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An Eeconomic Study for The production of Red Meat from Buffalo in Egypt

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Abstract: The research aims to financial and economic analysis of a buffalo meat project, In addition to estimating the net return from the project under study, which has a size of 50 heads. by estimating the discounted measures, it was found that the current value of costs was estimated by 6402 thousand LE., the net present value of revenue was estimated by 7735 thousand LE., and the value of the net present value, which was estimated by1333 thousand LE., which indicates the feasibility of investing in this project, It was also found that the value of the internal rate of return reaches 92.77%, which is higher than the opportunity cost of investing capital in society, which is represented by the commercial interest rate prevailing at the time of the study, which is 10%, which confirms the profitability of investment in this project. And by studying the sensitivity analysis by presenting two scenarios The first scenario is the increase in project costs, whether capital or operational costs, by about 10%. It appears that the discounted standards recorded low figures compared to before the increase in costs, but they were encouraging for investors. Where the net present value achieved by the project is still high and amounts to about 693 thousand pounds, while the Internal Rate of Return (IRR) value was about 40.79%. The index of the ratio of benefits to costs is 1.1. The second scenario is a 10% decrease in revenue: it was found that the discounted criteria recorded lower figures compared to before the decrease in revenues and were encouraging to the investor, Where the net present value achieved by the project is still high and amounts to about 560 thousand pounds, while the Internal Rate of Return (IRR) was estimated at 35.78%, and the ratio of benefits to costs was 1.1.
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Key words: Financial and economic evaluation, net present value, internal rate of return, economic return

The study Problem:

The problem of the study can be illustrated by the following questions:

- Is the project of producing red meat from buffalo a profitable and rewarding project?
- What is the economic feasibility of the project and what are the criteria and indicators used for the evaluation?
- Is the project beneficial to society or not?

The aim of the study:

The research aims to study the position of animal production and consumption in Egypt on red meat. Livestock production in Egypt faces severe shortages when compared to the increase in demand on red meat, especially beef and buffalo, it is required to bridge this gap in the expansion of animal production projects, whether they are fattening or breeding through:

- Study the economic return of fattening buffalo calves during the study period.
- Estimating the discounted standards for a buffalo calves fattening project during the study period.
- Study the sensitivity analysis by presenting different scenarios for the buffalo calves fattening project during the study period.

Data Sources:

The study depended on published and unpublished data; where used the statistics data issued by government agencies. The most important of which are the Ministry of Agriculture and Land Reclamation, and publications of the Central Agency for Public Mobilization and Statistics in addition to the technical rates available at the Animal Production Research Institute.

Research Method:

The research depended on some methods of descriptive and quantitative analysis in analyzing the data obtained, especially data on the development of livestock and Buffalo numbers in Egypt and Production and consumption of red meat. It also relied on the method of project evaluation to identify the economics of the red meat production project by calculating the net present value, the benefit / cost ratio, and internal rate of return.

The financial evaluation is carried out by determining profitability at the individual, institution or project level through some indicators called the financial evaluation criteria. In addition to the economic evaluation (measures the impact on national income or return on society).

1- Benefit / Cost Ratio

It is Means divided the present value of the inflows entering the project by the present value of the inflows coming out of the project. If the ratio is greater than one, the project is financially viable and vice versa. And the benefit / cost ratio is useful in prioritizing activities on the basis of their profitability as a prelude to choosing the most profitable activity.

Benefit / Cost Ratio = Present value of net revenue/Present value of net cost

2- Net Present Value:

Net present value refers to the difference between the present value of the cash inflows entering the project or activity and the present value of cash flows coming out of an activity or project. If the net present value is positive, then the project or activity is financially viable, (profitable).

Net present value = sum of the present values of revenue (returns) - sum of the present values of costs

3 - Payback Period

It is the period during which projects recover investment costs or the period when inflows and outflows are equal, It is clear from the calculation of the payback period that the project recovers its capital during a certain period of time after which it achieves a positive net profit. The preference is given to A project which is characterized by less recovery period, which is expressed mathematically as follows:

$$\text{payback period} = \frac{\text{total investment}}{\text{Average annual net cash flow}}$$

4- Internal Rate of Return (IRR):

The internal rate of return (IRR) standard is considered one of the most important standards for evaluation and comparison between activities within a single project or between different projects and the World Bank is currently using it in all types of financial and economic analysis.

IRR= the smaller discount rate +

$$\textbf{The difference between the two discount rate} \times \frac{\text{NPV of cash flow at smaller discount rate}}{\text{Sum of NPV of cash flow at the 2 discountsrates}}$$

The feasibility study fattening buffalo calves in Egypt are depended on several assumptions on, namely:

1- Fixed prices prevailing in the study during the life of the project.

2- The analyzes are based on the fact that the useful life of the project is estimated at 5 years.

3- The daily growth rate is 1.4 - 1.5 kg.

4- A single animal needs about 7 m^2 for subsistence + 3 m^2 for stores and services.

5- The project starts with about 20 wheels, increased by about 10 wheels, each cycle until the project reaches 50 wheels during the fourth cycle.

6- Animals are sold at a weight of 450 kg, at a price of one kilo (62 - 65) pounds.

7- The head is produced within 7-8 m^3 of the municipal fertilizer during the session, the price per cubic meter is from 200 to 300 pounds.

8- The 10% discount rate, which represents the expense of the best alternative opportunity available by investing capital in society during the year 2019, was used to estimate the future present value of both project revenue and costs.

9- The tables of the inflows entering, coming out and net cash flows were designed throughout the life of the project.

10- In light of what might be exposed to investment in the animal domain and the consequent increase in the costs, or the decrease in the return, and the increase in costs at the same time, the study depended on using the sensitivity analysis method to face these risks and measure the sensitivity of the project to them.

Results:

The ratio of the contribution of animal production to agricultural income:

It is clear from Table No. (1) that the value of animal production amounted to 77,382 million LE in 2010 out of the total value of agricultural production of 209,354 million LE. The value of animal production has increased until it reached about 170064 million LE in 2017 from the total value of agricultural production, which is 469202 million LE. Which declares that animal production contribution rate was represented about36.96% of the total agricultural output in 2010, it decreased to about 36.25% of the total agricultural output in 2017, with an average contribution of 35.85 % during the period (2010-2017).

Development of livestock and Buffalo numbers in Egypt:

Table No. (2) indicates that the number of livestock has fluctuated between a maximum limit of about 18.989 million head in 2012 and a minimum of about 17.255 million head in 2017, indicating a decrease in livestock numbers by about 9.13% compared to 2012, It was also found that the number

of buffaloes has fluctuated between a maximum limit of about 4.165 million head in 2012, 21.9% of the total number of livestock and a minimum of about 3.433 million head in 2017, or 19.9% of the total number of livestock, which indicates to the decrease in livestock numbers in 2017 by about 17.58% compared to 2012.

Table No. (1) Percentage of animal production contribution to agricultural production (at current prices) during the period (2010-2017)

Year	The value of Agricultural production (million LE)	The value of Animal production (million LE)	The percent of The value of Animal production
2010	209354	77382	36.96
2011	249989	84669	33.87
2012	267424	88970	33.27
2013	282434	97781	34.62
2014	305414	112181	36.73
2015	318332	119406	37.51
2016	356958	134055	37.55
2017	469202	170064	36.25
Mean	307388	110564	35.85

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics, Livestock Production Bulletins, Various issues

Table No. (2) Development of livestock and Buffalo numbers in Egypt During the period (2010-2017)

year	Total livestock numbers (million head)	Total number of buffalo (million heads)	%
2010	18.363	3.818	20.8
2011	18.523	3.983	21.5
2012	18.989	4.165	21.9
2013	18.53	3.915	21.1
2014	18.558	3.949	21.3
2015	18.247	3.702	20.3
2016	18.422	3.437	18.7
2017	17.255	3.433	19.9
Mean	18.360	3.800	20.7

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics, Animal Production Bulletins, various issues

The relative importance of meat buffalo production in Egypt:

Table No. (3) shows that Lower Egypt came first in terms of production of meat buffalo, where its production reached about 55.8% of the total production of the Republic, second followed in the Middle Egypt region As it reached about 20.7%, followed by third in the region of Upper Egypt, where its production amounted to 20.21%, while it came in the fourth and last rank outside the valley, where its production was estimated at about 3.8%, and that of total buffalo production in Egypt.

Table No. (3) Numbers and types of livestock in Egypt 2017

Territory	The total number of buffalo in million heads	The total number of livestock in a million head	%
Lower Egypt	1.92	8	55.98
Middle Egypt	0.71	3.4	20.70
Upper Egypt	0.69	3.9	20.12
Out of the valley	0.11	1.9	3.21
Total	3.43	17.2	100

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics, Livestock Production Bulletins, various issues

Self-sufficiency ratio of red meat:

Table (4) shows that the production of red meat in Egypt has started to fluctuate between a maximum of about 793 thousand tons in 2015 and a minimum of about 269 thousand tons in 2014. It is also clear from the table that the amount of imports of red meat has increased. From about 261 thousand tons in 2010 to about 615 thousand tons in 2015, it decreased again until it reached about 456 thousand tons in 2017, with an average estimate of about 373 thousand tons during the period (2010-2017).

The rate of self-sufficiency in meat was estimated at 75.19% in 2010, and it began to decrease, reaching 66.35% in 2017, at a rate of self-consumption estimated at 68.67% during the period (2010-2017).

Table No. (4) Production and consumption of red meat During the period (2010-2017)

year	Production (1000 Ton)	Exports (1000 Ton)	Imports (1000 Ton)	Available for consumption (1000 Ton)	Average per capita Kg/year	% Self-sufficiency
2010	791	0	261	1052	10	75.19
2011	787	0	240	1033	9	76.19
2012	788	0	309	1052	9	74.90
2013	780	0	338	1118	10	69.77
2014	769	1	388	1223	10	62.88
2015	793	0	615	1408	11	56.32
2016	791	3	373	1167	9	67.78
2017	792	1	412	1382	13	66.35
Average	802	0.63	373	1179	10	68.67

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics -Food Balance Bulletins - Various Issues - %Self-sufficiency = production/consumption *100

Production and consumption of buffalo meat and average share per capita:

Table No. (5) Shows that the production of buffalo meat at the level of the Republic ranged between a maximum of about 326 thousand tons in 2010, and a minimum of 305 thousand tons in 2016 with an annual average of about 318 thousand metric tons during the period (2010-2017).

While the remaining amount of human food from of buffalo meat ranged between 231 thousand tons as a maximum in 2010 and 221 thousand tons as a minimum in 2017, with an average amount of about 224 thousand tons during the period (2010-2017). Thus, the average per capita share of buffalo meat in the year decreased from about 2.9 kg / year in 2010 to about 2.3 kg / year in 2017, where the average per capita buffalo meat during the period from (2010-2017) was estimated at 2.6 kg / year.

Table No. (5) average per capita buffalo meat during The period from (2010-2017)

Year	Production (1000 Ton)	Exports (1000 Ton)	Imports (1000 Ton)	Available for human Consumption (1000 Ton)	The population In a thousand people	Average per capita Kg/year
2010	326	0	0	231	78728	2.9
2011	324	0	0	230	80410	2.9
2012	315	0	0	224	82550	2.7
2013	319	0	0	226	84629	2.7
2014	311	0	0	217	86814	2.5
2015	330	0	0	229	88958	2.6
2016	305	0	0	212	91023	2.3
2017	317	0	0	221	95203	2.3
Average	318	0	0	224	86039	2.6

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics - Food Balance Bulletins - Various Issues

Evolution of the actual capacity for feed cattle farms according to kind:

Table No. (6) Shows the development of the actual capacity of livestock fattening farms according

to the kind, as it was found from the table that buffalo production amounted to about 102.25 thousand heads in 2010 of the total production of buffalo and cows amounting to about 273.98 thousand tons, with a rate estimated at about 37.32% of the total farm production. It increased to reach about 128.07 thousand tons of buffalo in 2017 from the total production of buffalo and cows fattening farms, which amounted to about 376.71 thousand tons, with an estimated rate of 34% of the production of cows and buffalo fattening farms.

Table No (6) Evolution of the actual capacity for feed cattle farms according to kind during the period (2010-2017) ((by 1000 Head)

Year	Cows		Buffalo	Total	% of Buffalo production
	Baladi	Cross			
2010	108.75	62.98	102.25	273.98	37.32
2011	89.90	92.01	105.14	287.05	36.63
2012	82.96	102.06	110.78	295.80	37.45
2013	92.06	120.53	109.61	322.19	34.02
2014	97.52	118.61	114.53	330.65	34.64
2015	95.45	134.07	122.43	351.95	34.79
2016	85.75	138.41	117.07	341.23	34.31
2017	100.88	147.76	128.07	376.71	34.00
Average	94.16	114.55	113.73	322.44	35.27

Source: Ministry of Agriculture and Land Reclamation - Central Administration of Agricultural Economics - Food Balance Bulletins - Various Issues

Financial and economic evaluation of the buffalo calves fattening breeding project:

It is clear from the above how important the buffalo calves fattening farms are up to 400 - 450 kg weight and marketing these calves for consumption as meat animals, as the fertilizer produced from the farm is a secondary crop that is either sold or used to improve the soil in agriculture and in the event of the success of this project the number of fattening calves will increase In order to produce meat.

Below is a feasibility study for the project of fattening 50 buffalo calfs in Kafr El Sheikh Governorate, the amount of the invested capital is about 1.765 million pounds.

First: the investment costs of the project.

The investment costs (fixed costs) of the project include the value of the land purchased, the cost of utilities and infrastructure (electricity, water and electricity generators..... etc). It also includes the value of buildings, facilities, breeding pens, the value of machinery, equipment, and transportation. The investment costs also include the value of buffalo heads. Where it was found that the total costs of installations and machinery amounted to about 890 thousand pounds, distributed as follows: 456 thousand pounds, land costs of the project, 670 thousand pounds, costs of installations, 165 costs of equipment, 55 thousand pounds, costs of tools and equipment for the farm. Table No. (7)

Table No. (7) costs of the facilities and machines in a project In Kafr El-Sheikh Governorate in 2019

Cost Items	Value
Land cost of the project	456
Facility costs	600
Pipes and iron pipes costs	70
Total costs of facilities	670
Equipment costs	165
Tools and equipment for the farm	55
Total costs for facilities and machines	890

Source: Study sample data, buffalo calves fattening project, in Kafr El-Sheikh Governorate

While for the purchase of animals, animals are purchased at the age of two months and at a weight of (200 - 250) kg at a price of 63 pounds. The cost of buying the animals during the four project cycles where 20 buffalo calves were purchased in the first cycle of 19 females and one male with a total value estimated at 252 thousand LE, while the number of animals purchased in the second cycle was about 30 heads with a total value of about 378 thousand LE and at the beginning of the third cycle, the number of animals purchased was about 40 heads with a total value of about 504 thousand LE In the fourth cycle, the number of animals purchased was about 50 heads with a total value of about 630 thousand LE.

Table No. (8) The purchase price of animals in a 50-calf fattening project In Kafr El-Sheikh Governorate in 2019

The Cycle	Number of purchased animals	Number of dead animals	The value by 1000LE
First	20	1	252
Second	30	2	378
Third	40	2	504
Forth	50	3	630

Source: Study sample data, buffalo calves fattening project, in Kafr El-Sheikh Governorate, Average mortality rate of 5% for the cycle

The mortality rate was estimated for the cycle at about 5%. So, the number of dead animals ranges from one animal in the first cycle to about 3 animals by the end of the fourth cycle of the project. Table No. (8).

Second: Project operating costs:

The project operating costs include the costs of feeding mothers flock, fattened males, annals female, wages and salaries, whereby every 25 fattening animals need one worker, his monthly wage is about (2000) pounds, and the costs of medicines and veterinary services where the costs of veterinary care are estimated at 2,500 pounds per session (6 months). Electricity, water costs, maintenance of machinery and equipment, buildings and installations, and fuel and oil costs.

Table (9) Cost and Benefits Structure for Buffalo Meat Production Farms for 2019(1000 LE)

Items	The first cycle	The second cycle	The third cycle	The forth cycle	The fifth cycle	The sixth cycle	The seventh cycle	The eights cycle	The ninth cycle	The tenth cycle
Capitalist costs:										
The price of buying animals	252	378	504	630	630	630	630	630	630	630
Depreciation of facilities Machinery and equipment	22.25	22.25	22.25	22.25	22.25	22.25	22.25	22.25	22.25	22.25
Working capital	244.074									
Total For capital costs	518.324	400.25	526.25	652.25	652.25	652.25	652.25	652.25	652.25	652.25
Variable costs:										
feeding costs	196.074	294.111	392.148	490.185	490.185	490.185	490.185	490.185	490.185	490.185
Veterinary care costs	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Labor costs	48	48	48	48	48	48	48	48	48	48
Total variable costs	246.574	344.611	442.648	540.685	540.685	540.685	540.685	540.685	540.685	540.685
Total costs	764.898	744.861	968.898	1192.935	1192.935	1192.935	1192.935	1192.935	1192.935	1192.935
The return from the project										
From selling animals	567	850.5	1134	1417.5	1417.5	1417.5	1417.5	1417.5	1417.5	1417.5
From municipal fertilizers	37.5	56.25	75	93.75	93.75	93.75	93.75	93.75	93.75	93.75
Total returns	604.5	906.75	1209	1511.25	1511.25	1511.25	1511.25	1511.25	1511.25	1511.25
Net return	-160.398	161.889	240.102	318.315	318.315	318.315	318.315	318.315	318.315	318.315
Return on pound	0.790	1.217	1.248	1.267	1.267	1.267	1.267	1.267	1.267	1.267
Net return on the invested pound	-0.210	0.217	0.248	0.267	0.267	0.267	0.267	0.267	0.267	0.267
Return on one animal0	4.184	5.396	6.003	6.366	6.366	6.366	6.366	6.366	6.366	6.366

Source: Source: Study sample data, buffalo calves fattening project, in Kafr El-Sheikh Governorate

Table No. (9) showed that the variable costs during the project cycles, which were estimated as follows: The total variable costs for the first cycle were estimated at 246.574 thousand LE, as labor costs during the course reached about 48 thousand LE and the cost of veterinary care is about 2.5 thousand LE, which are fixed during the four cycles, while animal feeding costs estimated at 196.074 thousand LE in the first cycle. In the second cycle, the variable costs was estimated at 344.611 thousand pounds, while the cost of feeding was estimated at 294.111 thousand LE. While in the third cycle, the variable costs were estimated at 448.648 thousand LE and the feeding costs about 398.148 thousand pounds. Finally, the total variable costs for the fourth cycle were estimated at 540.685 thousand pounds, where the feeding costs represented about 490.185 thousand LE. The study assumed that the variable costs of the project Fixed from the fourth to the tenth cycle of the project, which was estimated at 540.685 thousand LE for the project. were proven from the fourth to the tenth session of the project, which was estimated at 540.685 thousand LE for the project.

Third: The expected return of the project:

By estimating the expected return from the project, it was found that the total expected return

from the sale of fattened animals and the return from municipal fertilizer is about 604.5 thousand LE, 906.750 thousand LE, 1209 thousand LE in the first, second and third cycle, respectively. The total expected return from the fourth to the tenth cycle was estimated at 1511,250 thousand LE. Table (9).

It was also found that the expected net return was estimated at 161,889 thousand pounds, 240.102 thousand LE during the second and third cycles, respectively. While, the expected net return for the project from the fourth cycle to the tenth session was estimated at 318.315 thousand LE.

Estimating the Financial and economic evaluation standards:

- **NPV standard:**

The net present value measure is the most common and used feasibility metrics for its accuracy and clarity, and this standard is based on deduction of cash inflows entering and coming out the basis of a specific discount rate that reflects the cost of the invested capital. Where it was found that the current value of the costs was estimated at about 6402 thousand LE and the net present value of the revenues was estimated at 7735 thousand LE and the value of the net present value, which was estimated at 1333 thousand pounds, which indicates the feasibility of investing in this project Table No. (10).

• Internal rate of return (IRR):

Table No. (10) Illustrated that the value of the internal rate of return reaches 92.77%, which is higher than the opportunity cost of investing capital in the community, which represents the prevailing commercial interest rate at the time of the study of 10%, which makes it profitable to invest in this project.

• Ratio of Current Benefits to Current Costs: Benefit / Cost Ratio:

Table No. (10) Calculating the net present value and internal rate of return for the project for fattening 50 heads of buffalo In a project in Kafr-El Sheikh

standards	Value
The present value of costs (1000 LE)	6402
The present value of revenue (1000 LE)	7735
Net present value NPV (1000LE)	1333
Internal rate of return IRR (%)	92.77%
Benefit /cost ratio B/C	1.2

Source: Computer results of the study data

This standard is aims to measure the relationship between the present value of expected returns from investment in the project and the present value of expected costs of investment over the life of the project. As it was found that the ratio of the current benefits to the current costs recorded a value of (1.2), that is, greater than the correct one, which indicates the feasibility of the project.

- **Payback Period**

It was clear from the calculation of the Payback Period that the project will recover its capital during the second cycle, i.e. at the end of the first year after which it will achieve positive net profit. Table No. (11)

Table No. (11) Calculating Payback Periodfor the fattening project of 50 heads of buffalo in Kafr El Sheikh Governorate

Item	First cycle	Second cycle
Expenses for the previous yea	0	-160
Current year expenses	764.898	744.861
Total expenses	764.898	584.861
Revenues	604.500	906.75
Decrease or increase (balance)	-160.398	321.889

Source: Computer results of the study data

A study of sensitivity analysis by presenting two scenarios for the project for fattening 50 heads of buffalo in a project in Kafr El Sheikh Governorate during the study period: There are a group of unexpected events that may affect the accuracy of forecasts and the project does not have an impact on them, such as the occurrence of unexpected changes in the prices of inputs and products, or project management, or change in the investment orientation, or the shelf life and degree of productivity of the project. The question now is what happens to the criteria that were calculated when total costs increased by 10% or when yields fell by 10%? Will the net present value be the same? Will the evidence of profitability remain the way it was? Will the internal rate of return for the project change? Therefore a sensitivity analysis of the project is carried out.

The first scenario assumed increase in costs 10%:

In the first scenario, it is assumed that the project costs, whether capital or operational costs, increase by about 10%, and by calculating the discounted standards, they recorded low numbers compared to what they were before the increase in costs, but they were encouraging for the investor, as the net present

value achieved by the project is still high and amounts to about 693 thousand pounds. While the value of the internal rate of return was estimated at 40.79%, and benefit to cost ratio was estimated at 1.1. Table No. (12)

The second scenario assumed decrease in revenue 10%:

In the second scenario, the project revenues are assumed to decrease by about 10%, and by calculating the discounted criteria, it recorded low numbers compared to before the decrease in revenues, but it was encouraging for the investor, as the net present value achieved by the project is still high and amounts to about 560 thousand pounds, while the value of the internal rate is estimated at 35.78%, and benefit to cost ratio was estimated at 1.1. Table No. (12)

Table No. (12) Calculating the net present value and internal rate of return for the fattening project of 50 heads of buffalo in Kafr El Sheikh Governorate

Standards	First scenario increase costs 10%	First scenario decrease Revenue 10%
The present value of costs (1000 LE)	7042	6402
The present value of revenue (1000 LE)	7735	6962
Net present value NPV (1000LE)	693	560
internal rate of return IRR (%)	%40.79	35.78%
Benefit to cost ratio B/C	1.1	1.1

Source: Computer results of the study data

Recommendations:

Therefore, the research recommends investing in buffalo fattening projects because of its great economic and environmental importance as it achieves rewarding profits for both the farmer (the investor) and the state. It can contribute to bridging the meat gap in Egypt.

References:

1. Ahmed Abdul-Rahim Zardaq, Muhammad Saeed Basyouni (Doctors), Principles of Economic Feasibility Studies, Faculty of Commerce, University of Banha, 2011.
2. Hamdi Abdel-Azim. "Economic feasibility studies and evaluation of projects", Dar El-Shorouk, Cairo, (1999).
3. Saad Zaki Nassar (Doctor) financial, economic and social evaluation of projects Cairo - 1978.
4. Ali Ibrahim Mohamed (Doctor) Economics of Sheep and Goat Production and Marketing in Egypt - The Egyptian Journal of Desert Sheep, Goat and Animal Science - First International Conference for the Development of Small Ruminants - (7-9) February 2006 Cairo - Volume 1 - First Issue 2006.
5. Animal Production Research Institute - Cattle and Buffalo Breeding Research Department - Results of breeding experiments - Unpublished data.
6. Animal Production Research Institute- Animal Nutrition Research Department - Results of laboratory experiments and research - unpublished data.
7. Muhammad Mazal Hamid (Doctor), A technical and economic feasibility study for the project of producing broiler meat in Anbar Governorate, Anbar University Journal for Economic and Administrative Sciences, Volume (4) No. (7), 2011.
8. Ministry of Agriculture and Land Reclamation - Central Administration for Agricultural Economics, Livestock Production Publications, various issues.
9. Ministry of Agriculture and Land Reclamation - Economic Affairs Sector - Food Balance Bulletins - Various Issues.
10. Ministry of Agriculture and Land Reclamation - Economic Affairs Sector - Agricultural Economics Publications, various issues.

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