AN ECONOMIC STUDY FOR THE PRIVATE TENURE PATTERNS OF RECLAIMED LAND IN EYPT

by
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INTRODUCTION

The total old land agricultural aree of Egypt amounted to 5.85 million feddans (1 feddan = 0.42 ha.) in 1982. Over the period 1952-1982 an additional new area of about 1.03 million feddans has been reclaimed. Even though, the aggregate agricultural land in Egypt (6.88 million feddans) represent only 2.44 percent of the total area of the country (1). On the other hand, arable land per capita has been declining for decades and is currently at 0.12 feddan (2). Likewise average farm size has been falling. In 1961 only 37.8 percent of the holdings were less than five feddans in size. By 1975 the proportion had increased to 65.8 percent, and by 1983, 95 percent of the Egyptian farms fall in this size category (3). This, in addition to the need for creating new communities, imply that reclamation of new land is a vital goal in the Egyptian development issue.

Large scale land reclamation has been carried on in Egypt for over a century, beginning with Mohamed Ali's efforts in the Northern Delta which brought some 600,000 feddans into production between 1813 and 1852 (5). Toward the end of the 19th century initiative passed from the state to private hands. Between 1900 and the revolution in 1952 several private companies continued to reclaim land in the Northern Delta and in Upper Egypt to a total of some 125,000 feddans.

Since 1952 land reclamation has passed through several stages, reflecting changing objectives and ideologies with respect to land ownership and management and knowledge about the land reclamation process itself. During the 50s several ambitious projects to develop

land for agricultural settlers were undertaken. However, "much early planning was based on the assumption that providing irrigation water would be sufficient to establish agriculture. Irrigation system designs were poor and neglected soil characteristics, resulting in inadequate drainage and increasing salinity (6). A total of 79,000 feddans were reclaimed during this period.

Over the years 1963 to 1967 a major initiative led to the reclamation of 712,000 feddans, most of which was organized as state farms to produce fruit and vegetables for export. Efficiency goals and the search for economies of scale replaced the earlier emphasis on settlement of the landless, who in any case, the government had realized, were more numerous than the total amount of conceivably reclaimable land. The period 1967 to 1979 was one of retardation with the reclamation of only 143,000 feddans. In many of the older reclaimed areas water tables rose creating problems of waterlogging and salinity and a fall in yields.

Organizationally, state farm yields were considerably below those achieved by small holders on adjacent distributed lands. Between 1968 and 1975 some land in five feddan plots was distributed to landless rural people from the delta and valley. In 1976 the government initiated a program of distributing land in 20 and 30 feddan units to agricultural granuates of high schools and universities, respectively. In the same year the government authority responsible for cultivation of large scale units in the reclaimed areas was broken up into separate companies each of which was to operate as a commercial enterprise (7). In 1980 the government introduction public auctioning of certain lands belonging to these companies in 10-20 feddan parcels as a further means of income generation and land distribution. The current five year plan (1982/83-1986/87) calls for reclamation of a further 637,000 feddans at an average cost of LE 2,105 per feddan, amounting to half of total public expenditure in agriculture (7).

DATA AND METHODOLOGY

There are few studies of private management of New Lands in Egypt.

This study is an appraisal of private management of reclaimed land by graduates and small holders because most of the New Land buyers at auction have not yet shown serious efforts towards cultivation. Various statistical tests and techniques including the t-test, Chi-square test, linear correlation and partial budgeting were used.

The Upper Egypt Agricultural Company (UEAC) is the New Lands company responsible for the land reclamation programme in Upper Egypt. The present study site is part of the area supervised by the UEAC and is located at on the western fringe of the Nile Valley in El Minia Governorate. The gross reclaimed area of the site is about 42,500 feddans. However, only 25,000 feddans have so far been cultivated. The distribution of holdings at the site in June 1983 is shown in Table 1.

A farm management sample survey was conducted in 1984 to cover the agriculture year 83/1984 The sample size totalled 40 farms- 17 farms representing small holders and 23 farms representing agricultural graduates. The Ford foundation in Cairo sponsored the survey as a reconaissance to guide the development of the new land.

FARMER ATTITUDES TOWARDS INVESTMENT OPPORTUNITIES

Investment in New Land:

the average farm size of the graduates was around 28 feddans, while it was 4.5 feddans for the small holders. Whereas 48 percent of the graduates have purchased additional land in the same area, only 6 percent of the small holders were able to add some land to their original holdings, even though the small holders had started cultivation five years earlier than the graduates. The average additional area purchased by the graduates is 8.8 feddans per farm, while it

is only 0.1 feddan per small holder. The average graduate farm size reached 37 feddans in 1983, while for the small holders it did not increase significantly because they are much less able to invest in land (Table 2).

All land purchases by the graduates had occurred by 1980, i.e. they were able to finance such investment at least for three years after they had received their original reclaimed land from the UEAC. The inputted investment was due to appreciation in land values. The value of the land originally distributed to the graduates increased from L.E. 280 per feddan in 1977 to L.E. 4,955 in 1984. Small holders land values increased from L.E. 236 per feddan in 1972 to L.E. 2,288 per feddan in 1984. This shows that the value of the graduates land increased at a higher rate than the small holders' land (Table 3). The better quality of the graduates'land is probably the reason for the higher value per feddan as will be presented later. The new policy of selling the land though auctions plays an important role in causing the price of even the newly reclaimed land to rise at a very high rate because many new buyers purchase the land for speculation.

Investment in Livestock:

Whereas 74 percent of the graduates do not hold any livestock, 70 percent of the small holders do hold livestock. Those graduates who do hold livestock own larger numbers than small holders,but do not hold buffaloes (Table 4). The graduates invest mainly in fattening (feedlot operations) and production of broilers. They may prefer not to invest in dairy cattle because of marketing problems and current policies which make feedlot operations less risky and more profitable. However, the small holders, continuting their practice from the Valley, keep mainly buffaloes and use most of the milk produced for home consumption. They depend mainly upon their own feed resources (the area of berseem and alfalfa is one fourth of the total cropped area). The graduates have started to invest in livestock and poultry since 1981, i.e. after 4 years of land cultivation. However, the small holders started with their livestock from the very beginning. In future, it

seems likely that the graduates will invest more in livestock and poultry than the small holders, and will show more attention to dairying than fattening (Table 5).

The New Lands graduate farmers, cited several constraints which make them hesitate to invest in livestock. These are lack of funds to purchase livestock and to finance operations, lack of space in which to expand such enterprise, and frequent electrical failure. They did not mention feed shortage as a major constraint.

Investment in Machinery:

The small holders are not able to buy machinery or even to obtain loans for such purposes. Therefore, they rent them when it is required. From Table 6 it is noticeable that the graduates gave irrigation pumps and pick-up trucks the first priority in machinery purchase, even before reaching the marginal stage of land productivity, i.e. before 1980. This is because water shortage and transportation are the most critical constraints. In general, one-half of the graduates own a pick-up, one-third own a tractor and one-fourth own an irrigation pump and a private car. However after reaching the marginal stage, they became more able to invest in other machinery.

THE CROPPING PATTERN

Cropping patterns on the New Lands under private management are not imposed on the farmers as is the case in the old lands. The farmer is therefore free to make his own decisions to cultivate what he believes profitable. However, the available information concerning the most suitable crops to be grown on the New Lands is so limited that some farmers have tried to grow as many as 15 crops to find out the ones which are best adapted.

Table 7 presents the average cropping pattern for small-holders and for graduates for the year 1983/84 agricultural years. It is quite clear that small holders have maintained the agricultural attitudes and practices of the Valley after moving to the New Lands.

Wheat and corn are the two major crops on the small holders farms in winter and summer, respectively. These two crops have very little importance on the graduates land. On the other hand, the graduates tend to follow a relatively nonconventional cropping pattern. They cultivate elephant grass as a summer fodder and fruit trees such as citrus, guava and pomegranate. They may be able to cultivate such crops because they have adequate sources of funds.

In general, the most important crops among the graduates are: tomatoes, onion and bean in winter, watermelon, sesame and groundnuts in summer, and alfalfa and guava as permanent crops. The most important crops among the small holders are: wheat, tomatoes and beans in winter, and corn, watermelon and groundnuts in summer, with only alfalfa as a permanent crop.

From Table 8 it is possible to compare the area of each crop and its importance over two successive agricultural years (1982/83 and 1983/84) for both the graduates and the small holders. Among fruits, guava is more successful than citrus. Concerning field crops, the small holder wheat area remained fixed with increasing relative importance, indicating its role as a subsistance food crop for this group. For the graduates, wheat occupied a small area which decreased over time. The area planted to barley has increased over time, probably because it makes good fodder and is suitable for sandy and saline soils. Area under oil crops decreased, but corn area remained almost fixed. Corn is a subsistance grain for the small holders and it is a good feed for the graduates' livestock and poultry. Both groups of farmers expanded the broad bean area. The most successful crop is watermelon which significantly expanded its area for both groups of farmers. Area under winter onions also increased indicating its success. The small holders tended to reduce their tomato area, either because of its high cost of production or the lack of marketing facilities. This was not true for the graduates. There was an expansion in alfalfa and a decreasing area of berseem. The experience of the graduates with elephant grass in 1982/1983 lead them to significantly decrease its area in 1983/84.

AGRICULTURAL PRODUCTION PERFORMANCE

To investigate yield, input levels, input-output relations and crop economics, it was difficult to deal with all crops. Therefore, the two major winter crops-tomatoes and inions-and the two major summer crops-groundnuts and watermelons-were selected. The traditional subsistance grains (wheat and corn) were omitted, because they were cultivated not for commercial purposes but mainly for the small holders' home consumption.

From Table 9, it is clear that the graduates are able to achieve a much higher yield than the small holders. The graduates use, in general, higher levels of all inputs than the small holders. As an unexpected result, the graduates use two times the number of hours of human labour per feddan used by the small holders. Human labour used by the graduates is completely hired, while the small farmers depend completely on family labour. This leads to very high labour costs for the graduates which may reach one half of the total costs of production (Table 9). Surprisingly, the graduates also use more machinery hours per feddan.

Fertilizer use varies between crops. Winter tomatoes receive the highest levels of chemical fertilizers while watermelons have the highest level of organic fertilization. Groundnuts, as a leguminous crop, require minimal levels of fertilization (Table 9). Differences between organic fertilizer levels among crops and farmer groups are very little because they use it mainly for improving land productivity and for the residual effect on successive crops as well as for the current crop. Fertilizer costs (organic and inorganic) represent the second largest item in total costs of production after human labour costs (Table 9). A panel survey indicated that the farmers cannot get more than one-third of their demand for chemical fertilizers from the cooperative at subsidized prices.

The variability in yield and cropped area per crop is much higher amonge small holders (Table 10), i.e. agricultural production under graduate management is more stable, as a measure of management

efficiency. However, the variability in the crop area is higher than the variability in the yield for a given crop. This evidence shows that the farmers decide to change areas cropped to compensate for the lack of funds and liquidity, in order to keep the yield as high and as stable as possible. Of course, the small farmers suffer much more than the graduates from lack of liquidity. Therefore, the variability in the area and the yield among them is much higher.

A simple linear correlation matrix between the yield per feddan and the input levels was estimated (Table 11). This matrix shows the direction and the magnitude of the input-output relationship. In general, fertilizers have the highest effect (correlation) on yields among all inputs. On the other hand, machinery inputs have very weak or even negative effects on yields.

It seems that the graduates use excess labour per feddan because it has either a weak or negative effect on yields, while the small holders showed a high positive effect of human labour on yields. This indicates that the family labour level used by the small holders is efficient in terms of quality. The fertilizer levels (organic and inorganic) have higher positive effects on yields in the case of the small holders. This is because, these farmers are conservative in applying fertilizers because of shortage of funds or their longer experience. Accordingly, they do not reach the ridge boundaries of the fertilizer-yield relation. They also cultivate lower quality land as will be shown later, which may require higher level of fertilization.

The graduates obtain yields nearly twice those achieved by the small holders for the winter crops and they also achieve lower costs per ton for tomatoes and groundnuts (Table 9). With respect to onions and watermelons, the small holders achieve lower costs per ton and higher net returns. This is mainly because of problems with the supply of hired labour in the case of the graduates. As shown in Table 10, there is excess use of human labour in comparison with the small holders. Also, they have to pay higher wage rates than the small holders. However, we cannot ignore the other reasons for less efficienct

input-output relationships as indicated by the estimates of Table 11.

COMPARISON OF AGRICULTURAL PERFORMANCE BETWEEN THE NEW LAND FARMERS AND NATIONAL AVERAGES

Table 12 is derived in order to make a comparison between the graduates and the small holders on the one hand and national averages on the others. The New Lands farmers produce higher yields than the national average, but also experience higher costs of production per feddan. The difference between the graduates and national averages is much higher than that of the small farmers. However, the New Lands farmers receive lower prices per ton for their crops than the national average, i.e. they have a lower market incentive, this is probably the impact of such remote area.

The reasons for the higher costs of production faced by New Lands farmers can be attributed the following reasons. The New Lands farmers (graduates and small-holders) bear higher costs for labour, fertilizer, seed and machinery. Therefore there are two possible explanations: (1) New Land farmers intensify input use to get yields above the national average, or (2) In order to intensify inputs they are forced to buy a higher proportion of inputs from the free market than the quantity provided by the cooperatives at subsidized prices. It seems that both explanation are possible.

MAJOR AGRICULTURAL CONSTRAINTS

It is not easy to judge the private management efficiency of the New Lands before knowing the constraints affecting such agricultural performance. The analysis of these constraints is based on a panel survey with the graduates, the agricultural cooperative board, Upper Egypt Agricultural Company employees and the staff of the Soil Science Department at El-Minia University.

Reclamation Plan:

Investigation of the reclamation plan shows that the graduates possess higher quality land. Whereas the small holders received the land in three parcels of good, medium and poor quality, the graduates received one homogeneous good quality parcel. In addition, the graduates' land had received about ten years of reclamation and cultivation by UEAC while the small holders' land had received only about two to three years of such treatment before passing into private ownership (Table 13). Even though, the number of years lasted for soil fertility improvement by the small farmers was around 5 years, i.e. only one more year than such period in case of the graduate farmer.

The graduates also have enough funds to add silt to their land (30 cubic meters, on the average, per feddan), but the small holders have never used such applications and depend on animal manure only. In the early days silt cost around L.E. 1.30 per cubic meter, however it has now reached L.E. 7.00 per cubic meter. On the other hand, application may infest the soil with nematodes.

Water Supply Shortage and Low Irrigation Capacity:

The problem of water shortage stems from the original planning of the irrigation system in the project area. The design of the pumping stations and the canal network was based upon a given cropping pattern, working hours of the pumps and a theoretical replacement and maintenance programme of the system. Unfortunately, all these assumptions have been violated over time. Presently, electricity outages are frequent and maintenance of the pumping station is poor. Irrigation capacity has decreased over time because of sand accumulation in the canals. The workers who operate the pumps actually work only about 60 percent of the programmed number of working hours per day. Also, the increasing trend of cultivating vegetables and fruits raises the water requirements beyond the current capacity.

Soil Features:

The soils in the area are of coarse texture, suffer from nutrient deficiency and are low in silt and organic matter. These factors in turn limit fertilizer response.

Weeds:

The proper chemical herbicide by season and by type and the proper method of application are not well known by the farmers, which causes negative results.

Nematodes:

Nematodes are widespread and becoming a serious problem in the project area. Sources of the infestation are not well documented but include irrigation water from the river as a carrier, the silt obtained from cleaning and deepening the drains and irrigation cannals which is spread on the land. and the manure applied to the soil.

Economic Constraints:

The three major economic constraints stressed by the farmers of the New Lands are: (1) Shortage of funds. (2) Labour supply shortages. and (3) Marketing difficulties.

The farmers require funds in order to invest in livestock, poultry and machinery or to finance current farming operations. The excess use of fertilizers, seeds and labour, particularly by the graduates leads to a high demand for funds to cover high current expenditures. Of course if they had an optimal technological package for farming such land with better irrigation management it would diminish the damand for funds.

The graduates in particular suffer from labour supply shortages because they depend entirely on hired labour and since many do not live permanently at the site they require additional labour for supervision and management. Also, they were originally high ranking employees and they do not like to do operations themselves like driving the tractor or other machines or performing routine maintenance.

Seasonal labour shortages also affect the efficeincy of farming operations. For example, to maintain optimum soil moisture content during land preparation it is necessary to plough within 4 to 5 days after irrigating. However, labour supply shortages may delay such

operations. Harvesting is another time of peak demand for labour. The graduates tried to develop a mechanical method for groundnut harvesting, which they postulate reduces the time required and the costs of the operation by one third.

The small holders particularly suffer from unavailbale marketing facilities and incentives. This constraint is probably behind their devoting a significant proportion of their land to subsistance grains. Relaxing this constraint may lead to a more market-oriented trend of small holder decision making. The availability of ready-made food stores in the village, particularly for bread, may encourage small holders to shift towards more commercial attitudes. All farmers in the study area received sale prices for their crops below the national average.

Present Farming Practices:

Traditional cultivation methods are commonly followed by the small holders. There is a wide variation between farmers with respect to planting methods. The varieties grown in the site are those used in the valley and the Nile Delta, since adapted varieties suitable for the New Lands have not been discovered yet. The proper sowing dates for the crops, especially, those which are sensitive to heat or frost, are not exactly known. The optimal planting density is also not known. This is a very important variable that may raise yields and lower costs.

Each farmer uses his own experience to determine the level, the time and the method of fertilizers application. Farmers usually apply higher levels of fertilizers than those recommended by the Ministry of Agriculture or those used by the UEAC. There is a common belief that appllying larger amounts of fertilizers will further raise yields. However, the low irriagation capacity and the nature of the soil interact to substantially lower fertilization use efficiency.

Furthermore, the farmers do not consider the residual effects of fertilization from the previous crop when they decide on fertilizer application rates for the current crop. In addition, the seeds of the leguminous crops (groundnuts, peas and beans) are usually not treated

with the appropriate bacterium to promote the formation of nodules to fix the nitrogen which leads to higher requirements for nitrogenous fertilizers.

All these farming practices require further techno-economic studies to determine the most efficient packages seasonally and for each crop.

Institutional Constraints:

There is no well equipped meteorological station in the project area to provide daily weather information.

the extension service in the project area is poor or non-existent. The farmers use their own experience and judgement based on trial and error concerning their agricultural production practices. The few extension employees who are available do not have reference material relating to newly reclaimed calcarous soils. They can only pass on general recommendations drawn up at the national level, which are based on and directed to agricultural conditions in the Valley and Nile Delta. The sample survey showed that surprisingly, all farmers in the sample, even the graduates, consider their neighbours to be the most likely source of advice, if they face a technical problem. In addition, El-Minia University provides some advice and demonstration services. An extension service center has been established in the Soil Science Department, based on a soil testing laboratory set up in 1981 with Dutch government technical and financial support. the lab provides analysis of soil, water and plants to farmers. El-Minia University is doing its best to raise the capacity of the lab to 20,000 samples a year by the end of 1985. The University will also establish a station of about 200 ha in West Samalout. This station will provide demonstration, training and consultancy services to farmers.

Social Constraints:

More than one third of the graduate families live in cities, while all the small holder families live in the village. The average family size of the graduates is smaller than the holders, i.e. 5.8 vs. 8.0.

Also, about two thirds of the graduates' children go to school, while only one child in every second small family attends school. There are two implications of this. First, educational facilities in the area are poor. Second, because many of the graduates do not live in their farms their children are unavailable to help with farm work. Accordingly the graduates suffer from labour shortages and have to use more hired labour than the small holders.

Interestingly, all the graduate families where the wife is employed live in the village near their lands while the families where the wife remains at home live in the cities. Therefore, it is recommended to set the wife's employment in the village as a criterion for future graduate selection for settlement in the New Lands.

All graduates possess TVs, electrical refrigerators, butagaz stoves and piped-in drinking water. However only one fifth of the small holders have a TV and none possess butagaz stoves or electrical refrigerators and less than two thirds have piped-in drinking water. Whereas international standards are for a maximum number of two persons per room, in small holders households the density reaches more than 3 persons per room and not all houses are made of concrete. Graduate houses have less than one person per room and all houses are made of concrete. Occupation rates of the houses available in the villages range between 20 and 95 percent. Transportation facilities are not satisfactory.

In general, it seems that the infrastructure and services do not provide opportunities for permanent settlement and a better quality of life.

1. Ministry of Planning of Egypt "Proposal of the 5 years Development Plan (1978-82) Vol.4, General Strategy for Agriculture, Irrigation and Food Security", August 1977.

2. International Bank for Reconstruction and Development. May 20, 1983. Arab Republic of Egypt: Selected Issues in Agriculture, Irrigation and Land Reclamation. Report No. 4133-EGT. Washington, D.C. 50 p.

3. Richards, Alan. 1982. Egypt's Agricultural Development 1800-1980: Technical and Social Change. Westview Press, Boulder, Colorado. Cited in Thomas P. Tomich. August 1984. Private Land Reclamation in Egypt: Studies of Feasibility and Adaptive Behaviour. Unpublished Ph.D. disseration. Stanford University, Stanford California. 519 p.

4. Egyptian Prime Minister Office: "A Study of the Food Problem in Egypt and the Required Policies". February 1983.

5. El Tobgy, M. 1976: Egyptian Agriculture. Ford Foundation, Cairo. 342 p.

6. Tomich, Thomas P. op.cit. Ref. No.3.

7. International Bank for Reconstruction and Development. June 25, 1984. Arab Republic of Egypt: Five-Year Investment Plan Review-Land Reclamation. Draft. Washington, D.C. 57 p. with annexes.

Table 1. Distribution of Holdings on the Reclaimed Land at West Samalout, Upper Egypt in June 1983

The Holder	The Area (Feddans)
- UEAC	28864*
- El Minia Food Security Co.	1064
- The Small Holders	457
- The Agric. Graduates	
University Graduates	1470
High School Graduates	320
- Land purchases through auctions	10392
	42567

*Out of this area about 17,000 feddans are not cultivated at present because of shortage of irrigation.

Table 2. Average Farm Size (feddans per holding)

Item	The Graduates		The Small Holders	
	Area	Year	Area	Year
Distributed land	27.26	1977	4.48	1972
Additional purchased land	8.80	after 1980	0.10	after 1980
Total farm size	36.66	1984	4.58	1984

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Table 3. Land Values (L.E./Feddan)

Item	Distributed land		Newly purchased land	
	Graduates	Small Holders	Graduates	Small Holders
Purchase value	280.5	235.6	1020.0	1147.0
Current value	4954.6	2287.8	3103.1	2294.1
Annual increase	667.7	171.0	694.3	286.7
Annual growth rate(%)	41.0	18.9	37.1	17.3

Table 4. Present Investment in Livestock and Poultry

Type of Livestock	Graduates		Small Holders	
	% of total farms	Average herd size (head)	% of total farms	Average herd size (head)
Dairy cattle	8	18	12	2
Buffaloes	0	0	59	1.5
Fattening	16	10	0	0
Broilers	16	925	0	0
Egg. layers	0	0	0	0
Rabbits	12	32	0	0

Table 5. Attitudes of Farmers toward Future Investments in Livestock and Poultry

Type of livestock	Graduates %	Small Holders %
Dairy Cattle	36	12
Fattening	12	18
Broilers	12	0
Egg - layers	8	6
Rabbits	12	0

Table 6. Relative Frequency of Machinery Holdings On Graduate Farms

Machinery Type	% of Total Holdings		Total
	Before 1980	After 1980	
Irrigation equipment	20	4	24
Tractors	12	24	36
Pickup	32	16	48
Harvestors	8	4	12
Milk separator	8	0	8
Private cars	16	8	24

Table 7. Average Cropping Pattern per Holding in 1983/1984

Crops	Average Crop Area per holding (feddan)		% of the total holders of each group	
	Graduates	Small Holders	Graduates	Small Holders
Winter Crops				
Tomatoes	6.71	0.98	78.0	80.0
Onion	6.33	0.30	72.0	24.0
Bean	3.98	0.84	68.0	71.0
Berseem	2.24	0.42	52.0	41.0
Pea	3.10	0.00	26.0	00.0
Barley	0.54	0.19	13.0	21.0
Wheat	0.04	1.24	4.5	88.0
Sub-total	23.12	3.97		
Summer Crops				
Corn	1.46	1.15	30.0	71.0
Groundnuts	5.43	0.96	67.0	58.0
Sesame	5.94	0.61	67.0	44.0
Tomatoes	1.20	0.10	13.0	6.0
Watermelon	7.53	1.14	76.0	68.0
Sweet potatoes	0.04	0.00	4.0	00.0
Sub-total	21.6	3.96		
Permanent Crops				
Alfalfa	2.77	0.43	54.0	41.0
Elephant grass	0.16	0.00	11.0	0.0
Guava	2.00	0.00	28.0	0.0
Citrus	0.18	0.00	6.5	0.0
Pomegranate	0.31	0.00	11.0	0.0
Sub-total	5.42 *	0.43		

Table 8 Cropping Pattern in Two Successive Years

Season	Crops	Small Farmers						Graduate Farmers					
		1982/83			1983/84			1982/83			1983/84		
		Area	%(1)	%(2)	Area	%(1)	%(2)	Area	%(1)	%(2)	Area	%(1)	%(2)
Winter Crops	Tomatoes	20.4	29.9		11.9	18.6		157.5	29.8		152	29.6	
	Onion	2.5	3.7		6	9.4		143	27.1		149	29.0	
	Broad beans	13.6	19.9		15.3	23.8		89	16.8		84	18.3	
	Berseem	8.5	12.5		6.3	9.8		59.5	11.2		53	10.3	
	Pea	-	-	48.1	-	-	47.1	54	10.2	44.7	30	5.8	44.3
	Barley	2.9	4.2		4.1	6.4		6	1.1		16	3.1	
	Fallow	-	-		-	-		10	1.9		13	2.5	
	Wheat	20.4	29.8		20.4	31.9		10	1.9		7	1.4	
	Sub-total	68.3	100.0		64.0	100.0		529.0	100.0		504	100.0	
Summer Crops	Zea Maize	18.7	27.5		20.4	32.5		33	6.2		32	6.3	
	Ground nuts	18.7	27.5		10.2	16.2		176	33.3		137	17.1	
	Sesame	11.9	17.5		8.5	13.5		130	24.6		111	22.0	
	Tomato	1.7	2.5	47.9	1.7	2.7	46.5	15	2.8	44.7	15	3.0	44.1
	Water melon	17.2	2.5		22.1	35.1		166	31.4		209	41.4	
	Fallow	-	-		-	-		9	1.7		-	-	
	Sweet potato	-	-		-	-		-			1	0.2	
	Sub-total	68.2	100		62.9			529	100		504	100	
Permanent Crops	Alfalfa	5.6	100		8.5	100		52.3	52.3		64	50.4	
	Elephant grass	-	-		-	-		7	5.6		3	2.4	
	Guava	-	-	4.00	-		6.3	44	34.8	10.6	46	36.2	11.0
	Pomogranade	-	-		-			8	6.3		4	3.1	
	Citrus	-	-		-			15	11.9		10	7.9	
	Sub-total	5.6	100		8.5	100		126.3	100		127	100	

(1) From the area of the same season

(2) Sub-total of the season area divided by total area

Table 9. Agricultural Production Performances for the Four Major Crops in 1983/84

ITEM	Winter Tomatoes		Onion		Groundnuts		Watermelon	
	Graduates	Small H.	Graduates	Small H.	Graduates	Small H.	Graduates	Small H.
Per feddan basis								
Yield (ton)	19.9	9.6	15.6	8.7	2.3	1.5	11.5	10.7
Labour Hours								
Human	705.8	398.0	778.3	317.7	635.6	382.1	514.0	378.6
Machinery	32.7	26.8	56.3	15.2	31.8	18.8	38.8	30.9
Animal	15.7	15.3	15.0	12.0	18.8	12.0	15.5	12.9
Costs (L.E.)								
Mineral fertilizers (1)	133.3	81.3	87.9	40.2	32.4	27.6	97.8	67.3
Manure	53.1	43.3	51.0	39.3	44.9	46.5	89.7	71.1
Seeds (2)	63.2	67.3	50.3	45.8	52.5	42.4	15.5	17.1
Chemical sprasy	74.0	53.7	48.6	32.2	27.6	16.8	55.1	60
Land rent (3)	89.2	52.9	74.5	61.6	83.4	53.3	108.7	87.5
Human labour	382.9	176.2	398.1	126.9	276.9	179.4	220.1	179.2
Machinery	81.1	41.4	103.7	25.1	62.0	27.3	77.4	48.5
Animal work	3.6	2.3	2.2	2.7	2.9	2.0	2.7	3.2
Total cost	880.4	518.4	816.3	373.8	579.2	395.3	667.0	534.1
Per ton basis								
Costs (L.E.)	44.2	54.0	52.3	43.0	251.8	263.5	58.0	49.9
Sale price (L.E.)	81.0	81.0	75.0	75.0	416.0	416.0	100.0	100.0
Net return (L.E.)	36.8	27.0	22.7	32.0	164.2	152.5	42.0	50.1

(1) Fertilizers: 33% subsidized and 67% from the free market
(2) Small holders use their own seed, graduates buy most of it
(3) It is the share of the crop in the total rent calculated on base of the period of the year in which the crop occupies the land.

Table 10. Yield Variability and Crop Area of the Four Major Crops

Crop	Comparative item	Farmers Group	Mean	Standard Deviation	Coefficient of variability %
Winter Tomatoes	Yield (tons)	Graduates	19.9	3.2	16.1
		Small H.	9.6	1.6	16.7
	Area (fed.)	Graduates	9.6	3.0	31.2
		Small H.	1.1	0.4	34.2
Onion	Yield (tons)	Graduates	15.6	1.0	6.4
		Small H.	8.7	1.4	16.1
	Area (fed.)	Graduats	8.0	2.9	36.2
		Small H.	1.1	0.6	54.5
Groundnuts	Yield (tons)	Graduates	2.3	0.2	8.7
		Small H.	1.5	1.3	86.7
	Area (fed.)	Graduates	8.9	3.9	43.8
		Small H.	1.3	0.7	53.8
Watermelon	Yield (tons)	Graduates	11.5		11.3
		Small H.	10.7	2.4	22.4
	Area (fed.)	Graduates	11.3	5.2	46.6
		Small H.	2.4	0.7	29.2

Table 11. The Correlation Matrix Between Yield/Fed. in Tons and Inputs Levels in 1983/84

Inputs	Winter Tomatoes		Winter Onion		Groundnuts		Watermelons	
	Graduates	Small Farm.	Graduates	Small Farm.	Graduates	Small Farm.	Graduates	Small Farm.
Labour (hrs/fed.)								
Human	.267	.782	(-.215)	.686	.382	.857	.264	.388
Machinery	.252	.284	(-.368)	(-.352)	.053	.580	(-.079)	(-.064)
Animal	(-.279)	.505	(-.139)	.452	.050	0.0	.285	.077
Other Inputs (L.E./fed.)								
Seeds	(-.224)	(-.081)	.177	.302	.228	.443	.260	.188
Fertilizer	.449	(-.92)	.316	.470	.008	.758	.292	.559
Manure	(-.246)	.865	.177	.302	.340	.896	.544	.483
Chemical Spray	.130	.855	.037	(-.030)	.008	.758	(-.079)	.559
No. observations	19	11	16	.6	16	8	19	14

Table 12. A Comparison of Yield, Costs and Sale Price Between New Land and Old Land Farms

Crop	Farmers Group	Yield ton/feddan	Costs (A) L.E./ton	Sale Price L.E./fedda
		...Percentage of the National Average... (2)		
Tomatoes	Graduates	268.5	68.0)	61.4
	Small Holders	129.9	84.0)	
Onion	Graduates	181.9	99.9)	93.2
	Small Holders	101.4	75.4)	
Watermelons	Graduates	113.5	146.5)	98.0
	Small Holders	105.6	125.9)	
Groundnuts	Graduates	306.7	82.9)	85.8
	Small Holders	200.0	87.7)	

(A) Land rent was ommitted

(2) % (Graduate's or Small Holders' Average / National Average)

Source: Calculated from tables 9 and 12.

Table 13. Reclamation History of the Farms

Comparative Item	The Graduates			The Small Holders		
	Mean	S.D.	Coef.of Variab.	Mean	S.D.	Coef. of Variab.
Reclamation period (years) by the Government	10	00	00	2.53	1.58	62%
Years required to reach the break-even point by the farmer	4.17	1.33	31.9%	5.29	2.11	39.9%
Silt additions by the Farmer						
M^3/feddan	29.84	4.50	157%	0	-	-
costs/m^3 (L.E.)	1.32	2.2	190%	0	-	-

ملخـــــــــص

دراسة إقتصادية لأنماط الحيازة الخاصة في الأراضي المستصلحة في مصـــر

إتبعت الدولة خلال السبعينات توزيع الأراضي المستصلحة على الفلاحين المعدمين والخريجين الزراعيين ، بهدف خلق فرص توظف أفضل للعمالة الفائضة من هذه الفئات ، ورفع مستواها المعيشي والمساهمة في زيادة الإنتاج الزراعي في هذه المجتمعات الجديدة . وإستهدفت تلك الدراسة تحليل أداء النشاط الزراعي تحت هذه الأنماط الإدارية الزراعية بعد مرور فترة كافية للإستزراع . وشملت الدراسة تحليل إتجاهات الزراع نحو الإستثمار وأنماط التركيب المحصولي والعلاقات الإنتاجية وكفاءة الإدارة المزرعية والمعوقات الفيزيقية والتكنولوجية والإقتصادية والإجتماعية المقيدة لكفاءة أداء النشاط الزراعي في تلك المناطق . وا ستخدمت الدراسة بيانات حصر بالعينة لإستبيان ميداني لكفاءة الإدارة المزرعية شمل ٤٠ مزارعا منهم ٢٣ من الخريجين الزراعيين ، ١٧ من صغار الزراع في منطقة سمالوط بمحافظة المنيا في عام ١٩٨٤ .

وتبين من نتائج التحليل أن عنصر الإدارة أكثر أهمية من حجم المزرعة في كفاءة إستخدام عناصر الإنتاج ، حيث إنخفضت تكاليف الإنتاج لوحدة الإنتاج لدى صغار الزراع عنها لدى الخريجين رغم إرتفاع الغلة الفدانية لدى الخريجين مما زاد صافي العائد لوحدة الإنتاج لدى صغار الزراع لعدة محاصيل ، أن حل مشاكل تسويق المحاصيل ، وإتاحة السلع الغذائية الأساسية للإستهلاك في المنطقة سوف يدفع صغار الزراع إلى نمط الزراعة التجارية ويحد من ظاهرة زراعة محاصيل الحبوب الغير مربحة كما يحد من نسبة الإستهلاك من إنتاج الأسرة . كما أن معيشة صغار الزراع في المنطقة وتوافر العمالة العائلية بما فيها المرأة والأولاد جعلت كفاءة هذا العنصر أعلى وأقل تكلفة منه في مزارع الخريجين ، بينما لعدة معوقات إجتماعية وإقتصادية كان هناك إستخدام زائد للعمالة في مزارع الخريجين ويبدو أن نقص مياه الري وإنخفاض كفاءة نظم الري معوقا رئيسيا لتنمية هذه المنطقة . كما أن هناك إفتقار لشبكة الخدمة الإرشادية المناسبة وتوصي الدراسة بتشجيع قيام شركات تسويقية تصنيعية زراعية ، وشركات خدمات للطاقة الغير تقليدية والميكنة في تلك المناطق ، مع تفعيل دور الجمعيات التعاونية للمزارعين خاصة من ناحية الدور التسويقي والإرشادي .