

**NSAP****47th Annual
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SECURING ANIMAL
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GLOBAL CHALLENGES****FOETAL WASTAGES IN RUMINANT ANIMALS IN JOS NORTH MAIN ABATTOIR, PLATEAU STATE NIGERIA: A RETROSPECTIVE STUDY.*****D.U. Mmadu, **K. I Okeke-Agulu, ***O. Adedire, **G.C. Onuwa, *C. Nwadike****Department of Agricultural Technology, Federal College of Forestry, P.M.B. 2019, Jos Plateau State, Nigeria****Department of Agricultural Extension and Management, Federal College of Forestry, P.M.B. 2019, Jos Plateau State, Nigeria*****Department of Statistics, Federal College of Forestry, P.M.B. 2019, Jos Plateau State, Nigeria
Corresponding email: undavis@yahoo.com /mmadudave@gmail.com***Abstract**

There had been a dearth of information on the level of fetal wastages in slaughtered ruminants and the associated economic losses in West African countries other than Nigeria; this study evaluates the level of fetal wastages in cows and does slaughtered at Jos main abattoir, Plateau State, Nigeria. A total of 12,377 fetuses for both animals were wasted within six years studied (2015 – 2020). Most of the fetuses encountered in cows were in 2016 (1,012) followed by 2017(1,004). The year 2018 (764) had the lowest rate of fetal wastage, while in doe the highest fetal wastage recorded was in 2015 (1,452), followed by 2018 (1,214) and the year 2020 (1,021) had the least. Monthly fetal wastage increases in cows at the abattoir were in the months of March, February, April, and December, in which fetal wastage was 2923, 2 956, 2 960, and 3023, respectively, with the highest peak in January 3103 throughout the study period. The early rainy season (February- May) had the highest rate of fetal wastage, as well as the late dry season (December - January). More so in goats, monthly fetal wastage increases at the abattoir were the months of July, January, August, and September, in which fetal wastage was 8131, 8219, 8236, and 8262, respectively, with the highest peak in October 8293 throughout the study period. The results indicated a high level of slaughtering of pregnant cows in the abattoir studied. Therefore, concerted efforts like routine veterinary checks and interventions among trade animals are needed to reduce the high level of fetal wastage in the country. Also, livestock owners should be educated on the seasonal breeding patterns of cattle to avoid selling cows during the calving season.

Keywords: *Fetal wastages, ruminant animals, economic loss, Jos Main Abattoir, slaughter.***Introduction**

The United Nations in 2003 estimated Nigeria's population to be 124,009,000 making Nigeria the most populous country in Africa and one of the top ten most populous countries in the world. As a result of this huge population, there is a high demand for animal protein to meet the dietary protein requirements of the populace. Food animals play an important role in providing financial security for rural populations and in improving a nation's economy, especially in developing countries (Alhaji and Odetokun, 2013).

Nigeria's cattle, goat, and sheep populations were recently estimated at 19.2 million, 57.4 million, and 38.5 million, respectively (FAO 2014), with annual growth rates that are too low to satisfy the requirements of the increasing human population. The slaughter of pregnant animals for meat is unethical, and this practice frustrates the efforts of geneticists, nutritionists, and livestock breeders.

Because of limited veterinary and extension services in rural areas, farmers just sell animals without knowing their pregnancy status. Studies in many African countries show that many local ruminant animals slaughtered in different slaughterhouses are pregnant (Hassan *et al.*, 2016). This leads to fetal wastage, which otherwise would have increased the animal herds that ultimately increase the protein supply to the ever-increasing human populations in African countries like Nigeria. The attendant embryonic and fetal wastages due to this practice consequently query the efficiency of *antemortem* and the rationale for converting pregnant animals to beef, mutton, chevon, pork, offal, and other meat types. It also challenges the ethical or moral act of slaughtering pregnant animals in situations where there is no law supporting the practice.



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In many states of the federation, there are no modern abattoirs where proper antemortem examination of slaughtered animals is practised to eliminate the slaughtering of pregnant animals.

The aim of this study, therefore, is to determine the rate of foetal losses at the Jos main Abattoir, Plateau State, Nigeria for the period of 6 years (2015-2020), and some possible implications of these losses.

Materials and methods

Study area

The study was conducted in Jos North main abattoir, Plateau State, Nigeria. Jos is the State capital of Plateau, located at latitude 9° 55'00"N and longitude 8° 00'00"E of the mostly rocky formation. The annual rainfall is about 1500mm lasting between 6 and 7 months, with an average high-temperature of 34.5°C (94.1°F) and an average low-temperature of 19.5°C (67.1°F) (<https://www.weather-atlas.com/en/nigeria/jos-climate>). The geographical area is largely inhabited by people whose main occupation is subsistence agriculture, including the rearing of animals (ruminants). Others are artisans and civil servants.

Data processing and statistical analysis:

Primary data was collected from the abattoir authorities. The data were analyzed using mean statistics, and a Chi-square test was employed to test the association between foetal wastage across years, months, and seasons. These analyses were done according to the procedures in SPSS version 21.

Results and discussion

The result of this study showed that 22.98% and 15.60% of slaughtered cow and doe were pregnant in Jos main abattoir within the period under study, implying, for every four and six slaughtered cows and doe, one could be pregnant; this showed the extent of reproductive loss. The proportion of slaughtered pregnant cows varied considerably among countries; 38.7% in New Zealand (dairy cows) (Lawton *et al.*, 2000), and 23.5 % in the UK (dairy cows) and States; 2.6% in Kano (Bakari, 2016) and 40.70% in Lafia (Hassan *et al.*, 2016). However, the incidence of pregnant cows slaughtered in Jos main abattoir was higher in comparison with some countries' reports. Tables 1 and 2 show the annual incidence of foetal wastages in Jos main abattoir. A total of 5343 and 7034 foetuses were wasted within the six years. The majority of the foetuses encountered in cows were in 2016 (1012) followed by 2017 (1004). The year 2018 had the lowest rate of foetal wastage (764). In goats, most of the foetuses wasted were in 2015 (1452) followed by 2018 and 2016 (1214 and 1135), while the year 2020 had the lowest foetal wastage (1021). The possible reason for the peak in foetal wastages could be that often cattle are sold to meet up certain families financial demands such as children school requirements, house rent and some other domestic needs. This finding implies that 22.98% and 15.60% of the future productive herd was lost to this practice which would adversely affect the development of cattle and goat production in and around Plateau State, Nigeria. The higher percentage observed in this study could be associated with a lack of enforcement of legislation against the slaughtering of pregnant animals and possible sanctions.

The percentage of foetal wastage in cows 22.98% in this study was higher than 9.87% by Ardo *et al.* (2013) and 2.6% by Bakari (2016). The findings in this study also showed that one foetus was wasted for every four cows slaughtered. This ratio is higher than the findings of 1:14 by Fayemi *et al.* (2008) at four abattoirs in the Ogun State of Nigeria.

Table 1: Annual incidence of foetal wastage in cows slaughtered at Jos main Abattoir, Plateau State, Nigeria from 2015-2020

YEARS	TCTS	TBS	TCS	TFW	POFW (%)	TCS: TFW
2015	5532	1844	3688	984	26.68	4:1
2016	6042	1976	4066	1012	24.89	4:1
2017	5919	1874	4045	1004	24.82	4:1
2018	5901	2013	3888	764	19.65	5:1
2019	5735	1987	3748	811	21.64	5:1
2020	5704	1897	3807	768	20.17	5:1
X ²	88.95					
P value	0.00					
Total	34833	11591	23242	5343	22.98	4:1



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Keys: TCTS = Total number of Cattle slaughtered, TBS = Total bulls slaughtered, TCS = Total cows slaughtered; TFW= Total number of fetuses wasted, POFW=Percentage of foetal wastage.

Table 2: Annual incidence of foetal wastage in goats slaughtered at Jos main Abattoir, Plateau State, Nigeria from 2015-2020

YEARS	TGS	TBS	TDS	TFW	POFW (%)	TDS: TFW
2015	16393	7680	8713	1452	16.66	6:1
2016	16581	9376	7205	1135	15.75	6:1
2017	16680	8692	7988	1084	13.57	7:1
2018	16708	9356	7352	1214	16.51	6:1
2019	15859	8768	7091	1128	15.91	6:1
2020	14705	7987	6718	1021	15.20	7:1
Total	96926	51859	45067	7034	15.60	6:1

X² 504.73

P value 0.00

Keys: TGS = Total number of Goat slaughtered, TBS = Total bucks slaughtered, TDS = Total does slaughtered; TFW= Total number of fetuses wasted, POFW=Percentage of foetal wastage.

Tables 3 and 4 showed the monthly increase of slaughtered cows and doe at the abattoir. In cow, as shown in table 3, there was a fluctuation in wastages from the months of January-May with the highest peak in January and December (3103 and 3023) respectively. Table 4 revealed an increase from the month of June to October, with a peak in the month of October (8293).

The highest overall fetal wastages were observed during the dry season within the period under study. It should be kept in mind that seasonal slaughter patterns and trends may be affected to varying extents by circumstances such as occasions and festivities with no fixed annual dates (e.g. Eid), salary increases and improved living standards, as well as uncertainties and risks such as drought. Many authors have reported that most cattle sold for slaughter during the dry season were females (Alhaji and Odetokum, 2013). The rise in wastages in the month of January and December revealed the level of demand following Christmas and new festivities and ceremonies allowing the sales and slaughter of many animals including pregnant ones.

The results show that more goats were slaughtered than cattle at the abattoir hence more foetal losses. It is possible that the relatively small size and associated easier handling, ready availability, preference for taste and relatively lower costs may drive the preferential slaughter of goats over the cattle.

Table 3: Monthly Distribution of Foetal Wastage in Cow Slaughtered at Jos main Abattoir, Plateau State, Nigeria from 2015 - 2020

Months	15	16	17	18	19	20	Total	Mean	X ²	P value
Jan	504	566	512	534	503	484	3103	517	55.52	0.5
Feb	448	546	496	504	491	471	2956	493		
March	428	572	478	492	497	456	2923	487		
April	486	548	497	478	492	459	2960	493		
May	464	512	493	499	488	451	2907	485		
June	436	488	502	487	482	457	2852	475		
July	442	447	473	467	466	492	2787	465		
Aug	424	456	486	478	459	486	2788	465		
Sept	436	464	489	495	461	478	2823	471		
Oct	458	472	488	472	468	473	2831	472		
Nov	482	476	493	488	452	488	2879	480		
Dec	524	495	512	507	476	509	3023	504		
Total	5532	6042	5919	5901	5735	5704	34832	5805		



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Table 4: Monthly Distribution of Foetal Wastage in Goats Slaughtered at Jos main Abattoir, Plateau State, Nigeria from 2015 - 2020

Months	15	16	17	18	19	20	Total	Mean	X ²	PValue
Jan	1400	1423	1395	1403	1421	1177	8219	1370	427.41	0.00
Feb	1344	1408	1382	1396	1404	1012	7946	1342		
March	1362	1387	1377	1401	1367	986	7880	1313		
April	1376	1367	1391	1406	1383	1019	7942	1324		
May	1324	1371	1386	1397	1375	1061	7914	1319		
June	1367	1356	1376	1382	1366	1158	8005	1334		
July	1348	1373	1388	1367	1378	1277	8131	1355		
August	1354	1376	1384	1379	1369	1374	8236	1373		
Sept.	1346	1381	1384	1385	1372	1394	8262	1377		
October	1368	1365	1392	1377	1381	1410	8293	1382		
Nov.	1389	1378	1410	1396	1017	1416	8006	1334		
Dec	1415	1396	1415	1419	1026	1421	8092	1349		
Total	16393	16581	16680	16708	15859	14705	96926	16154		

Key: 15-20 means 2015 – 2020

Conclusions

The results of this study showed that the fetal wastages were quite alarming and seasonality is a major factor in determining slaughter patterns of pregnant ruminants. Efforts should be geared towards instituting routine veterinary checks including pregnancy diagnosis at various animal control posts and abattoirs, a change in the current animal management practices and enforcement of laws guiding against the indiscriminate slaughter of pregnant ruminants at Nigerian abattoirs. In addition, adequate infrastructural facilities including ultra-scanners that will ensure adequate pregnancy diagnosis should be provided to aid quick detection of pregnant animals during an inspection.

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