

# Geographical Analysis of Poultry Farming Projects in Baghdad Governorate, 2017

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**Abstract:** A comprehensive field survey was carried out for (320) productive permitted Poultry Farming Projects distributed in the ninth districts of Baghdad governorate, (80%) of them were Meat Chicken Producing Projects, the largest of which was in Mahmudiya district (23.9%) and (20%) for Eggs Producing (as food), the largest one was in Tarmiya district (24.6%). The Actual capacity was less than Designed capacity of these projects. The actual capacity of the meat chicken projects reached (4,048,020) chickens, and the Food Egg projects reached (2,185,210) chickens for egg. The number of manpower in poultry farming projects reached (1697) persons, (63.8%) of them working in poultry meat projects and (36.2%) working in eggs projects. The quantities of chicken meat production amounted (38,082,404) Kg of meat, the largest amount was in Tarmiya district with (22.2%), while (565,031,000) eggs, the largest amount was in Mada'in district with (46.7%). (97.5%) of these projects have a land-based system and 2.5% have Cages system. The per capita amount of chicken meat in the Baghdad governorate was (4.8) kg/person/year, where his share of eggs was (71.5) egg/person/year, which is lower than the rates recommended by the World Health Organization (WHO). The largest correlation ( $R^2$ ) of Meat Production was with the number of halls with (0.985), while the largest ( $R^2$ ) of Eggs Production was with the Actual Capacity with (0.982).

**Keywords:** Poultry Farming Projects, Poultry meat projects, Eggs projects, Actual capacity, Designed capacity

## 1. Introduction

Poultry Farming Projects is an important economic activity. It provides a foodstuff and has an increasing demand due to its high food awareness and individuals' incomes. The Iraqi market suffered from a shortage of chicken meat and eggs, which necessitated compensation by importing foreign products from abroad. Because of its importance in providing the necessary food for humans, its economically importance because of its speed of growth, fast capital circulation [1], and in view of the lack of recent geographical researches on the distribution of these projects, their requirements and the quantities of their production, therefore, this research can be considered as a contribution to find out the types of these projects, their geographical distribution in the districts of Baghdad governorate, its specialization and activity, and some factors affecting on the production, as well as supporting the research results with data obtained from a questionnaire distributed to all projects.

### 1.1 The problem of the research

The question is whether the spatial distribution of poultry farming projects in the districts of Baghdad governorate, with its two types of projects: Meat Chicken Projects and Food Eggs Projects, and does this difference contribute in the effect on production quantities and fill the need for local consumption.

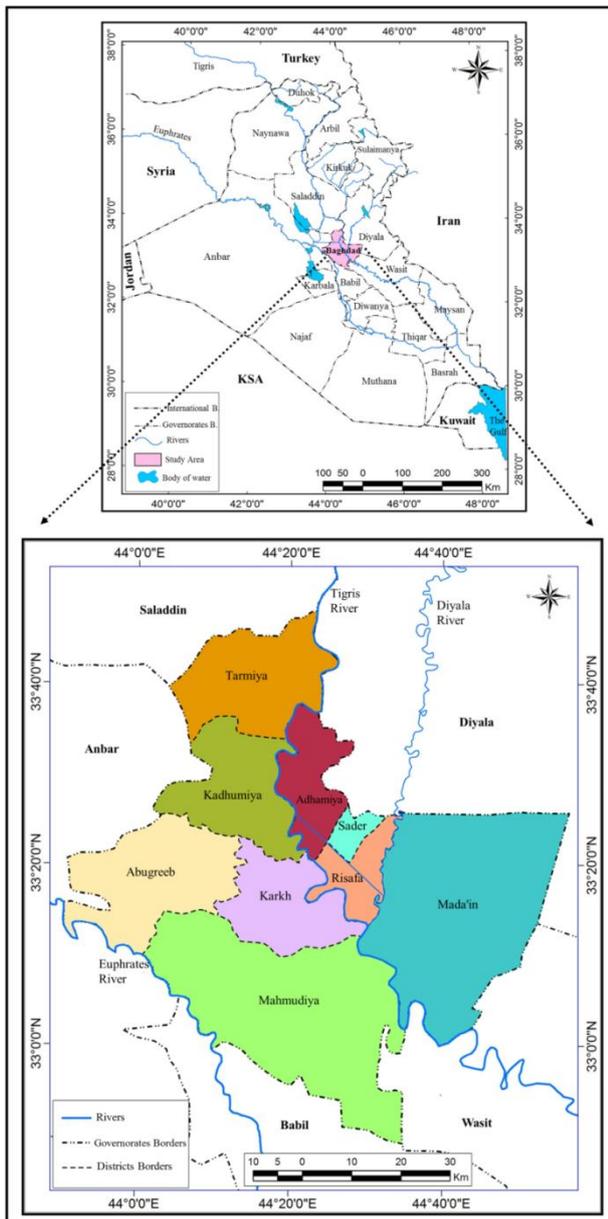
### 1.2 Hypothesis

The research assumes that there is a variation in the distribution of poultry farming projects in Baghdad governorate depending on the location, capacity and energy of the projects, and the manpower in the field of producing chicken meat and producing food eggs.

### 1.3 Study area

The study area is the administrative boundary of the Baghdad governorate, which is located between latitudes (32°48'-33°46' North) and a longitude (43°51'-44°56' East) in the center of Iraq, which has nine districts, eight of them have poultry farming projects, as shown in map (1).

Some of climatic data for Baghdad station were analyzed for a climatic cycle (2005-2015). The annual rate of highest temperature was 31.4 °C and the lowest was 16.5 °C. Where the highest monthly rate was in July (44.6 °C) and the lowest in January (4.4 °C). The annual rainfall rate was (147.9) mm, while the highest one was in November (31.0 mm) [2].



**Map 1:** The study area in Iraq [3]

## 2. Discussion

### 2.1 The Distribution and specialization of Poultry Farming Projects in the Districts of Baghdad Governorate

A number of poultry farming projects were established , spread in Baghdad governorate and distributed in(8) districts of the governorate. The total number of these projects was(320)productive and permitted projects [4] , all of which were invested in private investment. The number of meat chickens farming projects was 255, that represents about 80%, where the projects of eggs chickens projects reached 65 projects with 20% all distributed in eight districts in Baghdad, which their area vary from one district to another. Table (1).

**Table 1:** Quantity of poultry production projects (chicken meat, Food eggs) in the provinces of Baghdad governorate and their percentage for the year 2017

No.	District Name	Area[3] (Km) <sup>2</sup>	%	Total Productive Projects		Meat Chicken Projects		Food Eggs Projects	
				Qty.	%	Qty.	%	Qty.	%
1	Mahmudiya	1312.239	25.7	70	21.9	61	23.9	9	13.8
2	Mada'in	1294.215	25.4	54	16.9	40	15.7	14	21.5
3	Abugreeb	754.287	14.8	43	13.4	30	11.8	13	20.0
4	Tarmiya	484.18	9.5	64	20.0	48	18.8	16	24.6
5	Kadhumiya	440.091	8.6	49	15.3	40	15.7	9	13.8
6	Karkh	289.73	5.7	18	5.6	18	7.1	0	0.0
7	Adhamiya	279.491	5.5	21	6.6	18	7.1	3	4.6
8	Risafa	163.769	3.2	1	0.3	0	0.0	1	1.5
9	Sader	80.25	1.6	-	-	-	-	-	-
	<b>Total</b>	<b>5098.252</b>	<b>100</b>	<b>320</b>	<b>100</b>	<b>255</b>	<b>100</b>	<b>65</b>	<b>100.0</b>
	Percentage			<b>100%</b>		<b>80%</b>		<b>20%</b>	
	C.V%	<b>81.27</b>		<b>60.7</b>		<b>60.7</b>		<b>75.8</b>	

Source : The results of questionnaire , 2017

The area of the districts are varied from one district to another . Mahmudiya District represents about (25.7)% of the governorate area and the number of projects is (70), and

the proportion of its projects of chicken meat (23.9)% of the total chicken meat projects.

The spread of meat chicken projects in the large area districts is due to their large area and providing a network of transport routes that contribute to the delivery of the product and production requirements, as well as that these districts has rural and agricultural nature and are active in agriculture investment , animal husbandry and poultry, beside the existence of large consumer market for these meat and the quick returns achieved by the production of poultry farming projects.

As for the projects of chicken food eggs projects , the highest number was in the district of Tarmiyah by (24.6)% as well as other rural districts such as Abugreeb district and Mada'in district, in which large projects were spread that need large capital to invest in these projects.

The survey questionnaire indicated that the priority of the reasons for the spread of these projects were: (60%) because of the availability of capital, (33%) was due to inheritance that work, then the other reasons come after as the scientific specialization or because it is a hobby.

The questionnaire also revealed that the most important reasons for choosing the sites of these projects is because of their proximity to the place of residence of their owners by (29%), and the reason for their proximity to transportation routes, water sources and veterinary services centers in varying percentages.

**2.2 The quantity of the projects and their area**

The total number of halls for poultry projects reached (768) hall with an area of (581021) m<sup>2</sup>, the largest number of halls in chicken meat projects (486) hall with (63.3%) with an area of (382998) m<sup>2</sup>, due to the large size and number of these projects especially in the district of Mahmudiya.

As for the number of halls of chicken eggs projects, there were (282) halls with a percentage of (36.7)% and the area of (197723) m<sup>2</sup>, the largest number and area in the district of Mada'in, in which giant projects of food eggs is spread , some of them built with two floors to accommodate the large numbers of chickens.

**Table 2:** The quantity of halls, areas and percentages by specialty for poultry farming projects in the province of Baghdad for the year 2017

No.	District Name	Total Poultry Projects				Meat Chicken Projects				Food Eggs Projects			
		Halls		Area		Halls		Area		Halls		Area	
		Qty.	%	m <sup>2</sup>	%	Qty.	%	m <sup>2</sup>	%	Qty.	%	m <sup>2</sup>	%
1	Mahmudiya	139	18.0	103654	17.8	106	21.8	83653	21.8	33	11.7	20001	10.1
2	Mada'in	168	21.8	128912	22.2	86	17.7	57991	15.1	82	29.1	70921	35.9
3	Abugreeb	107	13.9	74140	12.8	62	12.8	41580	10.9	45	16.0	32560	16.5
4	Tarmiya	191	24.8	125900	21.7	105	21.6	82854	21.6	86	30.5	43046	21.8
5	Kadhumiya	87	11.3	70631	12.2	65	13.4	53374	13.9	22	7.8	17257	8.7
6	Karkh	26	3.3	21569	3.7	26	5.3	21569	5.6	0	0.0	0	0.0
7	Adhamiya	46	5.9	53035	9.1	36	7.4	41977	11.0	10	3.5	11058	5.6
8	Risafa	4	0.5	2880	0.5	0	0.0	0	0.0	4	1.4	2880	1.5
9	Sader	-	-	-	-	-	-	-	-	-	-	-	-
	Total	768	100	580721	100	486	100	382998	100	282	100	197723	100
	Percentage						<b>63.3</b>				<b>36.7</b>		
	C.V%		<b>83.5</b>		<b>76.5</b>		<b>62.8</b>		<b>59.5</b>		<b>95.4</b>		<b>95.3</b>

Source : The results of questionnaire , 2017

Most of the Farming system in these projects was land-based farming system with (97.5%) percentage , mostof them were using wood sawing, while the percentage of (2.5%) was Cage farming system especially for the projects of food eggs in the district of Mada'in.

**2.3 The Designed capacity and Actual capacity of the projects according to their specialization**

The designed capacity of the projects was (7930195) chickens which is greater than the actual capacity that

reached (6233230) chickens with a percentage (78.6)%. And that's indicates that the projects are not fully operational for many reasons.

The fears of the spread of diseases causing the destruction, especially in the summer with high temperatures was one of the most important reasons, then the rise in feed prices and the prices of eggs according to the questionnaire form. As shown in table (3).

**Table 3:** The Designed capacity and actual capacity (a chicken), for the chicken meat projects and food eggs projects and their percentages in Baghdad governorate for the year 2017

No.	District Name	Designed Capacity (Chickens)	%	Actual Capacity (Chickens)	%	Designed Actual Percentage	Meat Chicken Projects		Food Eggs Projects	
							Actual Capacity (Chickens)	%	Actual Capacity (Chickens)	%
							1	Mahmudiya	1587950	20.0
2	Mada'in	2191737	27.6	1708465	27.4	78.0	689455	17.0	1019010	46.6
3	Abugreeb	852766	10.8	740820	11.9	86.9	464510	11.5	276310	12.6
4	Tarmiya	1476500	18.6	1296245	20.8	87.8	841105	20.8	455140	20.8
5	Kadhumiya	934672	11.8	748050	12.0	80.0	595050	14.7	153000	7
6	Karkh	256220	3.2	192800	3.1	75.2	192800	4.7	0	0

7	Adhamiya	594350	7.5	517150	8.3	87.0	449150	11.1	68000	3.1
8	Risafa	36000	0.5	20000	0.3	55.6	0.0	0.0	20000	0.9
9	Sader	-	-	-	-	-	-	-	-	-
	Total	7930195	100	6233230	100		4048020	100	2185210	100
	Percentage %						65.0		35.0	
	C.V%	73.0		71.5						

Source : The results of questionnaire , 2017

#### 2.4. The Population, Manpower and their percentages

The success of any project depends on the management experience of the project owner, as well as the importance of skilled and unskilled labor. With the development of poultry

projects , they still need the existenceof labor services despite the acquisition of automatic machine in some of the joints of production and farming in these projects. The population of Baghdad was (7710001) persons in 2016 , they were distributed to the districts according to table (4).

**Table 4:** Population andNumber of workers in poultry farming projects accordingto districts of Baghdad Governorate for the year 2017

No.	District Name	Population[5] (persons)	%	Manpower (Number)	Meat Chicken Projects		Food Eggs Projects	
					Manpower (Number)	%	Manpower (Number)	%
1	Mahmudiya	459188	6.0	307	238	22.0	69	11.3
2	Mada'in	436090	5.7	455	161	14.9	294	48.0
3	Abugreeb	306499	4.0	224	130	12.0	94	15.3
4	Tarmiya	137687	1.8	316	218	20.1	98	16.0
5	Kadhumiya	851378	11.0	191	155	14.3	36	5.9
6	Karkh	1511950	19.6	50	50	4.6	0	0.0
7	Adhamiya	1140827	14.8	150	132	12.2	18	2.9
8	Risafa	1716676	22.3	4	0	0.0	4	0.7
9	Sader	1149706	14.9	-	-	-	-	-
	Total	7710001	100%	1697	1084	100	613	100
	Percentage				63.8		36.2	
	C.V%			69.7	58.5		125	

Source: The results of questionnaire , 2017

The total number of workers in all projects was (1697) , it was very small percentage of the total population of Baghdad governorate,it was distributed on the projects of meat chicken projects , which amounted to (1084) workers by (63.8)% because of the large number of these projects, especially the province of Mahmudiya, in which its proportion of labor was (22.0%).

The number of workers in Eggs chicken projects reached (613) workers by (36.2%) and the largest percentage in the district of Mada'in , with (48.0%) because of the spread of the these projects as mentioned earlier. The level of education of these labor varied and distributed as follows : First percentage was the Intermediate school, Read and write workers in second rank, then preparatory school , then bachelor and finally primary schools.

#### 2.5 Quantities of Meat chicken production and Food eggs in projects

The total production of meat chicken quantities was (38,082,404) Kg, where Mahmudiya district was the first with the highest percentage (20.5)% of total quantity . While the total quantity of eggs was (565,031,000) eggs, the concentration of the highest production was in Mada'in district with (46.7) % of total quantity. Table (5)

**Table 5:** Quantities of Meat chicken production and Food eggs production in Poultry projects in Baghdad governorate for the year 2017

No.	District	Quantities of chicken meat production (meat chicken projects and chicken for eggs projects ) (kg)	%	Quantities of production of food eggs (1000) eggs	%
1	Mahmudiya	7,803,788	20.5	49,553	8.8
2	Mada'in	7,402,209	19.4	263,627	46.7
3	Abugreeb	4,568,550	12.0	74,619	13.2
4	Tarmiya	8,466,954	22.2	116,072	20.5
5	Kadhumiya	5,114,121	13.4	39,089	6.9
6	Karkh	1,608,418	4.2	-	0.0
7	Adhamiya	3,084,365	8.1	17,142	3.0
8	Risafa	34,000	0.1	4,929	0.9
9	Sader	-	-	-	-
	Total	38,082,404	100	565,031	100

Source: The results of questionnaire, 2017

The quantities of chicken meat production were calculated from multiplying the number of the remaining number of chicks resulting from the process of subtracting the losses from the total number of chicks by the average weight of one chicken (1.750) kg.

#### 2.6. Veins and Diseases

Rose vein was used more than the rest of the other veins with (60%), especially in the projects of meat chicken, while the most vein used in the projects of chicken for eggs was Lohan by (55%).

The chicken projects suffer from multiple diseases and vary in proportion of disease from one to another that cause the losses, Table (6).

**Table 6:** Chicken Diseases , Infection and Losses percentages in Poultry projects in Baghdad governorate for the year 2017

No.	Disease Type	Infection Percentage%	Losses Percentage%
1	Newcastle	20	6
2	Infectious bursal disease (IBD Disease)	15	20
3	Infectious Bronchitis (IB disease)	20	25
4	Salmonella	15	2
5	CRD	10	15
6	Avian influenza	0	25
7	Coccidia	10	3
8	Omphalitis	5	3
9	Other	5	1

Source : The results of questionnaire , 2017

Newcastle disease and IB disease were among the most common and diseases causing the highest percentage of losses (25%). The incidence of these diseases increased by 32.8% in Winter then Summer with 30.6%.

This indicates the effect of the rise and fall of temperature and the climatic effects that affect the formation of a suitable environment for the breeding and growth of chickens [6].

### 2.7. Statistical Analysis

A statistical analysis of the data is implemented using SPSS program, the Coefficient of Variation (C.V.%) and Correlation R<sup>2</sup> were calculated , as shown in table (7) .

**Table 7:** Correlations (R<sup>2</sup>) between production and other indexes in Baghdad governorate for the year 2017

Specialty	No.	Index	R <sup>2</sup>
Quantities of Meat chicken Production	1	Quantities of chicken meat projects	0.948
	2	Number of halls chicken meat projects	0.985
	3	Area of chicken meat projects halls	0.971
	4	Actual capacity	0.966
	5	Number of workers in chicken meat projects	0.959
	6	Baghdad Districts Area	0.490
	7	Population of Baghdad Districts	0.816
Quantities of Food Eggs Production	1	Quantities of food eggs projects	0.507
	2	Number of halls of food eggs projects	0.718
	3	The space of the food eggs	0.937
	4	Actual capacity	0.982
	5	Number of workers in food eggs projects	0.979
	6	Baghdad Districts Area	0.448
	7	Population of Baghdad Districts	0.359

### 2.8. Per capita share of meat and eggs

The increase in the population in Baghdad governorate has led to growth, and increasing size, but with fluctuating and disproportionate levels of production of chicken meat and food eggs, despite their importance and nutritional value. The World Health Organization (WHO) has estimated the annual need for one Iraqi person of chicken products (30-40 kg/person/year) and for food eggs (180 eggs/person/year) according to International Standards for health food[7].

.While the National Nutrition Research Center / Iraqi Ministry of Health has estimated the basic requirements of the Iraqi individual for animal products as in Table 8.

**Table 8:** The Iraqi Individual need of meats products [8]

Food Stuff	Individual needs (Kg/person/year)
Red meat	10 Kg
Poultry meat	16 Kg
Fishes	6 Kg
Eggs	9 Kg (≅ 150 eggs)

Throughout the analysis of field survey data for the projects in Baghdad governorate for the year 2017, it showed that the per capita share of poultry meat reached (4.8) kg/ person/year, while the food eggs was (71.5) eggs/ person/year .

These quantities still less than the recommended amount of meat and eggs (WHO and Iraqi Recommendations) , which requires increased government support for these projects and attention to their requirements to achieve a good portion of the self-sufficiency of their products, instead of importing them from outside the country.

### 3. Conclusions

- 1) The largest percentage of the projects were for meat chicken projects (80%) and (20%) for egg production.
- 2) The largest district in the quantity of Projects of Meat Chicken was Mahmudiyah district with (23.9%), while the largest in Meat production was Tarmiyah district with (22.2%), and the largest districts in the production of food eggs was Mada'in district with (46.7%).
- 3) The percentage of actual capacity was less than the designed capacity with (78.6%) .
- 4) The percentage of manpower in Poultry Projects , which represents a very low percentage of Baghdad Population . (63.8)% of them worked in Chicken Farming Projects , while the rest worked in Food Eggs Projects.
- 5) The amount of Chicken Meat Production was (38,082,404) Kg, while the amount of Food Eggs Production was (565,031,000) eggs.
- 6) Newcastle Disease and IB disease were the most widespread disease with (20%) percentage for both diseases , and most diseases were more prevalent in Summer and Winter than in transitional seasons .
- 7) The largest Coefficient of Variation C.V% of Project Quantities was 75.8% for Food Eggs Projects .
- 8) The largest correlation (R<sup>2</sup>) of Meat Production was with the number of halls with (0.985) , while The largest (R<sup>2</sup>) of Eggs Production was with the Actual Capacity with (0.982) .

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