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POPULATION AND FOOD RESOURCES
IN MENOUIYA - EGYPT

By

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Thesis submitted to the Faculty of Social Science,
Department of Geography, for the degree of
Doctor of Philosophy

University of Durham, England
December 1984



16 JUL 1985

Thesis
1984 / EHE

To

SABAH, ISLAM AND AMR

ABSTRACT

The problem of the relationship between population and food supply in Menoufiya is a small scale example of that facing the whole of Egypt. The main problem is not as a result of insufficient production of food from the land, but as a result of continuously increasing population with high density which causes pressure on the limited cultivated land.

It is important to understand the population characteristics of Menoufiya, which are even distribution of high density; high fertility; a high proportion working in agricultural activities; a majority of young people; and high illiteracy especially among females and farmers. One response to increasing population has been heavy out-migration to the large cities of Egypt.

Despite the fact that Menoufiya is facing a great problem in increasing food production caused by decreasing acreage of land; fragmentation of farms; disguised unemployment; limited machinery and increased landless, the region is one of the main agricultural regions in Egypt. It is characterized by one of the highest productivities for food among the governorates of Egypt, because of the excellent environmental conditions - fertile soils with flat surface, abundant water of good quality from the Nile and its canals, and warm temperatures which permit year-round plant growth and the intensive system of farming. The main food crops in the region are maize, wheat, broad and soya beans covering about 50 per cent of the total cropped area. Vegetables are grown all the year-round, especially potatoes, tomatoes and beans. In addition, the region is one of the main producers of fruit such as citrus, grapes and bananas. There is a large area cultivated with clover as a fodder for animals in winter, but animal

feed is in chronic short supply especially in summer. The study of food production in Menoufiya shows that it is abundant and increasing, being able to feed the dense population of the region as well as some of these in major urban centres especially Greater Cairo in most vegetables, fruit, and animal products.

In fact, there is no shortage of the majority of foodstuffs (except for wheat) in the region at the present time, but the problem may become more acute in the future as the population will increase more rapidly than food production. The solution of the problem of population and food resources in Menoufiya - as well as in Egypt - must be sought both in accelerating the development of agricultural processes and in slowing down the growth of population through social and economic development. Such development is not in isolation, for Menoufiya provides migrants to Egypt's large cities and to some other Middle Eastern countries. So the problem is not just one of a man-land ratio, but of population in relation to total available resources.

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I am indebted to the University of Alexandria, Ministry of Higher Education in Egypt and the Committee of Vice Chancellor and Principals of the Universities of the United Kingdom (O.R.S.Award) for financing the study. I would like to express my gratitude to those who taught me geography in the University of Alexandria. My thanks also go to my colleagues in the Geography Department in the Faculty of Arts, Alexandria University for their encouragement and support.

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CONVERSION FACTORS FOR EGYPTIAN DATA

1. Weight and Measures of Egyptian Data

One feddan = 1.038 acres = 4200.8 sq.metres

One metric ton = 1000 kilograms = 2200 pounds

One ardeb (metric) = 198 litres

= 150 kilograms of wheat

= 155 " " broad beans

= 140 " " maize

= 120 " " barley and sesame

One Egyptian Pound (LE) = 100 Piastres = 1000 milliems

2. Unified Exchange Rate

One G.B. £ = 1.40 Egyptian Pound

One U.S. \$ = 1.25 " "

according to the prices of 20.12.1984.

CHAPTER ONE

INTRODUCTION

1.1 Research strategy and justification

The problem of population and food supply is one of the main problems facing the development of Egypt. This problem is caused by the continuing increase of population numbers with a high annual growth rate, compared with the growth rate of its agricultural land and cropped area. Therefore this high growth of population consumes all the efforts of the state to overcome the problem by reclaiming more new land or by increasing the yields per feddan.

Many years ago, Egypt could produce enough wheat to meet the needs of its relatively small population. Today the situation is different. Egypt relies heavily on the international market for satisfying its food needs. The increasing reliance on food imports is accentuated by the rapid growth of the urban population. Since the open door policy (1974), the higher level of urban incomes and the rise in the standard of living of the majority of the population have led to increased consumption of wheat, meat and dairy products, oils and fats, vegetables and fruit. In addition, consumer subsidies, which are well adhered to in the urban community, have contributed to high growth rates in total food consumption.⁽¹⁾

Egypt is importing large amounts of wheat, flour, cooking oil, sugar, frozen beef and mutton. With a high rate of population growth, lagging growth rate of food production and changing patterns of consumption, food supplies have deteriorated. Since the early 1950's wheat and maize production have increased remarkably. During the 1970's fruit, vegetables, meat and egg production rose rapidly, generally going to the urban areas where effective demand is greater. The gap between food demand and supply began to widen, particularly for those items



with high income elasticity of demand, for example vegetables, fruit and meat.

Menoufiya Governorate as a Nile deltaic region, is considered a good example of the main problem of population and food supply of Egypt as a whole. The researcher has chosen this region as a case study for four main reasons:-

- (i) The population of Menoufiya is characterised by high fertility and high natural increase, agricultural activity is the main occupation for the majority of the population, and there is high illiteracy among the population especially females, as compared to the other governorates of Egypt.
- (ii) Menoufiya has a unique feature of even distribution of population with high density, and the lack of employment opportunities as compared to the increasing number of population encourages a large number of migrants to the large cities, thus Menoufiya has more out-migration than any other governorate in Egypt.
- (iii) The continuous increase of population on limited arable land in Menoufiya has led to population pressure on land, thus leading to the decrease of the agricultural land which is a great obstacle to increase the food production.
- (iv) Menoufiya's soils are the most fertile in Egypt, and with intensive agricultural use in small plots the region has the highest yield per feddan for the majority of crops, vegetables and fruit. In fact the region is one of the main food-producing governorates in the country.

The researcher wanted to study the causes of the problem of population and food resources in a region with high density of population and good production of food as a micro-study, to reflect the main problem of Egypt as a whole. For the above reasons Menoufiya has been chosen as a case study.

1.2 Objectives of the study

Population geographers have always sought to make their work relevant to the needs of the societies they have studied. They have focused on such vital issues as population/resource relationships, population characteristics, and patterns associated with cultural systems and economic and social change.⁽²⁾ As the population geographer has been more concerned with empiricism than theory, he looks at the specific population problems of countries and cultures.⁽³⁾ In Egypt, high population pressure on limited arable land and the problem of food supply have become one of the main issues of the country. This is one of the topics which should be examined by population geographers and that is the main objective of the study. There are many other objectives to the study of population and food resources in Menoufiya as a Nile deltaic environment, such as:-

- (i) The elements of population growth, causes and trends of out-migration, the mode of distribution and the main characteristics of population in this dense region.
- (ii) The food production in the region suffers from a mass of problems, of which the decreasing cultivated land, fragmentation of land holdings and limited agricultural machinery are the most critical. These, therefore, have been an interesting target of this study.
- (iii) The crux of this thesis is to give more precision to the problem of food consumption and the increase of imported foodstuffs.

The study attempts to answer the following questions:

- is there a nutritional adequacy among the Egyptian people?
- what is the average consumption of foodstuffs in Menoufiya?
- is there a food surplus or deficit in the region?

- (iv) The main objective of this study is to determine the elements of the problem and to try to find solutions to overcome the main problems facing the development of the region, especially the problem of population growth, land utilisation and food production.
- (v) Finally, it is hoped to fill a gap in the literature. The previous studies stress either the population or the food production (see the bibliography). For this reason it appears significant that a study should be taken on this problem.

1.3 Sources of Data Collection

The study of population in this thesis depends on the data of censuses and vital statistics. In fact Egypt has the longest experience of census taking among the states of North Africa and the Middle East. The degree of reliability of the statistical data should be appraised. The first modern type census of Egypt's population was taken in 1881 and for various reasons its results are not considered to be very reliable. From 1897 until 1947 Censuses were taken decennially.⁽⁴⁾ The next census was taken in 1960 due to the Suez Canal crises in 1956. The 1966 Census was the first to be taken on a sample basis. The last census was taken in 1976.

Vital statistics data of Egypt are available after legislation attempting to obtain fuller registration of births and deaths since June 1891. However, since 1913 the law required registration within 15 days for births and within 24 hours for death, but in 1946 the reporting of births became compulsory within 8 days of confinement.⁽⁵⁾ The reliability of registration data differs between towns, between regions, between urban and rural areas and between years.⁽⁶⁾

Most of the published data used in the chapters on agriculture and food are derived from a long series of agricultural Censuses in 1929,

1939, 1950 and 1960. These censuses contain detailed data about land use, crops, vegetables, fruit, and livestock production for all the governorates of Egypt at the district level. In addition, the Central Agency for Public Mobilization and Statistics (CAPMS) has also published many annual bulletins concerning water resources, land use, agricultural production, food consumption etc. (mentioned in bibliography).

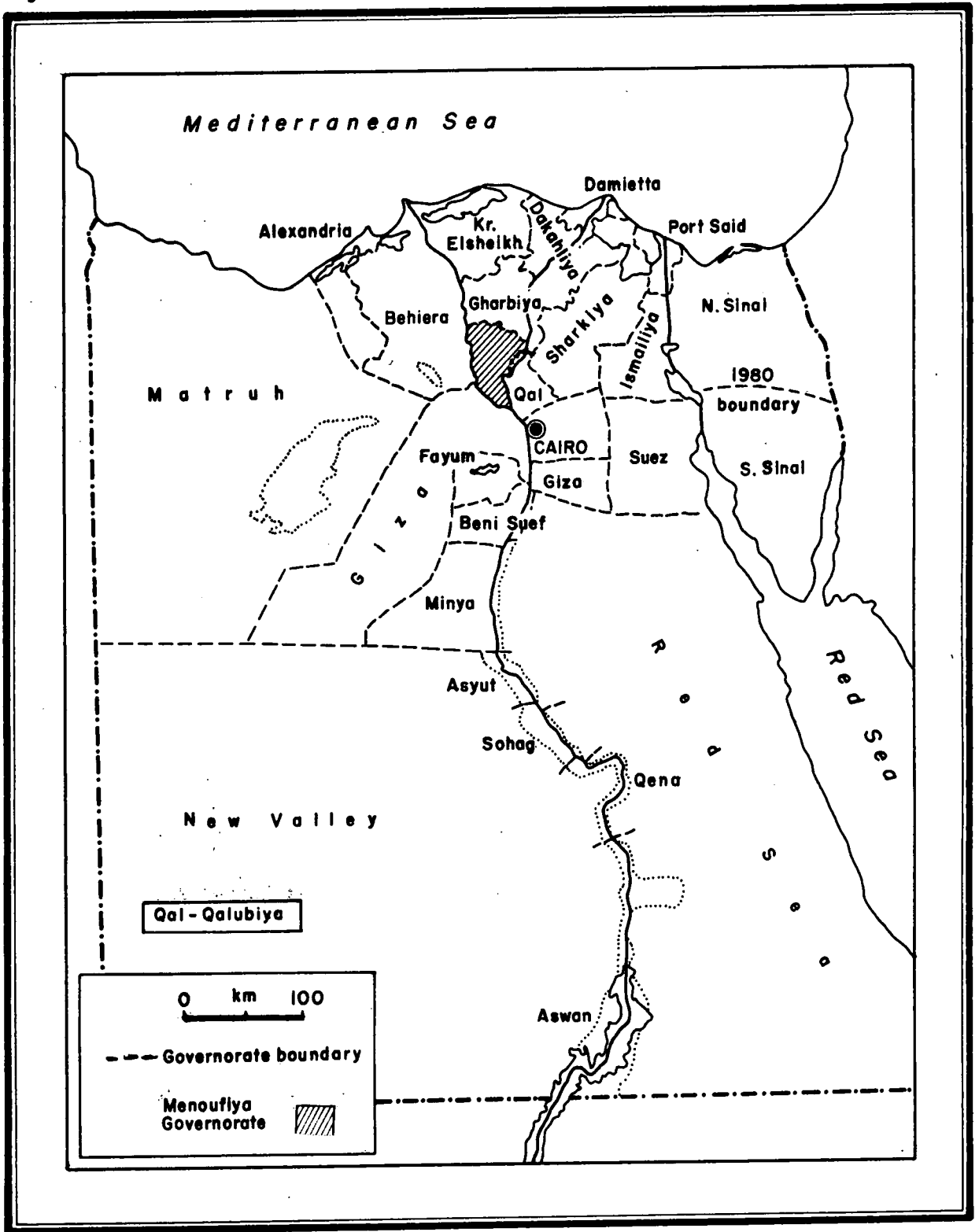
In addition to the above mentioned data, the researcher had to rely on fieldwork in order to deal with the problem of shortage of detailed published data. Two periods of fieldwork have been carried out, the first was conducted from August to December 1981, and included the collection of any available data from the Ministries of Agriculture, Irrigation and Interior Trade and Food Supply in Cairo, and many government offices in Shebien Elkom.

The second period of the fieldwork was conducted during autumn, 1983 and included a field visit to the study area to collect basic data about the production of food, fragmentation of land holdings, co-operatives, family planning, and food security projects from Shebien Elkom. Informal interviews with the farmers have been conducted concerning the main problems of food production, agricultural income and the working time needs per feddan during the year. The researcher has studied many villages such as Mit Mousa, Tanbedy and Shanawan in Shebien Elkom district, Kafr Ganzour and Zennara in Tala, and Kafr Elkhadra in Bagour district. It is noteworthy that the results of these interviews provided basic data for many chapters of this thesis, especially the chapter of solutions (Chapter 9).

1.4 Areal Units

Menoufiya is one of the 26 governorates of Egypt, and is located in the Nile delta between the Rosetta and Damietta branches on the apex of the delta. The area has a triangular shape (Fig.1.1) with its base in

Fig 1-1 EGYPT: GOVERNORATES, 1976



the north and top in the apex of the Nile delta.

The boundaries of the governorate are generally obvious. In the east it is limited by the Damietta branch which demarcates it from Daqahliya and Qalubiya governorates, except for the boundaries of a few villages of Qaluḫiya which interpose on the north-eastern boundaries of Menoufiya. At the same time, the Rosetta makes a clear line between the area of Menoufiya in the east and Beheira and Giza governorates in the west and south-west. On the other hand, the northern boundary between Menoufiya and Gharbiya is unclear, most of it travelling along irrigation drainage canals; this boundary has been changed many times over the centuries.

With an area of 1,532 sq kms,⁽⁷⁾ Menoufiya is the twelfth largest of the governorates of Egypt covering about 2.9 per cent of the total inhabited area of the whole country.

The administrative area of Menoufiya includes eight districts; each one with a capital town and many villages, except for Menouf district which has two major towns, the capital and Sers Elliyaba which became a town according to the decision of the Ministry of Interior no.332 in 1979.⁽⁸⁾ All the districts are named after their capital town : Shebien Elkom, Ashmoun, Bagour, Berket Elsaba, Shohada, Tala, Quesna and Menouf. The capital of the whole governorate is Shebien Elkom city (Fig.1.2).

Menoufiya includes nine towns and 300 villages with variations between the districts according to the total area, the size of population and urban ratio as shown in Table 1.1.

The Ashmoun district is the biggest according to the total area and the size of population, at the same time about 72 per cent of its labour force is employed in agricultural production. This district is famous for producing vegetables and fruit, it is considered to be part of the

agricultural hinterland of Greater Cairo.

Shebien Elkom city is the major urban centre in the governorate. Being a capital of Menoufiya, most of the industrial factories and governmental offices are concentrated here, therefore about two thirds of the labour force of Shebien Elkom district works in non agricultural activities.

Table 1.1 The Districts of Menoufiya Governorate

Districts	Villages number	Area		Population in thousand	Urban
		Sq.kms.	% of the		
Shebien Elkom	36	184.3	12.0	301	34.5
Ashmoun	54	299.7	19.6	311	14.5
Bagour	47	164.8	10.8	173	14.7
Berket Elsaba	23	119.7	7.8	131	13.4
Shohada	26	153.4	10.0	145	17.7
Tala	38	186.5	12.2	182	16.6
Quesna	44	205.2	13.3	205	10.1
Menouf	32	219.5	14.3	263	31.0
Total	300	1532.1	100.0	1711	19.8

- Sources:-
1. Ministry of Interior, Table of the Names of the Villages, Towns, Districts and Governorates of Egypt, Cairo, 1980, p.16.
 2. Central Agency for Public Mobilization and Statistics (CAPMS), Statistical Data - Delta Region, Cairo, 1978, pp.10-11.

Menouf district is the second industrial district, about 11 per cent of the population (6 years and more) works in numerous workshops and small factories which dominate Menouf and Sers Elliyana towns. Furthermore Menouf town was the old capital of Menoufiya until 1844.

Quesna district is the most famous of the governorates for the production of citrus fruit. At the same time many industrial projects

Fig.1-2 ADMINISTRATIVE AREAS IN MENOUIYA GOVERNORATE, 1976

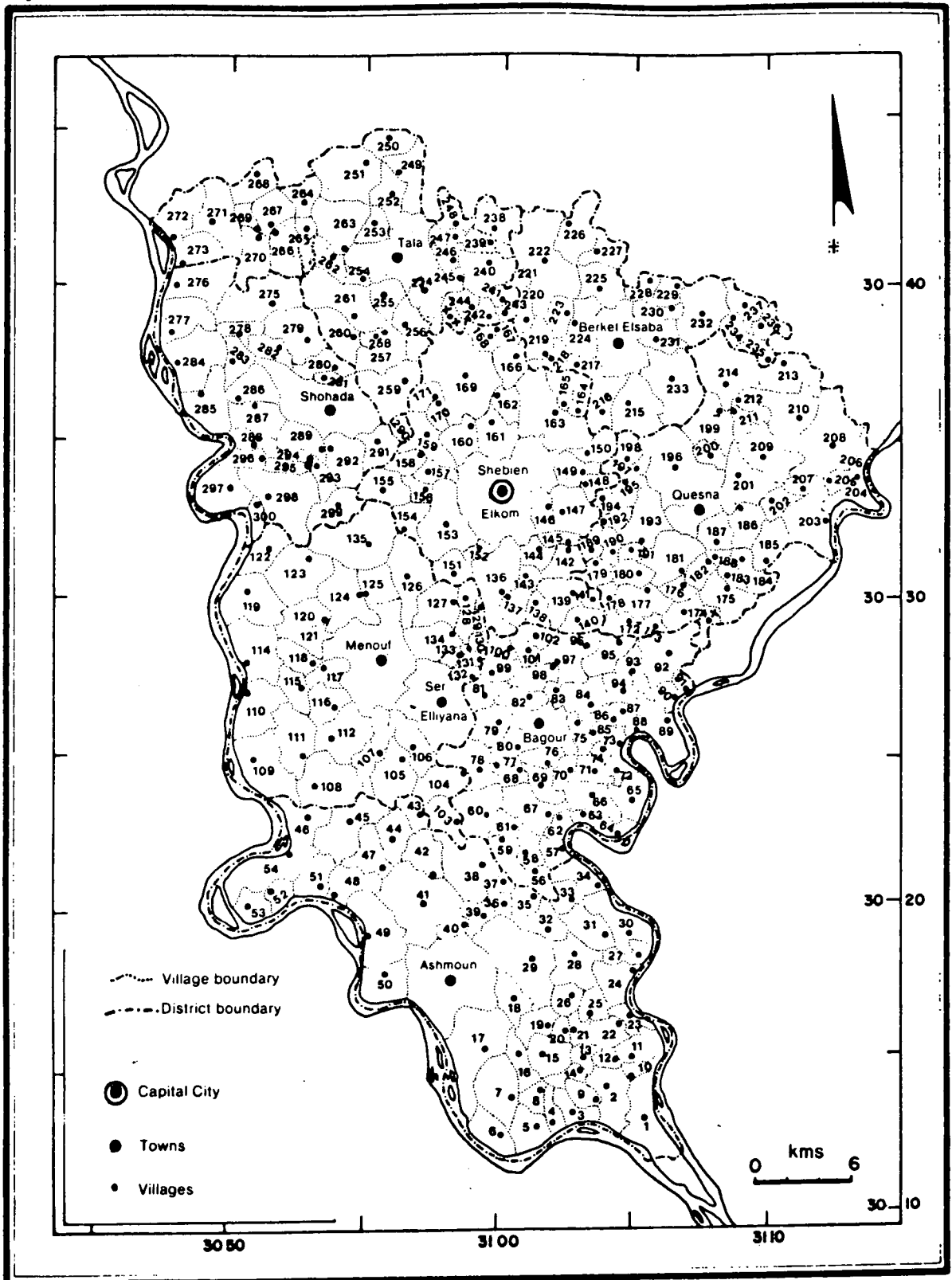


Fig. 1.2 Cont.

Ashmoun District

1. Darawa
2. Shatanouf
3. Kafr Mansour
4. Menyal Aros
5. El Kawady
6. Ghanamya
7. Elbarraniya
8. Kafr Aoun
9. Sheshaa
10. Kafr Sarawa
11. Sarawa
12. Kafr Elghareb
13. Manyal Goweda
14. Elhilwasi
15. Buhet Shatanouf
16. Elkhor
17. Talya
18. Mahallet Subk
19. Abu Raqaba
20. Kafr Abu Raqaba
21. Kafr Quras
22. Neinaiya
23. Sihwag
24. Kafr Elhima
25. Quras
26. Kafr Abu Mahmood
27. Shanawai
28. Sentris
29. Subk Elahad
30. Saqyat Abu Sha'ra
31. Samalai
32. Elqanatrein
33. Elpharoniya
34. Kafr Elpharoniya
35. Elqanatrin
36. Brashem
37. Kom Aiyad
38. Shanshour
39. Shushai
40. Kafr Elsayed
41. Samadon
42. Migirya & Kr. Migahid
43. Bisha (Libesha)
44. Ramlet Elangeb
45. Shamma
46. Saqyat Elmanqadi
47. Elingib
48. Minchat Griss
49. Griss
50. Abu Awali
51. Munsa
52. Kafr Eltarayna
53. Dalhamu
54. Tahway

Bagour District

56. Simman
57. Elkattamiya
58. Kalata Elsoghra(El Khadra)
59. Kalata Elkabra
60. Telwana
61. Kafr ElKhadra
62. Ber Shams
63. Kafr Mahmood
64. Kafr Eldauwar
65. Mit Afif
66. Bahnai
67. Kafr Elghunamiya
68. Singalf
69. Bai Elarab
70. Abu Sineita
71. Asriga
72. ElgezeraElsharqiya
73. Kafr Elqarinein
74. Elqarinein
75. Ibkhass
76. Kafr Singalf Qadim
77. Kafr Singalf Gadid
78. Fisha
79. Garawan
80. Kafr Elbagour

81. Kr. Shoubra Zangi
82. Zawyet Garawan
83. Elatarsha
84. Subk Dahhak
85. Elbaranqa
86. Kafr Subk
87. Elbeda
88. Elatf
89. Misheirif
90. Masgid Elkhadr
91. Minchat Masg. Elkhadr
92. Astanha
93. Tilbent Abshish
94. Mit Elwasta
95. Abshish
96. Elmaqatie
97. Manawahla
98. Minchat Gededa
99. Shoubra Zangi
100. Kafr Manawahla
101. Kom Eldaba
102. Elmanchiya

Menouf District

103. Heit
104. Serwiheit
105. Fisha Elkobra
106. Kafr Fisha Elkobra
107. Kamshush
108. Bihwash
109. Zawyet Razin
110. Sansaft
111. Damalig
112. Sidud
114. Gouzai
115. Kafr. Bilmisht
116. Kafr Elghanamiya
117. Minchat Ghimrin
118. Bilmisht
119. Tamalai
120. Kafr Elashry
121. Berheem
122. Shabshir Tamalai
123. Dibirki
124. Ghimrin
125. Teta
126. Singerg
127. Shoubra Bilula
128. Elamra
129. Kafr Elamara
130. Kafr Ramah
131. Mit Rabie
132. Elkom Elahmar
133. Kafr Shubra Bilula
134. Hamoul
135. Minchat Soltan

Shebien Elkom

136. Shanawan
137. Kafr Shanawan
138. Eldalatun
139. Istubari
140. Shoubra Khalfun
141. Kafr Elagayza
142. Mit Misawd
143. Elasalta
144. Elrahieb
145. Kafr Duqmak
146. Elmuseilha
147. Mit Khalaf
148. Salaka
149. Ziwier
150. Mit Elmuz
151. Shunufa
152. Minchat Shanawan
153. Elmai (Mai)
154. Dakama
155. Shoubra Bas
156. Michat Elsharikin
157. Tuhk Elbaraghta
158. Minchat Bakhati

159. Bakhati
160. Tambidi
161. Kafr Tambidi
162. Elkom Elakhdar
163. Milig
164. Mit Afya
165. Hisset Milig
166. Mit Mousa
167. Elsukkariya
168. Bitibs
169. Batanoun
170. Kafr Elsheik Khalil
171. Kafr Elbatanoun

Quesna District

172. Minchat Abu Zakry
173. Kafr Abshish
174. Masgid Elkhoder
- 174+ Shoubra Qebala
175. Aghor Elramel
176. Kafr Elarab Kebly
177. Om Khenan
178. Minchat Om Khenan
179. Mit Elqasri
180. Agayza
181. Kafr Elsalamiya
182. Kafr Ashlim
183. Kafr Wahb
184. Arab Elramel
185. Minchat Damalo
186. Shiranis
187. Kr Sheikh Ibrahim
188. Kafr Abdou
189. Mit Elqasri
190. Mit Serag
191. Mit Elizz
192. Kr. Mit Serag
193. Tah Shoubra
194. Mit Abu Sheikha
195. Kr. Tah Shubra
196. Ibahnas
197. Kafr Abu Hassin
198. Kafr Manch-Qibli
199. Elrimali
200. Kafr Abahnas
201. Quesna Elbolad
202. Kufor Elramel
203. Mit Berah
204. Kafr Mit Elabsi
205. Baqsa
206. Mit Elabsi
207. Berah Elagoz
208. Shoubra Bekhoum
209. Bigierim
210. Damalo
211. Kafr Elakram
212. Beni Ghiryen
213. Kafr Ben Ghiryen
214. Mustai

Berket Elsaba District

215. Tanbisha
216. Dabayba
217. Elghori
218. Mit Fares
219. Kafr Milig
220. Minchat Elrafie
221. Kafr Gonzour
222. Gonzour
223. Mit Om Salah
224. Shentena Elhagar
225. Qlamshe
226. Abu Mashhour
227. Abgoul
228. Kafr Elhammadiya
229. Elhalamsha
230. Kafr Horien
231. Kafr Alim
232. Horien
233. Tuhk Tambisha
234. Kafr Nefra Bahri

235. Elshahed Abdel Munem
236. Kafr Helal
237. Kafr Sheikh Teima

Tala District

238. Babil & Kafr Hamam
239. Kafr Elarab Elbahry
240. Zennara
241. Kafr Elsukkariya
242. Kafr Elqalashi
243. Samalig
244. Kafr Bitibs
- 244+ Elqalashi
245. Kafr Samalig
246. Kafr Qarshum
247. Kafr Elsheikh Obed
248. Kafr Sanadid
249. Elbindariya
250. Qashtukh
251. Kafr Elsheikh Shehata
252. Zawiet Bimam
253. Kafr Elsadat
254. Kafr Askar
255. Barawi
256. Tablouha
257. Zurkan
258. Kafr Mit Abul Kom
259. Kamshish
260. Mit Abul Kom
261. Tuhk Dalka
262. Minyat Tuhk Dalka
263. Bimam
264. Elkamaysha
265. Kafr Elalawi
266. Saft Gidam
267. Gidam
268. Kafr Shurafa Elgharbi
269. Shoubra Butush
270. Mit Elkeram
271. Kafr Rabia
272. Tanob
273. Kom Mazln
274. Kafr Tablouha

Shohada District

275. Dragil
276. Amros
277. Bichtami
278. Kafr Elshaba
279. Sahil Elgoaber
280. Chimiaties
281. Kafr Elgamala
282. Kafr Elsoalmiya
283. Abshady
284. Zawyet Elbakaly
285. Danasur
286. Abu Kals
287. Denshway
288. Kafr Denshway
289. Kafr Ashma
290. Kafr Sarsamos
291. Sarsamos
292. Ashma
293. Kafr Elgalabta
294. Salamun Qibli
295. Salamun Bahari
296. Kafr Hegazi
297. Geziret Elhagar
298. Zawyet Elnaoura
299. Eliraqiya
300. Nader

are under establishment in about 300 feddans of the uncultivable land (sandy islands) in Quesna town and Kufur Elramel.

A considerable percentage of the population of Becket Elsaba works in services (20 per cent), because many villages, in addition to the capital town of the district, are located on the highway between Cairo and Alexandria. Meanwhile Shohada, Tala and Bagour districts are characterised with high natural increase, high illiteracy, most of the population works in agriculture on small farms, in fact most of the out-migration from Menoufiya comes from these districts.

1.5 Organization of the Study

This study consists of nine chapters. The introduction in chapter one gives background to the areal units of the region and the objectives of the study. The chapters from two to five deal with the problem of population. Chapter two is concerned with population growth during the period 1897-1976, with especial emphasis on the annual growth of population, high natural increase and the out-migration. Chapter three elaborates the numerical changes and determinants of the even distribution, the growing concentration and the high density of population across the settlement sites of the region. Patterns of population composition such as over-supply of labour, youthfulness of the population, and illiteracy and education are identified in chapter four. Chapters five, six and seven concentrate on the food resources in Menoufiya. Chapter five deals with Menoufiya as a Nile deltaic environment; the study of location, soils, climate, irrigation, crop rotation and co-operatives are examined in this chapter. Chapter six lays stress on some of the problems of land utilization and the effect of population pressure on the limited acreage of arable land. Chapter seven explores in more detail the food production in the study area. The population and food problem, consumption of foodstuffs, level of nutrition and surplus and deficit

of food commodities are analysed in chapter eight. The concluding chapter (nine) stresses reducing population pressure and growth, and agricultural development as a solution to the problem.

It seems clear that such attempts are likely to be assisted by the kind of detailed description of the evolving population and food resources in Menoufiya.

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Abdel-Aal, W.A. Spatial Patterns of Population Dynamics in Egypt, 1947-1970, Unpublished Ph.D. Thesis, Durham University, Durham, 1977, pp.7-18.
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CHAPTER TWO

RELATIVELY SLOW GROWTH OF POPULATION

2.1 Slow Population Growth

The data of this study are based on the results of a long series of Censuses of Menoufiya Governorate from 1897 to 1976. The Census of 1897 has been selected due to its relative precision compared with the only previous Census (1881) and previous estimates.⁽¹⁾

With a population of 1,711,000 at the last Census 1976, Menoufiya had the tenth largest population of the governorates of Egypt, following Cairo Dakahliya, Sharkiya, Behiera, Giza, Alexandria, Charbiya, Minya and Sohag. This number is about 4.7 per cent of the total population of Egypt, slightly less than in 1960 and 1966, when the governorate contained 5.2 per cent in 1960 (ninth largest) and 4.9 per cent in 1966 (eleventh largest),⁽²⁾ so its relative demographic significance is declining.

The population of Menoufiya only doubled during the period 1897-1976; it was 840,000 inhabitants in 1897, then slowly increased to reach 1,047,000 and 1,138,000 in 1917 and 1947. Then it rose considerably between 1960 and 1976, attaining 1,352,000 in 1960 and 1,711,000 in 1976.

The rate of net intercensal population growth in the region was irregular and always lower than that of Egypt as a whole. The rate of Egypt has not been less than 11.5 per cent (between 11.5 and 37.1),⁽³⁾ but in Menoufiya it has always been lower than this (Table 2.1). It reached the lowest rate of intercensal increase (0.4 per cent) during 1937-47, when the annual growth was only 500 persons, because of increased out-migration; the total number of migrants was 137,000.

Table 2.1 Development of the Size of Menoufiya's Population
and Net Intercensal Growth from 1897 to 1976

Date of Census	Inter-Censal Period (years)	Population (Thousand)	Net Intercensal growth		Average of Annual growth
			Number (thousand)	%	
3.5.1897	-	840	-	-	-
30.6.1907	10.2	952	112	13.3	11
7.3.1917	9.7	1047	95	10.0	10
19.2.1927	9.9	1080	33	3.2	3
27.3.1937	10.1	1131	51	4.7	5
27.3.1947	10.0	1136	5	0.4	0.5
20.9.1960	13.4	1352	216	19.0	16
31.5.1966	5.7	1463	111	8.2	19
22.11.1976	10.5	1711	248	17.0	24

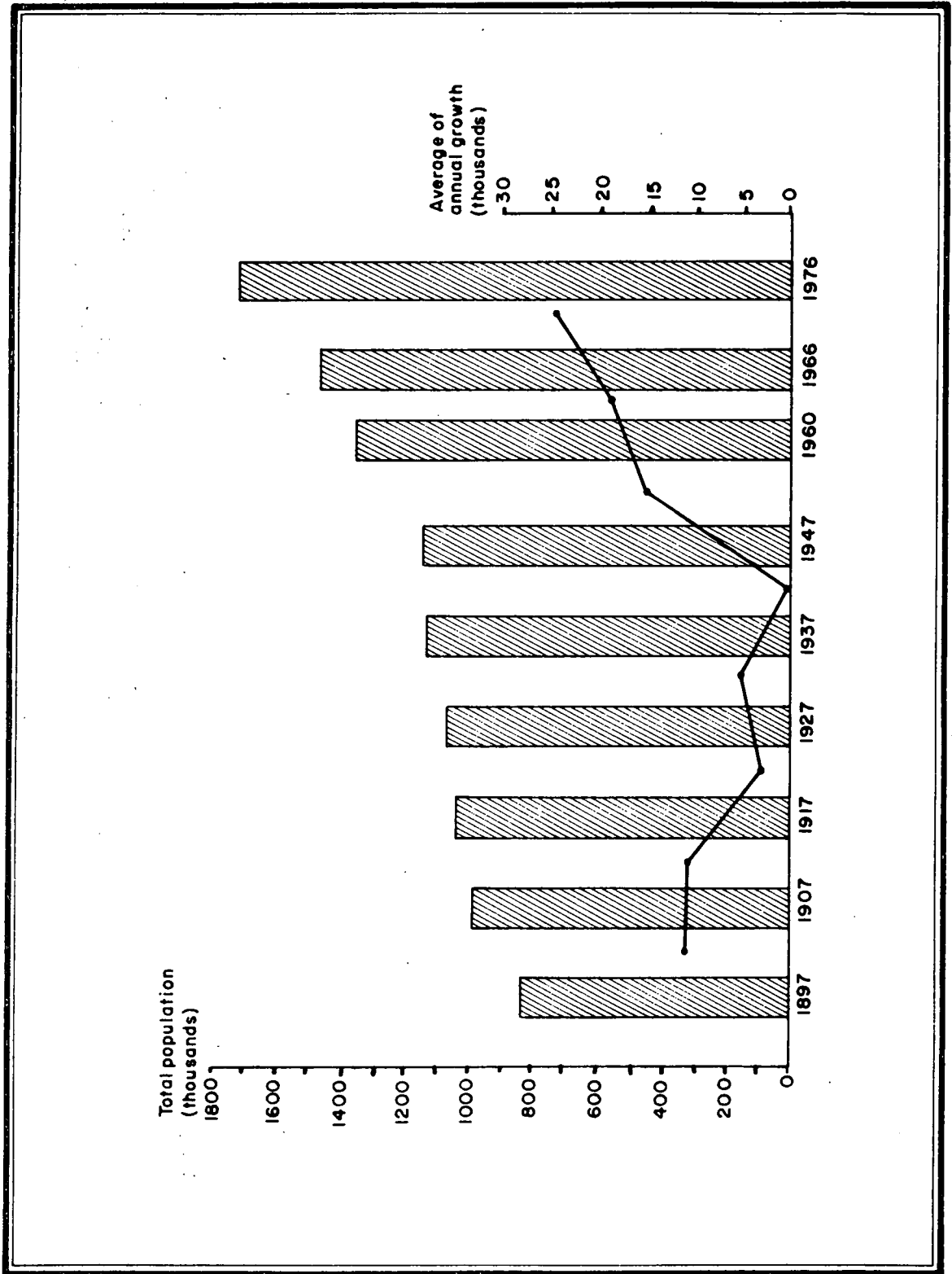
Source: Calculated from: Egypt, C.A.P.M.S. The Population Censuses of Egypt.

In contrast, the highest increase of population was during 1966-76, when the number increased by 248,000, with an average of annual growth of 24 thousand persons (Fig.2.1). We can interpret this growth as due to the increase of job opportunities in the governorate, which in turn led to the decline in number of out-migrants who found difficulty in finding accommodation and jobs in the large cities such as Cairo, Giza and Alexandria.

2.1.1 The Annual Rate of Population Growth

The annual rate of population growth in Menoufiya has been lower than Egypt's rate since 1897 (Fig.2.2A, and Table 2.2). In spite of the fact that the annual rate had only reached 1.49 per cent during the period 1966-76, the rate of Egypt has exceeded this since 1937-47 and reached 2.29 per cent during 1966-76.

Fig 2-1 DEVELOPMENT OF THE SIZE OF MENOUF IYA'S POPULATION AND THE ANNUAL INTERCENSAL GROWTH 1897 - 1976



The main thing to note on the annual rates of growth in both Egypt and Menoufiya is the remarkable rise after 1947 (Table 2.2). This is attributed to the advantages of the medical care which influenced the decline of the death rate in Egypt from 21.4 per thousand in 1947 to 11.7 in 1976,⁽⁴⁾ a decrease by nearly half in twenty nine years; meanwhile the death rate in Menoufiya had also decreased from 27.9 per thousand to only 14.4.

The study of the rate of the annual growth in Menoufiya shows that it had decreased to less than 0.46 per cent in the period 1917-47, and only 0.03 per cent during 1937-47, but it was always higher in Egypt where the lowest rate was 1.05 per cent between 1917 and 1927. These low rates may be related to the economic depression which was prevalent over all the country.

The annual rate of population growth has varied from one district to another in Menoufiya (Fig. 2.2B and Table 2.2), and from one period to another. However, the rates were rather similar during the period 1917-27, but dissimilar after 1960. We can also notice that the rates of districts have not undergone similar increase or decrease. The highest rate in 1966-76 was in Shebien Elkom district, but it had the lowest rate in 1917-23. Meanwhile Ashmoun district had the highest rate from 1897 to 1927, but it fell back to sixth place in 1960-66. Therefore no district in Menoufiya retained consistently high or low annual rates of population growth.

The highest rates of growth from 1927 to 1976 were in Shebien Elkom district owing to a remarkable growth in Shebien Elkom City as a result of establishing some industrial projects which caused the rate to increase from 2.3 per cent in 1937-47, to 4.2 per cent in 1966-76.⁽⁵⁾ At the same time, the lowest rates of population growth between the districts was in Tala district during most of the periods from 1897 to

Fig 2-2 (A) THE ANNUAL RATE OF POPULATION GROWTH IN EGYPT AND MENOUIYA 1897-1976

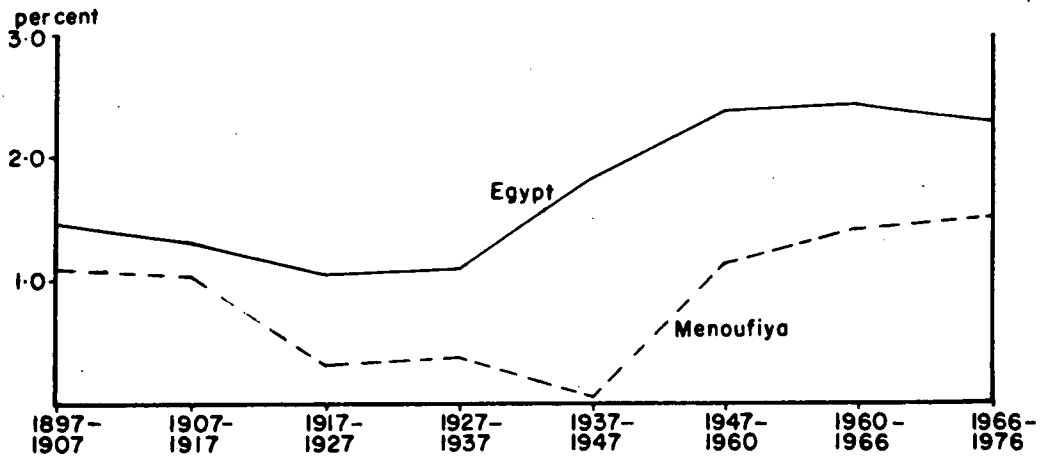
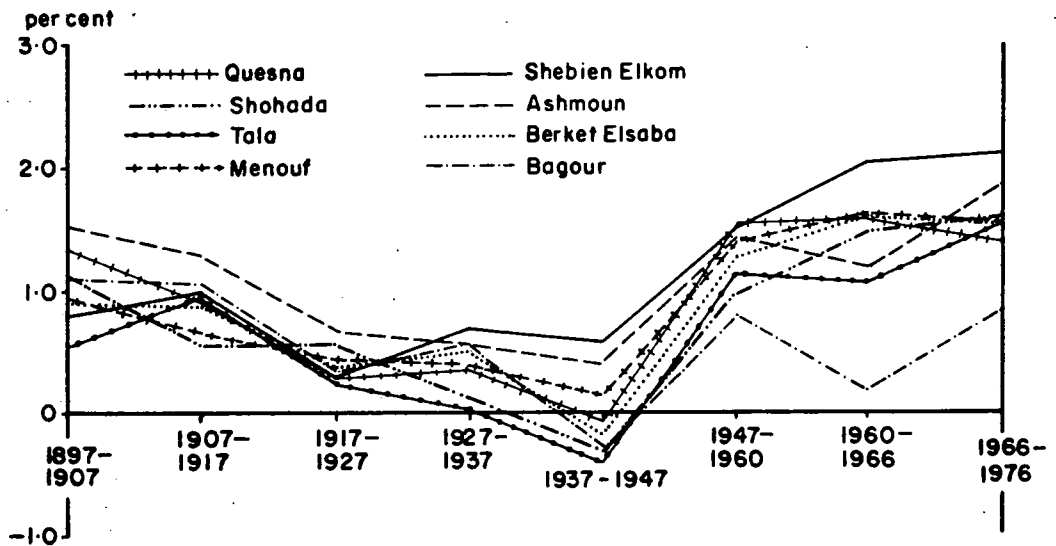


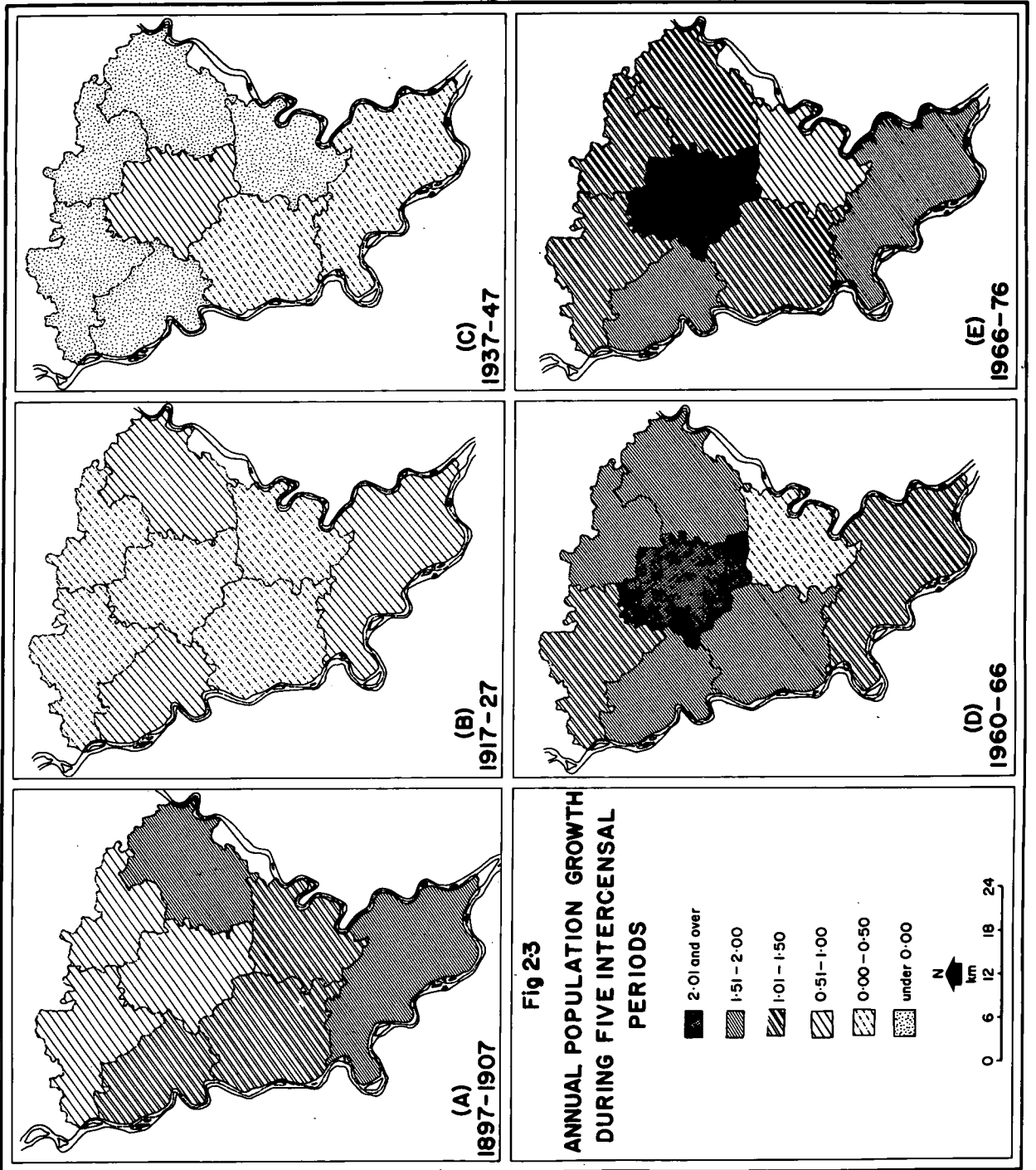
Fig 2-2 (B) THE ANNUAL RATE OF POPULATION GROWTH IN MENOUIYA'S DISTRICTS 1897-1976



1947, but Bagour took over this position from 1947 to 1976.

It is difficult to classify the districts into groups according to growth, but we can compare that growth by studying intercensal periods:

- (1) 1897-1907 : Most of the districts were characterized by a fairly high rate of annual growth (1.1 per cent). In this period we can divide the districts into two groups : those with higher than average growth including Ashmoun (1.51), Quesna (1.39), Bagour, Shohada (1.14) and Menouf (1.10 per cent), and those lower than average including, Berket Elsaba (0.88), Shebien Elkon (0.80) and Tala (0.59 per cent). There is no striking variation between the districts as shown in Fig.2.3A.
- (2) 1907-17 : The annual rate of population growth dropped to 1.03 per cent. Some districts had an increase of their rates such as Shebien Elkom, Bagour and Tala. On the other hand, other districts experienced a drop in their rates, the largest drop being in Shohada district from 1.14 to only 0.55 per cent, and the lowest drop was in Berket Elsaba from 0.88 to 0.78.
- (3) 1917-27 : The annual rate of population growth tumbled suddenly to 0.36 per cent (Fig.2.3B). We can attribute that to out-migration, when about 122,000 persons left the governorate to work in Cairo and the other large cities of Egypt, especially after the end of the First World War. Ashmoun, Quesna and Shohada districts had the highest rate (0.67-0.69). By contrast the rate was less than 0.50 per cent in all the rest of the districts.
- (4) 1927-37 : The growth rate in the governorate was still low (only 0.46 per cent). The cause of this slow growth was different from the previous period because the slump in rates also occurred in other governorates in Egypt such as Cairo, Alexandria and all the towns of the Suez Canal region.⁽⁶⁾ It was due to the economic



depression, which prevailed all over Egypt from 1929 to 1933. (7)

- (5) 1937-47 : The annual growth rate of Menoufiya's population sunk to the lowest level in the period 1937-47, reaching only 0.03 per cent. As shown in Fig.2.3C most of the districts had experienced population decline for the first time : Tala (-0.37), Bagour (-0.35), Shohada (-0.30), Berket Elsaba (-0.25) and Quesna (-0.15 per cent). Meanwhile the highest rate was in Shebien Elkom 0.61 per cent, and the other districts had a low rate of growth, Menouf 0.12, and Ashmoun 0.41 per cent.

We can attribute these rates (in spite of great improvement in sanitary conditions and the decline of the death rates in all the governorates and the whole of Egypt since 1937) (8) to the outpouring of a large number of migrants (137,000 persons) to the other great cities. The migrants from Tala, Bagour, Shohada, Berket Elsaba and Quesna were about 83 per cent of the total number.

- (6) 1947-60 : The annual rate of growth began to rise gradually after 1947. The growth rate had remained lower than 1.0 per cent for approximately forty years, and increased to 1.14 per cent. The rates of most of the districts were more than 1.20 per cent, except for Shohada and Bagour districts, which had rates of 0.92 and 0.86 per cent. The causes of the decreasing of land holding and the lack of new jobs in both Bagour and Shohada are the main reasons for the low rates of growth during this period.

- (7) 1960-66 : The annual rates of population growth increased to more than 1.0 per cent in all the districts, except Bagour where the rate remained low at 0.22 per cent. The effect of industrialization which started to prevail in the capitals of the districts, had a great influence on the increase of the rate of population growth in the urban sector, Menoufiya's rate being 2.3 per cent in 1947-60

and 5.2 per cent in 1960-66,⁽⁹⁾ and the rate of Shebien Elkom district grew to 2.1 per cent.

- (8) 1966-76 : The annual rates of population growth continued to rise to reach 1.49 per cent in the period 1966-76, the highest intercensal rate of growth. All the districts of Menoufiya had an annual rate of more than 1.00 per cent except for Bagour district which still had the lowest rate (0.80 per cent). The highest rate was still in Shebien Elkon district (2.14 per cent). The government wants to decrease the pressure of migrants on Cairo by encouraging migrants to return to their own governorates by offering the same job at the same place of origin. It has reduced the flow of migrants from the districts of Menoufiya to only 92,000 persons, and has increased the rates of growth in the districts.

Table 2.2 The Annual Rates of Population Growth by Districts from 1897 to 1976

Districts	1897-1907	1907-1917	1917-1927	1927-1937	1937-1947	1947-1960	1960-1966	1966-1976
Shebien Elkom	0.80	1.06	0.30	0.70	0.61	1.50	2.10	2.14
Ashmoun	1.51	1.26	0.69	0.59	0.41	1.47	1.13	1.79
Bagour	1.14	1.15	0.30	0.56	-0.35	0.86	0.22	0.80
Berket Elsaba	0.88	0.78	0.31	0.55	-0.25	1.32	1.60	1.18
Shohada	1.14	0.55	0.67	0.16	-0.30	0.92	1.52	1.66
Tala	0.59	0.90	0.30	0.10	-0.37	1.22	1.15	1.02
Quesna	1.39	0.92	0.67	0.46	-0.15	1.51	1.60	1.39
Menouf	1.10	0.76	0.45	0.47	0.12	1.46	1.51	1.43
Menoufiya	1.10	1.03	0.36	0.46	0.03	1.14	1.38	1.49
Egypt	1.45	1.38	1.05	1.12	1.79	2.36	2.48	2.29

Source: Calculated from The Population Censuses of Egypt.

2.1.2 The Variation of the Size of the Population of Menoufiya 1897-1976

Thus, Menoufiya increased by 871,000 inhabitants during 1897-1976, and doubled in size (10 per cent). Meanwhile the size of population in Egypt had multiplied nearly three times (292 per cent). We can attribute that to the continuing migration from Menoufiya because the difference of natural increase between Egypt and the governorate is not wide.

Table 2.3 The Absolute and Percentage of Population Increase In Menoufiya and Egypt 1897-1976

Districts	Population number (thousand)			Percentage of total increase
	1897	1976	Total increase	
Shebien Elkom	124	302	178	144
Ashmoun	127	311	184	145
Bagour	106	173	67	63
Berket Elsaba	70	131	61	87
Shohada	79	145	66	83
Tala	113	182	69	61
Quesna	93	205	112	120
Menouf	128	262	134	105
Menoufiya	840	1711	871	104
Egypt	9749	38228	28479	292

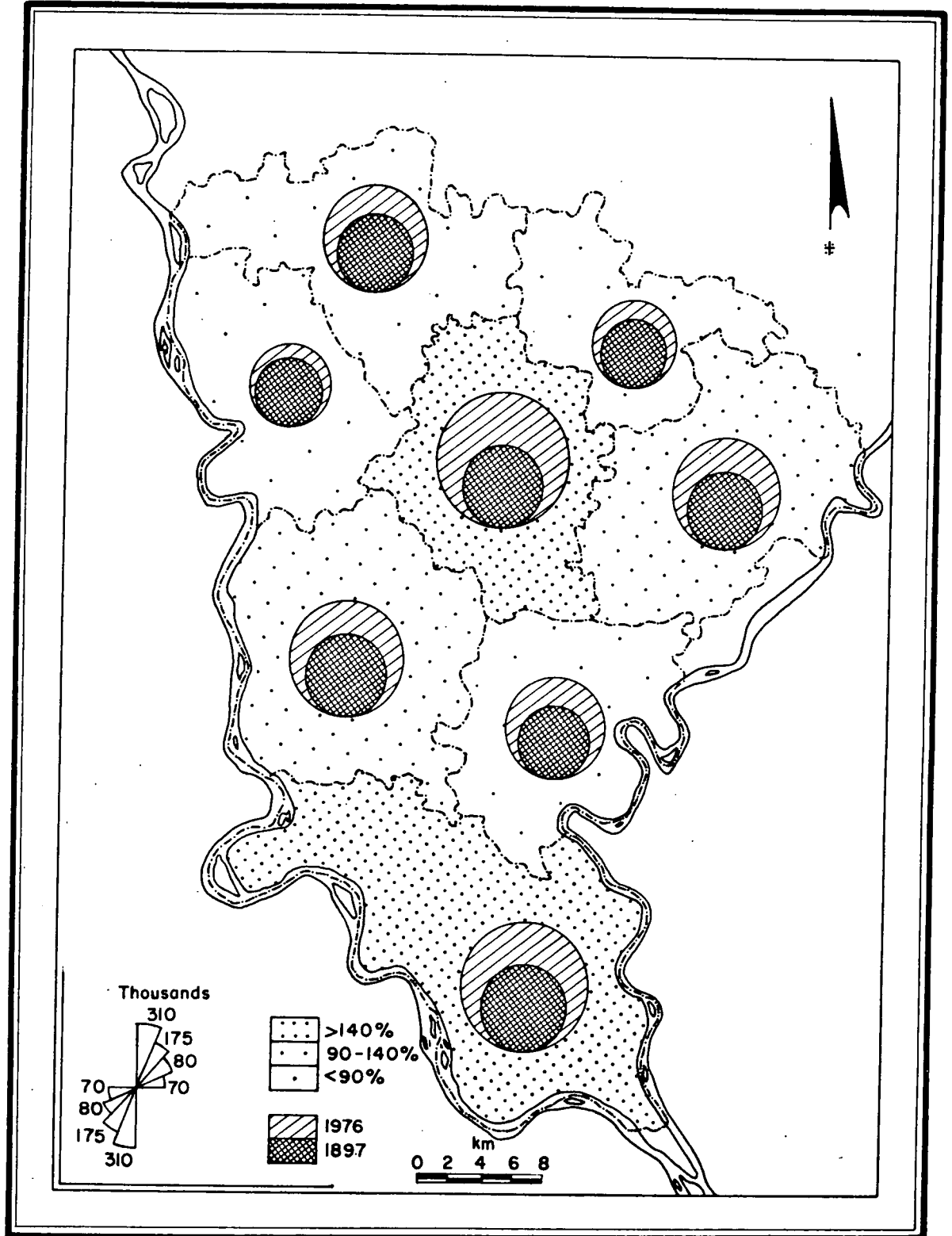
Source: Calculated according to the data of 1897 and 1976 Censuses. The percentage of total increase calculated on the formula:

$$\frac{\text{Total increase}}{\text{Population of 1897}} \times 100$$

From the study of the spatial distribution of the percentage and absolute growth in Menoufiya as shown in Table 2.3 and Fig.2.4, we can notice the following:-

- (i) Ashmoun and Shebien Elkom districts had the highest and similar

Fig 2.4 ABSOLUTE AND PERCENTAGE POPULATION INCREASE IN DISTRICTS OF MENOUIYA, 1897-1976



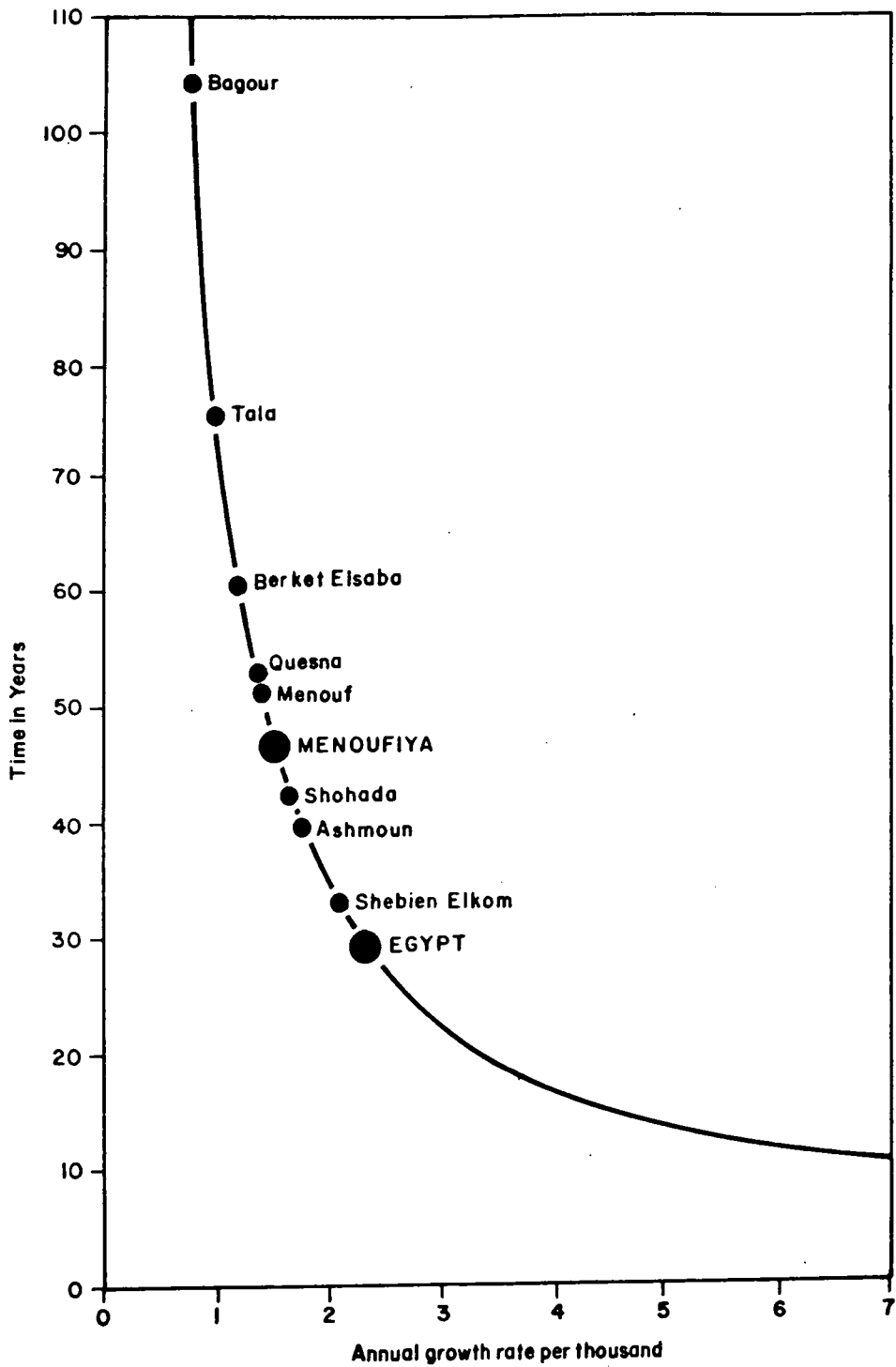
rates of population increase in the governorate (145 and 144 per cent respectively). This results from the high rates of natural increase in Ashmoun, and to the high increase of population of Shebien Elkom city since 1960, after the establishment of the spinning mill and many other governmental agencies.

- (ii) The rates of Quesna (120 per cent) and Menouf (105 per cent) were higher than average for the governorate, because Menouf is the second industrial town after Shebien Elkom, and the population of Quesna increased after the reclamation of some of the uncultivated lands on the sandy islands of Quesna and Kufur Elramleh in addition to the establishment of many industrial projects in other areas.
- (iii) The rest of the districts had rates of increase lower than 90 per cent, the lowest being in Tala (61), and Bagour (63 per cent). These districts only had a small number of jobs, so most of the out-migration came from them.

Briefly, it is clear that the population of the districts of Ashmoun, Shebien Elkon, Quesna and Menouf had doubled, while the population of other districts had not done so. The great majority of this variety is mainly related to the factor of migration from most of the districts, to the abundance of new jobs in some districts, and to the decline of natural increase in the others.

The number of years required for the population of each district to double can be calculated using the annual growth rates of 1966-76 (Table 2.2). It is apparent that if present annual rates of growth continue, the population of Menoufiya will double in 47 years, but the doubling time for districts varies greatly. Shebien Elkon district with relatively high growth will double in population in 33 years, but even this is longer than for Egypt as a whole (Fig. 2.5). Most other districts will need 40-60 years to double with the exception of Bagour and Tala districts which will double

Fig 2-5 YEARS REQUIRED FOR POPULATION TO DOUBLE IN DISTRICTS OF MENOUIYA (according to 1966-76 population growth rates)



in 104 and 76 years respectively. In fact, this pattern may change in the near future, as a result of many factors in which, increasing urbanization, job creation and rural Development, along with the difficulties which face migrants looking for accommodation in the large cities, all play a part.

2.2 High Fertility

The factors which have influenced the increase of population in Menoufiya are natural increase and out-migration. Therefore these two elements must be examined to assess their relative significance.

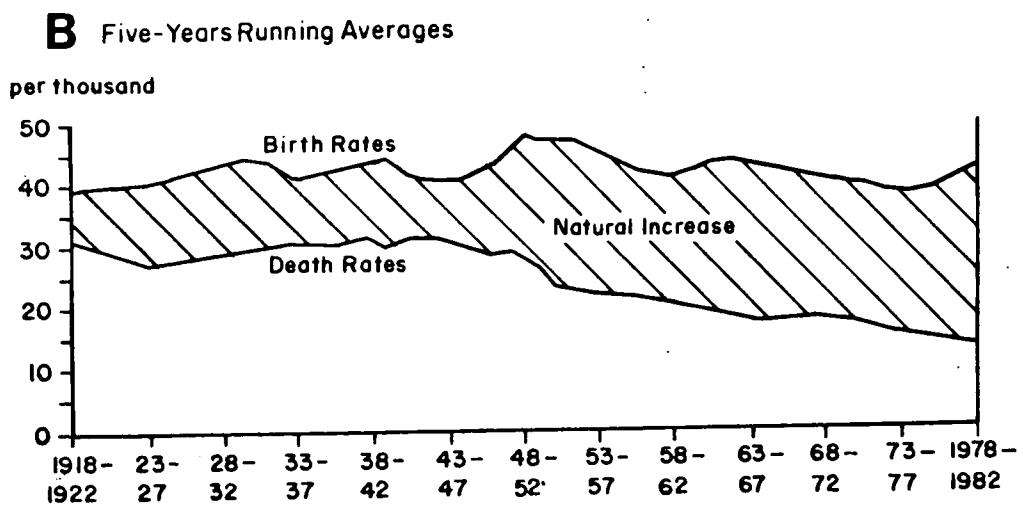
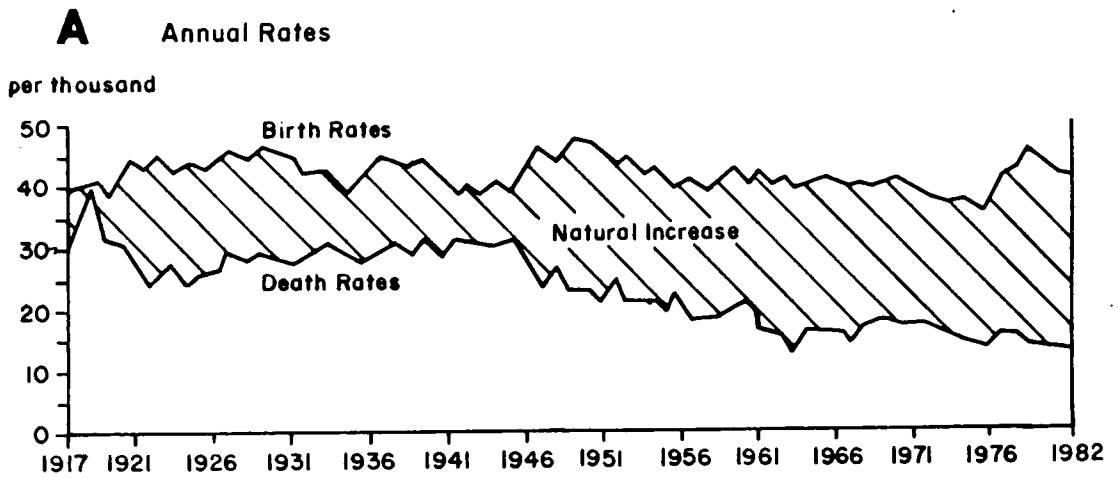
Vital statistics data of Menoufiya are available for the period since 1900, but the Department of Statistics considers the year 1917 as a beginning of accurate accounts.⁽¹⁰⁾ Fertility in Menoufiya is still high. The highest crude birth rate was in 1950, when it reached 48.3 per thousand and the lowest was 36.4 in 1975 as shown in Fig.2.6A. The birth rate rose continually from 40 per thousand in 1917 to 45.2 in 1931; it gradually decreased to reach 39.2 in 1946, then rapidly increased to over 45 per thousand between 1947 and 1954. Between 1955 and 1976, the birth rate decreased to less than 40 per thousand. Significantly, there has been a major rise in Menoufiya's birth rate during the years 1976-79; since it was 37.5 in 1976, the rate consistently increased to reach 45.7 per thousand in 1979. The main reason for this high increase since 1976 was the cessation of the war of October 1973, and the resultant baby boom associated with the demobilization of a large number of soldiers in 1975-76, and a remarkable increase in the marriage rate.⁽¹¹⁾ However, the phenomenon must have been only temporary, because the birth rate registered a sharp decline to reach 39.2 in 1982. Further decrease of the birth rate may be occurring in the next years as a result of the improvement of the standard of living and the success of the development projects in the rural areas of the region.

Table 2.4 : The Rates of Birth, Death and Natural Increase in Menoufiya, 1930-82
(Per thousand)

Year	Birth Rates	Death Rates	Natural increase	Year	Birth Rates	Death Rates	Natural increase
1930	45.7	27.9	17.8	1955	43.3	22.7	20.6
1931	43.9	29.1	14.8	1956	43.1	21.1	22.0
1932	42.9	30.7	11.2	1957	41.0	24.2	16.8
1933	42.9	30.8	12.1	1958	42.2	20.1	22.1
1934	40.1	31.0	9.1	1959	41.5	20.1	21.4
1935	39.3	27.7	11.6	1960	41.5	21.0	20.5
1936	41.9	31.3	10.6	1961	44.8	21.0	23.8
1937	46.0	31.3	14.7	1962	41.8	22.7	19.1
1938	44.3	31.5	12.8	1963	43.7	17.2	26.5
1939	43.4	29.7	13.7	1964	43.2	17.2	25.0
1940	43.6	32.3	11.3	1965	42.0	17.6	24.4
1941	44.4	29.3	15.1	1966	41.4	14.6	26.8
1942	39.1	32.9	6.2	1967	41.3	14.6	26.7
1943	40.6	30.4	10.2	1968	40.6	16.8	33.8
1944	39.6	30.6	9.0	1969	40.1	18.5	21.6
1945	40.9	31.2	9.7	1970	39.3	17.7	21.6
1946	39.2	27.9	11.3	1971	39.5	17.5	22.0
1947	47.6	27.9	19.7	1972	38.5	16.0	22.5
1948	46.8	27.9	18.9	1973	37.4	16.0	21.4
1949	45.2	28.3	16.9	1974	37.4	15.5	21.9
1950	48.3	23.5	24.8	1975	36.4	15.3	21.1
1951	48.0	24.3	23.7	1976	37.5	14.4	23.1
1952	47.3	21.6	25.7	1977	41.3	15.5	25.8
1953	45.0	26.9	18.1	1978	42.4	14.9	27.3
1954	45.0	22.0	23.0	1979	45.7	13.8	31.9
				1980	42.9	13.1	29.8
				1981	40.1	12.7	27.4
				1982	39.2	12.1	27.1

Source: Calculated according to -
Vital Statistics and Census of Menoufiya governorate.

Fig 2.6 BIRTH, DEATH AND NATURAL INCREASE RATES IN MENOUIFIYA
1917 - 82



The spatial pattern of birth rates in Menoufiya (Fig.2.7A) shows that the highest rates are in the districts of Shohada and Ashmoun (more than 40 per thousand). This is related to the high illiteracy rates (more than 63 per cent of the total population), and to the high proportion working in agriculture (72 per cent of the total population); the highest rates of illiteracy are among the population working in agriculture in Menoufiya. Meanwhile the lowest birth rates are in the districts which have a high ratio of out-migration, like Tala, Berket Elsaba and Bagour. The rates are even lower in the rural areas of these districts.

2.3 Declining Mortality

In 1917, an abnormally high death rate had been reached at 39.4 per thousand, because of the prevalence of Spanish fever in Egypt in general.⁽¹²⁾ The death rate gradually decreased from 1919 to 1932, when it fluctuated between 25 and 30 per thousand (Fig.2.6A). After that, the rate oscillated but increased during the Second World War when the country was struck by some infectious diseases such as malaria and typhus. The rate always exceeded 30 per thousand during the period 1936 to 1945, but thereafter decreased to reach 23.5 per thousand in 1950.

The progress in health, social and economic affairs after 1952 has had the effect of reducing mortality. This decline was largely due to improved sanitation and housing, better food and water supplies, rising standards of living and working conditions, and the improvement in medical services and public health,⁽¹³⁾ particularly in the field of infant care especially in the rural sector of the governorate.

The remarkable decrease of the death rate has been since 1963, when it decreased below 20 per thousand for the first time. By 1976 it was 15 per thousand, and by 1982, only 12.1, half of the rate of that of 1950s (Table 2.4).

Table 2.5 Birth, Death, Infant Mortality and Natural Increase Rates of the Districts of Menoufiya, 1976 (per thousand)

Districts	Birth rate	Death rate	Infant mortality rate	Natural increase
Shebien Elkom	37.4	12.9	106.1	24.5
Ashmoun	40.7	13.6	95.8	27.1
Bagour	35.1	15.3	131.0	19.8
Berket Elsaba	35.0	13.7	101.3	21.3
Shohada	41.4	15.5	113.7	25.9
Tala	34.8	15.1	102.3	19.7
Quesna	37.2	14.1	110.9	23.1
Menouf	38.8	14.6	117.8	24.2
Total	37.8	14.4	108.9	23.4

Source: Calculated from C.A.P.M.S. Birth and Death Statistics In Egypt 1976, Cairo, 1980.

The highest death rates were in Shohada, Bagour and Tala in 1976 (15.5-15.1 per thousand) as shown in Fig.2.7B and Table 2.5. The death rate is high in both rural and urban areas of Shohada, but it is higher in the rural area of Bagour, and Tala. Elsewhere death rates in 1976 were below 15 and as low as 13.7 in Berket Elsaba and 12.9 in Shebien Elkom; in all these districts except for Quesna, death rates are lower in the urban sector (Appendix 1).

2.3.1 High Infant Mortality

One of the main reasons for high death rates in Menoufiya is the high infant mortality rate. The Menoufian rate has always been higher than that of Egypt; in 1976, the infant mortality rate in the governorate was 108.9 per thousand, while that of Egypt (Appendix 4)

was 87.0. Moreover, the rate of Menoufiya in 1970-73 was 123.5, compared with that of Egypt at 108.3 per thousand.⁽¹⁴⁾ Menoufiya has one of the highest rates of infant mortality in Egypt; it is generally the fifth governorate rate after Aswan, Cairo, Qalyubiya and Giza.

The highest rates of infant mortality are concentrated in three districts (Fig.2.7D) : Bagour, (131 per thousand), Menouf (117.8) and Shohada (113.7). The rates are 100-112 per thousand in all the other districts except for Ashmoun (95.8), but this matter is uncertain because the urban mortality rates are generally substantially below those in rural areas. This fact is to be expected in any country where public health services, medical facilities, and hospitals are still lacking in rural areas and where communications do not permit the rural population to reach the cities quickly and easily.⁽¹⁵⁾

Causes of infant mortality in Menoufiya may be divided into two groups:

- (a) endogenous factors which the new-born inherits and which lead to death after a few weeks;
- (b) exogenous factors which cause neonatal death especially after the first month of life.

Diseases of the digestive system are the most important, followed by innate infirmity and diseases of the respiratory system with rates of 72.4, 18.9 and 9.6 per thousand respectively.

The seasonal peak of infant mortality rates is in July and August, when about 43.3 per cent of infant mortality occurs, and this is also true for Egypt as a whole.⁽¹⁶⁾

The correlation coefficient between infant mortality and female illiteracy is very strong (94 per cent) as shown in Appendix 2. So it is important to clear the ignorance of some women about fundamental infant care. Another factor which causes the rise of infant mortality

is the discrimination of care between the boys and the girls especially in cases of sickness, when most rural people give preference to boys.⁽¹⁷⁾ The correlation coefficient between the infant mortality and newborn female mortality is very strong (95.7 per cent).

2.4 High Natural Increase

The natural increase is the principal element in the population increase of Menoufiya, migration being a largely negative element. During the period 1917-67, the total population increase was 580,000 inhabitants, less than half of the natural increase which was 1,385,000, migration accounting for a loss of 805,000 (Table 2.6).

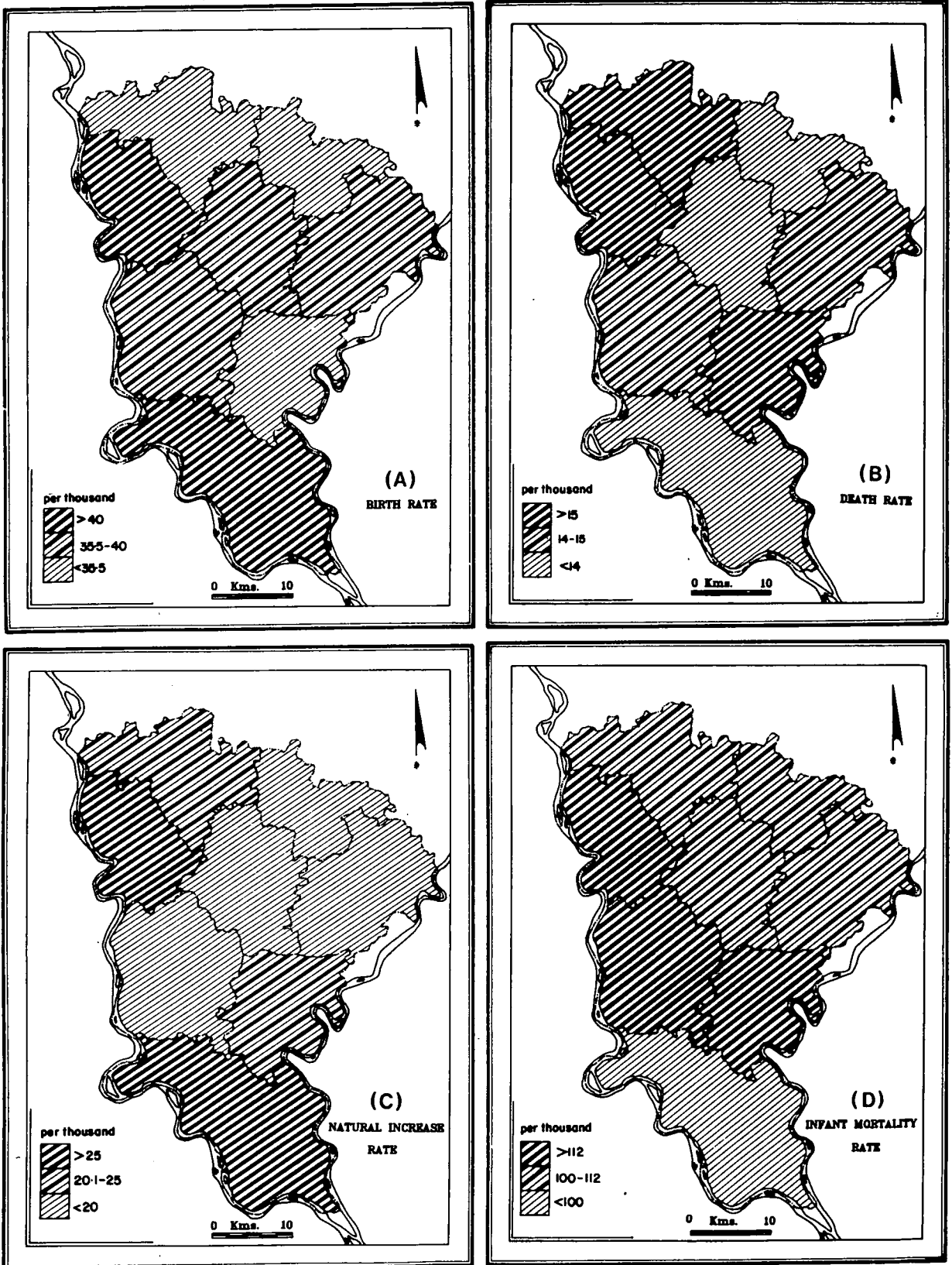
Table 2.6 The Proportion of the Natural Increase In the Population Growth in Menoufiya 1917-76
(Thousands)

Period	Total increase	Natural increase	Migration
1917 - 27	38	160	-122
1927 - 37	52	163	-111
1937 - 47	5	142	-137
1947 - 60	127	370	-243
1960 - 66	105	205	-100
1966 - 76	253	345	- 92
1917 - 76	580	1,385	-805

Source: The total increase calculated from Menoufiya's Censuses and the natural increase also calculated according to the vital statistics of Menoufiya.

The highest annual natural increase of population was during 1960-66, when 36,000 inhabitants were added to the total population every year, followed by the period 1966-76, when the average annual natural increase was 33,000 and 1947-60, when it was 28,000. However,

FIG. 2-7 BIRTH, DEATH, INFANT MORTALITY AND NATURAL INCREASE RATES IN MENOUIYA ,1976.



there is a problem of incompatibility of the census data with vital statistics data. (18)

According to the relationship between the birth and death rates, the natural increase is always vacillating. The natural increase is distinguished by a low rate during the period of 1917-50, at less than 20 per thousand, since when it has generally exceeded 20 per thousand. Because of the decrease in the death rate and the increase in the birth rate, especially after 1977, the natural increase rate rose in the late 1970's to 21.9 per thousand in 1979 (Table 2.4).

The natural increase rate was only below 10 per thousand in 1934 (9.1), 1942 (6.2), 1944 (9.0) and 1945 (9.7 per thousand). We can attribute the low rates in these years to a remarkable decrease in birth rates and still high death rates, and the oscillation of the natural increase rates in the period 1934-46, and to the gradual increase in the death rates. On the other hand, the decreasing death rate and the increasing birth rate during the period of 1978-82 meant that the natural increase rate became very high - over 27 per thousand.

The spatial distribution of natural increase in the districts of Menoufiya (Fig. 2.7C) varies considerably in 1976 from less than 20 per thousand in Tala and Bagour to over 25 in Ashmoun and Shohada.

To be acceptable, the study of birth, death and natural increase rates have to be averaged out over periods of five years. In this way we can avoid some of the oscillations which we sometimes find in these rates. In fact, this means having an indication of the overall trends of fertility in the governorate. Therefore, five years means were analysed (Fig. 2.6B and Appendix 3), revealing general characteristics:-
Firstly : the mean birth rate of Menoufiya has always been higher than Egypt as a whole, except for the period 1932-42. The reasons were varied:

1. The high fertility of the females of child bearing age, whose general fertility rate was 183 per thousand in 1976, compared with 209.3 in 1960 and 165.6 in 1966.⁽¹⁹⁾
2. The high infant mortality in Menoufiya (108.9 in 1976), and the fear of losing an infant was one of the incentives which made parents increase their number of children, especially in the rural areas.⁽²⁰⁾
3. The high marriage ratio in Menoufiya, where the ratio of marriage was 66.7 per cent of the total population aged 16 and over in 1976.
4. Land fertility and intensive agricultural system, plus the prevalence of cotton and vegetable growing encouraged the poor people in the rural areas to increase the number of children to help them with planting and gathering the crops, thereby increasing the family income.⁽²¹⁾
5. The dissatisfaction of most of the population with birth control. There is a strong conviction that a large family is favourable. At the same time, there is a fear of using the medical methods of birth control, especially among the illiterate females. In addition to that the midwives encourage the females to bear more children.

Secondly : the mean death rate in Menoufiya was higher than that of Egypt during all the years 1917-79, and the decline was slow, being less than 20 per thousand until after 1962, ten years later than Egypt as a whole. In spite of the death rate in the governorate decreasing from 31.7 in 1939-42 to 14.6 per thousand in 1976-79, by more than 50 per cent, it is still relatively high. This is due to the indigenous diseases, poverty, low standard of living and malnutrition of large numbers of the rural population, and the lack of emphasis on improving the medical services in Menoufiya, where most of the villages were without hospitals

until 1970. The number and capacity of the hospitals was also insufficient for the large population.

Thirdly : the mean natural increase in Menoufiya was higher only in the period 1977-79, and 1967-71, a fact attributable to the rise of the birth rate in the governorate of over 40 per thousand. The mean birth rate was 41.7 in 1977-79, while it was 39.1 per thousand throughout Egypt. On the other hand, the mean natural increase in Egypt was always higher than in Menoufiya during the remaining years between 1917-79, due to the high rates of death in Menoufiya, especially infant mortality.

2.5 Heavy Out-Migration

Out-migration is considered one of the main elements affecting the population growth and size of Menoufiya. It also influences demographic, economic and social characteristics. The study of internal migration between the governorates of Egypt does not depend on direct data, but can be inferred from other statistical data in the censuses. There are two methods of studying the internal migration in Menoufiya : the balancing equation method and the place-of-birth method.

(a) Balancing equation method : The estimate of net-migration is obtained by subtracting the natural increase from the total population, the difference between them representing the net-migration, be that positive or negative. The balancing equation can be described as: (22)

$$\text{Net-migration} = (P_t + n) - P_t - (B - D)$$

where $P_t + n$ is the population at the later census, P_t is the population at the earlier census, B is the number of births and D is the number of deaths that occurred to residents of the area during the intercensal period. One of the defects of this method is due to possible error in vital statistics registration and in the census data.

Analysis of net-migration in Menoufiya by this method during the period 1917-76 reveals:

1. The total number of net-migrants from the governorate was 805,000 persons during this period, a large number compared with the total increase which was only 580,000.
2. The current of out-migration was not less than 100,000 persons between each census, with the exception of the last period 1966-76, when the total number of migrants was 92,000. This was due to the care of the government in offering new jobs to the population of Menoufiya by establishing new factories to decrease the population pressure on Cairo by encouraging the migrants to return back to their native homes. In the governorate many factories were established, most important being the company of spinning and textile in Shebien Elkom which offered more than 18,000 new jobs to the population.⁽²³⁾ In addition, the service departments were extended and the university of Menoufiya was created.
3. The highest annual average of migration was during 1947-60, when about 243,000 persons migrated with an average of 18,000 migrants per year. Generally there has been an out-migration of 11-12,000 per annum, except in 1960-66 (17,000).

(b) Place-of-birth method : The main source of information on internal migration are the population censuses, which have included a question on place of birth since 1937. Answers to this question have been tabulated by distributing the enumerated population in each governorate according to the governorate of birth.

These tables lack some data which geographical studies need because the definition of the migrants is according to settlement of the persons in a place other than the place of birth, and the Census did not ask how long the person had spent in the place.⁽²⁴⁾ The last Census of 1976 put this question.

Table 2.7 Migration from Menoufiya, 1917-76

Census	Born in governorate and resident elsewhere		Born elsewhere and resident in governorate		Net balance	
	Total number (thousands)	% of	Total number (thousands)	% of	Total number (thousands)	% of
1917	69	6.6	33	3.2	36	3.4
1927	106	9.8	18	1.7	88	8.1
1937	135	11.7	15	1.3	120	10.6
1947	357	22.7	16	1.4	341	21.3
1960	381	28.1	40	3.0	341	25.1
1966	356	24.3	26	1.8	330	22.5
1976	365	21.3	26	1.5	339	19.8

Total number in thousand and % = percentage to the total population of the year.

Source: Calculated from Egypt, C.A.P.M.S. Censuses of Menoufiya.

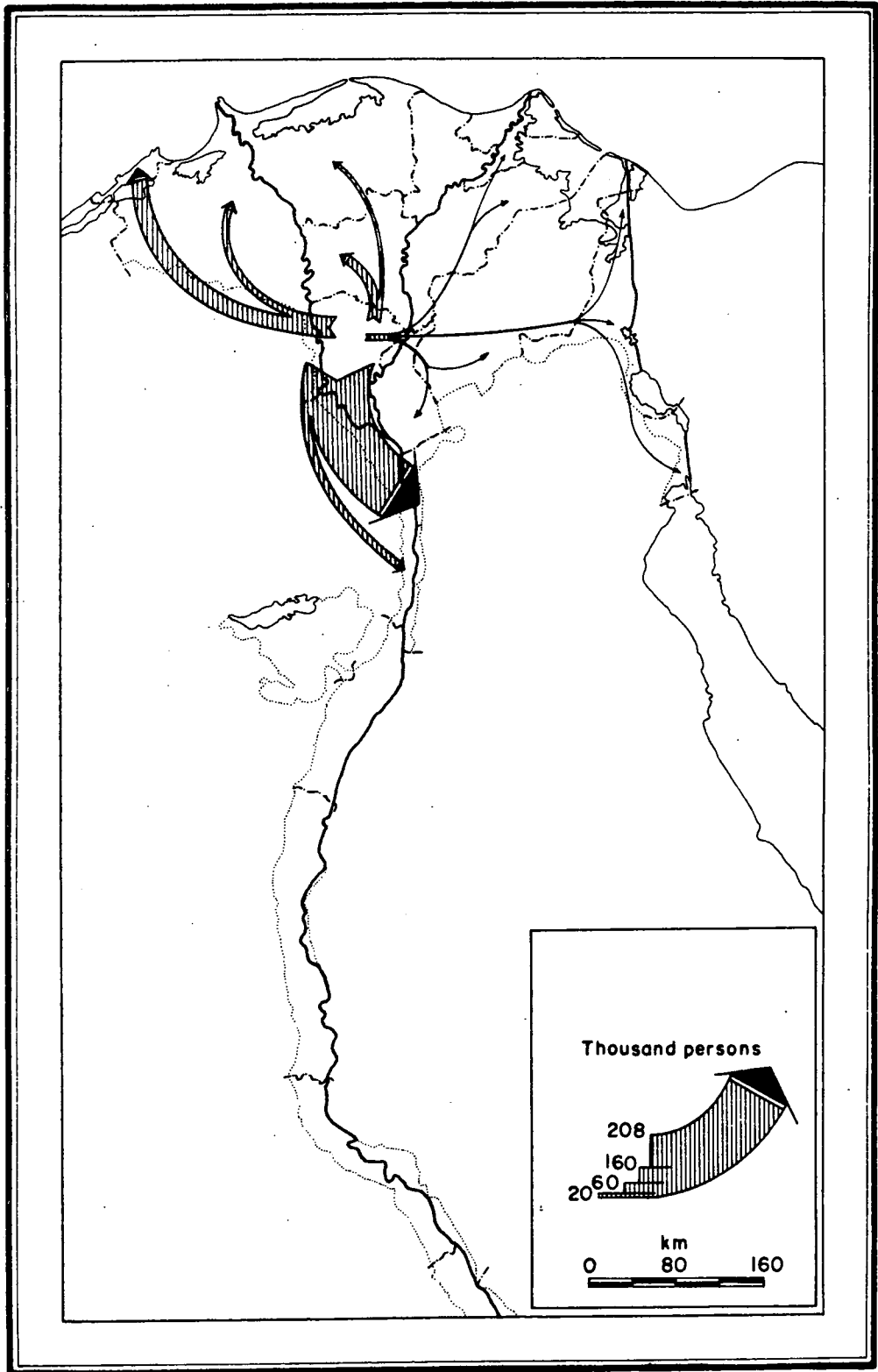
The highest net number of persons born in the governorate and resident elsewhere (381,000) was recorded in 1960, when the net balance was -341,000 or 25.1 per cent of the total population of Menoufiya. The lowest percentage for all censuses since 1947 was in 1976, when the net-migration was -339,000 or 19.8 per cent of the total population.

2.5.1 The Trends of Migration from Menoufiya

At the 1976 Census, the number of persons recorded as born in Menoufiya and living elsewhere was 365,000. The largest outflow of migrants settled in Cairo, which received 208,000 persons, 57 per cent of all migrants from Menoufiya. Alexandria came in second place receiving 42,000 (Appendix 5 and Fig.2.8).

During the last seven censuses, Cairo has been the largest governorate of Egypt attracting most of the migrants from Menoufiya (Table 2.8), more than 50 per cent of the migrants during the period of

Fig 2-8 TRENDS OF OUT-MIGRATION FROM MENOEFIYA IN 1976



Census records, except for the 1917 and 1927 censuses, when 29.3 and 43.0 per cent of migrants went to Cairo. The high percentage is due to the effect of opportunities of jobs and the short distance,⁽²⁵⁾ Cairo is not far from Menoufiya; it is only 35 kilometres from Ashmoun town, 40 from Bagour town and 70 kilometres from Shebien Elkom city.

In 1917 the percentage of persons born in Menoufiya and living in Alexandria was 5.2 of the total born in Menoufiya and living elsewhere, but rose to 8.7 per cent in 1927 and to 11.0 per cent in both 1937 and 1947. The highest percentage was in 1976, when it was 11.6 per cent or 42,000. They concentrated in the zone of Mahmoudiya Canal in Karmous and Mouharrem Bey suburbs and in Gheet Eleinab, Sobohia, Baccous and Ezab Elbarr Elqebly in Ramel suburb and also in the villages of Montazah suburb and in rural areas of Amiriya and Abeas.⁽²⁶⁾

The percentage of persons born in Menoufiya and resident in Giza did not exceed 4 per cent of the total during the census periods 1917-1947, but it had doubled by the 1960 Census, when it reached 8.1 per cent. This was due to the fact that Giza was formerly an area of out-migration, but it became one of in-migration after the census of 1947. The number of persons born in Menoufiya and resident in Giza at the Census of 1976, was 30,000 about 8.3 per cent of the total resident elsewhere from Menoufiya. In fact most of them go to Giza and its suburbs as an extension of Greater Cairo, so the population and urban growth of Cairo is not limited by the administrative boundaries of Cairo governorate.⁽²⁷⁾

Gharbiya governorate became, in 1976, in the fourth ranking governorate to receive migrants from Menoufiya. The number of persons born in Menoufiya and living in Gharbiya was 29,000 or about 8.1 per cent at the 1976 Census. Gharbiya was the largest governorate after Cairo receiving migrants from Menoufiya till the 1947 census, as it is the nearest governorate to Menoufiya, where the distance between Tanta

the capital and Shebien Elkom is only 17 kilometres. At the 1917 Census the percentage of the persons from Menoufiya living in Gharbiya was 24 per cent, and in 1927 was 18.3, the percentage continued to decrease to 11.8 at the 1947 Census and to only 7.7 per cent in 1960.

Behiera and Kafr Elsheikh came in fifth and sixth rank respectively. The number of persons from Menoufiya living in Behiera was 20,000 persons, nearly 5.4 per cent, at the 1976 Census, while the number which were resident in Kafr Elsheikh was 8,000, or about 2.1 per cent of the total migrants from Menoufiya. The main reason for migration towards these two governorates is the extension of land reclamation in the north of the delta (Kafr Elsheikh) and in the southern parts of Bekiera in Tahrir Province. These new lands are always needed by farmers and therefore it is natural that the farmers of Menoufiya represent a great proportion of the new citizens of these areas as Menoufiya has the highest agricultural density in Egypt.⁽²⁸⁾

Table 2.8 Percentage of Migrants from Menoufiya to the Other Governorates of Egypt, 1917-76

Censuses	Cairo	East Delta & Suez Canal	Mid-Delta	West Delta	Upper Egypt	Others	Total %
1917	29.3	16.8	24	17.9	9.0	3.0	100
1927	43.0	10.0	18.3	21.3	5.9	1.5	100
1937	52.1	8.9	12.0	19.3	6.0	1.7	100
1947	58.1	7.9	11.8	16.2	5.6	0.4	100
1960	56.9	6.8	9.7	17.4	9.1	0.1	100
1966	56.2	6.0	9.3	18.7	9.1	0.2	100
1976	57.0	6.2	10.2	17.1	9.4	0.1	100

Source: Calculated from: Egypt C.A.P.M.S. The Population Censuses of Menoufiya

The migration current to the governorates of East delta which includes Qalubiya, Sharkiya, Dakahlia, and Damietta is small compared with the current of migration to Cairo and Giza or the western delta governorates of Alexandria and Behiera. About 14,000 migrants settled in the governorates of the east delta; that is 3.9 per cent only of the total migrants went to that area. In general, the percentage of the persons born in Menoufiya and living in Qalubiya was 8.2 at the 1917 Census, then it decreased to 4.9, 3.9, 3.4, 0.9 and 0.7 per cent at the Censuses of 1927, 1937, 1947, 1960 and 1976. Moreover, the current of migration to Sharkiya was 4.7 per cent at the Census of 1917, and gradually decreased to 1.1 in 1976.

The governorates of the Suez Canal region do not represent an attractive area to migrants from Menoufiya, and migrants to them did not exceed 1.0 per cent during the Censuses 1917-66; but in 1976, it increased to 2.2. This area receives migrants from Upper Egypt and eastern delta governorates. (29)

Ignoring Giza governorate, the current of migration to the Upper Egypt governorates is small and does not exceed 1.5 per cent of the total migration from Menoufiya during the censuses period. This is because all the governorates of Upper Egypt, like Menoufiya, have the largest outflow of migrants of Egypt as a whole. The ownership of small plots of land and the high rate of natural increase encourage the people to migrate from these regions. (30)

According to the previous analysis of the migration to the other governorates of Egypt, several main currents may be discerned. The first current drifts to the large cities of Cairo, Alexandria, Giza and the industrial towns in Lower Egypt of Mahalla Elkubra, Tanta and Kafr Elzaiyat. These urban regions received about 75 per cent of the total migrants of Menoufiya at the 1947 Census, and the ratio increased

to 79.3 in 1960, and 85.2 per cent at the 1976 Census. The main reason for this high ratio is due to the industry which creates a considerable number of new jobs, and encourages the village dwellers to migrate to these areas. The factories offer regularity, security and stability in work and income which the agricultural work does not provide.⁽³¹⁾ Short-term city employment as labourers, service workers or small entrepreneurs can increase their income and provide cash surplus to subsistence requirements. This they may save with the subsequent intention of buying village land or property. Attachment to the village is very strong and many temporary migrants strive to do well in the city with the sole intention of financing the village economy and of furthering the development of the rural community.⁽³²⁾

The second current goes from Menoufiya to the rural areas, especially the new reclamation area in Kafr Elsheikh, Tahrir Province Abeas and Amiriya. These areas received some of the farmers of Menoufiya since they have experience in reclaiming and cultivating the land.

The balance of migration between Menoufiya and the other governorates of Egypt (Appendix 5) shows that Menoufiya sent a large number of migrants, while it received few. In-migration to Menoufiya was only 1.5 per cent of the total population, meanwhile out-migration was 21.3 per cent at the 1976 Census.

The total number of in-migrants to Menoufiya was 26,000, of whom 5,000 persons or 19.1 per cent came from Cairo, followed by Gharbiya (16.1), Port Said (7.1) and Qalyubiya (6.8 per cent). In other words, about 50 per cent of the total persons born elsewhere and resident in Menoufiya came from these four governorates.

The balance of migration between Menoufiya and the other governorates is not in its favour except for Port Said, Sohag, Qena and New Valley. Most of the migrants from Port Said are the remains of the

forced migration after the 1967 war; some people preferred to live in Menoufiya rather than return .

2.5.2 The Characteristics of Migrants from Menoufiya

Migrants from Menoufiya exhibit a number of characteristics:

- (1) Most of the migrants are males, but they only accounted for 60 per cent of the total in 1976.
- (2) The percentage of the migrants in the age-group 20-55 was 71.5 per cent of the total in 1976, with about 54 per cent in the age group 25-45, so most of the migrants are of working age. At the same time, the mean age of migrants to Cairo from Menoufiya was 26 years in 1966,⁽³³⁾ and 25 at the Census of 1976.
- (3) Most of the migrants to Cairo are single with a ratio of 71.6 at the Census of 1976. Most of them prefer to get married to a woman from the governorate a few years after arrival in the new place.
- (4) Most of the migrants (63.1 per cent) at the 1976 Census were working in agriculture, more than in 1966 (60 per cent).⁽³⁴⁾ Due to the fragmentation of the agricultural holdings and the shortage of job opportunities in the governorate, some farmers were encouraged to migrate to urban areas and change their jobs, while some migrated to new land in rural areas.
- (5) About 67.3 per cent of the migrants at the 1976 Census were either illiterate or could read and write but had no certificate, while those who had obtained the secondary school certificate were about 28.2 per cent of the total migration, and University graduates about 4.5 per cent.
- (6) The economic factor is the main factor for migration from Menoufiya : about 96 per cent of the total migrants to Cairo were seeking a new job.⁽³⁵⁾

(7) At the 1976 Census, about 27.4 per cent of the migrants to Cairo stayed there for a period between 10-20 years, 26.2 over 30 years and 22.1 per cent stayed 20-30. This means that more than 75 per cent of the total migrants to Cairo settled for a period over 10 years. At the same time the majority of migrants (87 per cent) decided to spend the rest of their life in Cairo as a final decision.⁽³⁶⁾

The majority of migrants from Menoufiya are therefore of employable age, single, illiterate or can just read and write and are working in agriculture.

2.5.3 Causes for Migration

Among the causes for migration, of great significance, is the continual increase of rural population in relation to the cultivated land; for example the total number of population doubled during only 40 years while the cultivated area decreased, so that the amount of cultivated land per person does not exceed 0.30 feddan (Table 8.1). This is one of the main factors for pushing migrants to seek a better life and a higher salary. The economic factor clearly has an effect on migration from Menoufiya. It plays a double role as a push factor for out-migration and as a pull factor in the in-migration area. It is difficult to evaluate the effect of either factor by itself, since they are together the principal factors behind the migration from Menoufiya.

The demographic factor is considered as one of the main factors affecting migration from the region. Menoufiya is characterized by the high rate of natural increase, so out-migration has become a means to control the population by pushing the excess population numbers to be migrants, especially as the jobs and the cultivated land are limited.

The migrants from Menoufiya conform to the theory of Ravenstein,⁽³⁷⁾ which predicts that the migrant moves a short distance from rural to the

adjacent urban areas. Therefore the majority of Menoufiya's migrants go to Greater Cairo (Cairo, Giza, Shobra Elkhema and Helwan), followed by Alexandria and Tanta and a few to the Suez Canal cities. Migrants to Greater Cairo depends very much upon information flows and social relationships, giving them some security to migrate without fearing the new place of settlement.

2.5.4 Temporary Emigration to the Rich Arab Countries

Temporary emigration from Menoufiya to the rich Arab countries has been a salient phenomenon since 1974. The duration of stay abroad is unknown, it fluctuates between a few months and more than 4 years. While the early movement of Egyptian labour abroad was limited to teachers and technical professions (e.g. doctors and engineers) by the late 1970's it covered the whole occupational spectrum. All types of skilled and unskilled labour are now involved, from University staff, civil servants, professionals, farmers and construction workers to domestic servants.

Despite the indisputable increase in the scale of emigration in recent years and its profound effects on the labour market and despite the severe scarcities it creates for particular types of skills, occupation and profession, no single authority seems to be responsible for information in this matter, neither in the scale of Menoufiya governorate, nor in Egypt as a whole.

Emigrants' earnings are in line with wages and salaries in developed countries, and it is this huge gap between earnings in the region and in the Arab host countries that induces the large flow of emigrants.⁽³⁸⁾ The remittances of these emigrants play a great part in improving the condition of the villages (Plate 1), and increasing the food production by permitting many projects such as an animal and poultry farm and the purchase of new agricultural machinery.



Plate 1 : The effect of remittances upon housing reconstruction in the village

2.6 Summary

Despite the fact that Menoufiya's population is characterized with high natural increase rates, the total number of population was only doubled during the period of 1897-1976. The annual rate of population growth is lower than 1.5 per cent. This slow growth of population is related to outpouring of large numbers of migrants to the large cities. The period of 1960-76, saw the highest intercensal rate of growth due to the creation of more jobs for the increasing population which has reduced the expulsive current of migrants from the region and increased the rates of growth in some districts such as Shebien Elkom, Ashmoun and Shohada.

Natural increase is the principal element in the population increase of Menoufiya, migration being a largely negative element. During the period 1917-76, the total population increase was 0.6 million persons, less than half of the natural increase which was 1.4 million, migration accounting for a loss of 0.8 million persons. In fact the out-migration from the region has a great effect on decreasing the population pressure on the limited cultivated land.

Menoufiya has the highest percentage of out-migration among the governorates of Egypt during the intercensal periods. About two thirds of these migrants have settled in Greater Cairo, and one fifth of them live in Alexandria and Giza. Migrants exhibit a number of characteristics : most of them are male, the majority are in the working age group (20-55 years); most of them are single; about 60 per cent of them work in agriculture; at the same time most of the migrants were illiterate.

Temporary emigration to some of the rich Arab countries is a salient phenomenon after the beginning of the open door policy in 1974. The movement of Egyptian labour abroad is covering all types of

skilled and unskilled occupations. The remittances of these emigrants are very important, as they are used to improve the condition of the villages and the standard of living, in addition to investment in many food production projects.

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CHAPTER THREE

THE CHANGING PATTERN OF POPULATION

3.1 Even Population Distribution

The pattern of population distribution in Menoufiya is characterized by the relatively even scatter of the population over the area. It is opposite to the pattern of Egypt, which has heavy pressure and concentration in a very limited area.

With a total population of 1.711 million inhabitants or 4.7 per cent of the total population of Egypt, Menoufiya is the tenth largest of the governorates of Egypt. Menoufiya's percentage of the total population fluctuated during the census periods. This fluctuation was characterized by a continual decrease. Menoufiya's population was 7 per cent of the total population of Egypt in 1937, when the governorate was the seventh largest of the governorates. The percentage decreased to reach 5.9 per cent (eighth largest) in 1947 and 5.2 per cent (ninth place) in 1960. We can attribute that decrease to the low rates of growth of Menoufiya compared with Egypt.

The population distribution between 1897-1976 was always changing, due to population growth. The salient phenomenon was the creation of more new jobs especially in some of the capital towns of the districts, in addition to the expansion of agriculture and the selection of more labour-intensive crops, which determine the size of the villages.

Starting with the study of the increase of population in both rural and urban areas of the governorate, the ratio of the rural to the total population is always decreasing. In the 1937 Census for example, the rural population was 89.1 per cent, while in 1947 it was 87.6 per cent. The rural population ratio continued to decrease to reach 86.4 per cent in 1960, and 83.7 per cent in 1966. In the 1976

Census the total population of the urban sector rose to 337,000 inhabitants or about 20 per cent of the total population, while the percentage of rural population decreased to 80 per cent.

Nevertheless, Menoufiya is still last in the ranking of all governorates in Egypt according to the ratio of the urban population. In contrast, Menoufiya has the highest percentage of the rural population in the whole of Egypt. This is due to the nature of Menoufiya as an agricultural governorate having no large factories until 1960 when the first large factory at Shebien Elkom city offered more than 18,000 new jobs. All the urban areas in Menoufiya - except for Shebien Elkom and Menouf - have a very limited industrial base and serve mainly as market towns and centres of local administration. In recent years the state has pursued a policy aimed at the wider dissemination of industrial plans : a few have become located in Quesna, Sers Elliyama and Ashmoun towns. Such policy may reduce the flow of migrants from the region to Cairo, but so far such reduction has only been marginal. It is noteworthy that the installation of more large industrial projects in the region will help to absorb the surplus of the agricultural labour force and will increase the ratio of urban population.

There is a clear correlation between industrialization and urban growth. The higher standard salary in industry pulls a large number of the village dwellers to work in the factory or the booming service sector.

Table 3.1 : The Distribution of the Population of Menoufiya, 1897-1976(In thousands)

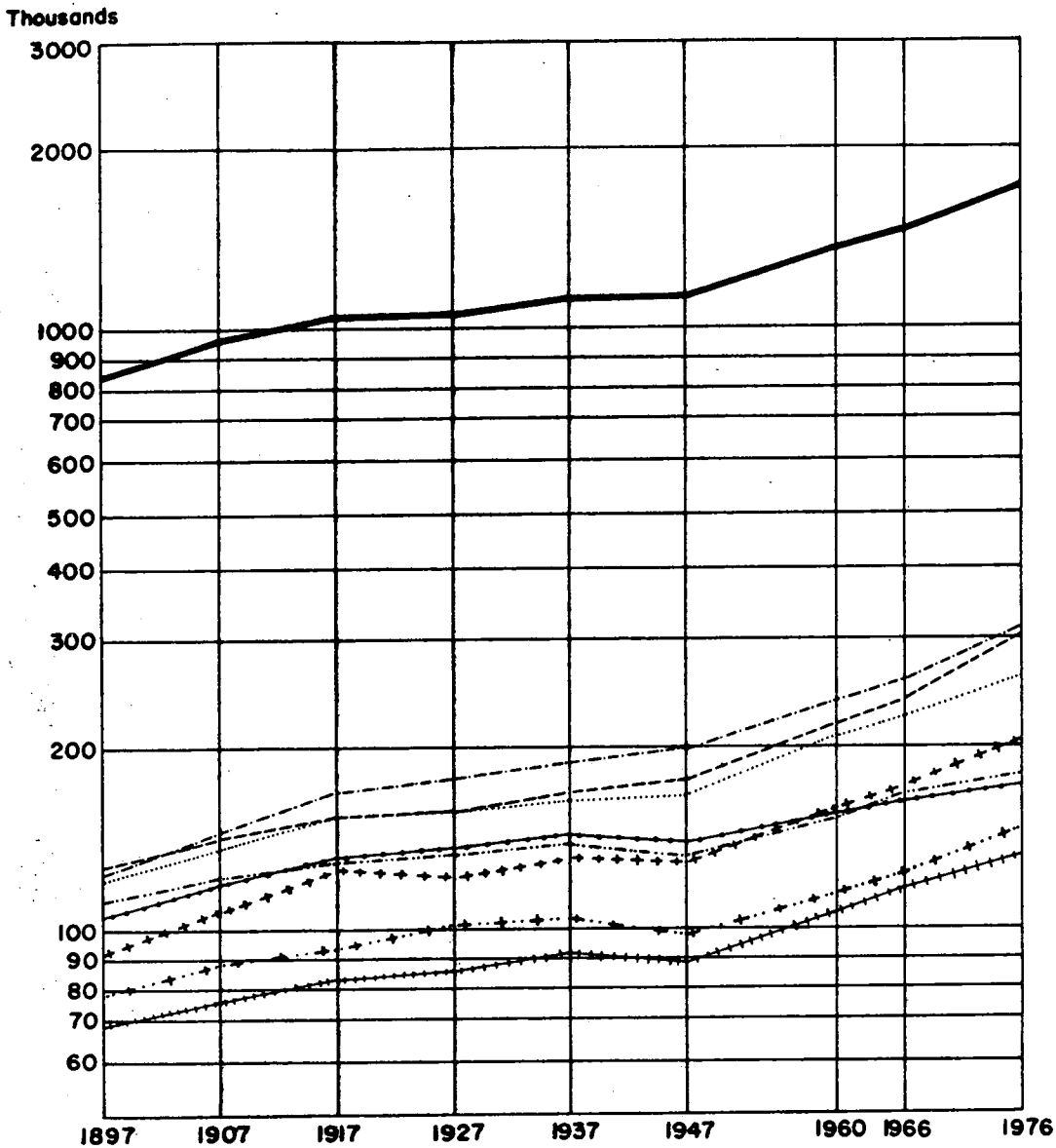
Districts	1897	1907	1917	1927	1937	1947	1960	1966	1976
Shebiem Elkom	124	137	154	157	168	177	216	242	302
Ashmoun	127	148	171	179	191	198	241	257	311
Bagour	106	119	133	137	145	141	157	159	173
Berket Elsaba	70	77	83	85	90	88	105	115	131
Shohada	79	89	94	101	103	99	113	123	145
Tala	113	131	131	135	136	132	154	164	182
Qesna	93	108	117	125	131	129	158	177	205
Menouf	128	143	154	161	167	172	208	226	262
Total	840	952	1047	1080	1131	1136	1352	1463	1711

Source: C.A.P.M.S. Census of Menoufiya

The differentiation of the distribution of the population of Menoufiya is not limited to the rural and urban sectors; changes occurred in the geographical distribution at the district level. As shown in Fig.3.1 and Table 3.1, the total number of population has slowly increased, especially during the period 1907 to 1947. The number did not exceed 184,000 inhabitants. On the other hand, the period between 1947-76, saw a remarkable increase in the population numbers, when more than half a million inhabitants were added to the size of Menoufiya's population.

The total population curve for Menoufiya as a whole is almost exactly the same as for the districts. The population of all districts slowly increased between 1907 and 1947, while a substantial increase occurred between 1947 and 1976. This is due to the high rate of natural

Fig 3-1 EVOLUTION OF THE POPULATION OF MENOEFIYA BY DISTRICTS, 1897-1976



- Total
- Bagour
- + + + + + Quesna
- + . . + . . Shohada
- + + + + + Berket Elsaba
- - - - - Ashmoun
- - - - - Shebien Elkom
- Menouf
- - - - - Tala

increase along with the decrease of the out-migration created by new jobs in the capital town. The greatest increases were in both Shebien Elkom and Ashmoun districts, due to the increased migration to Shebien Elkom city where most of the governmental administrations are concentrated. The city received a lot of migrants after 1960.⁽¹⁾ Ashmoun district had the highest rates of natural increase in the governorate, and is characterized by vegetable and fruit production for Greater Cairo.

The study of the spatial distribution at the village level gives the true sense of scatter or concentration of the population in the area of the governorate. In 1897, the total number of population was 840,000 inhabitants or 8.6 per cent of the total population of Egypt. About 45 per cent of the population was concentrated in three districts, Menouf 15.3, Ashmoun 15.1, and Shebien Elkom 14.7 per cent of the total population. On the other hand, the smallest size district was Berket Elsaba with 8.3 per cent. The population was distributed over the whole area of the governorate (Fig.3.2A), with concentrations in the few towns and the large villages such as Tetà 5,000 inhabitants, Gouzai 6,000, Sers Elliyana 14,000, and Menouf town 21,000 inhabitants in Menouf district. The concentration of the population of Ashmoun district was in the large villages such as Shanshour 6,000, Samadon 8,000, in addition to Ashmoun town 12,000 inhabitants. In Shebien Elkom district, the largest villages were Shanawan 8,000, Milig 10,000, and Batanoun 13,000 inhabitants, meanwhile the population of Shebien Elkom town was 21,000. In the other districts the population was distributed over the whole area with a few concentrations.

In the 1917 Census, the picture of population distribution revealed some changes; Ashmoun district became the largest with 171,000 inhabitants or 16.3 per cent of the total population, Menouf and Shebien Elkom districts came equal second with 154,000 inhabitants or 14.7 per cent. In other

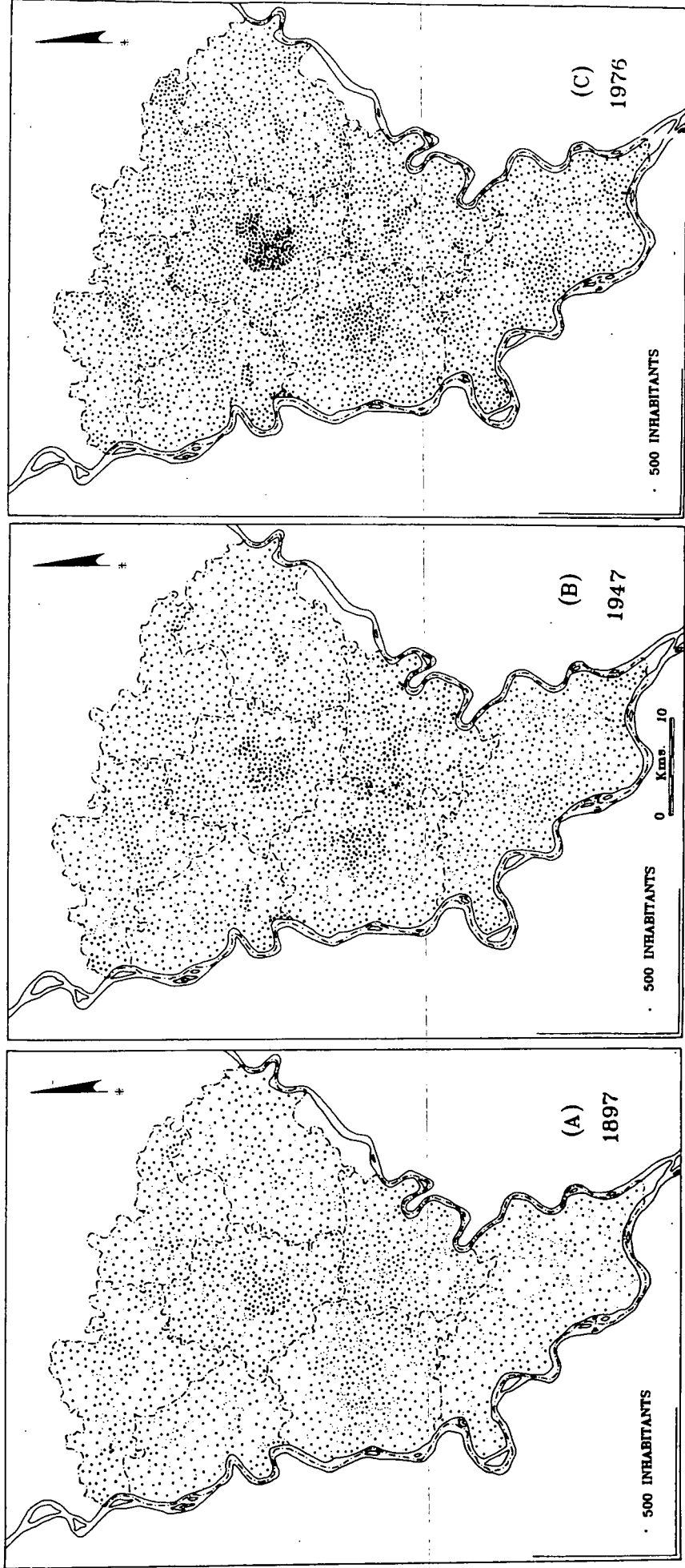
words about 46 per cent of Menoufiya's population was concentrated in these districts. Berket Elsaba remained the smallest district with a total population of 83,000 inhabitants.

There was no great difference between the picture of the distribution in 1947 and the two previous censuses; Ashmoun district still having the largest number in the governorate with a population of 198,000 persons or 17.5 per cent of the total population. The population was concentrated in Ashmoun town 23,000, Samadon 10,000 and Talia 9,000 inhabitants, that is about 21 per cent of the total population of the district concentrated in these units (Fig. 3.2B). Shebien Elkom district came second with a population of 177,000 inhabitants. The population concentrated in Shebien Elkom city 42,000, and the large villages such as Batanoun 19,000 and Milig 11,000 inhabitants, that is about 40 per cent of the total population of the district. Menouf had a population of 172,000 or 15 per cent of the total population. The concentration of the population was in Menouf town 31,000, Sers Elliyana 20,000 and Tetta 12,000 inhabitants which accounted for 37 per cent of the total population of the district.

The same distribution was found in the 1960 Census, where Ashmoun district had the largest number with 241,000 followed by Shebien Elkom with 216,000 and Menouf in third place with 208,000 inhabitants. The total number of Menoufiya population increased to reach 1.352 million inhabitants.

At the 1976 Census, the population of Menoufiya rose to reach 1.711 million inhabitants. The mode of the distribution was the same as the previous censuses with a clear concentration in the capital towns and the large villages. We can see a remarkable difference between the 1897 Census (Fig. 3.2A) and the last Census of 1976 (Fig.3.2C) as the population is focused in the cities and in the following large villages : in Shebien Elkom district, Batanoun 25,000, Milig 20,000, Shanawan 17,000 and

FIG.3.2 THE CHANGING PATTERN OF POPULATION DISTRIBUTION IN MENOUIFYA.



Elmai 13,000 inhabitants. In Ashmoun district, Samadon 18,000, Tahway 15,000, Talia 14,000 and Shanshour 13,000 inhabitants; In Berket Elsaba district, Ganzour with 13,000 persons; in Quesna district we find Mit Berah with 13,000 inhabitants and Shoubra Bekhoum with 13,000 inhabitants also. The largest villages in Menouf are Teta (17,000 persons) and Minchat Soltan (12,000 persons).

Ignoring the absolute increase in population numbers, we can classify the district according to the percentage of population to the total population (Table 3.2) as follows:-

The first group includes the districts which had a continuously increasing percentage of the total population of the governorate, such as Ashmoun, Shebien Elkom and Quesna. The percentage of Ashmoun rose from 15.1 in the 1897 Census to 18.1 per cent in the 1976 Census. Increases also occurred in the Shebien Elkom district where the percentage of its population rose from 14.7 to 17.6 per cent for the same period. Meanwhile the percentage increase was slow in Quesna which rose from 11.1 to 12 per cent. The increase in the above districts was caused by a decrease in out-migration after the creation of new jobs in Shebien Elkom, and the establishment of some industrial projects in the uncultivated areas of the sandy islands in Quesna such as textile plants and the sandy brick factories; and in Ashmoun to the high rates of natural increase and a decline in the rates of out-migrants.

The second group includes the districts which are distinguished by the stability of their percentages, having the same annual rate of growth as the governorate during the census periods. Despite the clear increase of population their percentages remained constant. The characteristics of this group and the governorate are similar; with high rates of natural increase and an increase in out-migration. Menouf district is a good example; its percentage was always about 15.3 per cent.

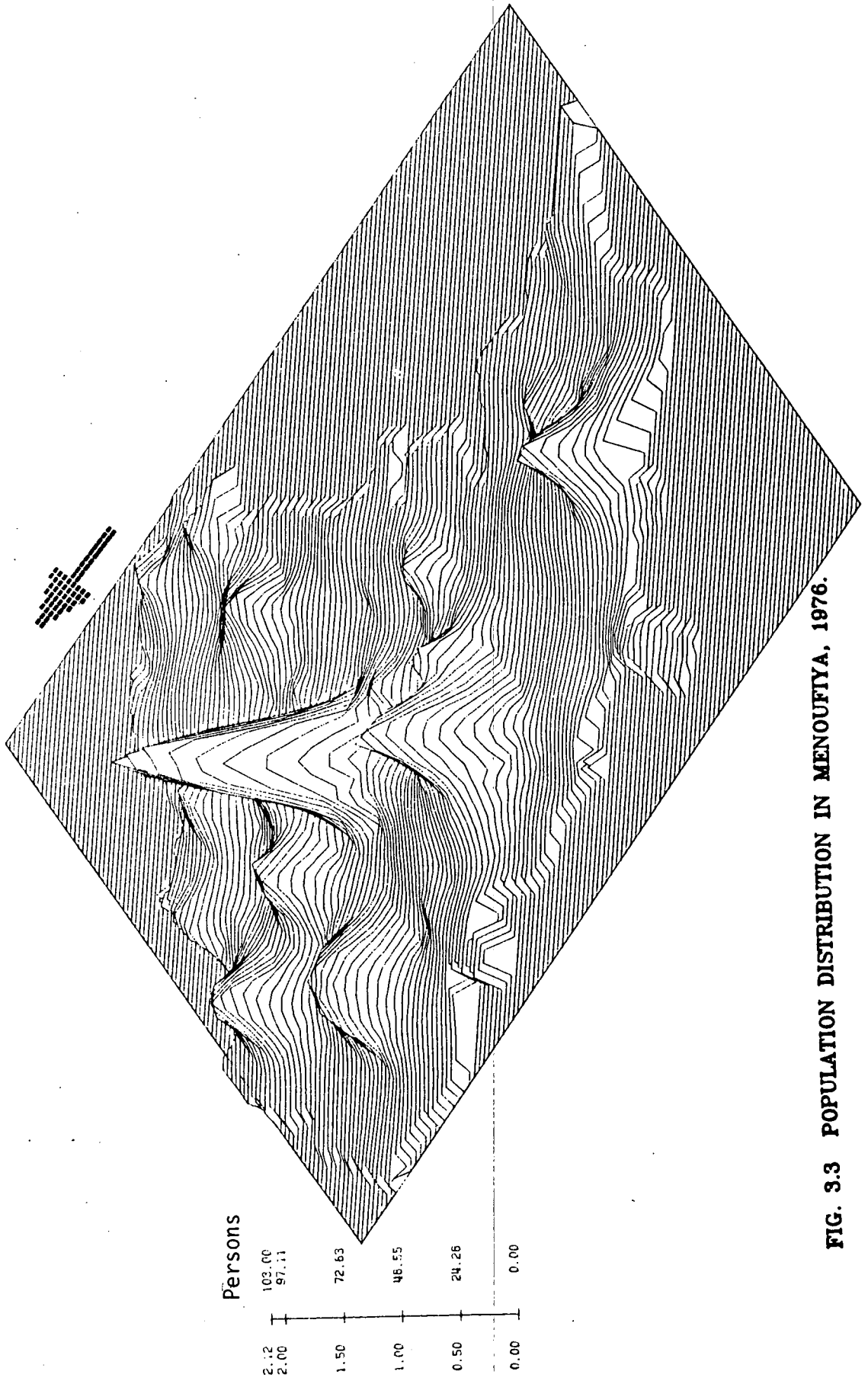


FIG. 3.3 POPULATION DISTRIBUTION IN MENOUIFYA, 1976.

Table 3.2 : Population Percentage of the Districts to the Total Population of Menoufiya 1897-1976

Districts	1897	1907	1917	1927	1937	1947	1960	1966	1976
Shebien Elkom	14.7	14.5	14.7	14.5	14.9	15.6	16.0	16.5	17.6
Ashmoun	15.1	15.6	16.3	16.6	16.9	17.5	17.8	17.6	18.1
Bagour	12.6	12.5	12.7	12.7	12.8	12.1	10.6	10.9	10.2
Berket Elsaba	8.3	8.1	7.9	7.9	8.0	7.8	7.8	7.9	7.6
Shohada	9.5	9.3	9.0	9.3	9.1	8.7	8.4	8.4	8.5
Tala	13.4	13.7	12.6	12.4	12.0	11.6	11.4	11.2	10.7
Quesna	11.1	11.3	12.1	11.6	11.6	11.4	11.6	12.0	12.0
Menouf	15.3	15.0	14.7	15.0	14.7	15.3	15.4	15.5	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : Calculated: C.A.P.M.S. Census of Menoufiya.

The third group includes the rest of the districts which had a decreasing percentage during the Census periods. We can note some differences between the districts : the highest decrease was in Tala from 13.4 in 1897 to 10.7 per cent in 1976, followed by Bagour 12.6 to 10.2, Shohada from 9.5 to 8.5 and Berket Elsaba from 8.3 to 7.6 per cent of the total population. In all of these districts (with the highest rates of out-migration) more than 60 per cent of the population are employed in agriculture and there is a clear fragmentation and smallness of the agricultural holding. At the same time the opportunities of new jobs are not adequate for the increasing population.

3.1.1 Distribution of Settlement Units by Population Size

In the 1976 Census half of the total population was distributed in 195 small settlement units with less than 5,000 inhabitants, mostly in Ashmoun, Quesna, Bagour and Tala. At the same time there are

26 small villages of this category with a population of less than 1,000 inhabitants; in all a population of 23,000 inhabitants or 1.4 per cent of the total population.

The number of settlements with a population of 59.9 thousand was 82 with 250 thousand inhabitants or 14.6 per cent of the total population. Most of these units are in Menouf 16, Shebien Elkom 13 and Tala 11. The rest of the other districts have less than 10 units.

The large units with 20,000 inhabitants and more, include seven towns and one village, they are Shebien Elkom 103 thousand, Menouf 55, Ashmoun 39, Sers Elliyana, Shohada Quesna between 21-30 thousand and Batanoun village 25,000 inhabitants. The total number of population in this category are 326,000 or 19.1 per cent of the total population. The population of Berket Elsala and Bagour towns were less than 20,000 inhabitants.

The salient phenomena of the size category in 1976 and 1917, as shown in Table 3.3 and Fig.3.4 is the decline of the number of settlements with less than 5,000 inhabitants from 249 units in 1917 to 195 in 1976, this is because of the growth of the population of many settlement units in this category which resulted in the following category of 5,000-9,999 inhabitants. Therefore, the percentage of this category decreased from 60 to 50 per cent in 1976. In contrast the population in the category of 20,000 inhabitants and more increased from 48,000 or 4.6 per cent (in Shebien Elkom and Menouf) in 1917 to eight settlement units with a population of 326,000 inhabitants or 19.1 per cent.

This change in the picture of distribution reveals an increase in the concentration of the population in the urban areas and the large villages where the activities of the population are diverse.

Fig. 3.4 Number and Population of Settlements in Menoufiya, 1917 and 1976

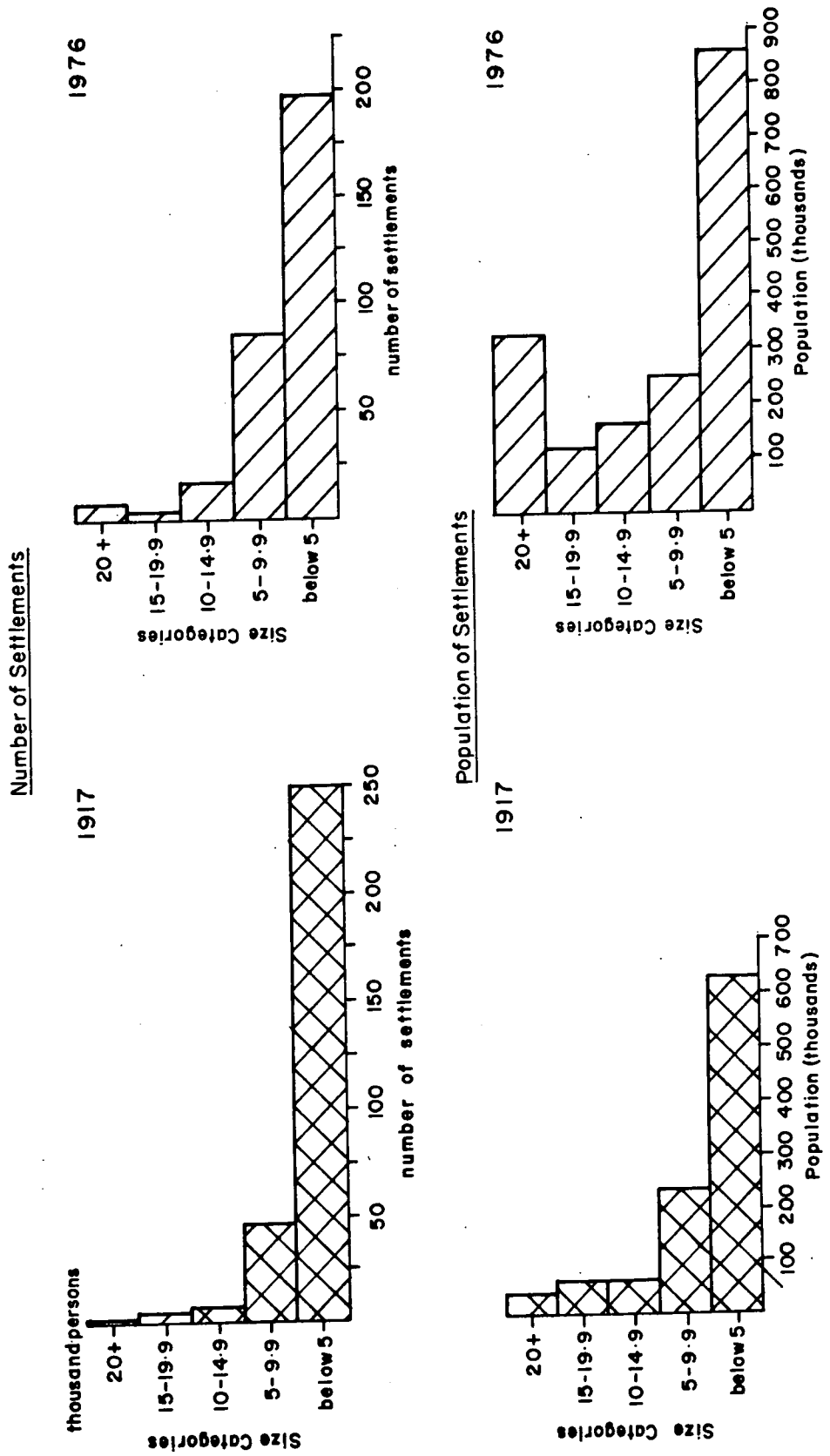


Table 3.3 : Distribution of Population in Settlement Units by Size Categories in Menoufiya 1917 and 1976

Size Categories	1917			1976		
	Number	Population (thousand)	%	Number	Population (thousand)	%
20,000 & more	2	48	4.6	8	326	19.1
15-19,999	4	67	6.4	5	123	7.2
10-14,999	6	68	6.5	16	156	9.1
5-9,999	47	232	22.2	82	250	14.6
5,000	249	632	60.3	195	856	50.0
Total	308	1047	100	308	1711	100

Source: Calculated according to the 1917 and 1976 Censuses of Menoufiya.

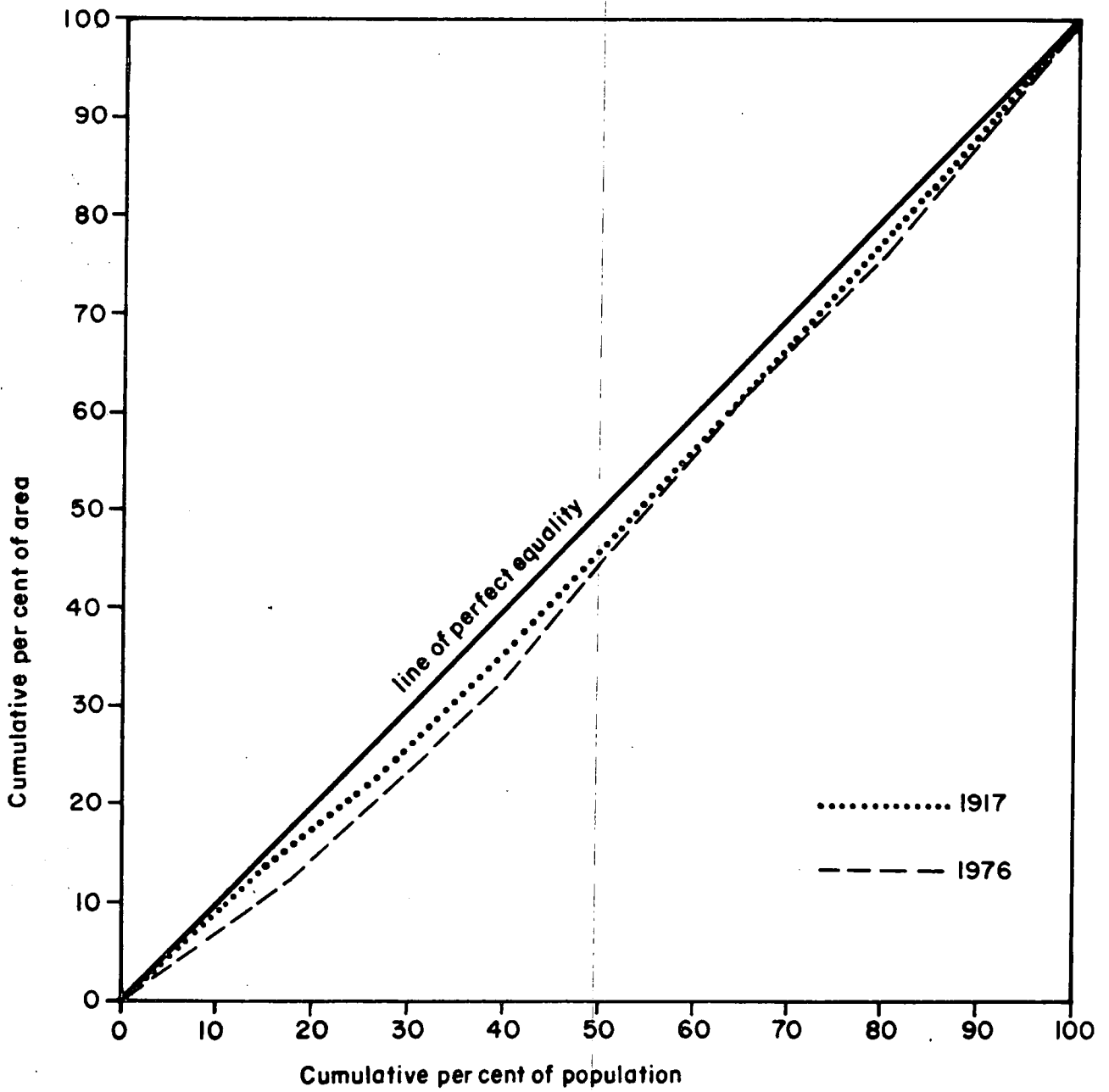
3.1.2 Growing Population Concentration

Measures of population concentration may be regarded as a measure of the distribution of the total population in the inhabited area, using statistical methods such as the index of concentration and the Lorenz curve.

The index of concentration reveals that the population distribution of Menoufiya in 1976 is nearly even, since the population was spread over the whole area of the governorate. The study of Appendix 6 shows that the index of concentration of Menoufiya is only 6.6 per cent (the distribution becomes absolutely even if the index of concentration is zero), there are a few concentrations especially in the towns where the continual creation of new jobs stimulates some of the village dwellers to settle there. Shebien Elkom and Menouf provide good examples.

The index of population concentration in the rural sector is only 1.6 per cent, this means that the scattered population is always in

Fig 3-5 LORENZ CURVES OF POPULATION CONCENTRATION IN MENOUIYA, 1917 and 1976



balance with the cultivated area. The index of concentration differs from one district to another. It is lower in these districts where most of the population works in agriculture such as Bagour and Shohada and higher in the districts where the population is employed in non-agricultural activities, as in Shebien Elkom.

Measuring population concentration by using the Lorenz curve (Fig.3.5 and Appendix 7) confirms the results of the index of concentration. The distribution of the population in Menoufiya is remarkably even in 1976, about 25 per cent of the total population was concentrated in 19 per cent of the total area, 50 per cent were distributed over 44 per cent of the area; and 75 per cent of the population spread over 70 per cent of the land area of Menoufiya.

The pattern of population distribution of Menoufiya is completely different from that of Egypt as a whole, the pattern of Egypt is heavily pressurized and concentrated on a very limited area, about 99 per cent of the total population of 1976 lived on only 5.3 per cent of the cultivated land area. Further, about 24 per cent of the total proportion of Egypt lived on 0.8 per cent of the cultivated land area and about half of the population lived in one fourth of the cultivated area.

There is no significant difference in the mode of distribution found in 1917, although it was more even, with 25 per cent of the population of Menoufiya distributed over 23 per cent of the area. The limited industrialization in the towns of Menoufiya at this time encouraged some of the population to migrate to the great cities of Egypt; therefore only 5.3 per cent of the total population of the governorate is concentrated in the urban sector. In contrast, in the 1976 Census, the concentration of the population in the towns rose to 20 per cent of the total population. The concentration of the population of Shebien Elkom and Menouf towns became obvious when the percentage of Shebien Elkom

rose from 21 per cent of the total population of the district to 35 per cent in 1976, and Menouf from 16 to 21 per cent over the same period. Furthermore, between 1966 and 1976, Shebien Elkom city had the highest annual rate of increase in Egypt as a whole after Kafrel Dawar, Shoubra Elkhema and Giza. (2)

3.2 High Population Density

In the 1976 Census, the density of the population in Menoufiya was as high as 1,117 persons per square kilometre; therefore the governorate had the seventh highest density of the governorates of Egypt after Cairo 23,737, Port Said 3,642, Giza 2,396, Qalubiya 1,672, Sohag 1,244, and Gharbiya 1,181 persons per square kilometre.

The population density in each district is set out in Table 3.4, from which various conclusions can be drawn. In 1976, densities ranged from 948 persons per square kilometre in Shohada to 1,636 in Shebien Elkom district. Although Menoufiya is characterized by fertile soil and highly productive land and the majority of its land is cultivable, there is an obvious difference between the density of districts. The main reason is the type of cultivated crops, the productivity of land and the opportunities of new jobs in the towns. For example, the high density of Shebien Elkom district is due to its being the capital of the governorate and to the concentration of most of the industrial factories and the governmental agencies. Therefore the density of population in Shebien Elkom city reached 4,033 per square kilometre. Menouf district is second in the density rank following Shebien Elkom with a density of 1,196. The density is 3,046 in Menouf town which is considered the second largest industrial town in the governorate.

Table 3.4 : Population Density of Inhabited Areas in Menoufiya 1917-76 (per square kilometre)

Districts	1917	1927	1937	1947	1960	1966	1976	% Increase in density 1917-76
Shebien Elkom	836	851	914	962	1173	1312	1636	96
Ashmoun	571	598	637	662	805	858	1036	81
Bagour	809	832	880	850	953	967	1047	29
Berket Elsaba	690	713	755	740	880	964	1090	58
Shohada	612	656	669	644	733	797	948	55
Tala	703	722	730	705	824	878	977	39
Quesna	572	612	640	634	772	869	1005	75
Menouf	701	731	758	780	945	1028	1196	70
Menoufiya	683	704	738	741	883	955	1117	64
Egypt	371	410	466	546	733	845	601	62

Source: Calculated from C.A.P.M.S., Censuses of Menoufiya Governorate.

The density of the population in the districts of Shohada and Tala (less than 1,000 persons per square kilometre), is lower than all other districts of Menoufiya; not because of the infertile soils or the low productivity of land but because of the scarcity of jobs compared to the increasing population, especially in the capitals of these districts. At the same time most of the land is cultivated with traditional crops. The density of population in Shohada town was 1,452, and in Tala town 1,660 per square kilometre.

In 1976, Menoufiya can be divided according to density into four groups as shown in Fig.3.6.

Firstly, the high density areas with more than 2,000 inhabitants

per square kilometre. This zone includes two different sorts of density. First, the density of urban areas includes Shebien Elkom city 4,040; Menouf town 3,046 and Quesna town 3,017 inhabitants per square kilometre. In these areas of the governorate the majority of industrial projects were concentrated. The second zone of high density includes the villages of Kafr Shanawan in Shebien Elkom district, Kafr Abahnas, Minchat Damalo and Kafr Wahb in Quesna, Kafr Milig in Berket Elsaba, Kafr Askar and Kafr Elsadat in Tala and Brachen in Ashmoun district. The population density is high in these villages due to the specialization in vegetable and fruit production which requires much labour. For example, Kafr Shanawan (taro or qulqas), Kafr Milig, Kafr Askar and Kafr Elsadat (tomatoes and vegetables), the three villages of Quesna district (citrus), and Brachem (grapes).

Secondly, the areas of average density, ranging from 1,000 to 1,999 per square kilometre include large areas of Menoufiya (55 per cent of the total area) especially in the districts of Shebien Elkom, Menouf and Ashmoun. The lands of these areas have high productivity with yields above the average for the whole of Egypt and the governorate.

Thirdly, the moderate density areas are between 500-999 per square kilometre. These are to be found in Berket Elsaba, Shohada and Tala districts. The land there has an average productivity with a feddan yield the same as for the whole of Egypt.

Fourthly, the low density areas with densities between 250-749 inhabitants per square kilometre includes land of poor productivity; the yield per feddan is always less than for Egypt. These areas have poor drainage and the water table is near to the surface. The lands are located on the banks of the Rosetta branch of the Nile in Darawa, Ghanamya, Minchat Griss in Ashmoun district and Zawyet Elbakaly in

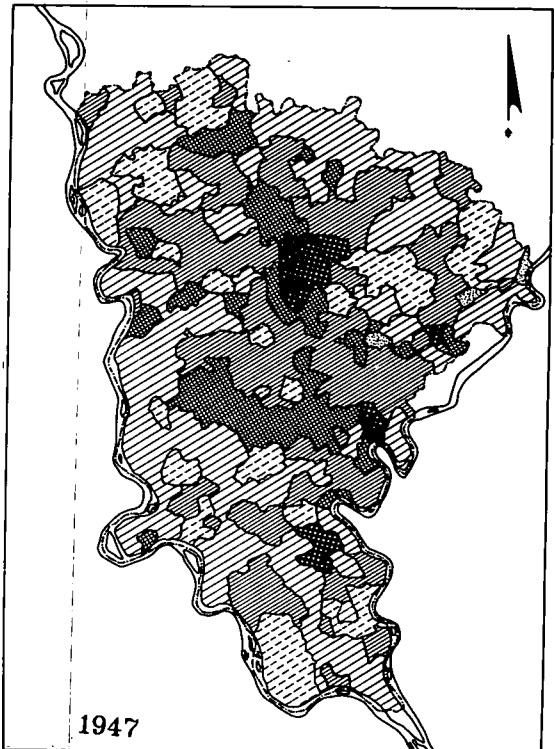
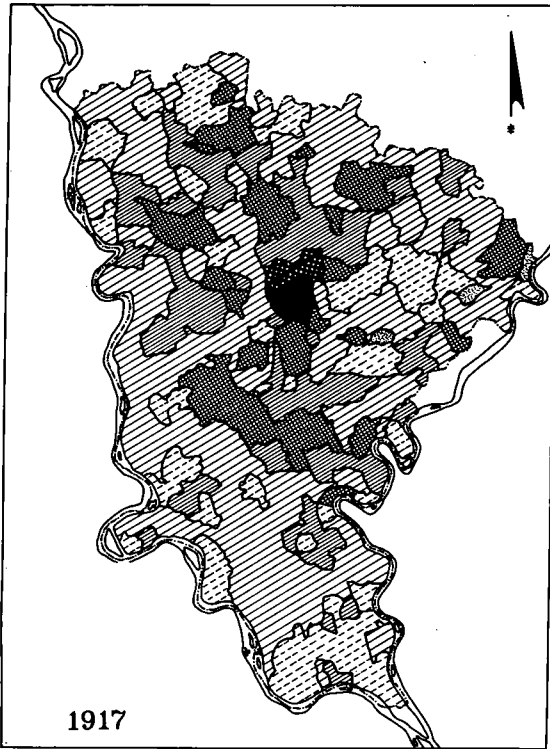
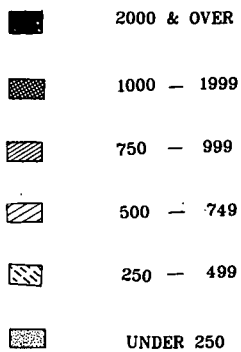


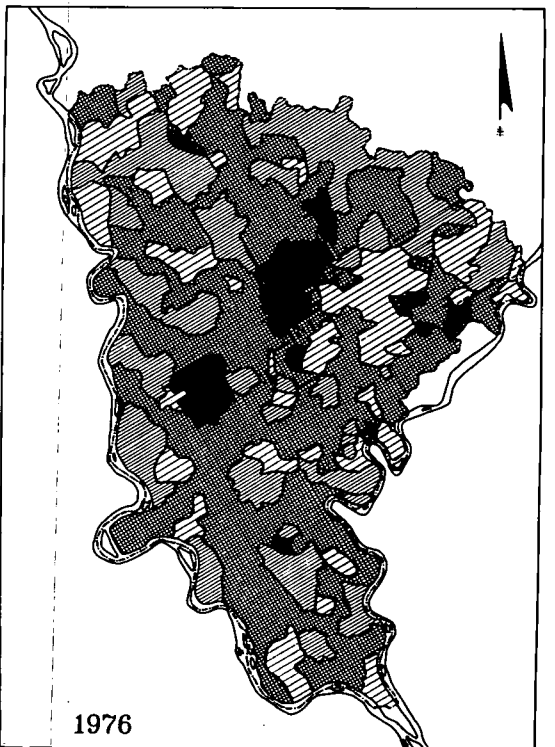

FIG. 3.6

DENSITY OF POPULATION IN MENOUIFYA ,
1917 ,1947 AND 1976.

PER SQUARE KILOMETRE



0 Kms. 12



Shohada, Kom Mazen and Kafr Rabi'a in Tala. A low density is also found in some parts in the middle of Menoufiya, especially on the low land between the irrigation canals such as some lands of Sentri Telwana and Ashma and some villages in Qesna. At the same time the lowest densities of Menoufiya are in the villages of the sandy islands in Qesna district. The density here is between only 250-499 persons per square kilometre, in Kufr Elramel and Kafr Abdou.

3.2.1 Growing Population Density

The population density of Menoufiya has been higher than Egypt's inhabited area. Ignoring the population density in the urban governorates, Menoufiya had the highest population density in Egypt until the Census of 1947. It then became third in rank, following Qalubiya and Sohag in the Censuses of 1960 and 1966. In the 1976 Census, it became fourth in rank. It is related to the continual out-migration from Menoufiya. At the same time the populations of Qalubiya, Sohag and Gharbiya increased more than the governorate because of the extension of industrial factories in these governorates.

The density of population in Menoufiya changed completely during the period 1917-76. As shown in Fig. 3.6, the density map of 1917 was characterized by low density. Most of the localities had densities between 500 and 1,000 per square kilometre. The highest density was in Shebien Elkom City (2,017). All the other towns had a density of 1,000-.500, except for Ashmoun City (740). About twenty three villages in Menoufiya were also distinguished by high density (more than 1,000). Low density (250-499) was dominant in most of the villages of Ashmoun district and many of the villages of Qesna and Tala. At the same time the density was under 250 per square kilometre in the villages of the sandy islands in Qesna district.

In the 1947 Census, the density became higher in most of the

villages of the governorate, especially the 750-999 category which now extended over the area of the density previously lower (500-749 per square kilometre). At the same time, the high density of 2,000 and more included in addition Shebien Elkom City and three villages, Kafr Wahb in Quesna, Kafr Mahmood and Elkhadra in Bagour.

In 1976, the map shows the remarkable increase in the density all over the governorate when the density of 1,000-1,999 was the dominant fact. Even high density (2,000 and more) was to be found in many localities in the governorate. At the same time, the low density (250-499) decreased from 32 villages in 1947 to only three villages in 1976. The main reasons for the increase in population density of Menoufiya are the continual increase of the absolute population, and the fact that the area of the region is limited and non-expandible with the population distribution all over its area.

Comparing the density of the population of the districts at 1917 with the density of 1976 (Table 3.4), the densities of all the districts had increased. The highest increase was in Shebien Elkom (96 per cent), Ashmoun (81) and Quesna (76 per cent). It was related to the creation of more jobs to the population which led to a decrease in the out-migration numbers since 1960. In contrast, the districts of Bagour and Tala (less than 40 per cent) have the lowest percentage increase related to the limited job opportunities and the high number of out-migrants.

3.2.2 High Agricultural Density

Menoufiya has a very high agricultural density in the 1976 Census. The density of the agricultural population to the cultivated area was 237 inhabitants per square kilometre (one person per feddan). It is higher than the density for Egypt as a whole, which was 154 per square kilometre (0.6 person per feddan) as shown in Table 3.5. This can be

attributed to the increase in the percentage of people working in agriculture in Menoufiya (61 per cent) compared with Egypt (46 per cent).

The spatial distribution of the density of the agricultural population shows a zone of high density (300-500 per square kilometre) in most of the villages of Menouf such as Tamalai and Gouzai, in addition to the villages of Denshway and Abu Kals in Shohada district. The zone of high agricultural population density extends to include the villages of Kamshish, Zurkan and Tablouha in Tala and Mit Mousa and Salaka in Shebien Elkom district and some villages in Ashmoun and Bagour district. The highest agricultural density (500 and more) is found in those villages which also had a very high population density (2,000 persons per square kilometre).

Table 3.5 : Cultivated Area, Cropped Area, and Agricultural Population Densities in Menoufiya 1976

Districts	Cultivated area density		Cropped area density		Agricultural population	
	Per feddan	Per sq.km.	Per feddan	Per sq.km.	Per feddan	Per sq.km.
Shebien Elkom	8.0	1916	3.4	816	0.9	220
Ashmoun	4.7	1168	2.4	590	1.2	282
Bagour	5.0	1196	3.0	709	0.7	172
Berket Elsaba	5.3	1267	2.6	627	1.0	236
Shohada	4.5	1092	2.1	509	0.8	187
Tala	4.4	1061	1.9	463	0.8	201
Quesna	4.8	1148	1.8	420	1.0	227
Menouf	5.3	1382	2.7	650	1.3	307
Menoufiya	5.3	1273	2.6	631	1.0	237
Egypt	5.5	1335	2.9	707	0.6	154

Feddan = 1.038 acres.

Source: Calculated from (1) C.A.P.M.S., Menoufiya Governorate. Census 1976,

(2) Ministry of Agriculture, Province of Agriculture in Shebien Elkom, Unpublished data.

In 1976, the density of cultivated area in Menoufiya was 1,273 persons per square kilometre (5.3 per feddan), while the density of cropped area was 631 (2.6 per feddan). Both densities are lower than for Egypt as a whole (Table 3.5), due to the scarcity of barren land in Menoufiya (not more than 0.7 per cent of the total of agricultural land). On the other hand, about 88 per cent of the total area of Menoufiya is agricultural land. The fertility of the land enables the farmer to cultivate more than two crops per year.

Shebien Elkom district has the highest density of both cultivated area (1,916 per square kilometre or 8.0 persons per feddan), and cropped area (816 per square kilometre) due to the extension of the built-up area over agricultural land because of urban growth. About 16 per cent of the total area of Shebien Elkom district is built up. In contrast, Tala district has the lowest density of cultivated land because it has the lowest percentage of built-up area compared to the total land (8.5 per cent).

3.3 Summary

Menoufiya is the most important governorate of agricultural production in Egypt as a whole. Most of its area is agricultural land, and most of the labour force is employed in agriculture. Therefore the population is well distributed over the whole area of the governorate, with a low concentration in some cities. Menoufiya is very densely populated, due to its fertile land and to the high productivity of most of the crops because of the abundance of irrigation and drainage canals. Barren land is also extremely rare in the governorate. The density of inhabited area is more than 1,000 per square kilometre with a density of over 2,000 in some towns and villages.

Furthermore, the effect of industrialization is obvious in increasing the density to more than 3,000 per square kilometres especially in Shebien Elkom city and Menouf town. The influence of the creation of

new jobs by industry is not limited to the urban areas but extends to the adjacent villages, so the highest densities (1,190 and more) are recorded in the districts of Shebien Elkom and Menouf.

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4. Ibid. p.147.

CHAPTER FOUR

PATTERNS OF POPULATION COMPOSITION

4.1 Introduction

The study of population composition in Menoufiya is important to understand the personality of the population of the region. The main characteristics are, high natural increase, out migration, even distribution, and overall high density.

In this chapter some of the other characteristics of the population composition will be illustrated. The answers to some questions will be sought: Is the labour force size increasing despite the large number of out-migration of people in working age? What are the main activities of the population? Are females playing an effective part in the labour force? What is the general shape of the age-sex pyramid of population? Is the age composition changing or has it remained stable throughout the period 1927-76? Finally, the problem of illiteracy will be examined as a main factor of the underdevelopment of the area.

4.2 Over-Supply of Labour

The labour force or the economically active population is distinct from the labour supply which includes those of working age who are inactive (as it takes into account neither efficiency, nor working hours). It is defined as not only those men and women who are actually engaged in productive employment, but also those who may be unemployed only temporarily: employers, employees, the self-employed, unpaid family workers, domestic servants and members of the armed forces. The inactive group is composed of children, retired persons, students, housewives, inmates of institutions and those living from royalties, rents, pensions, dividends etc.

The total labour force in the region grew from 384 thousand persons in 1960 to 525 thousand persons in 1976, with an annual growth rate of 2.2 per cent. As a consequence of rapid urbanization, the growth rate of the labour force was considerably higher in urban than in the rural areas. Growing at an annual rate of 3.6 per cent, the urban labour force grew from 35 to 43.6 per cent. The rural labour force grew only by 1.3 per cent annually, with a fall in its share.

The growth rate of labour force also varied considerably between males and females. The female labour force increased by 2.9 per cent annually against 2.1 per cent for males. This is because the increasing number of females graduated from schools, and that enabled them to be involved in suitable jobs in the government. Most of these jobs are located in the urban areas. The female labour force growth rate in urban areas was clearly higher than that of the rural areas. The difference is particularly large for females who had an urban growth rate of 5.1 per cent against 0.2 per cent for rural areas.

The crude activity rate decreased from 37.1 per cent in 1937 to 23.9 in 1976; while the average Egyptian activity rate decreased from 36.5 to 25.3 per cent resulting in an increase in the average number of dependants per 100 economically active persons. The dependency ratio increased from 150 in 1937 to 309 in 1976 (compared to the national increase from 147 to 279 per cent during the same period). It is related to the high rates of birth in Menoufiya, in addition to the out-migration of large numbers of population in the working age group.

The percentage of children participating in the labour force in Menoufiya is high. In the rural areas, it is four times that of the urban areas. The agricultural processes need children, especially in the areas producing vegetables, fruit and cotton, which dominate many villages in the governorate.

At the 1976 Census, the characteristics of the labour force of the districts of Menoufiya differed as follows:-

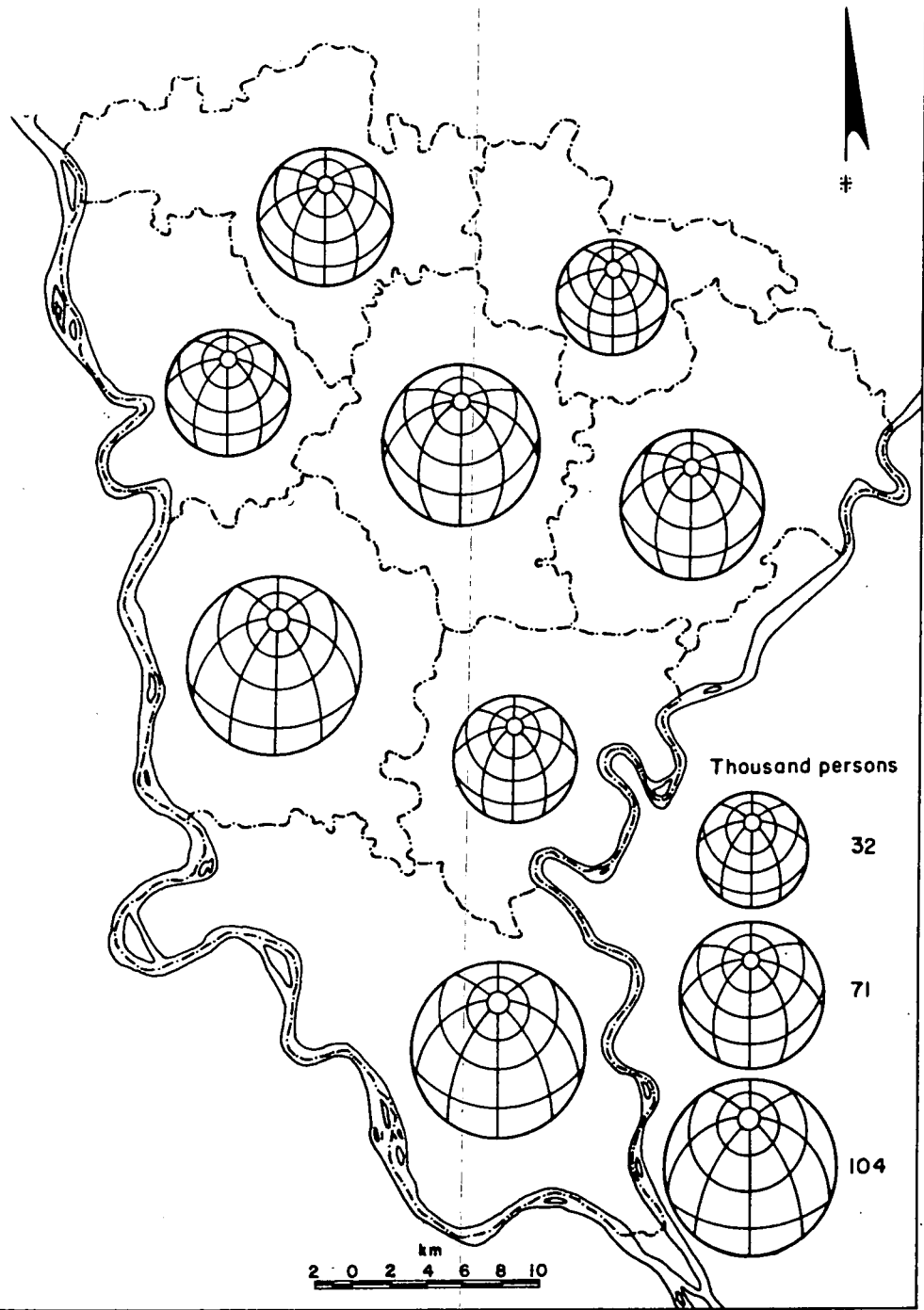
- a. The size of the labour force in Menoufiya is more than half a million persons (30 per cent of the total population). More than 50 per cent of the labour force is resident in the districts of Ashmoun, Menouf, and Shebien Elkom, these having the largest proportion of the population (Fig. 4.1). Shebien Elkom has a smaller labour force than Menouf, because of the high percentage of children in Shebien Elkom who are defined as students.

Table 4.1 : Labour Force in Menoufiya and Egypt in 1976 (6 years old and more)

Districts	Total in thousands	Percentage of the labour force		Percentage of the total population	
		Male	Female	Labour force	Unemployment
Shebien Elkom	88.6	83.9	16.1	29.4	2.8
Ashmoun	104.1	82.1	17.9	33.5	2.2
Bagour	40.9	92.8	7.9	23.7	2.9
Berket Elsa'a	32.3	94.5	5.5	24.7	3.0
Shohada	43.1	93.9	6.1	29.7	1.8
Tala	51.8	94.5	11.4	28.3	1.9
Quesna	70.7	80.0	20.0	34.4	2.6
Menouf	93.5	77.5	22.5	35.6	2.0
Menoufiya	525.0	84.5	15.5	30.7	2.4
Egypt	10,954.0	87.0	13.0	29.8	3.6

Source: Calculated : C.A.P.M.S., The General Population and Housing Census of Menoufiya 1976, Vol.1, Cairo, 1978,p.39.

Fig 4-1 LABOUR FORCE IN MENOEFIYA, 1976



- b. The highest percentages of the labour force to the total population were in Menouf, Quesna and Ashmoun (more than 30 per cent), owing to the nature and the sort of agriculture especially in those districts which are famous for producing vegetables (Ashmoun), and fruits (Quesna, but in Menouf - in addition to that - there are many workshops and small factories in the cities of Menouf and Sers Ellyana. In contrast, it is lower in the districts of high out-migration such as Bagour and Shohada.
- c. The percentage of the female labour force is low (15.5 per cent) compared to the male labour force (84.5). As shown in Table 4.1, it is higher also in Menouf, Ashmoun and Quesna (17.9 - 22.5 per cent), and lower in those districts of out-migration such as Shohada (6.1 per cent) and Bagour (7.2 per cent), where there are no opportunities of jobs. The districts which have most of their population employed in agriculture have the highest percentage of men in the labour force (more than 92 per cent of the total labour force).

4.2.1 Age Specific Male Activity Rates

The proportion of males in the labour force is higher in the rural areas than the urban areas. Moreover most of the urban males enter the labour force later than their rural counterparts as their education is more extended.

Male activity rates exceed 85 per cent of the total population in the age groups between 30 and 60, in both Menoufiya and Egypt (Fig. 4.2). The rates rise gradually from 11.3 per cent in the age group 6 - 11 to 89.2 per cent in the 20 - 29 group, and reach the highest percentage of more than 95 per cent in the age groups 30 - 59, then it decreases again. The male activity rates of Egypt are

lower than Menoufiya in all the age groups. This reflects the fact that the males in Menoufiya enter the labour force earlier than in Egypt as a whole and retire later, especially those who work in agriculture which is the dominant occupation of Menoufiya (61 per cent of the labour force are employed in agriculture whereas in Egypt as a whole it is 46.5 per cent). Therefore male activity rates surpass the national rates in all age groups. The differences were greatest for those under 20 and over 64 years and relatively slight between the ages of 25 and 54.

Table 4.2 : Percentage Age-Sex Specific Activity Rates in Menoufiya and Egypt, 1976

Area	Sex	6-11	12-14	15-19	20-29	30-39	40-49	50-59	60-64	65 and more	Total 6 yrs. and more
Menoufiya	Male	11.3	39.0	56.5	89.3	99.2	99.1	98.3	87.5	67.4	57.7
	Female	3.1	6.2	6.4	9.8	7.5	5.7	4.2	4.0	2.7	4.0
Egypt	Male	10.1	37.6	50.6	85.3	99.2	98.8	97.6	85.7	62.7	50.7
	Female	2.0	5.1	5.1	7.7	6.2	4.7	4.7	4.0	2.0	3.8

Source: Calculated from C.A.P.M.S. op.cit. p.32.

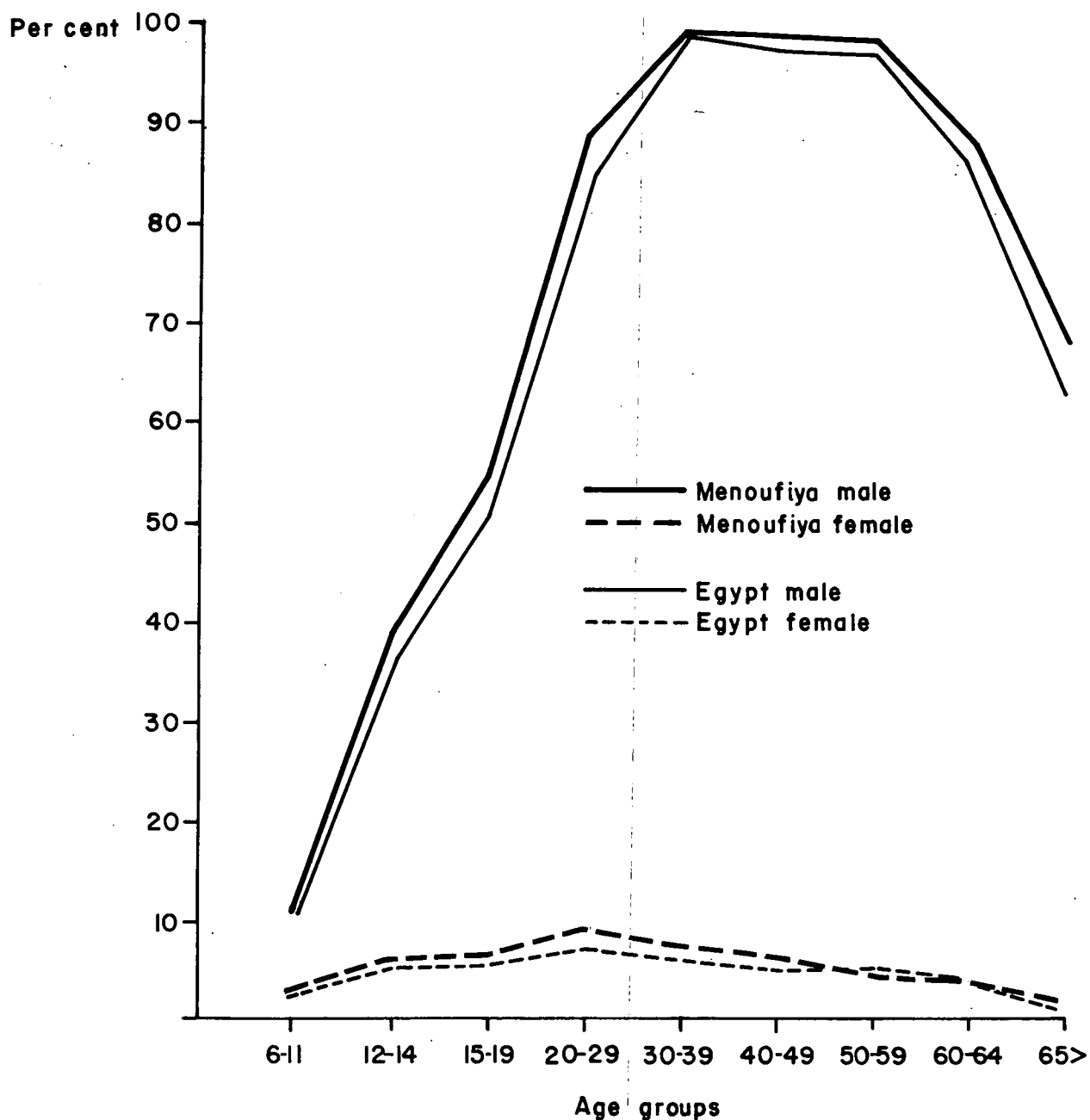
4.2.2 Age Specific Female Activity Rates

The participation rates of females is low in all age groups as shown in Table 4.2 and Fig. 4.2. Women constitute slightly more than one tenth of the total labour force of Menoufiya but they only make up 4 per cent of the total working population in all the age groups.

The Census statistics are likely to understate the number of economically active women, especially in the category of unpaid helpers on farms and other family-operated economic enterprises.

There is a great difference between the curves of males and

Fig. 4.2 Age-Sex Specific Activity Rates in Egypt and Menoufiya, 1976



female activity rates. The male curve has a high peak and there is a large difference between the lowest rates (11 per cent) and the highest (99 per cent). The female curve is regular and has a flatter line and the difference between the maximum rate (9.8 per cent) and the minimum (2.7 per cent) is smaller than male.

The influence of culture is apparent in the picture of variations in female activity rates. Such traits of culture may affect not only the extent to which women actually engage in income producing work but also the reporting of their activities in the census. The extent of female participation in the labour force is related to their marital status and the number and ages of children under their care. All these factors affect their needs for income. As shown in Fig. 4.2, the majority of young females in Menoufiya work for their living until late in their marriage. Activity rates for single females are about 12 per cent, and the urban/rural difference in activity rate is higher for females than it is for males.

4.2.3 Industrial Composition

A large percentage of the economically active population of Menoufiya have primary activities as seen in Table 4.3. In contrast, the population of secondary and tertiary workers is low in most of the districts of the governorate.

The agricultural sector has always been the dominating economic activity in the region, about 61 per cent of the labour force being engaged in agriculture according to the 1976 Census. The proportion of the agricultural labour force has been gradually decreasing since the 1917 Census; it was 70.3 per cent in 1917 and 66 per cent in 1960.

While agricultural activity is the main provider of employment in the region, two other sets of occupation are no less important.

First, there is what we may loosely call the secondary and tertiary sectors of rural areas, which include such activities as small cottage industries, handicrafts, trade and services. The phenomenon of increasing non-agricultural rural employment is neither new nor unique to Egypt. As agriculture stagnated, mainly as a result of reaching the limit of arable land as the population rapidly increased, a process of tertiarisation began to take place. New entrants to the labour force who were unable to find employment in agriculture or the opportunity to migrate to urban centres joined the ranks of the tertiary sector in handicrafts and small scale trade or other unskilled jobs. (1)

Table 4.3 : Percentage of Economically Active Population By Industry Groups in Menoufiya, 1976

Industry Groups	Prim-ary	Secondary			Tertiary			Others
	1	3	4	5	6	7	8	9
Shebien Elkom	38.6	15.3	0.9	3.6	6.9	4.0	29.7	1.2
Ashmoun	72.5	5.0	0.4	2.0	4.5	2.1	12.4	1.1
Bagour	61.0	5.6	0.4	2.4	5.3	3.8	19.3	2.4
Berket Elsaba	59.8	7.3	0.4	2.4	4.2	4.2	20.2	1.5
Shohada	72.5	6.5	0.4	1.5	4.0	1.5	12.6	1.0
Tala	66.2	6.5	0.4	2.0	4.7	2.4	16.9	1.0
Quesna	57.5	7.5	0.5	2.4	5.8	3.4	20.4	1.45
Menouf	63.0	10.5	0.4	2.5	5.5	2.6	14.8	0.8
Total	60.8	8.5	0.5	2.4	5.3	3.0	18.3	1.2
	60.8	11.4			26.6			1.2

Source : Calculated ; C.A.P.M.S., op.cit. p.39.

There are many differences between the districts of Menoufiya according to the classification of the economic activities as shown in Fig.4.3 as follows:-

1. Agriculture is the main activity of the population of the districts of Ashmoun and Shohada (72.5 per cent), meanwhile the lowest percentage is Shebien Elkom (38.6 per cent), the capital of the governorate and the location of most of the services, offices and factories. The rest of the districts have a percentage as high as 57 to 72 per cent. The fertile land and the cultivation of more than two crops a year and the intensive farm system make Menoufiya a famous agricultural governorate in Egypt.

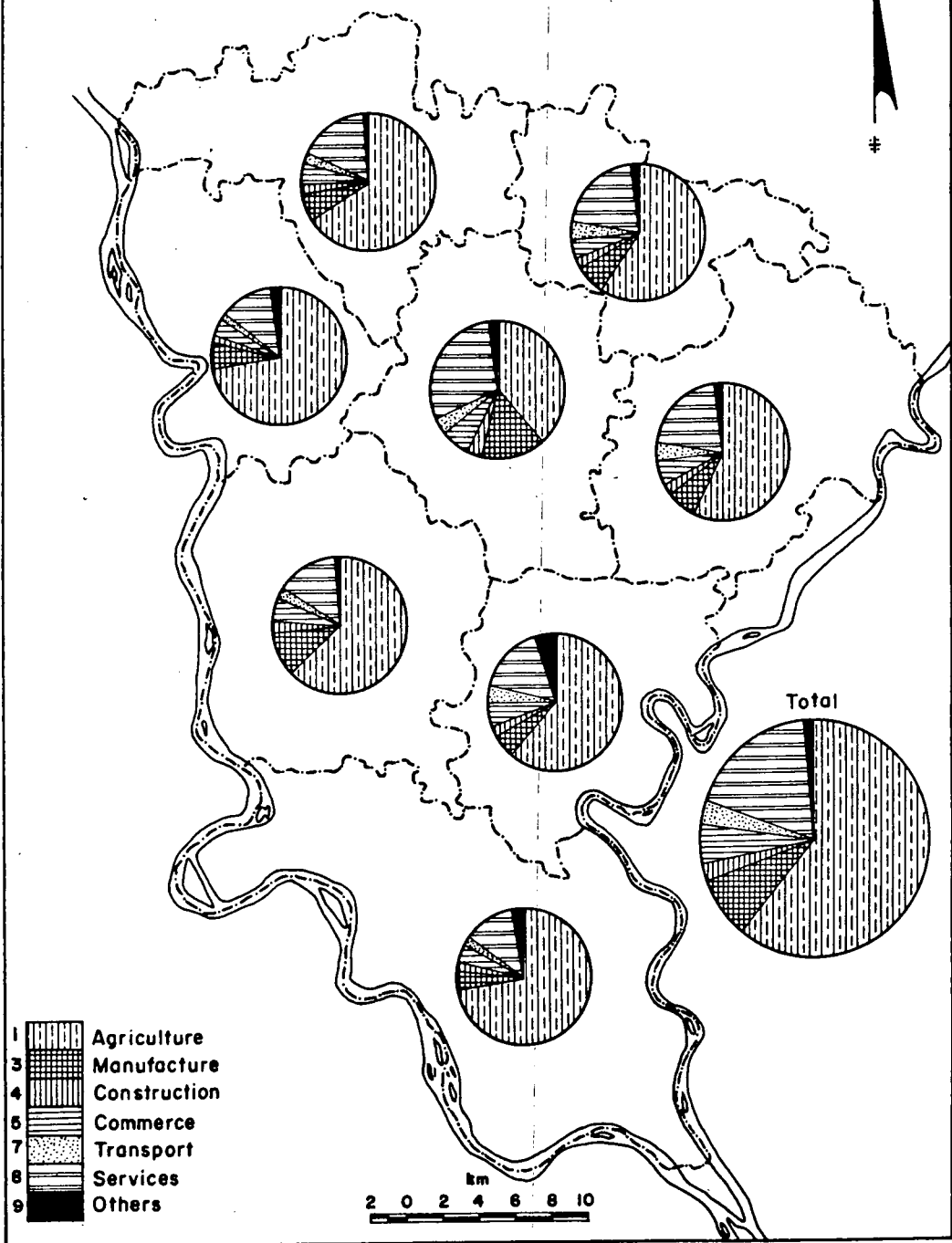
2. Less than eight per cent are employed in industry in all the districts of Menoufiya except for Shebien Elkom (15.3) and Menouf (10.5), owing to the rarity of large factories in Menoufiya. The first large factory was established in Shebien Elkom in 1961 and created more than 18,000 new jobs. In Menouf there are many workshops and small factories such as glass and tobacco processing.

3. Construction activity is low in most of the districts (under 2.5 per cent), but in Shebien Elkom it is 3.6 per cent because of the great urban growth of Shebien Elkom city and the adjacent villages.

4. The electricity, gas, water and sanitary services represent a small part of the labour force of Menoufiya. They do not exceed 0.5 per cent, except for Shebien Elkom 0.9 per cent, partly owing to all the villages and towns of Menoufiya being without gas, in addition to the rarity of hospitals in most of the villages. At the same time, the electricity network does not employ many people.

5. The percentage of commercial workers is high in Shebien Elkom (6.9 per cent) where most of the wholesale activities of the governorate

Fig 4-3 ACTIVE POPULATION BY INDUSTRY GROUPS IN MENOUIYA, 1976



are concentrated. The commercial activity is higher in the towns where most of the wholesalers and retailers of the villages reside. Naturally commercial activity flourishes in the districts of diverse activities.

6. Service sector employees are obviously more numerous in the capital towns than in the villages. The highest percentage is in Shebien Elkom, where most of the governmental agencies are located. At the same time, the percentage is high in both Berket Elsaaba and Quesna (more than 20 per cent), owing to the large number of persons who work in the services of the Cairo-Alexandria motorway.

7. Mining and quarrying are non-existent in Menoufiya.

4.2.4 Employment Status

The employment status of the economically active population reflects the organizational framework of the economy. Thus it is often true in the early stages of development in many developing countries. The important role of family enterprises in Menoufiya economy is illustrated (Table 4.4) by the fact that 47.8 per cent of the labour force in 1976 were categorised as employees, owing to most of the labour force working in agriculture and services. In the rural sector 34.3 per cent of the labour force was categorised as employees because of the shortage of land holdings. The ratio is higher in the urban sector where about two-thirds of the total labour force are employees because most of the labour force here are employed in services or manufactures and the governmental works.

As a result of low income and the sharing of children in the work of agriculture, the percentage of unpaid family workers in the rural sector is high (27.6 per cent). It is lower in the urban sector (6.1 per cent).

Table 4.4 : Percentage Distribution of Employment Status in Menoufiya, 1976

Status	Urban	Rural	Total
Employers	14.7	19.6	17.6
Self-employed	8.4	17.6	13.6
Employees	66.6	34.3	47.8
Unpaid family workers	6.1	27.6	18.6
Unemployed	4.2	0.9	2.4
Total	100.0	100.0	100.0

Source: Calculated C.A.P.M.S., op cit. p.38.

The labour force in the category employers and self-employed are in third and fourth places in the governorate (17.6 per cent). Most of them work in agriculture in the rural sector. In the urban sector most of the labour force work in commerce and services.

The pattern of employment status structure by age in 1976 is quite illuminating (Table 4.4). Employers and self-employed persons prevail among the old age groups; seven out of ten of economically active persons 65 years of age and over were either employers or self employed. In contrast, the proportion of both groups was less than one per cent of the labour force below 15 years of age. The unpaid family workers which dominate in the rural sector are children and about 75 per cent of the economically active aged 6-9 were family helpers. This proportion declines continually to the minimum level at the oldest age groups. Employees tend to be concentrated in the adult age groups, where above average proportions are found in the age range 20-50. (2)

4.2.5 Length of Working Life

The average length of working life, or net expected years of active life is determined by age-specific activity rates, considered as measures of the probability of a person of either sex being in the labour force at each age, together with the probabilities of survival to various ages. (3)

In the 1976 Census, on the assumption that males of Menoufiya will still live to the age of 65, the average expected years of activity may reach 57.7 years. The male will spend 42.9 years of his life in work if he starts working at the age of 20 years and retires at 65 (Table 4.5).

Table 4.5 : Average of Expected Years of Active Life in Menoufiya in 1976.

Age groups	Length of age group	Males		Females	
		Activity rates	Years of active life	Activity rates	Years of active life
6-11	6	11.3	0.7	3.1	0.2
12-14	3	39.0	1.2	6.2	0.2
15-19	5	56.5	2.8	6.4	0.3
20-29	10	89.3	8.9	9.8	1.0
30-39	10	99.2	9.9	7.5	0.8
40-49	10	99.1	9.9	5.7	0.6
50-59	10	98.3	9.8	4.2	0.4
60-64	5	87.5	4.4	4.0	0.2
Total	59	57.7	47.6	4.0	3.7

$$\text{Years of active life} = \frac{\text{Length of age group} \times \text{activity rate}}{100}$$

The years of active life are high in the medium age groups 30-59, where the male spends more 9.8 years per 10 years in work.

The average of the expected years of active life of females is only 3.7 years. It is lower than males which is related to the lowness

of female activity rates and the preference to work as a housekeeper, in addition to the lack of suitable jobs in the region.

4.2.6 Small Number of Employment

In 1976, the unemployment total in Menoufiya was 33,790 persons (2.4 per cent of the total population aged six years and more). This small number is due to the migration of most of the unemployed from Menoufiya to the large cities of Egypt. The majority of the unemployed have just finished their studies and are either waiting to serve in the army or are waiting for an opportunity of a governmental job. Graduates sometimes wait for a period of 2 to 3 years.

The percentage of unemployed was high among the males (3.1 per cent), meanwhile it was only 1.6 per cent among the females because of the marriage of most females after obtaining their secondary certificate and the preference for housework related to the wish of her husband.

The highest percentage of unemployment was in Berket Elsaba and Bagour districts (3.0 per cent) and the lowest in Shohada and Tala (1.8 per cent). The unemployment in these districts is influenced by the high percentage of the unemployed females.

The percentage of unemployment is higher in the urban sector. In fact it is related to the migration of some of the countryside dwellers to the cities seeking better jobs, to a high percentage of graduate and the lateness of female marriage in the urban areas. At the same time, some women can work after marriage according to the kind of job and the salary.

4.3 A Youthful Age Structure

As in the whole of Egypt, the overwhelming majority of the population are young, but in Menoufiya the proportion was 41 per cent in 1976 compared with 39.8 per cent in the country, an indication of the problem facing this governorate.

Regarding the relative age distribution of the total population, the proportion of population in Menoufiya at the young ages (0-14) fluctuated little during the period 1917-47, remaining at 38.8 per cent of the total population (Table 4.6). The biggest change which happened in that proportion was in 1960, where it rose to 42 per cent. However, the proportion of children under 10 years old declined regularly, though very slightly, with the exception of 1960, when the proportion of this group acquired a three per cent increase above the average of the preceding censuses. This pattern of change in the proportion of children is attributable to the steady decline in the infant mortality rate and the relative rise of the birth rate.

In 1976, the proportion of children is lower than that recorded in 1960, but it is still at a higher level than in other censuses owing to the high birth rates during the period 1957-67, when they were over 40 per thousand.

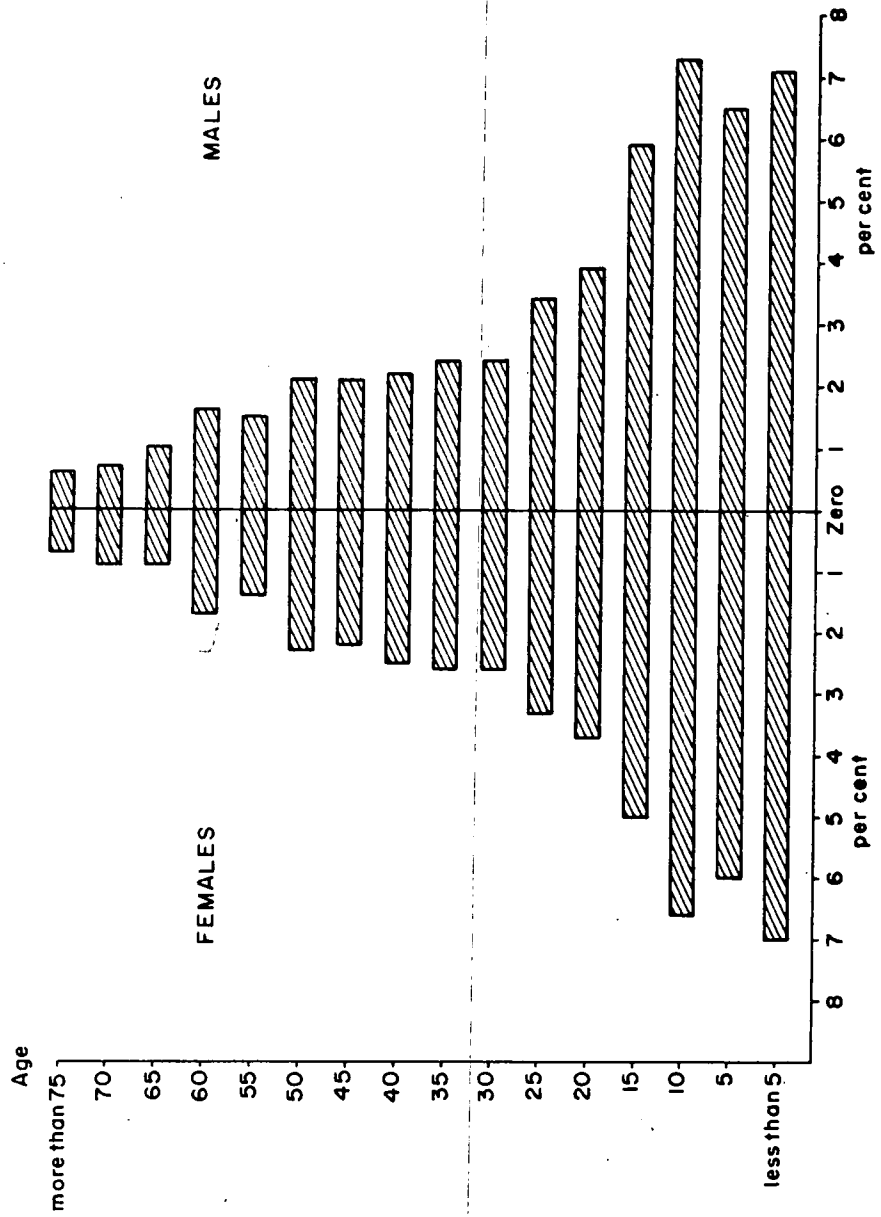
The older population (60 years and more) was increasing during most of the period 1927-76. The percentage was 7.1 in 1927, and reached the highest percentage in 1976, a reflection of the development of medical care in Egypt, some improvement in living standards and the decline of death rate in the older groups. However, we can note the percentage of aged persons in Menoufiya is always higher than the whole of Egypt.

Table 4.6 : Percentage Distribution by Broad Age Categories in Menoufiya, 1927 - 76

Age Groups	1927	1937	1947	1960	1976
0 - 4	14.3	12.9	13.2	15.6	14.3
5 - 9	13.2	13.6	12.4	14.2	12.5
10 - 14	11.3	12.3	11.2	12.2	13.9
0 - 14	38.8	38.8	38.8	42.0	40.7
15 - 19	8.7	8.1	9.8	8.2	10.9
20 - 24	7.2	6.4	6.3	6.3	7.4
25 - 29	8.8	8.0	7.0	6.7	6.7
30 - 34	7.4	7.0	6.3	5.6	5.0
35 - 39	7.2	7.7	7.1	6.5	4.9
40 - 44	5.3	5.9	6.1	5.1	4.8
45 - 49	4.1	4.3	4.4	4.3	4.3
50 - 54	3.9	4.3	4.2	4.3	4.3
55 - 59	1.8	2.2	2.5	3.2	2.9
15 - 59	54.1	53.9	53.7	50.2	51.2
60 - 64	2.7	2.9	3.8	3.2	3.3
65 - 69	1.1	1.2	1.2	1.9	2.0
70 and over	3.3	3.2	3.0	2.7	2.8
60 and over	7.1	7.3	7.5	7.8	8.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Calculated from the Population Censuses of Menoufiya.

Fig 4.4 AGE-SEX PYRAMID OF THE POPULATION OF MENOEFIYA, 1976



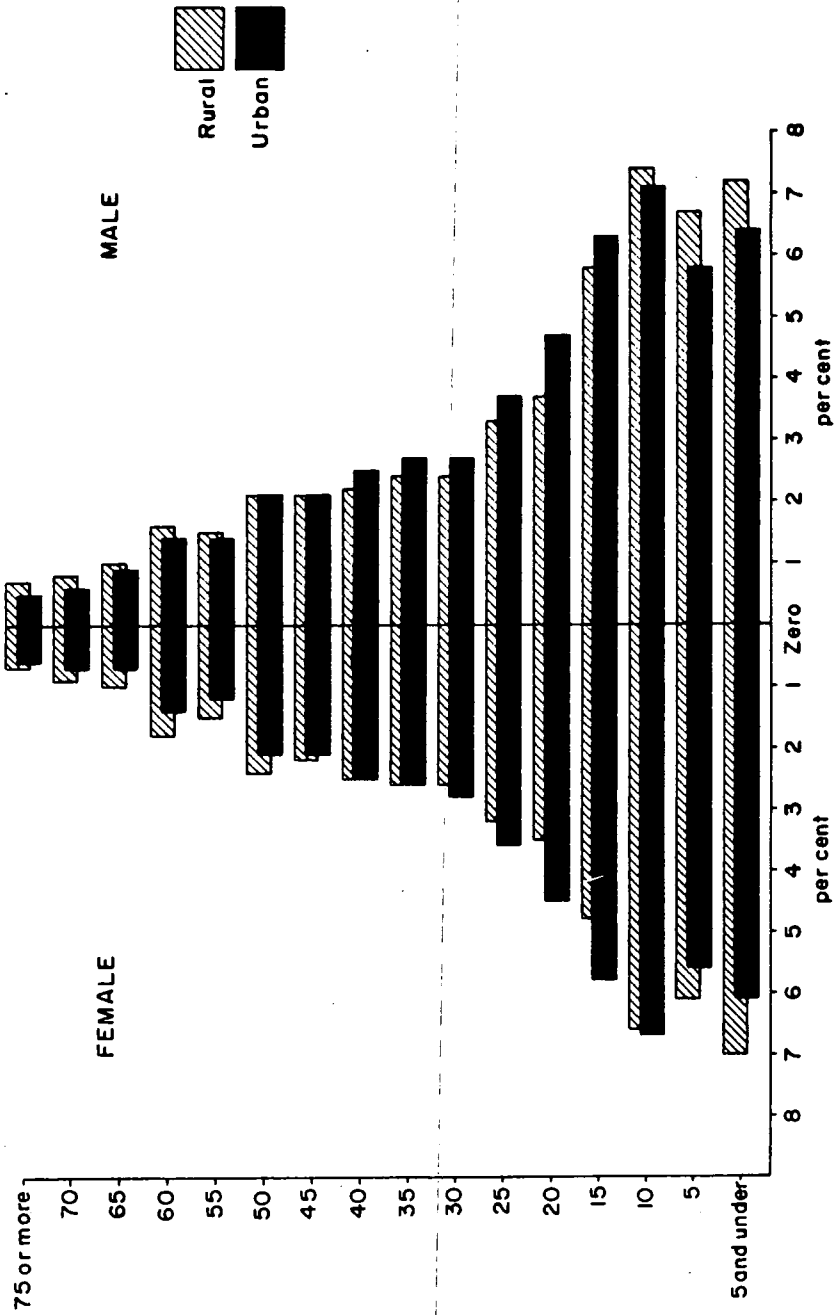
The pattern of change in the proportion of population at medium ages (15-59 years old) was the reverse of that taking place in the proportion of population at young ages. We can notice a small fluctuation in the proportion of adults during the period 1927-76. The greatest change in this proportion took place in 1960, when it reached a minimum level of about 50.2 per cent during the previous period. The relative decline in this age category was almost equal to the relative increase in the young age category in the same year (1960).

In general, the age composition of population of Menoufiya has remained more or less stable throughout the period 1927-76, with minor fluctuations. This is also the case of Egypt as a whole as a developing country with constantly high birth rates and slowly decreasing death rates.⁽⁴⁾

The progressive age pyramid of Menoufiya in 1976 shows how this region has a large proportion of the young people (Fig.4.4). It also reflects the influence of out-migration on the population. It is obvious that there is a decline in the proportion of the population in the work ages 30 plus as a result of the large number of males of Menoufiya who migrated to other areas.

A difference can be seen between the pyramid of the population of the rural and urban areas of Menoufiya (Fig.4.5). The general shape of the pyramid is progressive in both of the two areas, but the percentage of the population in the age groups under 15 is less in urban areas owing to the lower birth rate in there, and the high proportion of the population in the age group 20-45, related to the greater abundance of jobs. At the same time, the existence of many secondary schools and faculties of Menoufiya University in Shebien Elkom and Menouf Town encourages some of the population of the villages to stay in these two urban centres during the academic year. In contrast, the proportion of

Fig 4.5 AGE-SEX PYRAMID OF THE URBAN AND RURAL POPULATION OF MENOUIFIYA, 1976



the old people (65+) is higher in the rural areas owing to the return of some of the migrants to their place of origin to work in their fields after retirement, especially if they are landowners.⁽⁵⁾

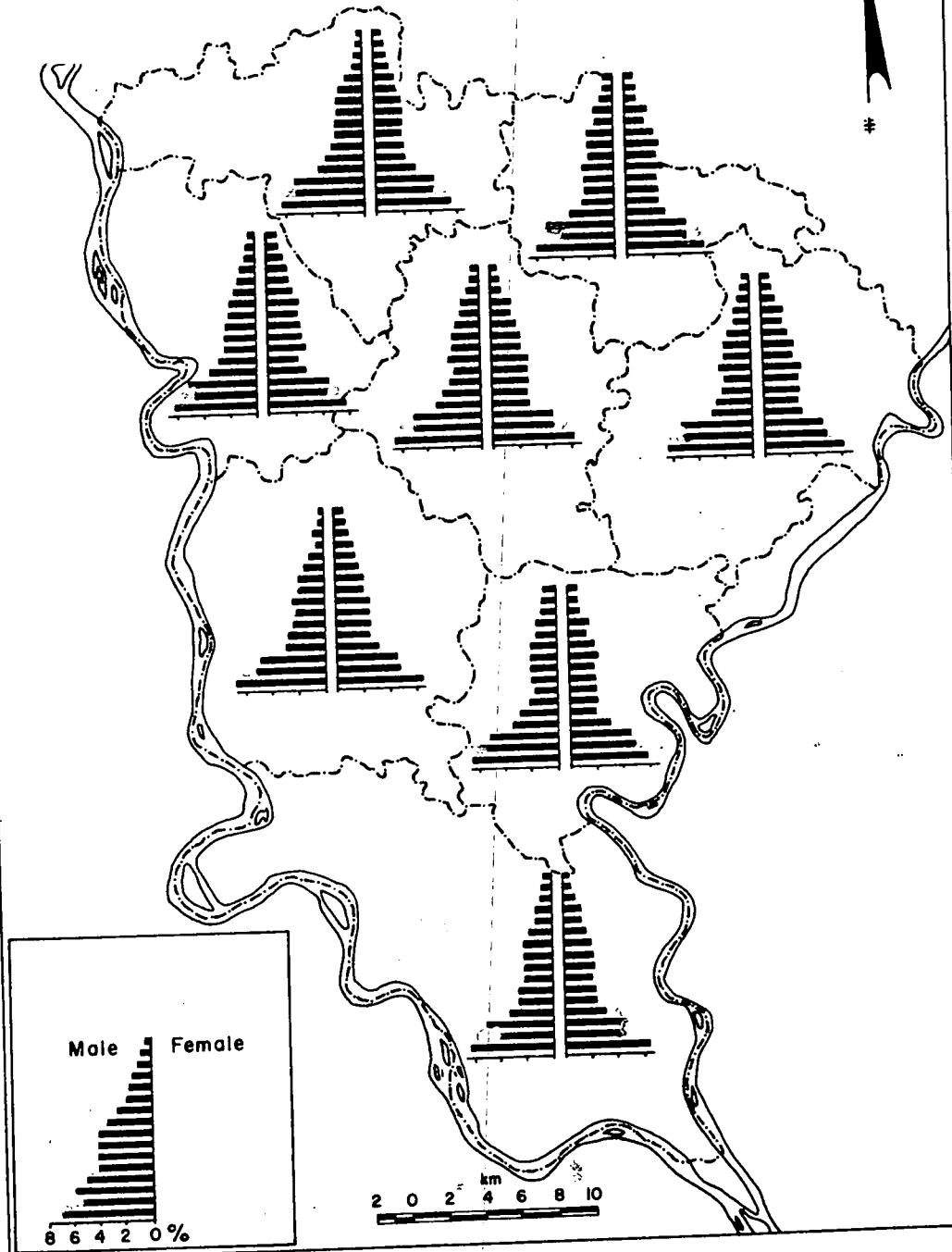
Table 4.7 : Percentage Distribution of the Population by Age and Sex in Menoufiya, 1976

Age groups	Urban		Rural		Total	
	Male	Female	Male	Female	Male	Female
0 - 4	6.4	6.5	7.2	7.2	7.1	7.2
5 - 9	5.8	5.7	6.7	6.1	6.5	6.0
10 - 14	7.1	6.7	7.4	6.6	7.3	6.6
15 - 19	6.3	5.8	5.8	4.8	5.9	5.0
20 - 24	4.7	4.5	3.7	3.5	3.9	3.5
25 - 29	3.7	3.6	3.3	3.2	3.4	3.3
30 - 34	2.7	2.8	2.4	2.6	2.4	2.6
35 - 39	2.7	2.6	2.4	2.5	2.4	2.5
40 - 44	2.5	2.5	2.2	2.5	2.3	2.5
45 - 49	2.1	2.1	2.1	2.2	2.1	2.2
50 - 54	2.1	2.1	2.1	2.4	2.1	2.3
55 - 59	1.4	1.2	1.5	1.5	1.4	1.5
60 - 64	1.4	1.4	1.6	1.8	1.6	1.7
65 - 69	0.9	0.7	1.0	1.0	1.0	0.9
70 - 74	0.6	0.7	0.8	0.9	0.7	0.8
75 and over	0.5	0.6	0.7	0.7	0.7	0.7

Source: Calculated C.A.P.M.S. Census of Menoufiya, 1976, p.127.

The spatial distribution of the age-sex pyramids of districts of Menoufiya (Fig.4.6) reveals that all the districts seem to have the same shape with the wider base and the narrow apex and the progressive population. The effect of migration is clear with decreasing population

Fig 4-6 AGE-SEX PYRAMID OF THE DISTRICT POPULATIONS IN MENOUIFYA, 1976



in the middle age groups. The districts of Ashmoun and Menouf have the widest bases related to the high birth rates. The percentage of population in the older age groups is higher in the districts where most of the population are employed in agriculture, such as Ashmoun, Bagour and Shohada.

In addition to the decline of the percentage of the population in the working age groups, migration affects the sex ratio of Menoufiya. The ratio was always lower than Egypt as a whole except in the Censuses of 1960-76, where the ratio was the same (Appendix 8). At the 1976 Census, the sex ratio was 104. When considering the relative age distribution of Menoufiya's population by sex during 1927-76, we can notice that the proportion of female children under 15 years of age was always below the corresponding proportion of male children. The ratio of the young group was 109 in 1976, which is due partly to the preponderance of male births and to the less hygienic care for newborn females, especially in the rural areas. The sex ratio of the proportion 25-64 was less than 100 in all the age groups since 1927, because of the out-migration of males. The sex ratio of the groups aged 65 and more are also as low as 93 owing to the higher rate of mortality among males.

The geographical distribution of sex ratio shows that it is nearly the same in both the urban (105) and rural areas (104). The highest ratio in Shebien Elkom (106) reflects the pull of the migrants from the adjacent villages. The lowest ratios in Bagour and Shohada (101) are because these districts were always characterized by out-migration.

4.4 Illiteracy and Education

Literacy is essential for economic development, social advancement, and influences demographic attributes like fertility and mortality. Thus analysis of literacy patterns of an area is basic to the comprehensive understanding of its population geography. Most of the developing



countries, including Egypt, suffer from the fact that a high proportion of the population are illiterate.

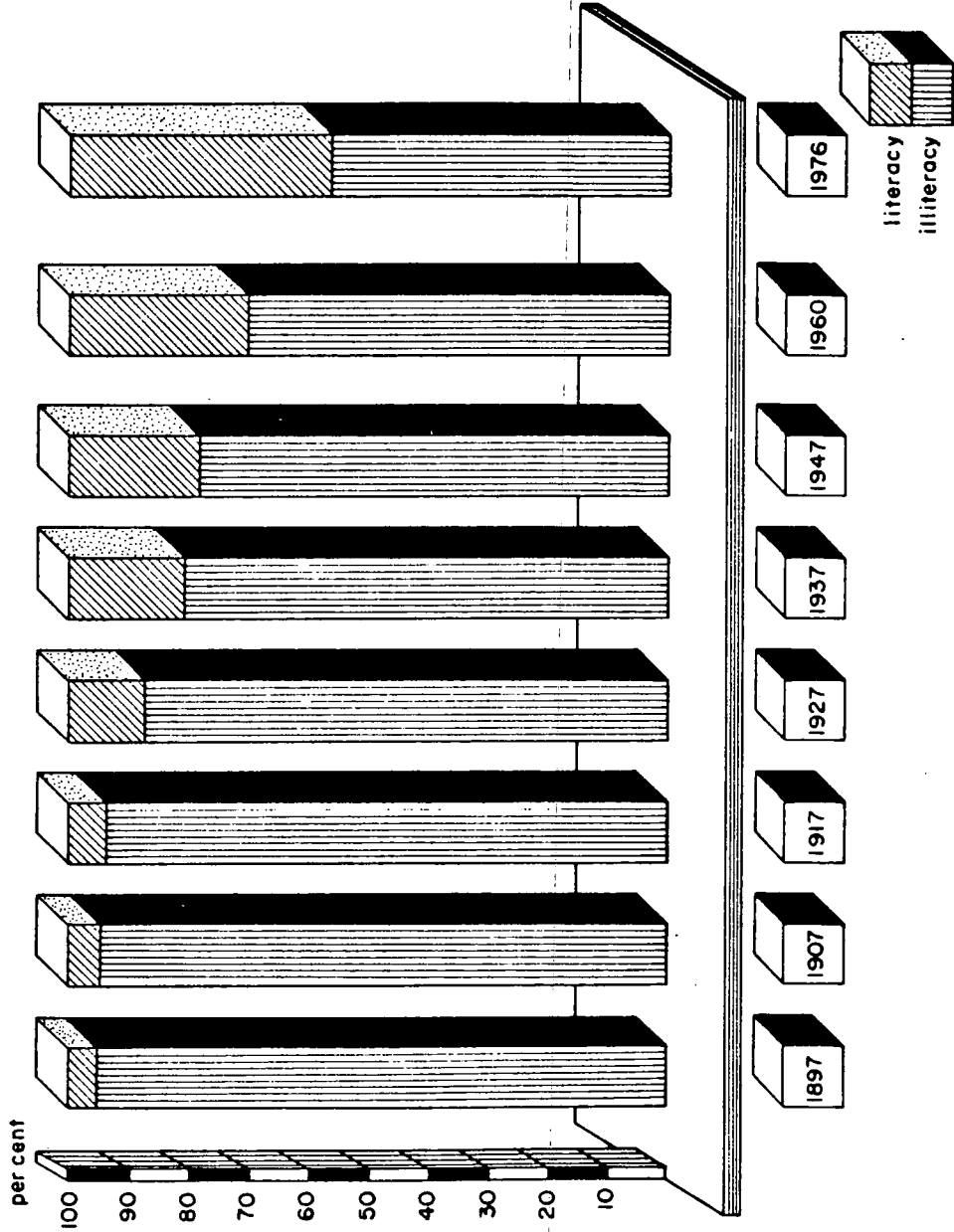
The illiteracy rate is high in both Egypt as a whole and Menoufiya, where more than 55 per cent of the total population aged 10 years and more were illiterate in 1976 (Table 4.8). The decline in the rate was slow until 1947 and faster in the period 1947-76 as shown in Fig.4.7. About 95 per cent of the total population aged 10 years and more were illiterate in 1897, but the percentage declined to 78.6 at the 1947 Census, and by 1976 it had slumped to 56.9. This results from the recent educational policy adopted by the Egyptian government after the 1952 revolution, which involves the broadening of compulsory and free education. The state does its best to encourage the education process among the population, especially the females of whom 6.0 per cent of the total aged 10 years and over were literate in 1937, 17 per cent in 1960 and 30 per cent in 1976. The percentage of males was higher, it was 44 per cent in 1960 and 60 per cent in 1976.

Table 4.8 : Percentage of Illiterates to Total Population in Egypt and Menoufiya, 1897-1976 (10 years and more)

Censuses	Menoufiya	Egypt
1897	95.3	94.9
1907	94.8	94.5
1917	93.9	92.0
1927	87.8	86.1
1937	81.4	81.3
1947	78.6	75.7
1960	64.7	61.0
1976	56.9	56.2

Source: Calculated from the different Censuses of Population of Egypt.

Fig 4-7 THE TRENDS OF LITERACY IN MENOUIFIYA, 1897-1976



At the same time, about half of the urban population are illiterate, but in the rural areas three quarters of the population 10 years and more suffer in this way.

4.4.1 Sex Differentials in Literacy

The distribution of educational attainment by level of education varies according to the age groups and the sex. As shown in Table 4.9 and Fig.4.8, we can notice the following:-

- (i) Illiteracy is more than 80 per cent in all the female age groups 25 and more. The lowest percentage, 65.9, is in the age group 15-24. It was related to the general belief among most of the village dwellers that housekeeping is the only job for a female. This picture started to recede in recent years after the government gave encouragement for literacy among girls. The percentage of illiterate males is higher than 40 per cent in the age groups over 25, related to the policy of education in Egypt as a whole before the revolution.
- (ii) The percentage of those who can read and write is higher among all the age groups of males. It is more than 20 per cent, except in the age groups 15-24, when a large number of the males are still studying or have just finished the certificate less than intermediate.
- (iii) Some of the farmers and the poor people encourage their children to leave school after having obtained the primary certificate to help them or to work to increase their income. The percentage of this group is high among the males (12.2) and the female (6.0) in the age group 15-24. It is lower than 5 per cent and 2 per cent respectively in the other age groups.

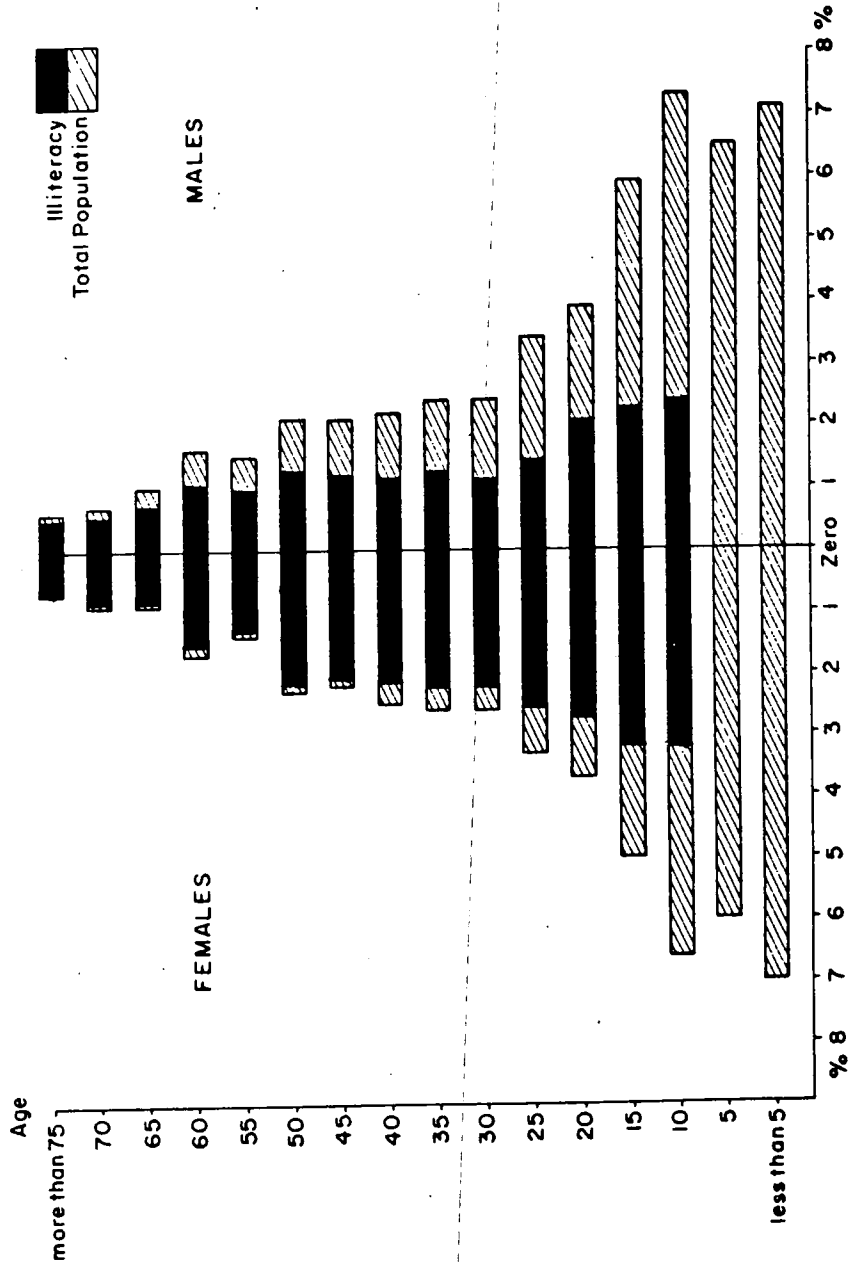
Table 4.9 : Distribution of Educational Attainment by level of Education Age and Sex in Menoufiya 1976 (10 years and more)

Level of Education	15-24		25-34		35-44		45-54		55-64	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Illiterates	32.7	65.9	39.3	81.2	49.5	89.7	56.5	95.7	65.0	95.0
Read and Write	15.8	8.6	28.0	9.0	30.0	6.0	30.5	2.9	23.6	4.3
Primary	12.2	6.0	4.6	1.6	4.6	1.3	4.5	0.5	4.6	1.0
Less than Intermediate	20.2	9.6	4.3	2.1	2.4	0.4	1.3	0.2	0.4	0.1
Intermediate	16.9	9.0	15.3	5.0	7.6	2.1	3.6	0.6	3.7	1.0
Some University	1.2	0.9	8.2	1.0	5.6	0.4	3.3	0.1	2.5	0.1
University	0.0	0.0	0.3	0.1	0.3	0.1	0.3	-	0.2	0.1
Total	100	100	100	100	100	100	100	100	100	100

Source: Calculated C.A.P.M.S. Census of Menoufiya 1976, p.143.

- (iv) The influence of making education free for the people is obvious in the age groups 15-24, when 37.1 per cent of the males of this age group have either intermediate or less intermediate certificates, compared with 18.6 per cent females. This is a good sign for decrease of illiteracy in the short term.
- (v) The percentage with university certificates is low. The highest percentage is in the age group 25-34; 8.5 among males and 1.1 among females. It is lower in the other age groups, where the fees of the university education were very high before 1952. Most of the people who have university certificates in Menoufiya migrate to work in the large cities where there are more suitable jobs for their training. The effect of the establishment of many faculties of Menoufiya University will appear in the next

Fig 4-8 THE PERCENTAGE OF ILLITERACY BY SEX AND AGE IN MENOUIFYA, 1976



census of population in 1986. About 15,000 students from the governorate have been registered during the academic year 1981-82 and many jobs may be created after the large urbanization extension in Menoufiya.

4.4.2 Spatial Distribution of Literacy Rates

There is a clear variation of literacy rates in the districts of the governorate according to the percentage of urban and rural population. These differences are a result of many factors such as : type of economy, degree of urbanization, standard of living, value of women in society, availability of opportunities for education and the degree of development of means of transportation and communication.

The influence of these factors appears in the diversity of literacy rates in the districts of Menoufiya. Table 4.10 and Fig.4.9 illustrate the following:-

1. The illiteracy percentage is as high as 56.9. The percentage of the urban sector is 37.7, meanwhile it is higher in the rural areas. The correlation coefficient between the illiteracy rate and the agricultural activity is perfectly positive as shown in Table 9 in the Appendix. The highest percentages of illiteracy by district are between 60 and 67 in those districts where most of the population is employed in agricultural activity such as Ashmoun, Shohada and Tala. In contrast the lowest percentage in Shebien Elkom 44.7, which has the lowest employment in agriculture.

In the urban areas the highest percentage of illiteracy is in Ashmoun town, 66.9, the ratio does not exceed 50 per cent except for Shohada town 54.3. It is worth mentioning that a great proportion of the population of Ashmoun and Shohada towns are also employed in agricultural activity. The lowest percentage of illiteracy is in

Quesna town (29.5) and Shebien Elkom City (32.0). The main reason for the low percentage of Quesna is that it was established in 1897 as a capital of a new district,⁽⁶⁾ and therefore concentrated many government employees. Its name was Michat Sabri, which changed to Quesna later.

2. The percentage of those who can read and write is about 27.1 of the total population 10 years and more. There is an inverse relationship between the population in this category and the agricultural activity. It is lower in Ashmoun 24.4, and high in Shebien Elkom 30.3 per cent. Of course, it is higher in the urban areas than the rural.

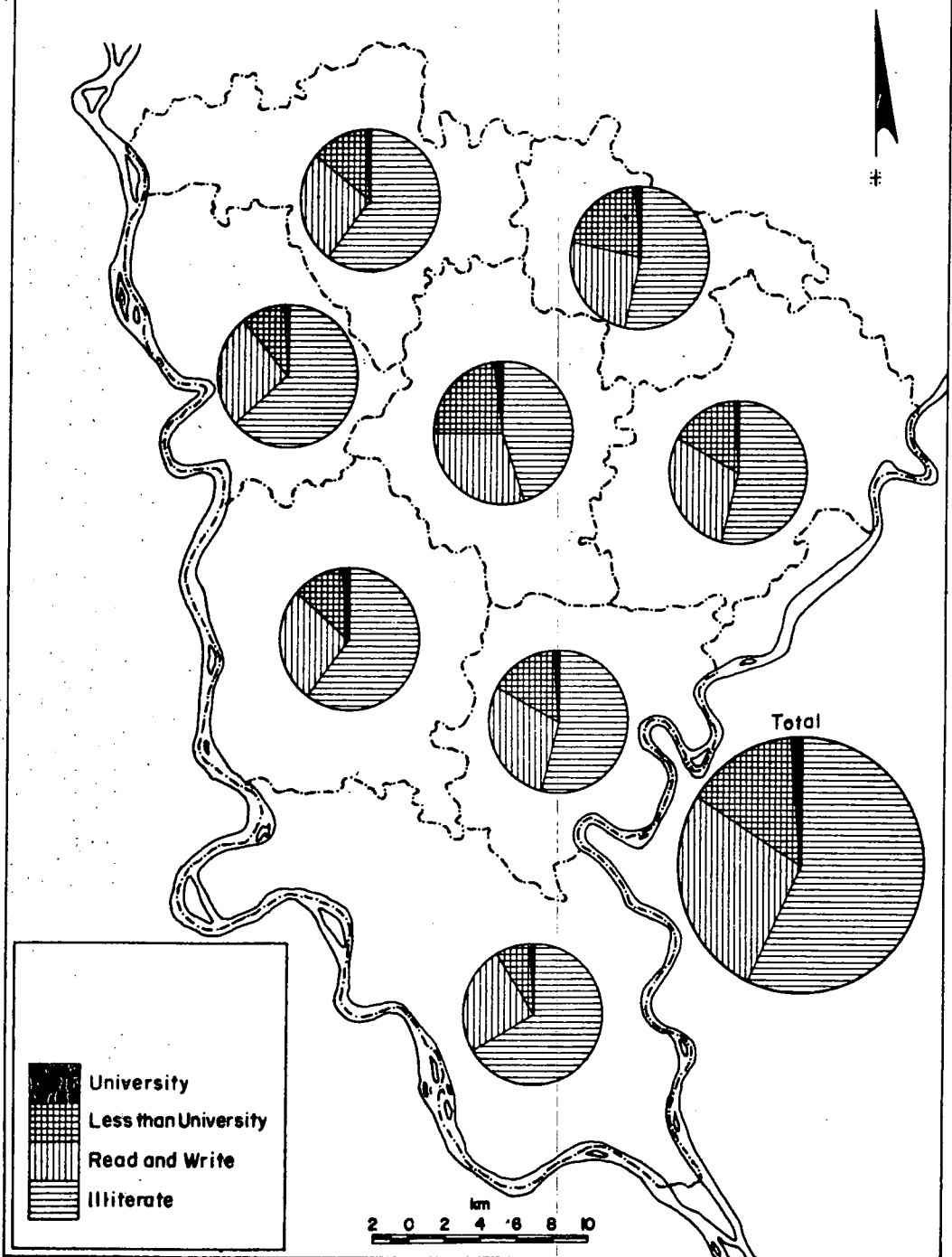
Table 4.10 : Percentage of Literacy in Menoufiya by Rural and Urban, 1976
(10 years and over)

Districts	Illiteracy			Read & Write			Less than University			University		
	U	R	T	U	R	T	U	R	T	U	R	T
Shebien Elkom	32.0	52.0	44.7	30.0	30.5	30.3	33.7	16.4	27.7	4.3	1.1	2.3
Ashmoun	66.9	66.9	66.9	25.0	24.3	24.4	6.1	8.2	8.0	2.0	0.6	0.7
Bagour	48.1	54.5	53.8	25.4	29.4	29.0	24.1	15.3	10.2	2.4	0.8	1.0
Berket Elsaba	38.1	56.1	53.6	28.6	24.4	25.0	30.1	18.6	20.2	3.2	0.9	1.2
Shohada	54.3	65.6	63.4	30.1	24.7	25.6	13.6	9.0	10.1	2.0	0.7	0.9
Tala	48.5	62.6	60.2	27.1	25.3	25.6	22.1	11.3	13.1	2.3	0.8	1.1
Quesna	29.5	56.5	53.8	36.5	28.3	29.1	29.9	14.4	15.9	4.0	0.8	1.2
Menouf	48.3	65.8	60.3	27.2	26.3	26.6	21.9	7.3	11.9	2.6	0.6	1.2
Menoufiya	37.7	60.2	56.9	28.6	26.7	27.1	24.5	12.3	14.7	3.12	0.8	1.3

Source: Calculated from: C.A.P.M.S ibid, p.149.

3. The people who have a certificate less than university is 14.7 per cent in Menoufiya. It only exceeds 20 per cent in Berket Elsaba district (20.2 per cent). The rest of the districts have a percentage between 10-16.

Fig 4.9 LITERACY IN MENOUIFYA IN 1976



Most of the poor people do not send their children to university and prefer to obtain a certificate less than a university degree where the cost is lower and they obtain a faster governmental job . Relating to the concentration of secondary schools in urban centres, therefore, the percentage is lower in the areas far away from the town, or in the areas in which the means of transportation are still lacking especially in Ashmoun and Shohada districts.

4. The percentage of those who have the university certificate is as low as 1.3 per cent due to the high fees of the university before 1952, late establishment of Menoufiya University, and the fact that most of the students went to Cairo or Alexandria to complete their degrees and to work in these large cities; the means of creation of ease and luxury are still lacking in Menoufiya compared with the other large cities of Egypt.

4.4.3 School Registration

After 1952, the government made primary education free, but in 1962, all the schools and universities became gratis as a step to abolish illiteracy. The student numbers increased continually. Comparing the total number in the academic years 1970/71 and 1981/82 we can notice a great increase in student numbers in all the educational stages. In the primary schools the number of pupils increased from 189,400 to 245,000 (29 per cent). The number of pupils in the preparatory schools increased from 42,100 to 85,200 (102 per cent). The highest percentage increase is among the secondary school students whose numbers have increased from 29,700 to 63,000 (112.1 per cent).⁽⁷⁾

The effect of this increase will be clear in the next Census of Population in 1986, to reduce the percentage of illiteracy. Furthermore the University of Menoufiya became an independent University from 1976, to include Faculties of Agriculture, Engineering and Technology,

Science, Medicine, Education and Commerce in Shebien Elkom City, and the Faculty of Electronic Engineering in Menouf Town. In 1981/82 the total number of students was about 15.1 thousand, the overwhelming majority of them from the governorate, but in 1969/70, the number of students in the Faculties of the University had been only 1,393 students.

In 1976, the state was doing its best to abolish illiteracy by opening many classes to educate adults, most of whom are male, so, the problem of female illiteracy will still remain. The government must encourage women to erase their illiteracy in separate classes as the tradition of the region is not to mix males and females in the older age groups.

The other way to abolish illiteracy is to strictly control the drop-out of children under 12 from the primary schools. There are a great number of pupils who leave school at an early age to work to help the family to increase their income. Of a group of 1,000 male pupils registered in the first grade of primary school, about 659 complete their study to the end of the primary stage. Meanwhile about 574 female pupils finish the primary stage.⁽⁹⁾ It is a dangerous phenomenon and the reason why at least 30 per cent of the illiteracy of the population is in the young age groups. It is obvious in the rural areas of Menoufiya.

4.5 Summary

The population composition in Menoufiya has a number of characteristics. These are important to understand the personality of the population as follows:

1. Labour force size is more than half a million persons (nearly one third of the total population). It is always increasing despite the out-migration of people of working age. As a result of the lack of large factories and the agricultural nature of the region, the agriculture sector has always been the dominating economic activity.

Moreover, most of the labour force in Menoufiya are males, females accounting for about one tenth of the total working population. The unemployment total is about 2.3 per cent of the total population in the working age.

2. As a result of the high birth rate and the decrease of mortality and overall infant mortality, the proportion of young persons under 15 years rose to more than 40 per cent of the total population after 1960. At the same time, the proportion of adult population was always more than 50 per cent, though the proportion also reflects the effect of out-migration on the population in the working age. On the other hand, old people (60 years and more) still have a small proportion despite the development of medical care, but the death rate is still high in these age groups. Therefore the general shape of the age pyramid of Menoufiya is progressive.

All the districts of the governorate have the same characteristics of age structure, so, the state has to find more places for the increasing number of children in different stages of education. At the same time it has to plan to offer many new job opportunities to the young working age groups, and concentrate medical care for the old people to reduce the high death rates in these age groups.

3. This study shows that illiteracy is a major problem facing social development in the area, as about 57 per cent of the total population (10 years and more) are illiterate.

The key to this problem resides in the people of agricultural activities, who comprise more than two thirds of the total population. However, illiteracy is also dominant among females, of whom more than three quarters of the total being illiterate in 1976. In addition, the third category of illiterates are those who leave their study to work in

order to help their poor families, as a result of low income in the region.

The government has made all education free as a step to abolish illiteracy. Therefore the percentage of pupils and students has increased in all stages of education. Moreover, after establishing some new faculties the University of Menoufiya has become independent, so there are real efforts being made to find some solution to the problem of development in Menoufiya.

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CHAPTER FIVE
NILE DELTAIC ENVIRONMENT

5.1 Introduction

The Nile delta comprises about two thirds of the total cultivated land of Egypt, and contains one of the world's greatest population concentrations. The importance of agriculture in the region is demonstrated by the fact that it absorbs more than 50 per cent of the labour force. The food production of the region is adequate to supply most of the food needs of the population of the region and most of the urban governorates of Egypt.

The study of the locational advantages of Menoufiya as a Nile deltaic environment is an essential element in the study of the agriculture and food production. In this chapter the study will illuminate the explanation of the following questions to show the characteristics of the land use and food production in the area:

- What are the environmental advantages and disadvantages for producing food in Menoufiya?
- What kind of agrarian rotation is used?
- What are the crop seasons?
- What is the rule of co-operative system on agricultural production?

5.2 Deltaic Location

Many aspects and views have been reported about the geological features and landforms in the Nile delta. Atia (1954)⁽¹⁾ concluded that the Eocene formation is followed by Oligocene gravels, sands and sandstone. The Miocene formation consists of sandstones, limestone and clay. Pleistocene and Recent deposits consist of gravel and sand.

The surface of the delta is formed of alluvial suspended matter and fine sand brought down by the Nile. Many bores have been cut down in Menoufiya but none reached the basement rock. The thickness of the deposits varies in the different locations, but all the bores show that the geological structure of the delta in Menoufiya include three main layers (a) the clay at the surface overlying; (b) fine sand and then; (c) coarse sand and gravel (fluvial deposits).

The thickness of strata is variable. The clay has a minimum thickness of between zero and two metres in the eastern parts of Quesna districts especially in Kufor Elramel in the area of the sandy islands (turtle backs), the maximum thickness being about 23 metres in the middle of Menoufiya in Milig, and the mean about 12 metres in most of the bores (Fig. 5.1).

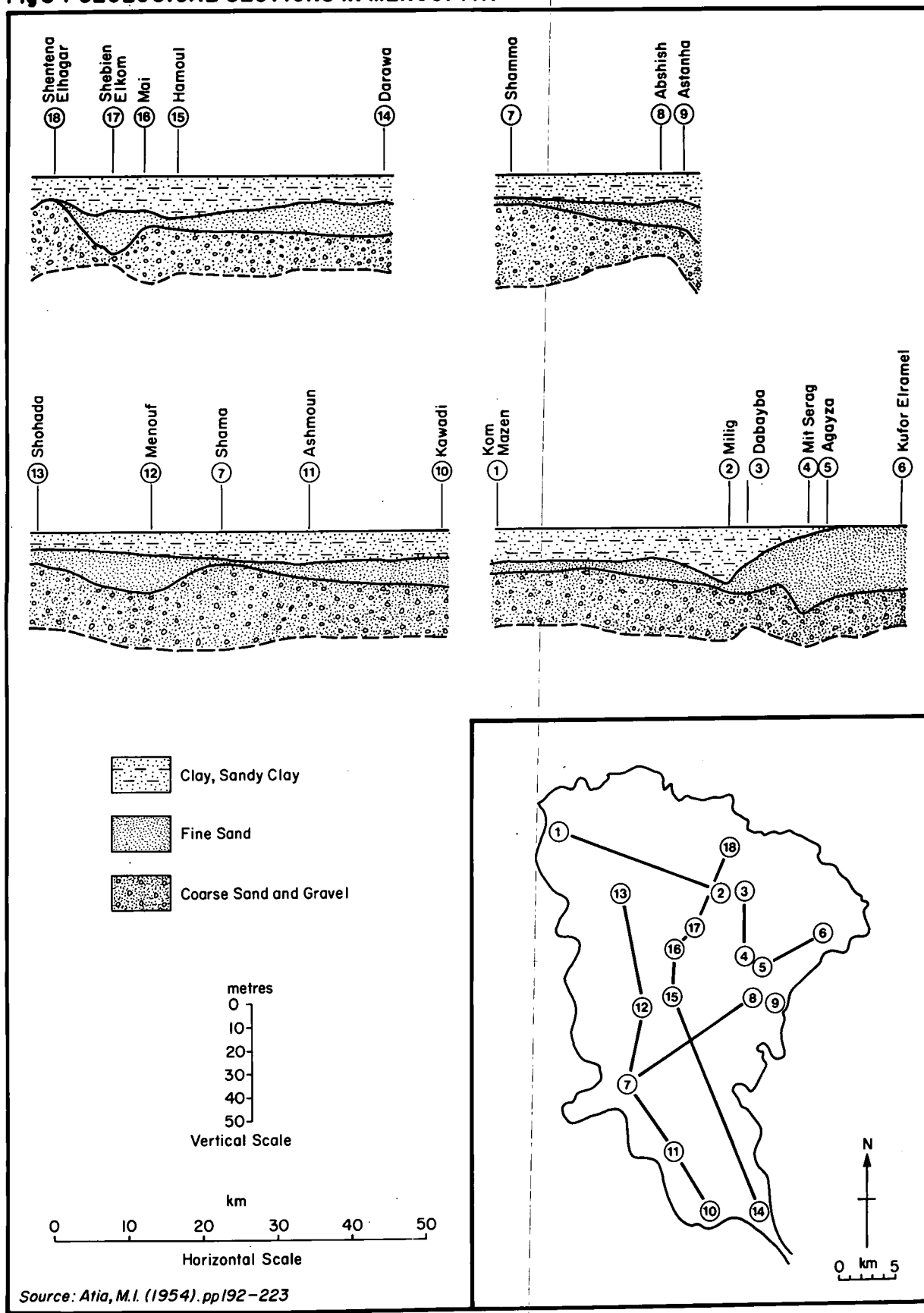
The fine sand layer has a thickness of about 7 to 15 metres in most of the area, the maximum thickness being in the area of the sandy islands which reaches more than 32 metres; however, this stratum disappeared in some bores such as Shentena Elhagar.

The coarse sand and gravel layer (diluvial deposits) is always found underneath the fine sand with maximum thickness in Shamma (30 metres), and minimum in Astanha (1.5 metres). It was not present in Hamoul bore.

If we take the average of the surface of the ground in Menoufiya to be 12 metres above sea level, the base of some borings have been 155.8 metres below sea level but did not strike the rocky bottom.⁽²⁾

It is sometimes difficult to determine the exact thickness of alluvium at a particular place through borings, partly because the sands and gravels on which it was originally laid down presented a somewhat irregular surface and partly because the Nile has from time to time changed its path.⁽³⁾

Fig 5-1 GEOLOGICAL SECTIONS IN MENOUIFYA



Source: Atia, M.I. (1954). pp192-223

The contour lines in Menoufiya region are widely spaced and do not follow any head bend. The highest contours, ignoring the sandy islands, are in the apex of the delta which is 16 metres above sea level (Fig.5.2), while the lowest are 8 metres in the northern parts of Tala district.

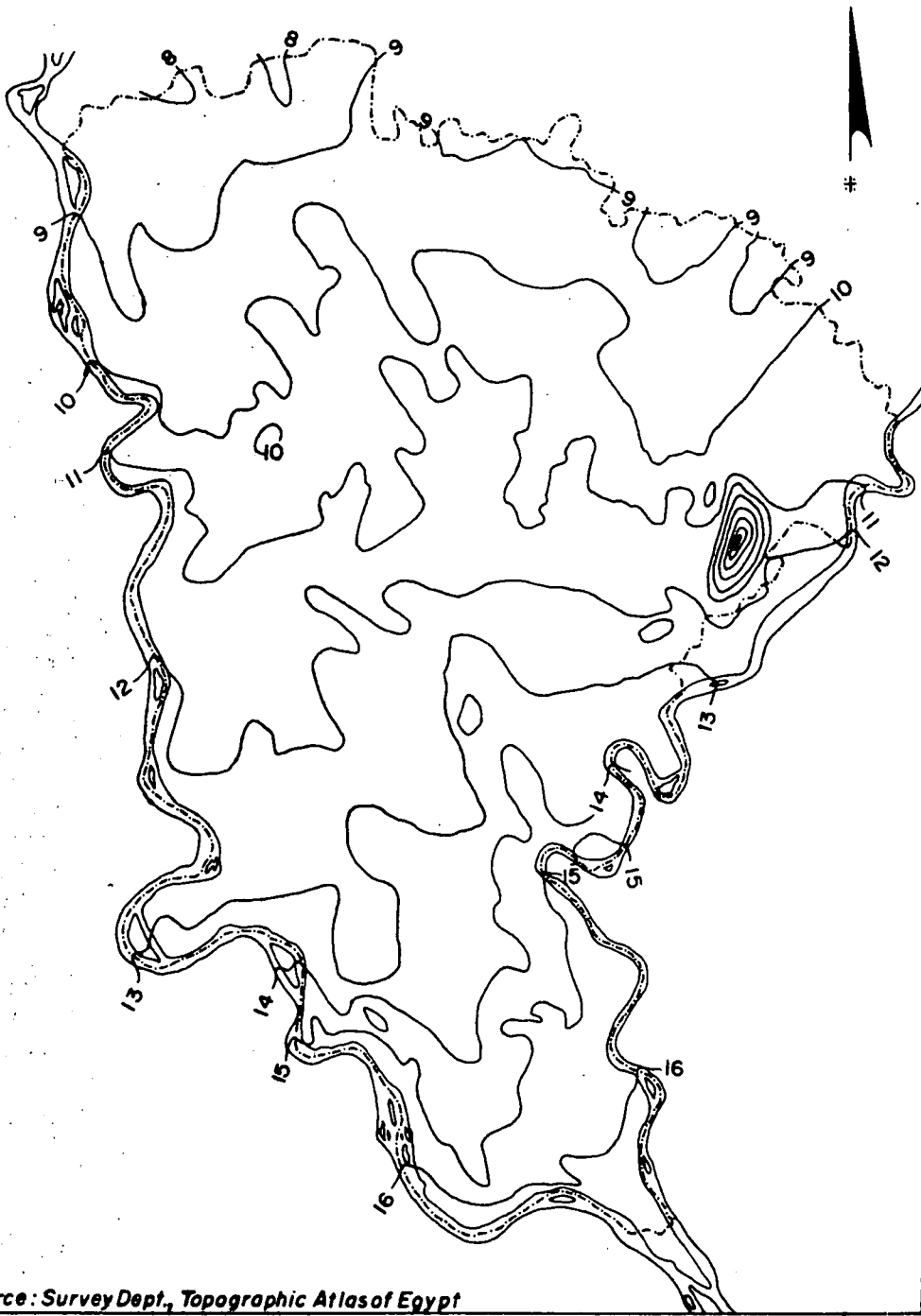
The general slope of the delta in Menoufiya is about 1:10000 down to the north and north-west, it is related to the sorting of material as they were deposited in the sea during the first stage of the delta's formation. "The coarse materials were deposited at the apex and the fine clay at the base, which means that the texture of deposition is finer northwards. The surface of the Nile delta in Menoufiya is relatively smooth if compared to the surface in the north."⁽⁴⁾

A series of sandy islands known as "turtle backs" are the strongest feature of the region. These consist essentially of deposits of fine to coarse fluvial sand, sandy clay and impure silt.⁽⁵⁾ They are generally seen 10-12 metres above the surface of the eastern parts of Quesna district.

The largest sandy island is named Remal Elaraqi with an area of 13.1 sq.km. (4.3 x 3.7 km). The highest part is in the south-west, where it reaches 22 metres above sea level, as shown in Fig.5.3. The base of this island is bounded by the contour of 12 metres; making its peak 10 metres above the elevation of the flood plain.

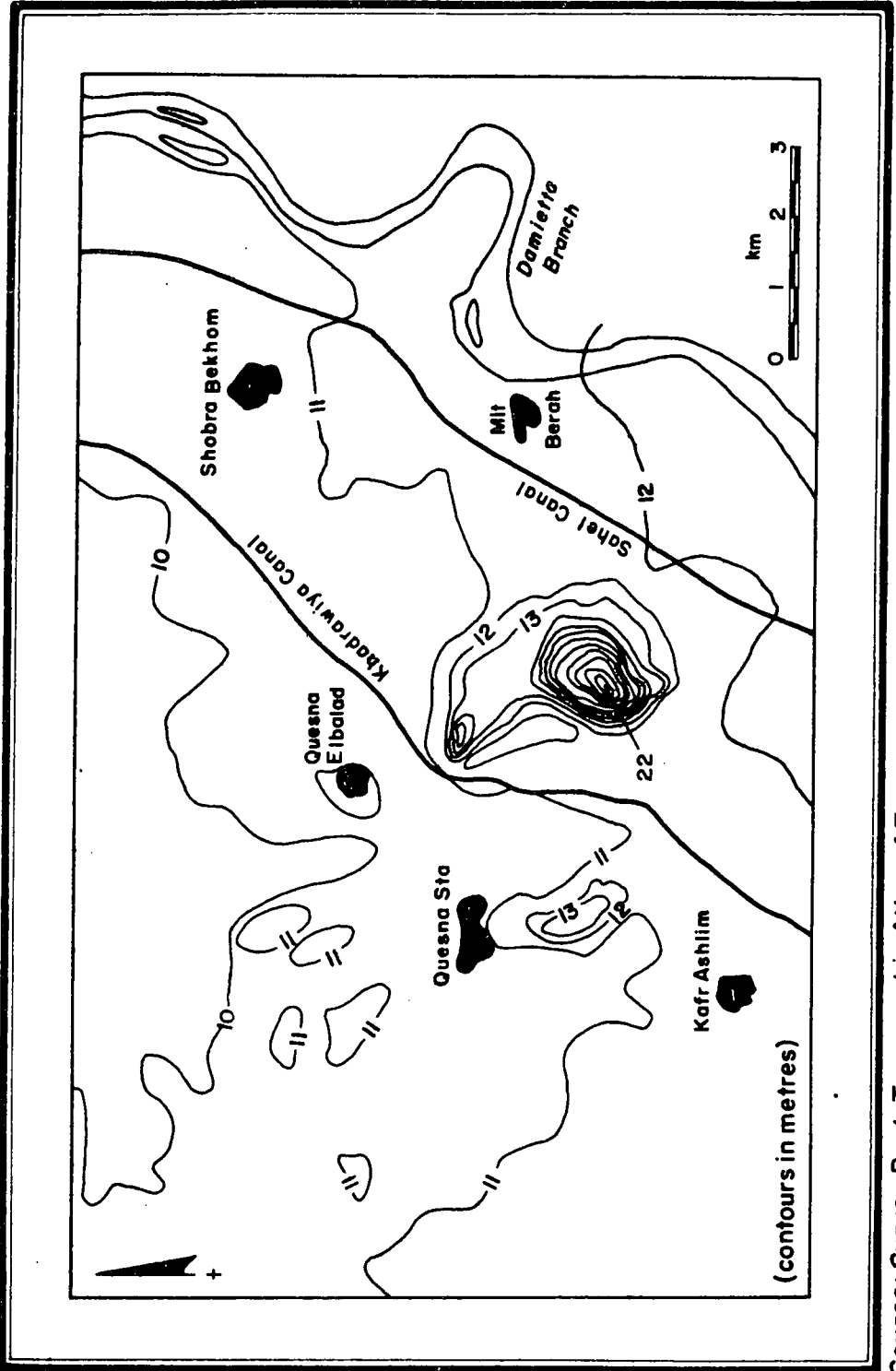
The second island is near Quesna town with an area of 2.3 sq.km with a maximum height of 13 metres and it is higher than the surrounding area by two metres. The other turtle backs are in the west of Quesna Elbalad in the same level of the deltaic plain. They are now covered with alluvium, and their elevation above the area is constantly reduced, so that some have disappeared.

Fig 5-2 CONTOUR MAP OF MENOEFIYA (contours in metres)



Source: Survey Dept., Topographic Atlas of Egypt

Fig 5-3 THE SANDY ISLANDS IN QUESNA DISTRICT



Source: Survey Dept. Topographic Atlas of Egypt

It is easy to understand how these turtle backs originated. They are merely the more consolidated and more resistant portions of deltaic deposits, formed in the sea at the distributary mouths of the river at a time when the sea level was considerably higher relative to the land than it is at the present time. As the relative level of the sea fell, the less compacted portions of the deposits disintegrated due to water action and their materials were redistributed beneath the water, while the more resistant portions remained in position and formed islands. (6)

The sands of these islands have no great economic value, but are used now for constructions. Some portions of these islands were reclaimed and used for agriculture after the extinction of Khadrawiya and Sahiel irrigation canals in 1955. Most of these reclaimed lands are cultivated with citrus and vegetables.

5.3 Nile Deltaic Soils

The soils of Menoufiya, as for the delta as a whole, are formed from relatively recent calcareous alluvium laid several metres thick over alluvial gravels of an older age. The source of the mud or silt has been primarily the highland of Ethiopia. The alluvial soils here are rich in unweathered minerals that give most of the mineral nutrients that plants need. (7) The organic content in the soil varies between 0.2 and 3.0 per cent. (8)

The thickness of the alluvial soils is variable, and there is a strike line between the alluvial deposits and the sand clay. The present mean depth of the alluvial soil has been found to be about 11 metres.

Soil profiles show that the clay ratio in the soil is between 43 to 70 per cent increasing with depth and to the north. The soils can be classified into five categories according to the profile

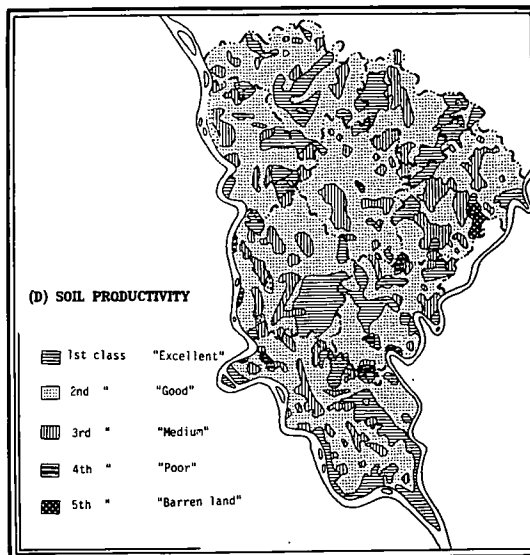
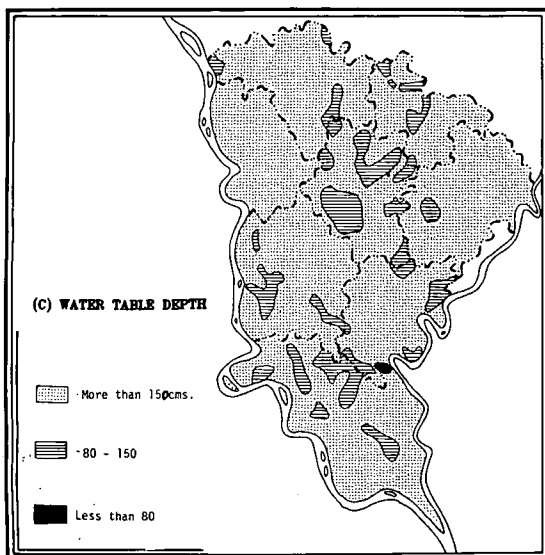
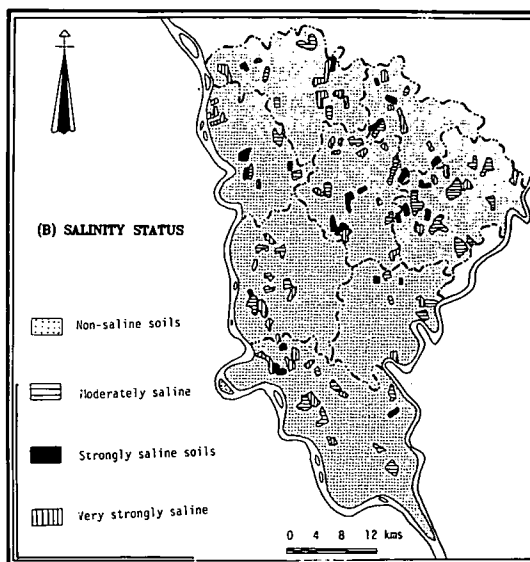
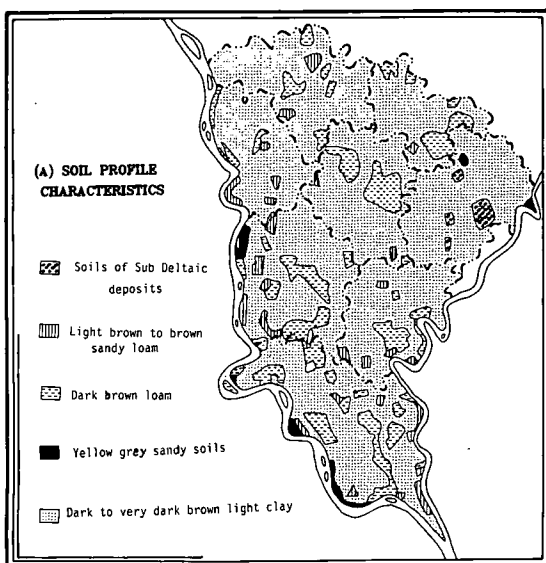
characteristics as follows (Fig. 5.4A):-

1. Dark to very dark brown, light clay occasionally clay loam in the surface or subsurface soil, accounts for about 80 per cent of the total soils of the region.
2. Dark brown loam, occasional clay in the surface soil, forms about 15 per cent of the land.
3. Light brown to brown sandy loam, throughout occasionally clay or clayey loam in the surface soil, is not more than 3.5 per cent of the soils.
4. Yellowish grey, sandy, occasionally clay loam in the surface soil, always besides the Nile branches, and accounting for about 1.45 per cent.
5. Soil of sub-deltaic deposits, yellow, grey, sandy, found in the turtle backs in Quesna district. It forms as little as 0.05 per cent of the total soils.⁽⁹⁾

Most of the land of Menoufiya has normal salinity. At the same time there are about 20,000 feddans which have relatively high salinity especially in the lands located between the irrigation canals (Fig.4.4B). In general, the average pH in most of the soils is between 7.5 and 8.2,⁽¹⁰⁾ which means that it is suitable for most agricultural production.

The depth of the watertable is more than 150 cm. from the surface in more than 80 per cent of the land of Menoufiya. It is less than this average in some parts, especially in Shebien Elkom and Ashmoun districts, while less than 30 cm. in a few lands in Bagour district (Fig.5.4C). The watertable depth is always low near the irrigation canals.

FIG. 5.4 SOILS OF MENOUIFIYA.



Source: Ministry of Agriculture, Soil and Water Research Institute, The Agricultural Research Centre, Soil Survey and land Classification of Menoufiya, Cairo, 1966.

The soils can be classified according to the productivity potential which is presented in Table 5.1 and Fig. 5.4D as follows:-⁽¹¹⁾

- a. Lands of first class are of high productivity with yields of more than the average of the whole of Egypt and the governorate. They are suitable for any traditional crop. The land is always clayey to sandy clayey, with deep profile soil and a deep watertable. The lands in this class include about 75,375 feddans (23 per cent of the total cultivated land). More than 25 per cent of the land of Berket Elsaba Bagour and Ashmoun districts are first class, but in contrast only 5 per cent of the land of Shebien Elkom district.
- b. Land of second class has good productivity, and the yield per feddan is also higher than the average of the whole of Egypt. Its soil is clayey with normal salinity in most of the lands but there are some lands having a moderate salinity in the sub-surface soil. More than half of the lands of Menoufiya belong to this class with an area of 190,050 feddans. More than 60 per cent of the land of Menouf, Tala, Shebien Elkom and Shohada districts are under this category.
- c. Land of third class includes the land of moderate productivity of the governorate. The yield per feddan is nearly the same as that of Egypt as a whole. The soil is light clay, its salinity is normal and the watertable is about 100-150 cm. deep. The total area of this class is about 49,660 feddans (15.1 per cent). This land is dominant in both Shebien Elkom and Quesna districts.
- d. Land of the fourth class has poor productivity, the yield per feddan being lower than the average of Egypt as a whole. The drainage is in a bad condition and salinity is moderate and high in some portions. The watertable is at a depth of 60-80 cm. whereas most of this land is adjacent to the irrigation canals, with an area of 10,510 feddans (3.2 per cent). It is dominant in some parts in the governorate.

Table 5.1 : Productivity Classes of the Land of Menoufiya (per cent)

Productivity Classes	First Class	Second Class	Third Class	Fourth Class	Fifth Class
Shebien Elkom	5.6	64.8	24.5	4.9	0.2
Ashmoun	27.5	56.9	9.4	4.8	1.4
Bagour	31.2	55.8	10.8	1.9	0.3
Shohada	20.1	67.1	11.1	1.6	0.1
Berket Elsaba	32.7	47.2	17.3	2.8	0.0
Tala	24.1	63.1	10.5	2.2	0.1
Quesna	23.8	47.8	22.7	3.5	2.2
Menouf	19.8	60.1	16.9	2.6	0.6
Total Feddan	75375	190050	49660	10510	2354
Total %	23.0	58.0	15.1	3.2	0.7

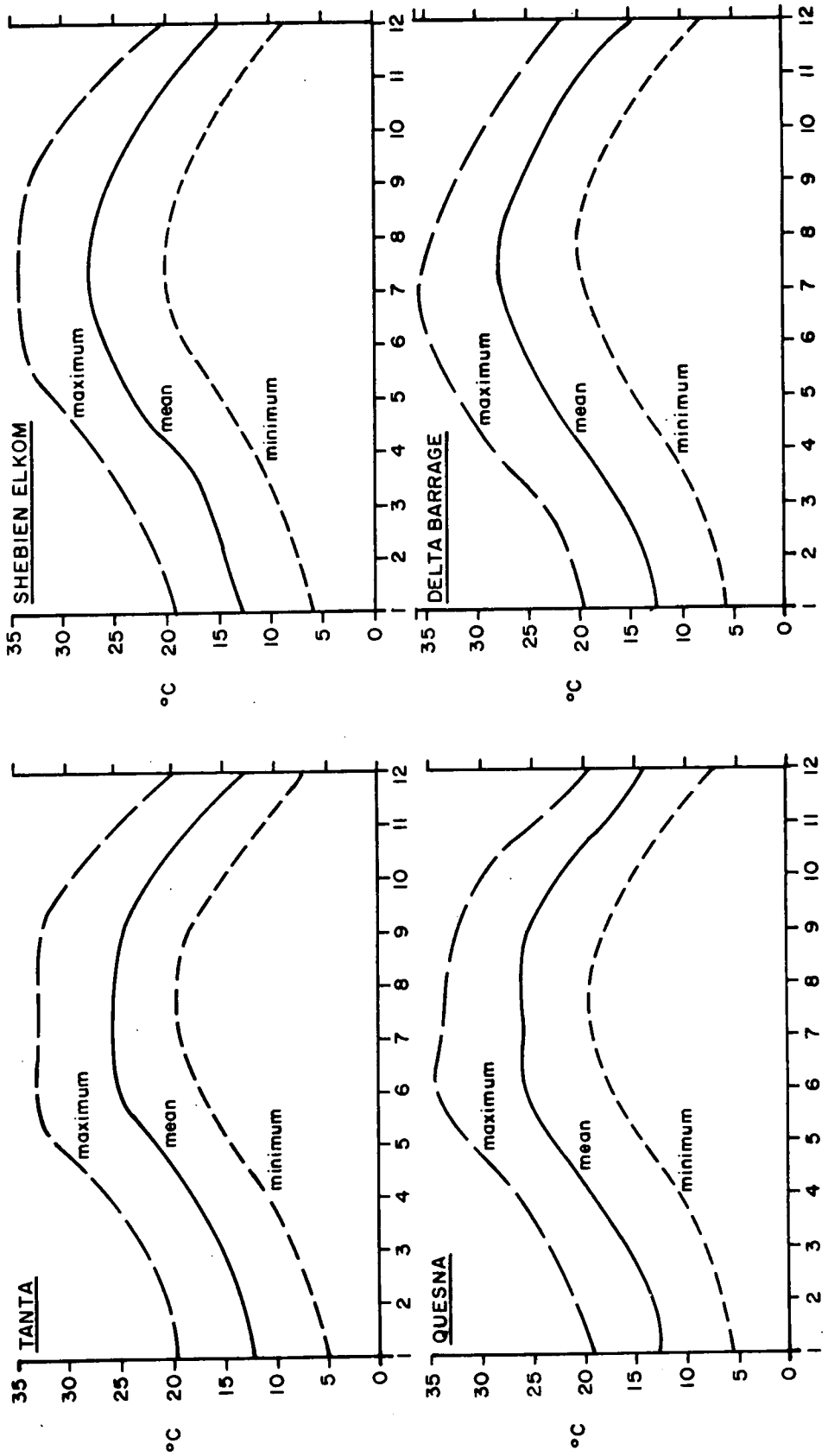
Source: Ministry of Agriculture, Department of Land Census, The Records of the Classification Census of Menoufiya's Land, Cairo, 1968, p.43.

e. The barren land which could be reclaimed comes in the fifth class with an area of 2,354 feddans (0.7 per cent). Most of these are concentrated in Quesna district (sandy islands) and swamps of the north-east of Ashmoun district (old tributaries of the Nile), and some are under reclamation for cultivation.

5.4 A Semi Mediterranean Climate

The climate of Menoufiya as a Nile deltaic governorate is mostly under the influence of the sea, and it experiences a warming effect in winter and cooling effect in summer. The Nile delta has the characteristics of both Mediterranean and desert climates; having a small rainfall and mild temperature in winter, and a dry hot summer. The climate has a great influence on the agricultural production in

Fig 5.5 MEAN MONTHLY TEMPERATURE IN THE SOUTHERN PART OF THE NILE DELTA



Menoufiya as follows:-

i. Temperature : The average daily mean temperature is high in July and August (25.8 - 27.2°C), and lower in January with the average between 11.9 and 13.2°C as shown in Table 5.2 and Fig. 5.5.

The daily mean maximum temperature is high in August and it is more than 32°C in all the stations of the region. In contrast, the daily mean minimum temperature is always not less than 5.9°C in January in all the stations.

The absolute records of temperature (30 years ago 1949-1979) reveal that the minimum absolute records in Shebien Elkom station were 0.1°C, 0.8 °C on 4th of January 1973, and 16th December 1970, while Quesna recorded 0.9°C on 5th of January 1979, Tanta 0.6°C on 16th of December 1970, and Delta Barrage -0.3°C on 11th of December 1978.

The maximum absolute records were in May in all the stations: in Shebien Elkom 46.4°C on 21st of May 1965, Quesna 46.6°C on 20th of May 1970, in Tanta 43°C on 2nd of May 1970 and in Delta Barrage 46.5 °C on 14th of May 1973.

In general all the means of temperature are clearly suitable for all the common crops of the Mediterranean region, such as : wheat, maize, barley, clover, broad beans, potatoes and most of the vegetables and fruit such as citrus, grapes and bananas, in addition to cotton as a cash crop. The fluctuation of temperature always has an effect on vegetables especially tomatoes.

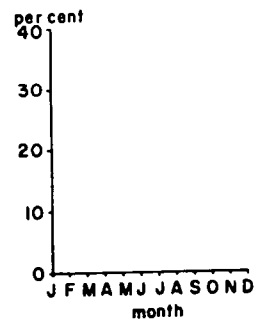
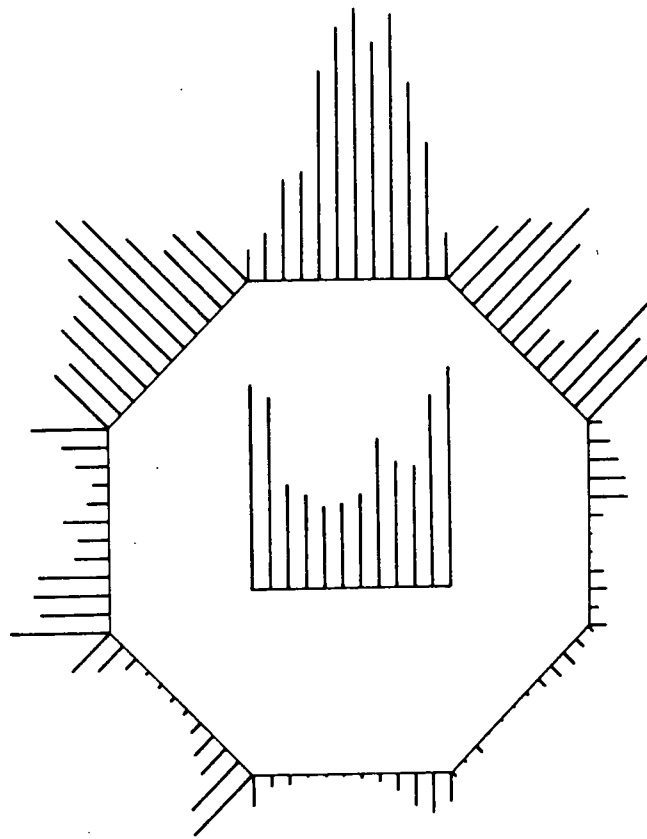
ii. Winds: The prevailing winds blowing on Menoufiya are the northerly (25.5 per cent northern, 15.1 north-western and 18 north-eastern) as illustrated in Fig. 5.6 and Appendix 10. The highest percentage of winds blowing is between May and September. The calm of winds is about 22.4 per cent with a high proportion (more than 30 per cent) from November to February. The average speed of the winds blowing during

Table 5.2 : Mean Monthly Temperature in the South of Delta (Menoufiya Region) 1949 - 1979 °C

Months	Tanta			Sheblien Elkom			Quesna			Delta Barrage		
	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
Jan.	18.7	6.3	11.9	19.6	6.8	13.2	18.8	5.9	12.3	19.9	6.4	13.1
Feb.	20.4	6.2	12.7	20.9	7.3	14.1	21.3	6.3	13.8	21.4	6.8	14.1
March	22.1	8.6	15.2	23.8	9.1	16.4	23.7	8.6	16.1	23.9	8.6	16.2
April	26.1	10.3	18.5	27.3	11.8	19.5	26.7	11.2	19.0	28.4	11.2	19.8
May	30.8	14.0	22.1	31.3	15.1	23.3	31.4	14.4	22.9	32.4	14.9	23.6
June	33.3	17.3	25.1	34.1	18.4	26.2	34.3	17.8	26.0	34.5	17.6	26.0
July	32.6	19.0	25.8	34.2	20.2	27.2	33.4	19.2	26.3	35.6	19.3	27.4
Aug.	32.7	19.3	25.7	34.2	20.2	27.2	33.4	19.2	26.3	34.6	19.9	27.2
Sept.	32.4	17.7	24.5	32.8	18.4	25.6	32.7	17.8	25.3	32.0	18.4	25.2
Oct.	29.4	15.1	21.8	30.2	16.2	23.2	29.6	15.2	22.4	30.4	16.2	23.3
Nov.	23.8	11.5	17.3	25.7	12.8	19.2	24.1	11.4	17.7	25.9	12.3	19.6
Dec.	19.7	7.5	13.2	21.2	8.8	15.0	19.9	7.2	13.5	21.3	8.1	14.7

Source: Egypt, Ministry of Military Production, Meteorological Dept. Climatological Normals for Egypt up to 1980, Cairo 1980. (Unpublished).

Fig 5.6 WIND DIRECTION IN SHEBIEM ELKOM STATION



the year is 4.5 knots. The months of March to June have the highest average of wind speed (more than 5.0 knots).

Khamasin weather is the salient phenomenon in some days of spring all over the delta; it takes place in association with the passage of desert depressions. The main weather features which give rise to Khamasin weather conditions are the excessively high surface temperature and the extremely low humidities. The surface air temperature in May is as high as 45°C and the relative humidity as low as 15 per cent. During Khamasin conditions, duststorms raised by the winds in desert depressions give visibility of less than 50 metres at times.⁽¹²⁾ These conditions usually cause damage to some crops in the region, especially the vegetables, cereal crops and citrus trees. The Khamasin may cause the shrinkage of wheat seeds or the falling down of citrus flowers or even fruit. About 20 per cent of certain farm crops of citrus fall as a result of Khamasin.

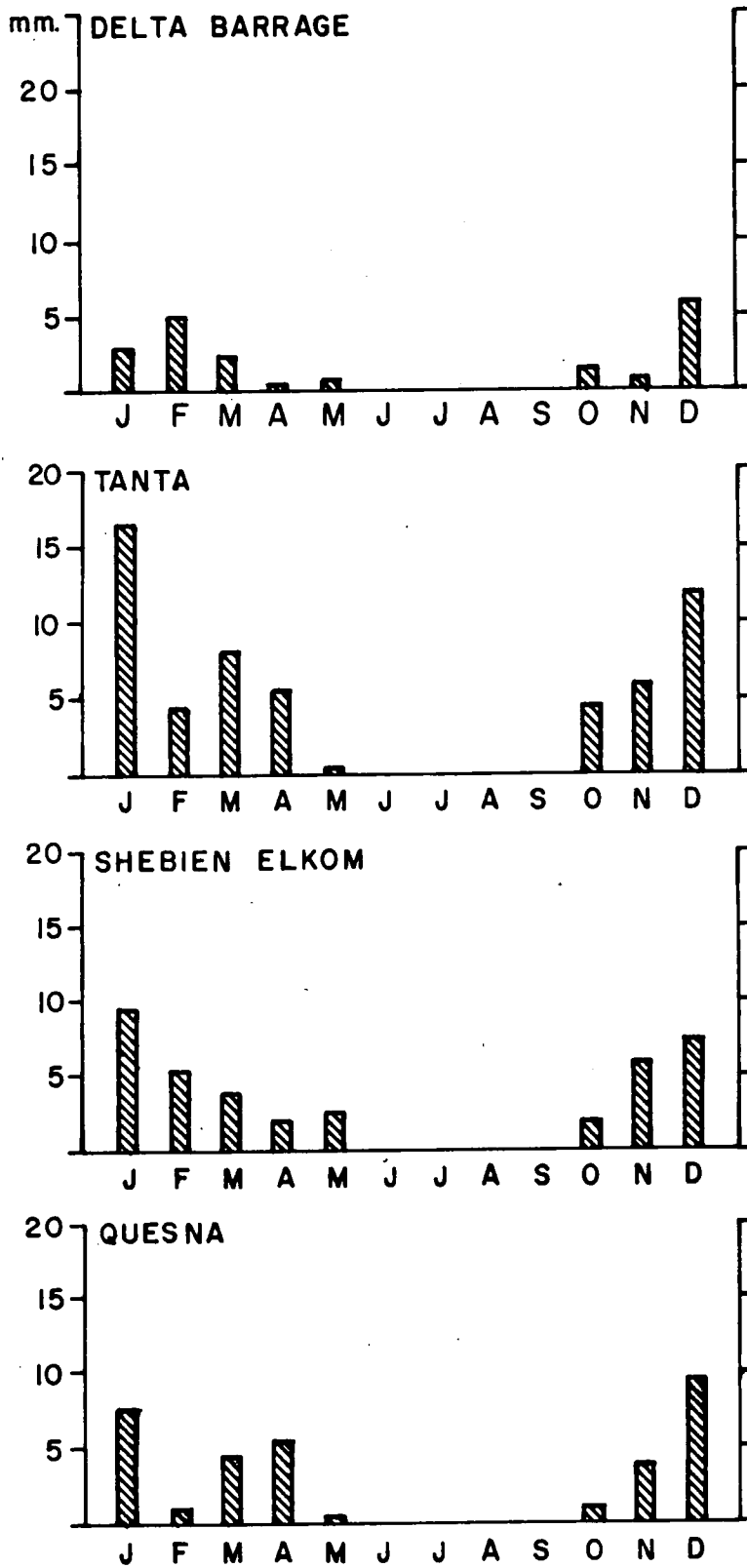
iii. Precipitation : In the whole of the region of the southern delta precipitation is scanty and unreliable. The annual rainfall markedly decreases southwards, averaging in Tanta about 57 mm., Shebien Elkom 38 mm, Quesna 33 mm. and in Delta Barrage only 15.3 mm. (Fig.5.7).

Table 5.3 : Mean Annual Rainfall in the Southern Delta 1949-1979
(In millimetres)

Station	Jan.	Feb.	Mar.	Apr.	May	June	Jul	Aug.	Sep.	Oct.	Nov.	Dec	Total
Tanta	16.5	4.2	8.0	5.7	0.5	0.0	0.0	0.0	0.0	4.3	5.4	12.0	56.9
S.Elkom	9.1	5.6	3.9	2.1	2.4	0.0	0.0	0.0	0.0	2.1	5.9	7.4	37.9
Quesna	7.5	1.1	4.5	5.6	0.4	0.0	0.0	0.0	0.0	1.0	4.0	3.2	32.3
D. Barrage	4.1	5.0	2.5	0.4	0.8	0.0	0.0	0.0	0.0	0.0	1.6	0.9	15.0

Source: Egypt, Ministry of Military Production, op.cit.

Fig. 5.7 Mean Annual Rainfall in the Southern Part of the Nile Delta



The months between November and February experience most of the rainfall, with maximum rainfall mostly from October to May and are of a relatively short duration. The annual mean number of days with precipitation of 1 mm. or more amounted to 28 days in Tanta and 22 days in Shebien Elkom and only 13 days in Delta Barrage. The amounts and the days of precipitation are not enough for agriculture, and with the deficiency of rainfall over the entire country human existence in Egypt obviously depends mainly on irrigation water from the Nile.

iv. Evaporation and relative humidity: Evaporation from irrigation canals and soil surface is high in summer. The average is about 12.2 mm/day in Quesna, 11.1 mm/day in Tanta and lower in Shebien Elkom with about 7.5 mm/day. In winter it is lower (between 2.7 and 3.5 mm.). The annual average is about 4.7 mm/day in Shebien Elkom and 6.8 mm. in Tanta.

The relative humidity is high in all areas of the governorate. The annual average is about 60-66 per cent. The highest humidity is during winter months and it is often more than 65 per cent with the northerly winds. But during Khamasin winds it is as low as 15 per cent, and during the Khamasin damage occurs on wheat, barley and vegetables as a result of the increasing temperature and decrease of relative humidity.

Taking into consideration the climate and physiographical data provided it can be safely said that without the Nile, Menoufiya in particular and Egypt in general would constitute a desert.

5.5 Artificial Irrigation

Agriculture in Menoufiya depends on artificial irrigation using water from the Nile. Since 1833, all the lands were converted to perennial irrigation; many canals were dug throughout the governorate to

carry the water to the fields. These canals give each farmer a fixed water share on rotation of the watering days and closing days (in order to have irrigation water judiciously distributed among the various canal systems).

Water use in the region is controlled by different seasons and the kind of crops under cultivation. In Menoufiya it is estimated that about 1,751 cu.m. of water per feddan are necessary for winter crops, 2,303 in autumn crops and 2,654 cu.m. per feddan in summer and spring crops. The average of feddan requirement of water is 2.214 cu.m. feddan per year, and it is less than the average of the whole of Egypt (3,275 cu.m./feddan). (13)

Table 11 (in the appendix) shows the recommendations made by the Ministry of Agriculture regarding water use and requirements in the region. The highest requirement of water is for the summer vegetables, orchards and cotton. After assessing the cultivated area of crops, it is easy to calculate the total water requirement of Menoufiya per year or season.

Water distribution within the governorate is being performed by an imposing network of canals. A distributary canal can water about 1,000 to 10,000 feddans depending on its length and capacity. The total length of irrigation canals in Menoufiya (Table 5.4) is about 1,788 km. and they provide water to an area of 319,770 feddan. One kilometre of canal waters about 180 feddans of the cultivated area, but this average differs from one district to another according to the number of main canals.

Table 5.4 : Length of Irrigation and Drainage Canals in Menoufiya, 1980

Districts	Cultivated area (feddans)	Length of canals km	km/fed.	Length of drainage km	km/fed.
Shebien Elkom	36,928	189.60	194.8	80.91	465.5
Ashmoun	63,711	328.16	194.1	132.24	481.8
Bagour	34,556	459.48	75.2	72.31	478.0
Berket Elsaba	24,642	109.38	225.1	51.60	477.6
Shohada	31,495	138.76	227.0	70.71	446.1
Tala	40,622	159.20	255.2	106.62	381.0
Quesna	42,216	179.38	235.3	95.36	443.0
Menouf	45,600	233.55	204.2	115.51	394.8
Total	319,770	1788.32	178.8	725.10	441.0

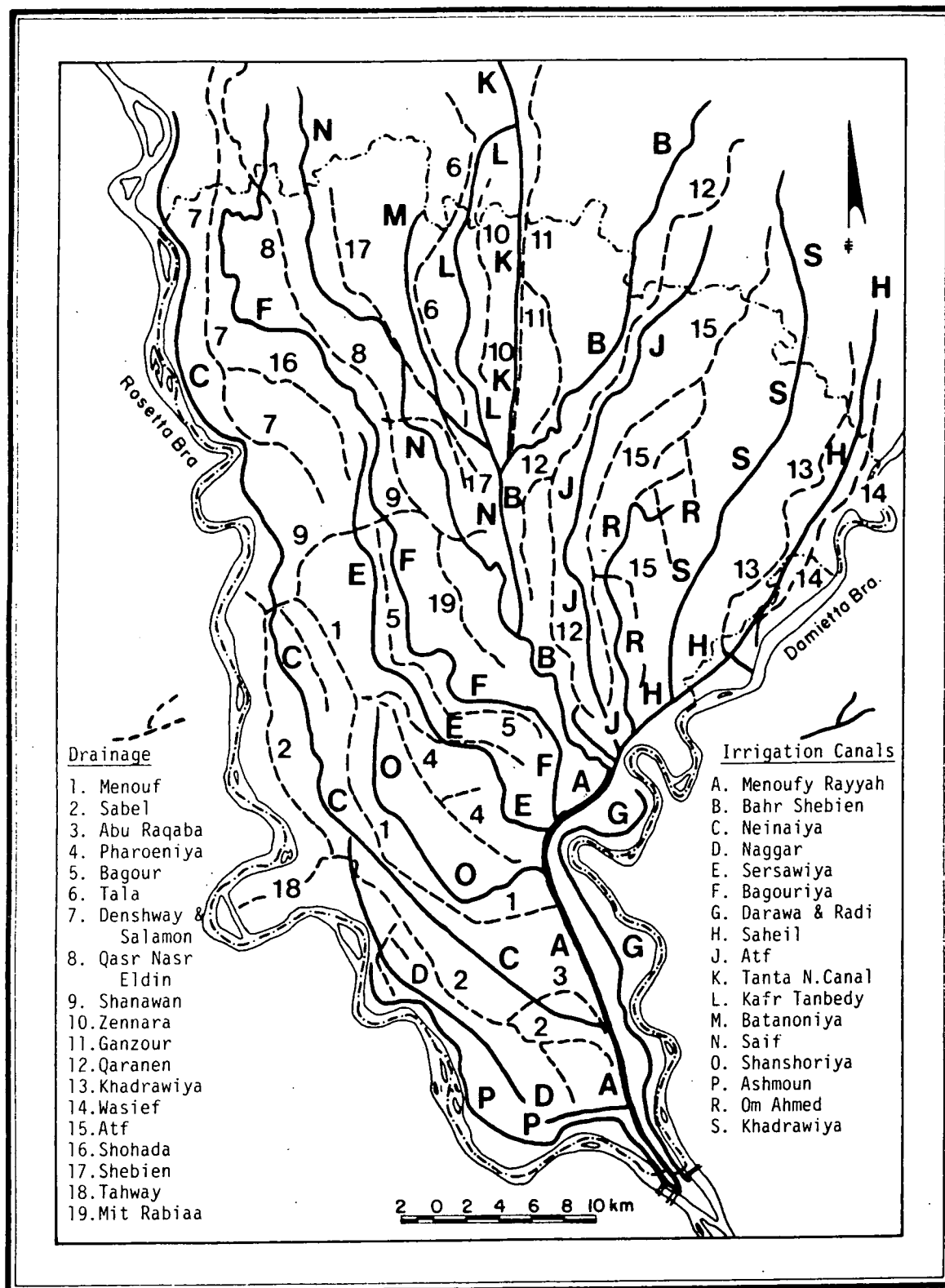
Source: Ministry of Irrigation, Province of Menoufiya's Irrigation, Canals and Drains in Menoufiya, Shebien Elkom, 1980, Unpublished data.

The major irrigation canals in Menoufiya as shown in Fig.5.8 are as follows:

1. Damietta and Rosetta branches of the Nile irrigate the adjacent lands of Ashmoun, Menouf, Shohada (Rosetta branch), Bagour and Quesna districts in addition to Ashmoun (Damietta branch). The level of the Damietta branch is higher than that of the Rosetta by nearly two metres, as the region of mid-delta slopes generally from east to west. Most of the irrigation canals in Menoufiya begin at the Damietta branch and slope north-westwards to end in the bogs of the prairie area in the north of the delta. ⁽¹⁴⁾

2. Rayyah Menoufy (A) : "rayyah" is an Arabic term and means a large capacity feeding canal which carries water directly from the Nile to most of the canals of the delta. Rayyah Menoufy carries water to the canals (teraa) of Naggar (D), Neinaiya (C), Shanshouriya (O),

Fig 5-8 THE MAIN IRRIGATION AND DRAINAGE CANALS IN MENOUIFYA



Source: Province of Irrigation, Shebien Elkom, Irrigation and Drainage Canals in Menoufiya (Unpublished Data).

Sersawiya (E), Bagouriya (F), Saheil (H), Khadrawiya (S), Atf (J) and Om Ahmed (R).

3. Bahr Shebien (B) is considered the extension of Rayyah Menoufy. It carries water to the canals of the middle and north of Menoufiya such as Bahr Saif (N), Kafr Tanbedy (L) Batanouniya (M) and Tanta navigation Canal (K).

4. Darawa and Ashmoun Canals (G & P) carry their water from the Nile to irrigate some lands parallel to the branches of the Nile in Ashmoun and Bagour districts.

It is worth noting that there are about 270 canals (teraa) which take their water from the above mentioned canals to feed smaller canals called miska and tarkib, which are designed for irrigation of fields (Plate 2).

Irrigation is flush - "raha" - all the year through, except where lift is needed either for lands at high level. Methods of water lift are varied. They differ with change in land level and size of holdings and consequently availability of capital. They range from the ordinary sakia (waterwheel) and the "tambour" (Archimedean screw) to the centrifugal pumps.

Except for the Rayyah, Bahr Shebien and the navigation canals, all the canals of Menoufiya are not full of water every day but according to an alternate system where some canals have water for 5 days and are closed 10 days during the period of 21st of August to 27th of November (Nili period), and between 12th of March to 15th of April (Spring period). In summer from 16th of April to 20th of August, the canals have water for six days and are closed twelve days. Also in winter from 28th of November to 11th of March, the cycle is repeated. The purpose of the rotation system is to ensure fair distribution and economical use of

Plate 2 : Some types of irrigation canal



(A)
Navigation
canal



(B)
Teraa



(C)
Tarkib

water, together with putting the farmer into the habit of employing only needed water amounts for different crops in addition to serve water to other areas of the delta.

During the period from first to 18th of January all the canals and Rayyah are closed because of the decrease of water level in the Nile. This period called "Sadda" is the time for executing all the conservation work as barrages; construction of bridges and desilting of canals.

Perennial irrigation together with intensive yield regulation have resulted in a greater importance being attributed to the drainage system. The irrigation canals are filled with water for most of the year in addition to the flood irrigation system (Plate 3), causing a subsoil impregnation with water which, in turn, brings about a steady lifting of the groundwater which has already reached a level of 150 cm. below the surface.

A fair number of drainage canals had been dug in all the area of Menoufiya. The role of drainage in improving crop yield is enormous. An increase of crop yield in the governorate has been realised after the installation of draings. Maize production showed an increase of about 50 per cent, wheat 20-30, rice and cotton 40-50 per cent. (15)

The total length of the drainage canals in Menoufiya is 725 km., which means that about every 440 feddan of the cultivated land should have only one kilometre of drains. The major drainage canals are illustrated in Fig.5.8. The main drains which have a length of more than 12 kms are : Menouf (1), Sabel (2), Pharoeniya (4), Bagour (5), Tala (6), Denshway and Salamoun (7), Qasr Nasr Eldin (8), Shanawan (9), Ganzour (11), Qarenen (12), Khadrawiya (13), Atf (15) and Shebien (17). These drains receive their water from many small drains (less than 12 km.) and also the water of tile drains.



Plate 3 Flood irrigation is the dominant system in the region, but causes a subsoil impregnation with water.

The government concentrated efforts on introducing tile drainage system (with an average depth of 1.25 metres and usually 25 metres between drains) which saves more lands for cultivation. A great increase in the use of the tile drainage has occurred since 1965, when the total length was 9,100 km. By 1977, it has increased to about 30,000 kms of drains, but by 1980 the majority of the cultivated lands of Menoufiya were under the benefit of both tile and cover drainage, with total length of more than 33,000 kms. (16)

The effect of the tile drainage created a 10 per cent increase in crop yield in the first year. In the second year this rose to 15 per cent for cotton, rice and wheat and 20 per cent for maize. In subsequent years the yield increase settled to 20 per cent for cotton, rice and wheat and 27 per cent for maize. (17)

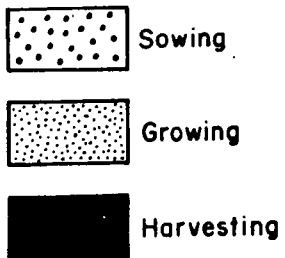
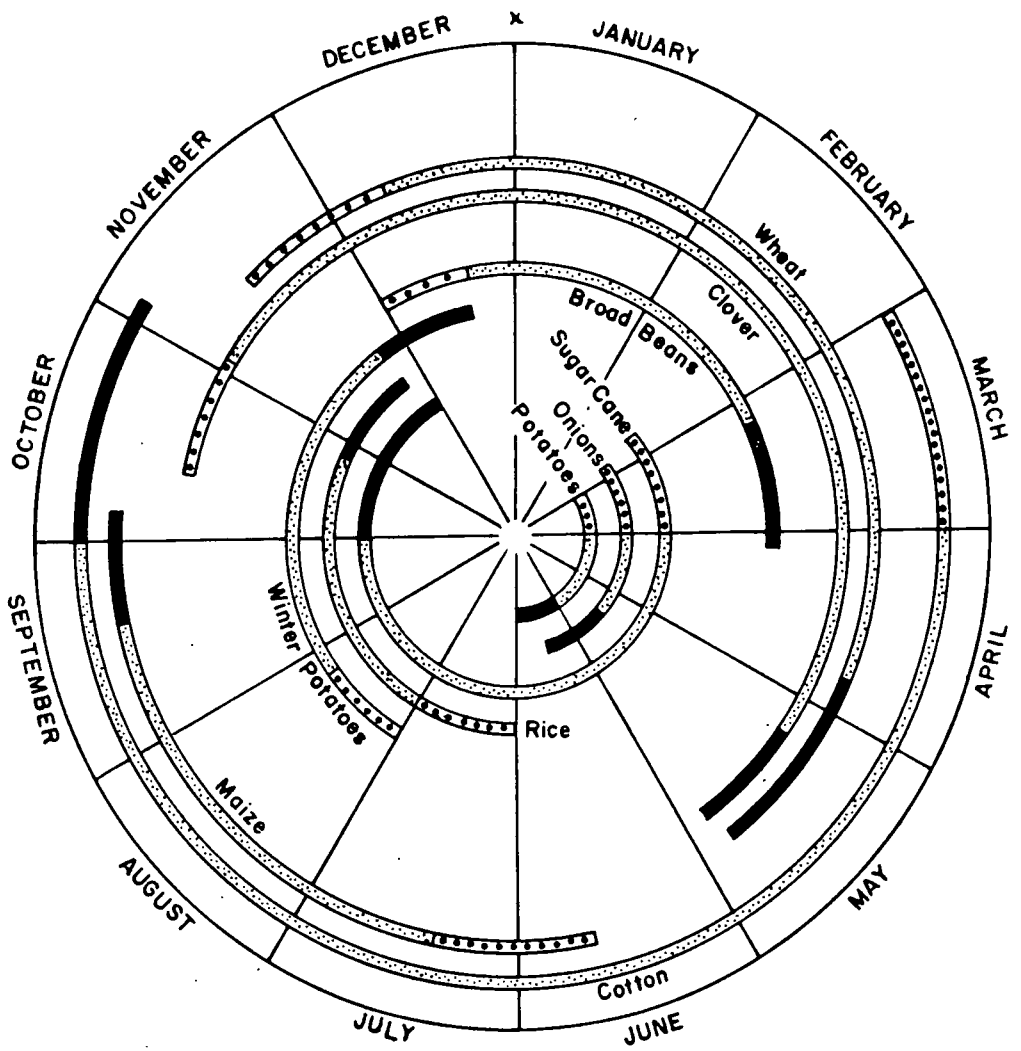
5.6 The Agricultural Seasons and Crop Rotation

The fertile soil, good climatic condition and perennial irrigation in addition to the high density of population leads to the possibility of cultivation of more than two crops in a year in Menoufiya. There are three growing seasons in which particular crops can be grown in a particular season : the winter season "Shitwi", the summer season "Seifi", and the autumn season "nili".

The winter crops grown from November to April are mainly wheat, barley, beans, onions and clover. The most important summer crops grown from April or May to October are cotton and maize. Autumn crops were omitted from the area of Menoufiya because of ministerial decision in 1968, except for some fodder crops with an area of 2,200 feddans. (18)
Vegetable cultivation belongs to all three seasons.

The periods of sowing, growing and harvesting of major crops in Menoufiya are illustrated in Fig.5.9. Wheat planting usually begins

Fig 5-9 CROP SEASONS IN MENOUEFIYA



between 15th November and 10th December and it is ready for harvest by late May or early June. Maize is always planted between 20th June and 10th of July and is ready for harvest in September and October. Beans are sown in late November and is ready for harvest from the 10th March to the 5th April. Cotton planting is usually between March and April and picking starts in October, while rice is sown in July and harvested in November.

Rotation of crops is an essential element in Menoufiya as a region of multiple cropping. Two systems of rotation are practised, the biennial system and triennial system. The main crop of the agricultural rotation is cotton.

The biennial system is characterized by a given crop which is grown on the same plot every other year. According to this system, the first year from November to February, the land is cultivated by clover snatch crop until cultivated with cotton as a summer crop. In the second year from November to April, the land is cultivated with either wheat or barley, followed by maize as a summer crop. This system is only prevailing on the lands of very high productivity.

The triennial crop rotation is the most favoured practice at present. It permits three crops a year and keeps the land under continuous cultivation. The land is divided into three equal plots. The first is either cultivated with clover followed by cotton. The second is taken by beans and/or clover. These crops are succeeded by maize or rice. The third plot is sown with wheat or barley followed by maize.

Both systems of rotation are applied in Menoufiya as well as in the delta. The determining effect on the fertility of the soil by multiple cropping, is resolved by this system of rotation to maintain soil fertility in which two different types of crops are grown alternately.

5.7 Agricultural Co-operatives

One of the most distinctive features of the Egyptian agrarian reform in 1952 was the creation of the supervised co-operatives, which covered almost all of rural Egypt by the 1960's.

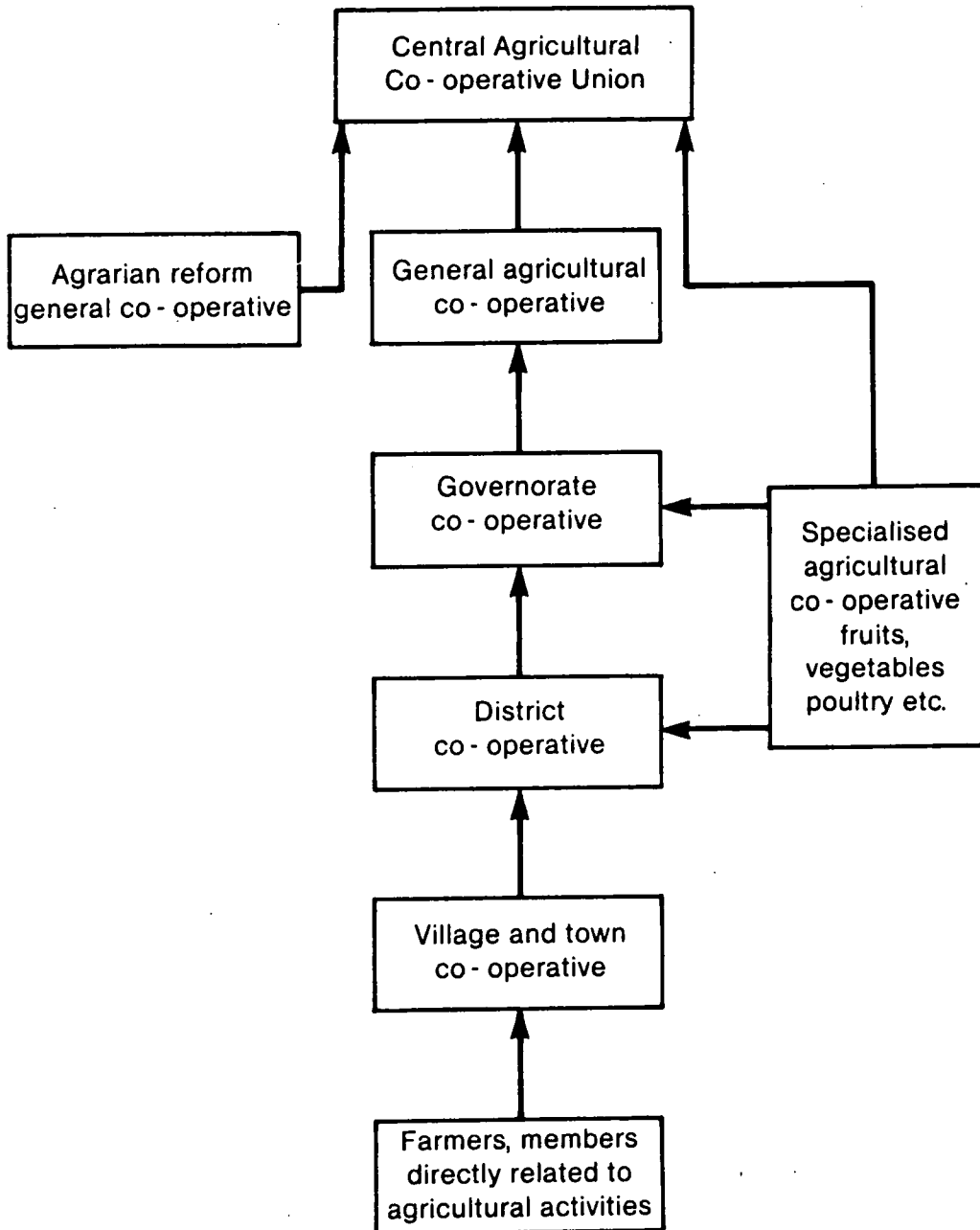
In Menoufiya there are 285 agricultural co-operatives, in addition to 16 co-operatives of vegetables and fruits (one), of animal production (five), and of poultry (ten). Since 1952 the agricultural co-operatives have increased by 4 times in number, their membership by over seven times and their capital by about 14 times. (19)

As a result of the rapid growth of the co-operative movement, Menoufiya, as elsewhere in Egypt now possesses an elaborate and highly complex co-operative system (Fig.5.10). The organisational structure of the co-operatives is pyramid shaped with the local or village society at its base, the co-operative union at the top and three middle strata corresponding to the country's administrative hierarchy, the district, the governorate, and the country as a whole. (20)

The co-operative societies are considered the nerve centre of agricultural production in Egypt as a whole. Providing a suitable mechanism for its intervention in agriculture at the grass roots level, the Government has tended to load the co-operatives with the responsibilities of credit and agricultural production inputs, developing agricultural mechanization capacity through crop consolidation, and above all marketing of member's produce.

i. Provision of agricultural inputs : One of the main objectives of the co-operatives is to influence agricultural productivity through the provision of requisite inputs, fertilizers, pesticides, seeds, technical advice, modern agricultural machinery, and above all financial help (credit). The interest on the loans was fixed at a low rate of 4 per

Fig. 5-10 Co - operative Structure in Egypt



cent, and the loans, such as seeds, fertilizers etc. were made to each farmer according to the area of their farms and the type of crop planted. (21)

In 1981, the co-operatives of Menoufiya offered about 5.70 million Egyptian pounds, to the members as a credit, (22) in addition to distributing about 112,000 tons of Azote fertilizers and 35,000 tons of Phosphate fertilizers according to the needs of the crops (as shown in Table 12 in the appendix).

Unequal distribution of credit among the members is indicated by the fact that the small peasants (less than 3 feddans) who represent the great majority (91.2 per cent) of debtors, and the most needy, get about half of the credit, while the medium and large landowners get the other half. The system has favoured large farmers rather than small and poorer peasants, the large landowners finding in the credit a cheap source of finance to enhance their wealth by buying more land, machinery, livestock etc.

ii. Land and crop consolidation : The continuous fragmentation of land holdings as a result of a rapid population growth and decreasing of cultivated land is considered one of the great problems in increasing agricultural productivity. The co-operatives have attempted to overcome the problem by treating the majority of cultivated land as a single unit which they divided into three blocks, each of which was planted with a single crop according to the phase of the triennial crop rotation. Though farmers retained both ownership and responsibility for their own plot, a number of important farming operations which could be performed more efficiently on a large scale basis, such as mechanised ploughing, crop fumigation and pest control were done by the co-operative.

The advantages of this system became immediately apparent. Crop

consolidation saved land and may have increased yields. It made it possible to avoid certain losses caused by the contiguity of different crops with varying irrigation requirements in a single block of land, which often resulted in the transmission of pests and diseases from one crop to another. (23)

The majority of poor and small land owners, found it difficult to diversify their products. Their small plots of land would inevitably fall within a single block and they would be obliged to cultivate all their land with a certain crop a year and have to depend on the open market for satisfaction of their needs. This situation has resulted in the creation of an active black market, especially in cereals, rice and fodder. Many small farmers are hiring land for a specific season to grow a specific crop at rents much higher than the official rate. Therefore, the system was strongly resisted by the small and poor farmers. (24)

iii. Marketing: The third duty of the co-operatives is marketing the agricultural crops (especially the cash crops) such as cotton, rice and potatoes. By the mid 1960's, the larger part of these crops were marketed through the co-operatives, in order to ensure the supply of the main crops necessary for the manufacturing and export sections. At the same time, the government created the system of compulsory deliveries, whereby the farmers were obliged to deliver a proportion of their production of grains at a lower price on the free market. The objective of this system to ensure a sufficient flow of grains to feed the urban population.

Most of the farmers are disaffected with the co-operatives marketing, where the majority of them are hiring lands (65 per cent) in small size plots. It seems that they are barely making a satisfactory living or providing enough food for their families.

The only way to improve the co-operative marketing is to omit the system of compulsory deliveries, especially from the poor farmers who have less than 3 feddan, and to increase the prices of the agricultural crops to make a mutual competition with the open market.

5.8 Summary

Menoufiya as a Nile deltaic region has an excellent environmental condition. Most of the land of the region is formed of the alluvial deposits of the Nile. The structure includes three main layers; thick layer of clay at the surface followed by fine sand and coarse sand and gravel underneath. The thickness of alluvium is so great that none of the geological bores strike the rocky bottom despite most of these bores having been more than 150 metres below the sea level. The general slope in Menoufiya is north westward. The land is nearly flat with a slope of 1:10000. A series of sand ridges known as "turtle backs" are a feature of the delta in Quesna district and are generally seen 10-12 metres above the surface, with a total area of less than 20 sq.km.

The Nile delta's soils are some of the most fertile soils in the world. The overwhelming majority of the soils of Menoufiya are fertile and can produce more than two crops per year. They are recent Nile alluvial deposits and their average thickness is more than 10 metres. The land has a normal salinity and the watertable depth is more than 150 cm from the surface. More than 80 per cent of the land of Menoufiya has productivity higher than Egypt as a whole.

Climate of Menoufiya as a Nile deltaic environment is advantageous to agriculture. The warm temperatures permit year-round plant growth. With the deficient rainfall in the region, human existence obviously depends mainly on irrigation water from the Nile. The introduction of perennial irrigation by the Nile and its canals enabled the area to be

a main agricultural region in Egypt. There are more than 300 irrigation canals which run through the land of Menoufiya. The irrigation canal network system is important for watering the land of the delta in addition to the region.

Menoufiya has a hydrologically stable environment, where the overwhelming majority of irrigation canals were established in the period of Mohammed Ali Bash (1833) i.e. 150 years ago, and have not changed substantially except for (a) extending of some canals in Quesna district to irrigate reclaimed land of the sandy islands (Khadrawiya and Sahiel); (b) widening and transferring some canals into navigation canals such as Tanta, Bagouriya and Neinaiya canals; (c) establishing of many canal locks and bridges. In this respect Menoufiya is usual in the Nile Valley and Delta region. There have been many more changes resulting in the harnessing of the Nile.

The perennial irrigation by ^{flooding?} floating the lands increases the watertable which reached a level of about 150 cm below the surface. Therefore an efficient drainage system is an urgent necessity. There are many drains which pass throughout the land of Menoufiya with a length of about 725 kms, in addition to more than 30 thousand kms. of tile drains which are created to save many areas for agriculture. The installation of the drainage system in the region started in 1938, but the majority of open and tile drains have been dug since 1960. It is no wonder that the yields of crops have increased as a result of the installation of drainage in the region.

The former excellent environmental condition, in addition to the high density of population, leads to the possibility for agricultural production all the year round. Most crops can be grown successfully and an increasingly wide variety of crops are grown as a result of using a

good system of rotation of crops. The triennial crop rotation is the most favoured practice and permits three crops a year and keeps the land under continuous cultivation.

The system of co-operatives succeeded in creating an alternative organization for rural development. It plays a great part in helping the small farmers to face the greed of the large landowners. The main objectives of the co-operatives are : provision of agricultural inputs; organization of agricultural production and mobilization of agricultural crops. The co-operatives were no doubt successful as an instrument of government policy to give a hand to the poor farmers and to increase agricultural production, but they have given very little to the small and poor farmers. They will do better in increasing agricultural production if the government does its best to improve the defects of this organization, keeping in mind the benefit to the small peasants who constitute the overwhelming majority of the members.

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CHAPTER SIX

PROBLEMS OF LAND UTILIZATION

6.1 Introduction

Menoufiya is facing a great problem in increasing its food production, caused by the continual population increase, which adds to the pressure on the limited cultivated land. As a result, the density of population in the governorate is one of the highest densities in Egypt as a whole. In addition the density has created many problems in the utilization of land.

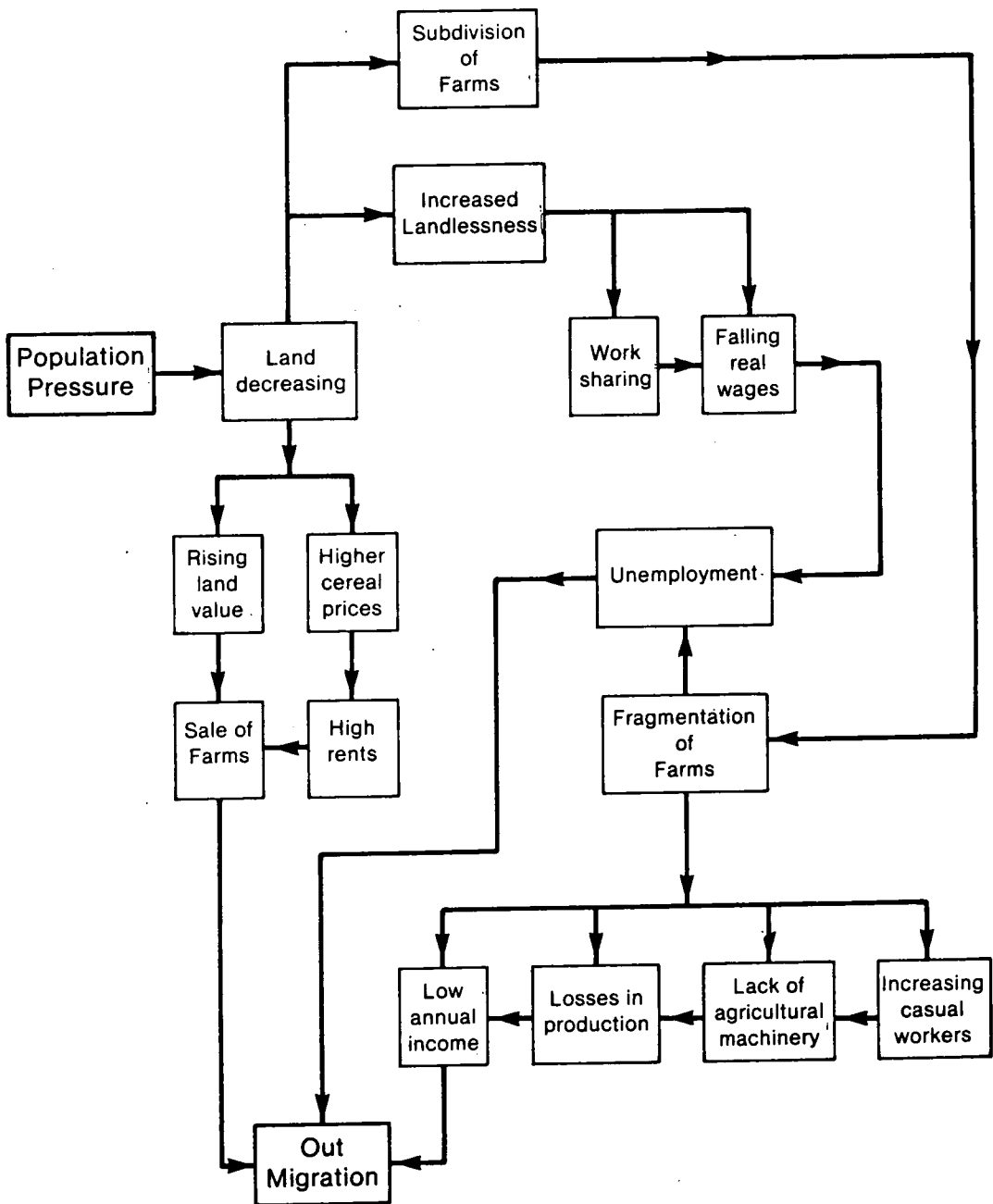
A model (Fig.6.1) is used to identify the main problems of the cultivated land of Menoufiya as an over-populated region. It shows that the decreasing land is a result of the population pressure on the limited acreage of land, which leads to the subdivision of farms and increasing rates of landlessness. As a result, fragmentation of farms, increasing numbers of casual workers, rising land values and low annual incomes of farmers are salient phenomena. All these elements encourage some of the people to migrate to the large cities in search of other jobs. The model also shows the symptoms of population pressure on the limited acreage of arable land which can be classified as follows:-

- decreasing cultivated land, which plays a great part in raising both the land values and the prices of agricultural products;
- fragmentation of land holdings, which leads to disguised unemployment as a result of increased landlessness; and
- limited machinery, which restricts agricultural production.

6.2 Decreasing Cultivated Land

The total area of Menoufiya is 365,025 feddans, but the cultivated land area is 319,771 feddans. This figure means that more than 85 per

Fig 6.1 MODEL OF POPULATION PRESSURE SYMPTOMS ON THE LIMITED ARABLE LAND OF MENOUIYA (BEFORE 1980)



Source: Modification of Grigg, D. B. The Dynamic of Agricultural Change. p.28

cent of the total area of Menoufiya is considered cultivated land. Barren land is nearly non-existent, and there is no chance of increasing the cultivated land area. Therefore the effect of population pressure on the cultivated land is always increasing year after year.

Table 6.1 : Decreasing Cultivated Land of Menoufiya 1929-80

Years	Cultivated Land area (feddan)	Built-up area	
		in feddan	% of total area
1929	341,700	23,325	6.4
1939	337,000	28,070	7.7
1950	336,127	28,898	7.9
1960	330,100	34,870	9.6
1970	324,719	40,306	11.0
1980	319,771	45,254	12.4

Source : Ministry of Agriculture, The General Agricultural Censuses of Egypt, 1929, 39, 50 and 1960. The data of 1970 and 1980 from: Province of Agriculture, Shebien Elkom, unpublished data.

The price of increasing population and continuous urban sprawl, together with the construction of many agricultural and industrial projects must be measured in terms of the loss of previous agricultural land. The cultivated area has declined from 341,700 feddans in 1929 to 319,771 feddans in 1980 as shown in Table 6.1. The seriousness of the problem is revealed by the fact that after a period of about 50 years the decline of the cultivated land of Menoufiya amounted to 21,929 feddans, with an average annual decrease of 430 feddans.

The built-up area increased from 23,320 feddans in 1929 to 45,254 feddans in 1980, but this increase was irregular during the intercensal periods. The period of 1960-80 saw the main absolute decrease

of the cultivated land, because of the establishment of some industrial projects, urban sprawl, the digging of a large number of drains and the extension of some roads. All of these projects had been established in the agricultural area (Plate 4).

The problem of the decrease of cultivated land varies from one district to another, depending on the rate of urban and agricultural development in each of them. During the period of 1970-80, the total decline of agricultural land of Menoufiya was about 5,000 feddans, half of which was in the districts of Shebien Elkom (1,471) and Berket Elsaba (1,188 feddans). It is not surprising to see that the largest decline of cultivated land was in the area of Shebien Elkom district where the majority of services and industries concentrate in the capital of the governorate. The urban sprawl of Shebien Elkom City is not limited in its area, but extends to the surrounding villages.

Table 6.2 : The Decrease of Cultivated Land In the Districts of Menoufiya, 1970-80 (in feddans)

Districts	1970	1975	1980	Total Decline
Shebien Elkom	38,399	37,879	36,928	1,471
Ashmoun	63,810	63,801	63,711	99
Bagour	34,756	34,656	34,556	200
Berket Elsaba	25,830	24,811	24,642	1,188
Shohada	32,126	31,843	31,496	630
Tala	41,120	41,114	40,622	498
Quesna	42,818	42,808	42,216	602
Menouf	45,860	45,744	45,600	260
Total	324,719	322,656	319,771	4,948

Source: Province of Agriculture, Shebien Elkom, Unpublished data.



Plate 4 : The urban sprawl at the expense of the agricultural land has led to a reduction in cultivated land.

Berket Elsaba is the second district which has suffered from a large decrease in cultivated land during the same period amounting to 1,188 feddan. Most of this land was used in the establishment of an asphalt factory to serve the motorway between Cairo and Alexandria, and in the remarkable extension of Berket Elsaba town.

The industrial zone which had been established in Qesna in the late 1970s on about 300 feddans,⁽¹⁾ was in the area of the sandy islands so the cultivated land of Qesna did not experience a great decrease.

The lowest decrease of cultivated land was in Ashmoun and Bagour districts because of the small number of industrial projects and services and limited urban sprawl owing to the high level of out-migration.

Table 6.3 : The Total and Percentage of Built-up Area in Menoufiya, 1980
(in feddan)

Districts	Total Area	Built-up area	
		Total	%
Shebien Elkom	43,896	6,968	15.8
Ashmoun	71,389	7,678	10.7
Bagour	39,264	4,708	11.8
Berket Elsaba	28,505	3,863	13.5
Shohada	36,549	5,054	13.8
Tala	44,437	3,815	8.9
Qesna	48,612	6,396	13.2
Menouf	52,373	6,773	12.9
Total	365,025	45,254	12.4

Source: Province of Agriculture, op.cit.

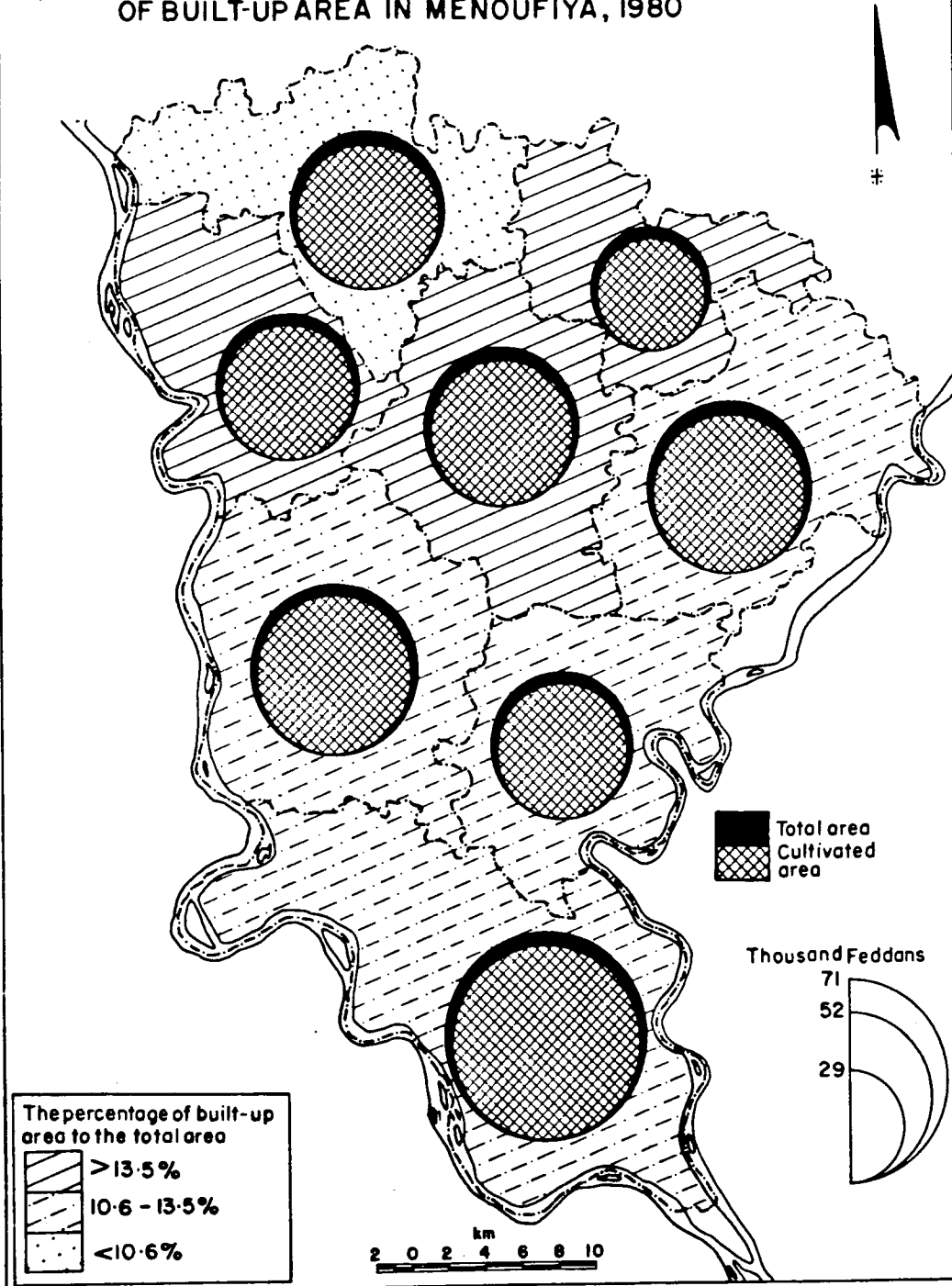
Table 6.3 and Fig.6.2 show that the majority of the land of Menoufiya is used as agricultural land, the built-up area being about 12.4 per cent of the total area. This percentage is highest in those districts which have seen most construction, and where the percentage of the cultivated land has decreased. The only possible interpretation is that the overwhelming majority of rural and urban extension projects grow at the expense of the cultivated land.

Because the demand for farm land in Menoufiya exceeds its supply, land values rise. Both rents and the sale prices of land have shown a pronounced upward trend since the period of rapid population growth between 1960-80. The price per feddan of cultivated land increased from about 1,600 Egyptian pounds in the 1960's to about 4,200 in 1980 (more than 150 per cent). The price of cultivated land which was used for village sprawl has experienced an absolute increase. The price of a square metre of land rose from 0.80 to about 7-10 Egyptian pounds (more than 800 per cent). The land value is even higher in the urban sector.

As a result of the population pressure on the decreasing land area, the prices of agricultural products have risen. The demand for food outran supply in the region as population grew rapidly and this was expressed in rising food prices. Considering the prices of 1976 = 100 per cent, the prices of 1977 and 1982 were very much higher : cereal prices increased to 172% in 1977 and to 253% in 1982; dry beans to 206 and 579; vegetables to 290 and 545; dairy products to 261% and 600%; meat and fish to 270% and 763%; fruits to 301% and 1584. (2)

It is worth noting that the prices are rising continuously and sharply. The prices of 1978 were higher than 1977, for example, by between 8-30 per cent (wheat 14, dry beans 8, vegetables 20, maize 28 and rice 30 per cent...)⁽³⁾ The prices of some food products, although high in the urban sector, are even higher in the rural sector, where the surplus of

Fig 6-2 THE TOTAL CULTIVATED AREA AND THE PERCENTAGE OF BUILT-UP AREA IN MENOEFIYA, 1980



farm production is limited and rich farmers sell their products at higher prices than those fixed by the Ministry of Internal Commerce (as the supervision of the government on prices is weak).

6.3 Fragmentation of Land Holdings

A major determinant of spatial variations in farm size is population density, and in particular the density of the agricultural population. The population of Menoufiya grows on a limited acreage of arable land, therefore farms have been subdivided, Over time the average farm size will fall.

Where farms are subdivided as a result of population growth there is often an accompanying fragmentation. Farms which originally consisted of a contiguous block of fields are split up over a few generations and the fields of one farm become increasingly fragmented; furthermore, the average size of field has declined.⁽⁴⁾

Table 6.4 : Percentage of Numbers and Area of Farmholdings According to the Number of Plots, 1980

Area in Feddans	One plot		Two plots		Three plots		Four + plots		Average area of farm feddan
	No.	Area	No.	Area	No.	Area	No.	Area	
< than 1	<u>56.4</u>	<u>45.1</u>	32.4	38.9	8.3	11.5	2.9	4.4	0.3
1 : 3	12.9	10.6	<u>32.6</u>	<u>29.6</u>	26.3	27.0	28.2	32.6	0.6
3 : 5	4.1	4.0	13.8	13.2	24.6	23.8	<u>57.5</u>	<u>58.8</u>	0.9
5 : 10	3.6	3.6	8.4	8.2	15.6	14.9	72.4	73.3	1.2
10 : 20	6.2	6.2	10.8	10.8	12.5	12.3	<u>70.5</u>	<u>70.7</u>	2.2
20 and more	14.2	18.6	12.1	11.0	9.6	9.3	<u>64.1</u>	<u>39.1</u>	7.1
Total	25.1	<u>9.4</u>	28.4	<u>20.1</u>	19.6	<u>20.1</u>	26.9	<u>50.0</u>	0.8

Source: Province of Agriculture, Shebien Elkom, Unpublished data.

The problem of fragmentation of landholdings does not mean that the average ownership is as little as 1.4 feddan, but that these ownerships are scattered across many plots. About 50 per cent of the farms are subdivided in 4 and more plots (Table 6.4). That means that the farmer wastes energy moving between his scattered plots, particularly at the time of sowing, watering, weeding and harvesting, with the results that some cultivators construct a kind of temporary frugal abode wherein they stay when looking after the more distant plots.

A maldistribution of ownership since the establishment of the system of private land in the second half of the 19th Century, is the first element of fragmentation in the whole of Egypt. The concomitant emergence of a powerful class of large landowners led to a heavy concentration of land ownership on the one hand and the continued fragmentation of small landholdings on the other.

The period between 1952 and 1969 has seen a great increase of land fragmentation, when three new land reform laws were passed with the expressed purpose of lowering the ceiling on large estates, which by 1969 was set at 50 feddans per person, not to exceed 100 feddans per family.⁽⁵⁾ As a result of those laws about 12,375 feddans were taken over and distributed to 4,688 peasants in Menoufiya.⁽⁶⁾

The problem of fragmentation increased after the land reform laws as shown in Table 6.5, when the number of farms in the category 1 - 3 feddans nearly doubled during the period 1950-80. By contrast the number of farms of 20 feddans and more, decreased from 23.0 to only 7.2 per cent.



Plate 5 : Small strip of cultivated land along a canal;
it is cultivated by a poor farmer.

Table 6.5 : Changes of the Pattern of Farm Size In Menoufiya 1929-80.
(per cent)

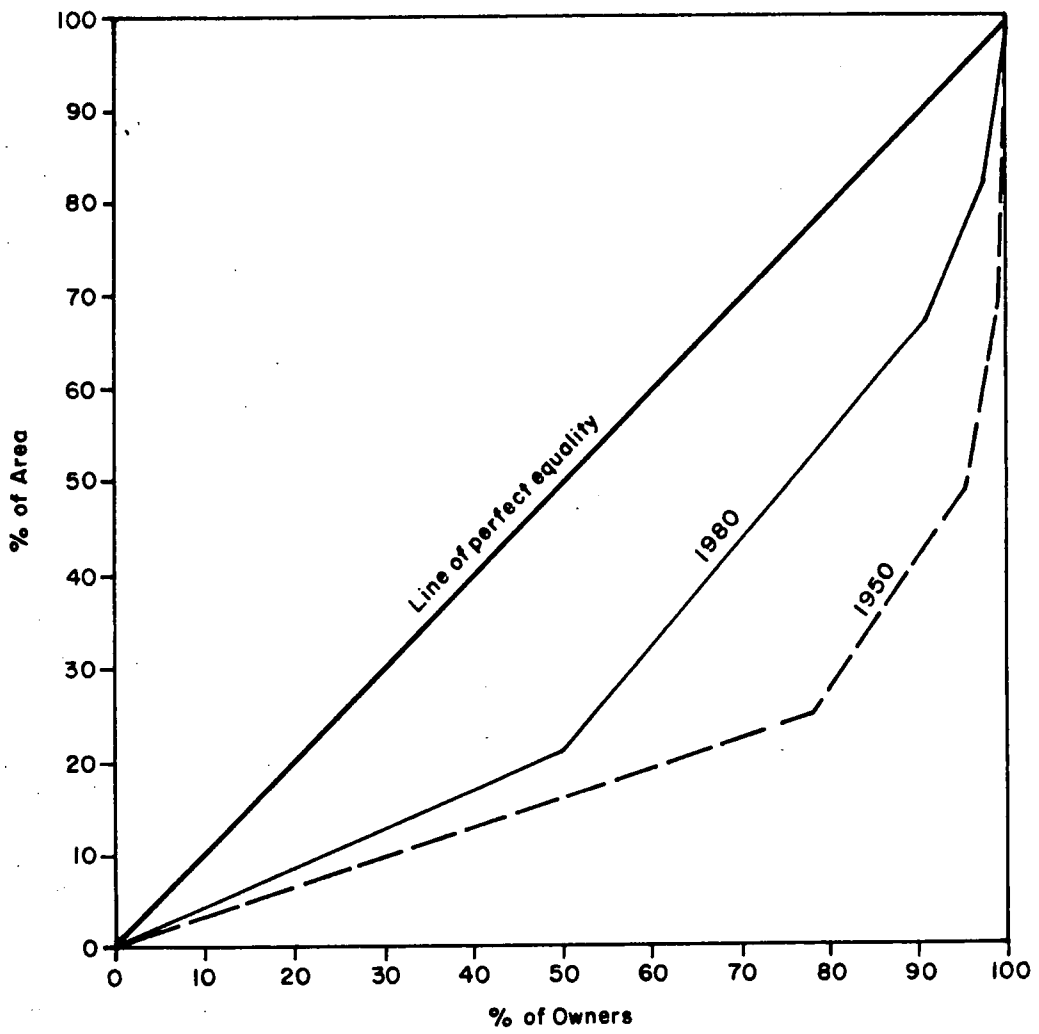
Area in Feddans	1929	1950	1980*
Less than 1	11.7	24.7	21.0
1 - 3	26.0	24.3	46.5
3 - 5	12.9	10.0	14.3
5 - 10	12.7	10.0	7.7
10 - 20	8.5	8.0	3.3
20 and more	28.2	23.0	7.2
Total	100.0	100.0	100.0

* After promulgation of Land Reform laws in 1952, 61 and 1969.

Source: Ministry of Agriculture, The General Agricultural Censuses of Egypt of 1929 and 1950.
The data of 1980 from:-
Province of Agriculture, Shebien Elkom, Unpublished data.

It is clear from Table 6.5 that the problem of fragmentation is increasing and has actually worsened. The picture of land distribution in Menoufiya in 1980 shows that more land has changed hands than in 1950 (Fig.6.3). For instance, the area controlled by holders of 10 feddans or more has dropped from 108,776 feddans (31 per cent) in 1950 to 33,603 feddans (10.5 per cent) in 1980. Thus it is obvious that land ownership has changed rapidly since the first land reform law was passed in 1952. The government gave the large owners the right to sell land or have it taken over at a compensation rate determined by the government. Many large landholders therefore preferred to sell land on easy terms to peasants. Moreover, every time the government reduced the ceiling, large landholders felt nervous and started selling.⁽⁷⁾

Fig 6-3 LORENZ CURVES FOR LAND DISTRIBUTION IN MENOUIYA, 1950 and 1980



In addition, one should remember that the Islamic inheritance laws in the region entitles all male and female descendants to a share of the inheritance and this contributes to more fragmentation.

In terms of the increasing equality of distribution, it is interesting to note that small farm operators (less than 3 feddans) constituted 91.7 per cent of all farmers in 1980 and controlled 67.5 per cent of the land, while in 1950 they made up 94 per cent. Large owners (5 feddans and more) made up 2.8 per cent of all landowners in 1980 and controlled 18.2 per cent of the land, while in 1950 they constituted 3.0 per cent of all farmers and possessed 41.0 per cent of the land.

The unequal distribution of the cultivated land in Menoufiya in 1980 shows that about 50 per cent of the farmers owned less than one feddan, possessing only 21 per cent of the land, with an average of 0.6 feddans per farmer (Table 6.6). This group constituted the poorest segment of the farmers and deserves to be called the "near landless", receiving the least income among all the farmers. The farm operators who managed between 1-3 feddans formed about 43 per cent of the total farmers with an average of farm size of 1.5 feddans. We estimate that two feddans at least is the minimum farm size necessary for providing subsistence to an agricultural family; it is equivalent to the minimum farm size considered by the World Bank.⁽⁸⁾ However this depends on the kind of crops raised and the productivity of the land. In general, it can be stated that more than two-thirds of the land operators were living below the poverty line in 1980, although land is the main source of income in the Egyptian village.

Table 6.6 : The Pattern of Land Distribution by Size of Farm in Menoufiya, 1980

Farm Size (feddan)	Owners		Holdings		Cumulative		Average size of ownership
	Number	%	Area in Fed.	%	Owners	Hold.	
1	110,693	49.0	67,116	21.0	49.0	21.0	0.6
1 : 3	96,471	42.7	148,645	46.5	91.7	67.5	1.5
3 : 5	12,485	5.5	45,767	14.3	97.2	81.8	3.7
5 : 10	3,898	1.7	24,639	7.7	97.9	89.5	6.3
10	2,420	1.1	33,603	10.5	100.0	100.0	13.9
Total	225,967	100.0	319,771	100.0	-	-	1.4

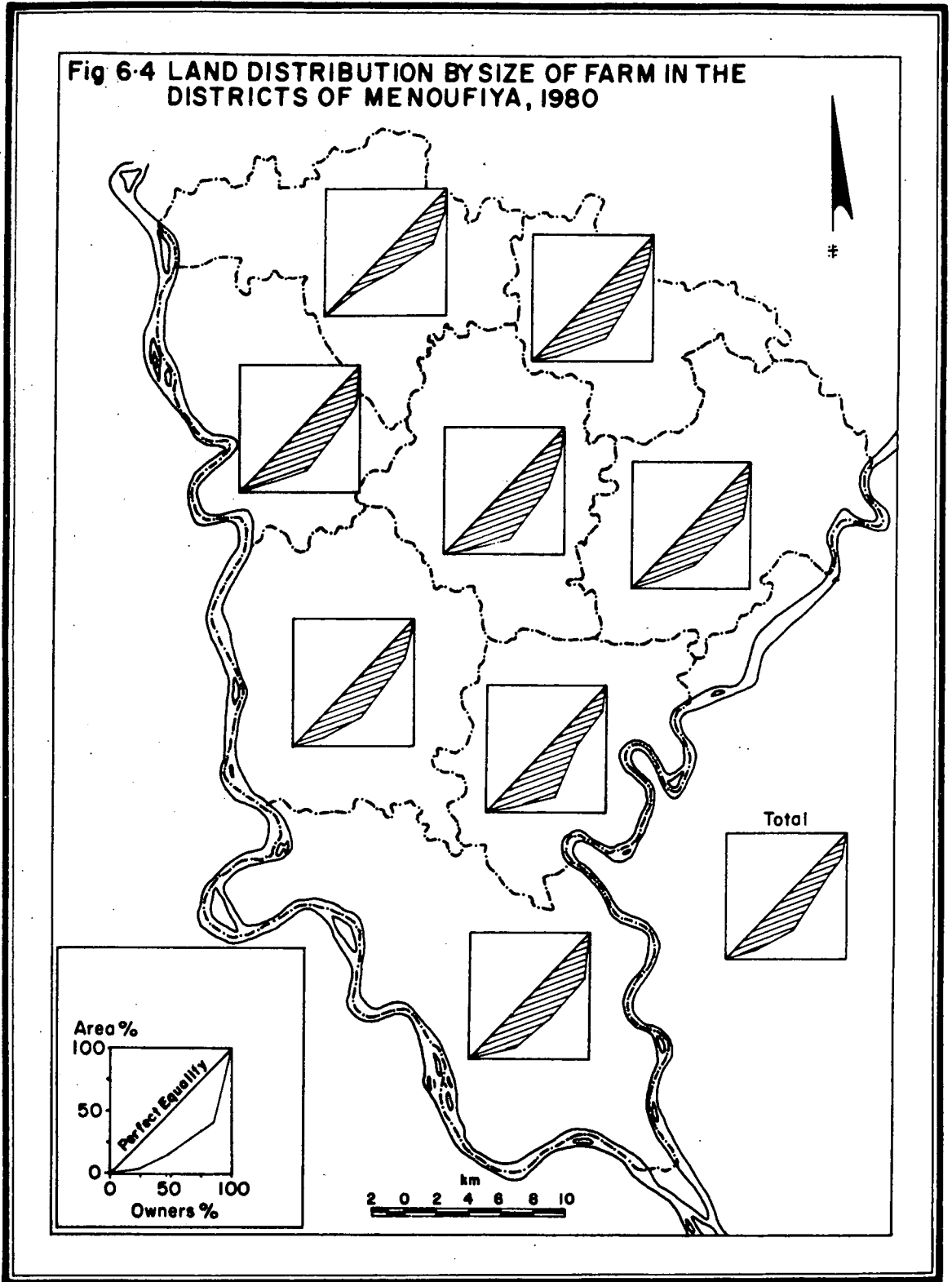
Source: Province of Agriculture, Shebien Elkom, Unpublished data.

The problem of land fragmentation is the salient phenomenon in all the district of Menoufiya. Fig. 6.4 reveals that the maldistribution of land is the main element of fragmentation. The poorest farmers who own less than one feddan represent 50 per cent and more of the total owners in the districts except for Tala. The average size of the ownership in the districts is between 1.2-1.5 feddan, in Tala is as high as 2.2 feddans.

The land fragmentation in Menoufiya has many effects on farmers as follows:-

(i) There was an increasing number of casual workers, who are employed only part-time during the year and are hired seasonally on farms and public works. This group consists of children 6-14 years, adult females, and the near landless and the landless individuals who have nothing else than their labour to sell. Many of them work in places other than their own communities and are known as migrant workers (tarahil). The living conditions in the work places of 'tarahil' labourers were inhuman, and they

Fig 6-4 LAND DISTRIBUTION BY SIZE OF FARM IN THE DISTRICTS OF MENOEFIYA, 1980



suffered from acute malnutrition.⁽⁹⁾ The number of tarahil labourers was not definitely known, but they were estimated at about one million in Egypt as a whole in 1976, when Menoufiya had the largest number of all governorates of Egypt.⁽¹⁰⁾ By the end of the 1970's the "tarahil" labourers have disappeared completely from Egypt as a whole and from Menoufiya because of the chance to work in other jobs such as construction and manufacturing, especially after the migration of a large number of craftsmen to the Arab countries especially Saudi Arabia, Iraq, Jordan, Gulf Emirates, Kuwait and Libya.

(ii) There was a decrease of agricultural production, where the fragmentation meant certain losses of cultivated land (10-20 per cent) for digging irrigation canals and making separate areas between the holdings.⁽¹¹⁾ Also there are certain losses in production caused by the contiguity of different crops with varying irrigation requirements in a single plot of land, in addition to the spread of pests from one crop to another.

(iii) Decreases occurred in annual incomes and the standard of living of the farmers. Assuming the average family size in the countryside to be five or six, planting traditional crops, the annual income per capita will be about 60 Egyptian pounds among 50 per cent of the owners of less than one feddan and the landless. The annual income per capita is quite a lot higher (90 Egyptian pounds) among the holders of 1-3 feddans (43 per cent of the total owners). This confirms the fact of widespread poverty in the countryside. Menoufiya is found to be among the poorest governorates of Egypt.⁽¹²⁾

Therefore, it is no wonder that Menoufiya is to be found at the top of the list of governorates of out-migration in Egypt. During field research in the region in October 1983, it was found that a large number of the farmers have other jobs in addition to their

work in agriculture to improve their low income. For example, some of them prefer to become government employees despite the low income in order to be insured against old age incapability, especially if they can read and write. Most of the people in this category live in villages near to the urban sector specific examples are (a) in Tanbedy Mr. S. Atia is working as a cleaner in the Authority of Agriculture in Shebien Elkom, (b) Mr. F. Ahmed of Shanawan who deserted his work in agriculture in order to work in the textile factory in Shebien Elkom; (c) Mr. S. Ibrahim of Mit Mousa and his 13 year old son who work in the construction sector because they earn more in a month than their land (two feddans) can give during 6 months, this new job consisting of manual work and not requiring literacy; (d) Mr. A. Gebril of Kafr Ganzor goes daily on his bicycle to work as a guard in the secondary school in Tala.

There are many of the farmers who leave their farms at least temporarily to earn more income elsewhere, so that their wives and children manage their farms and animals till their return. This phenomenon is caused by the low prices of the cash crop cotton, in addition to the rise in the standard of living of most of the free employees after 1973. The main effect of the additional income is that the houses of these people have been improved and supplied with electricity, as well as some electrical equipment such as TV and washing machines.

As a consequence of these problems, the Shora Council recommended in its meeting of 13-15th December 1983 that the government should give more facilities to import and produce agricultural machines to fit the small plots, such as those used successfully in Japan and China to increase the production, and to stop further decline in the number of agricultural employees.

6.4 Limited Agricultural Machinery

Egyptian agriculture has been characterized by the stability of the means of agrarian production since the Pharaohs' regime. Most of the agrarian tools which are still used now are the same as those used in ancient times. Despite the great revolution in agricultural production - after the co-operative movement in the 1960's - and the increased use of modern techniques and machines, the region still lacks agricultural machinery. We can briefly state the difficulties which have hindered the spread of agricultural machinery in the area for a long time.

- a. The poverty and low income of the majority of the farmers, where more than 90 per cent of the farmers possessed between 0-3 feddans and the average farm size was 1.4 feddans (Table 6.6). This area is just able to feed a large family, and does not produce enough profit to buy an expensive modern machine or to hire it from the rich farmer.
- b. The fragmentation of land holdings, where most of the holdings are divided into more than three plots in different places in the village. That creates a major problem for the use of machinery which needs a large farm to be economic.
- c. The need to create practical technicians to manage or to fix the machines in the countryside.

By the mid 1960's agricultural machinery appeared in Menoufiya after the establishment of the co-operatives which rent out the machines at low rates and established alternative facilities to pay after marketing the cash crops. By the end of the 1970's machinery became more widespread in order to increase production and to solve the problem of labour-force migration from the agricultural sector.

6.4.1 Agricultural Machinery and the Problem of Labour Force

A decline in agricultural employment is a striking feature in Menoufiya. In 1976, agricultural employment was 273,000 persons (60.8 per cent of the total labour force), but by 1981, it was estimated to be 238,000 persons (46.5 per cent).⁽¹³⁾ This was an abrupt decline compared with the gradual decrease during 1917-76 (see Chapter 4). This decline is consistent with the general impression of labour shortage in agriculture. In Egypt as a whole, a fall of 14 per cent took place during 1972-79. This rapid decline of agricultural employment represents a new trend in the Egyptian economy,⁽¹⁴⁾ and can be interpreted as a result of the low annual income of agricultural employees compared with other jobs. Therefore, some of them migrated from agriculture to work in other jobs such as construction and manufacturing activities. A point to be made first is that the decline of agricultural employees does not necessarily imply a similar fall in production which is still high because families often remain in the village (we shall stress food production in Chapter 7). On family farms, women and children would naturally take over all farm work in the absence of the male members. Indeed, the fall in agricultural employees from 60.8 per cent to 46.5 per cent may to some extent have been replaced by increased mechanization.

In general, the decline in agricultural employment is considered as a way to get rid of the disguised unemployment. The agricultural labour force is still suffering from large labour surplus. The Egyptian agricultural labour surplus has been estimated at between 30 and 50 per cent in 1975.⁽¹⁵⁾ In Menoufiya unemployment among the agricultural employees has been estimated at 111 days per year. That means that there is a surplus of about 33 per cent of the total agricultural labour force. The average of the labour force working on one feddan

is about 90 man per days and 29 boy per days. According to this estimation, the land of Menoufiya needs only about 79,000 men and 25,000 boys. By their presence, more than 100,000 people drag down the general standard of living. If their labour was removed, the volume of production would not suffer since they contribute nothing to the productivity. The main problem of too many people on too little land remains, no matter how the ownership is juggled with, and acts as the most powerful incentive to a policy of expansion of the industrial sector in the economy.⁽¹⁶⁾ At the present time, because of the scarcity of non-agricultural jobs in the region, the encouragement of more farmers to migrate into other jobs is greatly necessary to decrease the disguised unemployment and to increase the income of the people.

It is worth noting that the Egyptian agriculture is still suffering from reliance upon casual workers. The rush months are in May and June, the period of harvesting the winter crops, and in October and November, the period of harvesting maize and picking the cotton (see Chapter Five).

The evidence reveals that casual workers in this type of agriculture may disappear because cheap employment disappeared. There is a remarkable rise in the agricultural worker's salary : it was 0.14 Egyptian pounds per day in 1961/62, increased to 1.00 in 1975/76, to reach 2.50 Egyptian pounds in 1980/81. At the same time, there are some difficulties in finding casual workers, despite this high salary in the busiest time of picking the cotton. Therefore we find the tarahil workers who prevailed in Menoufiya till the early 1970's created to exist by the end of the 1970's.

So the use of agricultural mechanization will not lead to unemployment in the countryside. Mechanization is necessary at the moment because of the lack of agricultural workers in the busiest time, and to increase production. With regard to the sort of mechanization which

was prevalent in the governorate by the 1980's, the majority has replaced animal power in farming. Most farmers do not need a large number of labourers for ploughing, planting, irrigation and the threshing of grains.

6.4.2 Level of Mechanization

The number of tractors in Menoufiya in 1981 was 2,092, the private sector possessing the majority.⁽¹⁷⁾ The main function of the tractor is about 70 per cent in planting, and 30 per cent in other activities such as thrashing and transportation.⁽¹⁸⁾ Every tractor serves an area of 153 feddans (Egypt as a whole 1 per 175 feddans); that demonstrates the low level of mechanization. In fact, Egypt is considered to be among the countries with the lowest levels of mechanization in the world.⁽¹⁹⁾ The other machines are about 947 thrashers, 1300 irrigation pumps most of which are also privately owned. In 1981, more than 90 per cent of ploughing was mechanized, and the thrashing was totally mechanized. There are about 614 machines for spraying in addition to the use of aircraft to spray pesticide onto the cotton. Most of these machines are co-operative property, and spraying is not totally mechanized. By contrast, the use of modern machinery for lifting water is rare. The ordinary sakia (waterwheel) is still the major method of water lift for lands higher than water level (Plate 6).

The number of agricultural machines in 1981 is nearly double that of 1960 primarily due to the success of the land consolidation which covered the land in 1965. At the same time, the co-operatives bought the machinery and hire it at low price to the farmers. Hence the small farmers became able to use agricultural machinery like the rich. Since the period of open door policy (1974), the number of machines has greatly increased because the government has encouraged the private sector to import agricultural machines free of tax. Many of the rich farmers

bought modern machines for their farms and for hire at low price to the farmers. This temptation has succeeded among the farmers as it saved effort and animal power. By the 1980's mechanization experienced a new advance when the use of the small tractors and rotivators became widespread, especially in the orchards (Plate 7).

The advantages of agricultural machinery can be briefly outlined as follows:-

- i. An increase in agrarian production, where mechanized work is characterized by quick execution and possibility of control in addition to raising efficiency in the agrarian process. Tests revealed that the use of mechanization increases of feddan productivity, for example, maize by 13 per cent, broad beans by 14.6 per cent and wheat by 20 per cent.
- ii. Saving effort and time spent in the agrarian process, which led to a decrease in the production costs of 30-50 per cent.⁽²⁰⁾ That has meant an actual increase of the farmers' income. The trial confirmed that the non-mechanized feddan costs are nearly double those of the mechanized feddan.
- iii. Increase in the production of milk and meat. The evidence shows that the energy expended by one cow in farm work for one hour is 640 calories, equal to that required to make about one kilogram of milk. At the same time, the release of the cow from farm work in addition to scientific care will help to increase meat production and save large areas of fodder land to be cultivated with cereals.⁽²¹⁾

The evidence shows that use of agricultural mechanization will improve the income of the farmers and contribute to an increase in the food production of the region. This is a way to solve the problem of food in such a region of high population density.



Plate 6 : The ordinary sakia (waterwheel) is still the major method of water lifting for lands higher than water level.



Plate 7 : The use of small tractors has become widespread especially in orchards.

6.5 Summary

There are some major problems facing land utilization and food production in Menoufiya, resulting from high density of population and its pressure on the limited acreage of land : decreasing cultivated land, fragmentation of holdings, and shortage of machinery.

The decrease of cultivated land is obvious, where the cultivated land area was 341,700 feddans in 1929, it was reduced to 319,771 feddans in 1981. That means that the average annual decrease was about 430 feddans. That decrease was caused by the near non-existence of barren land in Menoufiya, and the fact that continuous urban sprawl and the establishment of many agricultural and industrial projects are at the expense of the cultivate land. As a result of the high density of population and the decreasing area of cultivated land in addition to many factors, the sale prices of land and agricultural products have seen an absolute upward trend during the period of rapid population growth in the last twenty years.

The problem of fragmentation of landholdings is considered one of the main problems which faces the development of agriculture. The majority of farms are of an average size of less than 1.5 feddan. Most farms are in more than four separate plots. Fragmentation of land holdings is a result of two elements:-

- i. the high density of population at the same time as a decrease of cultivated land, in addition to the effect of the muslim laws of inheritance which required the breaking-up of properties among heirs after the death of the owner;
- ii. the inequality of land distribution, where the majority of the owners (75 per cent) possessed less than 50 per cent of the cultivated land which led to the creation of the Land Reform Laws after the 1952 revolution. About 12,375 feddans have been

taken from the large owners and redistributed in small plots of about two feddans.

The fragmentation of landholdings has effects on the development of the agricultural production by i) decreasing the annual income of farmers ii) increasing the number of casual workers and landless farmers and iii) decreasing the agricultural production.

The limited amount of agricultural machinery is considered the third problem which food production faces in Menoufiya, as in the whole of Egypt. The use of agricultural mechanization is necessary in the region because of the continuous migration from agricultural employment to other jobs owing to the low income from agriculture. The disguised unemployment in agriculture, where a large number of the family work on small plots of land, has encouraged some of them to improve their income by working in other jobs or to emigrate temporarily to one of the Arab countries. This phenomenon began to prevail in the countryside after 1973. Therefore the salary of casual workers in agriculture has increased sharply, and the use of machinery is considered a way to solve this problem and to release animals from the work of the farm.

The use of agricultural machinery became more widespread in the 1980's than in the 1960's, and the number of machines doubled in this short time. The problems of fragmentation and the poverty of the farmer are not so restrictive to mechanization as they were in the past. The co-operatives by their policy of farm consolidation in addition to the hire of the machines to the farmers at low prices gives agricultural mechanization a great push.

Trials have confirmed that a real increase in both farm and animal production will occur after mechanization, which will have social effects and will increase the standard of living of the farmers. The success of

of mechanization may change some of the farmers' habits, such as the large number of children to help him on the farm, and it will help to decrease the "drop-out" of some of them from school and thus improve the standard of living of the Egyptian villages.

It follows that Menoufiya's agriculture is responding to changes in Egyptian economy and society as well as the international labour market within the Middle East as a whole. It therefore faces structural problems of landholding, labour supply, mechanization which are a reflection, not only of its internal geographical conditions, but those pertaining within Egypt as a whole and in neighbouring countries. In short, Menoufiya's agriculture and food production can not be considered separately from the conditions elsewhere. It is far from being a closed system; indeed, the region is increasingly involved in interregional movements of people and goods.

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CHAPTER SEVEN

FOOD PRODUCTION

7.1 Introduction

Menoufiya is one of the main agricultural regions in Egypt, characterized by one of the highest productivities for food among the governorates of Egypt. It is related to excellent environmental conditions. Soils are mostly riparian silts and clays of great depth, fertility, and uniformity with flat surface. Abundant water of good quality flows down the Nile and it is distributed to farms through a well-developed storage and distribution system. The region, like the whole of Egypt, is spared the vagaries of rainfall. It enjoys maximum sunlight and growth rates, and the warm temperatures permit year-round plant growth. These resources (soil, water and climate), in addition to the intensive system of farming in small plots of land means that a feddan of cultivated land in Menoufiya can give more than two crops annually with high yields.

The agricultural production in Egypt as a whole is characterized by technological dualism. Most of the farmers use bullocks and human labour and work their three feddans or less for both market and their own consumption. There is no rangeland grazing, the animals being stall-fed or staked out. The animal production is part of a complex multipurpose farm system. Farmland must therefore be allocated to both fodder and food crops, and the choice among crops is influenced by whether they permit the joint production of by-products suitable for animal feed, such as straw. The allocation process is further complicated by the traditional two-or three-year rotational cycle and the cotton crop quotas imposed by the government, although these are decreasing slightly. Purchased inputs such as inorganic fertilizer, certified seed, improved varieties and pesticides are common.

With more than half a million feddans of cropped area, the majority is cultivated for food crops and clover for animal fodder. The study of food production will show how the cropping pattern is determined more by the farmer's needs, his degree of commercialization and government's quotas than by the physical limitations of soil and climate.

This chapter will deal with the area, yield and production of food crops, vegetables and fruit; the present agricultural pattern and major trends; and changes of production during the period 1950/55 to 1980/82. It is worth noting that the study will clarify the problems and difficulties which face crops and livestock production and the role of the government in increasing yields.

The study of vegetable and fruit production will stress the factors which have caused their expansion at the expense of other crops. It will also answer the questions: why are the majority of vegetables and fruit grown in the Ashmoun and Quesna districts? What are the main problems facing production and marketing?

The study of livestock production will discuss the problem of fodder in summer and its effect on meat and milk production in Menoufiya. Is the improvement in the standard of living in Egypt affecting the number of slaughtered livestock? What are the main problems of increasing poultry production? What is the role of the government in increasing the animal and poultry in the region?

7.2 Food Crop Yields and Production Trends

Food crops are the dominant crops in Menoufiya. About 480 thousand feddans are cultivated for food crops and clover. The total area allotted to food crops (without clover) is 289 thousand feddans, representing 46.1 per cent of the total cropped area of Menoufiya in 1980-82. The major food crops are maize (67.7 per cent of the total food crops area), wheat (24.7%), broad and soya beans (6.4%), and others, including onions,

sugar cane and rice (1.2 per cent). (1)

7.2.1 Maize

This is a common crop in the Nile delta, providing the staple food of the rural population, and fodder for animals and poultry. The area devoted to maize cultivation in Menoufiya is large, about two-thirds of the total area of grain cultivation. The governorate is considered to be the most important one for cultivation of maize in Egypt as a whole. With an area of 195,109 feddans (13.5 per cent of the area of maize in Egypt) in 1980-82, Menoufiya was at the top of the 19 governorates producing maize.

Table 7.1 : Maize : Area, Yield and Production in Menoufiya
1950-54 to 1980-82

Averages	1950-54	55-59	60-64	65-69	70-74	75-79	80-82
Area	181010	190710	195313	194440	185869	191356	195109
Index %	100	106	108	107	1029	106	108
Yield(ardeb)	8.93	9.88	13.35	12.24	13.08	13.40	13.49
Index %	100	110.6	149.5	137.0	146.5	150.0	151.0
Production	1616	1884	2607	2380	2431	2564	2633
Index %	100	116	161	147	150	158	163

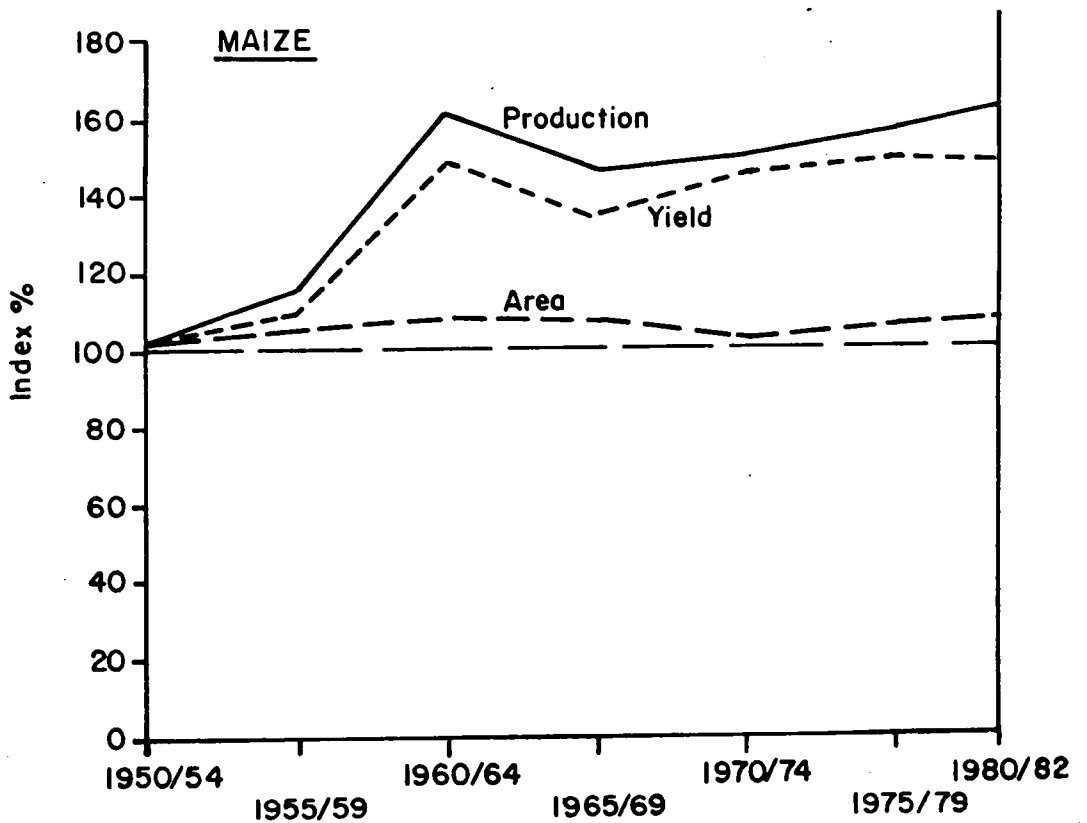
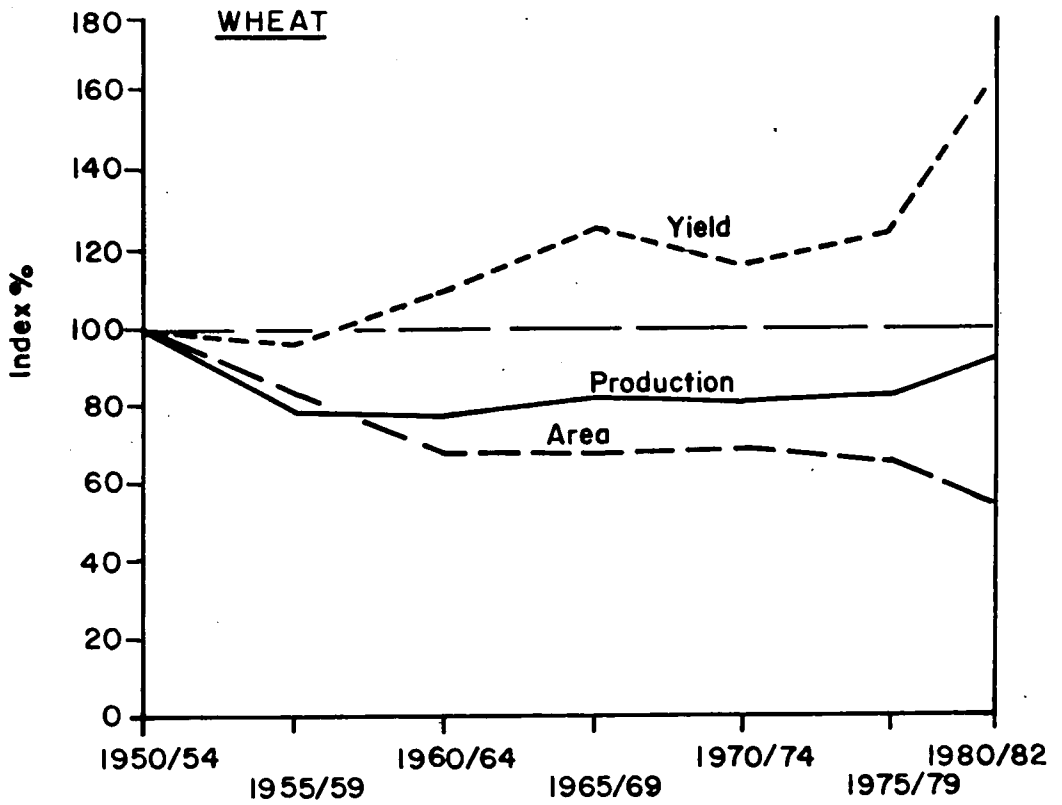
One Ardeb of maize = 140 kilograms

Area in Feddans

Production in thousand of ardebs

Source : Calculated from : Ministry of Agriculture, Agricultural Economy and Statistics Authority, Statistics Dept., Field Crops data. Unpublished data.

Fig 7-1 INDEX OF MAIZE AND WHEAT AREA, YIELD AND PRODUCTION



the government has a plan to spread the new crop in all farms by the year 1985.

In the whole of Egypt, where maize is grown mostly by peasant farmers, the adoption of hybrid maize has been restricted for many reasons. Production facilities of hybrid seed are often limited or non-existent; hybrid seed only yields well under good management, it may be out-yielded by traditional varieties under unimproved peasant production methods, and it may also be expensive for a farmer to buy the improved seed if he is uncertain of the results. However, other improved varieties of maize such as Pioneer and Syed Galal are also being made available to peasant producers. These improved varieties are more variable than the single traditional hybrids which are low-yielding. They also eliminate the need for farmers to purchase new seed each year. It seems clear that Menoufiya could produce enough maize without using more land. It is just as clear that no simple solution, such as the introduction of improved varieties alone is sufficient without an associated change in the farming system and the improvement of market conditions.

The spatial distribution of the maize crop in the region as shown in Appendix 13 reveals that maize is the predominant crop in all the districts of Menoufiya. It covers about 31 per cent of the total cropped area of the governorate. In Menouf and Bagour districts more than 36 per cent of the cropped area is occupied by maize. On the other hand, less than 29 per cent of the cropped area of Tala, Shohada and Berket Elsaba districts is cultivated with maize. The highest yield per feddan is to be found in Menouf district (15.3 ardeb/feddan), but the lowest productivity is in Ashmoun and Quesna districts, as shown in Fig.7.2. Because of the highest yield, Menouf district alone has the highest percentage of production (19.4 per cent of the total production); despite the fact that the area under maize in Menouf district is lower than Ashmoun, which comes second (Table 7.2).

Table 7.2 : Maize : Area, Yield and Production in the Districts of Menoufiya, 1980-82

Districts	Cultivated land		Yield (ardeb)	Production	
	Feddans	% of Total		Thousand ardebs	% of total
Shebien Elkom	22,474	11.5	14.18	319	12.1
Ashmoun	39,080	20.0	11.74	459	17.4
Bagour	23,685	12.1	13.15	312	11.9
Berket Elsaba	14,360	7.4	13.59	195	7.4
Shohada	16,915	8.7	14.13	239	9.1
Tala	21,157	10.8	14.0	296	11.2
Quesna	23,977	12.3	12.61	302	11.5
Menouf	33,461	17.2	15.28	511	19.4
Total	195,109	100.0	13.49	2,633	100.0

Source : Ministry of Agriculture, Field Crops Data. op.cit.

7.2.2 Wheat

Wheat is the main food grain for urban dwellers, whose per capita consumption is about 137 kilograms a year, in comparison with 93 kilograms for those in rural areas.⁽⁴⁾ Because of the rapid increase of urban population, and migration from rural to urban areas, effective demand for wheat has been strongly increased at a time when wheat acreage has generally been falling. The average area of wheat was 122,974 feddans in the early 1950's and slipped to 70,907 feddans in the early 1980's. It is the same for Egypt as a whole (1.571 million feddans to 1.326).⁽⁵⁾

Trends for 32 years are illustrated in Table 7.3 and Fig. 7.2. Expansion of

cotton and clover has affected the wheat acreage, where both are cultivated at the expense of wheat land. The index of acreage of wheat shows the sharp decrease since 1950/54 (Fig.7.1) The low sale price encouraged the peasants to cultivate clover over large areas which provided them with a higher return as shown in Table 7.11.

Table 7.3 : Wheat: Area, Yield and Production in Menoufiya
1950/54 to 1980/82

Averages	1950-54	55-59	60-64	65-69	70-74	75-79	80-82
Area	122974	100316	85611	80031	84351	80503	70907
Index %	100	81.5	69.6	65.1	69.0	65.4	57.7
Yield(ardeb)	7.96	7.77	8.8	9.97	9.50	10.01	12.72
Index %	100	97.6	110.5	125.3	114.3	125.8	161.0
Production	979	779	753	798	801	806	902
Index %	100	79.6	76.9	81.5	81.8	82.3	92.1

One ardeb = 150 kilograms of wheat

Area in feddan

Production in thousand ardebs

Source: Calculated from Ministry of Agriculture, Field Crops Data, op.cit.

The cultivated area of wheat in the region is about 5.3 per cent of the total area of wheat in Egypt as a whole. Menoufiya has consistently been one of the main governorates producing wheat during the last 32 years (1950-82).

Menoufiya had the highest yield per feddan of wheat during the period 1950-80, and it has the second highest yield after Qalubiya in 1980-82. The productivity per feddan in the region was 12.72 ardebs, it is higher than the average of Egypt as a whole (10.42 ardebs). As

shown in Fig.7.1, the index of yield has increased to reach 161 per cent in 1980-82 following the installation of tile drainage in Menoufiya and the use of new technology such as the application of correct fertilizers and high yielding varieties (HYVs) of seed.

The experience with high-yielding Mexican wheat since 1972, led to an increase of yield of over two ardebs per feddan more than the other varieties of seeds. Mexican wheat is intolerant of high temperature. For example in 1974 high temperatures caused by Khamasin winds during the immaturity stage of grain led to a drop in production. The complaints advanced by farmers are that they require higher labour inputs and cash, the straw is less valuable, the rate of flour extraction is also less; and the lower water absorption of flour causes problems in baking. The harvest time is more critical with greater relative losses. Furthermore, the harvest coincides with corn cultivation, whereas other wheat varieties can wait. Perhaps the most serious drawback of the Mexican wheat is its lack of resistance to rust under local conditions. (6)

In 1980, the government provided some new improved seed varieties to fulfil the needs of the farmers with high productivity (14 - 17.5 ardebs/feddan) such as "Giza 157" and "Sakha 61". (7) It is worth noting that the use of these HYV's in 1980-82 caused the high yield (12.72 ardeb/feddan) because of the experience gained from these varieties in a large area of Menoufiya.

By 1980/82, wheat production in Menoufiya was at a record level of 902 thousand ardebs. Despite the fact that the area under wheat is always decreasing since 1950, the production has increased since 1960-64 (Fig.7.2) through increased yields.

Egypt now imports about 60 per cent of its wheat, with cheap prices as compared to the price of local produce. The government can increase the area of wheat in order to increase wheat production, but only at the expense of cotton in particular. The problem of decreased acreages of cotton land is so acute that the Egyptian government had to adopt a policy to maintain its international position. Egypt is the largest producer of long/staple cotton (two-thirds of the world's production) and medium/staple cotton (one-third of the world production) and cotton is one of the main sources for earning foreign exchange. Despite the fact that the government decreased the acreage of cotton in Menoufiya from 97.0 thousand feddans in 1960 to 51.5 thousand feddans in 1982, the area of wheat had also decreased. As a consequence, the cultivated area of clover increased from 98 to 194 thousand feddans. The farmer prefers to cultivate clover rather than wheat or cotton because of its high output, where a feddan of clover gives about 750 Egyptian pounds in comparison with cotton 170 and wheat 150 per annum. The planting period for wheat and clover lasts about 7 months, but cotton planting lasts more than 8 months.

Wheat is cultivated in all the districts of the governorate. It comprises about 11.4 per cent of the total cropped area in Menoufiya (Table 13 in appendix) Bagour and Shebien Elkom districts have the highest percentage of cropped area under wheat. (more than 13.0 per cent), while Ashmoun district has the highest percentage of wheat area in Menoufiya as a whole.

FIG. 7-2 AVERAGE MAIZE AND WHEAT YIELD PER FEDDAN IN MENOUEFIYA , 1980 - 82 .

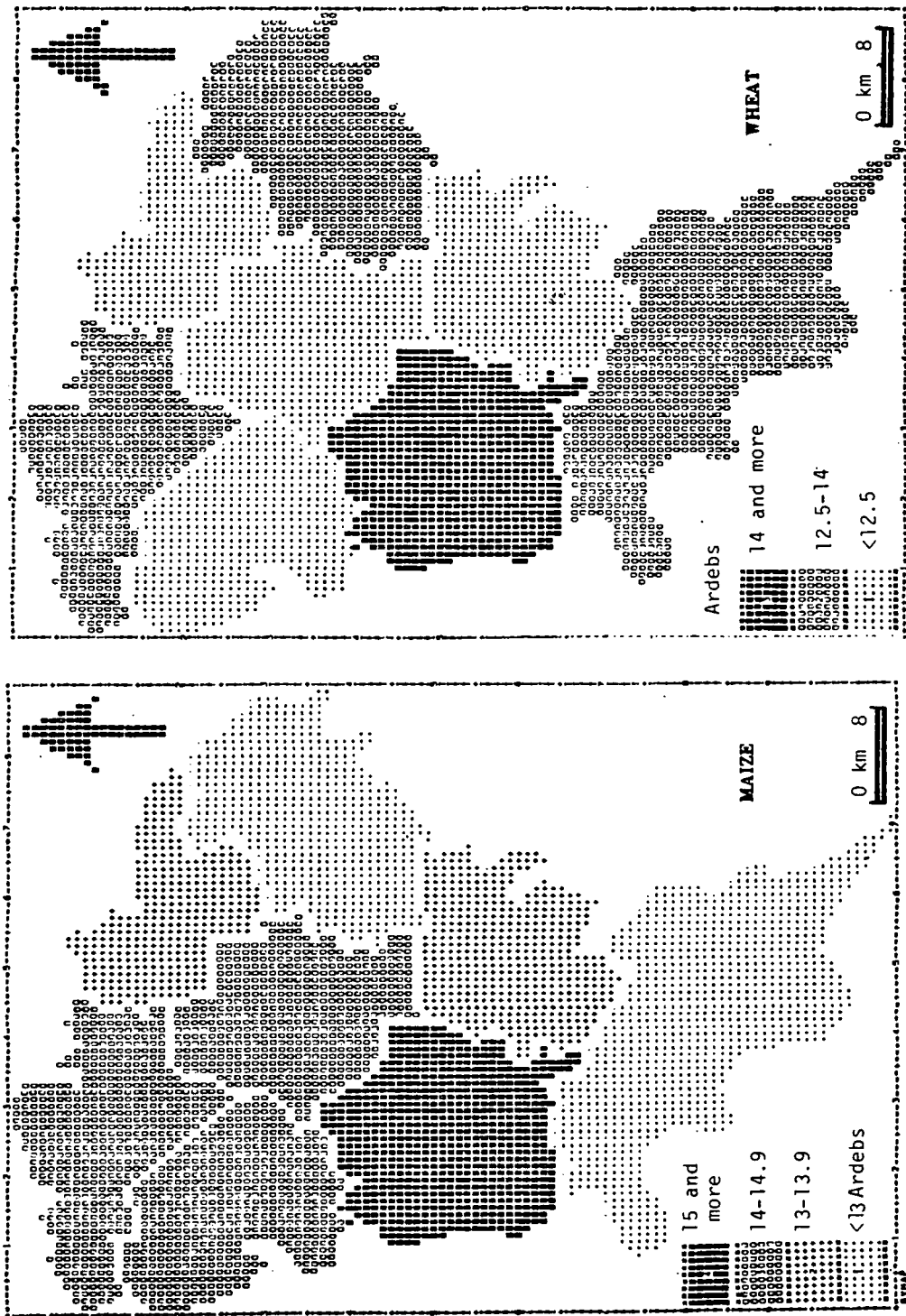


Table 7.4 : Average Area, Yield and Production of Wheat in the Districts of Menoufiya, 1980-82

Districts	Cultivated Land		Yield (ardeb)	Production	
	Feddan	% of total		Thousand ardeb	% of total
Shebien Elkom	9800	13.8	11.86	116	12.9
Ashmoun	11969	16.9	13.02	156	17.3
Bagour	8794	12.4	12.25	108	12.0
Berket Elsaba	6583	9.3	11.82	78	8.6
Shohada	6830	9.6	12.19	83	9.2
Tala	9012	12.7	12.66	114	12.6
Quesna	7921	11.2	12.95	103	11.4
Menouf	9998	14.1	14.45	144	16.0
Total	70907	100	12.72	902	100

Source: Calculated from Ministry of Agriculture, Field Crops Data.

The yield of wheat is as high as 14.45 ardeb per feddan in Menouf district (Fig.7.2). By contrast, the lowest yields per feddan are to be found in Shebien Elkom, Shohada, Berket Elsaba and Bagour (less than 12.5 ardebs per feddan). Ashmoun and Menouf districts have one-third of the total production of Menoufiya's wheat because of the large acreage and higher yield.

7.2.3 Broad and Soya Beans

Broad beans are an essential breakfast dish especially for most of the urban population in Egypt. They contain over 20 per cent protein and provide a valuable source of dietary protein. Broad beans constitute one of the most important legume grain crops in Egypt.

Broad and soya beans are considered as the main grain crops in Menoufiya after maize and wheat. The total area cultivated of broad and soya beans amounts to 18,228 feddans. As shown in Table 7.5, the average total area devoted to broad beans was 6,460 feddans (2.4 per cent of the total area in Egypt) in 1980-82. Among the 18 governorates producing broad beans, Menoufiya had the highest yield per feddan until 1975, and the second highest yield after Asyut in 1980-82. The average productivity in the region is 7.0 ardebs per feddan, while in Egypt as a whole it is 5.6 ardebs. The yield in Menoufiya decreased from 7.5 ardebs in 1970-75 to 7.0 ardebs in 1980-82, when the seed became susceptible to pests. Ministry of agriculture researchers tried to increase bean production by replacing the old varieties with high yielding broad beans such as Giza No.3 and Giza No.4 which have proved superior and have an increased productivity rate of 10-20 per cent.⁽³⁾

The average production of broad beans in Menoufiya increased from 33.7 thousand ardebs in 1966-70 to 45 thousand ardebs in 1980-82, which is related to the increase of area under the crop from 4,685 feddans to 6,460 during the same period. The average production Menoufiya's broad beans represents about 3.3 per cent of the total production of Egypt as a whole.

Menoufiya is the only governorate of Egypt in which broad beans are stored underneath the soil, in Berheem village (Menouf district). The nature of soils for storing broad beans and keeping pests away for a long time is unique. In this village there are about 400 underground bean pits with a capacity of 175 thousand ardebs.⁽⁹⁾

Table 7:5 : Average Area, Yield and Production of Broad and Soya Beans in Menoufiya, 1980-82

Districts	Broad beans			Soya beans		
	Area	Yield	Production (ardebs)	Area	Yield	Production (tons)
Shebien Elkom	524	6.0	3,100	353	1.75	600
Ashmoun	126	6.4	800	2,318	1.63	3,800
Bagour	145	7.7	1,100	329	1.45	400
Berket Elsaba	486	7.0	3,400	129	1.48	200
Shohada	1,945	6.7	13,000	3,413	1.60	5,500
Tala	1,541	6.2	9,600	3,001	1.53	4,600
Qesna	1,232	7.5	9,200	59	1.48	100
Menouf	461	10.5	4,800	2,166	1.65	3,600
Total	6,460	7.0	45,000	11,768	1.60	18,800

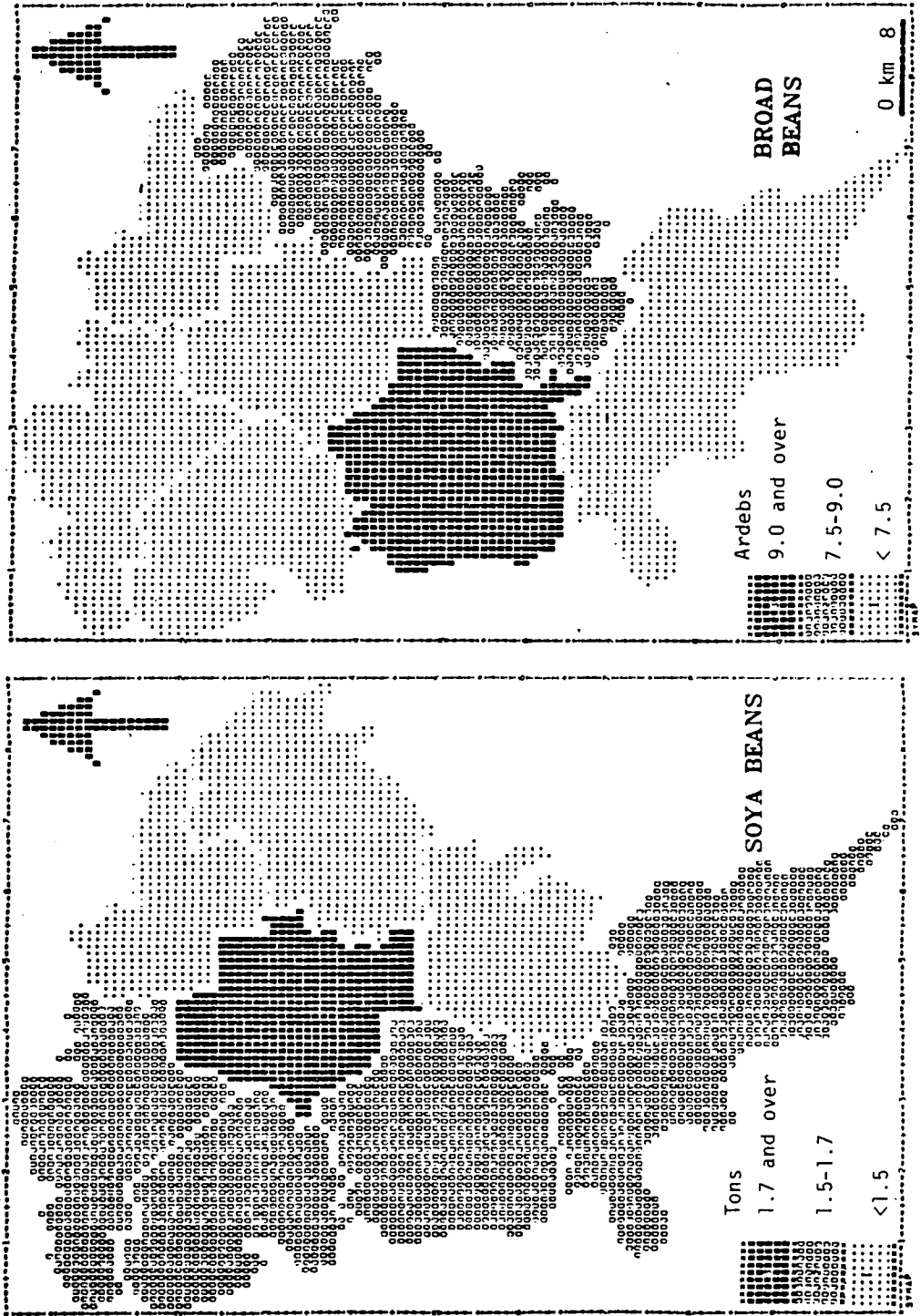
Area in feddans Yield in ardebs (broad) and tons (soya)

One ardeb = 155 kilograms of broad beans

Source: Ministry of Agriculture, Field Crops Data.

The spatial distribution of broad beans in Menoufiya illustrates that about three quarters of the total area is concentrated in Shohada, Tala and Qesna (Table 7.5). Menouf district has the highest yield per feddan (10.5 ardebs). As shown in Fig. 7.3 the rest of the districts produced 6 - 7.5 ardebs per feddan. About 70.1 per cent of the total production of broad beans was concentrated in the three districts with the largest acreage, Tala, Shohada and Qesna.

FIG. 7-3 AVERAGE BROAD AND SOYA BEANS YIELD PER FEDDAN IN MENOUIFYA , 1980 - 82



It is noteworthy that most of the production of broad beans in the region is surplus, since the farmers consume about 27 thousand ardebs of broad beans which are planted and intercropped with wheat. Furthermore, about 1,930 feddans are planted with broad beans whose production is consumed as a green vegetable.

The soya bean is the most important grain legume and the largest source of vegetable oil and protein. Some varieties contain up to 50 per cent protein in the dried beans which is more than any other crop.⁽¹⁰⁾ The government encourages the farmers to plant soya beans in order to provide cheap protein, substituting deficiency in animal proteins among the poor people.

Attempts to popularize soya bean cultivation as a cash crop in Menoufiya is successful, mainly because it provides higher output than most field crops (except clover). The soya beans can give an income of about 500 Egyptian pounds per feddan with about a six month planting period as shown in Table 7.11. The climatic requirements of soya beans are similar to those of maize. They are intolerant of excessive heat, high rainfall and high salinity. The environment of the region is ideal for soya bean cultivation and Menoufiya is the largest producer of the crop in Egypt. The area, occupied by soya beans, has increased rapidly from 7,530 feddans in 1979 to 14,749 feddans in 1982 (11 per cent of the Egyptian total). The yield per feddan is high in Menoufiya with 1.6 tons per feddan compared with 1.1 tons/feddan in Egypt as a whole. Average production was 18,800 tons (i.e. more than 13 per cent of the production of Egypt as a whole in 1980-82).

Soya beans are cultivated in all the districts of the governorate, with a higher concentration of about 93 per cent of the acreage area found in the four districts of Ashmoun, Shohada, Tala and Menouf, which also had about 93 per cent of the total production (Table 7.5).

The highest yield per feddan in the governorate is to be found in Shebien Elkom district (1.75 tons). In contrast, the lowest was in Qesna, Berket Elsaba and Bagour (less than 1.5 tons/feddan).

7.2.4 Other Food Crop Production

This group of food crops includes onions, sugar cane, rice etc., which are grown in a small acreage of land. The total area of these crops is not more than 3,400 feddans (1.2 per cent of the food crops area).

(i) Onions : Onions have been grown in Egypt since ancient times. They were an important food for the Egyptians around 5,000 years ago. They are eaten either raw or cooked, but rarely on their own. Cooked onions are used mostly for flavouring many dishes.

Onions are cultivated in the region (as in other governorates) in pure stands at high yields or intercropped with cotton at low yields. The total average area devoted to pure stand onions was 285 feddans in 1980-82 (1.5 per cent of Egypt's total). More than three quarters of the area and most of pure stand onion production is concentrated in Berket Elsaba district. The yield per feddan in Menoufiya is relatively low (5.6 tons), therefore the governorate is ranked the eighth highest producer after the governorates of Upper Egypt, the main producers of onions in Egypt. The average total production is about 1,600 tons (representing 1.2 per cent of Egypt's total).

Menoufiya has a large acreage of onions intercropped with cotton, the average total area of intercropped onions in the region is 15,328 feddans in 1980-82 (15.2 per cent of Egypt's total). The productivity is as little as 2.5 tons per feddan as compared with cultivated pure stand onions. Nevertheless, Menoufiya has the fourth highest yield per feddan. The average total production is 39 thousand tons (12.5 per

cent of Egypt's total). This figure excludes onions which were grown mainly for subsistence requirements.

(ii) Sugar Cane : Mainly a perennial plant whose stems contain a sweet sap rich in sucrose, it is the chief source of making sugar in Egypt. The crop has higher demands on soil nutrients and should be grown on fertile soils. The cultivation of sugar cane in Menoufiya is not to supply the demands for sugar, but is for a fresh popular drink produced by cane wringers in Greater Cairo and the region.

The average area covered by sugar cane in the governorate was only 1,440 feddans in 1975-80 representing only 0.5 per cent of Egypt's area, compared with the large acreage of sugar cane in Upper Egypt. The average production of Menoufiya was about 41 thousand tons (0.4 per cent of Egypt's total). More than two-thirds of both the area and production are concentrated in Ashmoun, Menouf and Shebien Elkom.

(iii) Rice : In terms of direct consumption as food, rice is the single most important cereal and it has been estimated that it is an important staple food for the rural and urban populations in Egypt. The major requirement for successful rice growing is water supply and heavy soils which are suitable for puddling, thus reducing losses of water and nutrients through percolation and leaching. (11)

Menoufiya is not included in the rice governorates belt in the Nile delta. The area under rice in 1980-82 was only 220 feddans, less than 0.02 per cent of the whole country in both area and production. The average total production of Menoufiya was only 600 tons. After the installation of the High Dam and the successful planting of rice in the less fertile lands of the northern parts of the delta, the acreage of rice sharply decreased in Menoufiya. Rice covered about 2,340 feddans in 1972 and decreased to only 186 feddans in 1982. Rice production is concentrated in Qesna district, with about 71 per cent of the total production of Menoufiya.

7.3 The Expansion of Vegetable and Fruit Production

The average area of vegetables and fruit has expanded in the region in particular and in Egypt as a whole during the last twenty years. This increase was caused by population increase and the emphasis to increase the exports of horticultural products after the Open Door Policy was declared in 1974. Horticultural production provides higher earnings to farmers than other field crops, therefore the percentage area under fruit and vegetables increased from 6.7 to 15.5 per cent of the total cropped area during the last twenty years (1960-80), as shown in Table 7.6. This expansion was at the expense of the field crops.

Table 7.6 : Percentage Areas of Field Crops, Vegetables and Fruit in Menoufiya, 1960-80

Years	Field crops	Vegetable	Fruit
1960	93.3	5.4	1.3
1970	90.1	6.9	3.0
1980	84.5	10.4	5.1

Source : Calculated from Ministry of Agriculture, Agricultural Economy and Statistics Authority, Statistics Dept. Vegetables and Fruit data, Unpublished data.

7.3.1 Increasing Vegetable Production

Menoufiya is considered as one of the main areas producing vegetables in Egypt. They are grown during three seasons, summer, autumn and winter, with summer vegetables predominating. The average total area of vegetables has been doubled during the period 1955-82. It was 27 thousand feddans in 1955 and increased to 65 thousand feddans in 1982. Most of the vegetables are grown for urban consumption. The acreage under cultivation has been increased to meet the demands of urban population in Greater Cairo and Menoufiya with an increasing amount of vegetables being exported as well.

Vegetable crops are advantageous to the producer because (1) they are not subject to farm gate price controls, and payments go directly to the grower; (2) they can be grown at various times of the year and the plantings can be adjusted to periods when labour is available; (3) they give high returns to labour; and (4) they are labour intensive and more suitable to densely populated regions such as Menoufiya.

Vegetable prices fluctuate widely, and high wastage of the crop occurs in times of surplus. Domestic sales are mainly in the nearest urban areas, and production has been limited to the capacity of storage and transport systems to deliver an acceptable product.⁽¹²⁾ In rural areas vegetables are not traditionally consumed in large amounts, and there is a self sufficiency in vegetables, where the overwhelming majority of farmers plant the vegetables they need in small plots or intercrop them with other crops.

The main vegetables produced are; potatoes (41.5 per cent of the total acreage of vegetables), tomatoes (13.8 per cent), and beans (10.0 per cent). There are many other less important vegetable crops such as cucumber (4.3 per cent), sweet potatoes (4.2 per cent), peas (3.3 per cent), taro (2.9 per cent), cabbages (2.8 per cent), aubergines (2.2 per cent), dry haricots (2.0 per cent) and marrows (1.9 per cent of the total acreage area of vegetables in Menoufiya). The yield per feddan in the area is one of the highest for all kinds of vegetables in Egypt as a whole.

(i) Potatoes

Potatoes are considered the chief vegetable crop in the governorate, which is one of the chief producers of potatoes in Egypt as a whole, about 14.6 per cent of the Egyptian production of potatoes coming from the region. Potatoes can be grown during summer (sefi), and autumn (nili) seasons.

Summer Season Potatoes : Menoufiya has the second highest acreage area of summer potatoes among the 15 producing governorates. The average area under potatoes in this season is 12,494 feddans (18.2 per cent of the total for Egypt) in 1980-82. The total area of summer potatoes increased markedly during the period 1960-82 from 3,936 to 13,980 feddans owing to the encouragement of the government to the farmers by providing them with imported high yielding seeds.

The average total production has increased to 140 thousand tons (18.0 per cent of the total for Egypt) in 1980-82, an increase of 348 per cent compared with the production of 1955. The production was 31 thousand tons, but rose to 136 thousand in 1980 as shown in Fig.7.4; owing to the increase of land cultivated mainly with potatoes, and to the increased yields.

The production of summer potatoes is nearly all concentrated in Ashmoun district, with about half of the production of Menoufiya. The other main producers are Menouf, Shohada and Tala (48 per cent of the total production of Menoufiya). The highest yield per feddan is to be found in Bagour, and the lowest is Ashmoun as shown in Table 7.7.

Autumn Potatoes : The average total area allotted to autumn (nili) potatoes in Menoufiya was 17,480 feddans in 1980-82. The region is considered the largest producer of autumn potatoes in Egypt, with about one-fifth of the acreage area mainly found in the governorate. The area under autumn potatoes - as that of summer potatoes - has registered a remarkable increase, rising from about 7,072 feddans in 1960 to 18,800 feddans in 1982.

Despite the fact that the area devoted to autumn potatoes is always higher than summer potatoes the production of the latter is higher due to the higher yield per feddan of the summer crop. The yield of autumn crop was fluctuating between 4.4 and 7.9 tons per

feddan, but the summer varied between 7.4 and 8.9 tons/feddan.

As shown in Fig. 7.4, the total production in 1955 was 25 thousand tons and rose to 131 thousand in 1980, owing to the extension of potato cultivation in the region especially after 1976. The figures of Table 7.7 indicate that nearly half of the area and also of the total production of autumn potatoes is concentrated in Ashmoun district. The other main producer districts are Menouf (30 per cent of the total production of Menoufiya) and Tala (13 per cent).

Table 7.7 : Average Area, Yield and Production of Summer and Autumn Potatoes in Menoufiya and Egypt, 1980-82

District	Summer			Autumn		
	Area	Yield	Production	Area	Yield	Production
Shebien Elkom	174	8.6	1,400	117	8.8	1,000
Ashmoun	7,515	8.1	61,000	8,306	7.4	62,000
Bagour	530	9.3	5,000	191	9.1	2,000
Berket Elsaba	183	8.6	1,600	133	7.0	1,000
Shohada	2,036	9.8	20,000	1,050	7.0	7,800
Tala	1,796	8.4	15,000	2,313	7.1	17,000
Quesna	118	8.6	1,000	136	7.1	2,000
Menouf	3,367	9.2	31,000	5,235	7.7	41,000
Menoufiya	15,719	8.66	136,000	17,480	7.65	133,000
Egypt	86,368	8.74	755,500	88,730	7.66	680,000

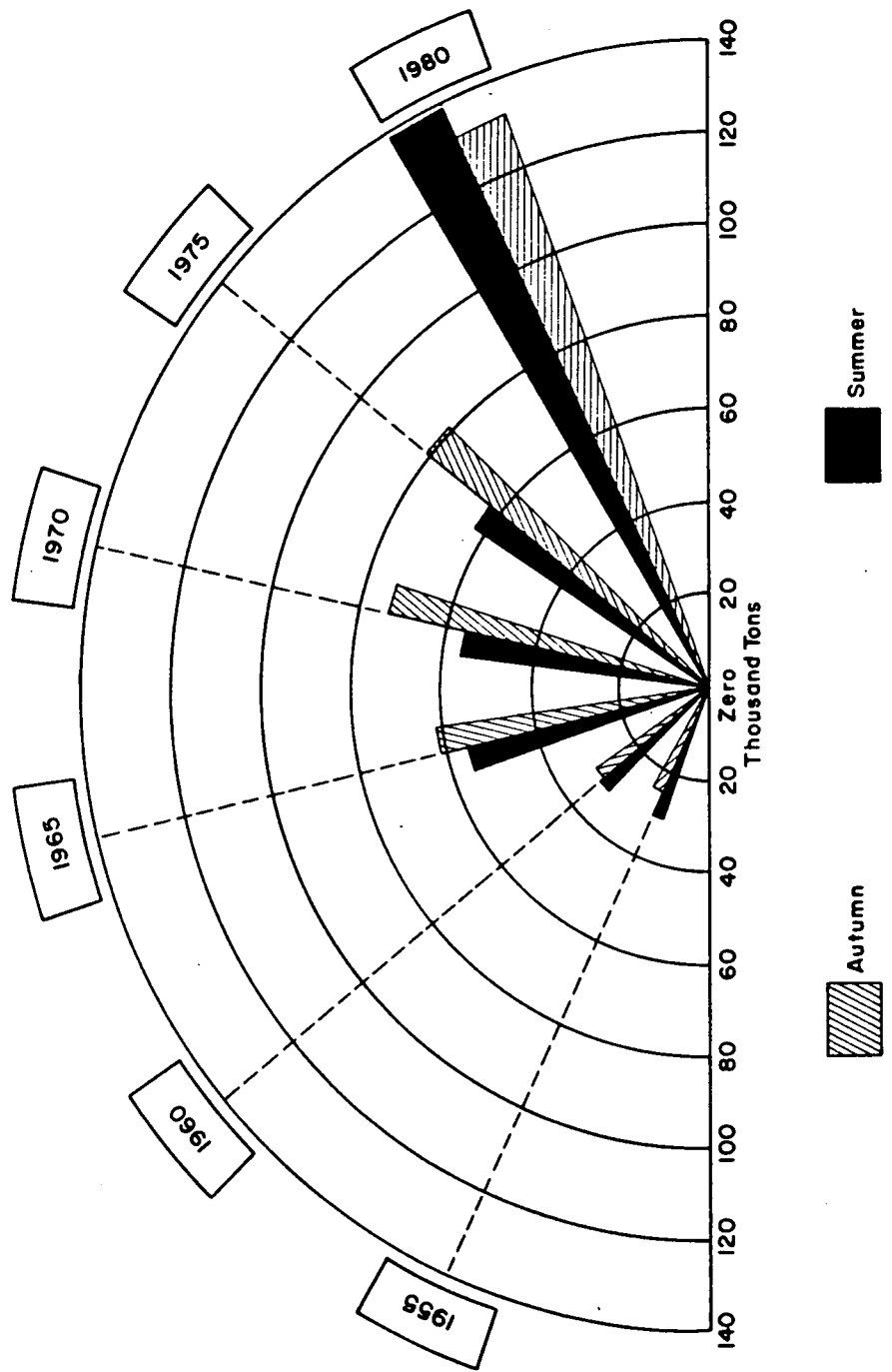
Area in feddans

Yield and production in tons

Source: Ministry of Agriculture. Vegetables and Fruit Data.

The highest yield is to be found in Bagour (9.1 tons per feddan), and the lowest is in Berket Elsaba and Shohada districts (7.0 tons per feddan). Despite the fact that the yield of both summer and autumn

Fig 7.4 DEVELOPMENT OF SUMMER AND AUTUMN POTATOES IN MENOUIFYA, 1955 - 1980



potatoes in Menoufiya is lower than Egypt, the region is one of the main potato-producing governorates. This is because of the experience gained by farmers in relation to planting, and the fast marketing of their output in Greater Cairo or exporting the good quality potatoes through Elwadi Company Exporting Vegetables and Fruits located in Quesna town.

(ii) Tomatoes

Tomatoes account for about 13 per cent of the total area of vegetables in Menoufiya, with an area of 8,500 feddans. Crops are grown in all the three seasons, but mostly in summer.

Summer Tomatoes: The area cultivated with summer tomatoes expanded from 1,584 feddans in 1950/55 to 4,686 feddans in 1980-82, and represented at least 60 per cent of the total years production of tomatoes. Menoufiya is the sixth highest producer of tomatoes of all the producing governorates, but is the highest producing governorate in yield per feddan (9.5 tons, compared with the total of Egypt 8.6 tons) owing to the fertile land and suitable climate for tomato production.

The average total production of Summer tomatoes as shown in Table 7.8 is 44,500 tons in 1980-82 (5 per cent of Egypt as a whole). The production is three times that of 1950-55, because of the increase of land cultivated with the crop, and the rise of yield from 6.5 to 9.5 tons per feddan.

Summer tomatoes are cultivated in all the districts of Menoufiya, but Shohada district has the largest acreage (1,390 feddans), 30 per cent of the total area of the crop in Menoufiya. At the same time nearly one third of this crop is concentrated in Shohada as shown in Table 7.8

Most of the districts had high productivity of more than 9 tons per feddan. The highest yield is concentrated in Menouf district (13.1 tons/feddans). Therefore despite the fact that summer tomatoes covered

an area of only 421 feddans in Menouf district (9 per cent of Menoufiya), its production was about 5,600 tons, 12.6 per cent of the total production of the region in 1980-82.

Autumn Tomatoes : The area devoted to autumn tomatoes in the region was only 1,739 feddans (1.9 per cent of Egypt) in 1980-82. The area registered a great decrease from more than 3,300 feddans in the 1960's and mid 1970's. The main reason for this decline was the low prices of tomatoes during the season.

Table 7.8 : Average Area, Yield and Production of Summer, Autumn and Winter Tomatoes in Menoufiya 1980-82

Districts	Summer			Winter			Autumn		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
Shebien Elkom	383	7.5	2.9	58	8.8	0.5	131	8.0	1.0
Ashmoun	797	9.1	7.2	1452	8.7	12.6	185	8.5	1.6
Bagour	228	9.8	2.2	240	6.8	1.6	23	9.5	0.2
Berket Elsaba	401	6.6	2.6	43	8.4	0.4	88	5.3	0.5
Shohada	1390	10.3	14.3	15	6.5	0.1	970	10.7	10.4
Tala	531	8.1	4.3	57	8.0	0.5	182	6.3	1.1
Quesna	535	10.0	5.4	139	7.8	1.1	82	9.7	0.8
Menouf	421	13.1	5.6	108	8.1	0.9	78	9.3	0.7
Menoufiya	4686	9.5	44.5	2112	8.4	17.7	1739	9.4	16.3
Egypt	104380	8.6	897.7	135920	6.1	829.1	87663	7.5	657.5

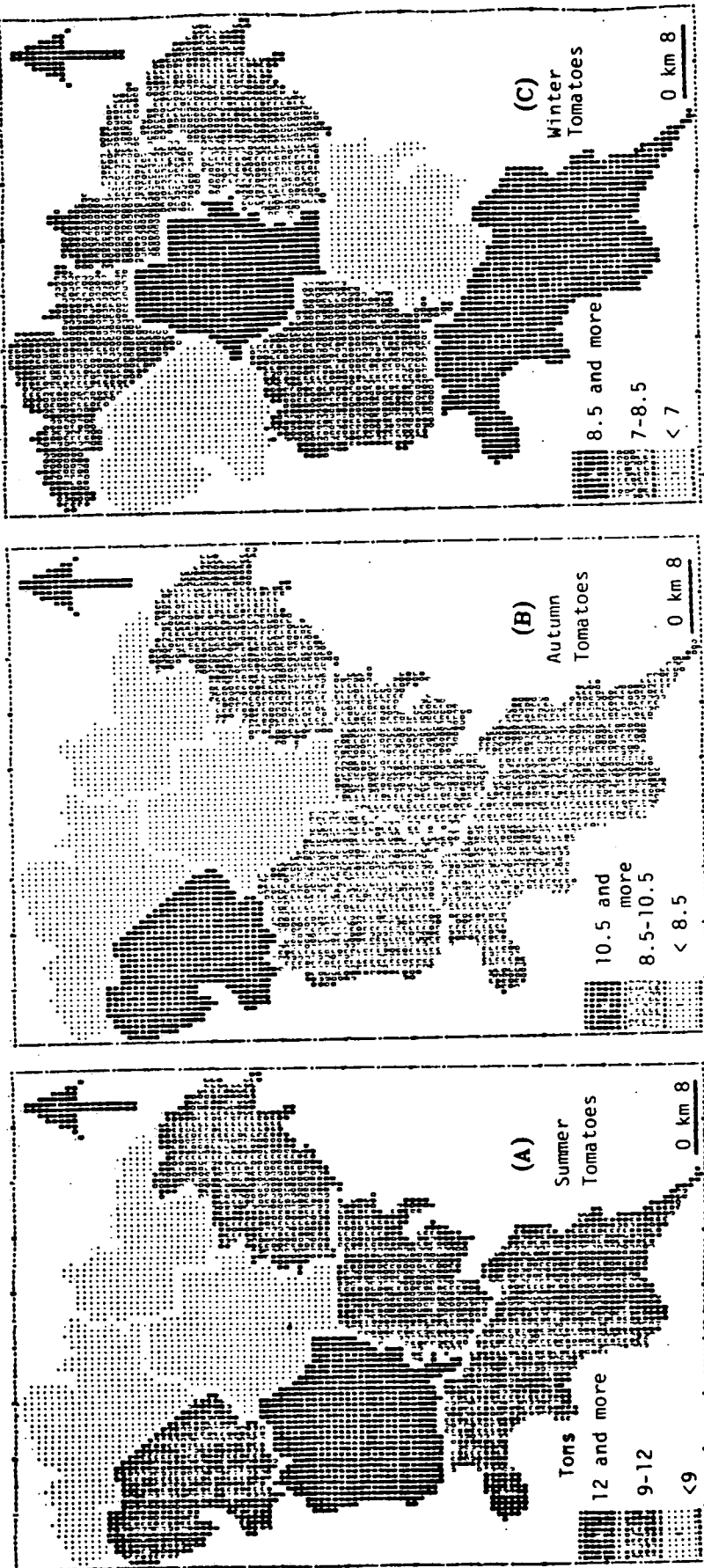
Area in Feddans

Yield in tons. Production in 1000 tons

Source: Ministry of Agriculture. Vegetable and Fruit Data.

The average total production of autumn tomatoes declined from 33 thousand tons in the 1970's to 16.3 thousand tons in 1980-82. More than half of the production came from Shohada district (56 per cent of the total production of Menoufiya).

FIG. 7.5 AVERAGE YIELD OF TOMATOES IN MENOUIFYA , 1980 - 82



The productivity of autumn tomatoes in the region is higher than the average of Egypt, 9.4 tons per feddan compared with 7.5 tons. Therefore Menoufiya ranks as the top governorate producing autumn tomatoes. The spatial distribution of yield as shown in Fig. 7.5 B, clearly indicates that the yield is more than 10 tons per feddan in Shohada district. The lowest yields are to be found in Tala, Berket Elsaba and Shebien Elkom.

Winter Tomatoes : They have the highest price compared with that of the other seasons' tomatoes because they are badly affected by the changes of weather. The cool nights of winter influence the plant and decrease its productivity. The average area cultivated with winter tomatoes was 2,112 feddans in 1980-82. The area under tomatoes was fluctuating during the period 1960-82, the largest area being in 1965/70 (3,013 feddans). Winter tomatoes in the region represented only 1.5 per cent of the total acreage of Egypt, contrasting with the large areas occupied by winter tomatoes in the governorates of Upper Egypt.

The average production of winter tomatoes in Menoufiya was 17.7 thousand tons (2.1 per cent of Egypt) in 1980-82. The yield of the crop is very high in the governorate, reaching 8.4 tons per feddan, while the yield of Egypt is only 6.1 tons. Therefore Menoufiya had the highest yield among the governorates of Egypt, but because the weather (especially the very cold temperature) is a chief element controlling the growth and productivity of tomatoes, Menoufiya's yield per feddan has always fluctuated between 4.4 in 1965 to 8.5 in 1982. Therefore the region had the top winter tomatoes yield in 1969; 1977; 1980 and 1982, but was the lowest yielder in 1970.

Winter tomatoes are cultivated in all the districts of the governorate. About two-thirds of the area of winter tomatoes in Menoufiya is concentrated in Ashmoun district. As shown in Table 7.8

the smallest area of tomatoes is located in Shohada in addition to the districts of Berket Elsaba, Tala and Shebien Elkom. The majority of production of the governorate comes from Ashmoun district (71 per cent of the total production), owing to the large acreage and high yield (8.7 tons per feddan). The highest yield of winter tomatoes was located in Shebien Elkom and Ashmoun districts in 1980-82 (Fig. 7.5C).

(iii) Beans

Beans are grown as pulses and also for green immature pods which are eaten as vegetables. They are valuable dietary supplements. The total area occupied by beans in the region is 6,372 feddans in 1980-82 (21.5 per cent of the total area of the country). Beans are grown during three seasons with the winter crop predominating as shown in Table 7.9.

Winter Beans : The area devoted to this crop is larger than other winter vegetable crops, with an average area of 2,993 feddans representing about 31 per cent of the total acreage under winter beans in Egypt as a whole. Winter beans cultivation is concentrated in Ashmoun district (2,888 feddans). The yield of beans in the region is higher than the average for the whole country, 3.8 tons per feddan compared with 3.2 tons. Menoufiya also has the third highest productivity after Daqahliya and Qalyabiya. The average total production was 11,400 tons (37 per cent of Egypt) in 1980-82. Ashmoun district has more than 95 per cent of the winter beans production of Menoufiya.

Table 7.9 : Summer, Autumn and Winter Beans in Menoufiya and Egypt, 1980 - 82

Beans	Menoufiya			Egypt		
	Summer	Autumn	Winter	Summer	Autumn	Winter
Area	2,296	1,083	2,993	11,025	8,941	9,660
Yield	3.8	2.8	3.8	3.96	3.7	3.2
Production	8.7	3.0	11.4	43.7	33.0	30.9

Area in feddans Yield in Tons Production in 1,000 tons

Source : Ministry of Agriculture. Vegetables and Fruit Data.

Summer Beans : The crop area is the second largest area of vegetables after tomatoes. The average total area is 2,296 feddans, one fifth of the total area under summer beans in Egypt in 1980-82. The yield of Menoufiya is lower than that of Egypt (Table 7.9), but the governorate has one-fifth of the total production of Egypt as a whole.

Summer beans are cultivated in all the districts of Menoufiya except for Menouf. Most of the land (77 per cent of the total in Menoufiya) under the crop is concentrated in Ashmoun, but it had only 71 per cent of Menoufiya's total production of summer beans in 1980-82 because its yield is low (2.87 tons per feddan).

Autumn Beans : Cultivation of autumn beans was carried out in an area of 1,083 feddans in 1980-82 (12 per cent of the total area in Egypt). The yield per feddan is low, about 2.8 tons per feddan, and Menoufiya is the lowest producer of this crop, the production being only 3 thousand tons (9.2 per cent of Egypt's total). Ashmoun district is again the chief producer, with about 81 per cent of the governorate's production in 1980-82.

(iv) Other Vegetables

A wide range of other vegetables are grown in the region such as cucumbers, sweet potatoes, taro, cabbage, aubergines, and dry haricots. The area of each crop was between 1,500 and 3,600 feddans in 1980-82. In addition, there are many other vegetables such as marrows, okra, spinach, lettuce, carrots, cauliflowers, turnips, kidney beans, radishes, artichokes, melons and water melons which are grown in smaller areas (less than 1,500 feddans for each one).

Cucumber cultivation occurs in all the districts, but 70 per cent of the area (2,875 feddans) is in Tala and Shohada. The total production of cucumber in Menoufiya is 31 thousand tons (12.5 per cent of Egypt's total) in 1980-82, two-thirds from Tala district.

Sweet potatoes in the region are famous. The total area is 1,940 feddans, 31 per cent of Egypt's area under the crop. The total production is 22.2 thousand tons (36 per cent of the total for Egypt), mostly from Bagour and Shebien Elkom districts.

Green peas are a winter vegetable in Egypt. The total area of peas in Menoufiya is 2,153 feddans (25 per cent of Egypt's total) in 1980-82, and the production 6,500 tons. The main area of green pea cultivation in Menoufiya is Ashmoun which produced about 97 per cent of the total amount of peas in the region.

The area cultivated with dry haricot beans in Menoufiya is 1,940 feddans and the production 1,900 tons. Menouf and Shohada districts account for more than 95 per cent of the total production of Menoufiya.

The area allocated to taro cultivation is 1,801 (Egypt 7,051 feddans) in 1980-82, while the total production is 14 thousand tons (Egypt 94 thousand tons). Shebien Elkom and Bagour districts are the chief taro producers, which together contributed 11.7 thousand tons.

The bulk of Egypt's cabbages are produced in Menoufiya and about 22 thousand tons are obtained from 1,840 feddans in the region. Cabbages are cultivated all the year round but mostly in winter. Menoufiya is also a producer of aubergines, 4.4 thousand tons from 1,470 feddans in 1979.

Vegetable crops are concentrated in the neighbourhood of urban settlements of Menoufiya and in Ashmoun district in particular which is considered one of the main agricultural hinterlands of Greater Cairo. The scattered nature of the vegetable farms causes problems in vegetable production. This is mainly because vegetables are perishable, thus accounting for much loss in the marketing process. The linkage of vegetable farms to the main roads is an urgent necessity for the vegetable production in Menoufiya.

Most of the vegetable production is to meet the demands of the urban population. The farmers plant the vegetables they need by intercropping with other crops or by small plots, sometimes for sale in other rural markets.

7.3.2 Increasing Fruit Production

In recent years the area planted with fruit has greatly expanded. Knowledge of prices and marketing through co-operatives has served as an inducement for the farmer as he has the opportunity to intercrop during the gestation period. Once a field is registered as an orchard, all cropping requirements are removed. The area of fruit planted covered about 7,747 feddans in 1960 (1.3 per cent of the total cropped area of Menoufiya). This increased to 19,271 feddans in 1970, as shown in Table 7.6. In 1980 it was 31,923 feddans representing 10.3 per cent of the total cropped area.

Menoufiya is considered as one of the main governorate producing fruit in Egypt. The average area allocated to fruit plantation was about 10 per cent of Egypt as a whole in 1976-80. The most important

fruits are citrus, grapes, bananas and others, including pears, mangoes, peaches and guavas.

(i) Citrus

Citrus fruits have the largest area in the governorate, with an average of three-quarters of the area in 1976-80. Menoufiya became the fourth largest governorate in terms of area under citrus fruit cultivation after Beheira, Qalubiya and Sharkiya. The average area in Menoufiya was 24,055 feddans (representing 10.4 per cent of the area of citrus in Egypt in 1976-80). The average total production of the area was 126 thousand tons. The main citrus crops are oranges, tangerines and other minor ones are lemons, sweet lemons and grapefruits.

Table 7.10 : Average Areas of Fruit in Menoufiya and Egypt, 1976-80.

Districts	Citrus			Minor Fruits				Total Orchards area
	Oranges	Tangerines	Total citrus area	Grapes	Bananas	Others	Total	
Shebien Elkom	2,159	327	2,498	46	02	106	154	2,652
Ashmoun	4,939	110	5,073	1,201	1,412	620	3,233	8,306
Bagour	2,659	248	2,912	928	626	227	1,781	4,693
Berket Elsaba	836	96	950	47	-	196	243	1,193
Shohada	2,009	159	2,196	377	75	312	764	2,960
Tala	1,701	120	1,840	164	05	282	451	2,291
Quesna	4,800	368	5,603	86	06	267	359	5,962
Menouf	1,485	169	1,692	390	283	234	907	2,599
Menoufiya	20,588	1,597	22,764	3,239	2,409	2,244	7,892	30,656
Egypt	158,912	15,046	188,605	50,390	13,060	79,945	143,395	332,000

Area in feddans

Source: Ministry of Agriculture. Vegetables and Fruit Data.

Oranges : Oranges are the chief citrus crop covering an area of 20,588 feddans, about 90 per cent of the total area of citrus (see Table 7.10) in 1976-80. Menoufiya is one of the chief governorates for the production of oranges in Egypt producing 13 per cent of the total of the country.

The area of oranges - as well as most of the fruits - has clearly increased, from 12.9 thousand feddans in 1971 to 21.8 thousand feddans in 1980. The production also has increased from 79 thousand tons in 1971 to 102 thousand tons in 1980. Nearly half of average production comes from Quesna and Ashmoun districts. Large areas of orange orchards are to be found in all the districts of Menoufiya (more than 1,400 feddans each) except for Berket Elsaba district which has only 836 feddans.

Tangerines : They are the second main citrus fruit with an average area of 1,597 feddans in 1960-80 (10.6 per cent of the total area under tangerines in Egypt). Menoufiya is the second largest producer of tangerines with 19 thousand tons (26 per cent of Egypt's total). Its productivity of tangerines is the highest among the governorates reaching 12 tons per feddans in 1976-80.

Tangerine orchards are to be found in all the districts of Menoufiya, but the largest area under this fruit is concentrated in Quesna and Shebien Elkom (Table 7.10). Berket Elsaba has the smallest area.

Other citrus fruits include lemons, sweet lemons and grapefruits, which are planted in small areas of not more than 500 feddans in all the region. Quesna district has the largest area under other kinds of citrus.

(ii) Grapes

Grapes are considered as the second main fruit. Menoufiya is the fifth largest producer of grapes in Egypt after Beheira, Alexandria, Minya and Fayum. The average area of land under vines was 3,239 feddans (6.4 per cent of Egypt) and the total production of grapes was 18 thousand tons (6.5 per cent of Egypt) in 1976-80.

Vineyards are concentrated in two districts of Ashmoun and Bagour which have two-thirds of the total area in Menoufiya. The other districts had an area which varied between 46 to 390 feddans.

(iii) Bananas

Menoufiya is the largest producer of bananas among the governorates of Egypt. The average total area was 2,409 feddans, 18.4 per cent of the total area in the country in 1976-80, an area which has not registered a remarkable rise; it was 2,051 feddans in 1966-70, and rose to 2,409 feddans in 1976-80. The main reason was the spread of some diseases which affected the productivity of bananas in Egypt as a whole in the last few years. The production of bananas had declined, therefore, the sale prices as registered experienced an increase of more than 300 per cent between 1978 and 1981. The government is trying its best to encourage the banana industry. It introduced high yielding fruit varieties such as Williams banana and others which have been experimented with in state farms and recorded a yield of 25 tons per feddan.⁽¹³⁾

The total production of bananas was 18 thousand tons (16.4 per cent of Egypt as a whole). Ashmoun district is the chief producer of bananas in Menoufiya, with nearly 60 per cent of the total land under this fruit. In addition about 38 per cent of the area under bananas in the region is found in Menouf and Bagour districts (Table 7.10).

Other Fruits

There are many other fruits planted in Menoufiya such as plums (682 feddans), pears (397 feddans), mangoes (396 feddans), guavas (202 feddans), and peaches (158 feddans). The area under each of these is low compared with the other main fruits. The total production of all these fruits was about 5,000 tons. The majority of the production comes from Ashmoun and Quesna districts.

7.4 Farmers' Response to Price Changes

It is useful to gain an understanding of the factors affecting farmers decisions and their behaviour. Obviously, incentive is difficult to define in a multi-purpose cropping system, but some feel for the relative attractiveness of alternatives may be gleaned from Table 7.11. The incentives are of two types, cash and non-cash crops. Cash objectives are to minimize cash costs, maximize cash returns, and to achieve the highest value of production, whether sold or not, to minimize the time from planting to the sale of the crop after providing enough food and fodder for on-farm consumption.

Labour-intensive vegetables have the highest net income per month (more than 130 Egyptian pounds per feddan), but are limited by markets. Plantings are, however, expanding rapidly. Fruit crops have a high net income but are restricted by the long period required to reach maturity and the small farmers' needs for food grain and animal fodder. These crops are very popular in Ashmoun and Quesna districts and near urban centres. Fruit and vegetables in Menoufiya are often tied to land speculation and capital gains. Of the field crops long-season clover has the highest net income per month (107 Egyptian pounds per feddan), recently followed by maize (77.1 pounds). Cotton (21.2) and wheat (23.1 Egyptian pounds) have the lowest net income per month. The main reason for that is the low prices obtained from the government. Therefore, the farmers are always less willing to grow cotton, although the government tries to induce farmers to do so by increasing cotton prices. Unfortunately the income from cotton does not cover the inputs involved. The price of wheat has been stable since the 1970's, while the price of maize increased three times during the period between 1970-82. As a result, the area under wheat has decreased and the area of maize increased, as shown in Tables 7.1 and 7.3

Table 7.11 : Incentives per Feddan for Selected Crops in Menoufiya
(1982 Prices) (Egyptian pounds)

Crop	Cash Inputs	Cash Outputs	Net Income	Land occup- ancy period (months)	Net in- come per month	Amount marketed
	(1)	(2)	(3)	(4)	(5)	(6)
Wheat	80	230	150	6.5	23.1	Part
Maize	130	400	270	3.5	77.1	Part
Short-season clover	35	n.a.	n.a.	3.0	n.a.	n.a.
Long "	90	840	750	7.0	107.1	Part
Cotton	470	640	170	8.0	21.2	All
Tomatoes	340	860	520	4.0	130.0	All
Potatoes	280	790	510	3.5	145.7	All
Soya Beans	85	590	505	6.0	84.0	All
Broad beans	63	280	217	3.0	72.3	All
Oranges	95	970	875	12.0	73.0	All

n.a. Not applicable since short-season clover was being fed to livestock and not marketed.

- (1) Off-farm payments, rents of land not costed.
- (2) Gross value of product.
- (3) Cash return minus cash costs.
- (4) Time from planting till harvesting.
- (5) Self-explanatory
- (6) The amounts of crop for sale

Source: Prepared by the researcher during the field visit in October 1983.

The typical Egyptian small farmer is only partly commercialized, and his decision variables are not strictly those of the large farmers. The small farmer first allocates land to his own food crops such as maize and other minor crops, and then to his animals, clover and straw. He then has to satisfy to some extent, area and quota requirements before the co-operative supply the desired inputs, mostly for cotton.

Any land left over can be freely allocated to long-season clover, over quota amounts of cotton, wheat, fruits and vegetables to maximize profits where market opportunities exist. Planting of long-season clover or wheat during winter precludes a crop of cotton the following summer because there is not enough time for a full growing season for both.

Cotton has by far the highest cash costs for inputs (470 Egyptian pounds), as shown in Table 7.11, and is entirely sold through the co-operative market system. It also has the longest growing period (8 months). There is some doubt whether the existing co-operative prices are relevant because these institutions' control over the disposal of each farmer's accounts often disregard the input costs incurred by the farmer. This has a negative impact on the income received by each farmer.

To conclude, studies of the effect of price changes on supply have been hampered by the complexity of these relationships. The evidence shows, however, that the farmers are neither unresponsive to price change nor perverse in their reaction. The major determinants of price response are the high degree of product substitutions technically possible, the farmers' attitude towards market exposure, the compulsory delivery quotas and their enforcability, and the dual purpose of crops.⁽¹⁴⁾

7.5 Livestock Production : Some Problems

In the Egyptian system, animals compete with people as well as complement them in the production and consumption of scarce food supplies. Virtually no rangeland is available for livestock, and all fodder must come from arable land; this raises the fundamental question of how to allocate a limited area between food for animals and for humans. Animal feed is in chronically short supply, especially in the summer. Winter feed is mainly clover (berseem), and summer feed is straw and concentrates, such as cereal grains, leaves of maize, and cotton seed cake.

Therefore, animals merely survive on a hunger ration during summer and autumn, whereas the surplus winter protein is a wasteful and expensive source of energy. (15)

The area under clover cultivation in Menoufiya was as large as 194 thousand feddans in 1980 (7.2 per cent of the Egyptian total). Among field crops, clover is the most important in area and value of agricultural output, covering about 31 per cent of all Menoufiya's cropped area (Table 13 in appendix). This is more than the combined area of its two alternative crops, cotton and wheat, which total 122.5 thousand feddans. Clover is an intermediate product, grown for either winter fodder or as a soil conditioner before and after cotton or maize. It is cut and fed to stock as green feed from December to May. If one or two cuts are taken, the residue is turned in and the land prepared for spring planting of cotton. If clover is kept for four cuts, no cotton crop follows. The type is called full-season clover, and covered 126 thousand feddans in 1980. Although yields are high, it should be possible to get more fodder with less land because little breeding work has been done. By substituting improved factor production for area expansion, more animal fodder can be grown without losing foreign exchange earnings from cotton or foreign exchange savings from wheat production.

7.5.1 Animal Production

Next to land, farm animals are the most important asset in Egyptian agriculture. Available evidence indicates that farm animals are generally owned by all groups of landholders. This is due to the fact that these animals are used particularly by small holders to perform farm work and to provide the family with some dairy products. Only a very small proportion of householders raise cattle for commercial purposes. (16)

Animals are considered one of the main sources of value in Menoufiya,

and represented more than one third of the total value of agricultural production in the region in 1976.⁽¹⁷⁾ The governorate had the second largest number of farm animals among the other governorates of Egypt. The density of livestock per feddan of clover is higher in Menoufiya than for Egypt as a whole. Because of the high yield per feddan in the region, on one feddan of clover 3.7 animals are fed whereas in Egypt this figure is only 2.7.⁽¹⁸⁾

The total number of livestock in Menoufiya in 1980 is illustrated in Table 7.12. The region accounted for more than half a million head, though numbers of donkeys and horses are not included. This number was about 7.0 per cent of the whole of Egypt. Because of the shortage of fodder in summer, and the rise of dry fodder prices, the number of animals declined from 668 thousand head in 1970 to 550.9 thousand in 1980. The decline in the number of animals is not limited to Menoufiya, but also occurred to some extent in the country as a whole, where numbers were 7,472 thousand in 1970 and decreased to 7,387 thousand in 1980.⁽¹⁹⁾

The main kinds of animals in the region are water buffaloes 240.7 thousand, cattle 176.1 thousand, sheep 74 thousand, goats 51 thousand and camels 9.1 thousand heads. Menoufiya has one of the largest numbers of buffalo and cattle in the whole of Egypt. The cattle were the main source of draughting power for food crops, but their role clearly declined after the use of agricultural mechanization. Cattle are often the best investment for both rich and small farmers, and is also a status symbol, a store of wealth and insurance to the fellahin.

The spatial distribution of livestock in Menoufiya, as shown in Table 7.12 reveals that Ashmoun district had the largest number of water buffalo, sheep and goats. While Tala had the largest number of cattle, Menouf district accounted for the largest number of camels in 1980. More than half of livestock numbers are concentrated in these three districts.

Table 7.12 : Number of Livestock in Menoufiya, 1980
(in 1000 heads)

Districts	Cattle	Water Buffalo	Sheep	Goats	Camels	Total
Shebien Elkom	16.1	26.2	8.7	6.8	0.5	58.3
Ashmoun	35.7	43.8	15.8	12.8	1.8	109.9
Bagour	13.2	29.8	7.7	4.9	0.8	56.4
Berket Elsaba	15.6	20.2	3.2	1.0	0.3	40.3
Shohada	27.4	31.1	9.2	5.2	1.3	74.2
Tala	38.8	36.0	21.5	7.7	1.0	98.5
Quesna	11.7	24.7	4.8	4.0	0.5	45.7
Menouf	17.6	28.9	9.6	8.6	2.9	67.6
Menoufiya ⁽¹⁾	176.1	240.7	74.0	51.0	9.1	550.9
Egypt ⁽²⁾	1912.0	2347.0	1593.0	1451.0	84.0	7387.0

Source: (1) Menoufiya Governorate Council, The Statistical Index of Menoufiya 1981, Restricted Publication, Shebien Elkom, 1982, p.173.

(2) C.A.P.M.S. Statistics of Animal Production of 1981, Cairo, 1982, p.16.

Cattle and water buffalo are the main source of milk and meat. Calves, sheep and goat are the chief sources of meat as shown in Table 7.13. Camels, beside their meat are fully used for transportation of fertilizers, seeds and products between the farms and the houses of farmers. Use of agricultural mechanization in the area led to the release of the animals from the farm work, which also led to relatively higher production of both meat and milk.

Table 7.13 : Number and Amounts of Slaughtered Livestock in Menoufiya and Egypt in 1981

	Oxen	Cows	Water buffalo	Calves	Sheep	Goats	Camels	Total
<u>Menoufiya</u>								
Numbers	0.22	9.4	7.1	30.7	4.0	1.9	0.9	54.2
Amounts	54.7	1888.0	1784.0	4461.6	100.6	28.5	271.0	8588.4
<u>Egypt</u>								
Numbers	1.0	41.0	82.0	743.0	422.0	30.0	46.0	1365.0
Amounts	249.0	8233.0	20606	107735	10613	450.0	13846	161732

Numbers in 1000 heads

Amounts in tons

Source: CAPMS, Statistics of Animals Production of 1981, Cairo, 1982, p.16.

Menoufiya Governorate Council, The Statistical Index of Menoufiya in 1981, op.cit. p.175-176.

Because of the great demand for veal there has been a sharp decrease in the number of calves. Therefore, the government established about 31 stations as a food security project in the late 1970's for fattening calves in many localities in Menoufiya. The production of these stations was 7,868 head per year, with about 1,731 tons per year, ⁽²⁰⁾ mostly to help feed the population of Greater Cairo.

There was about a 40 per cent increase in the amounts of slaughtered livestock in the region from 6,129 tons in 1975 ⁽²¹⁾ to 8,588 in 1981. In Egypt as a whole, the percentage increase in the same period was 10 per cent, when the amounts of meat from the slaughtered livestock increased from 146,749 tons in 1975 to 161,732 tons in 1981. ⁽²²⁾ The improvement in the standard of living and the increase of urban population in the area and Greater Cairo are main reasons for the large increase of the amounts of slaughtered livestock in Menoufiya.

Milk production in the region represented 10 per cent of the total production in Egypt in 1975. Menoufiya is the third largest producer of milk among all the governorates of Egypt, after Sharqiya and Daqahliya. The total production of Menoufiya was 158.1 thousand tons in 1970 which increased to 176.8 thousand tons in 1975,⁽²³⁾ and to 193.1 thousand tons in 1981.

Water buffaloes are the main source of milk, with a total production of 137 thousand tons (71 per cent of the total production of milk) in Menoufiya in 1981. Cows are the second main source of milk. The problem of feddan shortage during summer and autumn causes a decrease of milk production. The average production of milk by water buffaloes was 4.1 kg/daily, during winter and 2.4 kg/daily in summer. The average daily milk production per animal was between 3.2 and 3.9 kg.⁽²⁴⁾ In general, the milk productivity of buffaloes and cows in Egypt as a whole is low. The prices of milk and dairy products have increased sharply during the last few years, trebling between 1975 and 1982. The government is trying to improve cows and buffaloes, by cross-breeding of young cows and buffalo, in order to produce new hybrid breeds with high yields of milk and meat.

7.5.2 Poultry Production

Poultry production makes eminent economic sense under Egyptian conditions. The principal elements governing poultry production are: (i) the conversion ratio of grain per kilogram of poultry is up to 3.1 as against the 10.1 ratio for beef; (ii) commercial poultry production is capital intensive whereas beef is more land intensive because of its feed requirements; (iii) poultry production can be organized with many small farmers who have multiple objectives, many of which are other than economic; and (iv) the short breeding cycle of poultry makes it amenable to rapid improvement in breeding for specific traits. ⁽²⁵⁾

The government has started to invest heavily in this activity, from a previous negligible level, to large investment throughout the public sector, and co-operatives loans. Despite heavy direct investment, about 90 per cent of the chickens and eggs are still produced on traditional small farms and in the houses of rural residents.

It is difficult to know the precise number of poultry in the region, but we can say that the overwhelming majority of the rural residents have their own poultry such as chickens, ducks, geese and also rabbits. The objective of the home poultry is to provide the rural resident and his family with meat and eggs. Sometimes if there is a surplus, then it is sold at the local market in the village or the nearest urban centres.

The government also encourages people to invest in poultry production. There are about 132 stations of chicken production and about 25 of egg production. Chicken and egg production from these stations is provided to the urban population of the region and the surplus is to help feed urban population of Greater Cairo or other urban centres.

The poultry farms are to be found in all the districts of Menoufiya, with total production of 2.4 million chickens, about 8 per cent of the production in Egypt. Poultry meat production of poultry farms was estimated at 3,849 tons in 1981.⁽²⁶⁾

Egg production has registered an absolute increase after the establishment of Kamshish station in Tala district, which produces about 15 million eggs per year. The egg industry in Menoufiya will achieve a considerable surge in the year 1985, when the station of Kufur Elramel in Qesna district (now under construction) will produce about 30 million eggs a year.⁽²⁷⁾

Table 7.14 : Production of Chicken and Egg Farms in Menoufiya in 1981

Districts	Chickens		Eggs	
	No. of Farms	Production (thousands)	No. of Farms	Production (thousands)
Shebien Elkom	13	262	4	600
Ashmoun	30	464	1	7
Bagour	35	451	2	334
Berket Elsaba	11	207	2	825
Shohada	4	61	-	-
Tala	9	202	1	15000
Quesna	25	685	11	2962
Menouf	5	74	4	968
Total	132	2406	25	27588

Source: Ministry of Agriculture in Shebien Elkom, Poultry Production, Unpublished data.

7.6 Limited Production of Honey and Fish

(i) Honey : Despite the fact that there are vast areas of flowering crops such as clover, maize, cotton and fruits, the number of bee-hives is limited in the region. The total production of honey in Menoufiya was 340 tons in 1980 (4 per cent of the total production of Egypt). (28)

The production of the governorate has decreased from more than 400 tons in the early 1970's (29) The decline of honey production is related to the widespread use of chemical pesticides on cotton which led to the destruction of large numbers of honey bees and is limited by the importance of orchards.

(ii) Fish : The main source of fish in Menoufiya is the Nile and its main irrigation canals. Fish are not considered as essential diet for the population of the rural areas. Most of the fish trade is concentrated in the urban centres. The production of the region is low, therefore, the governorate council has a plan to establish fish farms by constructing fish ponds in some parts of Elpharoeneiya drainage canal and in Bahr Shebirn irrigation canal to provide the region with a cheap source of protein, because the price of meat is relatively high.

7.7 Summary

Food production in Menoufiya is abundant, the region being considered as one of the main food producing governorates in Egypt. The yield per feddan is always higher than the other governorates of the country for most cereals, vegetables and fruit, because of the fertile soils, good irrigation and drainage conditions, in addition to the intensive system of farming. Most of the cropped area is cultivated for food crops to cover the needs of the large population in the governorate and the large cities of the delta.

The main food crops in the area are maize, wheat, broad and soya beans, the total area allotted to these crops representing nearly half of the cropped area. Maize is the staple food of the rural population, its area recording an absolute increase during the last three decades, to satisfy the large increase of rural population. In contrast, at the same time the wheat area has decreased clearly, owing to the low price of imported wheat and flour. Expanding clover cultivation has been at the expense of the wheat acreage, which provides one of the lowest net incomes per month among food crops. The government provides the farmers with high yielding varieties of crop seeds which have led to a large increase in production.

Because horticultural production is one of the high earners to the large landholders rather than field crops, the percentage of land under fruit and vegetables has consistently increased since the mid-sixties. Vegetables are grown all the year round, with summer vegetables predominating. Different kinds of vegetables are produced in the region, the main ones being potatoes, tomatoes and beans. Menoufiya is considered the most important producer governorate of most vegetables in Egypt and most of the land under vegetable cultivation is concentrated in Ashmoun district, which is the nearest district to Greater Cairo, the main market of vegetables in the whole of Egypt. The scattered nature of vegetable farms causes problems to vegetable production and their linkage to the main roads is an urgent priority for the vegetable production in Menoufiya.

The region is also considered as one of the main fruit producing areas in Egypt. The most important fruits are citrus, grapes and bananas. Ashmoun and Quesna districts are the main source of fruits in Menoufiya.

The study shows that small farmers first allocates land to his own food crops such as maize and others, any land left over can be freely allocated to long-season clover. Therefore farmers are neither unresponsive to price change nor perverse in their reaction.

Animal feed is in chronically short supply, especially in summer and autumn. Winter feed is mainly clover; summer feed is wheat straw and concentrates. Therefore, animals merely survive on a hunger ration during summer and autumn. Because of shortage of fodder, small farmers were forced to sell the calves prematurely at considerable loss, some of them selling all their livestock, or part of it, during the year when their holdings lay in a cotton block, and then purchasing other livestock in the year when crops other than cotton were cultivated.

Farm animals are widely owned by all groups of landholders to perform farm work and to provide the family with some dairy products. Only a very small proportion of farmers raise cattle for commercial purposes. The governorate has the second largest number of livestock among the governorates of Egypt, the main kinds of livestock being water buffalo, cattle, sheep, goats and camels. Veal meat is the main source of meat production in the area. Menoufiya is also the third largest producer of milk among the governorates of Egypt.

Poultry production increased rapidly during the last decade, since the governorate has started to invest heavily in this activity. It is noteworthy that the majority of poultry and eggs are still produced in traditional small farms and in the houses of rural residents. Egg production has registered an absolute increase after the establishment of Kamshish station in Tala district which produces about fifteen million eggs per annum.

The study of food production in the area shows that it is large and is increasingly able to supply the dense population of the region as well as some of those in major urban centres, especially Greater Cairo, with most vegetables, fruit and animal products. But the question is what is the problem of food imbalance and deficit in Menoufiya?

The aim of the next chapter will be to attempt to provide the answer to this question, in addition it will stress the effect of population growth on land and food production.

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CHAPTER EIGHT

POPULATION AND FOOD

8.1 Introduction

Food is a major obstacle to development, and its adequacy a constant threat to economic and political stability, especially in the developing countries. The high rate of population growth is the chief element in increasing this problem in a country like Egypt, where the cultivated land is limited and the percentage of reclaimed new land is low compared with the growth of population. Every 22 seconds, the country receives a new baby. More children mean more mouths to feed. Beyond any doubt, an additional child is a burden on people other than its parents and in some ways even on them, for the first fifteen or twenty five years of its life.

The immediate problem in the relation between population and food is whether the actual production of food, as opposed to the potential, can satisfy the requirements and effective demand for it created by a rapidly growing population. Especially in Egypt, where population growth has accelerated to unprecedented levels and nutrition and food consumption are often deficient, food requirements and demand have grown at very high rates. The food problem in Egypt created by rapid population growth is, therefore, part of the general problem of overall and agricultural underdevelopment, the solution to which must be sought both in accelerating development and slowing down the growth of population.

The previous study shows that in Menoufiya, the growth of population is characterized by high natural increase rates. The population grows continuously on limited acreage of cultivated land which has led to an increase in its density, and the region has become one of the highest

density regions in the whole of Egypt. The drifts of out-migration to the large cities is a salient phenomenon, that means the increasing population needs more land to produce more food. Farmers with an intensive system of farming and intensive use of fertilizers have increased the production of food and offset the shortage of the cultivated land.

The purpose of this chapter is to present a general review of the state of knowledge concerning the relations between population and food. The first section will deal with the effects of population growth on land, and the development of land per capita, in addition to the study of the balance of population and food production. The second section focuses on levels of nutrition. The final section of this chapter deals briefly with the consumption of foodstuffs in the region.

8.2 Population and Food Production

It is generally recognized that population and food are closely interrelated, even to the extent that at times the population problem has been identified as a food problem. In Menoufiya as well as Egypt, the population growth has a great effect on the production and consumption of food. There are two main problems caused by the population growth on limited acreage of cultivated land, they are (a) decreasing per capita cultivated land and (b) food-population imbalance.

8.2.1 Population Growth and Cultivated Land

As a result of the continual increase of population, and the non-existence of barren land in Menoufiya, there has been a decrease in average cultivate land, as areas were urbanized at the expense of the cultivated land. That means increase of population and more urban sprawl will further decrease agricultural land and the production of food.

Despite the fact that during the period 1939-80, the population growth was more than two-thirds of a million and this increasing number

needed more land to produce more food, the cultivated land has decreased. More than 17 thousand feddans of cultivated land have been transferred to buildings, roads and other purposes. The sole result of that dangerous decrease is that both cultivated and cropped land per capita is decreasing. The figures of Table 8.1 reveal that per capita cultivated land in Menoufiya is not only too little, but is decreasing year after year. It was 0.3 feddan (1,260 sq.m.) in 1939 and decreased to only 0.18 feddan (756 sq.m.) per capita in 1980. On the other hand, the per capita of cropped area also decreased from 0.57 feddan to 0.34 feddan (Fig.8.1). The population growth on the limited acreage of cultivated land is the chief element affecting the land shortage and cultivated and cropped area decline in the region.

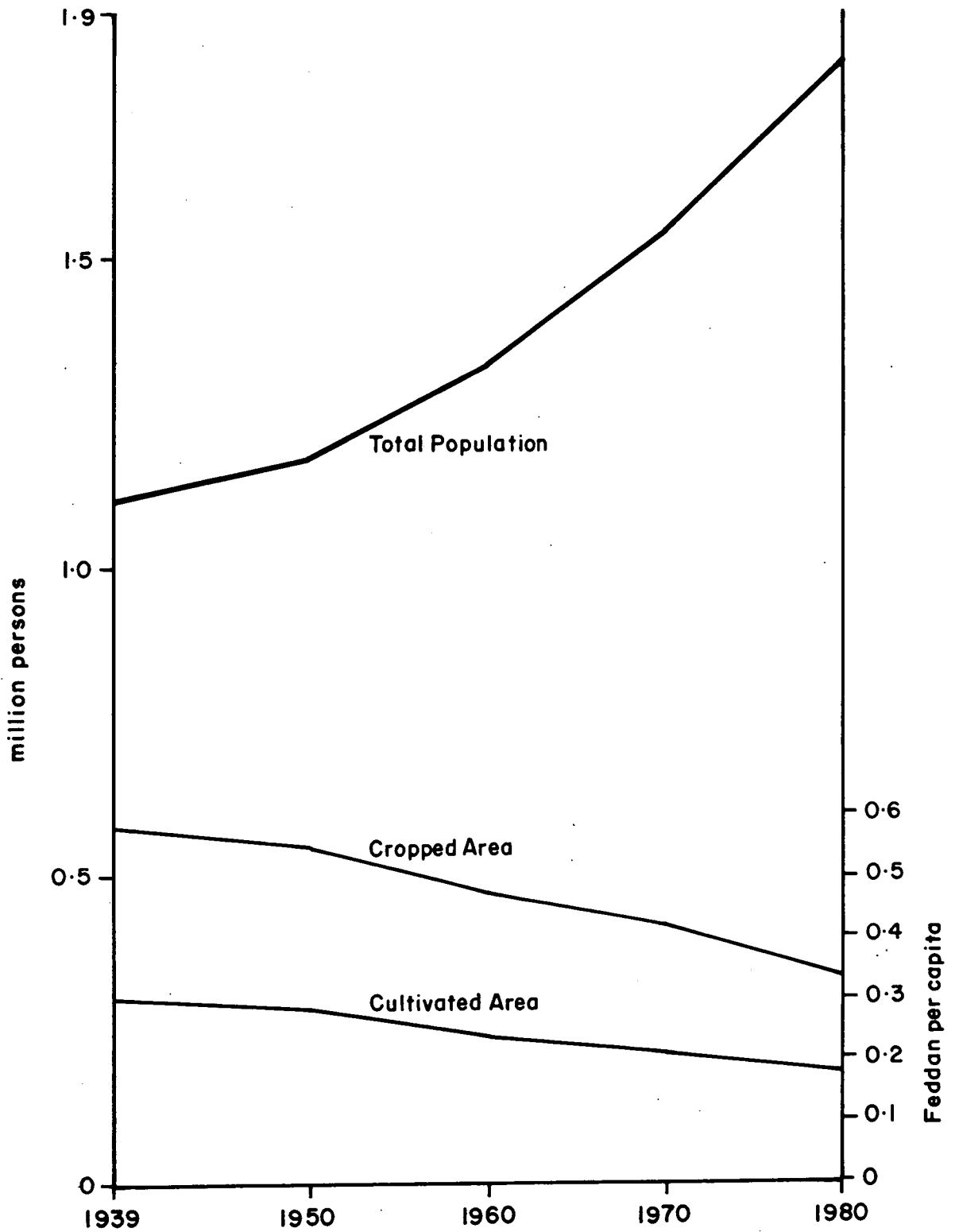
Table 8.1 : Cultivated and Cropped Land Area Per Capita in Menoufiya, 1939-80

Year	Population (million)	Cultivated Area		Cropped Area	
		Feddans (thousands)	per capita	Feddans (thousands)	per capita
1939	1.132	337.0	0.30	647.0	0.57
1950	1.175	336.1	0.29	645.3	0.55
1960	1.352	330.1	0.24	640.1	0.47
1970	1.552	324.7	0.21	633.2	0.41
1980	1.826	319.8	0.18	624.5	0.34

Source : (1) Population of 1960 from CAPMS, Census of Menoufiya, but the number of population of the other years estimated by the researcher.

(2) Cultivated and cropped area from : Agricultural Censuses of 1939-50 and 1960. Data of 1970 and 1980 from : Province of Agriculture, Shebien Elkom, Unpublished Data.

Fig 8.1 POPULATION GROWTH, CROPPED AND CULTIVATED LAND PER CAPITA IN ME NOUFIYA, 1939-80



The cultivated land per capita is small in all the districts of Menoufiya, although it varies from one district to another. Shebien Elkom district has the lowest cultivated land per capita, only 0.11 feddan (462 sq.m.); that is due to the large growth of its population as a result of creating more jobs for the increasing population, and the large urban and industrial expansion which occurred on its cultivated land during the last two decades. The per capita cultivated land is higher in both Shohada and Berket Elsaba districts (0.20 and 0.21 feddans respectively); these districts have large out-migrations in addition to the small percentage of their urban populations.

The problem of food production is that any creation of more jobs in the area will decrease the out-migration, and that will increase the urban sprawl at the expense of the cultivated land, which means more loss of cultivated land and more decline of per capita cultivated land. As shown in Fig 8.1, the population is increasing continuously and per capita cultivated and cropped land area is decreasing year after year.

8.2.2 Population Growth and Food Balance

In a region of high density of population and decreasing cultivated land such as Menoufiya, the only way to achieve a population-food balance is to increase the yield per feddan. The intensive system of farming and the long experience of farmers in addition to the use of new technology such as the application of correct fertilizers and high yielding varieties of seeds provided by the co-operatives have succeeded in increasing the food production in the area during the last three decades. The yield per feddan of grains in the region recorded an increase of between 50-60 per cent in 1980 compared with 1950.

There is evidence of food-population imbalance provided by the data of Table 8.2, which shows the growth of population (in index) and output of foodgrains (maize and wheat as a staple food of rural and

urban dwellers). According to this data, the growth rate of foodgrains has lagged behind that of Menoufiya's population since 1970. While the population index increased by 53 per cent between 1950-80, that of foodgrains production registered an increase of only 38 per cent.

Table 8.2 : Index of Growth of Population and Output of Foodgrains and Potatoes in Menoufiya, 1950-80
(1950 = 100)

Year	Population	Output of Foodgrains	Output of Potatoes
1950	100	100	100
1955	105	106	108
1960	115	129	132
1965	123	123	246
1970	132	125	261
1975	144	131	283
1980	153	138	516

Source : Calculated from

- (1) The Censuses of Menoufiya's Population
- (2) Ministry of Agriculture, Field Crops Data, op.cit.

There is no doubt that population growth at the same time as decline of the cultivated land area under grains, especially wheat, aggravates the present imbalance between output of foodgrains and population. The decline of land under wheat cultivation was as large as 51 thousand feddans (42 per cent) between 1950 and 1980.

A decline in per capita foodgrains resources is reflected in the production of maize and wheat. In 1950, 317 kilos of these two crops were available for each person in Menoufiya. By 1980, that figure had declined to 276 kilos. This decline was also related to the decrease

of wheat production in the region, since the per capita of wheat production was 124 kilos in 1950 and declined to 74 kilos in 1980. On the other hand, there was a small gain in maize production, per capita production of maize rising from 193 to 202 kilos.

By contrast, as a result of the great expansion of farming of fruit and vegetables at the expense of field crops during the last fifteen years, the production of fruit and vegetables in the area has increased sharply. This increase is due to the continuous demand of the urban population of the region and Greater Cairo. It is noteworthy that as a result of the rise in the standard of living of the population, the consumption of fruit and vegetables increased rapidly. As shown in Table 8.2 the index of potato production - as the main vegetable crop in the whole of Egypt - shows that there is evidence of food-population balance in fruit and vegetables. As a result per capita production of fruit and vegetables has seen an absolute increase.

8.3 Food Subsidies Problem

Food subsidies play an important role in keeping down prices of the main food commodities especially for the low income classes. The subsidized food commodities reach consumers in a variety of ways. Some, such as bread are available to all consumers at a unified low price, e.g. a loaf of bread (135 grams) still sells for one Egyptian piastre. Some, such as sugar, tea, rice, frozen meat and cooking oil, are offered on ration cards distributed according to fixed allocations per individual. In addition, flour, macaroni, broad beans and other food items are sold at subsidized prices. For each item the role of the government is confined to improving as much as its budget allows to try to make up for supply deficiencies in the market. It is noteworthy that these subsidies have mainly been for the urban population, apart from sugar, tea, cooking oil and rice for the rural areas.

Food subsidies did not appear in the government budget until the late 1950's. The total volume of subsidies increased each year with population growth and prices increases until they reached about 20 million Egyptian pounds in 1970. The most dramatic increase in the subsidy bill occurred after 1973 due to the large increase in the world prices and the government policy of keeping the prices of main items unchanged. This pushed the subsidy up to 130.8 million in 1973 and to 428 million pounds in 1974.⁽¹⁾ The total subsidy bill in domestic currency kept increasing, and as a result the direct subsidy burden in 1980 was put at 1270 million pounds.⁽²⁾

The main points raised against the food subsidies system are:

- (i) Selling food commodities at subsidised low prices encourages over-consumption and waste;
- (ii) The increase in consumption on the one hand and the increase of international prices on the other hand impose an increasing burden on the government budget and on the balance of payments, since a large portion of the subsidised items are imported.⁽³⁾ In fact, the subsidized price policy to urban consumers, which forces the farmer to buy dear and sell cheap, has discouraged farmers from producing strategic crops like cereal grains and pulses. As an income redistribution measure, the system of consumer subsidies in Egypt has proven to be ineffective and, instead, the program has created an undesirable disequilibrium. Thus, reforms are needed in Egypt's domestic price and food distribution policies.⁽⁴⁾

The second consequence of the politics of food has been the growing imports of foodstuffs especially wheat, wheat flour and maize as a result of the rapid growth of population and the shortage of the domestic product. As shown in appendix 14, Egyptian imports of some principal foodstuffs increased by more than 700 per cent during the period 1976-81.

The continuous increase of imported foodstuffs has obviously oriented large sums of capital away from productive investment, and the rising imports in a time of rising international prices for agricultural produce have cannibalized large amounts of precious foreign currency. The result in Egypt has been the aggravation of an already serious balance of payments problem. Egypt's production of wheat is about 1.9 million tons and 3.3 million tons of maize in 1981.⁽⁵⁾ The country has been importing growing amounts to face the needs of the increasing population. In 1976 hard currency outlays did not exceed 221 million Egyptian pounds, but by 1981, the bill reached more than 1,000 million Egyptian pounds (appendix 14).

On the other side, at the time when Egypt's population was increasing by one million every 10 months,⁽⁶⁾ and facing a food deficit, a certain quantity of grain, particularly wheat and maize, was utilized as livestock feed, and another portion of any year's harvest was held for the next planting. Then finally, there is the annual loss of about 7 per cent of all grain production owing to poor storage, humidity, birds and rodents, and the post-harvest effect of pesticides.⁽⁷⁾

8.4 Food Supplies and Level of Nutrition

The available figures on the quantities of food consumed indicate an increase in the rate of foodgrain and a decrease in the rate of meat, fish and eggs. The last group consists of a high rate of proteins. There is a major problem of protein malnutrition amongst children between weaning and four years of age. It is clear that children of unskilled workers in urban areas of Egypt and most rural farmers are at particular risk from chronic malnutrition.⁽⁸⁾ Moreover, children of owners of farms of less than 5 feddans also have a high ratio of malnutrition.

Several methods may be used for assessing the level of food

supply and nutrition. One of these, developed especially by United Nations Food and Agriculture Organization (FAO), is to determine the food supplies in terms of the quantity of diet as reflected in the calorie intake, and the quality of the diet as reflected in the availability of one or several essential nutrients, such as protein.⁽⁹⁾

The International Food Policy Research Institute (IFPRI) estimated calorie requirement per capita to the people of the Middle East and North Africa as 2,450 calories.⁽¹⁰⁾ According to this standard, the figures for Egypt show that daily calorie intake has increased over the period 1950/51 to 1966 from 2,383 to 2,851 calories, but then the rapid increase of standard of living led to a large increase of the daily calorie intake per capita which reached 3,774 calories in 1976 (see Table 8.3).

Table 8.3 : Daily Calorie per capita in Egypt in 1966 and 1976 (kcal)

Food Groups	1966	1976
Cereals	2,091	2,685
Starch roots & tubers	22	47
Sugar & sugar products	166	282
Pulses	76	116
Vegetables	71	88
Fruits	106	112
Meat	53	47
Fish	11	10
Eggs	7	6
Milk & dairy products	120	116
Fats & oils	128	265
Total	2,851	3,774

Source: CAPMS, Consumption of Foodstuffs in Egypt, 1979, p.26.

Cereals provide more than 70 per cent of the calories consumed in Egypt. The low income levels, the skewed income distribution, and the high cost of plant and animal protein prevent adequate supplies of protein from reaching the majority of people. In 1966, the per capita intake of proteins was 83.3 grams of which 14 per cent only came from animal proteins as shown in Table 8.4 but by 1976 there was a little increase, since the per capita intake was 96.0 grams with a decreasing percentage of animal protein share of 13.7 per cent. This share of the animal protein is considered very low if compared with developed countries where it is always more than 40 per cent.⁽¹¹⁾

Table 8.4 : Daily Per Capita Intake of Proteins According To Its Source in Egypt (Grams)

Food Groups	1966	1976
Cereals	60.1	67.1
Starchy foods	0.3	0.9
Pulses	4.8	8.0
Vegetables	4.5	4.5
Fruits	1.8	2.3
Meat	4.5	5.3
Fish	1.6	2.0
Milk and dairy	5.1	5.4
Eggs	0.5	0.5
Total	83.3	96.0

Source : CAPMS, Ibid, p.18.

Animal protein consumption is also insufficient particularly for such population groups as women in the stage of maternity as well as children who need more protein. Poor householders appear to suffer from protein deficiency as well as calorie inadequacy. The protein intake of the poor amounted to 57.4 gram per person per day, representing some 75.5 per cent of the safe level of 75.0 grams daily per person recommended by the FAO.⁽¹²⁾ However, only an insignificant proportion (less than 5 per cent) of the poor people can be described as seriously undernourished since their calorie intake was below the critical limit of 2,450 calorie per person daily, but these people who live mostly in rural areas have the greatest requirements of calories because they are engaged in types of heavy work (e.g. in agriculture) that require higher energy inputs.

The nutritional status of most of the population of the rural area can be explained by reference to their dietary pattern. The most striking feature of the pattern is that their diet is largely cereal-based, while that of the non-poor (the majority of urban dwellers and some of the rural population) is much more diversified. Poor householders spend one-third of their budget on cereals and one-quarter on meat. It is almost the reverse for the non-poor, with one-third of their food budget spent on meat and only 22 per cent on cereals.

The prominence of cereals and starches in the diet of the Egyptian family can be explained by their relatively low calorie price. The figures of Table 15 in the appendix, show the comparative price in calorie terms of the major food commodities. The consumption demand is for commodities which cost less per unit of calories. The degree of substitution between different foods seems to be extremely limited given the relative price relationships. It is difficult for a poor householder to substitute broad beans, which cost 2.6 milliem per 100 calories with

meat costing twenty-five times as much.⁽¹³⁾

The major problem in Egypt's food supply is that of producing the extra calories per head to feed the present population adequately, and increasing supplies fast enough to meet the calorie needs of the increasing population.

8.5 Consumption of foodstuffs

Cereals are the most important food item in Egypt. Bread consumed in urban areas is made with wheat. A blend of predominantly maize and wheat is used to make bread in the countryside. Rice is consumed throughout Egypt. Grain legumes are second in importance to cereals, and broad beans, lentils, haricot beans and cowpeas are the most common. Vegetables are traditionally a small item of consumption in rural areas.

The major determinants of consumption demand are increased population, changes in consumption pattern and income changes. Food consumption is not simply a matter of the number of people in the region, but man has a physiological need for food just as he has for water and for shelter. There is a minimum food intake requirement for each person, below which that person would not be able to survive. People naturally demand more food than the absolute minimum they require to stay healthy. Not only does this increase the total demand but, more importantly, the nature of this food demand changes. With rising income, people consume more sophisticated foods, particularly meats.⁽¹⁴⁾

Since 1952, there has been a steady increase in the quantities consumed of the various commodities in Egypt. If we compare 1975 with 1952, the figures reveal that the increase in consumption of food grains reached 144 per cent, and cooking oils 397 per cent. These increases are due to many factors including the annual rate of population

growth which has reached 2.7 per cent, the total consumption expenditure which rose by 22 per cent,⁽¹⁵⁾ and the gradual increase of per capita income.

There is no doubt also that the out-migration from the rural to the urban areas in the region an important factor in the increase of the demand for consumer commodities and services. It is well known that the patterns of consumption differ from urban to rural areas, with regard to the kinds of commodities as well as to the rate of consumption. The out-migration from villages to urban centres is followed by a remarkable change in the pattern of consumption due to their acquiring some of the prevailing characteristics in the new place and the increase in the average per capita income as a result of acquiring work opportunities in the sectors of non-agricultural activities.

The majority of the population of Menoufiya (80 per cent) as well as Egypt as a whole (56 per cent), are rural residents, and their average per capita income is lower than that of the urban areas. It is clear for the lower-middle, middle and upper middle classes of the urban areas that their consumption of meat, poultry, eggs, fruit and vegetables and wheat flour is higher than the average of the village dwellers. Rural populations consume small amounts of meat, although they do have on big occasions and Fridays locally raised chickens, ducks, rabbits and pigeons. Their bread is made of home-grown maize flour mixed with wheat flour.

8.5.1 Patterns of Food Expenditure

The proportion of total family expenditure devoted to food generally decreases as family income and expenditure increase. According to family budget surveys in 1981/82 in Menoufiya, on average more than half of the total per capita expenditure is allocated to food. The percentage expenditure on food in urban areas (54 per cent) is lower than in the rural areas (62 per cent).⁽¹⁶⁾

Although increases in wealth generally lead through time to a decline in the proportion of total expenditure devoted to food, nevertheless absolute per capita expenditure for food increases. Higher income families can satisfy basic desires for more food and their patterns of expenditure shift, in particular, toward more expensive, varied and protein-rich foods. Moreover, an increasing proportion of this expenditure is attributable to marketing and servicing costs associated with more highly processed foods.

An example of how expenditure patterns vary from one income group to another is shown in Table 8.5. Nearly 25 per cent of the annual outlays are for cereals, starchy roots and pulses among the low income families of Menoufiya, as compared with about 8 per cent among the highest income group. The proportion of food expenditure for high quality foods, such as meat, fish and livestock production ranges from 14 per cent among the poor to 15 per cent in the high income group. Richer families spend a higher proportion of their food outlays on fruit, milk and dairy products than the poorer families.

Because of urban price subsidies, the proportion of total family expenditure on cereals is low compared with the quantity of cereals consumed. In urban areas, the proportion of total expenditure on cereals and starches is 9.6 per cent, meanwhile it represents 18.5 per cent of total expenditure.

Such differentials occur partly because rural incomes are generally lower than urban incomes, but they may also be due in part to differences in food habits and range of available foods between urban and rural areas.

Table 8.5 : Food Expenditure Patterns in Relation to Family Expenditure in Menoufiya, 1981/82

Average annual expenditure (Egyp. pounds)	Rural areas				Urban areas			
	Under 100	100-500	501-1000	Over 1000	Under 100	100-500	501-1000	Over 1000
Cereals & starches	25.0	21.9	16.0	10.2	18.9	14.9	9.7	4.6
Sugar	3.7	4.0	3.0	3.2	4.1	3.3	2.7	2.1
Pulses	3.5	2.5	2.2	1.4	3.6	2.3	1.6	0.8
Vegetables	6.0	4.7	4.0	3.1	6.5	5.4	4.3	3.1
Fruits	1.6	1.8	2.4	3.2	1.9	2.3	2.6	2.8
Meat	12.0	11.7	11.7	12.7	10.6	9.4	11.0	11.0
Fish	1.6	1.7	1.9	2.0	2.3	2.4	2.2	1.7
Eggs	1.1	1.3	1.3	1.3	1.2	1.3	1.0	1.3
Milk	3.3	3.6	4.4	4.0	3.4	3.6	4.6	4.4
Oils and fats	5.7	6.2	5.7	4.5	5.8	4.6	4.2	3.1
Drinks	2.8	3.7	3.6	3.6	3.9	4.5	4.1	3.6
Other Foodstuff	3.3	2.5	2.3	1.1	6.4	4.9	3.6	2.5
Total of food	69.5	65.6	58.5	50.3	68.6	58.9	51.6	41.0

Source: CAPMS, Family Budget Survey in Egypt, 1981/82., Unpublished Data.

8.5.2 Trends of Foodstuffs Consumption

Egypt now faces a great problem of food supply. This problem arises not only because of increase in population without corresponding increases in the output of foodstuffs, but also because of the increased consumption of food commodities. The study of annual per-capita food consumption in 1952, 1966 and 1976 as shown in Table 8.6, reveals:-

- 1) The total increase in the annual per capita foodstuffs consumption has jumped from 341.9 kilograms in 1952 to 580.1 kilograms in 1976. This large increase is due to the great change in the population's income

and the improvement of their standard of living. In addition the remarkable increase in the urban population has led to a change in food consumption patterns. It is worth noting that about one half of the increase is a result of a rise in cereal consumption (i.e. from 170 to 271.4 kilograms).

2) There is a remarkable per capita increase in total quantity of all commodities consumed between 1952 and 1976. The largest percentage increase is amongst the vegetable and oil groups which have increased by more than 200 per cent. Despite the increase in quantity of fat consumption, the annual per capita consumption of it in Egypt is low compared with the developed countries is more than 20 kilograms. At the same time the consumption of most of the food commodities has increased by more than 50 per cent, but milk, eggs and pulses have the lowest percentage increase (less than 10 per cent).

3) Cereals are the most important commodity in the Egyptian diet. Their share of total quantity consumed was more than 45 per cent during the comparative periods as shown in Table 8.5, because cereals are the main source of cheap daily calorie intake. In addition, vegetables and fruit are the second most important commodities after cereals, with shares of more than 10 per cent.

4) As shown in Table 8.6 there is an increase of the percentage share of starchy roots, sugar, vegetables, fruit and oils. By contrast, there is a remarkable decline in the percentage of meat, fish, eggs, milk and pulses, probably due to the slow increase of its production during the last decade which led to sharp increases in their prices.

In general, with growing urbanization and improving standard of living, it is expected that the demand for meat, fish, milk, eggs, vegetables and fruit and several other processed products will increase at a much faster rate than the demand for foodgrains. This is of crucial

importance in the formulation of planning policies for the agricultural factors of Menoufiya as well as the whole of Egypt, undergoing a rapid process of urbanization.

Table 8.6 : Annual Per-capita Food Consumption in Egypt, 1952,1966 and 1976 (kilograms)

Food Groups	1952		1966		1976	
	quantity	per cent	quantity	per cent	quantity	per cent
Cereals	170.0	49.7	217.6	45.2	271.4	46.8
Starchy roots	7.7	2.3	8.6	1.8	16.8	2.8
Sugar	16.1	4.7	18.2	3.8	28.9	5.0
Pulses	11.0	3.2	10.0	2.1	12.4	2.1
Vegetables	36.3	10.6	98.8	20.5	113.5	19.6
Fruits	36.4	10.6	58.7	12.2	62.4	10.8
Meat	9.1	2.7	10.0	2.1	9.8	1.7
Fish	2.3	0.7	3.1	0.6	3.5	0.6
Eggs	1.0	0.3	1.3	0.2	1.0	0.2
Milk & dairy	49.0	14.3	49.5	10.4	49.4	8.5
Oils and fats	3.0	0.9	5.4	1.1	11.0	1.9
Total	341.9	100	481.2	100	580.1	100

Source: Data of 1952 from C.A.P.M.S., Population increase in U.A.R and its Challenge to Development, Cairo, 1966, p.214 .
Data of 1966 and 1976 from : C.A.P.M.S., Consumption of Foodstuffs in Egypt, Cairo, 1979, p.37.

8.6 Food Surplus or Deficit?

The most important thing in the study of population and food supply in a region is to answer the question: Is there a food surplus or deficit? This question cannot be fully answered because the consumption figures in

underdeveloped countries are not kept accurately, especially in the countryside.

Table 8.7 throws some light on the surplus or deficit of food supply in the region according to the total production and total consumption of every commodity as following

Table 8.7 : Food Surplus and Deficit of the major Commodities in Menoufiya, 1981

Food Commodities	Per capita Consumption	Total production	Total Consumption	Balance + or -	% of total production
Wheat	115.0	135.0	210.0	-75.0	-66
Imported flour	18.3	-	33.4	-33.4	-100
Maize	89.5	368.0	163.4	+204.6	+56
Rice	30.1	0.6	55.0	-54.4	-91
Broad beans	4.5	7.0	8.3	- 1.3	-19
Lentils	1.9	-	3.5	- 3.5	-100
Macaroni	5.3	9.6	9.7	- 0.1	- 1
Meat	6.2	13.0	11.3	+ 1.7	+ 13
Poultry	3.3	7.2	6.0	- 1.2	+ 17
Eggs(million)	33.0	68.0	60.0	+ 8.0	+ 12
Oils	7.9	-	14.4	-14.4	-100
Potatoes	8.7	269.0	15.9	+253.1	+ 94
Onions	7.2	40.6	13.1	+ 27.5	+ 68
Tomatoes	17.5	78.5	32.0	+ 46.5	+ 60
Citrus	8.7	102.0	16.0	+ 86.0	+ 84
Bananas	1.3	18.0	3.2	+ 14.3	+ 80
Grapes	6.2	18.8	11.3	+ 7.5	+ 40
Sugar	11.8	-	21.5	- 21.5	-100
Honey	0.2	0.4	0.4	0.0	0.0

- Per capita consumption in kilograms, except for eggs in number

- Total production, total consumption and balance in thousand tons, except for eggs amount in millions.

- Meat, poultry and egg production are estimated

Source: Per capita consumption: CAPMS, Family Budget Survey, 1981/82, Unpublished data. Total production, consumption and balance calculated.

8.6.1 Food Surplus Commodities

(i) Food commodities with large surplus of more than 50 per cent of the total production

This group includes maize (56%), tomatoes (60%), onions (68%), bananas (80%), citrus (84%) and potatoes (90%). The main reason of the surplus is the relatively vast areas under the crop. For example, maize occupies more than 50 per cent of the cultivated land of the region, because it is the staple food of the farmers, in addition to its use as forage for livestock and poultry. The surplus of maize production is completely consumed in the food security project stations for fattening calves and poultry production in the governorate. The great surplus of tomatoes, bananas, citrus fruits and potatoes is due to the concentration of cultivation of these crops in the southern areas of Menoufiya, as a part of the agricultural hinterland of Greater Cairo, the market for the surplus. The great onion surplus in the region is due to Menoufiya having a large acreage of onions intercropped with cotton.

(ii) Food commodities with surpluses of up to 50 per cent of the total production.

These include those food commodities which meet the large demand in both the urban and rural areas i.e. grapes (40), eggs (12), poultry (17) and meat (13 per cent). The animal and poultry production have been estimated because it is difficult to know the net production of them, when most of the rural residents raise large numbers of chickens, ducks, rabbits..etc.at home to supply themselves with meat and eggs. The surplus of this production is sold at the local market or the nearest city market. The problem now is that home production surplus has decreased during the last 15 years. The per capita consumption of meat in the rural areas has increased after the remarkable increase in their standard of living. Therefore the government established many stations for poultry and calf farms

to provide the urban residents in the region and some others of Greater Cairo with eggs and meat. As shown in Table 8.7, the amount of meat consumed is higher than the amount of slaughtered livestock, that is because large amounts of slaughtering occur outside the slaughterhouses, especially in the countryside.

(iii) Food commodities with a little surplus

Despite the large numbers of breeding cows and water-buffaloes in Menoufiya, the total milk production is little higher than the total consumption, because of the large amounts consumed in the villages where milk and dairy products are the common diet for the farmers. In addition, milk quantities decrease sharply during the summer as a result of the shortage of fodder inhibiting annual productivity. There is no surplus of macaroni and honey production in the region, where the total consumption is the same as production.

8.6.2 Food Deficit Commodities

(i) Food commodities with total production less than total consumption

This group includes broad beans (20), wheat (65) and rice (91 per cent). These crops are subsidized by the government to keep their prices low. The price of wheat has been stable for a long time, therefore, the farmers are less willing to grow a larger area of this crop. The area under broad beans is increasing and production is also increasing, but the problem is that the feddan yield of this crop had decreased since the 1970's, because the seeds became susceptible to pests. The rice production in the region has sharply decreased after the installation of the High Dam and the success of rice cultivation in the vast infertile lands of the northern parts of the Nile delta's governorates.

(ii) Food commodities not produced in the region

Lentils, for example, are not produced because of their need for different climatic conditions. There are other manufactured commodities which are produced in other urban areas of Egypt, such as sugar and oils, and a group of some commodities are imported from abroad such as flour and frozen meat.

In general, the problem of food supply in the region is not because there is a great percentage deficit of some foodstuffs. At the present time there is no shortage of the majority of foodstuffs and there is a surplus to help feed some of the population of Greater Cairo and other large cities, and also to export some production of vegetables and fruit. One reason is that the population growth rate is lower than the whole of Egypt, despite the fact that the natural increase is high, and because of the out-migration of a large number from Menoufiya. The problem may become more acute in 15 or 20 years time if the population of Menoufiya increases more rapidly than production. On the other hand, a continuous increase of income and improvement in the standards of living will increase the level of food consumption and reduce the food surplus in the region, causing some commodity shortages in Greater Cairo and other cities. In addition, the deficit of many other foodstuffs will grow because the governorate production will not be able to fulfil the needs of the population.

With a decreasing area of cultivated land and structural problems limiting technological progress, in addition to the continuous increase of the population particularly in urban centres, the bulk of the deficit of foodstuffs will have to be met by imports. This will impose an increasing burden on the Egyptian current accounts deficit and the balance of payments. This is a great problem facing the development of the country.

8.7 Summary

Food is one of man's basic needs, essential for day-to-day survival. Scarcity of food often has severe consequences manifesting itself in undernutrition and malnutrition and, in the case of acute shortage, in sickness and starvation. The food problem arises from the effect of the food requirement of a rapidly growing population. As a result of its rapid growth of population especially in the urban areas, Egypt now relies heavily on the international market to fulfil its food needs.

In Menoufiya, as well as Egypt as a whole, the population growth has a great effect on the production and consumption of food. Despite the fact that the population grows rapidly the cultivated land has decreased by about 450 feddans per annum. The sole result of that serious decrease is that both cultivated and cropped area per capita are decreasing. The decline was much more dramatic in all the districts of the governorate. The problem of food production is that any more increase of urban sprawl at the expense of the cultivated land will lead to more loss of cultivated land and more decline of per capita cultivated land.

There is some evidence of food-population imbalance in the region, as the growth rate of foodgrains, as the staple food of population, has lagged behind that of population since 1970. The decline in per capita foodgrains is a salient phenomenon during the last three decades, resulting from the decrease of wheat production. By contrast, the production of vegetables and fruit has increased sharply as a result of the rise in the standard of living and the great increase of urban population.

Figures of the quantities of food consumed indicate that cereals provide more than 70 per cent of the daily calorie per capita. The low income and the high cost of plant and animal protein prevent adequate supplies of protein from reaching the majority of people. There is a

major problem of protein malnutrition among children under 4 years of many groups of the poor and middle classes especially in the rural areas. The domination of cereals and starches in the diet of the Egyptian family is because of their relatively low prices compared with other foodstuffs. The major problem in Egypt's food supply is that of producing extra calories per head to feed the present population adequately, and increasing supplies fast enough to meet the calorie needs of the increasing population.

Since 1952, there has been a steady increase in the quantities consumed of the various commodities. The increase of population, change in consumption patterns and the improvement of the standard of living are the major determinants of consumption demand.

More than half of the total per capita expenditure is on average allocated to food. About a quarter of the annual outlays are for cereals, starchy roots and pulses among the low income families of Menoufiya; by contrast only one-twelfth is outlaid among the rich families.

The problem of food supply arises in the region not only because of the continuous increase in population without a corresponding increase in the foodstuffs output, but also because of the increase in the quantity of food consumed. There was a 70 per cent rise in the annual per capita foodstuffs consumption between 1952 and 1976.

The study of food consumption reveals that there is a great surplus of some commodities such as vegetables and fruit and maize, and a little surplus in other commodities such as meat, poultry and eggs. The surplus of these commodities helps feed some of the population of Greater Cairo and other large cities in the Nile delta, and also the export of good quality potatoes and citrus fruits. By

contrast, there is a deficit in some commodities which are produced in the region but their production is less than the total consumption, e.g. wheat, rice and broad beans. In addition, there is a group of commodities not produced in the area, for example lentils, sugar and cooking oils, which are produced in other areas of Egypt. There is also some imported foodstuffs such as flour and frozen meat to satisfy the needs of the population.

There is no shortage of the majority of foodstuffs in the region - as mentioned before - at the present time, but the problem may become more acute in the future as the population will increase more rapidly than food production. In addition the remarkable increase in incomes will increase the demand for food. Therefore the production of the area will not be adequate to satisfy the needs of the population of the region in many commodities. Imports of foodstuffs will be essential to overcome this problem. The result is the aggravation of the serious balance of payments problem and more shortage of hard currency. The solution of the problem of population and food supply in the region - as one of the largest food producers in Egypt - must be sought both in accelerating development of agricultural process and in slowing down the growth of population, and that is the topic of the next chapter.

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CHAPTER NINE

SOLUTIONS TO THE PROBLEM

9.1 Introduction

Whereas population growth increases requirements for food and, as has been shown in Chapter eight, is also by far the major factor in the growth of the demand for food, there is no such direct relation between population and the growth of food production. Efforts to narrow the gap between demand and supply must either be directed towards increasing food production to meet demand or else limiting demand so as to reduce it to a level consistent with supplies. The first approach stresses agricultural development in the region as the only solution to the food problem. The second approach, given the importance of the population factor in determining demand, points to the need for stabilizing population growth, the implications of which have been widely studied. Most demographers and economists are of the opinion, however, that the solution to the food problem in the developing countries lies in the combination of efforts to promote agricultural development while simultaneously reducing population growth to a more manageable rate.⁽¹⁾ Even so, in view of the urgency of the food situation, imported foodstuffs are seen as an essential element in the short run. A complete solution is necessary for the long term.

9.2 Reducing Population Pressure and Growth

Population pressure and growth had an overbearing influence on the development programmes of Egypt. The region has a low average income, high rate of illiteracy and small-scale agriculture is the usual occupation for the majority of the population. Furthermore, the birth rate is high, over 40 per thousand. The death rate is decreasing to its lowest level. The result is a high natural increase rate and a high growth rate of population. Rapid population growth contributes to stagnation or even

lowers the socio-economic standards in the country. At the same time socio-economic factors are the main reasons responsible for the high fertility rates. Therefore, it can be said that socio-economic development is of prime importance to reduce fertility rates. Population policy has been integrated in the general development plan. Therefore, two aspects of the development plan were recognized. First, the extension of the economic and social development plans. Secondly, the reduction of the population growth rate through the reduction of fertility rates.

9.2.1 Family Planning and Socio-Economic Development

All studies of the population of Egypt point out the widening gap between birth and death rates thus reflecting a high rate of natural increase. Therefore, it was necessary to study the matter within the general framework of socio-economic planning that aims particularly at promoting a happy and prosperous life for every citizen.

Despite the general efforts of the Supreme Council for Population and Family Planning since 1965 to reduce the high birth rate through raising the level of overall contraceptive practice among married women in reproductive age, Menoufiya still has one of the highest birth rates in Egypt (42 per thousand). The main reason is the low percentage of currently married "fecund" women (15-49 years) using contraceptive methods. The percentage of current users in Menoufiya in 1981 was about 18 per cent, and was only 15 per cent in Egypt as a whole.⁽²⁾

Looking at the level of use of specific modern contraceptive methods, it is clear that the pill is the preferred method among current users in rural Egypt. Two-thirds of all current users are relying on the pill.⁽³⁾ Modern contraceptive methods are used by 91 per cent of all currently married women practising family planning in the governorate, while it was 81 per cent of Egypt as a whole.⁽⁴⁾

The number of children still alive is another important factor in determining the percentage of usage. The percentage of ever users increases with higher number of children still alive. This ratio increases from 7.4 per cent for those women with one child still alive to about 50 per cent of all ever married women with 6 children still alive and decreases to 44 per cent for those women with 8 children still alive. Accordingly, it is observed that women start practising birth control at too late an age and after having a high number of children. It means that most users are aiming at controlling the size of family and not the spacing between children.

Those women who do not want more children represent the basic target population for the family planning program. About 50 per cent of all non-users intend to use a family planning method in the future.⁽⁵⁾

There are spatial differences between rural and urban areas, since in rural areas, the use of contraceptive methods is very low as a result of the high percentage of illiteracy and poverty among the population.

These data are useful for the progress of family planning programs, since they show the expected demand for contraception in the future. In addition they specify the target population and their priorities i.e. those women who do not want more children. The second priority target population is past users who do not want more children. The third priority target is those women who declared their intention to use family planning methods in the future. Finally, is the group of women who did not decide their attitudes and should be convinced to change their position and start practising in order to avoid this behaviour inconsistency, since they do not want more children.

There are 26 centres in addition to 117 hospitals providing family planning services in Menoufiya.⁽⁶⁾ This number will be increased in order to have one centre per village and per town quarter. But the

main task is to encourage women to become familiar with them. Multiplication of family planning clinics and services, widespread distribution of contraceptives and nation-wide advertisement are not enough to reduce the high birth rates. We have not only to distribute condoms and diaphragms and make mothers swallow pills etc. but have to stimulate, to help and accelerate a change of attitude and behaviour.

The starting point of the problem of the population's solutions in the region are (1) to reduce the high rates of natural increase through the birth rate; (2) to improve population characteristics, particularly those related to health, education, income, and the status of women; (3) to encourage the out-migration from the governorate to the new industrial cities i.e. 10th of Ramadan, Sadat and 15th of May etc. or to the new reclaimed land west of the Nile Delta i.e. Noubariya region.

There are many ways to achieve a solution to the problem of population by what may be termed "a developmental approach" to Egypt's population needs. This approach is aimed at inducing, or even precipitating, behavioural changes consistent with small family norms through the implementation of community-oriented socio-economic projects. The development approach must stress the following socio-economic factors to reduce the high fertility rates and then to reduce the population growth:-

- Economic development through industrialization and urbanization of the rural areas.
- Developing the education and increasing the number of female enrolments at all school and University stages.
- Raising the standard of living of the family.
- Increasing female participation in the labour force.
- Decreasing mortality rates, especially infant mortality rates.

- Expansion of social development programmes.
- Developing and improving programmes of training on methods of family planning.

The integration of family planning and development will facilitate and accelerate the beneficial effects which any development programme will achieve in relation to fertility reduction. It must be stressed that a whole complex of interacting factors are responsible for the change from high to low fertility, and attempts to associate the decline exclusively with a particular factor have not proved satisfactory.

Economic development through industrialization and urbanization of the rural areas has played a dominant role in past fertility declines and demographic transition theory states that the population of the region will experience decline in fertility as they come under the sway of industrialization have been accompanied by substantial modifications of manpower requirements in terms of ever-rising levels of skill and this in turn has contributed to the higher levels of education and to the increased cost of raising children.⁽⁷⁾ However, it is certain that industrialization itself does not explain the decrease of the birth rate and fertility in the region.

Development, embracing urbanization and education takes a large share in the establishment of the conditions for changing social conventions and attitudes. Pure water supplies, improved sanitation and medical facilities in the rural areas will reduce the toll on young children and make it unnecessary for eight children to be born in order to rear four. Parents come to realize that the smaller the family the greater the opportunities they can offer their children and the easier the passage up the social ladder. Much of this social evolution is closely bound up with the position of women.⁽⁸⁾

Changes in women's status, particularly in terms of their labour force participation can contribute to fertility reductions. Women who work may abstain from childbearing to a greater extent than non-working women, to maintain their objectives of higher standards of living. In the region, women constituted only slightly more than 15 per cent of the total labour force, as shown in Chapter Four. The state has to increase opportunities for such employment in Menoufiya as a means of reducing the high birth rate, since female employment outside the home is an important factor tending to lower fertility.

Efforts to assess the possible effects of female labour force participation on fertility are complicated by the intervention of other variables such as socio-economic status, education and so on, all of which are interrelated. Thus the likelihood of a woman entering the labour force may be influenced by her education, which in turn depends on other socio-economic factors.

The study of population characteristics reveals that more than half of the population are illiterate, and the majority of women are also illiterate. An increase in the level of education especially of the rural population is a key component of socio-economic change. The evidence indicates that as educational attainment rises the desired number of children will diminish and modern contraceptive methods will increase. For the poor and illiterate proportion of the population there is an excess demand for children; yet in families with some education, there is an excess supply of children. The level of education appears to represent a powerful influence on the desire for children.⁽⁹⁾ Educated women are usually more informed about health care, diet, medical facilities etc. This alone works to reduce sterility, sub-fecundity and mortality among their offspring to the extent that large number of live births are not needed to attain a desired family size.⁽¹⁰⁾

Higher education for women may influence fertility levels in a number of ways, however, such as delaying the age of marriage, increasing the likelihood of not marrying because of increased aspirations for higher levels of living, increasing interest and involvement in employment and other activities outside the home, and improving the potential capacity to plan and control births.⁽¹¹⁾ It should be noted that the average completed family size for illiterate women is about 1.6 times that of the university graduate women (5.22 per illiterate compared with 3.32 for university graduates).⁽¹²⁾

The government must do its best to abolish the illiteracy of females which reached more than 75 per cent of the total females in the region in 1976. Hence, the increase in female educational attainment will, in time, lead to a lower number of children ever born.

The reduction of high infant mortality is a major solution to the high fertility in Menoufiya. The study of Chapter two reveals that the region had one of the highest infant mortality rates of the governorate of Egypt in the 1970's. Parents seem to have had a large number of births in order to ensure the survival to adulthood of the desired number of offspring. The scope for lowering death rates however is likely to remain limited as long as the processes refer to the sanitary environment, to hygienic practices of household members and to feeding habits. The intervention strategies for reducing infant mortality therefore need to be formulated ultimately with a broader scope than therapeutic methods alone. This is essential even if the short-term priority is management rather than prevention.

Childhood diarrhoea is a major problem in the rural area of Menoufiya, and it is one of the main reasons for the high rates of infant mortality. Given the multiplicity of sources for infection in the Egyptian countryside, a programme for reducing diarrhoeal mortality is

admittedly difficult to formulate and to implement. Here the efforts need to be multilayered, encompassing a range of activities from community mobilization to alter the infrastructure of environmental hygiene and sanitation, to health education programmes for changing health care as distinguished from sickness care practices. Intervention strategies need to address multiple aspects of household behaviour which have a bearing on infant diseases, such as water use, waste disposal, food preparation and storage, child feeding and particularly weaning methods, as well as proper home treatment. (13)

Rural development and the spread of agricultural mechanization in the rural areas of Menoufiya will help to reduce the high fertility. In most rural areas, children are viewed as making a contribution to production while they grow up and, what is more important, they are perceived as a source of support later in life. As a society modernises, a number of changes reduce the economic value of children, among them the creation of institutions of social security and the enactment of compulsory education and child labour laws. Formal institutions of social security replace the family in its traditional function of old age support. Children begin to have a negative value. They become non-productive members of the family, ceasing to be a source of income for their parents and instead requiring increasing expenditure for education. (14) If economic development takes the form of agricultural mechanization, the demand for children diminishes and contraceptive use increases. (15) In sum, the form of economic development may be critical to determining the ultimate impact of government policies on completed family planning.

In addition to changing the economic value of children, the expansion of compulsory education has been a contributory factor in changes in the age of marriage and in the attitudes of women to their traditional roles

as homemakers and bearers of children and that is the first step for the development of population. The improvement in the standard of living and the creation of channels of social mobility or the broadening of those already existing will lead to improvement of life.

It is impossible to achieve demographic stability unless efforts are doubled for the promotion of production increasing the yield of the land, making use of the most advanced techniques of production, for the redistribution of income and wealth and for giving enough care to social development in a bid to raise the standard of living. However, the main factor to solve the problem of over-population in the region is quick economic development in the field of agriculture, industry and social affairs.

Since the majority of the population of Menoufiya are involved in agricultural activities, the limitation of the amount of cultivated land means that every increase of population results in a decrease of the per capita share from production and consequently a low standard of living. The surplus in agricultural employment is estimated at 36 per cent of the total manpower occupied in agriculture (see Chapter 6). Therefore, the government must offer new jobs to this number by creating new projects of dairy, poultry and animal production and small-scale factories established in the countryside. The objectives of these projects are to help the people to increase their income in addition to absorb the surplus labour force of agriculture. In order to save the fertile land of Menoufiya from establishing large-scale factories and other constructions, the researcher suggests that the only ideal place for establishing large-scale factories is in the Quesna district where the non-agricultural lands of the turtle back occur in many parts of the district. The rural industrialization programme which must be based on agricultural products and the increasing use of modern agricultural techniques, will help augment the productivity of

the land and raise standards of living. This will help towards making the rural population respond to the family planning programmes with the result that fertility rates and the natural increase of population will diminish.

The social development is an important element in family planning. It is necessary to raise the standard of living of the people by improving housing, educational and health conditions, in addition to the provision of adequate means for marketing, storage, communication between the rural and urban areas.

The provision of free educational opportunities at the different stages, vocational training and the eradication of illiteracy of those drop-outs from school, the expansion in the construction of hospitals and health units, family welfare projects and social rehabilitation etc. are the most important steps to establish social welfare and ensure public services for all the people. The social development programmes will participate actively in changing the prevailing demographic trends, resulting in a decrease in the size of the family and a drop in the birth rates until they reach a reasonable standard conforming with the rates of increase of production. (16)

As a result of the dominance of illiteracy especially in the countryside, particularly among those involved in agricultural activities and females, most of the rural residents have very little interest in family planning, particularly because they receive little encouragement from religious leaders. The role of the Imam and religious leaders in addition to midwives is very important if the high birth rates are to be reduced, they have to be persuaded of the value of spreading family planning propaganda. It is necessary to raise the cultural and social standards of them through organising cultural symposiums to overcome their resistance to the idea of family planning. Some have erroneously interpreted this resistance

as being due to Islamic doctrines on traditional customs. Many of the great medical books of Islamic science contained long lists of contraceptive techniques and instructions for their use. Moreover the Qur'an contains no injunction against contraceptive use.⁽¹⁷⁾ During the time of Prophet Mohammed people used to practise the only known means of contraception. A Hadith calling for small families, the smaller a family the richer it becomes and vice versa is attributed to the Prophet and is often quoted in family planning campaigns in Egypt.⁽¹⁸⁾ It is a fallacy that the Islamic religion is against the widespread espousal of family planning. Islam is not against contraception, and abortion may take place in most Muslim countries where there is a risk to the woman's life.⁽¹⁹⁾ With all this evidence, the men of religion can encourage the people to be convinced of a small family.

Certification and extension of skills, in addition to the improvement of the income of midwives could go a long way to harness resources which are already guiding the health care of expectant mothers and the spacing of their children.

It should be pointed out that the reduction of the high fertility rate of the region will occur in the long run by stressing all the previous socio-economic factors, but not in all groups of the population until the processes of social development that affect fertility are equally distributed.

In fact, the Egyptian government is doing its best to achieve the policy of "development approach to the population problem" by using the external assistance of many organizations such as the World Bank, United Nations Fund for Population Activities (UNFPA), the United States and other European countries. The progress of the development approach is slow since the fund is not enough to cover all the rural areas (about \$4 million/year during 1980-84).⁽²⁰⁾ Therefore the government must increase the efforts to improve the incomes and lives of people.

9.2.2 Out-Migration and Population Pressure

The out-migration of Menoufiya's population is an important element of decreasing the high pressure of people on the agricultural land and the limited resources in the region. Chapter three revealed that Menoufiya has the largest amount of out-migration in the whole of Egypt since the 1917 Census. The percentage of people born in the governorate and settled anywhere else in Egypt is not less than 20 per cent of the total population of all the censuses. This is a large percentage and has an important role for a region with a high density of population.

The out-migration from Menoufiya has led to the great decline of the annual growth of population which had only reached 1.5 per cent in 1966-76 (i.e. Egypt as a whole 2.3). This large decline occurred at the same time as the region had high natural increase rates of more than 23 per thousand. Most of the migrants were involved in agricultural activities, and they left their villages to work in other jobs and for a better life.

Out-migration has had many advantages since it has decreased the pressure of population on the limited cultivated land, decreasing the density of population, reducing the percentage of unemployment and exposing some of the disguised unemployment in the small-sized farms in the region. By contrast, the flood of unskilled peasantry from the countryside far exceeds the establishment of new industries and jobs. Cities expand mainly with the accretion of squatter shacks (spontaneous settlements), but the inhabitants do not easily integrate with urban life-style and bring social and economic betterment, but merely exchange under-employment in the countryside for unemployment in the towns.⁽²¹⁾ On the other hand the continuation of out-migration drift to the large cities adds more burdens on its services. The implication of this are profound and manifold. Many problems of housing, water, drains, means of

transportation, food shortage, hospitals, schools, noise, crowding etc. are similar in the cities and large towns of Egypt.

To stop this drift, a wide variety of rural-orientated and urban-orientated policies are employed. The principal rural-orientated policies are the following:-

- "(a) frontier colonization, which accounts for the bulk of new rural land settlement;
- (b) integrated or comprehensive rural development schemes, aiming at improving rural levels of living and self-sufficiency, welfare, health and education, reducing rural-urban differential and encouraging people to stay in rural areas or at least in small towns;
- (c) Capital-intensive agricultural development programmes, technocratic in style and aiming at increased agricultural productivity, but often causing greater regional inequality and further rural out-migration.

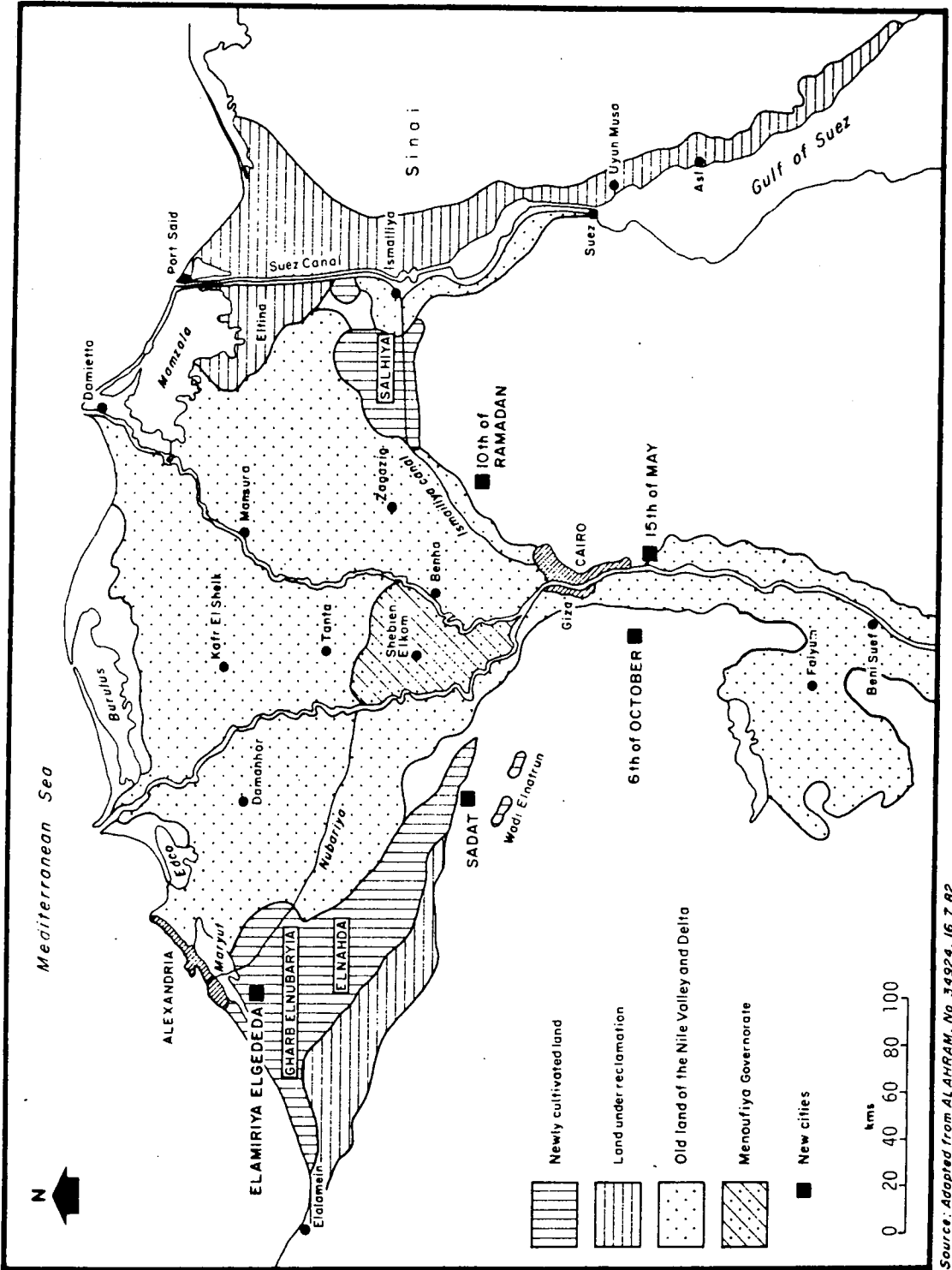
Among the urban-orientated policies, which are widespread, are the following:-

- (a) policies to accommodate urban growth, and to accept centralized urban development by improving slums and squatter settlements as well as social welfare;
- (b) Closed city programmes, to prevent incursion of migrants;
- (c) urban rustication or reversal programmes, which sometimes send, forcibly, urban residents to rural areas;
- (d) dispersed urbanization, or the development of dormitory towns and satellite cities;
- (e) medium sized city and growth pole strategies, designed to attract migrants, stimulate regional development and to encourage the growth of medium sized cities." (22)

These policies would have little impact on population redistribution if operated in isolation, though their effectiveness is influenced by the dynamic situation within a country.⁽²³⁾ As for the matter of relevant policies for Menoufiya region, many of those cited above are of value, including all three rural-orientated policies and (a),(d) and (e) among the urban-orientated policies. Egypt is making a determined effort to develop new areas, encourage rural development harness the Nile, and reduce the over-concentration upon Cairo, but slow economic development and rapid population growth affect many of its efforts.

Of these various policies, the most sensible would appear to be that of creating new industrial and agricultural regions in the desert. The aim of these new regions is to absorb the over-population of Menoufiya as well as the other high density governorates, in addition, to decrease the drift of migrants to the large cities. The state is now establishing five new cities (10th of Ramadan, Sadat, 15th of May and Elamiriya Elgededa) which are under construction on the fringes of the desert (Fig.9.1). 10th of Ramadan city is located 48 kms north east of Cairo with a population capacity of about one hundred thousand persons. Sadat city is in the middle of the desert motorway between Cairo and Alexandria. The city will house about 200 thousand of the population. The city of 15th of May is constructed in the south-eastern parts of Helwan to absorb about 40 thousand persons. Elamiriya Elgededa city "free zone" is established about 26 kms to the west of Alexandria to absorb 200 thousand persons. The 6th of October city is in the middle of the desert motorway between Cairo and Fayum with a population capacity of 52 thousand. The combined total absorption capacity of the new cities has been estimated at about 1.5 million in the year 2000. These new cities are especial investment areas where investments in projects are ^{exempted} expected from taxes for five years. Iron and steel, chemicals, petro chemicals, cement, textiles and other industries

Fig 9-1 THE PROPOSED NEW CITIES AND LAND TO ABSORB THE OVER-POPULATION OF THE LARGE CITIES AND NILE DELTA GOVERNORATES



Source: Adapted from ALAHRAM, No 34924, 16.7.82.

will be the main economic base of these new cities. Self-sufficiency is the key theme of these cities and sites were chosen especially where sources of natural wealth and water exist, so as to establish a sound economic base for the communities.

The other way to absorb the problem of over-population in Menoufiya and the other rural governorates of the delta region is to encourage out-migration and the settlement in the new reclaimed land. There is a vast cultivated area (about 600 thousand feddans) which is now being reclaimed along the Mediterranean coast west of Alexandria. The Nile water has already reached this area through Noubariya and Elnasr canals. In addition to the reclaimed land of Salhiya region (56 thousand feddans) to the west of Ismailiya city there is more land under reclamation on the fringes of the eastern Nile delta and the surrounding areas of the Suez Canal. Water from the Nile has also reached some parts of this area after the widening of Ismailiya canal as shown in Fig.9.1. The installation of Elsalam Canal will help to irrigate the reclaimed lands of Northern Sinai (200 thousand feddans).⁽²⁴⁾

The only problem of the settlement in these new areas is the availability of services. Therefore, the state should stress the provision to these areas of a good transportation network, bakeries, food markets, hospital, schools and other infrastructural services. In addition, a good system of co-operatives should be established to supply the new residents with the agricultural inputs and create a good system of marketing their production.

Out-migration to the new industrial and agricultural regions is a very important step to reduce the high pressure and density of population in the old agricultural land of the valley and delta of the Nile. In addition, it will help to reduce the high density of population and the shortage of services in the large cities of Egypt.

The external migration to the rich Arab countries since 1974 is a remarkable phenomenon. In fact the effect of the migrants' remittances is obvious in changing and developing the governorate. New modern houses were constructed in the villages provided with modern appliances, in addition to the installation of new poultry and animal farms and the purchase of modern agricultural machinery. The remittances of migrants play a great part in the development of the Egyptian village and have increased the standard of living of the population. It will indeed help to reduce the family size and the high birth rate. The government has to encourage and facilitate the emigration for those who want it.

The government policies in the international migration field should be threefold : (i) to provide more attractive alternatives to migration in the region of origin; (ii) to protect migrants and their families from difficulties and distress which sometimes follow migration; and (iii) to take care that neither migration nor its alternatives are prejudicial to the rest of the population or harmful to economic and social development in either Menoufiya or the new region of employment.

9.3 Agricultural Development

To overcome the problem of food deficit in Menoufiya, total agricultural production needs to grow at higher rates than the population growth. Because of the shortage of arable land, the production growth will have to come from yield increase.

The major problems facing the development of agriculture can be classified as the following:-

- a. technical problems which include irrigation and drainage, decline in the fertility of soil;
- b. institutional problems which include farm fragmentation and farm size, co-operatives, scientific research and mechanization;

- c. economic problems such as investment, production losses, labour productivity, equity and efficiency in pricing and land use planning; and
- d. animal production problems such as the summer shortage of fodder and poultry, eggs and fish production.

To increase the food production in the area, it is possible to make a number of recommendations.

(1) The soils of poor lands must be improved to increase productivity. Maps of land productivity should be provided for all the governorate every five or six years to indicate the poor lands. Farmers should be given more information about the best ways to improve it, and be recommended the most suitable crops. In addition the study would stress the best sorts of fertilizers to maintain the highest yield. The state should expand the programmes for the manufacture and production of ammonia azote and the organic fertilizers which lead to high productivity in most of the soils of Menoufiya.

(2) A policy of rationalization of irrigation water must be maintained. Field irrigation methods for individual types of soil and plants should be used and attention given to levelling the agricultural lands using the surface irrigation system "raha".

The state should conduct a study on the required water quantities to be considered in laying the irrigation system and apply the results of the studies and experimental projects. It should then embark upon the maintenance of the Nile and the irrigation canals and the mechanization of dredging works, and develop techniques to combat water weeds.

The government has to raise the rates of the implementation of the tiled drainage projects in order to cover all the land of the region and has to expand the work of preserving these drains. This would

protect the network of tiled drainage, and in addition it will decrease the salinity of the soil.

(3) The co-operative network should be re-established as a genuine self-help system sensitive to farmers' needs as well as to national priorities. To achieve this goal the recommendations are:-

- (i) to establish a strong relationship between the agricultural co-operatives and the consumer co-operatives to put an end to middlemen;
- (ii) to promote the productive role of the agricultural co-operatives not only in the field of crop production, but also animal and poultry production in the rural areas, in order that the co-operatives should have a big role in implementing the state plan for increasing the agricultural production;
- (iii) to maintain sufficient loans to the small farmers to enable them to implement their productive and service projects;
- (iv) to establish the real concept of co-operative marketing, as the co-operative should undertake the marketing of the crops of their members from the stage of harvesting until that of local marketing, exporting, or manufacturing. As an alternative to the co-operative monopoly for marketing inputs and outputs at the farm level, a system such as supervised private traders, should be considered to induce some competition.

(4) The state must encourage the spread of the use of agricultural mechanization as a necessary route to the development of agriculture; and in order to do away with draft animals and thus free feddanage normally utilized for fodder crops for grain cultivation. Mechanization of Egyptian agriculture can be encouraged by:-

- (i) the establishment of investment companies or specialized co-operative societies, as long as this is related to a plan for maintaining

and repairing machines, providing spare parts, and as much as possible manufacturing them locally;

(ii) the creation of a technical team in every village to maintain the machines by providing those who dropped out of general education with the vocational training to enable them to operate and preserve the machines;

(iii) the widening of farm roads and building of strong bridges over the irrigation canals, to make the machines easy to move.

(5) The government should try to put an end to the disguised unemployment in agriculture, and encourage small-scale industry projects to absorb the surplus of the agricultural labour force. This would lead to the improvement of the standard of living of the farmers; in addition it would help to solve the problem of increasing fragmentation of land holdings.

(6) While there is a continuous shortage of cultivated land, vertical agricultural expansion by maintenance the highest yield per feddan is the only way to increase food production in the region. In order to encourage this the following must occur:

(i) production of HYVs of field crops as well as fruits to give good production of much superior varieties to the current varieties;

(ii) production of disease-resistant varieties such as rustproof wheat and dry proof hybrid maize;

(iii) study of the ways to eradicate the Mediterranean fly which causes excessive damage to garden produce;

(iv) continuation of the national campaign to fight field rats, which have become a threat to agricultural production. All local bodies and popular organizations should do their best to help in this matter;

(v) Recommendation of the quantity and quality of fertilizers to

each crop according to the state of the soil.

- (7) It has become urgent to change the land use system in Menoufiya and also the other high-density governorates surrounding Greater Cairo. The system of agricultural rotation, which is based on cotton. The total area under cotton cultivation in Menoufiya is 51,000 feddans. This area can be cultivated by many other food crops to reduce the shortage of food production as follows:-
- (i) complete omittance of the cotton cultivation from the area and replacement with cash food crops such as soya beans or potatoes would increase the farmer's income and offer a raw material for manufacturing forage for both animal and poultry. Hopefully this would lead to a large surplus of food and meat production;
 - (ii) replacement of the extra long-staple cotton varieties in the region (as well as the other governorates surrounding Greater Cairo), which last eight months in the land, by other medium and short-staple varieties which stay in the land only five months (from June to November) would allow an increase of the area under wheat or broad beans. The medium and short-staple cotton varieties have a higher productivity than the extra-long ones, and would enable the present quantity of cotton to be produced on only 60 per cent of the land used at present. This would add about at least 20 thousand feddans to be cultivated with the other food crops. It is worth noting that the country imports large amounts of medium and short-staple cotton to produce the subsidized clothes.

This change of agricultural land use in the area would help to increase the income of the farmers and increase the area of wheat, maize, broad and soya beans, and potatoes; in addition it would help to solve the problem of the shortage of summer fodder and increase animal production.

(8) The state should establish a consistent and explicit methodology to determine which patterns of agriculture are socially and economically worthwhile and adjust private profit incentives accordingly. Economic development can then proceed as rapidly as possible by consistently choosing policies and projects that contribute most to growth, stability and equity at the least social cost.

(9) A more flexible price policy must be pursued so as to benefit from the relative advantages and the allocation in the crop composition in international markets. The decision must be made about whether the system of regulated prices for agricultural output should continue. Although price administration has achieved some equitable effects, it has been at the cost of serious resource misallocation. If major changes in price regulation are considered, special attention should be given to transitional problems.

To grant more interest to the marketing process, namely crop collection, storage, transportation and packing, improved methods that suit the Egyptian environment should be employed. On the other hand, the price policy on the wholesale and retail traders level should serve as a perfect incentive to the marketing services, thus cutting down crop waste.

(10) Except for owners of 5 feddans and less, input subsidies in the form of low land taxes, low interest rates, free water, and others, should be abolished, and output prices should be set at levels and in ratios with one another that have some connection with the long-run moving average of world prices. If the sector is capable of generating a surplus for taxation, alternative means of appropriating this surplus should be examined. One method would be through fixed levies, which do not distort production in the way that unbalanced price manipulation does. The land tax might be increased and output prices allowed to rise. (25)

(11) In the field of animal production a stepping up of the production of meat, poultry and fish can be achieved by:-

- (i) Production of new breeds of hybrid varieties of cows and water-buffaloes high in milk and meat production - the government should improve the domestic breeds of sheep and goats to produce highly reproductive hybrid varieties;
- (ii) Search for a solution to the shortage of summer fodder, to avoid the chronic short supply of animal feed, in addition to provide the poultry farms with forage. The productivity of the only factory of concentrated seeds and cottonseeds centre in Zennara (Tala district) should be increased; at present production is limited and cannot satisfy the needs of one-third of the livestock of the governorate. Establishment of another new one (in Quesna) is a great necessity;
- (iii) Stopping slaughtering of young calves, and expanding the "calves project", which concludes contracts with small farmers authorized to sell calves to animal resource development projects, where they are raised in farms until they reach a weight of 400-450 kgs;
- (iv) Encouragement of more chicken farms and incubation egg farms, and poultry farms, in addition to improvement of local "balady" poultry. This will reduce the shortage of protein among the populations; and
- (v) Consolidating agricultural and veterinary guidance organisation and establishing an institution for veterinary technical assistant graduates to provide personal training in animal and poultry health protection procedures. The state should assure the provision of the necessary vaccines and medication for poultry and cattle. Diagnoses methods should be developed. Financial allocation

should be made available to combat poultry and cattle diseases and sterility.

- (vi) Increasing fish production through encouragement of fishermen and fishermen co-operatives by granting loans. It is noteworthy that the establishment of fish farms along scientific lines is a great necessity. There are two vast reservoirs suitable to the projects as shown in Fig.9.2; they are Elpharoniya drain (2000 feddans) and Elkattamiya drain (200 feddans) in the southern Nile delta. The installation and success of these farms will increase the fish production with a large surplus which can help to solve the shortage of meat production in the area; in addition, the surplus can be marketed easily in Cairo (35 kms).
- (12) Other recommendations may be made as:-
- (i) building modern silos for the storage of wheat and corn instead of the traditional barns which cause a loss of at least 10 per cent of the total production;
- (ii) establishing more refrigeration for storing potatoes and other vegetables to guarantee a good distribution all the year round and to avoid their damage or contamination;
- (iii) speeding up promulgation of draft laws on non-encroachment on agricultural land, and to encourage the production of alternative bricks to those made from the soil which have led to the poverty of land.

To find solutions to the agricultural problems, the sector will need major changes in technology, institutions and policies, accompanied by complementary changes in related sectors. Not all these changes are likely in the near future, and there will be a lag between

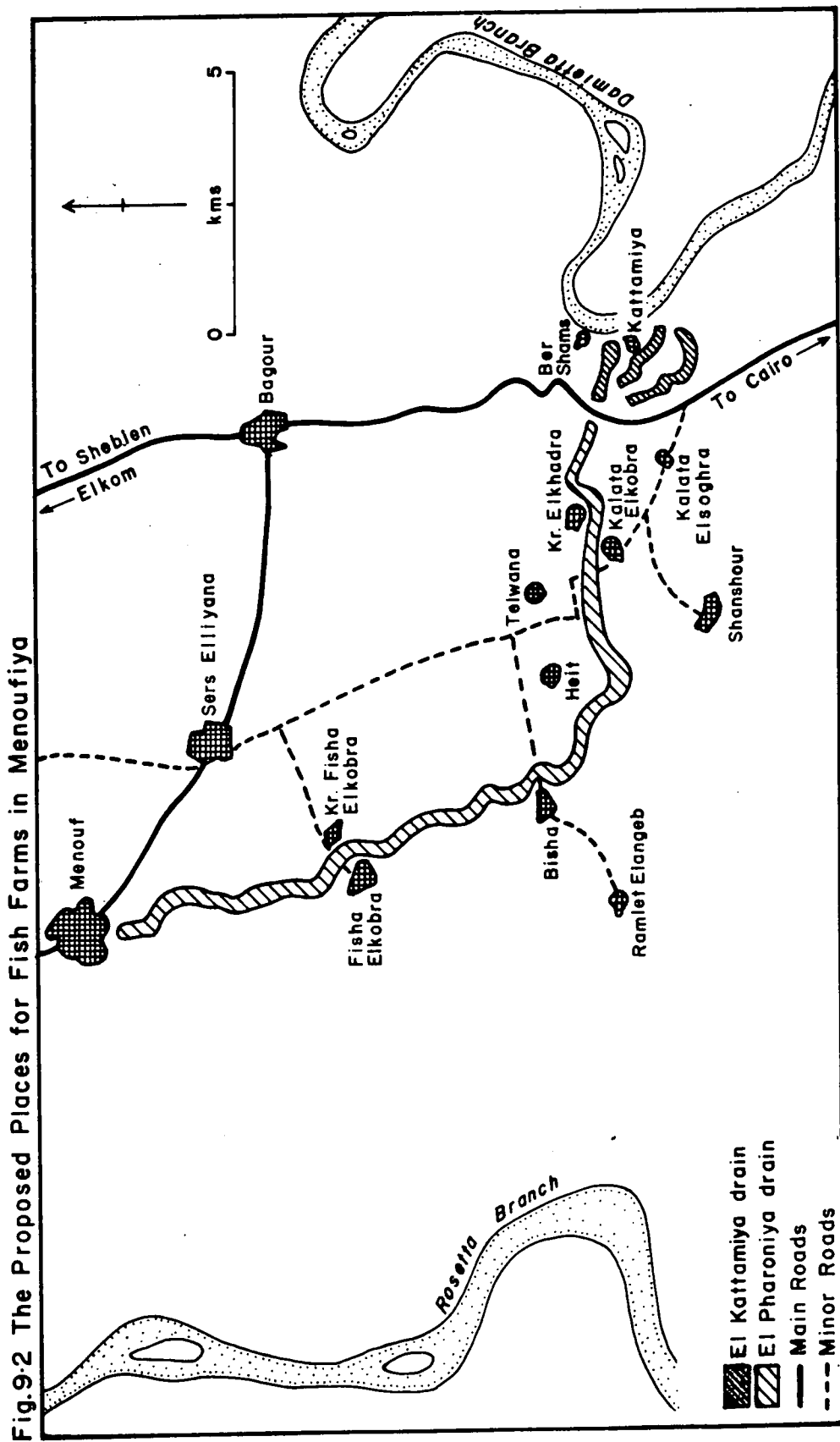


Fig.9.2 The Proposed Places for Fish Farms in Menoufiya

Source : Topographic Atlas of Egypt 1:100,000

implementation and effect. It is possible, though, to group the problems according to their anticipated solutions - those with probable short - or medium-term solutions and those requiring a longer time or heavily constrained by the performance of the rest of the economy. Priority courses and timetables can be set accordingly.

The basic problems of Egyptian agriculture stem from shortcomings in sectoral management and macroeconomic policies. An irresolute approach to correction of these deficiencies could vitiate the recommendations stated here. As long as the multitude of controls continue, agriculture will remain unattractive to investors. For many years to come the foundation of Egypt's economy will be the soil. If ways are found to make the best use of this vital resource, much else - and not only in the agricultural sector - would follow.

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Appendix I

Birth, Death and Infant Mortality Rates in the
Urban and Rural areas in Menoufiya (1976)

(per thousand)

District	Urban Area			Rural Area		
	Birth Rate	Death Rate	Infant Mortality	Birth Rate	Death Rate	Infant Mortality
Shebien Elkom	40.8	11.3	72.1	36.1	14.9	121.2
Ashmoun	39.8	12.9	100.8	40.9	13.8	95.1
Bagour	44.9	15.7	124.0	34.0	15.2	131.0
Berket Elsaba	29.7	11.0	81.8	35.8	14.7	103.5
Shohada	21.1	9.4	95.4	45.1	16.6	115.2
Tala	34.5	12.3	94.9	34.9	15.6	103.8
Quesna	45.9	15.6	123.3	36.3	14.0	109.4
Menouf	48.3	13.6	89.6	36.3	14.9	127.8
Total	39.9	12.5	91.4	37.4	14.8	123.5

Source: C.A.P.M.S. Birth and Death Statistics in Egypt in 1976.
Cairo 1980, pp.23-71.

Appendix 2

Correlation Coefficient between Infant Mortality and both
Female illiteracy and Female Birth Rate in Menoufiya

Districts	Infant Mortality a	Illiterate female b	Female Birth Rate c	(a- \bar{a}) 1	(b- \bar{b}) 2	(1x2)	(c- \bar{c}) 3	(1x3)
Shebien Elkom	15.73	15.21	16.4	3.23	2.71	8.75	3.9	12.60
Ashmoun	17.17	19.50	19.4	4.67	7.0	32.69	6.9	32.22
Bagour	11.66	10.35	9.8	-0.84	-2.15	1.81	-3.0	2.52
Berket Elsaba	6.57	7.37	7.1	-5.93	-5.14	30.43	-5.4	32.02
Shohada	9.60	8.95	9.6	-2.90	-3.54	10.26	-2.9	8.41
Tala	9.30	11.55	10.0	-3.20	-0.95	3.04	-2.50	8.00
Quesna	13.02	11.65	11.9	0.52	0.85	0.45	-0.60	-0.30
Menouf	17.12	15.73	15.8	4.62	3.23	14.22	3.30	15.24
Total	100	100	100			101.7		110.71

\bar{a} 12.50 \bar{b} 12.50 \bar{c} 12.50
 σ_a 3.692 σ_b 3.740 σ_c 3.97

where $r = \frac{1/n \sum(a-\bar{a})(b-\bar{b})}{\sigma_a \times \sigma_b}$

$= \frac{1017/8}{3.692 \times 3.740}$

$= \frac{12.7}{13.809} = 0.92$

Significant at $\alpha = 0.01$ (fairly high significance)

r (a and c) $= \frac{13.84}{14.657} = 0.94$

Significant at $\alpha = 0.01$ (fairly high significance)

Appendix 3

Birth, Death and Natural Increase Rates in Menoufiya (Five Years
running average) per thousand

Year	Birth	Death	Natural	Year	Birth	Death	Natural
1929-33	43.8	29.6	14.2	1953-57	43.5	23.3	20.2
1930-34	43.1	29.9	13.2	1954-58	42.9	22.0	20.9
1931-35	41.8	29.7	12.1	1955-59	42.2	21.6	20.6
1932-36	41.6	30.3	11.3	1956-60	41.9	21.1	20.8
1933-37	42.2	30.4	11.8	1957-61	42.2	21.1	21.1
1934-38	42.5	30.6	11.9	1958-62	42.4	20.8	21.6
1935-39	43.8	30.3	13.5	1959-63	42.7	20.2	22.5
1936-40	44.6	31.2	13.4	1960-64	43.0	19.4	23.6
1937-41	44.3	30.8	13.5	1961-65	43.1	19.1	24.0
1938-42	43.0	31.1	11.9	1962-66	42.4	17.7	24.7
1939-43	42.2	30.9	11.3	1963-67	42.3	16.0	26.3
1940-44	41.4	31.1	10.3	1964-68	41.7	15.9	25.8
1941-45	40.9	30.9	10.0	1965-69	41.1	16.1	25.0
1942-46	40.0	30.6	9.4	1966-70	40.5	16.2	24.3
1943-47	41.6	29.6	12.0	1967-71	40.2	17.8	22.4
1944-48	42.8	29.1	13.7	1968-72	39.6	17.1	22.5
1945-49	45.5	28.6	16.9	1969-73	40.0	17.1	22.9
1946-50	45.4	27.1	18.3	1970-74	38.4	16.5	21.9
1947-51	47.2	26.3	20.9	1971-75	37.8	16.0	21.8
1948-52	47.1	25.1	22.0	1972-76	37.4	15.4	22.0
1949-53	46.7	24.9	21.8	1973-77	38.1	15.3	22.8
1950-54	46.7	23.6	23.1	1974-78	38.9	15.1	23.8
1951-55	45.7	23.5	22.2	1975-79	40.6	14.8	25.8
1952-56	44.7	22.8	21.9	1976-80	41.9	14.3	27.6
				1977-81	42.4	14.0	28.4
				1978-82	42.2	13.3	28.9

Source: Calculated from Table 2.4

Appendix 4

Birth, Death, Natural Increase and Infant Mortality Rates

In Egypt 1943-80

(per thousand)

Year	Birth	Death	Natural increase	Infant Mortality	Year	Birth	Death	Natural increase	Infant Mortality
1943	38.7	27.7	11.0	160	1962	41.5	17.9	23.6	134
1944	39.8	26.0	13.8	152	1963	43.0	15.5	27.5	119
1945	42.7	27.7	15.0	153	1964	42.3	15.7	26.6	117
1946	41.2	25.0	16.2	141	1965	41.7	14.1	27.6	113
1947	43.7	21.4	22.3	127	1966	41.2	15.9	25.3	127
1948	42.6	20.4	22.2	138	1967	40.2	14.2	26.1	116
1949	41.6	20.5	21.1	135	1968	39.2	16.1	23.1	131
1950	44.2	19.0	25.2	130	1969	38.0	14.5	23.5	119
1951	44.6	19.2	25.4	129	1970	36.1	15.1	21.0	116
1952	45.2	17.8	27.4	127	1971	36.8	13.2	23.6	103
1953	43.6	19.6	23.0	146	1972	36.0	14.5	21.5	116
1954	42.6	17.9	24.7	138	1973	37.4	13.1	24.3	98
1955	40.3	17.7	22.7	136	1974	37.3	12.7	24.6	101
1956	40.7	16.4	24.3	124	1975	37.6	12.1	25.5	89
1957	38.0	17.8	20.2	130	1976	38.0	11.7	26.3	87
1958	41.1	16.6	24.5	112	1977	38.9	11.8	27.1	85
1959	42.8	16.3	26.5	106	1978	38.8	10.9	27.9	83
1960	43.1	16.9	26.2	109	1979	40.0	10.9	29.1	81
1961	43.9	15.8	28.1	108	1980	40.9	10.4	30.5	76

Source: C.A.P.M.S. Population Estimates in Egypt, Cairo, 1979, p.33 and the data of 1962-80 from C.A.P.M.S., Statistical Yearbook, 1952-81, Cairo, 1982, p.28.

Appendix 5

Balance of Migration between Menoufiya and the Other
Governorates of Egypt, 1976

Governorates	In-Migrants from	Out-Migrants to	Net migration
Cairo	5,019	207,644	- 202,625
Alexandria	1,224	42,323	- 41,099
Port Said	1,888	1,430	+ 458
Suez	1,498	3,568	- 2,070
Damietta	439	2,270	- 1,831
Dakahliya	1,405	5,000	- 3,595
Sharkiya	1,183	41,050	- 2,922
Qalyubiya	1,778	2,918	- 1,140
Kafr El Sheikh	795	7,700	- 6,905
Gharbiya	4,227	2,958	- 25,353
Behiera	1,659	19,740	- 18,081
Ismailiya	718	3,138	- 2,430
Giza	1,045	30,114	- 29,069
Beni Suef	200	805	- 605
Fayum	262	1,002	- 740
Minya	287	808	- 521
Asyut	341	517	- 176
Sohag	760	411	+ 349
Quena	576	324	+ 252
Aswan	149	300	- 151
Red Sea	53	101	- 48
New Valley	44	20	+ 24
Matruh	45	370	- 325
Sinai	330	417	- 87
Total	26,336	364,603	- 338,267

Source: Calculated according to C.A.P.M.S., The General Population and Housing Census of 1976, Cairo, 1978, Part I.

Appendix 6

Index of Population concentration in Menoufiya, 1976

Districts	% of total area (x)	% of total pop- ulation (y)	The positive difference x-y
Shebien Elkom	12.0	17.6	5.6
Ashmoun	19.6	18.1	1.5
Bagour	10.8	10.2	0.6
Berket Elsaba	7.8	7.6	0.2
Shohada	10.0	8.5	1.5
Tala	12.2	10.7	1.5
Quesna	13.3	12.0	1.3
Menouf	14.3	15.3	1.0
Total	100	100	13.2

Index of Concentration

$$= \frac{\sum x-y}{2}$$

$$= \frac{13.2}{2} = 6.6 \text{ per cent}$$

When the index of concentration is low it means that the population distribution is more even and scattered.

Appendix 7

Lorenz Curve of Population Concentration
in Menoufiya 1976

Districts	Density	Percentage of		Cumulative per	
		Population	Area	Population	Area
Shebien Elkom	1640	17.6	12.0	17.6	12.0
Menouf	1200	15.3	14.3	32.9	26.3
Berket Elsaba	1100	7.6	7.8	40.5	34.1
Bagour	1050	10.2	10.8	50.7	44.9
Ashmoun	1040	18.1	19.6	68.8	64.5
Quesna	1000	12.0	13.3	80.8	77.8
Tala	980	10.7	12.2	91.5	90.0
Shohada	950	8.5	10.0	100.0	100.0
Total	1120	100.0	100.0	-	-

Source: Calculated by the researcher

Appendix 8

Sex Ratio of Menoufiya by Age Group 1927-1976

Age	1927	1937	1947	1960	1976
0 - 4	96	95	99	106	103
5 - 9	101	100	104	112	108
10 - 14	120	120	108	111	110
15 - 19	109	114	111	114	117
20 - 24	89	96	94	120	111
25 - 29	83	58	82	83	102
30 - 34	83	82	80	86	92
35 - 39	109	103	92	89	92
40 - 44	89	94	88	95	92
45 - 49	113	103	95	91	95
50 - 54	89	97	89	93	95
55 - 59	101	102	96	92	93
60 - 64	86	87	83	86	94
65 - 69	111	96	99	91	100
70 - 74	83	81	80	79	75
75 and over	85	73	77	87	86
Menoufiya	98	98	96	101	104
Egypt	99	100	98	101	104

Source: Calculated by the Researcher.

Appendix 9

Spearman's Rank Correlation Coefficient between the
Illiteracy and Agricultural Activity in Menoufiya, 1976

Districts	Population (thousand)	Illiteracy %		Agric. Activ%		d	d ²
		x	Rank	y	Rank		
Ashmoun	311	72.5	1.5	66.9	1	.5	0.25
Shebien Elkon	302	38.6	8	44.7	8	.0	0
Menouf	262	63.0	4	60.3	3	1.0	1.0
Quesna	205	57.5	7	53.8	7	0	0
Tala	182	66.2	3	60.2	4	1	1.0
Bagour	173	61.0	5	53.8	5	0	0
Shohada	145	72.5	1.5	63.4	2	0.5	0.25
Berket Elsaba	131	59.8	6	53.6	6	0	0

n = 8

$\sum d^2 = 2.5$

$$r_s = 1 - \frac{6\sum d^2}{n^3 - n}$$

$$= 1 - \frac{15}{504}$$

$$= 1 - 0.0298$$

$$= 0.97$$

Perfect positive correlation

Appendix 10

The Annual Average Speed and Direction of the Winds
Blowing on Menoufiya (Shebien Elkom Station)

	Speed k/H	Direction								Calm
		N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	
January	4.3	5.0	11.9	2.1	0.9	4.8	13.5	16.2	12.2	33.4
February	4.6	7.7	16.4	3.4	1.7	6.5	10.8	11.3	11.9	30.3
March	5.2	16.3	18.7	4.9	2.5	5.3	5.8	12.7	16.7	17.2
April	5.2	17.4	24.7	6.1	2.3	2.4	4.3	10.7	16.9	15.2
May	5.2	33.7	19.3	6.4	1.5	1.2	2.1	5.6	18.6	13.0
June	5.1	40.9	14.2	2.1	0.5	0.5	1.0	4.9	23.9	12.0
July	4.5	43.3	6.0	0.1	0.1	0.1	0.9	7.2	30.0	15.3
August	3.8	38.1	6.2	0.3	0.1	0.1	0.8	3.4	26.5	24.5
September	4.1	42.8	11.7	2.2	0.0	0.2	0.7	2.4	19.7	20.3
October	4.2	31.6	21.7	2.9	1.4	1.3	2.3	5.1	13.7	20.0
November	3.9	22.0	15.3	1.5	0.7	1.8	5.9	7.4	14.1	31.3
December	4.0	7.2	14.6	2.9	1.0	4.9	8.9	12.7	11.8	36.0
Mean	4.0	25.5	15.1	2.8	1.1	2.4	4.7	8.0	18.0	22.4

Source: Ministry of Military Production, Meteorological Dept., Climatological Normals for Egypt until 1960, Cairo, 1980.

Appendix 11

Water Requirements In Menoufiya Based on the Dominant
System of Irrigation (cubic metres)

Winter crops	Water require- ments per Fed/m	Summer crops	Water require- ments per Fed/m
Wheat	1,320	Cotton	3,600
Broad beans	960	Maize	3,000
Barley	1,200	Vegetables	3,170
Onions	2,040	Orchards	6,850
Clover	3,100	Sugar cane	12,480
Vegetables	3,000	Rice	9,060

Source: C.A.P.M.S. Irrigation and Water Resource Report, 1979,
Cairo, 1981, p.37.

Appendix 12

Crop Requirements of Fertilizers According to the Estimation
of the Co-Operatives of Menoufiya in 1980

(Kilograms per feddan)

Crop	Azote	Phosphate
Wheat	450	100
Barley	300	-
Clover	-	100
Beans	100	200
Potatoes	800	450
Orchards	300	300
Vegetables	600	200
Onions	600	100
Sugar cane	-	200
Maize	250	100

Source: Menoufiya Governorate, Agricultural Co-operatives Authority
in Shebien Elkom, Unpublished data.

Appendix 13

Percentage of maize, wheat and clover of the total cropped area in Menoufiya in 1980-82

Districts	Cropped area (1000 feddans)	Percentage of cropped area		
		Maize	Wheat	Clover
Shebien Elkom	75.3	29.8	13.0	31.6
Ashmoun	114.1	34.2	10.5	30.1
Bagour	65.2	36.3	13.5	30.3
Berket Elsaba	54.6	26.3	12.0	29.5
Shohada	64.1	26.4	10.6	27.2
Tala	80.1	26.4	11.3	33.4
Quesna	83.2	29.0	9.5	32.6
Menouf	87.9	38.1	11.3	32.5
Total	624.5	31.2	11.4	31.1

Source: Calculated from : Ministry of Agriculture, Agricultural Economy and Statistics Dept., Field crops data, Cairo, Unpublished data.

Appendix 14

Egypt's Imports of Some Principal Food Commodities
(Million Egyptian Pounds)

Commodities	1976	1978	1981
Wheat	153.6	169.0	531.2
Wheat flour	36.4	74.8	250.8
Meat chilled or frozen	13.5	34.6	210.9
Dairy Products	21.6	49.0	150.8
Sugar refined	23.8	40.6	164.4
Maize	30.8	38.0	219.9

Source : C.A.P.M.S. Statistical Yearbook of A.R. of Egypt, 1952-81, p.266.

Appendix 15

Relative Cost of a 100-Calorie Equivalent of Some Food
Commodities in Egypt, 1977

Commodity	Price in (milliens)	Commodity	Price in (milliens)
Wheat	1.8	Milk	11.8
Maize	1.6	Cheese	14.1
Rice	2.1	Potatoes	11.2
Beans	2.6	Tomatoes	14.4
Lentils	5.6	Onions	18.2
Meat	64.8	Vegetables	17.5
Poultry	64.8	Citrus fruit	21.7
Fish	27.0	Other fruit	10.0
Eggs	17.2		

Source: Hansen, B., and Radwan, S., Employment Opportunities and Equity in Egypt, I.L.O, Geneva, 1982, p.114.

