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Prevalence of Foetal Wastage in Jalingo Abattoir: A Retrospective Study**^{1*}Uko, I. B., ¹Obialigwe, T. F., ¹Nyifi, S. A., ²Ekechukwu, K. C. and ³Tanimu, E.**¹Department of Animal Production and Health, Federal University, Wukari, Taraba State, Nigeria²Lagam Foods and Farms, Asaba, Delta State, Nigeria³Department of Animal Health and Production Technology, Federal College of Agricultural Produce Technology, Kano, Nigeria* Author for Correspondence: uko@fuwukari.edu.ng**ABSTRACT**

Indiscriminate slaughter of pregnant animals in the abattoir often results to wastage of foetuses. This study investigated the prevalence of foetal wastage in Jalingo abattoir. The study is an eleven years' retrospective study (2012 - 2022). The data for the study were obtained from the abattoir records for the study period. The study examined the number of cows slaughtered and the number of foetuses wasted in the abattoir as well as the seasonal variation in the prevalence of foetal wastage. Out of the total of 163,647 cattle slaughtered in the abattoir, 141,607 (86.5%) were cows. A total of 17,220 (12.2%) foetuses were wasted within the study period. About 6.4% of foetal wastages occurred in the dry season and 5.8% occurred in the rainy season. The study also found out that for every 8 cows slaughtered in the abattoir 1 foetus is wasted. It is recommended that pregnancy examination of cows should be carried out by experts such as veterinarians before slaughter and that farmers should use alternative means of feeding their animals such as hay as against the traditional grazing which often result to selling off even pregnant animals when there is scarcity of feed which has effect on cattle population in the study area.

Keywords: Abattoir; Cattle; Foetal Wastage; Prevalence; Jalingo**INTRODUCTION**

The rearing and killing of cattle have been a longstanding practice observed throughout various regions worldwide for thousands of years. According to Chidi *et al.* (2006), humans occupy the highest position in the biological food chain in terms of their consumption of meat. This serves as the primary rationale behind the establishment and continuation of these cultural practice. Cattle are one of the most significant livestock species in terms of meat and milk production, as well as capital value (Adebowale *et al.*, 2020). Cattle have a crucial role as a primary source of protein and serve as a significant contributor to the overall supply of animal protein (Addass *et al.*, 2011). According to the Food and Agriculture Organisation (FAO, 2014), Nigeria possesses a significant number of ruminant livestock resources, including cattle, sheep, and goats, estimated at 19.2 million, 38.5 million, and 57.4 million, respectively.

According to the United Nations Population Fund (2023), the predicted population of Nigeria in 2023 exceeded 223.8 million. Furthermore, it is anticipated that an increase in population will result in a proportional rise in the demand for meat as a vital protein source. Despite a marginal rise in livestock production in Nigeria and other developing countries, the ongoing issue of malnutrition and inadequate

consumption of nutritious animal protein persists. The current individual protein dietary intake is less than 9 kg, which is significantly lower than the FAO (2013) recommended threshold of 41.9 kg per person. This poses a significant public health concern, particularly for the younger population (Adebowale *et al.*, 2020).

Extensive study has been conducted globally on the significant issue of foetal wastage within slaughterhouses. Based on the systematic collection of data and surveys, the frequency of foetal wastage in abattoirs has been ascertained, revealing that it is a common phenomenon. Numerous studies have been conducted in various countries, such as Nigeria (Nwakpu and Osakwe, 2007; Cadmus and Adesokan, 2010; Alhaji, 2011; Awoyomi *et al.*, 2013; Alhaji *et al.*, 2015; Iliyasu *et al.*, 2015; Ngbede *et al.*, 2017; Raimi *et al.*, 2017; Adebowale *et al.*, 2020; Usman *et al.*, 2021; Zubair *et al.*, 2022), the Democratic Republic of the Congo (Mutwedu *et al.*, 2019), Ethiopia (Urga and Yohanis, 2021), and Algeria (Benaissa, *et al.*, 2016). To enhance the availability of nutritious animal protein, it is imperative to address the practise of slaughtering pregnant food animals in numerous developing countries (Maurer *et al.*, 2016). Foetal wastage has been primarily associated with substantial economic losses (More *et al.*, 2017).

Foetal wastage occurring in abattoirs can be attributed to various factors, such as indiscriminate slaughter of pregnant livestock (Fayemi and Muchenje, 2013), inadequate ante-mortem pregnancy screening methods (Urga *et al.*, 2021), advanced age and suboptimal body condition (Benaissa *et al.*, 2016), disease and stress (Adebowale *et al.*, 2020), leading to the production of low-quality meat (Iliyasu *et al.*, 2015). These factors contribute to a decline in the livestock population and low rates of herd replacement (Zubair *et al.*, 2022). Given these circumstances, the primary objective of this research was to determine the incidence of foetal wastage in cattle and examine any potential seasonal fluctuations seen during the duration of the eleven-year study period (2012 - 2022).

MATERIALS AND METHODS

Study Area

The research was carried out at Jalingo Abattoir, situated in Jalingo, the state capital of Taraba State. Jalingo is a municipality situated in the northeastern region of Nigeria, positioned at Latitude: 8° 53' 37.21" N and Longitude: 11° 21' 34.56" E. There exist two primary seasons, namely the dry season and the wet season. The dry season is normally observed to span from the month of November to March, whereas the rainy season is generally observed to occur from April to October. The Jalingo abattoir serves as the primary source of butchered meat for the entire population residing in the state capital. According to records, an average of 50 cattle are slaughtered daily.

Study Design

A retrospective study was designed and conducted using records taken from Jalingo abattoir, Taraba State. Data collected include total number of cattle slaughtered, number of cows and bulls slaughtered, and number of foetuses wasted over a period of eleven years from 2012 to 2022. Economic analysis of foetal wastage was done by multiplying the number of fetuses wasted over the period of the study by the estimated price of an adult cattle in the market and converted to Dollar using the current exchange rate of \$1 to N1,600.

Data Analysis

The data obtained were analysed using frequency, percentage and mean. The data were analysed with the aid of SPSS Version 25 (IBM Statistics). The results were presented in tables using frequency and percentage distribution. $P < 0.05$ were considered significant.

RESULTS AND DISCUSSION

The result in table 1 shows the number of cattle slaughtered, bulls and cows slaughtered, foetuses wasted, and the percentage of cows and foetus wasted in Jalingo abattoir in the period between 2012 – 2022. A total of 163,647 cattle were slaughtered in the abattoir between 2012 - 2022 with the year 2018 having the highest (19,630) and 2016 had the least (11,650) number of cattle slaughtered. The total number of cows slaughtered is 141,607 representing 86.5% of the total number of cattle slaughtered in the abattoir. This could be because cows are cheaper to buy than bulls (Obialigwe *et al.*, 2023) and possibly because cows in the study area produce more

female than males. This finding agrees with the findings of Adamu *et al.* (2022) and Zubair *et al.* (2022) in Sokoto and Hadeja abattoirs respectively. Ahmad *et al.* (2022) reported 64.28% in Kano Central abattoir. The finding also agrees with that of Uduak and Samuel (2014) who found out that 34.50% of cows and 65.50% of bulls were slaughtered in Abak slaughterhouse, Akwa Ibom which could be because more male animals are transported from the North to the South than females.

From the total number of cows slaughtered in the abattoir, 17,220 foetuses were wasted signifying about 12.2%. This is higher than the 4.07% reported by Usman *et al.* (2021) in a prospective study in Jalingo abattoir. The higher figure in this study could be because the study by Usman *et al.* (2014) was for a short period as compared to the present study and possibly because of poor data management by abattoir workers inflating the number in their record. Another prospective study by Ahemen *et al.* (2010) also found a prevalence of 4.58% of foetal wastage in Jalingo abattoir following their 4 months' data collection in the abattoir. Again, the short period covered in their study may be responsible for the lesser prevalence in the same abattoir. Other lower data has been reported in other parts of Nigeria such as 2.4% by Adeyemi *et al.* (2016) in Benue, 3.9% by Jiya *et al.* (2008) also in Benue, 3.8% by Adama *et al.* (2011) in Minna, 4.5% by Alhaji *et al.* (2015) in Minna and 4.5% by Dunka *et al.* (2017) in Jos. The prevalence in this study is lower than the 22.40% obtained by Uduak and Samuel (2014) in Abak slaughterhouse in Akwa Ibom state, 26% by Wosu (1988) in Enugu, 46.9% by Muhammad *et al.* (2008) in Gombe state, 18.4% by Atawalna *et al.* (2013) in Kumasi, Ghana. Adebowale *et al.* (2020) reported a prevalence of 12.6% in Ogun state.

Table 1 also present the ratio of cows slaughtered to the foetuses wasted in the abattoir. The overall ratio indicates that for every 8 cows slaughtered in the abattoir, 1 foetus is wasted. The ratio obtained is lower than 9:1 cow to foetus ratio reported by Oduguwa *et al.* (2013) and Zubair *et al.* (2022). This could be as result of lack of proper pregnancy diagnosis in the abattoir before slaughter.

Table 2 shows the seasonal variation of foetuses wasted in Jalingo abattoir. A total of 9,052 foetuses were wasted in the dry season with a prevalence of 6.4% and a mean of 822.9 foetuses per dry season of the year while 8,168 foetuses were wasted in the rainy season with a prevalence of 5.8% and a mean of 742.9 foetuses per rainy of the year. The mean of the total number of foetuses wasted in the dry and rainy seasons did not differ significantly ($p > 0.05$). This could be because farmers sell off even their pregnant animals due to scarcity of feed in the dry season. In Nigeria, herders moved from the North to the South during the dry season and return to the North during the rainy season, this could make them to sell off animals they suspect cannot withstand the stress of the journey irrespective of pregnancy status. This agrees with the finding of Zubair *et al.* (2022), Iliyasu *et al.* (2015) and disagrees with the finding of Uduak and Samuel (2014) who found out that more foetuses are wasted in the rainy season. The reason for the differences in the seasonal variation could be due to difference in the study location.

The economic losses over the eleven years' period of this study because of foetal wastage can be estimated as follows. A total of 17,220 foetues were wasted in Jalingo abattoir from 2012 – 2022. The current exchange rate of \$1 to N1,600 was applied. To estimate the economic losses, we estimate the cost price of an adult cattle to be between N180,000 and N 300,000 (\$112.5 – \$187.5). For the period of the study, the economic loss is estimated to be between N3,099,600,000 and N5,166,000,000 (\$1,937,250 and

\$3,228,750). This finding corroborate previous findings in Nigeria and other African nations regarding the significant economic losses linked to the slaughter of pregnant animals in abattoirs, which have been estimated to be in the millions of dollars annually (Ngbede et al., 2012; Alhaji and Odetokun, 2013; Awoyomi *et al.*, 2013; Uduak and Samuel, 2014; Nonga, 2015; Tamirat *et al.*, 2015; Adebowale *et al.*, 2020).

Table 1: Number of Cattle Slaughtered and Foetal Wastage in Jalingo Abattoir from 2012 - 2022

Years	Cattle Slaughtered	Cow slaughtered	Foetuses wasted	% cow slaughtered	% Prevalence of FW	CS:FW
2012	13670	11270	1586	82.4	14.1	7:1
2013	14196	11692	1391	82.4	11.9	8:1
2014	14968	12225	1190	81.7	9.7	10:1
2015	16148	14294	1255	88.5	8.8	11:1
2016	11650	10026	1032	86.1	10.3	10:1
2017	12124	10573	1323	87.2	12.5	8:1
2018	19630	17292	1678	88.1	9.7	10:1
2019	16931	15009	1784	88.6	11.9	8:1
2020	14846	13148	1730	88.5	13.2	8:1
2021	15445	13687	1671	88.6	12.2	8:1
2022	14039	12391	2580	88.3	20.8	5:1
Total	163647	141607	17220	86.5	12.2	8:1

CS: FW = Ratio of Cow slaughtered to foetuses wasted

Table 2: Seasonal Variation of Foetal Wastage

Years	Foetuses wasted in Dry Season	Foetuses wasted in Rainy Season	% Prevalence in dry season	% Prevalence in rainy season
2012	830	756	7.4	6.7
2013	661	730	5.7	6.2
2014	614	576	5.0	4.7
2015	644	611	4.5	4.3
2016	570	462	5.7	4.6
2017	629	694	5.9	6.6
2018	954	724	5.5	4.2
2019	927	857	6.2	5.7
2020	887	843	6.7	6.4
2021	875	796	6.4	5.8
2022	1461	1119	11.8	9
Total	9052	8168	6.4	5.8
Mean	822.9	742.5		

P > 0.05: Dry season (November to April): Rainy season (May to October)

Conclusion

The study found out that foetuses are wasted because of indiscriminate slaughtering of pregnant animals in the abattoir. This habit could result in decreased cattle population and attendant economic losses on the part of the farmers. The study also found out that for every 8 cows slaughtered in the abattoir 1 foetus is wasted. Foetal wastage in the abattoir results in great economic losses. More foetuses are wasted in the dry season than in the rainy season, therefore, farmers should use alternative means of feeding their animals such as hay as against the traditional grazing which often result to selling off even pregnant animals when there is scarcity

of feed which has effect on cattle population in the study area.

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Conflict of Interest

The authors declared that there is no conflict of interest.

Authors' Contributions

I.B.U., T.F.O., S.A.N., K.C.E, and E.T. conceived and planned the research. I.B.U. and T.F.O. carried out the data collection. I.B.U., T.F.O., S.A.N., K.C.E, and E.T.

planned and carried out the data sorting. I.B.U. and T.F.O. analysed the data. I.B.U., T.F.O., S.A.N., K.C.E, and E.T. contributed to the interpretation of the results. I.B.U. took the lead in writing the manuscript. All authors provided critical feedback and helped shape the research, analysis and manuscript.

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