11	3	2	53	2	55
3	El Salheia	Fakous	El Sharkia	5	9	13	1	2	30	8	38
	Balaks	Kabioub	El Kalioubia	15	7	3	1	1	27	1	28
	Subtotal			20	16	16	2	3	57	9	66
4	Hazoura	Semesta El Wakf	Beni Suef	8	10	7	2	1	28	2	30
	Subtotal			8	10	7	2	1	28	2	30
5	El Haradna	Sakoulta	Souhag	8	4	3	-	-	15	-	15
	Subtotal			8	4	3	-	-	15	-	15
	Total			84	73	62	13	11	243	24	267
	Percentage of Total Sample Size			31.5	27.3	23.2	4.9	4.1	91.0	9.0	100.0

