

SYSTEMS AFFECT THE PRODUCTION OF CHICKEN MEAT FARMS OPEN AND CLOSED ON PRODUCTIVITY AND ECONOMIC EFFICIENCY

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ABSTRACT

This study aimed to draw the criteria of productivity and economic efficiency of farms closed and open manner, the analysis of envelope data according to the methodology of Farrell (1957) methodology, a specific non-standard border The Deterministic Non-Parametric Approach and mathematical programming method is used to reach the standards of competency has been made use of the fixed costs and variable inputs the value of production output of the A strain of chickens Hubbard specialized for the production of meat, and the study found:

- 1 - The Educational fattening chicken (meat) must be closed within the wards and the transfer of wards closed to open as soon as possible and open farms that do not become closed does not receive a work permit and the farm closed and protect herds from infection of bird flu.
- 2 - Closed farm production efficiency is better than the open farm with a food conversion factor (1.61 to 1.93), average live weight / gm (2009 - 1749) and the number of birds / m² (20 to 7.27) and duration of feed / day (35 to 43) and the efficiency factor of production (from 324.36 to 194.23) for each of amber door open and farms respectively.
- 3 - Amber door is fully efficient, both in terms of revenue capacity of a fixed or variable dividend capacity and the economics of fixed size, as there is no surplus of any increases in the use of inputs, while the farms are open and obvious in the lack of economic efficiency in the revenue capacity of a fixed or variable, as well as hand, economies of scale, and economies in the process of increasing the size of Increasing Return to Scale (irs).

Keywords : Economic efficiency of farms closed and open, Educational fattening chicken, closed farm production efficiency.

INTRODUCTION

Poultry industry is an important agricultural industries in Egypt, where it invests more than 17 billion Egyptian pounds (more than 3 billion dollars) and employ some 2.5 million people in the poultry sector and supporting sectors, and more than 12% of Egyptians whose income depends on poultry and her belongings, as described by the (Ministry of Planning 96 / 1997 - 2000 / 2001, Hassan and others 2006).

It is also the industry by providing a large part of the animal protein to be the white meat and eggs, poultry production has increased in the last decade has become even cover domestic consumption, but has a small

surplus exported to abroad, and is a component of chicken fattening poultry industry, Egypt has witnessed rapid growth and development in poultry production at the beginning of nineties and until 2005, when it reached the production of chicken feed about 2 million chickens per day, the production of table eggs and 584 million eggs per month, and this has resulted in increasing per capita meat from 5 kg / year to 14 kg / year is expected to rise to 18.7 kg, 22.5 kg / year in 2010, 2015, respectively (Ahmed Geweili, 2006).

This latest surge of production and consumption and the clear result of the continuing evolution of the genetic, and the jurisprudence of international companies specialized in the production of strains for the production of fast-growing chickens, and at the same time, consume less feed to reach the required rate of weight, and as a result of the reduction in the force-feeding (decrease duration of the session of fattening) to 5 weeks, the researchers are still working to reduce this period to less than that, at the same time, a conversion factor of food has become a 1: 1.8 and so on (Geweili Ahmed 2006), and thus education for the production of meat, chicken feed if the economic strains of raising a sophisticated and well-developed farms closed 100% Egyptian thought (Zatter 1998), and this is the main objective of this research.

Research problem:

The activities of farms face many of the fattening chicken production and price risks, technological, and diverse sources of risk and uncertainty to the poultry industry, particularly after the emergence of bird flu in Egypt, which led to the ouster of a number of producers from the production, as well as the exploitation of non-farm, the optimal use of the number of courses in the year in which the range in most studies of 3 to 4 sessions at the most, which has a negative impact on the future of the poultry industry in general, so it requires several technical and economic studies to overcome the risks facing this important industry to upgrade the level of productive efficiency and economic and technological for fattening chickens in Egypt.

Objectives of the study:

The primary objective of the study is to analyze the productivity and economic efficiency of production of chicken fattening farms closed and open, so that whichever is more efficient and which is suffering from a lack of efficiency and, consequently, the results will be in the hands of decision makers, to take from the productive and economic policies that contribute to raising the economic efficiency of the industry.

Data sources:

This study adopted in achieving its goals to create a closed ward for the production of chicken fattening station experiments and research at the Graduate Institute of Agricultural Cooperation in Agriculture located at Kilo 62 Cairo-Alexandria desert road, the capacity of thousands of six birds, erected on an area of 300 m² net of the home were raising chicks from day-old chicks strain Hubbard data were collected during the experiment (average live weight / kg / bird - the duration of the fattening / day - the percentage of vitality - a conversion factor of food - the efficiency factor of production (the European laboratory - Abul-Ela 2007), a ((critical of the average weight (kg) × live birds%) / (duration in days × feed conversion factor of food)) × 100, as

well as economic data on costs and income and the relative importance of cost items, income and economic efficiency indicators for a single session is the net income, the marginal net income, total income attributable total to the total overall costs, profitability pound spent (Zatter 1998, Karim and others 2007), data were collected from some of the farms are open to the production of chicken feed Berma village of Tanta governorate of the West Center of the number of farms are open all four farm three wards each ward actual capacity of 4000 birds / cycle of strain Hubbard and amber area between 500 to 600 m² in the form of a questionnaire designed specifically for the production and economic data earlier, which had codified the methodology of production input costs, a random border nutrition, employment and wage costs of day-old chicks and the cost of medicines and Brush, electricity and water, the most important inputs that affect production and efficiency and economic productivity of farms closed and open, and used only the values of production director for analysis, and that the use of border approach (methodology Farrell Approach 1957), a specific non-standard methodology.

The Deterministic Non-Parametric Approach is a systematic methodology for Farrell realistic with what is being, and an accident. adopts the concept of efficiency coated on the analysis of the Data Envelopment Analysis (DEA) to estimate the economic efficiency of various criteria (Norman, and Stoker, 1991), in accordance with the hypotheses concerning the nature of the productive activity of the farm. In general, DEA relies on the use of linear programming method for the establishment of an envelope or the area containing the data with known Non-parametric Piecewise Surface so that the efficiency of the farm can be estimated according to the relationship of a combination of resources used from this area (the envelope), and study Ali, and Seiford, 1993, and there are three trends in the analysis of this type of data (Seiford, 1996) can be summarized as follows: : --

- 1 - use the DEA method in accordance with the concept of constant returns to scale (CRT) and Variable return to scale (VRS) the CRS and VRS which allows the assessment of technical competence of Technical Efficiency (TE), . Scale Efficiency (SE) represents (CRS/VRS) according to a study (Fare, Grosskopf, and Lovell, 1994).
- 2 - Bmallomip production and prices of factors of production and using the same method can estimate the cost-effectiveness Cost Efficiency (CE) and the allocative efficiency of resources (Allocative Efficiency (AE) study also indicated Charnes, Cooper, Lewin, and Siefors, 1995).
- 3 - It should be noted that the trends of the previous analysis can be applied in accordance with the concept of input or output Outputs Inputs in the productive activity of the farm is available for this purpose the program or statistical package known as the DEAP (Coelli, 1996).

Feed quality of the sperm used for each closed and open wards feed ready Cairo Poultry Company was the use of the following brands of feed:

- 1 - Super First (in the life of day-to-two weeks): crude protein contains at least 23%, crude fat and not less than 4.68%, crude fiber and not more than 2.62%, and feed ingredients are (Odhirp Yellow -- soybeans earn 48% - Bakery products - Gluten 60% - bilateral calcium phosphate - vegetable oil

- Limestone - mixed with vitamins and mineral salts - Methionin - food salt - Ovizim) and contains all the tons of feed to the nutritional needs of vitamins and minerals recommended rates internationally (vitamins: a - e - 1 - 2 - by 6 - to 12 - k 3 etc. - Selenium - Colin chloride) should not add any materials, vehicles, feed this to the Foreign Affairs also recommends that the Cairo Poultry Company.
- 2 - Super Nami (from the beginning of the third week to the end of the session): crude protein contains at least 20%, crude fat not less than 4%, crude fiber and not more than 2,5%, and feed ingredients, as mentioned earlier.

The results of the analysis: --

The most productive performance measures:

The results of the agenda (1) to the following results:

- 1 - Amber area (m^2) found that the sperm is less than the closed area, with open wings ($300, 550 m^2$) for each of amber and closed wards are open to the arrangement.
- 2 - Number of birds / m^2 , the sperm density of birds closed square meter higher than the density of birds per square meter in the open, with the wards ($20, 7,27 birds / m^2$) of the closed ward and the wards are open to the arrangement.
- 3 - The average weight of the living / gm when marketing was 2009 gm, 1749 for each of the sperm and the average closed wards open, respectively, has closed more than amber on average open wards.
- 4 - Found that the duration of feed / day lower in the amber of the closed wards open, with 35, 43 on each of the deck is sealed, and open wards, respectively, and thus can be closed in the implementation of amber 9 cycles / year, while the open wards implemented from 4 to 5 cycles / year.
- 5 - The percentage of wards vital in the open top of the door with an amber (92.16, 90.98), respectively, and the reason for the decline in the percentage of vital sperm closed because the workers because they are my work Bnnabr chicken They Borgelhm pressure to feed the chicks during the development of water and lack of experience in moving within the sperm and not for other things.
- 6 - A conversion factor of feed was found to be closed in the amber of the best open wards, with (1.61, 1.93) respectively.
- 7 - The efficiency factor of production data, it is closed and the wards of amber is clear that open is better than amber closed wards open because of the high efficiency of production plants, which was (324.36, 194.23) respectively.

Table (1): Some performance measures for poultry feed production (Hubbard) in the production systems of farms closed and open for one session during the months of February and March 2007:

Var.	Closed house	Average open houses
House area (m ²)	300	550
Number of birds /m ²	20	7.27
Average weight of the living (g)	2009	1749
Fattening period (day)	35	43
Percentage of vital (%)	90.98	92.16
Feed conversion	1.61	1.93
Factor of the efficiency of production	324.36	194.23

- Source: compiled and calculated by using the computer, data from a sample study of the ward and the average four-door open wards during one session during the February and March 2007.

The economics of production of chicken feed in the production systems in the closed and open houses :

Aimed at the economic aspect of this study to determine the economics of raising a chicken feeder in the closed wards and wards in order to be open and the results of economic analysis included a more comprehensive study of returns and costs, variable costs included the price of day-old chicks, feed costs, the costs of temporary employment, the cost of medicines and disinfectants , Brush costs, the costs of heating, water and electricity costs, and fixed costs in a closed amber embracing the depreciation of equipment (10% / year) and depreciation of buildings (5% / year) there was no labor costs, where all the permanent workers Banbr temporary employment (number 2 temporary workers only), while the fixed costs in the open wards, it was the rental of the wards and permanent wage workers in this farm. The revenue side has included the value of the sale of poultry and the value of the sale of district Manure, for a number of birds alive.

Can be identified on the economics of production under production systems in the closed and open wards referred to using the criteria of economic efficiency is by comparing the monetary value and the relative importance of the items and elements of variable and fixed costs and overall total cost and total revenue achieved by these farms, the data indicate (Table 2) and Fig (1, 2) the relative importance of cost items and revenue and economic efficiency, as is clear from the data that the costs of nutrition in the amber light of the closed system and open wards are ranked first in terms of variable costs, followed by the price of chickens in the important day-old chicks (Hubbard), then the cost of medicines and disinfectants in the third place, accounting for the relative importance of these items of the total variable costs about (57.94%, 29.29%, 5.25%) under the closed system of sperm, while in the open ward system has amounted to about (54 .20%, 26.26%, 15.30%), respectively, and we find in the amber closed temporary labor costs in fourth place, then the cost of mattress in fifth place, and the costs of water and electricity in the sixth, and seventh largest and the last as

the costs of heating (3.89%, 2.02%, 0.93%, 0.68%), respectively, while in the open ward system had cost Brush fourth place, then the cost of temporary employment in fifth place, sixth place in the cost of heating, Then came the seventh and final cost of water and electricity as it hit (1.95%, 1.31%, 0.71%, 0.27%) respectively and, in general, the total variable costs in the amber of £ 10,252.78 towards the door / 1000 birds, representing 98.65% of the total costs, fixed costs are £ 140.69 / 1000 birds, representing 1.35% of total costs, while the total variable costs in the open ward system has reached £ 11,437.94 / 1000 birds representing 95.41% of total costs, and fixed costs represent 4.59% of the total costs. The results indicate the scale (2) that the total income of the ward closed higher than income in the open as they hit the wards (12304 .10816 pounds / 1000 birds), respectively.

Table (2): The monetary value and the relative importance of cost items and revenue and economic efficiency of production of 1000-fattening chickens (Hubbard) in the production systems of farms closed and open for one session during the months of February and March 2007.

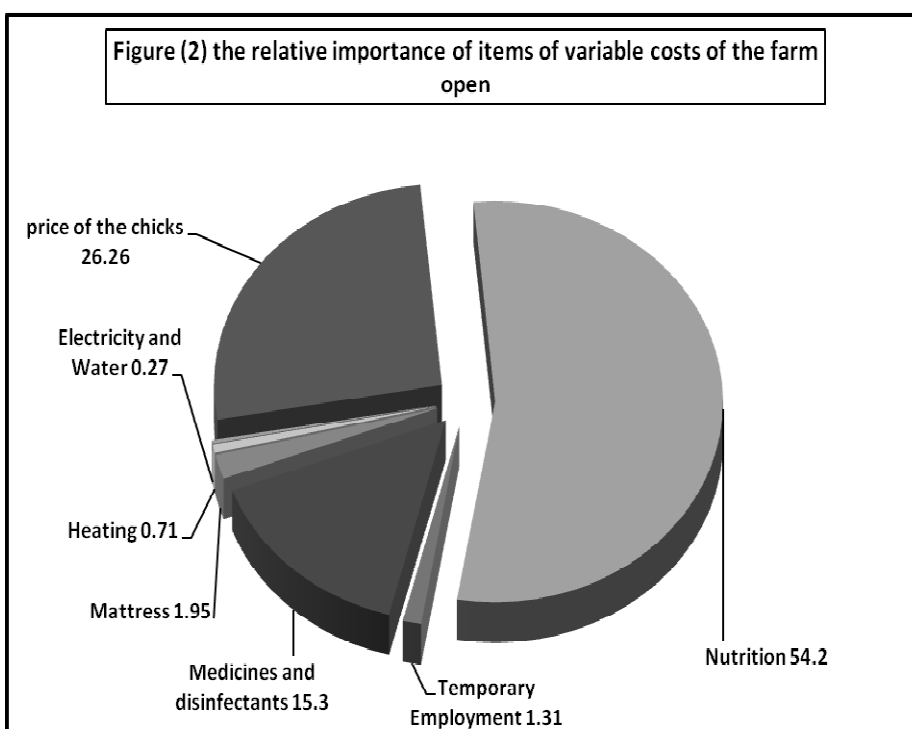
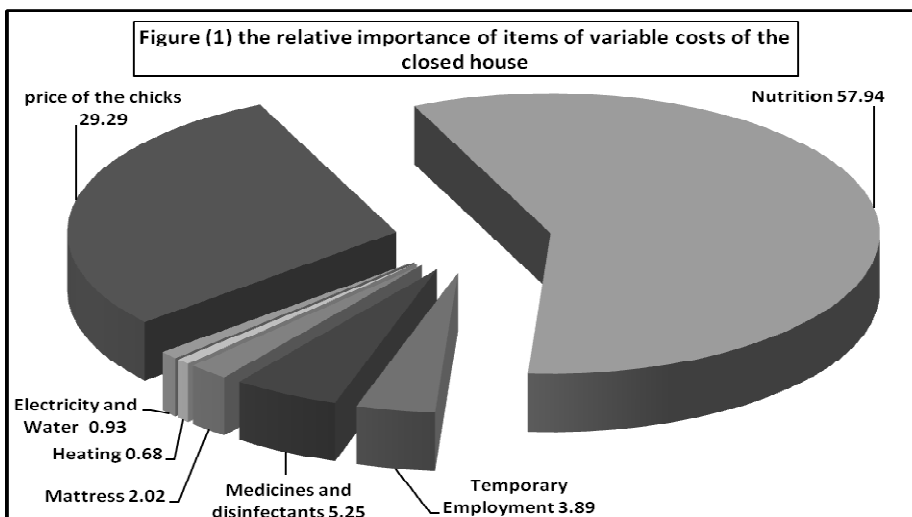
Var.		Closed House		Average open houses		
		Egyptian Pounds	%	Egyptian Pounds	%	
Costs	variable costs	price of the chicks	3003.33	29.29	3003.33	26.26
		Nutrition	5940.50	57.94	6199.61	54.20
		Temporary Employment	398.67	3.89	150	1.31
		Medicines and disinfectants	538.45	5.25	1750	15.30
		Mattress	206.67	2.02	222.50	1.95
		Heating	69.33	0.68	81.25	0.71
		Electricity and Water	95.83	0.93	31.25	0.27
	Total variable costs	10252.78	98.65	11437.94	95.41	
	Fixed costs *	140.69	1.35	550	4.59	
	Total overall costs	10393.47		11987.94		
Income	Value of the sale of live chickens	12054	98.23	10494	97.02	
	The value of the sale Manure	250	1.77	322	2.98	
	Gross total income	12304		10816		
Economic efficiency	Net income	1910.53		-1171.94		
	Marginal net income **	2051.22		-621.94		
	The total income attributable to the total variable costs	1.20		0.95		
	Gross total income attributable to the total overall costs	1.18		0.90		
	Profitability pound spent	0.18		-0.10		

- Source: compiled and calculated by using the computer, data from a sample study of the ward and the average four-door open wards during one session during the February and March 2007.

* Fixed costs of the closed ward to destroy Construction = 5% per annum + 10% depreciation of equipment annually. There are no permanent employment and the employment of all employment Banbr closed temporarily.

* Fixed costs of the farms open = permanent labor costs + rent.

** Marginal net income = total gross revenue - total variable costs.



As indicated in the table of economic efficiency criteria to the same sperm had closed his superiority to the open wards, where the total income attributable to variable costs approximately (1.20, 0.95), respectively, and the total income attributable total costs to total approximately (1.18, 0.90)

respectively, and refers to the standard that the pound spent on the terms of the total costs had achieved a profit margin of 0.18 in the amber light of the closed system while in the open under the ward system, it made a pound spent on the loss of total cost of \$ -0, 10, noting that the sale price / kg weight of chicken fattening district, foreign (6 pounds, the stock price of milk and poultry in Tanta) is the price at which the sale was done in the actual amber wings open and closed.

In the light of the above-mentioned results of the economic analysis and the results of the study illustrated the importance of raising a chicken feeder in the closed wards of Education in open wards, where proven technical and economic field during the study, and must apply those wards closed all farms Republic and the maximum speed to maintain that industry and to protect them from avian flu and the lack of waste in the production requirements, in particular, a component of the high price of feed and raise the efficiency of food for birds through education in the closed wards and thus provide many of the free exchange of import of feed ingredients.

Results of the analysis of drain-coated way data DEA:

Data were introduced to each of the cost of feeding and the costs of medicines, disinfectants and other expenses which are input for each door of amber and the average cost of four open farms, have been introduced which represents the total income of the output Table (3).

Table (3): The monetary value of items of costs and revenues for the 1000 production of chickens for fattening (Hubbard) in the production systems of farms closed and open for one session during the months of February and March 2007

Var.	Costs			Gross revenue	
	Nutrition	Medicines and disinfectants	Other expenses*		
Closed house	5940.5	538.45	3914.52	12054	
Open Farms	Farm 1	6210.0	1675	4003.33	11000
	Farm 2	6185.0	1800	4073.33	10850
	Farm 3	6221.4	1750	4103.33	10915
	Farm 4	6182.0	1775	3973.33	10500

* = Price of other expenses chicks + temporary employment + mattress + heating + water and electricity + Fixed costs.

- Source: compiled and calculated by using the computer, data from a sample study of the ward and the average four-door open wards during one session during the February and March 2007.

The results of the analysis of efficiency of the farms and the open door in the amber Table (4) and Figure (3) as follows:

- The efficiency of amber is fully closed, both in terms of revenue capacity of a fixed or variable dividend capacity and the economics of fixed size, as there is no surplus of any increases in the use of inputs (nutrition - medicine and disinfectants - other expenses), and the potential for increased production in these inputs.

- While the farmer open a distinct lack of economic efficiency in the revenue capacity of a fixed or variable, as well as economies of scale, and economies in the process of increasing the size of Increasing Return to Scale (irs).
- At the farm there use of the most open of any increases in the cost of nutrition was (131.74 - 3.36 to 167.34) for each of the farm 1, farm 2 farm, 4 respectively, while farm 3 there is no surplus in the cost of feeding, and for of the costs of medicines and disinfectants in the farms with a surplus of open (increase) (1099.39 to 1191.37 - 1132.54 to 1210.29) for each of the farm, 1, 2, 3, 4, respectively, and that there were no increases in other expenses for each of the Farm 1, 2, 4, while the farm for 4 with a surplus of about 3.54 the other expenses.
- Results showed that the farms have the ability to open to increase the value of production at the following rates (1054 to 1204 - from 1139 to 1554) for farm 1, 2, 3, 4, respectively.

Table (4): results of the analysis of drain-coated way DEA data

Var.	Dividend capacity		Size		Surpluses			The possibility of an increase in the value of production	
	crsEE	vrEE	scale		Nutrition	Medicines and disinfectants	Other expenses*		
Closed house	1.000	1.000	1.000	--	0.00	0.00	0.00	0.00	
Open Farms	Farm 1	0.892	0.978	0.913	irs	131.74	1099.39	0.00	1054
	Farm 2	0.865	0.961	0.900	irs	3.36	1191.37	0.00	1204
	Farm 3	0.865	0.955	0.906	irs	0.00	1132.54	3.53	1139
	Farm 4	0.858	0.985	0.871	irs	167.34	1210.29	0.00	1554
Average	0.896	0.976	0.918		60.49	926.72	0.71	990.20	

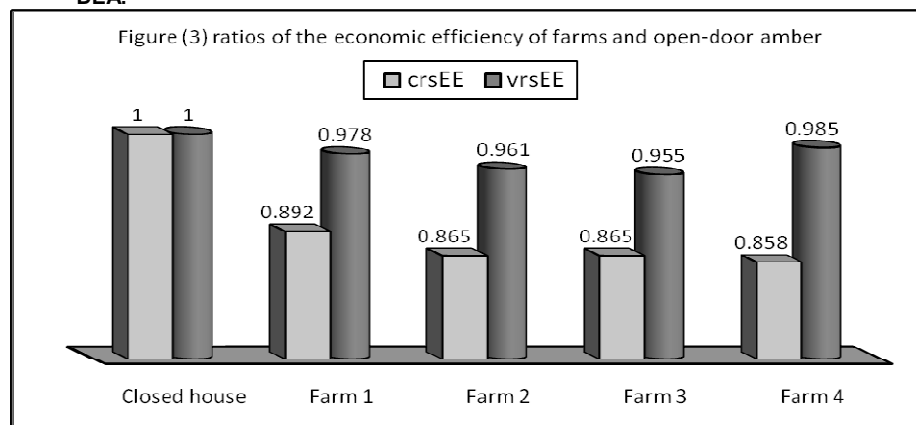
crsEE = Economic efficiency from constant return to scale

vrEE = Technical efficiency from variable return to scale

scale= scale efficiency = crsEE / vrEE

There is a possibility of an increase in production under the user's input to the study of the open farms

Source: compiled and calculated from the results of the method of data analysis of coated DEA.



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تأثير نظم إنتاج دجاج اللحم بالمزارع المفتوحة والمغلقة علي الكفاءة الإنتاجية والإقتصادية

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اعتمدت هذه الدراسة في تحقيق أهدافها علي إنشاء عنبر مغلق لإنتاج دجاج التسمين بمحطة التجارب والبحوث الزراعية بالمعهد العالي للتعاون الزراعي الواقعة عند الكيلو ٦٢ طريق مصر الإسكندرية الصحراوي ، سعة ستة آلاف طائر مقام علي مساحة ٣٠٠ م^٢ صافي من الداخل وتم تربية كذاكيت التسمين عمر يوم من سلالة الهيرد وتم جمع البيانات أثناء التجربة وكذلك البيانات الاقتصادية الخاصة بالتكاليف والإيرادات والأهمية النسبية لبنود التكاليف والإيرادات ومؤشرات الكفاءة الاقتصادية لدورة واحدة ، وتم جمع البيانات من بعض المزارع المفتوحة لإنتاج دجاج التسمين بقرية برما مركز طنطا بمحافظة الغربية لعدد أربع مزارع مفتوحة بكل مزرعة ثلاثة عنابر سعة كل عنبر الفعلية ٤٠٠٠ طائر / دورة من سلالة الهيرد وأن مساحة العنبر تتراوح بين ٥٠٠ - ٦٠٠ م^٢ من خلال استمارة استبيان صممت خصيصاً للبيانات الإنتاجية والاقتصادية السابقة ، واستخدام المنهج الحدودي (منهجية فاريل 1957 Farrell Approach) وهي منهجية محددة غير قياسية The Deterministic Non-Parametric Approach لاستخلاص معايير الكفاءة الإنتاجية والإقتصادية للمزارع المغلقة والمفتوحة بطريقة تحليل مغلف البيانات تبعاً لمنهجية Farrell (1957) وهي منهجية حدودية محددة غير قياسية The Deterministic Non-Parametric Approach ويستخدم أسلوب البرمجة الرياضية للوصول إلي معايير الكفاءات وقد تم الاستعانة ببيانات التكاليف الثابتة والمتغيرة كمدخلات Inputs وقيمة الإنتاج كمخرجات Output للألف دجاجة من سلالة الهيرد المتخصصة لإنتاج اللحم وقد توصلت الدراسة إلي :

- ١ - أن تربية دجاج التسمين (اللحم) لا بد أن تتم داخل العنابر المغلقة وتحويل العنابر المفتوحة إلي مغلقة بأسرع وقت ممكن والمزارع المفتوحة التي لا تتحول إلي مغلقة لا تحصل علي تصريح بالعمل وخاصةً المزارع المغلقة تحمي القطعان من الإصابة من مرض أنفلونزا الطيور .
- ٢ - المزارع المغلقة الكفاءة الإنتاجية أفضل من المزارع المفتوحة حيث بلغ معامل التحويل الغذائي (١,٦١ - ١,٩٣) ، متوسط الوزن الحي / جم (٢٠٠٩ - ١٧٤٩) وعدد الطيور / م^٢ (٢٠ - ٧,٢٧) ومدة التسمين / يوم (٣٥ - ٤٣) ومعامل كفاءة الإنتاج (٣٦,٣٦ - ١٩٤,٢٣) لكل من العنبر المغلق والمزارع المفتوحة علي الترتيب .
- ٣ - العنبر المغلق ذو كفاءة تامة سواء من ناحية عائد سعة ثابت أو عائد سعة متغير وإقتصاديات حجم ثابتة ، كما لا يوجد فوائض أي زيادات في استخدام المدخلات ، بينما المزارع المفتوحة تتسم بنقص واضح في الكفاءة الاقتصادية في ظل عائد سعة ثابت أو متغير ، وكذلك من ناحية إقتصاديات الحجم ، وهم في مرحلة إقتصاديات حجم متزايدة (Increasing Return to Scale (irs) .