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**Original article**

## **Bovine foetal wastage and its economic implication: a six-year (2003 – 2008) retrospective study in an abattoir in northwestern, Nigeria**

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### ABSTRACT

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Pregnancy wastage has been reported to account for about 20-25% of the fall in livestock production in Sub-Saharan Africa. In the light this fact, a six-year (2003 – 2008) retrospective study based on abattoir records was carried out to assess the magnitude of bovine foetal wastage and its economic implication in an abattoir in Kaduna metropolis. A total of 4867 fetuses were encountered during the six year period with an average of 811 fetuses wasted annually. Foetal wastage was observed to occur throughout the year with an increased occurrence (2890) in the first trimester i.e 59.38%. About 3148 (64.68%) of the wastage was encountered in the dry season (November – April) which coincides with the festive periods viz New year, Easter, Sallah and Christmas as well as the advent of the rainy season. Economic analysis of the magnitude of foetal wastage also indicated that about ₦28,390,833.3 - ₦40,558,333.3 (\$236,590.278 - \$337,986.11) is annually lost to foetal wastage. Full implementation of the legislations against the slaughtering of pregnant animals is advocated in addition to putting in place and strengthening of veterinary structures and services in the abattoirs across the country. Education of the butchers and farmers against slaughtering of pregnant animals and its economic implication is also advocated.

## 1. Introduction

Meat is an important source of proteins and the role ruminants especially cattle play as a source of this form of protein cannot be over emphasized (Idahor et al., 2009; Addass et al., 2010; Ibironke, 2010). Although, lack of adequate feed resources, poor nutrition, pest and disease, inadequate health care deliveries, as well as poor husbandry practices are reported to be major factors affecting supply of animals (Alade et al., 2011). The impact foetal wastage plays should not be underestimated.

The increasing human population is an indication that more cattle for the purpose of meat will be needed, but the destruction of cattle in the form of foetal wastage resulting from slaughter of pregnant cattle is a bane to achieving this much needed increase. Foetal wastage has been reported to account for about 20-25% of the fall in livestock production in sub-Saharan Africa (Chaudhari and Paul-Bokko, 2000). Despite reports from other parts of the country on the magnitude of foetal wastage (Idahor et al., 2009; Ibironke, 2010; Addass et al., 2010; Adama et al., 2011; Alhaji, 2011; Cadmus and Adesokan, 2011), the problem is yet to receive a meaningful attention from the agency responsible. Therefore, Nigeria with a cattle population of about 15 million and a growth rate of 0.8% (Ahemen and Zahraden, 2010) needs to urgently control this practice (foetal destruction) which is producing a negative effect on its livestock production and sector. This report is therefore intended to bring to light the magnitude of foetal wastage in an abattoir in Kaduna metropolis, Kaduna State, Nigeria over a six-year period. It also intends to assess the economic losses accrued from such foetal wastage.

## 2. Material and methods

### 2.1. Study design and location

A retrospective study was carried out using abattoir records for cases of foetal losses in cattle, over a period of six years from 1st January 2003 to 31st December, 2008. Data for the six year period (2003 to 2008) were obtained from the metropolitan abattoir in Kaduna State, Nigeria. The metropolitan abattoir is located in Tudun Wada area of Kaduna State. The abattoir is owned by the Kaduna State Government and managed by it the Ministry of Agriculture (Ngbede et al., 2012). The abattoir is the major source of meat for the populace of Kaduna North Local Government Area.

Kaduna State falls within latitude 09° 10' and 11° 30N and longitude 06° 10 and 09° E in the Northern Guinea Savannah zone. The area is characterized by three climatic seasons which consists of the cold dry season (November – February), hot-dry season (March – April) and the wet/rainy season (May – October) (Ayo et al., 1999). The annual rainfall peaks in the month of August with the average of 146 mm. The average humidity is highest in August with 75.6 mm/Hg and lowest at the months of December- January with 38.2 mm/Hg. The mean temperatures for the zone are 10.7<sup>0</sup>C and 38.75<sup>0</sup>C minimum and maximum respectively (Agbogou et al., 2006).

### 2.2. Statistical analysis

The data were analyzed and presented using descriptive statistics such as means, tables and charts. Economic analysis of losses accrued from foetal wastage was calculated as described by Bello et al. (2008).

## 3. Results

A total of 4867 foetus were encountered within the 6 year period studied. Majority of the foetuses encountered were in 2003 (1422) followed by 2004 (841). The year 2007 had the lowest rate of foetal wastage (545) (Table 1), also, number of cattle foetuses lost according to the trimester across the six year period (2003-2008) has been shown in Table 2.

On a monthly average across the 6 year period under study, majority of the foetal wastage occurred in the months of January (83), April (72), November (82) and December (174). Also more foetal wastage is encountered in the dry season (November - April) compared to the rainy season (May – October) (Fig. 1).

Majority of the fetuses encountered throughout the six-year period under study were in the first trimester i.e 2003 (821), 2004 (539), 2005 (378), 2006 (497), 2007 (325) and 2008 (420) followed by the second and third trimester. Financial loss over the six year period due to the wastage of 4867 fetuses when the cost of an adult cattle is between ₦35,000 – ₦50,000 (\$292 – \$417) is ₦170,345,000 – ₦243,350,000 (\$1,419,541.67 – \$2,027,916.67) estimated yearly loss over the six-year period is therefore valued at ₦28390833.3 - ₦40558333.3 (\$236590.278 - \$337986.11).

**Table 1**

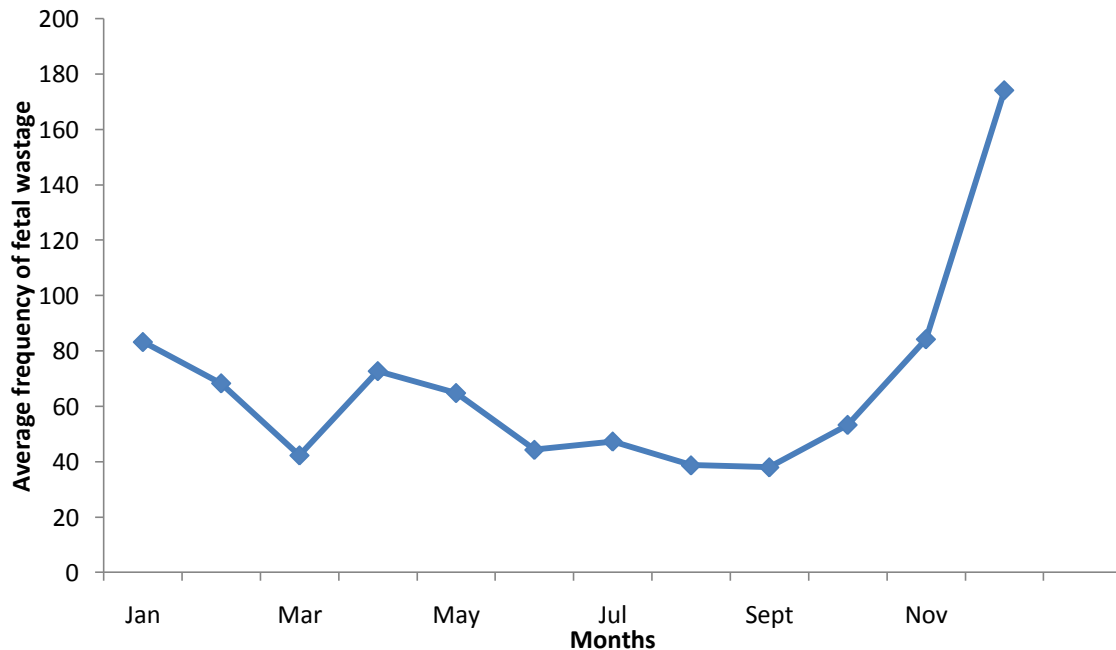
Distribution of fetal losses in cattle over a 6-year period (2003-2008) in the metropolitan abattoir Kaduna, Nigeria.

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Years</b>												
2003	44	56	28	55	50	12	17	60	42	51	253	754
2004	129	78	60	126	125	55	55	41	35	55	43	39
2005	50	55	30	120	39	39	60	28	35	55	43	55
2006	95	126	42	30	60	45	40	43	56	60	40	102
2007	126	39	39	50	60	60	56	0	0	60	0	55
2008	55	56	55	55	55	55	56	60	60	39	126	39
<b>Total</b>	<b>499</b>	<b>410</b>	<b>254</b>	<b>436</b>	<b>389</b>	<b>266</b>	<b>284</b>	<b>232</b>	<b>228</b>	<b>320</b>	<b>505</b>	<b>1044</b>
<b>Mean</b>	<b>83.2</b>	<b>68.3</b>	<b>42.3</b>	<b>72.7</b>	<b>64.8</b>	<b>44.3</b>	<b>47.3</b>	<b>38.7</b>	<b>38.0</b>	<b>53.3</b>	<b>84.2</b>	<b>174</b>

**Table 2**

Number of cattle fetuses lost according to the trimester across the six year period (2003-2008) in the metropolitan abattoir in Kaduna State, Nigeria.

Years	2003	2004	2005	2006	2007	2008	Total	Mean
<b>Trimesters</b>								
1 <sup>st</sup> Trimester	821	539	378	497	325	420	<b>2980</b>	<b>496.7</b>
2 <sup>nd</sup> Trimester	439	232	181	177	172	230	<b>1431</b>	<b>238.5</b>
3 <sup>rd</sup> Trimester	162	70	50	80	58	61	<b>481</b>	<b>80.2</b>



**Fig. 1.** Cumulative trend of fetal loss in cattle encountered in the abattoir across the 6 years (2003-2008) period in the metropolitan abattoir in Kaduna State, Nigeria.

#### **4. Discussion**

The findings of this study indicate that foetal wastage is still an ongoing problem across the abattoirs in Nigeria. The months of January, April, November and December had the highest occurrence of foetal wastages. These months coincide with the major festive periods in Nigeria viz: New Year, Easter, Sallah and Christmas festivals respectively. The month of April also coincides with the period of early rains (early raining season). These periods are characterized by increase demand for meat and meat products, therefore, more cattle are slaughtered during these periods to meet this demand (Ahemen and Zahraden, 2010). Also the month of April coincides with the advent of the rains which is characterized by farming activities and an increased demand for money for such activities. Majority of those who keep these animals are subsistence farmers, therefore they tend to dispose some of their belongings such as cattle in exchange for money which they use to purchase farm implements and inputs (Glatze, 2004, Adama et al., 2011). This is in agreement with the report of other worker in other parts of the country (Alhaji, 2011; Adama et al., 2011).

The loss of more foetuses between the months of November and April (Dry season) is also an indication that the reproductive efficiency of cattle in Nigeria follows a seasonal pattern i.e more conceptions occur during the rainy season. This is in agreement with the reports of Chaudhari and Paul-Bokko (2000). Reproduction is said to be a "luxury" and occur only when the body has adequate nutrition and enough to spare for this process. since there is abundance of food during the rainy season the cattle tend to become pregnant towards the end of the rainy season or early dry seasons so as to calve during the next rainy season when there is abundant food for them and their offspring. Thus, since more of the cattle are pregnant during the dry season there is tendency for more foetal wastage to occur during this season (Nwakpu and Osakwe, 2007).

The high number of foetal wastage encountered during the first trimester is also not surprising. This is because at this stage the pregnancy has not manifested visibly until the end of the first trimester or early second trimester. Therefore, the farmers may be ignorant of the pregnancy status of the animals at this stage and sell them.

The high volume of foetal wastage encountered poses a significant threat not only to meat and livestock production but also to the economy of the country. Based on the analysis about ₦28,390,833.3 - ₦40,558,333.3 (\$236,590.278 - \$337,986.11) is lost to foetal wastage yearly. This value is higher than that reported by Alhaji (2011). This variation is likely due to the difference in locality Kaduna State has a higher slaughtered rate compared to Nigeria State where he carried out his study. This is also higher than that reported for camels in Sokoto by Bello et al. (2008). The economic loss is too enormous to the country considering the present economic recession.

#### **5. Conclusion**

The study has brought to light the trend and economic loss associated with foetal wastage going on in abattoirs across Nigeria with special emphasis on Kaduna metropolitan abattoir. The study has also shown that foetal wastage occurs throughout the year but in greater magnitude during the dry season coinciding with the festive periods and advent of the rainy season, as well as during the first trimester of pregnancy.

The practice of foetal wastage due to the slaughter of pregnant cattle must be discouraged for the populace's demand for meat from cattle to be meet and maintained. To achieve this, the legislation against slaughter of pregnant animals must be implemented to the latter. Also the veterinary structures and services especially as it relates to ante-mortem examination in our abattoir must be put in place and strengthened. Educational campaigns towards behavioural change among the farmers and butchers towards the slaughter of pregnant animals need be carried out across the country.

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