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Animal Food Industries and Potentials for its Development in Babylon Province

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Abstract

The animal food industry is one of the branches of the food industry, due to its association with livestock and the resulting foodstuff for the population, such as red and white meat, eggs, milk and its derivatives, which have become an important nutritional place in people's lives, because they are considered at the forefront of foodstuffs that people desire for their food. This importance comes as a result of the high prices of red meat and the increase in the population, which stimulated the breeding of animals in facilities, and the food is provided for them, including those that are provided by natural ones, and the most important and most useful is what is produced by industrial products specialized in the production of these foods. The researcher conducted a field study and a field survey of animal food industry establishments in the governorate during the period from 17/11- 11/30/2022.

Keywords: *Industry, Animal Foods, Babylon.*

1. Introduction

1.1 Research Problem:

Are there any possibilities for the development of the animal food industry in Babylon? How can it be invested to develop the industry?

1.2 The research hypothesis:

Yes has a diverse potential for what is known for being well known for agricultural production, as well as the possibility of investing it to develop the branch of animal food industries.

1.3 Search limits.

The research is reflected in the geographical boundaries of Babylon governorate. The province of Babylon is located in central Iraq between two width circles (7 '32 ° - 8' 32 °) north and two longitudes (42 '43 ° - 50' 45 °) east with an area of 5,119 km2), representing (1,2%) of the country's total area, bordered from the north by Baghdad, the south by Qadisiyah and Najaf governorates, and the west by the governorates of Karbala (1).

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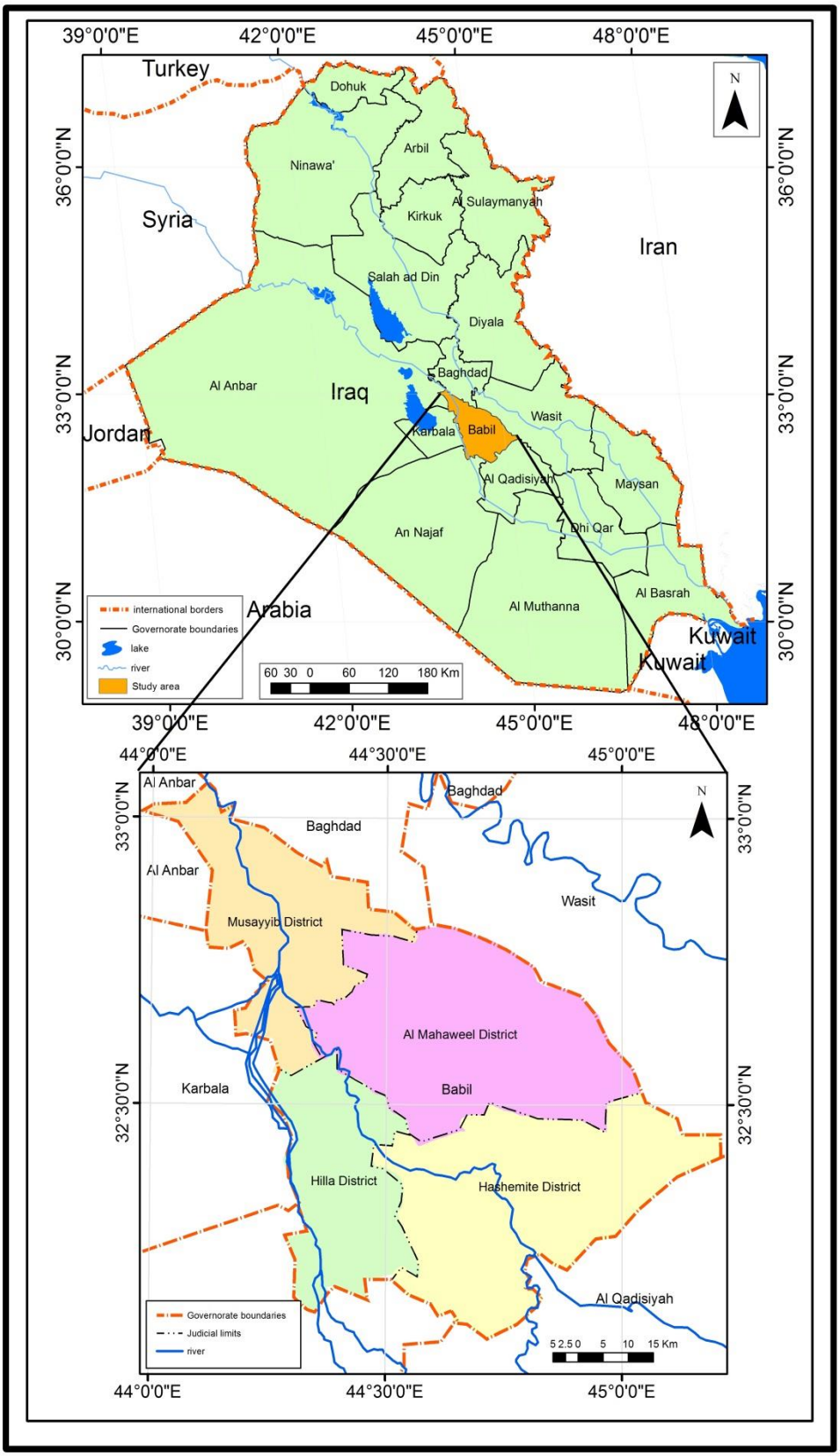
Time limits included the years of study from 2022 to 2023, as well as objective limits of studying animal food industry installations in the province of Babylon.



Map (1) Location of Babylon Governorate from Iraq

Source/Ministry of Finance, Al-Sahah Authority, Iraq Adriyah Map, 2023.

2. The historic development of Iraq's animal food industry.

The stages of development of Iraq's animal food industry are divided as follows:

Phase I (1976-1880): The peace facility was established in Baghdad governorate and the energy was 5 tons per hour And Mosul facility in Nineveh governorate, and the power was 8 tons per hour and the Amani facility in Baghdad, and the power was 8 tons per hour, As well as a poultry feed facility with production capacity (5) tons/hour, one facility in Karbala Holy and the energy was productive (9.5) tons/hour In Babylon governorate, the Babylon Feed Plant was built to produce animal feed and various varieties. There is poultry feed and ruminants. Each of these two species has special varieties. The plant was produced in 1980 in total. (65,092) tonnes, of which (52,784) tonnes of poultry feed, and (11,282) tonnes of ruminant feed and various varieties, in addition to the production of another type of feed with special specifications of (26) tonnes for the same year [(1)]

Phase II (1981-1989): The animal food industry began to flourish and develop within this phase, when the General Fodder Facility was established, which produced concentrated foods of all kinds.

The number of installations in this phase has increased to (28) with a total production capacity of up to 269,5 tons per hour in Iraq. The number of installations varied between a group of Iraqi governorates. Baghdad governorate came with a lead of 9 installations and energy production reached 125 tons/hour, second in Karbala Holy Governorate with 8 installations and energy productivity 63 tons per hour, a central governorate with 3 installations and productivity (35, 5) tons per hour. In Kirkuk governorate, 3 installations and 14 tons per hour were established. The latter were distributed in the following governorates:

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Najaf Governorate with one facility and production capacity (9) tons/hour, Diyala governorate where the Bilt Feed Facility and production capacity (6) tons/hour, Similarly, it is established by production (5) tons/hour, and in Qadisiyah by production (5) tons/hour, Babylon Governorate has established one facility, the Mustafa Feed and Production Capacity Facility (7) tons/hour. One of the plans developed by the General Fodder Establishment in Iraq is based on the importance of this food material for livestock. s need for poultry feed ". 580,485 tons in 1980 and is likely to rise to 975,000 tons in 1990. Similarly, the plan was established in Baghdad Governorate with 7 installations, including poultry installations. (13) Ton/Hour, Roths Facility (11) Ton/Hour, Two Installations by Production (14) Tons/Hour, Feed and Production Power Builders (20) Tons/Hour, Usury and Energy Installations (15) ton/hour, pure installations and production capacity (7) ton/hour, straightening installations with 10 tons per hour and Al-Aziziyah facilities for the production of Bilt fodder in 5 tons per hour. Nineveh governorate has established two facilities, in reality. (10) tons/hour for each of them and in this period one origin was established in Al-Qadisiyah governorate for roths and production capacity (10) tons/hour, while Diyala Governorate was established with a facility of (5) tons/hour, a facility and production capacity (12) tons/hour and a facility of

(6) tons/hour in Salahuddin, two facilities were established in Anbar governorate with capacity of (5) tons/hour and (15) ton/hour, one facility in Kirkuk and production capacity (10) ton/hour

In Babylon governorate, the plant of the animal food industry increased from the previous stage by 3, including the Jishaimi Feed and Production Capacity Facility (9) tons/h, the Farmer Feed Facility with capacity (5) tons/h, Gorani Feed and Production Capacity (4, 5) tons/h [(2)]

Phase III (1990-2000) saw the imposition of the economic blockade on Iraq, which caused the suspension of most industrial facilities and decreased production in general industry ", owing to the shortage of spare parts and raw materials for industrial operations and this has adversely affected industrial activity and has led to fluctuating numbers of industrial plants in general and the animal food industry in particular [(3)] The conditions of the blockade have forced many stops and prioritized the continuation of some industries such as grain milling industry to provide flour ration card supplies and the delivery of their crops such as wheat, barley and yellow corn to the State to provide raw materials. This has affected enterprises that rely on local raw materials and have ceased production. (173) Loan valued at IQD 39 million in 1993 (10) Loans worth eighty-three million dinars (1998). Therefore, the country's industry faced many problems due to the economic blockade, which reflected all indicators of industrial growth, especially during this period [(4)]

Four facilities were built in Iraq in phase IV (2001-2006): In Nineveh governorate, it established a feed facility and the production capacity was productive (5) ton/hour and protein facility in Baghdad and production capacity reached (2, 5) tons/hour, and in Dhi Qar Governorate established a ruminant feed facility and production capacity (3) tons/hour. During the events in 2003 and the deterioration of the security conditions, all these facilities were halted, leading merchants to import the concentrated protein from Dubai, Syria and Oman. (50)%, and in 2004, the concentrated protein facility was established in Sulaymaniyah governorate.

The year 2005 marked the first real start of Iraq's concentrated animal food industry and at the beginning of 2006 the high demand for ready-to-eat food began and the idea of establishing a concentrated food facility instead of importing it for the ready-to-manufacture protein Iraq lacks [(5)]

After 2006, as a result of the changing political climate in Iraq and the lifting of the economic embargo imposed on Iraq, which had a significant impact on the recovery of Iraq's economy, the State's financial income increased owing to the increase in Iraq's exports of oil and its substantial price, resulting in an increase in the standard of living of the Iraqi individual, especially State employees, after increasing their salaries. However, many circumstances occurred after 2006 that led to a deterioration in the overall industrial situation in the country. The State pursued an open-door import policy, which led to the flooding of the domestic market with various goods and global emergencies, with low prices compared to domestic goods, and the inability of domestic products to compete with these goods, which enjoy the support of their governments in view of the difficulties faced by industrial activity in Iraq through the lack of support and protection of the country's constant power disruption and high security. The phenomenon of financial and administrative corruption is widespread in most of the nation's joints, resulting in capital owners and manufacturers in particular migrating out of the country and investing their funds and expertise in other countries[(6)]

3. Factors endemic to the animal food industry in Babylon province.

3.1 Natural Factors:

3.1.1 Geographical location:

Babylon Governorate is located in the shape of the existing triangle, extending towards 106 km north to south with an irregular width of up to 84 km from east to west.

Babylon Governorate is located in the central region of Iraq within the Sahel al-Rusubi area, and represents the northern part of the central Euphrates region, which has made it mediate between a number of governorates. The governorate's centre is no more than (100km) from the capital Baghdad, approximately (45km) from Karbala and (65km) from Najaf al-Ashraf and (85 km) from Al-Qadisiyah, as in map (1), where Babylon governorate consists of four counties (*) and these districts are divided into administrative units at a lower level, namely, the areas and accordingly the total areas (12 km).

The astrological location of the governorate has not earned it a distinctive feature from the governorates adjacent to it, all of which share the same astronomical failure, but the distinctive location of the neighbourhood has given it special importance because of its proximity to the capital Baghdad and the rest of the governorates, and that this site has made it a bridge for the passage of a number of major roads as well as the highway and the passage. Basra-Umm Qasr with most of its main positions. Moreover, the Euphrates River conservation site, which enters from its northern part and follows it in its run south at its border near the governorates of Najaf and Qadisiyah, It has been easy to establish mutual relations with neighbouring governorates since ancient times when the river was a mode of transport as well as an important element to attract diverse economic activities, especially the animal food industry and characterized by a large population centre that contributes to the food industry's supply of diverse and cheap labour, There can also be a broad market for the disposal of their products, as a result of which existing industrial enterprises have evolved and their numbers have increased. This makes the province a place for the settlement of many industries and one such industry is the concentrated animal food industry.

3.1.2. Water Resources:

Water resources in Babylon Governorate consist of three sources: precipitation water, surface water and groundwater.

Falling: Since Babylon Governorate is within the Sahelo-Rusubi region of the dry desert climate, the quantities of falling are limited because they are quarterly, small and volatile And so there is no direct impact of fall on the animal food industry in Babylon province, However, there is an indirect effect because the amount of fall within the province's borders and in the Euphrates River Basin and its tributaries affects the amount of surface water in the governorate (7)

Surface water: Surface water is the primary water resource in the study area River Euphrates ", representing the main course of the Euphrates River and its branches, the amount of water in the river and its branches varied Al-Hilah is one of the most important branches of the Euphrates River from the front of the Indian dam in the study area because the President's Euphrates column, Al-Hilah is the ancient course of the Euphrates River until the late nineteenth century and has changed as a result of its high chest due to the many deposits in its introduction. The Shatt al-Hilah branches from the side or the left bank of the Euphrates River, branching out at a kilometer (602) in front of the front of the Old Indian Dam, reaching a length within the boundaries of the Irowa Babylon Governorate (101 km), but during the two seasons, its disposal rates varied to 131.6 m3. Its overall disposal rate is 172.7 m3/s, which is lower than its high design rate (250) m3/sq. The area of land he irrigates is estimated at (913689 dunums) And the Alexandria fountain at 573 kilometres in front of the Hindi dam and long (23,100 km) with a

discharge of (7.85) m3 per second with an area of up to (31454 dunums), the Al-Ruwaieh fountain is divided at 583 kilometres with a discharge rate of (2) m3/second length (8.450 km) Raoya has an area of (20,000 dunums), while the Messib fountain branches out at kilometer (596) with a length of (49.500 km) at a discharge rate of (40) m3/s and with a passive area of (334780donm),

The fountain of Nasiriyah is separated at kilometre (598) at a discharge rate of (4.7) m3/s with a length of (3) m3/s). (12802 km) with an area of (9826 dunums), the Al killed fountain is separated at km (620), the discharge rate (20.5) m3/s and the total area of land that depends on this fountain is approximately (167,000donem), 61,280 dunums of orchard land and 105,720 dunums of other crop land [(8)]

Al-Hilah is being strewn in the southeastern direction in line with the general decline of the earth of the logic of the study and its branch point of the Euphrates River has a level (32) meters above sea level and departs the governorate at the level of 24 metres above sea level, so it has a slope of 0.125 metres per kilometer, so Al-Hilah is one of the most important irrigation systems in Iraq, and the river is the only one that has seized all taken in and used the last drop of its water for actual irrigation, and Al-Hilah needs as much water at present as possible. (236) m3/tha to quench over 2 million and a quarter million dunums of agricultural land through a range of tables (32) Table, as shown in table (8), from its branch point from the Euphrates River to its branch point to the Diwaniyah Shatt, the Raid Shell and the Freedom Shell in its area of departure from the governorate towards Qadisiyah.

Water revenues in the Euphrates River are estimated to be about 26 billion m3, but they have fallen considerably in the last period and have fallen below 9 billion m3 per year. which has led to an apparent decline in the areas grown from different crops, most notably wheat, barley and maize, resulting in a sharp decline in domestic production and an increasing trend towards external import to fill the shortfall. One of the reasons for this shortage is the decline in water abundance and it has been estimated that in recent years Iraq has lost approximately 55% of its agricultural land due to water scarcity [(9)]

Crops that have been used as inputs into the concentrated feed industry have been most affected by water scarcity owing to declining areas under cultivation economic relations with neighbouring States must be invested and trade agreements must be linked to agreements on the division of water resources, Linking the outstanding water file with other economic and security files with the two countries as additional force elements of Iraq's position in negotiating with the two States and to cooperate with Syria in the field of water and the consolidation of political positions towards Turkey with a view to reaching permanent water-sharing agreements between these countries that will ensure Iraq's access to fair and stable quantities of water. This decline in the quantity of water received by the Euphrates River is no longer an obstacle to the establishment of the concentrated animal food industry because the Euphrates River in various branches passes through the study area from north to south and as a result of the process of finding raw materials in this industry facilitated in the governorate projects ", as well as the provision of liquidation projects from large quantities of water resources that can be supplied to food industry installations requiring water in their industrial operations.

Groundwaters: groundwaters are of limited importance to industrial endowment because of their poor quality, because most of them have high salinity rates. As a result, agricultural land that depends on their irrigation in the province is very limited, groundwater is that drilling wells to extract such water is economically expensive.[(10)]

The Euphrates River and its branches covered all parts of the study area except for a small part in the southeast of the province. Surface water is one of the most important components of the province's industrial settlement. Moreover, the quality of wastewater in industrial processes varies from one to the next. Refrigeration processes do not require that the water be pure at a time when the water must be pure and impurities-free if used to

generate steam in the animal food industry, as the industry relies directly on clean water. However, the indirect impact of water resources is demonstrated by their impact on the cultivation of local crops in the industry and the quantity of their production, but the recent decrease in the amount of water received has led to a decline in the area under cultivation by local crops.

3.2 Population factors.

Industries rely on human workers for their sophisticated abilities and skills in the agricultural production process human potential is therefore one of the major foundations influencing the success of the industry, Human beings are a positive factor in most cases [(11)] where human factors stimulate the establishment of limited industrial activities and create an appropriate spatial distribution of industries. Population factors affect industry in several ways:

The animal food industry is an industry that requires little working hands after it relies on manual work with some simple machinery and machinery depending on the need for industrial activity in terms of its type and size, so it attracts heavy working hands. At present, production is based on machinery and machinery. as well as skilled manpower to operate machinery from the stage of receipt of raw materials to the stage of final production and manufacture of leeches according to required quantities and also need engineers, veterinarians, electricians and maintenance devices within the factory.

From table 1, it is clear that the Babylon Governorate has seen an increase in the population's size, up from its number. (592016) population in 1977, the population of the province continued to increase to 223,1137 by the estimate of 2021, and this increase prepares the labour force for the animal food industry in the study area, and it is clear that the population growth rate of the province of Babylon has gone at different rates, in the period of one year (1977-1987) The growth rate was 4.2. This period saw a slow rise in the population of the governorate owing to the country's difficult political situation as a result of the wars and the economic blockade on Iraq. The residents of the governorate continued to increase for a period of time. (1987-1997) with a growth rate (2,7), while the duration of one year (1997-2007) An increase in the population at a growth rate of 3,4, and the population of the province has risen significantly for the period of one year (2007-2021) At a rate of growth (2,1) This increase is due to the improvement of social, economic and health conditions, the high standard of living of the inhabitants of Babylon governorate.

Table 1 Population development in Babylon governorate for the period from 1977 to 2021

Growth rate	N.O of population	Years
	592016	1977
4.2	897877	1987
2.7	1181751	1997
3.4	1651565	2007
2.1	2231137	2021

Source/Reliance on, Republic of Iraq, Ministry of Planning, Central Statistical Agency, Annual Statistical Collection, Results of the Babylon Governorate Census (1977-1897-1997) and Population Estimates for the Years (2007-2001), unpublished data, 2021.

Private sector enterprises are privileged to manage their facilities themselves or their children without the need to appoint administrators and accountants, but they need vets to supervise the ingredients and the majority of the workforce are rural dwellers to fill the needs of the animal food industry with unskilled hands used in shipping and unloading.

The animal food industry in Babylon Governorate depends mainly on the male, because the animal food industry needs considerable muscle effort when charging, discharging and manufacturing process, and it is noted from Table (2) that the residents of the governorate may be distributed among the main administrative units in an unbalanced manner, where the case district accounted for a percentage (40.73)%, followed by the Hashemite judiciary (23.06)%, while the Masib judiciary (19.06)%, while the doorstep (17.15)%.

Table (2) Population of Babylon Governorate by Administrative Units for 2021

٪	Total population	District
40.73	908940	Al hilla
17.15	382584	Al Mahaweel
19.06	425186	Al Mosaieb
23.06	514427	Al hashmiya
100	2231137	Total

Source/Research work based on the Republic of Iraq, Ministry of Planning, Central Bureau of Statistics, Babylon Statistical Directorate, unpublished data, 2021.

As regards the age composition of the population in the governorate and through the table (3) The age group (15-64) was found to be ranked first by (55, 5)% of the total population, so we find that the category of young people that is from (15-64) The working-age population represents a good majority in the province, which means that the necessary labour is available to operate most industries, including the industry under consideration. This structure is not an obstacle to the development of different industries. In qualitative distribution, accessible statistics show that the population is distributed in a very close proportion between males and females, and that this industry can be employed by both males and females, except for certain processes in which work requires physical capacity that is commensurate with males rather than females. The presence of 50% of the male population helps greatly in the provision of various categories of workers and in all stages of manufacturing

Table (3) Age Composition of Residents of Babylon Governorate 2021

٪	N.O of population	Age range
41٫7	930959	Less than 15 years
55٫5	1237378	years 64-15
2٫8	62799	years and 65 more
100	2231137	Total

Source/Research work based on the Republic of Iraq, Ministry of Planning, Central Bureau of Statistics, Babylon Statistical Directorate, unpublished data, 2021.

3.3. economic factors.

3.3.1. Raw materials:

Raw materials are defined as substances from which various goods used by humans are manufactured. Raw craft products such as turning wheat into flour, converting the animal into meat and ore skin, or converting iron ore into ore iron, may be plant, animal or metal raw materials. The animal food industry in Babylon governorate relies on agricultural

production of cereals and supplements provided as animal food (poultry, fish, livestock). These raw materials are local and imported. The local production of these materials in the study area is not sufficient to meet the needs of the factories, so the need is supplemented by import. The most important raw materials involved in the production of the relationship in the animal food industry facilities are:

Cereals: These include yellow corn, barley and wheat, which are essential substances that are also included in the animal food industry.

Yellow corn: Yellow corn is classified as an industrial crop by introducing raw material into a transformation series of industrial processes to extract starch, food oil, protein, and then converting starch into an adhesive, dextrin, while fibre is still converted into food for the animal, and its most important consumption in Iraq is that yellow corn cereal enters and by proportion. (40)% in concentrated chicken and livestock for the purposes of this study counted yellow corn from cereal crops[12]

In table (4), it is noted that the average areas grown with yellow corn in the province for the period from (2019M-2021M) About (91) dunums, the areas under cultivation have decreased from about (116) thousand dunums (2019) to approximately (63) thousand dunums (2021m), it is also noted from the same table and shape that production has decreased quantitatively from 130170 tons per year (2019) to 81300 tons per year (2021m). Yields were 1162,3 kg/d during the study period, rising from 1127 kg/d in 2019 to 1185,5 kg/d in 2021.

We note from Table (4), that there is a variation of areas in the cultivated areas and their production and crop rate among the provincial districts, where the elimination of the tentacles is ranked first with a production ratio (38, 5%) This is due to the availability of surface water, soil fertility and good management by peasants in the use of good seeds, control of pests and herbs, and the provision of fertilizers. This has led to a high percentage of production in this judiciary. The Hashemite district is the second most productive. (35%) Despite the high proportion of areas cultivated during the study period compared to those cultivated in the disposal of tanks. This is due to the low yields per dunum compared to those grown in the disposal of tanks through the optimal use of seeds and the provision of fertilizers and the control of pests and weeds in the crop. (16%) of the productions of the governorate, while the Al-Hilah district ranked last with a production ratio (9, 9%) Of the total production of the prefecture with yellow corn due to a decrease in the area cultivated in the district of Al-Hilah resulting in a decrease in the proportion of this crop.

As a result of the above, the areas grown with yellow corn decreased during the period of study. (52580 dunums), despite the continued production of more than 81 thousand tons of yellow corn per year in the province, this quantity is of cruel importance in the settlement of the livestock food industry because the basic use of maize in Iraq is essential for the livestock food industry, but the quantity of production still falls short of the local need. (24) thousand tons per year during the study period, so the governorate costs the expenditure of large amounts of import, and that it is possible to achieve high self-sufficiency successes by expanding the cultivated areas by supporting the purchase of its production at appropriate prices from farmers, disbursing farmers' dues without delay and raising the productivity of the dunum by providing pest control services and fertilizer to farmers and developing production receiving mechanisms, improving production techniques using spray irrigation and drip techniques and reducing the need for irrigation water.

Table (4) Area and production of yellow corn in Babylon governorate for three consecutive years (2019-2020-2010)

SMA			2021			2020			2019		
Crop	Ton/Production	Aria	Crop	/Production Ton	Aria	Crop	Product Ton/ion	Aria	Crop	Producti Ton/on	Aria	District
971‹2	10475	7.450	905	10475	3800	986‹7	10475	8300	1022	10457	10250	Al hilla
1379‹8	40812	31.333	1257	25785	20500	1511‹4	52145	34500	1371	53506	39000	Al mahaweel
961‹7	37408	390.57	975	27780	28470	973	35515	36500	937	48929	52200	Al hashmiya
1336‹3	17260	12.967	1605	17260	10750	1225‹9	17260	13500	1178	17260	14650	Al Mosaieb
1162‹3	105955	90807	1185‹5	81300	63520	1174‹3	115395	92800	1127	130170	116100	Total

Source: Research on the Ministry of Planning, Central Bureau of Statistics, Directorate of Agricultural Statistics, Maize Production, 2021.

Barley: It is a winter crop that is consumed as a food for bread. It is currently the largest consumption in Iraq of animal food directly or in poultry or in the concentrated feed of livestock animals. It also has other industrial consumption. His cultivation is accompanied by time and space. He is characterized by his ability to withstand the salinity of the soil, drought and high temperatures, so he is allocated less fertile and drier land, which has adversely affected the productivity of the dunum. Although its cultivation is widespread in all governorates, it is concentrated in wheat-producing governorates. (13) It is second only to wheat, although barley is more resistant to drought and heat.(14)

Through Table 5, the average area under cultivation in Babylon Governorate for the period from 2019 to 2021 has reached more than 28 thousand dunums. These areas covered about 52 thousand dunums in 2019 and reached about 8 thousand dunums in 2021.

The governorate's average barley production was about (13) thousand tons per year for the same period. It is also clear that production decreased significantly during this period, reaching (3452) tons per year (2021) after being about (24) thousand tons in 2019.

Yields reached an average of 436.7 during the study period, decreasing from 447 kg/dunum in 2019 to 416 kg/dunum in 2021, with a slight decrease of 2.3% per annum.

With regard to the spatial distribution of barley crop production according to the provincial districts, we note that from the same table there is a discrepancy in the ratio of area, production and yield according to several factors through the availability of water rations for each district, which has recently decreased and other factors related to production, which has led to a decrease in cultivated areas, affecting production. The Hashemite District issues the first place with 53.4% of the governorate's total production of barley crops. The Hashemite District holds the second place with the production rate of 18.4%. The Hashemite District then has the third place with the production rate of 15.5%, while the Masib District is the last with the output of 12.5%. From the above, the area cultivated in the study area fluctuates from year to year, with a general decline in these areas during the school years. Accordingly, production declined at the same pace. This is reflected in the extent to which the barley crop contributes to the animal food industry.

The proportion of barley production during the study period is not an obstacle to the endowment of this industry. Its production can be developed by increasing cultivated areas, providing appropriate water rations, supporting farmers to provide fertilizer and good seeds, supporting prices and supporting farmers' dues without delay so that local production can be relied upon and reducing or halting imports.

Table (5) Barley Area and Production of Babylon Governorate for Three Consecutive Years (2019-2010-2011)

SMA	2021		2020			2019					
Crop	Produ /ction Ton	Aria	Crop	Produ /ction Ton	Aria	Crop	/Production Ton	Aria	Crop	Production Ton/	Aria	District
441	2.014	4523.3	424،2	878	2070	450	1800	4000	448،7	3365	7500	Al hilla
399،9	2.386	5677.3	354،5	179	505	423،4	1811	4277	421،9	5168	12250	Al mahaweel
460،6	6.910	14738.3	437،8	1736	3965	472،6	6026	12750	471،5	12967	27500	Al hashmiya
445،4	1.628	3658،5	447،4	659	1473	442،8	1771	4000	446	2453	5500	Al Mosaieb
436،7	12.938	28597	416	3452	8013	447،2	11408	25027	447	23953	52750	Total

Source: Research on the Ministry of Planning, Central Statistical Agency, Directorate of Agricultural Statistics, 2022.

C. Wheat: Wheat is one of the most important winter crops, as it is considered the main substance of the population's food, and its accidental products can be invested (Bran material) In animal feed labs wheat is grown in northern sections depending on rain and in the central and southern regions dependent on irrigation water [15] Wheat cultivation is present in fertile, low-salted and well-drained alluvial mixed soil. Iraqis have been interested in farming for the earliest time because Iraq's normal conditions encourage cultivation [16]

Table 6 shows that the average area under cultivation has exceeded (250 thousand dunums) and has produced more than a quarter of a million tons per year with a clear decline in area and production from (2019-2021). The area under cultivation has decreased by (-14, 8)%. Production has decreased significantly from (2019-2021) to (132) thousand tons.

Yields varied over the years of study. (996,5) kg/kg year (2019), falling to 994,8 kg/kg year (2020m), then re-increased in 2021, with a rate of 1225,4 kg/dunum. Despite this increase in yields for the same year, production has continued to decline. One of the main reasons for this decline is the decrease in the areas under cultivation of this crop through the lack of water rations required for these areas in recent times.

As for the geographical distribution of wheat production according to the governorate's districts, the same table shows the variation of the cultivated areas and their production by wheat crop, where the shops were spent in the front, with nearly half of the production in the governorate (49)% is due to the expansion of the areas under cultivation in this judiciary, soil fertility and good management by peasants in the use of good seeds, control of pests and herbs, and provision of fertilizers, which has led to a high production rate in this judiciary, and the Hashemite district is second by the production rate (33, 7)%, Al-Hilah was third with a production rate of (10, 4)%, and Al-Masib was last with a output ratio of (6, 7)%.

From the previous information and data available in Table (6), there has been a decline in the province's production of wheat during the school years and a percentage of. (-14)% per annum The decline of the province's wheat production is not a disruptive factor. The animal food industry can grow and expand to process the province's production or by importing from other governorates, especially the north or imported from outside Iraq. This must be done through government support to farmers by providing fertilizer and good seeds as well as subsidizing prices and the disbursement of farmers' dues without delay. On the one hand, the Government must move towards providing appropriate water rations for the widest areas under cultivation. As noted earlier, economic relations with neighbouring States and permanent agreements to share the quantities of water used in these countries, or to reduce the supply of water This is enough to grow and expand.

Table (6) Average wheat cultivation and production in Babylon governorate for the years (2021-2020 2019

	SMA		2021			2020			2019		
Crop	Product Ton/ion	Aria	Crop	Produc /tion Ton	Aria	Crop	Producti Ton/ on	Aria	Crop	Produc /tion Ton	Aria	القضاء
1018،4	27.854	27.350	1643	17827	18050	1060،6	33939	32000	960	31795	32000	Al hilla
1076،1	130.674	121.431	1101،4	86131	78200	1031،7	147732	143193	1105	158159	142900	Al mahaweel
976،8	89.766	91.902	1050،1	63852	60806	960،4	103527	107800	951	101919	107100	Al hashmiya
985،1	18.046	18.320	1107،2	13353	12060	926،6	19366	20900	970	21420	22000	Al Mosaieb
1014،1	266340	259003	1225،4	181163	169116	994،8	304564	303893	996،5	313293	304،000	Total

Source/Research work based on Ministry of Planning, Central Statistical Agency, Directorate of Agricultural Statistics, Wheat Production, 2021

3.3.2 Power and Fuel: The susceptibility found within any material And make it able to do a job. It does not see the abstract eye, but we can see its effects in one form or another [17] Energy is one of the important pillars of industry's development and development, particularly those that require significant amounts of energy. As one of its types, electric power is an indispensable essential component of the industry and its importance is demonstrated through its multiple uses and its exclusive characteristics [18] and varies types, coronary and design capacity as well as locations, and the MESEB Thermal Plant is the largest of these plants with actual production ratio (64.5) Of the total production of electrical plants in the province, the gas meseb plant came in second by (14,1)%, and then the second gas suit station (12,5)%, followed by the first gas suit (8,4)%, and the last Indian hydroelectric plant (0.5)%.

The above shows a deficit in the production of electrical power at these plants when comparing actual power with design power, a major problem for all power plants in Iraq, where the total design capacity of these five plants is (2150MW/h), while its total actual production (855,4 MW/h), the Babylon Governorate's association with the national network and its subordination to programmed pieces made a large portion of its production distributed to the rest of the central Euphrates governorates, varying capacities received to maintain during the period of time. (2019-2022), with the highest percentage in 2022. (28)% of the energy collection received in the governorates of the Middle Euphrates and its lowest percentage in 2020 with an occupancy rate (22.2%) Although the percentage of energy received in the study area increased slightly in 2022 compared with previous years, this percentage did not meet the ambition of industries in general and the

animal food industry in particular. The large quantities of electricity produced in the study area do not reflect positively on them and, first, that an additional proportion be given to the electricity-producing province, The governorate's low energy processing is not commensurate with its actual need, and it must be given a privilege from this production compared to the neighbouring governorates.

From the foregoing, electrical power in the study area will not be hampered by the settlement of animal food industry facilities, and may become an encouraging factor when the governorate is equipped with greater amounts of energy so that it can advance the industry.

3.3.3 Capital: Modern industries need machinery, need buildings and hardware, You also need money to buy raw materials and pay workers' wages. And to promote and develop this sector they need capital, The larger the project, the greater the need for a capital, derives from national income and the way it is distributed, which in turn is reflected in real per capita income, the amount of savings generated and the contributions of the State and domestic and foreign companies.(19) and that the availability of the required capital for industry is not a problem for States in industry, However, developing countries are severely underfunded because their economies are growing and providing them may resort to borrowing. loans are the means used by many States to improve their economic conditions, However, a significant amount of such loans is spent on other activities, which subsequently burdens these States. and the sources of such loans, including internal or external, from private or governmental banks or bodies, Governments or IMF, and their amounts, conditions and conditions vary.

Capital is one of the industry's most flexible inputs into movement within a country However, its movement between States is determined by laws and affected, inter alia, by the amount of banking facilities, Transport facilities, the political safety component and the economy, the amount of interest on investments and the cost of shifting confidence (20)In Iraq, the public sector has the largest share of funds available for investment, Therefore, economic territories receive some investment based on a set of economic and social considerations and these are decided by the central authorities. investment in various economic activities, notably industry (21), As far as the animal food industry is concerned, it relies on the capital of the baseline, i.e. the local brass of the founders of the animal food industry enterprises. Despite this encouragement, success seems minimal. This sector is reluctant to invest its money vigorously in industry, and investing in it generates less income than other sectors. In particular, the animal food industry requires significant industrial capital in addition to fuel and the purchase of raw materials, including imported materials.

As for the number of loans granted by the Industrial Bank in the governorate to investors in the industrial sector for the duration of the (2020-2022), as the total loans granted during this period amounted to (194) loans, and the number of loans granted in 2021 increased by (19) loans in the value of (900) million dinars than in 2020, while the number of loans decreased in 2022 by (12) loans at a value of (660) million dinars compared to 2021, by loans granted to the industrial sector in general, and with respect to loans granted to animal food industry enterprises, the bank was unable to provide the researcher with them for reasons of the bank's policy Therefore, the researcher relied on loans to the industry in general to determine the availability of capital in the study area, thus demonstrating that the industrial bank plays a significant role in supporting and developing industries in the governorate, including the livestock food industry and provided that these funds invest better borrowers as some borrowers invest in trade, construction or other projects, There must be checks and follow-up by the bank on borrowers and know if these loans are disbursed in the industrial sphere or not by the On the other hand, the industrial bank must reduce the interest rate on loans, as well as extend the period for repayment of loans disbursed.

3.3.4 Transport: Transport networks provide important services to industry, as they are the link between different production factors in their types and in their locations. Without this connection, these factors will be irrelevant in the productive process. Natural, economic and human resources are unevenly geographically distributed between sites and territories, and transport's role is crucial in redistributing and providing industrial requirements in locations and territories where they are not integrated. The existence of the road and medium may not be decisive in setting up the industry unless its cost to the industry is appropriate. whenever the cost of transportation is low and constitutes only a small proportion of the total cost of production whenever this helps the industry's success in its locations and in providing alternatives to production requirements from multiple locations at an appropriate cost, In light of this, the size of the market enjoyed by the industry(22) The transport routes in Babylon governorate are by road, whether it be car roads or railways

I. Car roads are divided into:

1. Highway: This route is characterized by its multiple routes. The three-way route, like the other, is separate and non-intervention, allows for a transport stop in Babylon (100 km), Iraq's entire road area (1190 km), linking western Iraq on one side and Jordan to a heart in Baghdad and then south to Basra through Babylon, Qadisiyah, Muthani and Qar. (23)

2. Main roads are important roads linking the centre of Babylon to the centres of neighbouring governorates. These roads are characterized by a number of engineering specifications, including the existence of two tracks with central islands and each route with two lanes reaching the design and operational speed of cars. (120) km/h. All trucks, trucks and other vehicle types travel. The number of roads in the study area is five and the total length is 305 km. (24)

3. Secondary roads: roads linking the lowest-ranking administrative units such as the district and the periphery or linking the main roads, reaching five roads in the governorate. (25)

4. From the foregoing, Babylon Governorate has been characterized by a good transport network as it is a link between the Middle Euphrates governorates and other governorates, resulting in the livestock food industry benefiting from these routes whether to acquire the raw materials involved in this industry, or to distribute production, since most industrial facilities are located on the main and secondary roads, i.e. the ease of production to consumers.

4. Babylon Animal Food Industry

One of the most important food industries is the animal food industry because of its association with livestock and the resulting food items of the population ", such as red and white meat, eggs and milk derivatives, which have come to occupy an important nutritional position in people's lives, Because they are at the forefront of food that people want to feed and this importance comes as a result of the high prices of red meat and the increasing population, This stimulates animal husbandry in establishments and food is supplied to them by nature and the most important and useful of them is produced by industrial products specializing in the production of these foods. The researcher conducted a field study and field survey of animal food industry facilities in the governorate during the period (2022-2023), and the survey found 21 industrial enterprises in which it operates (527) workers, thus the livestock food industry in the province has witnessed many developments after it was concentrated in one facility during the period of (1976-1880) Increased to 21 establishments until 2022, owing to an increase in the number of animal breeders, especially poultry, fish and ruminants, and increased demand for food.

4.1. Historical development of animal food industry facilities in the governorate.

In general, the emergence of modern industries in the governorate and the animal food industry has been delayed, particularly as they are small, privately owned industrial enterprises, most of which rely on local materials due to the province's agricultural nature. In view of the country's developments in various economic and social spheres during the 1970s and 1980s, the main reason for the increase in the demand for processed food and the attention paid to livestock and the resulting foodstuffs of the population, The first steps of this interest began by increasing the share of the industrial sector in financial allocations within the five-year investment plans and raising the contribution of the Industrial Bank, which encouraged the private sector in the study area to invest further. It established in 1980 a KAFL complex for the production of protein and animal feed. Subsequently, the animal food industry thrived and developed in the governorate, establishing in 1980 a Babylon feed facility in Abiy sinking to produce animal feed and various varieties, specializing with food 30 At the time of the establishment of the General Animal Feed Facility, which produced concentrated foods of all kinds, as part of its plan in the governorate based on the importance of this animal food material, The private sector's Mustafa Feed Facility was established with a production card of 7 tons per hour.

The beginning of 1990 saw the imposition of an economic blockade on Iraq, which prevented Iraq from importing. This led to the cessation of a large number of industrial facilities based on imported raw materials. However, most of the livestock food industry facilities in the governorate were not affected by these determinants, most of which relied on domestic raw materials, especially those belonging to the private sector. (25) for the year (1991) which aims to develop and exempt from taxes industries using local raw materials [(26)]

However, this does not mean that animal food industry facilities, especially those of the public sector, are not affected during this period, as the import of spare tools and various spare parts for machinery and equipment in various branches of industry has ceased. Most of the equipment used in the country is from different foreign arenas, making it more difficult that many industrial plants, for example, stopped the Babylon Feed Factory in Abe's drowned side in a year. (1991), which was destroyed, requiring repairs to imported equipment. as well as targeting the blockade of power plants and their networks, and water and sewage filtration plants, which had a severe negative impact on the overall state of industrial activity at that time. The construction of this industrial branch continued to rise until it reached 3 facilities in the governorate in 2000. 5) ton/hour, as a result of adaptation to the circumstances of the blockade, which was hoped to be avoided with domestic production, but the success achieved was limited Agriculture in the country has not been able to meet the ambition, although there has been some success, especially in the cultivation of yellow corn, wheat and barley. This industry was hoped to have another advanced reality if agriculture had provided more of the raw materials it needed as an alternative to imported materials such as oil seeds. and starch and protein extracts, etc., used as a feedstock for the animal food industry [(27)]

4.2. Classification of animal food industry facilities in the governorate:

Studying geographical facts in isolation from other facts does not give a clear picture of them, and it may require a comparison of their phenomena, or of the conditions of that phenomenon from time to time.

Different concepts and lack of agreement on their limits and contents may give inaccurate features of the phenomena under consideration and lead to erroneous conclusions about them. Given that industry is a broad world of products, processes, ownership and so forth, researchers disagree in classifying it to vary their views on one

side and the different foundations and considerations of each classification on the other [28]

For the purposes of this study, the animal food industries in the governorate are classified as follows:

4.2.1 Classification of animal food industry enterprises based on ownership:

Ownership of such enterprises varies between the public and private sectors and as in table 7.

A.Public sector animal food industry facilities:

The public sector has one facility in the governorate, with a ratio of 4.5% of the total establishments, and a ratio of (0)% of the total number of workers, and that this facility ceased to work in 1991, as a result of the country's difficult circumstances during the period of siege as well as the military operations carried out by the United States-led International Coalition, which in turn destroyed many of the country's facilities in general and in particular in conservation. As a result of the discontinuation of imports of raw materials, equipment and production lines that were vandalized and looted in the same year [28]As shown in table (7).

Table 7 Classification of animal food industry facilities based on ownership in Babylon Province for 2022

N.O of workers	N.O of facilities	Sector Type
_	1	Public sector
527	21	private sector
527	22	Total

Source/research work based on field study.

B.Private sector animal food industry enterprises

Its privately owned enterprises with 21 establishments, accounting for 95.5% of the total animal food industry enterprises. We note from Table 7 that the private sector has taken the largest proportion of public sector weaknesses in the governorate. The total number of workers in this sector is 527 and 100%.

2.2.4.Classification of animal food industry enterprises by size of enterprises:

The classification of industrial enterprises in Iraq is based on the Industrial Statistics Classification 1983. Similarly, animal food industry enterprises in the study area have been classified [*] as shown in table (8).

Table 8: Classification of animal food industry facilities by size of facilities in Babylon province in 2022.

N.O of workers	N.O of facilities	Category
307	6	Large
181	9	Midume
39	6	Small
527	21	Total

Source: Researcher's work based on field studies

The first category (large) 6 are established at 28.6% of the total number of animal food industry establishments, employing 307 workers and 58.3% of the total number of

employees in the establishments. This category includes facilities (Al Rayyan, Ghadir Babil, Al Hadi, Jawhar Babil Al-Hadith, Abu Ghada, Project).

Category II (Medium): The number of animal food industry establishments in this category was (9) established in the study area and up to (42, 9)% of the total number of animal food industry enterprises, this category of enterprises is classified as medium-sized, and the total labour force in this category is (181) Workers (34.3%) of the total workers in animal food industry facilities in the study area. This category included facilities (Al-Mukhtar, Hebron, Al-Rajhi, Modern Messib, Zamzam, Green 1, Green 2, Al-Baraka, Al-Masoudi).

Category III (Small): The number of establishments in this category was (6) and (28, 5)% of the total number of animal food industry establishments in the study area. The number of workforces in this category was (39) working and (7, 4)% classified as small-scale installations and from these establishments (FADC, Ghazali, Top, Fandi, Green 3, Wassam).

4.2.3 Classification of animal food industry enterprises on the basis of production capacity:

One of the important criteria used to clarify industrial structure, by giving a clear picture of the distribution of production capacities, defined as the quantity of commodity already produced by enterprises in a given unit of time.

The total actual production capacity of animal food industry enterprises in Babylon governorate is (2004) tons/day and can be divided into (4) categories, as shown in table (9). The classification of animal food industry enterprises in maintaining the actual production capacity is as follows:

Table 9: Classification of animal food industry installations by production capacity (tons/day) in Babylon Province 2022

Production capacity tons/day	N.O of facilities	Category
208	5	The first category is less than (50)
528	8	Category 2 (51-80)
320	3	The third category (81-120)
948	5	Fourth category (121-300)
2004	21	Total

Source/Research's work based on field study

Category one : (less than 50) tons/day We note from Table (9) that the number of installations of this category is (5) established at 23.8% of the total installations of the animal food industry, with a production capacity of (208) tons/day and (10.4%) of the total production capacity and this category included installations (Ghazali, fadak, Al Qimma, Al massoudi, Wassam).

Category tow: From (51-80) tons/day we note from Table (9) this category has the most number of (8) enterprises with 38.1% of the total installations, production card amounting to (528) tons/day and occupancy rate (26, 3)% of the total production capacity, including (Al Birka, Al khadra 1, Al khalil, Al mashrou, Al MosaiebAl Hadith, Al khadra, 3, Al Fandiyah, Zamzam).

Category three: From (81-120) tons/day the number of enterprises in this category (3) amounted to 14.3% of the total animal food industry enterprises in the governorate, and a production card of 320 tons/day and 16% of the total production capacity of the livestock food industry enterprises in the governorate.and some of these facilities are (Al mokhrca.Al khadra 2 . Al rajhi

Category four: from (121-300) ton/day the total number of enterprises in this category (5) established in proportion 23,8% of the total animal food industry facilities in Babylon governorate, and this category has the highest productive capacity. (948) tons/day with 47.3% of the total production capacity of animal food industry facilities in Babylon governorate. This category included facilities (Al Rayyan, Ghadir babel, Al Hadi jawharat babil, Abu Ghada).

From the foregoing conclusion, the actual production capacity of the animal food industry enterprises varies. This variation has resulted in a number of factors, including the nature of each enterprise's special industrial operations, as well as the significant impact of these enterprises on the country's economic conditions, which has led to the cessation or reversal of production, offset by the flooding of the domestic market with imported product and the competition of local production.

4.3. Spatial distribution of animal food industry facilities

The judiciary has been adopted as a cadastral unit in distribution, as Babylon governorate is divided into four districts (hilla, Mahaweel. Hashemiah . Mosaieb). Data are often not available at the level because the area may not have industrial enterprises. Therefore, the study and measurement are misleading. The industrial enterprises of this branch are distributed among the provincial districts as shown in table (10).

Table 10 Spatial distribution of animal food industry enterprises, number of labour and production capacity by district in Babylon Province 2022

Production capacity	No of workers	N.o of facilities	Districts.
160	23	4	Hilla district
832	186	8	Mahaweel District
348	138	2	Hashimiya District
664	180	8	Al-Musayyab district
2004	527	22	Total

1.Al-Hilah District: It is noted from Table 10 that Al-Hilah District included (4) installations of this industrial branch in the form of a percentage (18.2)% of the total enterprises of this industry, employing 23 workers and 4.4% of the total number of employees, and the total actual production capacity of animal food industry enterprises in the district of Al-Hilah (160) tons/day with 8% of the total actual production capacity of the livestock food industry in the governorate.

2. Al mahaweel district : 8 enterprises and 36%, 4% of all establishments. The total number of workers employed in animal food facilities in the district of tentacles (186) was employed and 35%, 3% of the total number of workers employed in the enterprises. In the district of tentacles, the enterprises accounted for the highest productive capacity by (832) tons/day and a total of productive capacity (41%, 5%).

3.Al Hashemiah District: The total number of animal food industry enterprises in the Hashemite District amounted to 2 per cent, with 9.1 per cent of all establishments employed in these enterprises, and with 26.1 per cent of the total employees. The total actual production capacity in the Hashemite district was 348 tons/day and 17.4 per cent of the total production capacity.

4. Al-Mosaieb District: Al Mosaieb District has the largest number of animal food industry facilities in Babylon Governorate with 8 installations and occupancy rate (36, 4)% of total animal food industry establishments, and the total number of employees in these establishments is 180 workers (34.2%) of the total employees in the enterprises, while the total actual production capacity in the Masib district was (664) tons/day with occupancy rate (33,1)% of total production capacity, as shown in table (10).

We conclude from the foregoing that the Al Mosaieb and Mahaweel ranked first in the number of enterprises and in proportion (36, 4)%, followed by Al-Hilah (18, 2)%. In the last place, Al-Hashimiya (9, 1)% of the total number of establishments in the governorate was occupied, while in terms of the labour force it also led the district of Al-Khattoum and the occupation rate (35, 3)%, followed by the Masib district by (34, 2)%, then the Hashemite district by (26, 1)%, followed in the last place by Al-Hilah with (4, 4)%, and the total production capacity of these enterprises was as high as (2004) Tons/Day, the Testers' Elimination came up with a lead of (41, 5)%, followed by the Mosieb (33, 1)%, then Hashemite third salary (17, 4)%, and Al-Hilah last with (8)% of the total actual production capacity of animal food industry facilities in the governorate. The increase in the livestock food industry's facilities is due to the eradication of tentacles and sediment as a result of the abundance of fish-farming basins and poultry fields of both flesh and whiteness, and Thesmin fields, which led to the establishment of animal food industry facilities near the fields and reliance on them to meet the needs of the fields, on the one hand, and on the other hand, the good location of both Mahawel and Mezbat district in terms of proximity to the capital Baghdad facilitates the access of raw materials to these facilities, especially materials imported from the northern governorates and also contributes to the disposal of the products of these enterprises to other governorates, as well as to the essentially agricultural issue, particularly in the cultivation of cereal crops: (yellow corn, wheat, barley), to be rural in nature and to provide large arable spaces, as well as fertile soil of river shoulder soils and widespread use of fertilizers, , insecticides and jungles, resulting in high production, particularly in the destruction of tanks.

5. Conclusions.

1. Babylon Governorate is characterized by the potential for the livestock food industry, the most important of which is raw materials from agricultural sources (plant and animal) produced by the governorate, as well as other ingredients, including transport and labour.
2. The actual production capacity of the animal food industry enterprises varies as a result of, inter alia, the nature of their respective industrial processes and their significant impact on the country's economic conditions.
3. There is a discrepancy in the distribution of the number of animal food industry facilities in Babylon Governorate. The first-ranking district is 36.4% for each of them and then the second-ranking district is 18.2%, while the last-ranking district is the Hashemite district is 9.1% of the total number of facilities in the governorate.

4. The livestock food industry in the province suffers from fundamental problems, the most important of which are (lack of electric power, poor financing, open door foreign goods policy).
5. The increase in the private sector in the animal food industry, offset by the disruption of the public sector since 1991 in the governorate.

6. Proposals:

1. Provide the necessary infrastructure for the establishment of animal food industry projects in Babylon governorate and provide financial support and facilities to investors by the competent authorities to encourage the establishment of this industry.
2. Provide sources of energy that lead to the success of animal food production projects, supported and reflected in the low cost of production.
3. Promote the cultivation of crops in the animal food industry as a feedstock and develop educational courses to address problems facing agricultural production.
4. To properly promote the marketing of the products of the livestock food industry and its role in increasing the demand for them in domestic or external markets.
5. Keeping abreast of the technological development in the animal food industry in many countries of the world and conducting periodic maintenance of production lines and finding competent manpower in this field

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