U. N - U. A. R.

CAIRO DEMOGRAPHIC CENTRE
THE RELATIONSHIP BETWEEN AGRICULTURE AND POPULATION TREND IN BAGHDAD MUHAFADHA

BY

ABBAS FADHIL AL-SAADI

CENERAL DIPLOMA IN DEMOGRAPHY

Supervised by
DR.M.S. GHALLAB

November, 1973

CONTENTS

Chapter (1): introduction

Chapter (2)
The Population Changes in Baghdad Muhafadha 4-11

Chapter (3)
The Agricultural Changes in Baghdad Muh. 12-17

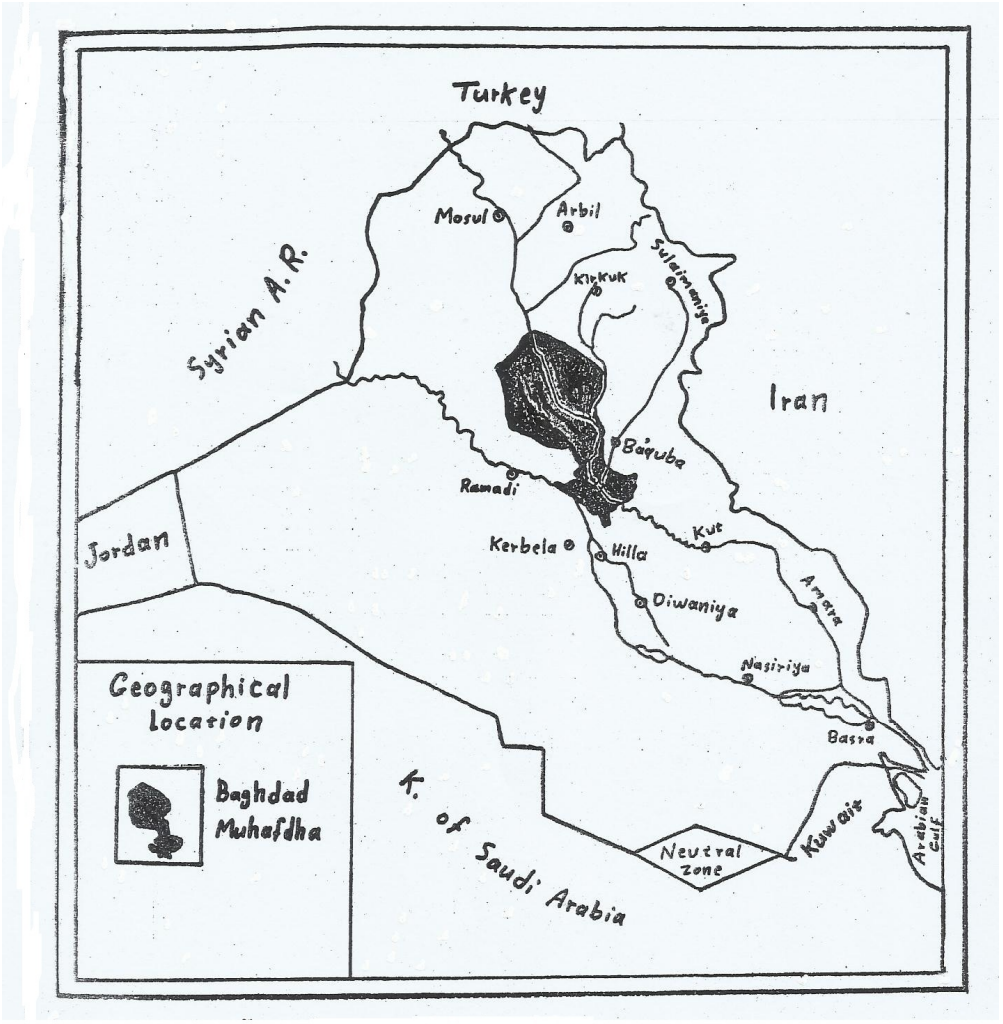

Turkey
Mosul
Arbil
Kirkuk
Sulaimaniya
Syrian A.R.
Iran
Baquba
Ramadi
Jordan
Kerbela
Hilla
Kut
Amara
Diwaniya
Nasiriya
Basra
Geographical location
Baghdad Muhafdha
K. of Saudi Arabia
Neutral zone
Kuwait
Arabian Gulf

Figure (1)

Chapter 1
Introduction

1.1 location, Area and Density

Baghdad Muhafadha(*) lies in the Middle of Iraq where the Tigris and the Eurphrates rivers flow parallel to each other. Its area is 19,922 square kms, i.e. 4.5% of the total area of Iraq. The inhabitants of Baghdad Muhafadha were estimated to be 2,688,819 in 1970, i.e. 28.5% of the total popiulation of Iraq. During 1970, its density was 135 persons per square km.

1.2 Objective of the Study

This research aims at studying the population and agricultural change in Baghdad Muhafadha, and the relationship between them, and also to know how far does the agricultural trend go with the population trend during the period of study and up to 1980, and to explain the effect of the population on cultivating new areas of land, and the effect of agriculture on population. Another aim is to find the correlations between the agricultural changes and population growth.

The reasons why I chose this topic are:

a. The importance of Baghdad Muhafadha and its economic structure, especially the importance of some agriculture corps, and the connection with the future of the population.
b. There are no previous studies about this topic in Baghdad Muhafadha.

(*)**Notice: Muhafadha = Governorate, Qadha= District, Donum= 2500 square metres.**

1 :3 The Importance of the Muhafadha:

Baghdad is the capital of Iraq; its administrative centre, its industrial, commercial and cultural heart. Baghdad comprises the bulk of the population of Iraq where this population cluster has led to the rise of a certain agricultural activity in the neighborhood, especially the cultivation of vegetables and fruits, Baghdad city with its 1,626,230 population according to 1965 census has a great effect in growing the vegetables, orchards of fruits, cash crops such as cotton, dates, sesame and linseed, and also cereals such as wheat, barley and rice.

In spite of the decrease of rural population from 1/3 of Muhafadha total population in 1957 to 1/5 of its total population in 1965, agriculture still plays a considerable role in the economies of the Mhafadha due to the availability of physical agricultural factors such as topography, climate and soil; and also human factors such as population and irrigation. Since the Muhafadha comprises 1/4 of Iraq total pop. , 1/5 of its agricultural production and 1/4 of horse power of the agricultural pumps of the country[1] According to 1970 the proportion of the cultivable land in the Muhafadha reached ll.2% of that of Iraq; also the proportion of cultivated land in the Muhafadha reached 9.5% of that of Iraq.

The Muhafadha comprises 38.7% of the vegetables of Iraq, 8.l% of its cereals and legumes area, 7.2% of its industrial crops area, 7.1% of its orchards of palmtrees area, and 2.5% of its orchards of fruits and vine area.

---

[1] According to 1970/71, the percentage of the agricultural pumps in Baghdad Muh. reached 19.9% of total pumps in the country and 25.2% of its total horse.

In Spite of the smallness of these proportions (excluding tables) the value of the agricultural products of the Muhafadha in 1970 (excluding livestock and fish wealth) constitutes 13.6% of the total" value of agriculture products of the country. In 1956 the Muh. contributed by 30% of the gross national income of Iraq, where the agricultural sector contributed by ll.l% of this income which proves-the importance of the economic structure of the Muhafadha.

1. 4 The Problems of the study:

During my study of this topic I was faced with many problems, such as the administrative boundary' changes, the scarcity of references and agriculture data for all years and for all districts of the Muhafadha, as well as the inaccuracy of the available data.

1.5 Areal Units Time Period of Analysis:

The areal units in this study are the administrative units of Baghdad Muhafadha (each administrative unit is called Qadha) adjusted to the 1971 administrative boundaries, i.e. (10 Qadhas). The analysis covered the changes in population and agriculture for the period 1957-1970 or 1971, where the data permits this. I have also tried to compare the population to the agricultural production, on the basis of the average of two periods (1958/60-1970/72)[2].

1.6 Data for the Study:

The data utilized in this study are the following

A) Population Data

---

[2] The average of each period is three years

Population data were obtained from the 1957, 1965 censuses and 1970-80 estimations of Kozo Ueda; (The following were utilized:

a) Rural, urban and total population.

b) Persons working in the agricultural sector.

B) Agricultural Data

The main sources of agricultural data are:

a. Ministry of Agriculture, Agr. Statistical Bulletin, 1958-64.

b. Ministry of Agriculture, Directorate of Agricultural economics.

c. Ministry of Agriculture, Agricultural Department for Baghdad \
muh.

d. CBS, Results of the Agricultural and Livestock census in Iraq for
the year 1958-59.

e. CSO, Annual Abstract of Statistics, 1970 & 1971

1.7 Boudary and Data Adjustments

A) Adjustment for boundary changes

In 1957 census there were five qadas only, whereas in 1971, Baghdad muhafadha was divided into ten Qadhas. Therefore, the 1957 data were adjusted to correspond with the 1971 boundaries.

B) Weather Fluctuations:

Because of the fluctuations in the agricultural production, and to climinate the effect of weather changes, I have taken the average of three A years for each period (1958/60 - 1970/72).

1.8 Some Modern Technical Methods:

I have tried to apply some of the modern technical methods in my research such as:

1. Two methods were used to estimate net migration in the Muhafadha: the first was the net intercensal migration method, depending on POB & POR. The second was the method of S.R.
2. The component interest rate method to get the Population growth rates, and the population estimations by applying the equation: $Pn= Po(1+r)^n$.
3. The rate of net migration (by S.R.) and the population of growth rate to get the rate of natural increase.
4. The equation of linear growth (y= a+bt) to get the percent annual in crease of agricultural crops as well as the agricultural estimates.
5. The correlation coefficient between population and agricultural change.

CHAPTER 2
THE POPULATION CHANGES IN BAGHDAD Muhafadha

2.1 Rate of Natural Increase:

Rate of natural increase is the difference between CBR and CDR, or
between annual growth rate and rate of net migration.

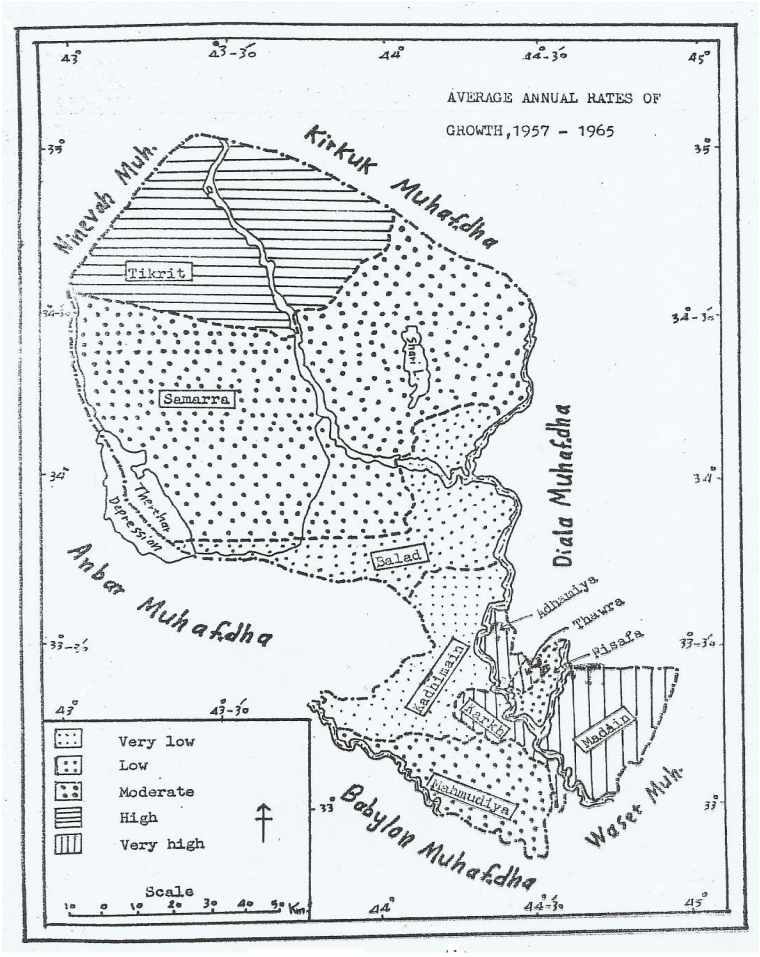


Figure (2)

Table (I) Shows the rate of natural increase which is 38.7%o etween 1957 and 1965. Compared by 31.2 %o for Iraq for the same period Annually natural increase in Baghdad Muhafadha was also (60,737) persons in annual average[3].

Table I: Rate of Net Migration, and Rate of Natural Increase in Baghdad Muhafadha, 1957-1965 (%o

Average Annual Rate of Growth	Rate of Net Migration	Rate of Natural
(1)	(2)	(3) = (1)- (2)
57.0	+18.3	38.7

Source: Computed from Appendix Table (I)

2.2 Rate of Net Migration

From table (I), that the rate of net migration in Baghdad Muh. Between 1957 & 1965 was +18.3%o. It is clear that it is positive and large because of the coming of large numbers of in-migrants to the Muhafadha from all over Iraq.

The rate was computed from the number of net-migration between 1957 and 1965 (246,464) by applying this formula[4]:

Net-mig . =1-0/p*k[5] =246.464/1.679.194* 1000
=146.77/8 = 18.3 %0

---

[3] **N.1. = Average Annual Increase - Average Annual Net Migration 732,363-246464 = 485.899/8 = 60737 or = 91,514 - 30,808 = 60,737**

[4] **(1) Donald J, flegue , Principles "of Demography, Copyright by John Wiley &. Sons, Inc., (Printed in U.s.A.1969), p. 758.**

[5] **Where I is the n° of in-migrants to an area,**
O is the n° of out- migrants from an area
P is average or midin terval pop. Of the area, and
K is a constant, usually 100 or 1000

When calculating the net migration in the Muhafadha between 1957 and 1965 censuses. We found that it gained 207,839 persons, by using the net intercensal migration method, depending on POB and POR. By using the method of survival ratio, the net migration came to be 246,464 persons. But relying on 1965 census, the net intercensal migration in the Muhafadha was 553,208 persons. These migrants contributed 34% and 27% of the population of Baghdad city and Baghdad Muhafadha, respectively.

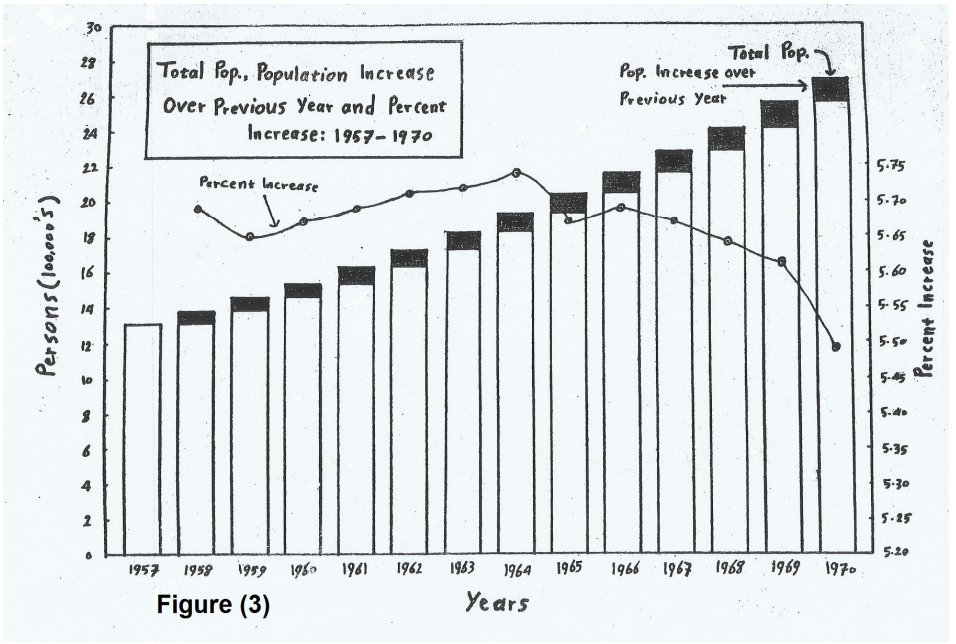


Figure (3)

2.3 Growth Rates

Baghdad Muhafadha is characterized by its high growth rates because of the two factors of high natural increase, and high net-migration. The AGR between 1957 and 1970 was 5.67% in the Muhafadha, compared by 3.1% for Iraq. As for the percent change during the same period, we find it to be 104.8% for the Muhafadha, compared by 49.9% for Iraq. And these are very high rates in comparison with the international rates. (see table 2).

Table .2- Percent Change and Average Annual Rates of Growth in Baghdad and Iraq:

Percent Change			average annual rates of Growth (%)		
1957-65	1956-70	1957-70	1957-65	1965-70	1957-70
Baghdad 55.7	31.5	104.8	5.7	5.6	5.6
Iraq 27.8	17.3	49 .9	3.1	3.2	3.1

Source: Computed from appendix table (1) and census of Iraq, 1957&1965

2.4 Population Trend (Urban and Rural):

Administrative urban areas in Iraq are defined as follows: "All areas lying within municipal metropolitan boundaries".

According to this definition, Baghdad Huh. has been comprised of 15 administrative units in the 1957 census (5 Qadhas and 10 Nahias) all of which included urban areas.

In 1970 the number of areal units has reached 29 (8 Qadhas and 21 Nahias) of which included urban areas. In

1971 Baghdad Muh. was divided into 31 areal. units (with 10 Qadhas and 21 Nahias).

The ratio of the urban population to the Muhafadha total population has increased from 65.2% in 1957 to 78.1% in 1965. For this reason, the ratio of the rural pop. to the Muhafadha total pop. has decreased from 34.8% in 1957 to 21.9% in 1965 (see tables 3 and 4). The reasons behind the increase of the urban pop. at the cost of the rural pop. are:

1. The continuous internal mig. from rural to urban areas, and the population natural increase. The urban areas whose population exceeds 5000 have gained about 365,128 migrants between 1957 and 1965 (see app. Table 8) Which is equivalent to 38.3%[6], and the rate of natural increase was 37.7%o or 39,407 persons per year[7] in average, while the annual growth rate between the two periods was 76%o (see table 6). In the urban areas, the rate of net-migration has reached 42.3%o and this high rate has resulted from the increase of the urban rate of growth between 1957 and 1965. It reached 81%o, while the rural rat of growth has decreased to -2%0 at the same period. (see the tables 5 & 6)
2. The appearance of new urban units between the two censuses, and some villages have been included in cities with their rural characteristics.

[6] **rate of net mg: =365,128/1.190.868 x 1000 ÷ 8= + 38.3 %0**

[7] **Averge Annual N. I = 680.381 – 365.128=315.253/8=39.407**

Table (3) Urban Population

population 1957	urban Pop. 1957	% urban 1957	population 1965	urban pop. 1965	% urban	average percent to the urban 57-65
1,313,012	856,022	65.2	2,015,375	1,596,706	78.1	71.6

Source: Computed from the census of Iraq 1957 and 1965

Table (4) Rural Population:

Population 1957	Rural pop. 1957	% Rural. 1957	Population 1965	Rural pop. 1965	% Rural	Average Percent to the rural
1.313.012	456.990	34.8	2.045.375	448.669	21.9	28.4

Source: Computed from the census of Iraq, 1957 and 1965

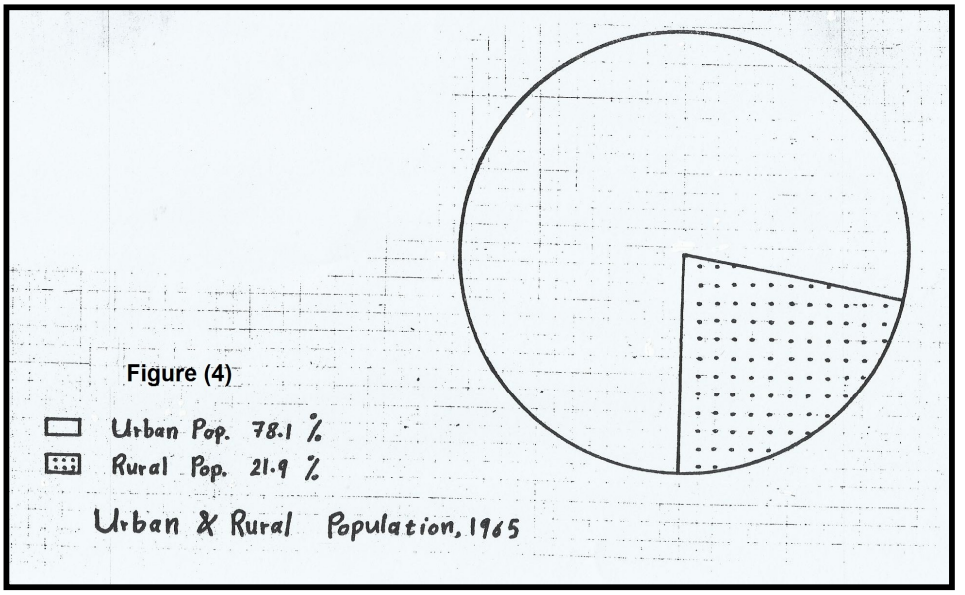


Table 5 G. R. of Urban & Rural pop. and Rate of Net-mig. for U. areas between 1957 and 1265 (%o)

G.R. for Urban	G.R. for Rural	G.R. for all pop.	RNI	Net Mig. Rate for Urban Areas
(1)	(2)	(3)	(4)	(5)=(1) – (4)
81	-2	57	38.7	+ 42.3

Source: Computed from Tables (1, 2, 3, 4)

Table 6 Rate of Natural Increase and Rate of Net-Wig. Between 1957 & 1965 in Baghdad Urban areas with (5000) pop. And over (%0)

Annual G.R. (1)	Rate of Net-Mig. (2)	Rate of N.I. (3) = (1) - (2)
76.0	**38.3**	**37.7**

Source: Computed from the census of Iraq, 1957 & 1965

2.5 Sex Ratio:

Observing the sex ratio in 1957, 1965 censuses and 1970 estimates, we find that the sex ratios were 104.7%, 103.5% and 101.9% respectively. We notice that they are continually decreasing. This means that the number of males is decreasing, while the number of females is increasing. But in Iraq the sex ratios were 99.6, 101.5 and 101.5% in 1957, 1965 and 1970 respectively.

2.6 – Age Distribution:

Studying the age distribution for the Muhafadha, we notice the following: (See Table 7):

1. The persons under the age of 15 years represent 44%, 47% and 47.6% of the total pop. in l957, 1965 and 1970 respectively. This shows that this ratio is gradually increasing.

2. The persons between 15 and 64 years of age (the economically active group) represent 52.8%, 49.5 and 49.4% of the total pop. in 1957,1965 and 1970 respectively. These ratios are gradully decreasing.
3. As for the persons over 65 years of age, they represented 3.2%, 3.5% and 3% of the total pop. in 1957, 1965 and 1970.

Out of those ratios, we conclude the following demographic facts:

A. The population of the Muhafadha is a young Population.
B. The active Population (15 - 64) represents 50.6% of the total pop: (in average) during the three periods.
C. The decrease in the median age in which the BR increase, broadens the base of the population pyramid. Moreover, the DR tends to a relative increase which makes the degrees of the Population Pyramid tend to a speedy slipping

Table (7): Percentage of Age Group, 1957, 1965, & 1970

Age group	1957		1965		1970	
	No. of pop.	%	No. of pop.	%	No. of pop.	%
Less than 15	577,520	44.0	962.648	47.0	1.279.227	47.6
15 – 64	693,326	52.8	1,011,993	49.5	1,327,372	49.4
65 +	42,066	3.2	70,734	3.5	82,220	3.0
Total	1.313.012	100.0	2.045.375	100.0	2.688.819	100.0

Source: computed from appendix table (1)

2.7- population distribution:

A. **The Numerical Distribution:** The population is distributed close to rivers beds where people exploit the land and benefit from the water. As for the areas far away from rivers, the population concentrates near to wells and springs in scattered plasces.

While the population crowds in Baghdad city and its surrounding quashes, they are less in the north of the Muhafadha. And though this area constitutes 3/4 of the Muhafadha total area, it has only 8.3% of the Mhhafadha population. This is because this area extends far away from the Tigris river, in addition to its arid qualities.

Table (8) indicates that the difference of percent distribution between 1957 and 1965 tends to decrease in all districts except Karkh, Adhamiya and Thawra Qadhas.

Table (8): Percent Distribution of Total Pop. for Baghdad Mun. by Districts, 1957 and 1965

Muhafadha and Districts	% Distribution of Total Pop.		Difference (3)= (1)- (2)
	(1)1957	(2)1965	
Risafa	33.7	24.5	- 9.2
Karkh	16.8	22.9	+ 6.1
Adhamiya and Thawra	13,2	26,4	+13.2
Mada'in	1.9	1,8	- 0.1
Kadhimain	18.0	11.7	- 6.3
Mahmudiya	5,7	4.4	- 1.3
Balad	4.3	3,2	- 1.1
Samarra	3.7	2.9	- 0.8
Tikrit	2.7	2.2	- 0.5
Muhafadha	100.0	100.0	

Source: Computed from Appendix Tables (3 & 4)

B. **The Density Distribution:** In Baghdad Muh., the earth. density was 65.9 persons/square kms. Then this density increased to 102.7 persons/kms. in 1965 and 135 persons/sq. kms. in 1970. But the agricultural density in the Muhafadha has decreased from 82.5 persons/sq. kms. to 33.3 persons/sq.Kms. between 1957 and 1965 censuses (See table 9). The agr. density increases along the Tigris river where the requirements of agriculture are available. So, this density decreases in the desert areas; where the water is rather scarse. Therefore, we can notice 3 regions of population, which are:

   a. Densely popu1atad region (more than 200 persons/sq.kms.); such as Risafa Qadha, Karkh Qadha and Kadhimain Qadha where we find many agricultural aspects.
   b. Moderately populated region (80 - 199 persons/sq. kms.); such as mahmudiya and Adhamiya Qadha which are agricultural areas.
   c. scarcely Populated region (less than 79 persons/ sq.kms) and we find that region in the rest of the administrative units that are faraway from the Tigris river, and that have the arid qualities.

Table 9: Arth. Density and Agr. Density for Baghdad Muh, by Districts, 1957 and 1965

Muhafadha and Districts	Arth. Density (Persons/sq. kms)		Difference	Agr. Density (Persons/gsgo. kms)		Difference
	1957 (1)	1965 (2)	(3)=(1)-(2)	1957 (1)	1965 (2)	(3)=(1)-(2)
Risafa	2633.3	2983.7	+ 350.4	749.6	8993	+79.7
Karkh	824.1	1748.6	+ 924.5	296,4	282.4	- 14.0
Adhamiya and Thawra	589.1	1826.1	+1237.0	380.6	92.2	-288,4
Mada'in	19.5	28.7	+ 9.2	80.4	27.3	- 53,1
Kadhimain	162.6	165.6	+ 3.0	108.1	236.3	+127.9
Mahmudiya	56.9	68.5	+ 11.6	63.6	111.0	+47.4
Balad	22.4	25.7	+ 3,3	38.4	16.9	-21.5
Samarra	5.4	6.6	+ 1.2	23.7	5.6	- 18,1
Tikrit	9.7	12.7	+ 3.0	50.4	11.2	-39,2
Muhafadha	65.9	102.7	+ 36.8	82.5	34.5	-48.8

Source : Computed from Appendix Tables (3 , 4 & 5)

Chapter (3)
THE AGRICULTURAL CHANGES IN BAGHDAD MUHAFADHA

1 .The Classification of Agr. Crops according to their Relative importance

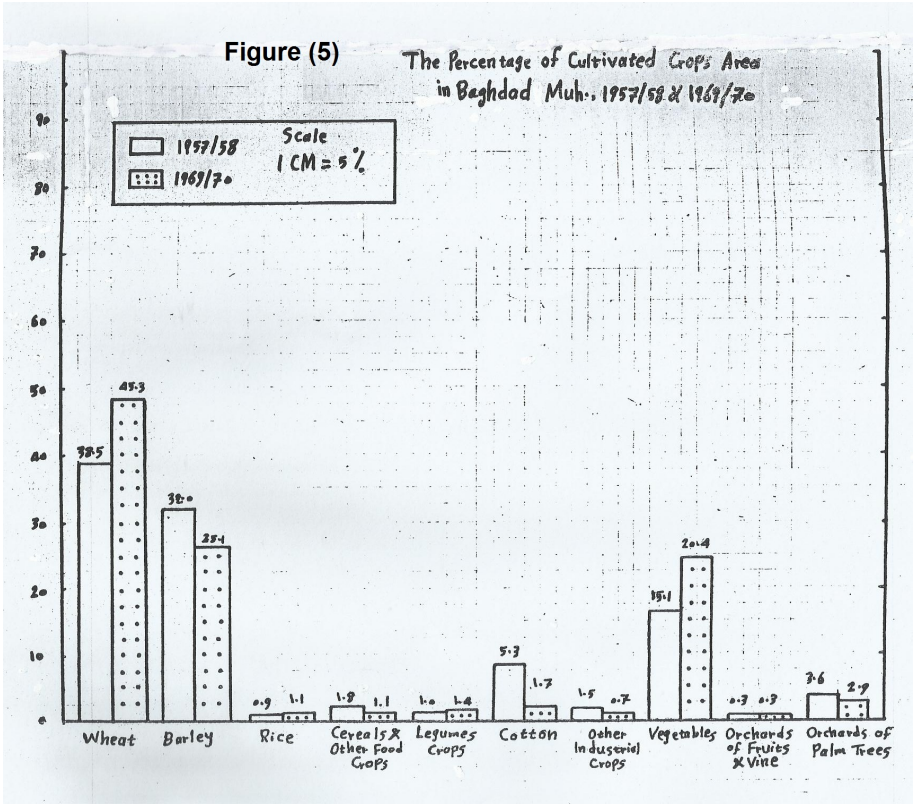
The classification depends on the average of percent distribution of the cultivated area for the period (1958/60) and (1970/72). So wheat comes first for it occupies 45.5% of the total cultivated land (See table 10). then comes barley that occupies 25%. Then come vegetables with 18.2%, orchards of Palm trees With 3.5%. Finally, we find the Cotton that occupy 2.1% of the total cultivated land. We may consider the preceding crops as the principal with regard to their area.

Tab1e 10: The Percentage Distribution of Cultivated Area by Type of Crops in Baghdad Muhafadha, 1958/60 and 1970 / 72.

C r o p	Average Percent 1958-72	Distribution of Cultivated Area			
		1958 / 60		1970 / 72	
		Donum	Percent	Donum	Percent
Wheat	45.5	417,167	40.8	629,565	50,3
Barley	25.0	324,220	31.7	227,708	18.2
Rice	0.8	6,682	0.7	11,486	0.9
Cereal and other food crops	1.6	17,666	1.7	18,675	1.5
Legumes	1.4	13.904	1.4	16,705	1.3
Cotton	2 .6	33,385	3.3	25,295	2 .0
Other industrial Crops	1.0	12,048	1.2	11,387	0.9
Vegetables	18.2	156,473	15.3	263,814	21.1
Orchards of fruits &vine	0.4	2,594	0.3	5,000	0.4
Orchards of palm trees	3.5	37,239	3.6	41.531	3.4
All crops	100.0	1,021,378	100.0	1,251,166	100.0

Source: Completed from Appendix, table (6).

Figure (5)



3.2 Change in Area, production and land productivity:

A. In Baghdad Muh, the percentage of annual increase[8] for the area of all the cultivated crops +1.9% per annum between the periods (1958/60) and (1970/72) (See table 11)

[8] **Percentage of annual increase here refers to the value of (b) in y = a +bt, divided by the value of the base year, where y is the index of area/production/ productivity, and t is the time.**

Table (11): Percentage of Annual Increase to the Base year (1958/1960) for Agr. Crops in Baghdad Muhafadha, 1958/50 & l970/72.

CROP	Area	Production	Land Productivity
Wheat	+ 4.2	+9.6	3.5
Barley	-2.5	-2.7	-0.3
Rice	+ 6.0	+12.5	+ 3.8
Cereals & Other Food Crops	+ 0.5	+15.2	+13.9
Legumes Crops	+ 1.7	+ 4.1	+ 2.1
Cotton	- 2,0	+ 9.3	+15.0
Other Industrial Crops	- 5.0	+60.9	+64,8
Vegetables	+ 5.7	+ 8,8	+ 1.8
Orchards of fruits & Vine	+7.7	+35.3	+14.2
Orchards of Palm Trees	+1.0	+2.2	+1.1
All Crops	+ 1,9		
Iraq	- 0.7		

Source: Computed From App. Table (6)

B. Table (12) presents the index of change in productivity of land from the base year (1958/60). It shows. that all crops witnessed

an increase during 1958/60 - 1970/72, exept for barley and

legumes where the change in productivity was fluctuated.

Table 12: The Index of change in productivity of land and Pops Trend During
1958-72 (1958-60 average =100)[9]

Pop. & agr. Variables	Years				
	1958/60 (base year = 100)	**1961/63**	**1964/66**	**1967/69**	**1970/72**
Total population	1468	118	140	165	194
Crops					
wheat	189	67	95	99	142
Barely	258	85	69	112	96
rice	380	94	114	112	145
Cereals & Other Food Crops	371	194	216	229	267
Legumes Crops	211	111	113	109	125
Cotton	121	127	155	200	280
Other Industrial Crops	172	80	96	192	877
Vegetables	2030	100	111	120	122
Orchards of fruits & Vine	13.672	100	100	100	271
Orchards	403	100	82	84	113

[9] Mid – year pop. & average yield (kg.) per donum-(crops in each 3 years – interval between (1958 – 1972).
source: computed from appendix tables (2 & 6)

of Palm Trees					

C) As for the specific percentage of annual increase for the cultivated crops we find that the production of wheat barley, rice, fruits and orchards of Palm trees are determined by the area and land productivity.

But legumes, Cotton, other cereals food and other industrial crops
are determined by the land productivity only. This is while the production of vegetables is determined by the area. Hence, the area and land Productivity explain the reasons of variations in the agricultural production.

D) The percent change for the area of all crops was + 22.5% during the same period. It was also noticed that the percent change have increased for most crops. However, a part of the crops tended to decrease in area, production or in land productivity. (See table 13).

Table 13: The percentage Change in Area, Production and Level yield of crops
in Baghdad Muhafadha, 1958/60 and 1970/72.

CROP	Area	Production	average yield per Donum (kg.)
Wheat .	+ 50.9	+115.5	+42.3
Barley	-29.8	-32.5	-3.9
Rice	+ 71.9	+149.6	+ 45.3
Cereals & Other Food Crops	+ 5.7	+182.4	+167.4
Legumes Crops	+ 20.1	+ 49.7	+ 24.6
Cotton	- 75.8	+ 112.2	+180.2
Other Industrial Crops	- 5.5	+730.9	+777.3

Vegetables	+ 68.6	+ 105.2	+ 21.7
Orchards of fruits & Vine	+ 92.8	+424.2	+170.6
Orchards of Palm Trees	+11.5	+26.7	+13.4
All Crops in Muh.	+ 22.5		
All crops in Iraq	- 7.2		

Source: Computed from App. Table (6)

E) The increase in production is connected with widening the area and increasing the land productivity. Widening the area depends on land reclamation, the new irrigation projects, the new drainage projects and other topographic factors as fund in the northern Muhafadha. But increasing the land productivity depends on the execution of the scientific vertical extension, changing the old agricultural methods and using chemical fertilizers as well as improved seeds.

3.3 Land Use:

A) Between the periods (1957/58 and 1969/ 70), the cultivable land has increased from 2.2 to 5.2 million donums, i.e. with a percent change of 136.4 or a percentage of increase of 11.4 annually. Depending on our estimation for the cultivables land in 1969/70, which is 3 million donums, the percent change became 36.4%, i.e, with an percentage of annual increase of 3%.

B) In the same period; the ratios of the cultivable land have decreased in Risafa, Karkh, Adhamiya, Thawra, Kadhimain and Mahmudiya qadhas, While those ratios have increased in the other qadhas of the Muhafadha. The reason behind the contradiction of those ratios is the widening of the areas at the expense

of the cultivable and cultivated land; except perhaps in Mahmudiya Qadha where the reason is the prevailing in salts in the soil; In other qadhas the reason of increase of those ratios is the land reclamation and the new drainage and irrigation projects. The change in administrative boundaries also contributed to this change.

C) to get land potential we apply this formula[10]

L P = Arable land - net sown area/arable land *100

According to 1957/58, table (14) shows a great Possibility to exploit the cultivable land in Qadhas of Kadhimain, Mehmudiya, Madain and Balad. This is while the possibility of land exploitation decreases in other Qadhas like Tikrit, Samarra, Adhamiya, and Thawra.

This is due to the fact that most of those Qadhas are already exploited, to the topographic factor or to the shortage in the irrigation water.

The estimates of 1969/70 have indicated that a lot of the administrative units that could be exploited, were either inhabited or already exploited by agriculture. This leads to the decrease of the ratio of the cultivable land in those areas.

[10]) K.S. Seetharam, Pop. & Agricultural change in Madras state (1951 – 61), Ph. D. Thesis submitted to the University of Pennsylvania, (August, 1971) p.165

Table 14: Land Potential in Baghdad Muh. by Districts, 1957/1958

Muh. and Districts	LP(%)
Risafa	38 .1
Karkh	39.8
Adhamiya & Thawra	15.3
Mda'in	45.5
Kadhimain	43.7
Hahmudiya	48.4
Balad	42.0
Samarra	34.1
Tikrit	32.9
Muhafadha	40.0

Source: Computed from "Results of the Agr. and Livestock
Census in Iraq for the year 1958/1959".

3.4 The Value of Agr. Crops

In Baghdad Muh., the value of agr. crops was 20 million l s. in 1970, i.e. 13.6% of the national value of agr. crops (excluding the l. Ds. vestock and fish wealth). And in 1956, the value of the same crops was 9.2 million I.Ds., i.e. there was percent change of + 118.2% from 1956 to 1965. (See table 15)

Table (15): Value of Agr. Crops in Baghdad Muh. 1970.

Crops	Area (Donum)	Value of a Donum Product (in I. Ds.)	Value of Agr. Crops (in I.Ds.)
Cereals & Legumes	1,062,446	6.099	6.479.858
Industrial Crops	34,330	22,156	760,515
Vegetables.	292,500	40.261	11,776,343
Friuts & Vine	5,000	65.512	327 ,560
Palm Trees	41.531	16.00	665,000
Total	1.435.807	13.94	20.009.376

Source : Value of a Donum's Product extracted from "Economic Magazine". No., 3, (1970), P. 74 (In Arabic)

3.5 The Average Daily Wage for Agr. Worker:

The general average of the daily wage for the agro worker is 600 fils, 454 fils and 333 fils for the male workder, female worker and juvenile respectively, (in the one day). Also there was an Increase (of the daily wage) of 61.3%, 58.2% and 58.6%,from 1967 per each of the male worker, female worker and juvenile respectively.

3.6 Baghdad City and its Agrigultural Fields:

A) Baghdad city, with its great site and increasing population, requires having special agr. fields around it. The expensive crops that are needed fresh are nearest to the city (like dairy production and vegetables). But the heavy, live long time and cheap crops, are farest from the city: like cereals.

B) The farm size grows, the workers wage decreases and the general pop.

density decreases, as we go far from the city.

Chapter (4)

The population – Agricultural Relationships

4.1 Change in average Per Capita of Cultivable and Exploited Lands:

A) The average per capita of cultivable land has increased in 1970 from what it was in 1957, from 1.7 to 2.0 donum. But this does not go with the trend of the general curve in Iraq where this average decreases in the long run because of the constancy of the cultivable land in Iraq, and the Pop. growth. (See table 16).

B) If we depend on the basis of our estimation of that area; the average per capita of cultivable lands was 1.7 donum in 1957 and 1.1 donum in 1970. In this case, this goes with the trend of the general curve in Iraq.

C) The average per capita of cultivated land decreased from (0.9) donum in 1957 to (0.5) donum in 1970, Thls required the exploitation of the cultivable lands in the Muhefadha (See table 16)

D) In 1965 the rural average per capita of exploited lends was between (0.5) donum in Risafa Qadha and (13.3) donum in Samarra Qadha. This average for the Muhafedha as a whole Was (3,7) donum, (See table 17).

E) The study shows that the rural average per capita [of exploited lands in the area of alluvial plain was less than that of Al-Jaziara region (desert region), which is due to the small urban population in Al-Jazira region, unlike the alluvial plain.

Table 16: Per Capita Cultivable and Cultivated Lands in Baghdad Muh. 1957 &1970

Year	No.of pop	Cultivable lands (donum)	per capita cultivable (donum)	Cultivabted lands (donum)	per capita cultivated lands (donum)
1957	**1.313.012**	**2.215.513**	**1.7**	**1.242.444**	**0.9**
1970	**2.688.819**	**5.397.241**	**2.0**	**1.435.082**	**0.5**

Tab1e 17. Per Capita (Rural Dwellers) share from the Exploited Area in Baghdad Muh. by Districts, 1965.

Muhafadha and Districts	rural pop 1965	exploited lands (douum)	per rural capita exploited area
Risafa	65.428	31.563	0.5
Karkh	34.988	49.165	1.4
Adhamiya	14.705	49.000	3.3
Thawra	-	3.800	-
Mda'in	32.457	182.107	5.6
Kadhimain	129.501	195.195	1.6
Mahmudiya	74.541	268.700	3.2
Balad	41.206	334.078	8.1
Samarra	30.783	408.555	13.3
Tikrit	25.060	140.000	6.6
Muhafadha	448.669	1.662.163	3.7

Source: Computed from the Cenus of Iraq, 1965 and Agr. Department for Baghdad Muh.

4.2 Change in share per-capita and per person working in Agr.From Gross Value of Agr. production:

A) between 1957 and 1970, the percent change of the agr. workers was + 1.3%. The decrease of this percent was due to the removal of the Agr. workers to other sectors, especially those of industry and services for they are more profitable, organized and constant. This

is unlike the agr. production which is opposed to climatic and bio logical risks. (See Table 18).

B) The share per-person working in agr. was 130.5 1. D3. in 1957 and 257.7 I.Ds. in 1970 of the value of the agr. production. So , the percent change was + 97.4% which was due to the doubling of the value of the agr. production while the numbers of agr. workers was almost constant. (See table 19).

Table 18: persons working in agr. 1965

Muhafadha and Districts	no. of persons Working in agr	percent
Risafa	4.389	5.7
Karkh	5.461	7.1
Adhamiya & thawra	5.751	7.4
Mda'in	7.563	9.8
Kadhimain	13.505	17.5
Mahmudiya	17.476	22.6
Balad	11.367	14.7
Samarra	7.510	9.7
Tikrit	4.245	5.5
Muhafadha	77.267	100.0

Source: Department of Civil Registration

Table 19: Share per-person working in Agriculture from the Gross Value of Production in (IDs.) for Baghdad Muh., 1957 & 1970.

Gross Value of Production (In million IDs		Persons working in Agr.		share per-person working in Agr. from the gross value of production (in: IDs.)		Percent Change
1957	1970	1957	1970	1957	1970	1957-70
10	20	76.641	77.610	130.5	257.7	+97.4

Source: Computed from Tables (15), (18) and APP Table (1)

C) The average per-capita of the value of the agr, production was 7.6 I. Ds. in 1957, then it decreased to 7.4 IDs. in 1970 because of the population growth in that period which was greater than the increase of the value of the Agr. Production. The percent change in population in that period was +104,8%, while the percent change in the per-capita of the value of the agar. production was -2.5% which tended to decrease. (See table 20).

D) The average per-capita of the Agr. production did not develop with the pop. growth. The rate of increase or this average-has decreased to -0.2% annually between 1957 and 1970. This is while the rate of pap- growth has increased by 5.6% annually. The decrease of the average rate of. Per. capita of the value of the agr. Production goes along with the decrease of the rural growth rate in the Muhafadha which was -0.2% annually between 1957 and 1970.

Table 20: Estimation of per capita value of production for total pop. In Baghdad Muh. 1957 & 1970

Gross Value of Production (In million IDs		**Total population**		**value of production per head of total pop. (in: IDs.)**		**Percent Change**
1957	1970	1957	1970	1957	1970	1957-70
10	20	1.313.012	2.688.819	7.6	7.4	-2.5

Source: computed from table 15 & app. Table (1)

4.3: The National and Individual Incomes:

In 1956, the share of Baghdad Muh. of the national income was 100.4 million dinars, i.e, 30% of the total Iraqi national income, The share of the agricultural sector

was 11,170,000 IDs[11]. This means that the Agr. sector has contributed With 11.1%, of the national income of the Muhafadha.

Then the national income kept on increasing. In 1960 it was 156 million I.DS. and In 1965 it increased to 6.25 million IDs, So, its percent of increase was 124% from 1956 to 1965, with an annual rate of increase of 9.3%.

As for the average individual share of the national income in the Muhafadha, it was (80.8) IDs. in 1956 and (110) IDs in 1965[12]. This means that it has increased with an annual growth of 3.5% while the Muh. Pop. has increased with an annual growth of 5.7% at the same period (1956-65). This shows than the rate of growth of pop. has increased more than the rate of growth of the individual income.

4. 4 Relationships between Population Changes and Agricultural Changes:

These relationships will be elaborated by means of correlation coefficients.

Population change acts as a stimulus to the change in agricultural production and vice versa. This, in turn, has its consequent impact on labour force namely that engaged in the agricultural activity. The rural-urban migration influences the size of agricultural labour force and consequently, the decline in production will follow. From the compred correlation coefficients between population change and agricultural change in production we find the following:-

---

[11] K. Haseeb, The National in come of Iraq: 1953-1961, (Oxford University press, 1964).

[12] CSO, Statistical Poket book 1960-1970 , (Baghdad, 1972), table 12

Total pop. had increased by 93.5% during 1958/60 -1970/72, mean while the production of barley, legumes and dates had a lower increase, At the same time other crops increase exceeded, the total Population. Hence one can say that while the population increase followed a gradual increase, the fluctuations in agricultural production was the predominant pattern tables (21 & 22) show the correlation coefficients between pop. change; and agricultural change in Baghdad Muhafadha:

A) The production of wheat met the needs of population in 1970/72 as compared with 1958/1960. The production increased by 22% or by 17,300 tons. Accordingly, the correlation coefficient between population growth and Wheat production change was a highly significant positive one (r = + 0.63) at 5% level of significance[13].

B) The barley production change was behind the population growth. This decline in barley production was about 126% or 105.300 tons. There is no correlation between pop. change and production of barley because (r = + 0.08) is not Significant.

C) The production of rice exceeded the needs of pop. by 56.1% at 1970/72 or by 1400 tons. Hence the correlation between these two variables was a highly significant positive one (r = 0.79).

D) Cereals and other food crops showed an Increase of 88.9% at 1970/72 or by 5900 tons. Their increase seems to have exceeded the needs of pop. the corr. coeff. here was a very high positive one (r = +0.87).

E) On the contrary the legumes were increasing less than the population growth and this decline was about

[13] **We utilized the following formula in testing the r**
t c = r n - 2 ÷ 1-r 2

43.8% or 1300 tons; therefore the correlation was a weak but positive one (r =0,32).

F) The case for cotton was completely different, where the increase of production was about 18.7% but it was weakly correlated with population change (r = + 0-39).

G) The industrial crops change was highly and positively correlated to the pop. change (r = + 0.60); this was due to the large increase in the Production of these crops.

H) The increase in the production of vegetables was about 11.7%. This increase provided a surplus of 12, 700 tons. The correlation here was a highly significant one (r = +0.84).

I) The production of dates showed a decline of 66.8% , and the correlation between it and pop. change was about zero (r = + 0.02).

J) Finally the correlation coeff. between pop. growth and change in production of fruits was weak at 5% 1evel of significance (r= +0.45).

Table21: Percent Increase or Decrease in Production for Agricutural crops. in 1958/60 & 1970/72

Crop	**Production (000) Tons**		**percent change**	**percent surplus or deficit in production to meet 1970/72 pop. 1958/60 per demand capita**	**amount of surplus deficit (000) tons**
	1958/60	**1970/72**			
Wheat	78.7	169.6	+ 115.5	+ 22.0	- 17.3
Barely	83.6	56.5	- 32.5	-126.0	-105.3
Rice	2.5	6.3	+ 149.6	+ 56.1	+ 1.4
Cereals and other food	6.6	18.5	+ 182.4	+ 88.9	+5.9
Crops legumes crops	2.9	4.4	+ 49.7	43.8	-1.3
Cotton	4.0	8,6	+ 112.2	+18.7	+ 7.5
Other Industrial	2.0	17.2	+730.9	+637.4	+ 12.7

Crops vegetables	317.6	651.7	+ 105.2	+ 11.7	+ 37.2
Orcherds of Palm trees	15.0	19.0	+ 26.7	- 66.8	- 10.0

Source: Computed from Appendix Table (6).

Table 22: Coefficients of Correlation Between Variables of population growth & the production of Agricultural change 1958-1972.

Agricultural Variables	population Variables
wheat	+0.63
barely	+0.08
rice	+0.79
cereals and other food crops	+0.87
legumes crops	+0.32
cotton	+0.39
other Industrial crops	+0.60
vegetables	+0.84
orcherds of Palm trees	+0.02
orchards of fruits and vine	+0.45

4.5: Indices for the pressure on Land and the Agricultural Opportunity:

Table (23) Shows the indices of the population pressure on land and the agricultural opportunity for some areas of Baghdad Muhafadha i.e. there is an inverse relationship between these two indices, wherever there is Pop. pressure in a certain area, the Agr. opportunity is reduced and vine versa.

We observe the following situations:

1. In karkh and Mada'in Qadhas we notice that the increase of pressure on land causes a reduction in the agr. oppo.
2. In Tikrit Qadha where the cultivable lands are rather few, it is observed that the pressure on land is weak.
3. In Kadhimaia and Mahmudiya Qadhas there is no pressure on land, therefore we find agr. opportunity. Due to this relationship the cor. coeff. between the two indices will be high and negative (- 0.7)

Table 23: Indices for the pressure on Land and the Agricultural Opportunity, 1957 - 1965

Districts	Index of pressure on Land	Index of agricultural Opportunity
Karkh	6.2	4.0
Mada'in	6.8	1.8
Kadhimain	1.6	5.5
Mahumdiya	0.5	14.9
Tikrit	2. 3	l. 7

Source: Computed from the Census of Iraq, 1957 & 1965 and Results of the agr. and Livestock Census in Iraq for the Year 1958/1959.

4.6: Production and Population Increases:

The yearly changes in agricultural production and population are given in table (24), and the rate yearly changes and the ratio of each production change to pop. change are as follows (table 24):

pop. and crops	annual changes (rates)	ratio
Population	5.6	1.00
wheat	7.8	1.39
barely	-3.3	-0.59
rice	5.1	0.91
cereals and other food crops	16.3	2.91
legumes crops	4.5	0.80
cotton	2.8	0.50
other industrial crops	15.3	2.73
vegetables	4.5	0.80
dates	-1.1	-0.20

Source: Computed from App. Table (2) and from the records Ministry of Agr., Directorate of Agr. Economics.

Table (25): Annual percent change in agricultural production and population, Baghdad Muhafadha, 1959-1972

dates	Vegtables	Other industrial crops	Cotton	Legumes Crops	Cereals & other food crops	Rice	Barley	Wheat	Pop	Year
-	-	-74.26	-	-5.64	+148.02	-47.48	-30.27	-47.06	+5.66	1959
-	-	-20.42	+5.92	+18.78	+14.81	+63.51	+17.41	+38.53	+5.68	1960
-	-	-30.26	-18.38	+26.44	-24.41	-8.63	+7.05	+3.29	+5.69	1961
-	+9.52	+2.81	+1.22	-24.15	-7.01	+1.99	+17.84	+19.74	+5.71	1962
-	+8.60	+94.54	-29.37	+65.21	+4.32	+30.04	-34.00	-68.85	+5.73	1963
-	+10.81	-1.16	+104.09	-6.98	+13.93	+42.42	+1.75	+268.78	+5.74	1964
-6.67	+(15.75)	+30.22	-(17.72)	+(27.03)	+(30.81)	+22.00	-24.81	-11.58	+5.67	1965
-14.29	+13.61	+23.27	-21.54	+21.26	+23.55	+6.59	+33.91	+13.65	+5.69	1966
+25.00	+33.59	+10.45	-0.72	-36.86	+18.09	+59.16	+68.25	+48.17	+5.68	1967
+6.67	-(4.41)	+92.18	+44.58	-55.04	+(1.02)	-8.48	-23.17	-9.15	+5.64	1968
-31.25	-4.61	+47.94	+18.17	+109.16	+1.01	-18.14	+23.33	-44.22	+5.61	1969
+127.27	+4.78	+84.27	-6.32	-7.91	-19.74	+12.15	-29.07	+33.65	+5.50	1970
-48.00	-3.18	-17.51	+29.22	-23.83	+7.72	-53.02	-65.23	-9.42	+5.56	1971
-	-12.6	+240.04	-12.41	+75.48	+60.34	+63.85	+131.40	+202.13	+5.58	1972
-1.1	4.5	15.3	2.8	4.5	16.3	5.1	-3.3	7.8	5.6	Rate

Source: Computed from app. table (2) and from the records of Ministry of Agr. Directorate of agr. Economics.

From table (25), we notice that production rate of barley and dates is less than rate population increase. However, increases in the production of cotton, legumes; Vegetables and rice are lower than the pop. Increase.

Increase in cotton production in the past 14 years is about {0.5} of the rate of pop. increase, and those for

legumes, vegetables and rice are (0,8),(0.8), (0.9) respective where as the production of cerealrs & other food crops (2.91), other industrial crops (2.73) & wheat (1.39) is larger than the PoP. Increase.

4.7: Future Expectations:

1. According to the increase of pop. of Baghdad city, which was (1,626,230) persons in 1965 census[14], or 79.5% of pop. Muh. and may be doubled by 1980[15], the great food consumption and the high income of its inhabitants which is the highest in the country, we expect the development of the intensive agriculture in the neighbouring areas of Baghdad. Therefore will not pass long term until we find specialized areas for the improvement of livestock farms, vegetables and fruits orchards and other gainfully agricultural schemes. These schemes will be more profitable when the market of their products expands, the motive of profit will be behind the vertical expansion in agriculture, i.e. by using the greatest possible amounts of labour and capital on the same area of land[16].
2. According to the land productivity (yield per donum in Kgs) during 1970 (see table 26) the production of wheat, barley, cotton, vegetables and

---

[14] Mustafa Jawad, et al, Baghdad-Historical_Review, (ramzi press, Baghdad. 1969), P.80. (in Arabic).

[15] The total pop. of Baghdad Muh. in 1965 (2.045.375) persons: and expected to be (4,618,236) persons in 1980.

[16] Abdul Sahib Alwan and Abdul Lateaf Abawi, Introduction to agr. Economic, 1st. edition, (Maarif Press, Baghdad, 1966) P. 151, (In Arabic).

dates, except the rice crop, could not meet the demands of the pop. during 1970/72 to 1979/81.

On the basis of that productivity, the difict of production in 1979/81 is 240,000 tons of wheat, 255,000 tons of barley, 19,000 tons of cotton, 512,000 tons of vegetables and 25,000 tons of dates. Mean while the rice showed a surplus of 1700 tons.

3. To raise the land productivity of the year 1970 to the world highest productivity level, we must raise the productivity by 608% of wheat, 393% of barley, 197% of rice, 8% of cotton, 83% of vegetables and 37% of palm trees.
4. If we raise the land Productivity of the year 1970 to the world highest productivity level (See table 27), the production of wheat, barley, rice and vegetables will increase and exceed the demands of population during l970/72-l979/81. The production of the palm trees will suffice the demands of pop. during 1970/72 only, yet the production of fruits and cotton will fall short of the demands of pop. during 1973/72-l979/81.
5. These facts require more efforts to raise the land productivity to the world highest level, and more than that level for the palm trees, cotton and fnuits, by carrying out the projects of scientifid vertical expansion, changing the old agricultural methods and using chemical fertilizers as well as improved seeds.

Table (26): Estimated amount of surplus or deficit in production for population demand between 1970-1981 on the basis of maximum world yield per donum, area of 1970 and per-capita share in production of 1958.

Required% increase in yield per donum to reach max average (%)	Surplus or deficit production to pop. Demand				Required production on the basis of 1958 per capita production for the population of				Maximum production according to 1970 area	yield per donum (k.g) in 1970	crop
	1979/1981	1976/78	1973/75	1970/72	1979/81	1976/78	1973/75	1970/72			
607.6	-240.5	-185.9	-141.7	-104.0	250.1	295.5	251.3	213.6	109.6	169	Wheat
393.2	-255.5	-203.5	-161.3	-125.2	334.2	282.2	240.0	203.9	78.7	219	Barley
197.3	+1.7	+2.7	+3.5	+4.3	6.5	5.5	4.7	3.9	8.2	513	Rice
8.3	-19.0	-14.9	-11.5	-8.7	26.5	22.4	19.0	16.2	7.5	312	cotton
83.3	-512.1	-324.1	-171.7	-41.8	1207.0	1019.0	866.6	736.7	694.9	2400	Vegetables
37.0	-25.3	-17.4	-11.1	-5.7	50.3	42.4	36.1	30.7	25.0	602	Palm trees
					4655	3930	3342	2841	Est. mid-period pop in (000)		

Notice: production was estimated in thousands of tons.
Source: computed from App. Tables (2 & 7).

Table (27): Amount of surplus and deficit in production of agricultural crops according to the highest world yield per donum, area of 1970 and per capita share in production of 1958.

Surplus or deficit in production to pop. Demands				Required production on the basis of 1958 per capita for the population of				production on the base of 1970 area(**)	Highest yield per donum (k.g)(*)	crop
1979/1981	1976/78	1973/75	1970/72	1979/81	1976/78	1973/75	1970/72			
+427.3	+481.9	+526.1	+563.8	350.1	295.5	251.3	213.6	777.4	1196	Wheat
+54.6	+106.6	+148.8	+184.9	334.2	282.2	240.0	203.9	388.8	1080	Barley
+18.0	+19.0	+19.8	+20.6	6.5	5.5	4.7	3.9	24.5	1525	Rice
-18.4	-14.3	-10.9	-8.1	26.5	22.4	19.0	16.2	8.1	338	cotton
+80.0	+268.0	+420.4	+550.3	1207.0	1019.0	866.6	736.7	1287.0	4400	Vegetables
-86.2	-67.6	-52.6	-39.7	119.2	100.6	85.6	72.7	33.0	6600	fruits
-16.0	-8.1	-1.8	+3.6	50.3	42.4	36.1	30.7	34.3	825	Palm trees
				4655	3930	3342	284.1	Est. mid-period pop in (000)		

Source: comuted from app tables (2 & 7)

(*) **The highest yield per donum of wheat was secured in Denmark (1968) of barley in Holland of fruits in Egypt (1955), of palm trees in Iraq (1970)**.
(**) **Production was estimated in thousands of tons.**

References

1. Alwan, Abdul Sahib and Abawi Abdul Lateef, Interoduction to Agr. Economic, 1st. Edition, (Maarif Press, Baghdad, 1966) (In Arabic).
2. Bogue, Donald J. Principles of Demography Copyright by John Wiley & Sons, Inc., (Printed in U.S.A., 1969).
3. Haseeb, K. The National Income of Iraq (1953 - 1961), (Oxford University Press, 1964).
4. Jawad, Mustafa, et al, Baghdad-Historical Review, (Ramzi. Press, Baghdad, 1969) (In Arabic)
5. Republic of Iraq, Directorate of Iraqi Dates-Central. Area, Baghdad.
6. Republic of Iraq, Ministry of Agriculture, Agr. Department for Baghdad Muhaifadha.
7. ----------, Directorate of Agricultural Economics, Agr. Statistical Bulletin, 1959-1961, (In Arabic).
8. ----------, Directorate of Agricultural Economics.
9. Republic of Iraq, Ministry of Interior, Abstract Statistics of the General pop. Census of 1957, Vol. 2, Part 7, (Zahra Press, Baghdad). (In Arabic)
10. ----------, Department of Civil Registration.
11. Republic of Iraq, Ministry of Planning, CBS, Results of the agricultural and livestock Census in Iraq for the year 1958-59 (Government Press, Baghdad, 1961), (In Arabic).
12. ----------, CSO, Annual Abstract Statistics 1970 & 1971 (Printed at Printing Dept. CSO).
13. Republic of Iraq, Ministry of Planning, CSO, General population Census of 1965, (Printed at the CSO Press, Baghdad, 1973).

14.----------, Statistical Pocket Book 1960-1970, (Baghdad, 1972).
15. Seetharam, K.S., Population and Agricultural Change in Madras State (1951-1961), Ph.D. Thesis Submitted to the University of Pennsylvania, (August, 1971).
16. Ueda, Kozo, Report on Estimates of Pop. Muhafhada in Iraq for 1957 - 1980, Republic of Iraq, Ministry of Planning, CSO, Dept. of pop, & Manpower Statistics, (Baghdad, August, 1970).

Appendix Table (1)
Estimates of pop. by sex and age group for Baghdad Muhafdha

Females			Males			Age
1970	1965	1957	1970	1965	1957	
1.331.956	1.005.057	641.334	1.356.863	1.040.318	671.673	Total
59.975	46.852	29.868	58.976	45.824	29.472	0
195.043	148.976	87.347	203.829	158.073	90.146	1-4
204.945	150.101	89.309	215.824	156.421	90.097	5-9
170.916	128.009	78.853	169.719	128.392	82.528	10-14
154.944	96.026	72.159	154.674	99.339	80.982	15-19
107.546	76.933	55.595	106.247	80.254	62.750	20-24
76.559	67.405	36.838	77.536	69.339	39.907	25-29
63.539	56.205	31.049	73.733	65.331	35.280	30-34
63.468	52.012	29.958	63.328	53.046	32.807	35-39
54.317	40.072	28.876	59.959	43.671	28.888	40-44
46.309	35.221	26.367	44.752	35.189	27.106	45-49
31.460	26.788	22.751	35.503	29.740	22.099	50-54
37.376	25.461	17.248	34.346	24.720	17.266	55-59
20.507	17.244	13.063	21.269	17.997	12.337	60-64
16.215	15.017	8.806	13.506	13.449	8.287	65-69
22.125	17.846	11.225	18.354	15.524	10.091	70-79
6.712	4.889	2.022	5.308	4.009	1.635	80+

Source: Reports of kozo Ueda. 1970, table 17, p. 30.

Appendix Table (2)

Estimates of population for Baghdad Muh. 1957 – 1981

No. of pop.	Year	No. of pop.	Year
2.688.819	1970	1.313.012	1957
2.838.330	1971	1.387.806	1958
2.996.693	1972	1.466.322	1959
3.163.832	1973	1.549.553	1960
3.340.211	1974	1.637.784	1961
3.523.424	1975	1.731.313	1962
3.718.835	1976	1.830.460	1963
3.926.507	1977	1.935.559	1964
4.145.884	1978	0.045.375	1965
4.377.589	1979	2.161.690	1966
4.618.236	1980	2.284.466	1967
4.969.000[17]	1981	2.413.397	1968
		2.548.733	1969

Source: Reprts of Kozo Ueda, 1970, table (16)

[17] **our estimation**

Appendix Table (3)

Urban & Rural Pop. In Baghdad Muh. By Districes, 1957

Total			Rural			Urban			Muhafdha & districes
T	F	M	T	F	M	T	F	M	
442.398	206.097	236.301	80.948	38.047	42.901	361.450	168.050	193.400	Risafa
220.858	104.746	116.112	29.317	14.798	14.519	191.541	89.948	101.593	Karah
173.779	86.418	87.361	60.811	30.418	30.393	112.968	56.000	56.968	Adhamiya & Thawra
25.041	12.474	12.567	22.309	11.161	11.148	2.732	1.313	1.419	Madain
235.745	116.395	119.350	100.419	50.760	49.659	135.326	65.635	96.961	Kadhimain
74.427	388.445	35.982	65.028	33.843	31.185	9.399	4.602	4.797	Mahmudiya
56.520	28.814	27.706	41.665	21.248	20.417	14.855	7.566	7.289	Balad
48.940	24.126	24.814	32.916	16.578	16.338	16.024	7.548	8.476	Samarra
35.304	18.032	17.272	23.577	12.097	11.480	11.727	5.935	5.792	Tikrit
1.313.012	635.547	677.465	456.990	228.950	228.040	856.022	406.597	449.425	Total

Source: Census of Iraq, 1957, Tables 4 & 8

Appendix Table (4)

Urban & Rural Pop. In Baghdad Muh. By Districes, 1965

Total			Rural			Urban			Muhafdha & districes
T	F	M	T	F	M	T	F	M	
501.265	235.249	266.016	435.837	205.741	230.096	65.428	29.508	35.920	Risafa
468.623	227.102	241.521	433.635	209.778	223.857	34.988	17.324	17.664	Karah
185.533	91.821	93.712	170.828	84.299	86.529	14.705	7.522	7.183	Adhamiya
353.152	173.537	179.615	353.152	173.537	179.615	-	-	-	Thawra
36.748	17.996	18.752	4.291	2.061	2.230	32.457	15.935	16.522	Madain
240.104	117.760	122.344	110.603	53.496	57.107	129.501	64.264	65.237	Kadhimain
89.497	44.679	44.818	14.956	7.243	7.713	74.541	37.436	37.105	Mahmudiya
64.865	32.011	32.854	23.659	11.960	11.969	41.206	20.321	20.885	Balad
59.649	29.106	30.543	28.866	13.991	14.875	30.783	15.115	15.668	Samarra
45.939	22.657	23.282	20.879	10.286	10.593	25.060	12.371	12.689	Tikrit
2045.375	991.918	1053.457	1596.706	772.122	824.584	448.669	219.796	228.873	Total

Sourc: CSO, General Pop. Census of 1965, Table (1)

Appendix Table (5)

General Area, and Cultivable Land Area in Baghdad Muh. by Districts, 1957/58 & 1969/70

Cultivable Land Area (in sq. kms.)		General Area (in sq. kms)	Muhafdha & Districes
1969/70	1957/58		
78.9	107.99	168	Risafa
123.9	98.90	268	Karah
159.5	159.79	295	Adhamiya & Thawra
1190.0	277.34	1282	Madain
548.7	929.18	1450	Kadhimain
671.8	1022.71	1307	Mahmudiya
2438.0	1084.75	2528	Balad
5545.8	1390.12	8995	Samarra
2238.9	468.00	3629	Tikrit
12995.5	5.538.78	19.922	Total

Source: SCO, Annual Abstract of Statistic 1970, Table (11) & Agr. Department for Baghdad Muh.

Appendix Table (6)

Average of Area Production and Land Productivity for Agricultural Crops in Baghdad Muhafadha, 1958 – 1972 (Area in Donums, Production in Tons and Land Productivity in kgs/Donum)

1970-1972			1967-1969			1964-1966			1961-1963			1958-1960			CROP
Prod u activity	Production	Area	Prod u activity	Production	Area	Prod u activity	Production	Area	Prod u activity	Production	Area	Prod u activity	Production	Area	
269	169.601	629.565	187	130.269	697.366	179	104.653	585.433	127	67.698	532.028	189	78.677	417.167	Wheat
248	56.485	227.708	290	106.046	365.995	179	63.586	356.110	220	86.098	390.750	258	83.617	324.220	Barley
552	6.346	11.486	540	8.714	16.139	435	5.563	12.787	358	2.800	7.819	380	2.542	6.682	Rice
992	18.528	18.675	849	16.293	19.188	801	11.055	13.795	720	7.391	10.272	371	6.561	17.666	Cereals & other food crops
263	4.390	16.705	230	4.476	19.483	238	6.025	25.326	234	4.085	17.792	211	2.933	13.904	Legumes crops
339	8.587	25.295	242	6.464	26.727	188	5.993	31.954	154	4.438	29.423	121	4.047	33.385	Cotton
1509	17.183	11.387	331	4.082	12.345	165	1.560	9.464	137	814	5.950	172	2.068	12.048	Other industrial crops

2470	651.702	263.814	2443	695.192	284.534	2247	479.157	213.202	2030	343.869	169.404	2030	317.640	156.473	Vegetables
37000	185912	5.000	13672	35466	2.594	13672	35466	2.594	13672	35466	2.594	13672	35466	2.594	Orchards of fruits & vine
457	19000	41.531	337	14000	41.531	329	13667	41.531	403	15000	37.239	403	15000	37.239	Orchards of palm trees
		1.251.166			1.485.902			1.292.196			1.202.971			1.021.378	All crops

Source: Computed from the records and publications of Ministry of Agriculture, Directorate of Agricultural Economics and Agr. Department for Baghdad Muh. and also from Dep. of Iraqi Dates- Central Area.

Notice: The average is for 3 years except for some crops where the average is for 2 years.

Appendix Table (7)

Area, Production and Level of yield in Baghdad Muhafdha, 1957/58 to 1969/70

Level of Yield (kgr. per donum)		Production (ton)		Area (donum)		crop
1969/70	1957/58	1969/70	1957/58	1969/70	1957/58	
169	262	109.597	104.310	650.000	398.100	Wheat
219	301	78.732	99.703	360.000	331.660	Barley
513	197	8.244	1.925	16.066	9.762	Rice
803	146	13.208	2.727	16.452	18.692	Cereals & other food crops
200	122	3.994	1.300	19.928	10.667	Legumes crops
312	142	7.471	7.859	23.977	55.291	Cotton
1.084	105	11.225	1.555	9.628	14.878	Other industrial crops
2.376	2.300	694.870	359.888	292.500	156.473	Vegetables
37.182	13.672	185.912	35.466	5.000	2.594	Orchards of fruits & vine
602	403	25.000	15.000	41.531	37.239	Orchards of palm trees
				1.435.082	1.035.356	All crops

Source:

1. CBS, Results of the Agricutlral and Livestock Census in Iraq for the year 1958-59
2. Ministry of Agr. Disectorate of Agriculral Economics
3. Other References

Appendix Table (8)
Net Mig. Between 1957 and 1956 in Baghdad Urban Areas with 5000 Pop. and over

+7589	+10643	+9593	+4533	+12082	+23458	+33487	+32589	+28792	Net Mig. 7=6-5
22.294	32.238	39.258	42.314	54.513	66.624	74.592	97.332	218.499	Actual pop. 65. 6
14.705	21.595	29.665	37.781	42.431	43.166	41.105	64743		Exp. Pop. 65 5=2-3
43-47	38-42	33-37	28-32	23-27	18-22	13-17	8-12	0-7	Age. 4
0.8614962	0.8533737	0.9443003	1.1669490	1.0319529	0.9739435	0.7703274	0.8725282		S.R. 3
17.069	25.305	31.415	32.376	41.117	44.321	53.361	74.202		U. pop. 57. 2
35-39	30-34	25-29	20-24	15-19	10-14	5-9	0-4	Female	Age 1
+5574	+8054	+4999	+2378	+7388	+22928	+37479	+33032	+30232	Net Mig. 7=6-5
24.785	37.044	44.251	45.919	56.896	67.089	83.232	106.993	231.309	Actual pop. 65. 6
19.211	28.990	39.252	43.541	49.508	44.161	45.753	73.961		Exp. Pop. 65 5=2-3
43-47	38-42	33-37	28-32	23-27	18-22	13-17	8-12	0-7	Age 4
0.9236578	1.0235482	1.0859609	1.2030516	1.0882675	0.8787514	0.7716713	0.9450657		S.R. 3
20.799	28.323	36.145	36.192	45.493	50.254	59.291	78.260		U. pop. 57 2
35-39	30-34	25-29	20-24	15-19	10-14	5-9	0-4	Male	Age 1

+191895	+10010	+1446	+4910	+5337	+7426							
	24.647	12.152	16.940	17.673	22.510							
	14.637	10.706	12.030	12.336	15.084							
	68+	63-67	58-62	53-57	48-52							
	0.5570356	0.9427542	0.7790187	0.8644369	0.8654908							
	26.276	11.356	15.444	14.270	17.428							
	Net Mig.	55-59	50-54	45-49	40-44							
+173.233	+6003	-425	+3843	+5718	+6030							
	19.888	10.753	16.944	21.250	23.119							
	13.885	11.178	13.101	15.532	17.089							
	68+	63-67	58-62	53-57	48-52							
	0.5788491	0.8683559	0.7996055	0.8299928	0.8535154							
	23.987	12.873	16.384	18.714	20.022							
	60+	55-59	50-54	45-49	40-44							
	Net Mig.											

Source: Competed from the Census of Iraq 1957 & 1956.

الجمهورية العربية المتحدة-الامم المتحدة
المركز الديمواغرفي بالقاهرة

العلاقة بين اتجاه الزارعة والسكان في محافظة بغداد

قدمها

عباس فاضل السعدي

لنيل شهادة الدبلوم العام في علم الديموغرافيا

اشراف

الدكتور محمد السيد غلاب

تشرين الثاني (نوفمبر) ١٩٧٣