

# Economics In Ewes' Gestation Termination In Maiduguri Abattoir, Borno State, Nigeria

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*Abstract: This study examined the economics of gestation termination in ewes in Maiduguri abattoir, Borno state, Nigeria. The specific objectives were to examine the magnitude of gestation termination in ewes, the chances of gestation termination in ewes, and the opportunity cost. The study utilized descriptive statistics in assessing the objectives of the study. The findings of the study indicated that total number of sheep encountered in Maiduguri abattoir between January to July 2015 was 15,620, while the number of ewes was 5,075 representing 32.49% of the total number of sheep encountered. The highest number of pregnant ewes (200 ewes) encountered was in the month of April corresponding to the highest number of ewes encountered in the abattoir within the period of the study. The probability of fetal losses among gestating ewes was 1.38, due to twinning rate and that for every ten sheep, slaughtered 3 were ewes and for every five ewes slaughtered one was pregnant with financial loss associated with fetal losses in ewes equivalent to ₦18, 463,111 (\$94,430.81) within the period of the study. The study therefore, recommends the need to create awareness through appropriate veterinary extension campaigns towards curtailing the slaughter of pregnant ewes. It further stresses the provision of ante mortem diagnostic facilities to ease the deterrence in the slaughter of pregnant ewes.*

*Keywords: economics, gestation, termination, ewes, Maiduguri, Nigeria*

## I. INTRODUCTION

The world food economy increasingly driven by shift of diets towards animal-based products such as meat, milk and dairy products, evidenced by the rapid increase in world per capita meat consumption from 41.3 kilograms in 2009 to 41.9 kilograms in 2010 (1). However, there is variation among different countries. For instance, people in the developing countries consume an average of 32 kilograms of meat per annum, compared to 80 kilograms per person in the industrial world. Nevertheless, the Food and Agriculture Organization (FAO) of the United Nations recommended that minimum intake of protein by an average person should be 65 g and 40% (26g) of which should come from animal sources per day (2). The animal protein consumption in Nigeria was 15 g instead of 26g per person per day (3), which was far from other advance countries. For example, China's animal protein consumption was about 23 kilograms; Canadians an average

of 65 kilograms and the US citizens consume 95 kilograms per person per day (2).

Nigeria is not only one of the largest meat producing countries in Africa but also one of the largest meat consumers in this part of the world (2). However, the major challenges facing the livestock industry is bridging the ever-increasing demand and supply gap for animal protein. Most diets in the country are deficient in animal protein. Despite its large number of livestock estimated at 19.5 million cattle, 72.5 million goats, 41.3 million sheep, 7.1 million pigs, 145 million chickens, contributing 6-8% of the National Gross Domestic Products (GDP) and 20-25% sub sector contribution to the Agricultural (4, 5). Regardless of the huge and robust population of the livestock enterprise, the gap between actual and expected protein intake among Nigerians continues to widen, as the annual growth rate in livestock production continues to decline (5).

Most, households in urban and rural Nigeria keep small ruminant animals like ewes primarily as an investment. In addition, ewes have always been of vital economic importance as producers of meat, milk, and financial security and in improving the nation's economy (6, 7) Others keep livestock for continues supply of animals protein products.

Slaughters of ewes for meat has become millenary tradition and serves as the foremost reason for maintaining ewe population to provide a nutritious and desirable form of food. Considering the need to keep increasing ewe meat supply to meet demand, an ideal livestock management demands that animals such as ewes for slaughter, should be mainly male and reproductively inactive female (8,9). Nevertheless, literature revealed considerable number of pregnant animals slaughtered in the Abattoirs, around the world (10, 11, 12). Similar, evidence reported by various studies in Nigeria includes (13, 14, 15, 16, 17, 18). These studies revealed cases of converting productive, clinically healthy animals to meat. This practice has remained unchecked for years and remains a major threat to future stock replacement (19). The negative effect on the nation's herd reproductive potential is enormous and the opportunity cost of continues termination of the conceptus for future stock cannot be overemphasized. This was attested by the huge opportunity cost involved, that averaged US\$290 000 as annual financial losses in the last five years (20). Moreover, the slaughter of pregnant ewes is likely to exacerbate the widening demand and supply gap in the provision of required sufficient animal protein to meet the needs of the populace. The economic cost involved is more than just productivity losses resulting from lack of appropriate methods to curtail such unethical practices. It also involves the threat to food security, given the fact that Borno state is one of the largest producers of livestock in the Nigeria. Understanding the economics in ewe gestation termination in Maiduguri abattoir will show the implication of the practice to the Nigerian economy. Hence the need to assess the economics in such practices in Maiduguri

## II. MATERIALS AND METHODS

### STUDY AREA

Maiduguri is the capital city of Borno state situated on latitude 11<sup>051</sup>'N, longitude 30<sup>050</sup>'E and an altitude of 354meters above sea level. Maiduguri falls within the Sahel region and has a very short wet period (3-4 months annually) with average rainfall of 645.9mm/ annum followed by long dry season of about 8-9 months starting from September/October to May/June. Daily environmental temperature could range from 23°C to 43°C with relative humidity of 45% during the peak of the wet season (August and dropping to as low as 5% in the drier season (December to January) such a climate condition is suitable for small ruminant production. Majority of the inhabitants are livestock and crop farmers, traders and civil servants. The major ethnic groups include Kanuri, Shuwa, Babur, Marghi, Fulani and Hausa (21)

## B. SOURCES OF DATA

Secondary data collected from Maiduguri abattoir was utilized for the analysis. The data recorded /obtained on ewes encountered in the month of January to July 2015 (All calculations were based on 2015 average official exchange rate of 195.52 Naira to a dollar) was utilized for the study.

## C. ANALYTICAL TECHNIQUES

The analytical techniques employed for the study was descriptive statistics.

### a. DESCRIPTIVE STATISTICS

Descriptive statistics such as mean, frequency distribution and percentages were employed to achieve the objectives of the study. The study used the (22) data to calculate the economic loss where:

$$OC = LLB \times LMR \times LRMW \times AMPE$$

Where:

OC = Opportunity cost

LLB = Live lambs born

LMR = Lamb mortality rate

LRMW = lamb raised to market weight

AMPE = average market price of ewe

## III. RESULTS AND DISCUSSION

The number of ewes and magnitude of gestation termination, and the monthly number of fetuses encountered were as presented in Table 1.

Month	Number of sheep encountered	Number of Rams encountered	Number of ewes encountered	% of number of ewes encountered
January	2018	1334	684	13.47
February	1783	1137	646	12.73
March	2059	1406	653	12.87
April	2373	1527	846	16.67
May	2524	1741	783	15.43
June	2584	1856	728	14.35
July	2279	1544	735	14.48
Total	15,620	10,545	5,075	100
Mean	2,231.4	1506.4	725	
Standard deviation	(291.14)	(243.46)	(72.13)	
Total revenue of sheep slaughtered				₦ 413,930,000 (\$2,117,072.42)
Total revenue of ewes slaughtered				₦ 134,487,500 (\$687,845.23)
Percentage of ewes among the sheep				32.49%
Average price of matured ewe for slaughter was				₦26, 500

Source: Authors compilation, 2017

Table 1: Number and magnitude of ewes encountered in Maiduguri abattoir

The result of analysis revealed that the total number of sheep encountered in Maiduguri abattoir between January to

July 2015 was 15,620, while the number of ewes was 5,075 representing 32.49% of the total number of sheep encountered. The number of fetal losses encountered through indiscriminate slaughter of pregnant ewes averaged 199 per month. The total revenue of ewes encountered in the abattoir within the period of the study estimated at ₦ 134,487,500 (\$687,845.23). This was not out of the range reported in literature in other parts of Nigeria including (24) in Gombe, Gombe state (7) in Minna, Niger state and (23) in Maiduguri, Borno state.

#### A. CHANCES OF GESTATION TERMINATION IN EWES

Probabilities are required to determine the chances of terminating gestation in ewes in the abattoir and the likelihood involved in the estimates were as presented in Table 2.

Month	Number of ewes encountered	% of number of ewes encountered	number of pregnant ewes encountered	Number of fetuses encountered	% of fetuses encountered
January	684	13.47	175	241	17.29
February	646	12.73	161	224	16.07
March	653	12.87	199	277	19.87
April	846	16.67	200	278	19.94
May	783	15.43	122	169	12.16
June	728	14.35	76	105	07.50
July	735	14.48	72	100	07.17
Total	5,075	100	1003	1394	100
Mean	725	14.29	143.29	199.14	
Standard deviation	(72.13)	(1.42)	(54.13)	(75.56)	

Probability of gestation termination among ewes 1.38

Chances of encounters

The probability of ewes encountered among the sheep 0.33

The probability of encountering pregnant ewe among the slaughtered ewes 0.20

Source: Authors compilation, 2017

Table 2: Monthly ewes' gestation termination probabilities

The study found that the highest number of pregnant ewes encountered was 200 in the month of April corresponding to the highest number of ewes encountered in the abattoir within the period of the study. The lowest number of fetal wastage encountered during the study period was 100 constituting 7.1 % of the total encounter. The chances probability of fetal losses among gestating ewes was  $\approx 1.4$ , this was because of higher twinning rate within the species. This result suggests that the chances were that for every ten sheep slaughtered, three were ewes and for every ten ewes slaughtered, two were pregnant in the Maiduguri abattoir during the study period. Furthermore, the result show there was a chance that every ten ewes slaughtered in the abattoir three fetuses were lost prematurely.

#### B. OPPORTUNITY COST OF TERMINATING GESTATION IN EWES

The opportunity cost involved in ewes' gestation termination estimated was as presented in Table 3.

Month	Monthly opportunity cost (₦)	Monthly opportunity cost (%)
January	3,191,972.7	17.29

February	2,966,812.8	16.07
March	3,668,781.9	19.87
April	3,682,026.6	19.94
May	2,238,354.3	12.12
June	1,390,693.5	07.53
July	1,324,470	07.17
Total	18,463,111.8	100

Source: Authors compilation, 2017

Table 3: Monthly opportunity cost in ewes' gestation termination in Maiduguri abattoir

The result of the analysis showed that the average peak gestation termination was recorded in the month of April (19.94%), that translates to huge economic losses of ₦3,682,026. This further suggest financial loss associated with fetal losses in ewes equivalent to ₦18, 463,111 (\$94,430.81) within the period of the study. Similar findings in literature include (7) that reported average financial loss of about ₦27, 458,060.00 (\$US 171,612.88) (from 581 lambs terminated) at the Minna slaughterhouse.

#### IV. CONCLUSION

The study found that the chance of ewes' gestation termination in Maiduguri abattoir was higher due to twinning rate and the financial losses encountered in the process was enormous. Therefore, the study recommends the following:

#### V. RECOMMENDATION

- ✓ There is the need to create awareness through appropriate veterinary extension campaigns towards curtailing the slaughter of pregnant ewes.
- ✓ There should be provision of ante mortem diagnostic facilities and training of abattoir staff to prevent the slaughter of pregnant ewes
- ✓ Private sectors should be encourage to participate in buying pregnant ewes that could be sold later and the lamb could be used to generate another flock for future sales
- ✓ The government should introduce revolving funds that could be used to buy pregnant ewes to encourage income generation and employment. These could be achieved through purchase of such ewes to sustain ewes flock, protein supply and income across the value chain.

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