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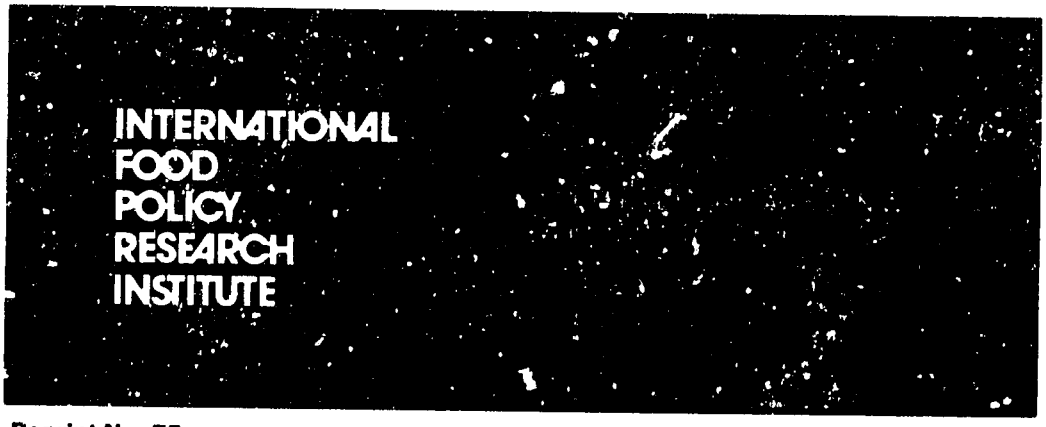

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Development and Structural Change in Rural Egypt, 1952 to 1982

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Summary. — This study evaluates the changes which have occurred in rural Egypt since 1952 in terms of a growth-conscious, poverty-oriented definition of development. According to the study, development requires improvements in three criteria over time: poverty, inequality and productivity (land and labor). Using a variety of empirical data, the study demonstrates that each of these criteria has either stabilized or improved in rural Egypt since 1952. The study therefore concludes that 'development' has indeed taken place in the Egyptian countryside. However, the low rate of qualitative structural change in the basic factors of production (land and labor) raises questions about the prospects for such development in the future.

'You have come to study rural development, *ya 'ustad* [lit. oh professor]? Maybe then you should pick another village. There has been no development here.'

Fellah (peasant) in Upper Egypt

1. INTRODUCTION

Recent years have witnessed a veritable plethora of attempts to define 'development.' Some writers have argued that development requires 'substantial' increases in output over time, as well as the means to distribute that output more evenly (Chenery *et al*, 1974; Morgan, 1975). Other authors have instead suggested that development requires some type of qualitative structural change in the basic factors of production (Johnston and Kilby, 1975; Uphoff and Ilchman, 1972).

Well aware of the controversy surrounding the concept of development, this paper does not intend to present yet another comprehensive definition of the word. Rather, it seeks to incorporate certain elements of the preceding definitions in such a way so as to ask very specific questions about the qualitative character of Egyptian rural change since 1952.

To these ends, this paper is divided as follows. Section 2 enunciates a threefold definition of development, namely, that development requires decreases in poverty and inequality, and an increase in productivity (land and labor) over time. Sections 3, 4 and 5 then use a variety of empirical data to evaluate changes in these three criteria in rural Egypt over time. In these three sections, a rather curious picture emerges: rapidly declining rates of rural poverty, a general stagnation in the incidence of rural inequality, and slow rates of increase in land and labor productivity. The final section of this paper attempts to resolve this paradoxical situation by citing the importance of worker remittances and by emphasizing the need for qualitative structural change in Egyptian agriculture.

2. A DEFINITION OF DEVELOPMENT

In our search for a working definition of development we can be guided by the thoughts of Dudley Seers. According to Seers, development has to do with 'those conditions which are necessary for the realization of the potential of human personality.'[1] As Seers notes, there is one *absolute* necessity for the realization of human potentiality — enough food.

In all countries foodstuffs have prices. It therefore becomes possible to express this criterion in terms of income levels. Yet since people,

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no matter how poor, never spend all of their money on food, any minimum level of income must also take into account basic physical necessities, such as clothing and shelter. While the difficulties of constructing such a minimum income level are well known,[3] the exercise represents a rough, yet useful, way of measuring changes in the incidence of poverty over time.

The number of people living in poverty seems to be closely linked with income distribution. According to Seers, 'It is a truism that poverty will be eliminated much more rapidly if any given rate of economic growth is accompanied by a declining concentration of incomes.'[4] A reduction in income inequalities seems desirable not only on welfare grounds. For example, since income in many developing countries is highly correlated with ease of access to state institutions, reducing income disparities would seem necessary to increase the poor's access to state services and resources (e.g., credit, technical assistance).

The third element of our notion of development is productivity, particularly per unit productivity. Realizing human potentiality in the sense of reducing poverty and inequality requires concomitant qualitative changes in the economic units of production — land and labor. In many poor countries, qualitative changes in land and labor productivity represent the best way for increasing food supplies and reducing poverty.

On the basis of the preceding, we now have three questions to ask about the character of Egyptian rural change since 1952: What has been happening to poverty? What has been happening to inequality? What has been happening to productivity?[4] If rural poverty and inequality have been reduced, and land and labor productivity have increased, then rural development has certainly taken place in Egypt. But if one or two of these central criteria have been growing worse, it would be very difficult to claim that rural development has occurred in Egypt.

Fortunately, data exist, however rough and incomplete, to allow us to pose these three questions to Egypt's record of rural growth since 1952. Such an examination will enable us to analyze the qualitative character of the changes that have occurred in the Egyptian countryside during the past 30 years.[5]

3. POVERTY

No single source of data can be used to estimate changes in the incidence of rural poverty in Egypt over time. The most reliable set of data comes from a series of consumer budget surveys undertaken by the Egyptian government (Central Agency for Public Mobilization and Statistics) in 1958/59, 1964/65 and 1974/75.[6] When combined with a new 1982 consumer budget survey undertaken by the International Food Policy Research Institute (IFPRI),[7] these surveys provide the basis for a broad quantitative overview of the changes in Egyptian rural poverty over time.[8]

One conventional way to measure poverty is to establish a poverty line, defined as the break-even level of income needed to meet certain minimum food and non-food requirements. Establishing such a poverty line for rural Egypt (Table 1) yields the following figures for the total amount of income per household needed in each of the four benchmark years: 77.9 Egyptian pounds for 1958/59, 118.3 Egyptian pounds for 1964/65, 344.8 Egyptian pounds for 1974/75 and 711.3 Egyptian pounds for 1982.[9]

Given the character of the data, it should be noted that this definition of the poverty line is necessarily arbitrary, and has at least three limitations. First, nutritional data on rural Egypt are quite sparse. Since the results available from the 1958/59, 1964/65 and 1974/75 surveys provide no data breakdown on the basis of age, sex or type of occupational activity, it is exceedingly difficult to estimate the nutritional requirements of any specific Egyptian household. Second, our calculations of average family size based on adult equivalent units (AEUs) ignore important differences in consumption behavior and nutritional requirements between various family members on the basis of age and sex. It would have been more accurate here to speak in terms of consumption units rather than family members. But, since the first three consumer surveys provide no data breakdown on family members, it proved impossible to frame our analysis in terms of consumption units. Third, and most important, it must be emphasized that our poverty line is based on consumer *expenditure* behavior, rather than consumer *income* behavior. All the data provided by the four consumer surveys relate to consumer expenditure behavior. Thus, no account is taken of the saving or dissaving behavior of the various income groups. This omission probably gives a slight downward bias to our poverty line estimates, since the bulk of dissaving activity typically occurs at the lower end of the income distribution.

Despite these limitations, however, our poverty line estimates seem to provide a reasonably accurate approximation of reality in the Egyptian countryside. For example, our estimates for 1958/59 and 1964/65 correspond quite closely to

Table 1. *An estimate of the poor in rural Egypt, 1958/59, 1964/65, 1974/75 and 1982*

	1958/59	1964/65	1974/75	1982
(1) Annual cost* of minimum required diet per capita per year	13.14 LE	18.02 LE	45.01 LE	89.85 LE
(2) Ratio of food to total expenditures	0.70	0.665	0.65	0.64
(3) *Poverty line per capita per year*: Total food and non-food expenditures	18.78 LE	27.09 LE	69.24 LE	140.40 LE
(4) Family size, in adult equivalent units	4.15	4.37	4.98	5.06
(5) *Poverty line per household per year*: Total food and non-food expenditures	77.98 LE	118.34 LE	344.82 LE	711.26 LE
(6) Percent of rural households below poverty line	27.4	23.8	60.7	17.8

Sources: Row (1) To calculate the market cost of the diet which satisfies minimum daily per capita requirements (2,510 calories) for an adult equivalent unit (AEU) in Egypt, as established by the Food and Agriculture Organization (1979, p. A-47), the following steps were taken: (a) the quantities, values and calorie content of the diet actually consumed by that expenditure group closest to the poverty line were calculated from the consumption tables; (b) the caloric content of this group's diet was proportionately scaled up or down to get the quantities of food that would produce the desired 2,510 calories; (c) the market cost of these items was then obtained by multiplying their quantities by the unit prices paid by rural consumers; and (d) the total cost of the minimum diet was calculated as the sum of these items. For more details on these calculations see Appendix.

Row (2) Figures obtained by calculating the ratios of food to total expenditures for that expenditure group falling closest to the poverty line. The ratios for 1958/59, 1964/65 and 1974/75 are cited in Radwan (1977, p. 42).

Row (3) Figures obtained by dividing row (1) by row (2).

Row (4) Figures for rural family size for 1958/59, 1964/65 and 1974/75 derived from Egyptian population censuses; 1982 figures from IFPRI Budget Survey. For all years it was estimated that, on the average, 1.0 person equals 0.830 adult equivalent units (AEUs); this is the ratio used by Radwan and Lee (1977, Table 5:2).

Row (5) Figures obtained by multiplying rows (3) and (4).

Row (6) Figures obtained by calculating total number of rural households with total food and non-food expenditures below the poverty line.

*According to the 1982 rate of exchange, 1.0 Egyptian pound (LE) equals US $1.22.

those made by Samir Radwan for the same years.[10] Our 1974/75 figures, however, are considerably higher than Radwan's, because we employed different assumptions regarding the composition of the least-cost diet, as well as family size.[11]

When compared with the expenditure data provided by the four consumer surveys, our poverty line data yield suggestive results. According to Table 1, there was a large increase in rural poverty, measured in terms of the percentage of rural households beneath the

poverty line, between 1964/65 and 1974/75. However, after the mid-1970s there was an equally dramatic decrease in the incidence of rural poverty in Egypt. By 1982 only 18% of all rural families were living beneath the poverty line, a figure far less than those recorded in all previous years.

Similar to the changes observed in other developing countries,[12] such dramatic fluctuations in the incidence of poverty in rural Egypt can be explained by reference to several factors. During the 1950s and early 1960s, rural poverty declined as successive Egyptian land reform initiatives improved the distribution of land and income in the countryside. But by the mid-1960s these initiatives, which distributed about 13% of the total cultivated land to about 9% of the rural population, came to an end.[13] In 1967, Egypt suffered a major military defeat. Anxious to secure the funds for national defense, the government at this time strengthened the character of a number of marketing and production controls in the countryside that were designed to increase the flow of the marketable surplus out of agriculture.[14] While the impact of these controls upon agricultural producers has been debated,[15] it seems clear that they did little to improve the status of the rural poor. By the end of the interwar period (1967–73) 60% of all rural families were living beneath the poverty line.

However, after the October War of 1973, President Sadat's decision to encourage Egyptians to seek work abroad (principally in the Arab oil countries) had a major salutary impact on the rural order. According to official government sources, the number of Egyptians working abroad increased from 34,000 in 1973 to approximately 3 million in 1984.[16] As Table 2 indicates, during the same time period official remittances from these workers increased from $128 million to almost $4 billion.[17] While no detailed work has yet been done on the amount of these remittances reaching the Egyptian countryside, it seems reasonable to assume that between 20 and 40% of these remitted earnings (i.e., in 1983/84 between $780 million and $1.5 billion) have gone directly to rural residents.[18] Such earnings have also had an important indirect effect on rural incomes, through their impact on real agricultural wages.[19] At the same time, rising urban demand and income have caused the rate of return on crops not marketed through official government channels (fruits, vegetables, *berseem*) to rise sharply. Fueled by the tremendous increase in worker remittances, the interaction of these various factors has caused the number of rural families living in poverty in rural Egypt to decline precipitously in the 1970s.

Although the most common way of measuring poverty is to analyze changes in the number of people living beneath a specified poverty line, this method of approach ignores the amounts by which the incomes of the poor fall short of the poverty line. It is therefore useful to supplement this simple head-count measure with more sophisticated measures.

The poverty gap index, which measures the percentage shortfall of the mean income of the poor from the poverty line, represents one such measure. But this index suffers from the problem that it is insensitive to the number of poor people, as well as to transfers of income among the poor. Thus, it is useful to couple use of this index with Sen's index of poverty, which measures the number of people living in poverty, as well as the weighted amounts by which their incomes fall short of the poverty line.[20]

Table 3 presents the changes in the poverty gap index and Sen's index of poverty for the four benchmark periods. The results are quite similar to those presented above. According to both measures, there was a steady increase in rural

Table 2. *Remittances of Egyptians working abroad, 1973 to 1983/84*[a]

1973	1975	1977	1979	1981/82	1983/84
		(millions of US dollars)			
128	365	896	2,214	2,100	3,900 (projected)

Source: Central Bank of Egypt.

[a]These official government figures include both 'monetary transfers' to banks and 'exchange imports' of Egyptians working abroad. As noted in footnote 17 of the text, these official figures probably underestimate the actual level of remittances entering Egypt in any given year.

poverty between 1958/59 and 1974/75, followed by an equally significant decrease in poverty in the subsequent decade. Over the entire period, 1958/59–1982, Sen's weighted index shows a slight improvement in the incidence of rural poverty. Table 3 therefore tends to corroborate the trend revealed in Table 1: between 1958/59 and 1982 the incidence of Egyptian rural poverty declined significantly.

4. INEQUALITY

One familiar way of measuring the degree of inequality in income distribution is the Gini coefficient, which is derived from the Lorenz curve showing cumulative proportions of income received by cumulative proportions of recipients.[21] As calculated from the data contained in the four consumer surveys, the Gini coefficient of household expenditure shifted from 0.343 in 1958/59 to 0.337 in 1982 (Table 4). These figures suggest an expenditure distribution that is generally egalitarian by developing country standards, but they also point to the absence of any significant improvement over time.

Another measure of inequality in wealth is Theil's entropy measure. This index, which measures the weighted difference of incomes from the mean,[22] is sensitive to the type of income transfers among the poor that the Gini coefficient misses.[23] Scaled to lie between 0 (perfect equality) and 1 (perfect inequality), Theil's entropy measure in Table 4 points to the same stagnation in rural income distribution as the Gini coefficient. Between 1958/59 and 1982 Theil's entropy measure shifted from 0.161 to 0.167, an insignificant change.

A third way of measuring changes in income distribution is by quintile groups. Table 5 presents data on the loss or gain in expenditure by quintile groups for the four benchmark years. The results are instructive. Between 1958/59 and 1974/75, the percentage of total expenditure accruing to the lowest 20% decreased, only to increase very slightly between 1974/75 and 1982. But over the entire study period, the percentage of expenditure accruing to the lowest quintile group declined significantly, suggesting that the incidence of inequality actually increased during these years. This finding is corroborated by noting that the percentage of expenditure accruing to the top 10% actually increased during the study period. Because these results relate to expenditure behavior only, and not to income

Table 3. *An estimate of the poverty gap of the rural poor in Egypt, 1958/59, 1964/65, 1974/75 and 1982*

	Proportion of rural population in poverty*	Average poverty gap in constant 1975 LE per AUE per year†	Sen's index of poverty‡
1958/59	0.274	9.994	0.079
1964/65	0.238	32.561	0.178
1974/75	0.654	30.466	0.212
1982	0.178	23.382	0.061

*Number of adult equivalent units in households below the poverty line as percentage of total adult equivalent units.

†Average poverty gap measures the shortfall of mean income of the poor from the poverty line. Figure is deflated by the wholesale price index, 1975 = 100.

‡Sen's index of poverty represents a normalized weighted sum of the income gaps of the poor. It measures both the number of people existing below the poverty lines, as well as the weighted amounts by which the incomes of the poor fall short of the specified poverty line. It can be expressed as:

$$P = \left(\frac{q}{n}\right)\left(\frac{1}{z}\right)\left[(z-m)\ (1-G)\right]$$

where: n = total population size
q = number of people in poverty
z = poverty line
m = mean income of the poor
G = Gini coefficient of the distribution of income among the poor.

Table 4. *Indicators of income distribution*, 1958/59, 1964/65, 1974/75 *and* 1982

	Gini coefficient of household expenditure*	Theil's entropy measure†
1958/59	0.343	0.161
1964/65	0.290	0.122
1974/75	0.348	0.174
1982	0.337	0.167

Sources: Coefficients of inequality calculated from four rural budget surveys.

*The Gini coefficient is an index commonly used to measure the inequality of a distribution of income. It can be represented as:

$$G = 1 + \frac{1}{H} - \frac{2}{HY}\sum_{1}^{H} p(h)\,y^h$$

where:
H = number of units
y^h = quantity over which inequality is measured
Y = total inequality
$p(h)$ = rank assigned to household h ranked by y.

†Theil's entropy measure is another index used to measure inequality of a distribution of income. Scaled to lie between 0 and 1, it can be expressed as:

$$T = 1 - \frac{y}{H}\exp\left(-\sum \frac{y^h}{Y}\mathrm{Ln}\ y^h\right).$$

Table 5. *Distribution of rural household consumption expenditure*, 1958/59, 1964/65, 1974/75 *and* 1982

Percentage of expenditure accruing to:	1958/59	1964/65	1974/75	1982
Lowest 20%	6.66	7.37	5.94	6.03
Second 20%	10.98	11.63	11.17	11.41
Third 20%	16.59	16.26	15.79	15.97
Fourth 20%	21.90	22.02	21.21	22.60
Top 20%	43.87	42.72	45.89	43.97
Top 10%	28.03	27.47	30.54	28.35
Theil's coefficient	0.161	0.122	0.174	0.167
Gini coefficient	0.343	0.290	0.348	0.337

Sources: Figures calculated from the four rural budget surveys.

actually received, it seems likely that they underestimate the exact increase in rural inequality since 1958/59.

It is also possible to measure rural inequality by examining changes in the distribution of landholdings over time. Land is not the only income-generating asset in the Egyptian countryside,[24] but it is certainly one of the most important. A recent study by the International Labor Office (ILO) in Egypt shows that the degree of rural landownership is positively correlated with income group. According to this study, 'at least 73% of all (rural Egyptian) households in the bottom 50% of expenditure groups own no land, while this is the case for only some 20–25 of the top 5%.'[25]

As calculated from the data on landholdings presented in Table 6, the Gini coefficient of inequality shifted from 0.715 in 1950 to 0.456 in 1975. This movement to less inequality in the distribution of landholdings can be attributed to the land reform measures enacted by the Egyptian government, as well as to the cumulative effects of Islamic laws of inheritance. Under Islamic law land is divided equally between all male heirs, with females theoretically receiving equal half-shares.[26]

It is important, however, to treat this decline in the Gini coefficient with some caution. Certain deficiencies in the data may well exaggerate the degree of improvement in the structure of Egyptian landholdings over time. First, Egyptian landholding statistics record the number of units of operation (owned *and* rented), in each village, and hence disregard the existence of multiple holdings (Fadil, 1975). In other words, a large landowner possessing land in two or three villages is not counted as a single owner, but several. This leads to an underestimate of the holdings of large landowners. Second, since the enactment of the first Egyptian land reform law in 1952, many large landowners have taken to registering their land in the names of different family members, while still retaining effective control over the land.

A closer look at the data in Table 6 reveals an even more important reason for caution. Between 1950 and 1975, the most significant changes in the structure of Egyptian landholdings have occurred in the less than one feddan category. (One feddan equals 0.42 hectares or 1.04 acres.) Between 1950 and 1975, the relative number of holdings in this category increased from 21.4 to 39.4%, while their share of the total area increased from 1.8 to 12.4%. These dramatic changes call attention to one of the leading problems in the Egyptian countryside: land fragmentation and the subsequent marginalization of the peasantry. In Egypt, the high rate of population growth on a relatively inelastic cultivable land base propels the division of small landholdings into ever more uneconomic slices of land.[27] According to the World Bank,[28] one feddan of land in Egypt is capable of supporting 3.5 persons. Yet according to the most recent family budget survey, rural families average 6.3 persons. To survive, large rural families in the less than one feddan category are forced to work either as agricultural laborers at home, or as manual laborers abroad.

A summary of the data in Tables 4–6 shows that there has been little or no improvement in rural inequality in Egypt during the period under study. Inequality in expenditure, as measured by the Gini, Theils and quintile indices, shows no improvement between 1958/59 and 1982. While inequality as measured by the concentration of landholdings shows considerable improvement, important data insufficiencies and equally critical changes in the relative and absolute numbers of nearlandless landholders seem to call this result into question. On the whole, there appears to have been a general stagnation in the degree of rural inequality in Egypt in the 30 years since the revolution of 1952.

However, it is important to recognize that this finding is quite consistent with the pattern observed in other developing countries. Kuznet's hypothesis (1963, 1966), in fact, suggests that income inequality actually increases during the early stages of development, and only begins to decline in the later stages. Ahluwalia's econometric results (1976) also support the position that inequality and income are related in a U-shaped manner during the early stages of development. On the basis of these studies, it seems significant that inequality in rural Egypt only stagnated — and did *not* rise — during the period under analysis.

5. PRODUCTIVITY

In applying the third aspect of our definition of development — productivity — to the Egyptian countryside, it becomes necessary to examine productivity per unit land and labor. Since Egypt is a land-scarce, labor-rich country, it is best to first examine the question of land productivity. Between 1948–52 and 1978–82, the cropped area in Egypt increased by less than 15%, while the total Egyptian population more than doubled. Coaxing higher yields out of a limited land base to feed a rapidly increasing population is thus the basic conundrum that Egyptian agriculture faces.

The data in Table 7 suggest that Egyptian agriculture has largely failed to meet this challenge over the last 30 years. While the percentage of cropped area devoted to major food crop production in Egypt has remained almost constant over the period 1948–52 to 1978–82, per capita food production peaked in 1955–59 and has declined steadily ever since. By 1978–82, per capita food production in Egypt had declined almost 11% from its level in 1948–52.

This disappointing record of food production growth is, in part, the result of Egypt's low rate of yield productivity growth. On the one hand, Egyptian crop yields are quite high by world standards. In recent years, only Mexico among

Table 6. *Distribution of landholdings by size, 1950, 1961 and 1975*

Size of holdings (feddans)	1950				1961				1975			
	Number of holdings (000s)	%	Area of holdings (000s)	%	Number of holdings (000s)	%	Area of holdings (000s)	%	Number of holdings (000s)	%	Area of holdings (000s)	%
Under 1	214.3	21.4	111.8	1.8	434.2	26.4	211.2	3.4	1,124.3	39.4	739.0	12.4
1–< 3	410.0	40.9	709.6	11.6	672.7	41.0	1,153.2	18.5	1,160.1	40.6	2,023.4	33.8
3–< 5	162.4	16.2	601.4	9.8	274.3	16.7	990.0	15.9	354.8	12.4	1,185.6	19.8
5–< 10	122.4	12.2	818.4	13.3	170.0	10.4	1,100.7	17.7	148.5	5.2	944.4	15.8
10–< 50	79.0	7.8	1,497.4	24.4	80.5	4.9	1,431.9	23.0	65.1	2.3	985.5	16.5
Over 50	14.9	1.5	2,405.4	39.1	10.4	.6	1,335.8	21.5	0.1	0.01	105.7	1.7
Total	1,003.0	100.0	6,144.0	100.0	1,642.1	100.0	6,222.8	100.0	2,852.9	100.0	5,983.7	100.0

Sources: 1950 figures from Egyptian Ministry of Agriculture, *Agricultural Census 1950*, Cairo, Volume 1, Table 3, pp. 34–35.
1961 figures from Egyptian Ministry of Agriculture, *Fourth Agricultural Census 1961*, Cairo, 1967, Part I, Section 1.
1975 figures from Ministry of Agriculture and cited in Harik (1979), p. 39.

Table 7. *Growth of population, cropped area, major food crop production and per capita food production in Egypt, 1948-52 to 1978-82*

	Population ('000)	Total cropped area ('000 feddans)	Percent of cropped area devoted to major food crops[3]	Total major food crop production ('000 metric tons)[4]	Per capita food production (kg)
1948–52	20,482	9,412	53.4	4,208	205.4
1955–59	24,102	10,077	53.6	5,230	217.0
1963–67	29,408	10,413	52.4	6,301	214.2
1970–74	34,715	10,855	52.4	7,272	209.5
1978–82	42,183	10,590	56.8	7,836	185.7

Sources: Population figures from United Nations data.
Figures on cropped area in Egypt from El-Fogby (1976), Richards (1982) and USAID (1984).
Food crop production figures from *FAO Production Yearbooks* (various issues) and *FAO Production Yearbook Tape* (1980).
[2]Total cropped area equals the total cultivated area multiplied by the cropping intensity. In Egypt for every feddan of land under perennial irrigation, there is approximately 1.9 feddans of cropped land. (One feddan equals 0.42 hectare.)
[3]Major food crops in Egypt include wheat, rice, maize, sorghum, beans, lentils, onions, vegetables and groundnuts.
[4]In computing major food crop production, rice is expressed in terms of milled form, and non-cereal components have been converted into wheat equivalents on the basis of calorie content.

all developing countries has registered higher wheat yields than Egypt, and only North and South Korea have posted higher rice yields.[29] However, it is important to remember here that Egyptian yields — unlike those in most other countries — are almost 100% under irrigation. If only *irrigated* yields between countries were compared, Egyptian yields would be relatively low, considering the excellent soil, sunshine and water inputs existing in Egyptian agriculture. When all these factors are taken into consideration, Egyptian yields — while high by world standards — still show much room for improvement (World Bank, 1976).

Table 8 compares the growth in Egyptian yields for major food crops with those of the average of 36 other developing countries. The data show that, between 1948–52 and 1963–67, the Egyptian rate of growth in output per hectare for major food crops far exceeded that of the average of 36 other developing countries. However, after 1963–67 Egypt's rate of yield growth for major food crops dropped sharply, while that of the average of 36 other developing countries rose considerably. Between 1963–67 and 1978–82, the 36 developing countries averaged a much higher rate of growth in output per hectare than Egypt.

The data in Table 9 provide a disaggregated view of the rate of yield growth for the principal field crops in Egypt and the 36 developing countries. Cotton is included in the calculations here because it is Egypt's leading export crop. The results are quite similar to those of the preceding table. Between 1948–52 and 1963–67, the Egyptian rate of growth in output per hectare for three of the five crops — wheat, maize and sorghum — exceeded that of the average of 36 developing countries. However, after 1963–67, Egypt's rate of yield growth for all the crops — except cotton — declined significantly. Between 1963–67 and 1978–82, the 36 developing countries averaged a much higher rate of yield growth for all crops — except cotton — than Egypt.

Egypt's low rate of yield growth in recent years is quite disturbing. Since the supply of harvested land in Egypt is relatively inelastic, the importance of achieving higher crop yields is paramount. Why, then have these yield increases not taken place?

The answer to this question is a complicated one, requiring the type of detailed examination of Egyptian agricultural pricing policies, investment strategies and institutional factors that lies well beyond the purview of this analysis.[30] Yet, at a most basic level, it seems that the Egyptian government's consistent neglect of agriculture has played a major role in forestalling the type of technological changes that are needed to stimulate agricultural productivity. The share of total

Table 8. *Average annual growth rates* of production, area harvested and output per hectare of major food crops† 1948–52 to 1978–82: Egypt vs 36 developing countries*

(a) Average annual growth rate, 1948–52 to 1963–67 (percent)

	Total major food crop production	Area harvested	Output per hectare
36 Developing countries‡	+3.24	+2.87	+0.74
Egypt	+2.73	−0.78	+3.53

(b) *Average annual growth rate, 1963–67 to 1978–82 (percent)*

	Total major food crop production	Area harvested	Output per hectare
36 Developing countries‡	+2.60	+0.79	+1.79
Egypt	+1.46	+1.48	−0.02

Sources: Major food crop production figures from *FAO Production Yearbooks* (various issues) and *FAO Production Yearbook Tape* (1980). All China data from *Statistical Yearbook of China* (1983).

*Average annual growth rates calculated here are simple and unweighted growth rates.

†Major food crops here include cereals, roots and tubers, pulses and groundnuts; bananas and plantains are excluded because estimates on area harvested are not available. In the computations, rice is expressed in terms of milled form, and non-cereal components have been converted into wheat equivalents on the basis of caloric content.

‡The 36 developing countries include: Afghanistan, Argentina, Bangladesh, Brazil, Burma, Chile, China (People's Republic) Colombia, Ethiopia, Guatemala, Guinea, India, Indonesia, Iran, Ivory Coast, Kenya, Korea (Republic), Libya, Madagascar, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Panama, Peru, Philippines, Senegal, Sri Lanka, Syria, Thailand, Tunisia, Turkey, Venezuela, Yemen (Dem.) and Zaire.

fixed public investment in agriculture (including irrigation and drainage) has declined steadily from 24% in the mid-1960s (when work on the Aswan Dam was at its peak) to about 8% in 1978.[31] Moreover, during this time, Egyptian investments have been heavily weighted towards land reclamation[32] and drainage projects. As a result, technical agricultural services such as research, extension and cooperative organization at the local level have been virtually starved of allocations. The low priority assigned to these services means that precious little effort has been spent on developing and disseminating the type of new technological inputs needed to boost crop yields at the farm level.

An instructive case in point of the productivity problems caused by the state's neglect of agriculture is provided by the low adoption rate of high-yield variety (HYV) seeds in Egyptian agriculture. Despite a generous seed subsidy, in 1982 less than 1% of the total rice area in Egypt was planted in HYVs, compared to 48% for India and 80% for the Philippines. The situation is only slightly better for wheat. In the case of wheat, 52% of total plantings in Egypt in 1982 were with HYVs, compared to 76% for India and 84% for Pakistan (Dalrymple, forthcoming). These low rates of HYV dissemination go a long way toward explaining the recent disappointing rates of yield productivity growth in Egyptian agriculture.

Egypt's yield growth problems are compounded by the fact that agricultural labor productivity has also stagnated. Despite recent state-supported efforts to mechanize, many Egyptian peasants still seed, plow, weed and harvest their crops using the same tools and techniques as they did a hundred years ago. It is

Table 9. *Average annual growth rates* of output per hectare for selected principal crops† 1948–52 to 1978–82: Egypt vs 36 dev. ..ping countries*

(a) *Average annual growth rate, 1948–52 to 1963–67 (percent)*

	Cotton (lint)	Wheat	Rice paddy	Maize	Sorghum
36 Developing countries‡	+1.96	+1.59	+2.38	+1.10	+0.67
Egypt	+1.47	+2.44	+1.96	+2.98	+2.28

(b) *Average annual growth rate, 1963–67 to 1978–82 (percent)*

	Cotton (lint)	Wheat	Rice paddy	Maize	Sorghum
36 Developing countries‡	+1.48	+2.34	+1.70	+1.52	+0.95
Egypt	+2.66	+1.52	+0.67	+1.09	−0.08

Sources: Cotton figures from USDA (1984); all other data from sources listed in Table 8.

*Average annual growth rates calculated here are simple and unweighted growth rates.

†In 1978–82 these five crops (cotton, wheat, rice, maize and sorghum) accounted for about 70% of Egypt's total cropped area.

‡The 36 developing countries are listed in Table 8.

quite normal, for example, to see peasants in Upper Egypt using cow-driven *baladi* plows to prepare their fields, and manually operated *tunburs* (Archimedean screws) to irrigate their crops.[33] As a result, labor productivity in Egyptian agriculture has grown but slowly, at a rate far below that of other developing countries. The usual problems of cross-national analysis notwithstanding, the data in Table 10 show that the rate of growth in output per male agricultural worker in Egypt between 1960–64 and 1978–82 fell over 60% behind that of the average of 21 selected developing countries. This is a disturbing finding. Some cross-national studies have found that the major difference in agricultural performance between developing and developed countries has been in the rate of growth in output per worker, which has been increasing at an annual average rate of 1.5% in the developing world, and 4.5% in the developed countries.[34] Egypt's low rate of labor productivity growth in recent years falls far short of the 4.5% average figure achieved in the developed world.

The pattern observed from the data in Tables 8, 9 and 10 thus seems to be consistent. Land productivity, as measured by output per hectare and labor productivity, as measured by output per male agricultural worker, have increased in Egypt since 1952, but at rates much slower than those of the average of other developing countries. On the whole, it seems that the type of technological and institutional changes that have stimulated the growth in land and labor productivity in other developing countries have largely bypassed Egypt.

6. CONCLUSION: DEVELOPMENT AND STRUCTURAL CHANGE IN RURAL EGYPT

According to our working definition of the word, development requires changes in three central criteria over time: a decrease in poverty; a decrease in inequality; and an increase in productivity (land and labor). On the basis of the data reviewed here, we are faced with a rather curious situation. Our first criterion of development — poverty — shows a significant improvement over time, primarily due to the impact of worker remittances. Our second criterion — inequality — reveals an essentially stagnant situation. Our third criterion — productivity — indicates a mixed, but generally positive, rate of growth. Since all of our criteria indicate either a

Table 10. *Average annual growth rates* of male labor productivity in agriculture, 1960–64 to 1978–82: Egypt vs 21 developing countries (percent)*

	Average annual growth in agricultural GDP†	Average annual growth in male agricultural employment‡	Growth in labor productivity (constant 1982 US dollars per worker)
21 Developing countries§	+2.00	+0.06	+1.94
Egypt	+1.13	−0.06	+1.19

Sources: Agricultural GDP growth data from World Bank, *World Tables* and *World Development Report* (various issues).
Male employment in agriculture figures from ILO, *Yearbook of Labour Statistics* (various issues).
*Average annual growth rates calculated here are simple and unweighted growth rates.
†GDP growth rates calculated by taking national data at current prices, converting into US dollars on the basis of official rates of exchange, and then deflating the values into constant 1982 dollars using the World Bank's c.i.f. index of international inflation.
‡Employment figures estimated from the data on the economically active *male* population in agricultural occupations (agriculture, forestry, hunting and fishing) recorded in ILO, *Yearbook of Labour Statistics* (various issues). In order to preserve the international comparability of data, only males are counted. In countries where original data are unavailable for specified years, extrapolations or interpolations were conducted by using the growth rates.
§Lack of reliable and consistent data on male employment in agriculture prevented the inclusion of all 36 developing countries here. The 21 countries include: Argentina, Brazil, Chile, Colombia, India, Indonesia, Iran, Korea (Rep.), Libya, Mexico, Morocco, Pakistan, Panama, Peru, Philippines, Sri Lanka, Syria, Thailand, Tunisia, Turkey and Venezuela.

steady or improving situation, it seems reasonable to label the changes that have occurred in rural Egypt since 1952 as 'development.'

Yet the slow rate of structural change in the basic factors of production — land and labor — in Egyptian agriculture raises certain questions about this finding. As noted at the outset of this study, a number of writers have insisted that the process of development necessarily demands some type of qualitative structural change in the basic factors of production. Johnston and Kilby, for example, argue that:

> The fundamental point (is) that economic development necessarily implies structural transformation. . . . (And) it is growth in factor productivity — the increase in output per unit of total inputs — that has been the major engine of structural transformation (in the developing world).[35]

To be sure, the data suggest that a limited amount of growth in factor productivity has indeed occurred in rural Egypt. Over the years, the agricultural gross domestic product (GDP) generated per male agricultural worker shows an unsteady, but generally positive, rate of increase (Table 11). Yet it is quite important to recognize that such *quantitative* increases in output per male agricultural worker have *not* come about as a result of *qualitative* structural changes in the basic factors of agricultural production in Egypt — land and labor. As we have seen, yields for all major crops (except cotton) have stagnated or declined within the past 15 years in Egypt, while labor techniques for seeding, plowing and harvesting have changed at a rate far below that of the average of other developing countries. What we therefore seem to have in rural Egypt today is a paradoxical type of development without qualitative structural change: sigaificant improvements in the incidence of poverty, without corresponding qualitative changes in the basic factors of production.

The main reasons for this paradoxical situation are clear. Since the mid-1970s, the dramatic opening of employment opportunities for Egyptian workers abroad has had a major salutary impact on the rural order. By 1984, an estimated 10–20% of the Egyptian agricultural labor force was working abroad, remitting an estimated $780

Table 11. *Average annual growth rates of agricultural GDP per male agricultural worker in Egypt, 1960–64 to 1978–82 (percent)*

	Average annual agricultural GDP growth rate*	Average annual growth in male agricultural employment†	Average annual growth in agricultural GDP per male agricultural worker
1960–64 to 1970–74	+3.49	−0.05	+3.54
1970–74 to 1978–82	−1.76	−0.06	−1.70
Average	+1.16	−0.06	+1.21

Sources: All data from sources listed in Table 10.
*GDP growth rates calculated by taking Egyptian data at current prices, converting into US dollars at official rates of exchange, and then deflating the values into constant 1982 dollars using the World Bank's c.i.f. index of international inflation.
†Employment figures interpolated and extrapolated from the data on the economically active *male* population in agricultural occupations (agriculture, forestry, hunting and fishing) recorded in ILO, *Yearbook of Labour Statistics* (various issues).

million to $1.5 billion a year to rural residents. The tremendous size of these remittances, as well as their indirect impact on agricultural wage rates and the profitability of certain crops (e.g., *berseem*), has had the effect of stimulating 'development' in rural Egypt from the 'outside-in.' As noted in Tables 1 and 3, the incidence of poverty in rural Egypt declined significantly in the 1970s.

Yet, as the results of this study suggest, the impact of these exogenous factors has thus far failed to stimulate qualitative structural changes in the basic factors of Egyptian agricultural production. In recent years, the large flow of remittances into the Egyptian countryside has *not* led to the type of qualitative changes in land and labor productivity needed to fuel an endogenous pattern of rural development. To date, private (as well as public) entrepreneurs have generally failed to invest in and supply farmers with those elements of the new seed-fertilizer technology that are needed to develop rural Egypt from the 'inside-out.'

The failure of worker remittances to induce an endogenous pattern of development in rural Egypt is not surprising. While no comprehensive work has yet been done on the contribution of remittances to agricultural development in Egypt, other studies in this general area suggest that very little of such income is typically invested in agriculture.[36] For example, studies of the impact of remittances in Jordan, Yemen, Bangladesh, and Pakistan all indicate that remittance earnings are far more likely to be used to purchase consumer durables (usually with a high import content), housing and land.[37] While in some cases investment in land may stimulate agricultural productivity, fragmentary evidence collected by the author in Upper Egypt shows that such investment only tends to inflate land prices and to impede the process of land consolidation.[38] Little wonder, then, that Egyptian policymakers themselves have not been overly optimistic about the possible developmental impact of remittances. In the preface to a recent National Plan, one Egyptian policymaker observed that '. . . growing numbers of Egyptians work abroad for very high wages, if compared with domestic salaries. These individuals return to Egypt possessed of high purchasing powers, which they individually direct not to savings and investment, but to flagrant and luxurious consumption' (Ministry of Planning, 1978).

The limited contribution of remittances to investment and structural change in Egyptian agriculture to date raises important questions about the prospects for the pattern of Egyptian rural development in the future. For instance, the recent leveling-off of the boom economies in the oil-exporting Middle Eastern countries raises serious questions about their ability and willingness to absorb new waves of Egyptian workers. Without the continued flow of worker remittances from abroad, and in the absence of rapid structural changes in the basic factors of agricultural production at home, problems of poverty and unemployment could well become more pressing in the Egyptian countryside in the 1980s.

Rural inequality, which stagnated during the period under study, could also rise in the coming decade if the present pattern of development without qualitative structural change continues in

Egyptian agriculture. The increasing fragmentation of the Egyptian landowning order speeds up the marginalization of those small landowning peasants who previously survived just above the poverty line. According to data gathered by the author in Upper Egypt (Adams, 1981), this process of marginalization helps to explain why the proportion of rural income derived from non-agricultural sources is so high in Egypt.[39] On the one hand, the more entrepeneurial elements of the rural labor force are 'pulled' into the non-agricultural sector by the lure of higher returns to labor. Yet at the same time poor peasants, without adequate access to land and to the technological inputs that multiply the productivity of that land, are 'pushed' into seeking income and employment outside of agriculture.

In this respect, it is important to note that research in other developing countries has shown that rapid technological change within the context of small-scale agriculture represents the most effective means of stimulating growth in non-agricultural income and employment for all rural classes (Bell and Hazell, 1980; Hazell and Roell, 1983). Such technological change raises the income of landowning peasants, who in turn spend a significant proportion of their new income on a variety of labor-intensive, locally produced goods and services. To continue the process of developing the countryside, Egyptian authorities would therefore be well advised to focus their energies on disseminating those elements of the new agricultural technology that are designed to stimulate qualitative structural changes in the basic factors of land and labor productivity in rural Egypt.

NOTES

1. Seers (1972), p. 22.

2. See Rhein (1970) and Sen (1981)

3. Seers (1972), p. 23.

4. Seers (1972), whose conception of development has strongly influenced the one presented here, asks the following questions concering a country's development: 'What has been happening to poverty? What has been happening to unemployment? What has been happening to inequality?'

5. For a more abbreviated examination of Egyptian rural change using the Physical Quality of Life Index devised by Morris (1979), see Field and Ropes (1978).

6. Unfortunately, at the time of this writing the final results of a more recent 1981/82 Egyptian Government consumer budget survey have not been released. However, preliminary results from the first rounds of this government survey are consistent with those of the 1982 IFPRI study.

7. The three Egyptian Government surveys included the following numbers of rural families: 1958/59 survey — 3,037 families; 1964/65 survey — 4,480 families, 1974/75 survey — 1,001 families. By means of comparison, the 1982 IFPRI survey included 1,389 rural families.

8. It should be emphasized here that the results of the 1982 IFPRI study are *not* strictly comparable to the consumer budget surveys carried out by the Egyptian Government, because of differences in sampling techniques and procedure. However, the 1982 IFRPI sample was chosen on the basis of the reported variance of the observations of the 1974/75 Egyptian Government survey. Based on that 1974/75 survey, the IFPRI sample was sufficiently large (1389 rural families) to have a probability of 0.997 of having mean values for food expenditures be within 4% of the true mean. Total expenditure results from the rural and urban rounds of the 1982 IFRPI study also aggregate consistently with national expenditures, and total food quantites in the study aggregate consistently with domestic production plus import figures.

9. According to the 1982 rate of exchange, 1.0 Egyptian pound equals US $1.22. Between 1977 and 1981 the Egyptian pound equaled US $1.43.

10. Working from the same consumer expenditure data, Radwan (1977, p. 42) put the poverty line figure per household for 1958/59 at 93.0 Egyptian pounds and 125.0 Egyptian pounds for 1964/65. These estimates correspond to ours of 77.9 Egyptian pounds for 1958/59 and 118.3 Egyptian pounds for 1964/65.

11. Radwan's 1974/75 poverty line figure of 270 Egyptian pounds per household seems to be unrealistically low because of two factors: (a) the composition of his least-cost diet is far more cereal-based (wheat, maize, sorghum) than is the actual diet of rural consumers, as calculated from the expenditure tables; and (b) his assumption that average family size remained at a constant five persons from 1958/59 to 1974/75 does not accord with relevant census figures, which show that average rural family size increased from 5.0 to 6.0 persons during these years.

12. During the period 1956/57 to 1977/78, Ahluwalia (forthcoming) found that the number of rural households living below the poverty line in India fluctuated between 39 and 57% of all rural households.

13. Fadil (1975), p. 10.

14. For a detailed description of these controls, see Fadil (1975), pp. 82–92.

15. Fadil (1975) maintains that the Egyptian government did not turn the domestic terms of trade greatly against agriculture in the early 1970s. However, a more recent study by Cuddihy (1980) argues that the agricultural sector in Egypt was 'significantly discriminated against' in the 1970s, p. 16.

16. In the absence of reliable and consistent records, there is much uncertainty about the actual number of Egyptians working abroad. Over the years official government estimates have generally run higher than those made by outside sources. For example, in 1984 unofficial sources estimated that only 1.0–2.0 million Egyptians were working abroad.

17. It is important to note that these official figures are probably underestimates, inasmuch as a large proportion of worker remittances (possibly $1.5 billion) enter the country in a way that is not counted.

18. In the absence of reliable data, these estimates were arrived at as follows. According to the most recent 1979 CAPMAS labor force survey, 40% of the Egyptian labor force is engaged in agriculture. If it is assumed that 40% of those working abroad also come from the agricultural sector, and that their total earnings are either proportional or slightly less than proportional to their numbers, it seems reasonable to conclude that rural Egyptians in 1983/84 earned between 20 and 40% of total worker remittances.

19. According to data gathered by the author in Upper Egypt, real agricultural wages increased by 25% between 1973 and 1980. See Adams (1981), p. 208.

20. See Table 3, note‡.

21. See Table 4, note*.

22. See Table 4, note†.

23. For a detailed discussion of this point, see Sen (1973), pp. 31–34.

24. According to a consumer budget survey undertaken by the ILO in Egypt in 1977, only 50% of total Egyptian rural income is derived from agriculture, and only 60% of the total rural labor force is employed in agriculture. See Hansen and Radwan (1982), pp. 99–102.

25. Hansen and Radwan (1982), p. 106.

26. In many cases in the Egyptian countryside, Islamic law is ignored and females are denied their rightful share of the landed inheritance.

27. Between 1948–52 and 1978–82 the cropped area, which equals the cultivated area multiplied by the cropping intensity, increased by 12.5% in Egypt. During the same period the total Egyptian population increased by 106%.

28. World Bank (1978), p. 2.

29. In 1978–82 Mexican wheat yields averaged 3857 kg/ha, while Egyptian yields averaged 3303 kg/ha. During the same time period Egyptian rice yields averaged 5632 kg/ha, while those of North and South Korea averaged 6087 and 5923 kg/ha, respectively.

30. For a more detailed examination of the pricing and institutional factors constraining the growth in Egyptian agricultural productivity, see World Bank (1976), Cuddihy (1980), Ikram (1980), and Adams, (1984).

31. Ikram (1980), p. 43.

32. Land reclamation was one of Egypt's top agricultural priorities during the 1960s. Yet, by 1980, only 900,000 feddans of land had been reclaimed, of which less than 700,000 feddans had been allocated for production, Ikram (1980), p. 218. This represents about an 11% expansion in Egypt's cultivable land base.

33. While such traditional techniques of agricultural production are still quite common throughout Upper Egypt, in certain Delta areas adjoining Cairo they are rapidly being replaced by more mechanized means of production. For example, in Sharqiyya Governorate cowdriven *baladi* plows are now quite rare.

34. Ruttan (1974), p. 37.

35. Johnston and Kilby (1975), pp. 35, 48.

36. See, for example, Keely and Saket (1984), Swanson (1979), Ali *et al.* (1981), and Gilani, Khan and Iqbal (1980).

37. In their review of the impact of remittances, Rempel and Lobdell concluded that 'in most cases where rural areas receive substantial remittances, it seems certain that very little is used directly as investment for rural development' (1978), p. 333.

38. According to data gathered by the author in a village in Upper Egypt, between 1975 and 1980 the average selling price of land increased by 116%, from $1,200 to $2,600 per feddan (1984), p. 6.22. For similar instances of remittances causing land inflation in Yemen, see Swanson (1979).

39. See note 24.

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APPENDIX

Table A1. *Value of diet satisfying minimum caloric requirements (2,510 calories per day) in rural Egypt, 1958/59 (all figures on per capita basis)*

Items	Quantities per year (kg)	Cost per year (LE)	Caloric content per day
Wheat	54.9	1.648	526
Maize	71.0	1.846	700
Sorghum	49.0	1.052	460
Flour	18.2	0.456	184
Bread	—	—	—
Rice	13.2	0.426	130
Noodles	0.7	0.006	1
Beans	3.9	0.297	37
Lentils	3.5	0.388	33
Meat	6.1	1.568	37
Poultry	1.0	0.105	6
Fish	1.9	0.187	7
Eggs	15.5	2.204	69
Oil	2.5	0.227	64
Margarine	—	—	—
Milk	8.2	0.317	22
Cheese	8.1	0.325	22
Butter	2.3	0.178	51
Ghee	—	—	—
Potatoes	4.0	0.110	9
Onions	8.7	0.258	10
Tomatoes	11.0	0.270	12
Citrus	1.3	0.093	1
Dates	4.6	0.184	21
Sugar	10.2	1.000	108
Totals		13.145	2,510

Table A2. *Value of diet satisfying minimum calorie requirements (2,510 calories per day) in rural Egypt, 1964/65 (all figures on per capita basis)*

Item	Quantities per year (kg)	Cost per year (LE)	Calorie content per day
Wheat	56.6	1.984	543
Maize	51.4	1.799	507
Sorghum	50.6	1.770	475
Flour	24.7	0.740	250
Bread	5.3	0.257	52
Rice	13.9	0.471	137
Noodles	0.7	0.014	1
Beans	3.4	0.215	33
Lentils	3.8	0.284	36
Meat	4.8	2.145	29
Poultry	1.3	0.296	8
Fish	2.2	0.327	8
Eggs	22.5	4.030	100
Oil	2.9	0.464	73
Margarine	0.5	0.078	8
Milk	2.3	0.109	6
Cheese	8.1	0.355	22
Butter	0.2	0.021	4
Ghee	1.5	0.155	40
Potatoes	7.5	0.227	17
Onions	7.8	0.230	9
Tomatoes	8.2	0.261	9
Citrus	1.3	0.152	1
Dates	3.7	0.177	17
Sugar	11.8	1.477	125
Totals		18.018	2,510

Table A3. *Value of diet satisfying minimum calorie requirements (2,510 calories per day) in rural Egypt, 1974/75 (all figures on per capita basis)*

Item	Quantities per year (kg)	Cost per year (LE)	Calorie content per day
Wheat	52.7	3.478	505
Maize	36.2	2.131	357
Sorghum	16.2	0.959	152
Flour	36.9	1.660	374
Bread	30.7	1.813	303
Rice	20.6	1.450	203
Noodles	1.5	0.063	2
Beans	3.1	0.451	29
Lentils	2.7	0.640	25
Meat	5.5	5.130	33
Poultry	1.5	0.669	9
Fish	2.9	1.153	11
Eggs	23.9	16.036	106
Oil	4.4	1.400	112
Margarine	2.9	0.457	50
Milk	3.3	0.582	9

(*continued*)

Table A3. (*continued*)

Item	Quantities per year (kg)	Cost per year (LE)	Calorie content per day
Cheese	5.9	1.035	16
Butter	1.9	0.269	42
Ghee	—	—	—
Potatoes	6.2	0.499	14
Onions	6.9	0.361	8
Tomatoes	10.0	0.855	11
Citrus	5.2	0.463	4
Dates	1.7	0.128	8
Sugar	11.9	3.327	127
Totals		45.009	2,510

Table A4. *Value of diet satisfying minimum calorie requirements (2,510 calories per day) in rural Egypt, 1982 (all figures on per capita basis)*

Item	Quantities per year (kg)	Cost per year (LE)	Calorie content per day
Wheat	27.6	2.599	265
Maize	28.1	3.269	277
Sorghum	28.1	2.519	264
Flour	78.3	7.840	794
Bread	18.5	1.089	182
Rice	17.3	3.800	170
Noodles	2.9	0.402	4
Beans	2.0	0.730	19
Lentils	1.9	1.171	18
Meat	3.6	9.732	22
Poultry	4.7	6.008	29
Fish	1.9	1.766	7
Eggs	20.3	30.415	90
Oil	3.3	1.321	83
Margarine	3.5	4.340	59
Milk	8.5	2.584	23
Cheese	3.3	1.679	9
Butter	1.5	2.298	32
Ghee	0.8	0.225	2
Potatoes	—	—	—
Onions	—	—	—
Tomatoes	—	—	—
Citrus	—	—	—
Dates	—	—	—
Sugar	15.2	6.068	161
Totals		89.855	2,510

The following food items were not covered in the 1982 IFPRI consumer budget survey: potatoes, onions, tomatoes, citrus and dates.