Foetal Wastage and Disease Prevalence among Slaughtered Livestock in Maiduguri Abattoir

Mohammed, A*.,Modu-Kagu, H.A., Balami, S.I*, Abdulraheem, A.O., Raji, A.O. and Alfred, B
*Department of Animal Science, Borno State University P.M.B. 1122 Maiduguri, Borno State.
Department of Animal Science, University of Maiduguri P.M.B 1069 Maiduguri, Borno State Nigeria.
Corresponding Author: banayeyya@yahoo.com Phone number 08033413930

Abstract

The study was conducted to determine foetal wastage and disease prevalence among slaughtered livestock in Maiduguri Abattoir. Records were collected from the Management for the purpose of the study. These records include foetal wastage and record for some of the major diseases that affect the slaughtered animals which are tuberculosis, fascioliasis, pneumonia, contagious bovine pleuropneumonia (CBPP), foot and mouth disease, dermotophilosis, cirrhosis, abscess, nodular worm andtaeniasis. The overall mean values for contagious bovine pleuropneumonia (CBPP), pneumonia, tuberculosis, taeniasis, abscess, fascioliasis, nodular worm, dermotophilosisand cirrhosis were 5.10, 4.10, 11.32, 5.84, 3.34, 17.92, 7.04, 2.53 and 2.64 respectively. Fascioliasis had the highest overall mean value of 17.92 andDermotophilosis had the lowest overall mean value of 2.53. The effect of seasons on disease prevalence indicated that CBPP, Fascioliasis and nodular worm were significantly higher (P<0.05) in the dry season. The effect of species on foetal wastage showed that there was significant difference (P<0.05) in CBPP, Tuberculosis, Taeniasis, Fascioliasis and Cirrhosis between species. These variations of prevalence may be due to personal and environmental hygiene and poor management of animals. There was no significant difference (P>0.05) between the effect of season and species on foetal losses. The effect of month on foetal loses indicated that May had the highest percentage of foetal loses with 65% for goats, 59% for sheep, 54% for cattle and 36% for camel respectively while January had the least percentage of foetal loses with 10% for goats and sheep, 8% for cattle and 2% for camel respectively.

Keywords: Foetal wastage; Disease prevalence; slaughter; Records and Abattoir.

Dépérissement fœtal et prévalence des maladies parmi le bétail abattu à l'abattoir de Maiduguri

Résumé

L'étude a été menée pour déterminer la mortalité fœtale et la prévalence des maladies parmi le bétail abattu à l'abattoir de Maiduguri. Les dossiers ont été recueillis auprès de la direction aux fins de l'étude. Ces registres incluent le gaspillage fœtal et enregistrent certaines des principales maladies qui affectent les animaux abattus, à savoir la tuberculose, la fasciolose, la pneumonie, la péripneumonie contagieuse bovine (PPCB), la fièvre aphteuse, la dermotophilose, la cirrhose, les abcès, les vers nodulaires et le taeniasis. Les valeurs moyennes globales pour la péripneumonie contagieuse bovine (PPCB), la pneumonie, la tuberculose, le taeniasis, l'abcès, la fasciolose, le ver nodulaire, la dermotophilose et la cirrhose étaient respectivement de 5,10, 4,10, 11,32, 5,84, 3,34, 17,92, 7,04, 2,53 et 2,64. La fasciolase avait la valeur moyenne globale la plus élevée de 17,92 et la dermatophilose avait la valeur moyenne globale la plus basse de 2,53. L'effet des saisons sur la prévalence de la maladie a indiqué que la PPCB, la fasciolase et le ver nodulaire étaient significativement plus élevés (P<0,05) pendant la saison sèche. L'effet des espèces sur la perte fœtale a montré qu'il y avait une différence significative (P <0,05) dans la PPCB, la tuberculose, le taeniasis, la fasciolose et la cirrhose entre les espèces. Ces variations de prévalence peuvent être dues à l'hygiène personnelle et environnementale et à une mauvaise gestion des animaux. Il n'y avait pas de différence significative (P>0,05) entre l'effet de la saison et de l'espèce sur les pertes fœtales. L'effet du mois sur les pertes fœtales a indiqué que mai avait le pourcentage le plus élevé de pertes fœtales avec 65 % pour les chèvres, 59 % pour les moutons, 54 % pour les bovins et 36 % pour les chameaux

respectivement, tandis que janvier avait lepourcentage le plus faible de pertes fœtales avec 10 % pour les caprins et les ovins, 8 % pour les bovins et 2 % pour les chameaux respectivement.

Mots-clés : Déperdition fœtale ; prévalence de la maladie ; abattage; Registres et Abattoir.

Introduction

Livestock are one of the main sources of animal protein to the human populace. Animal protein plays a major role in ensuring good body defense mechanism as such its consumption by humans is absolutely necessary (Gillespie, 2003). It has been a well-established fact that animal protein is superior to vegetable protein due to its better balance amino acids (Devendra, 2001, and Gefu*et al.*, 2004). WHO (2000) reported that the primary objective of livestock production is meat and milk while skin may be taken as an important by-product and a major export earner. According to Mukasa*et al.* (2006) herd productivity can be affected by a range of disease problem and reproductive wastages. Livestock are very important assets and contributes to the nutritional status and economic growth of their owners. They are reared for several reasons but mostly for animal protein supply. The steady growth demand for meat accompanied by increase in its price has led to practice of slaughtering pregnant animals in most Nigerian Abattoirs (Craig, 1982 and Taiwo*et al.*, 2006). Most livestock farmers also sell off their animal without confirming the fertility due to poverty, illiteracy and disease condition of the animal (Toulin, 1986). Animals commonly slaughtered for meat in Nigeria are cattle, sheep, pig, camel, donkey, horses and other edible game and forest animal (Alabi, 2003).

The united nation (2019) has estimated Nigeria's population to be 206,139,589 people making Nigeria the most populace country in Africa and one of the top ten in the world. As a result of this huge population, there is high demand for animal protein to meet the dietary protein requirement of the populace. Meeting this high protein requirement is therefore a great challenge for a developing country like Nigeria. Meat from livestock slaughtered at the various Abattoirs in the country constitute the largest sources of animal protein for the Nigerian populace (Idahor*et al.*, 2009). There is however, a disturbing trend in the bid to provide meat for the consumption of human populace which involves the slaughter of pregnant females. The slaughter of pregnant animals for meat is unethical (Khan and Khan, 1998). The practice frustrates the effort of geneticists, nutritionists and livestock breeders and constitutes a drain on breeding animals thus widening the gap between animal protein sufficiency and the ever-increasing human population (Khan and Khan, 1998). In addition, the preponderant slaughter of gravid sheep, goat and cattle in the Sahel region results in wastage of unborn offspring and loss of reproductively active dams (Abassa and Tine, 1998; Cadmus and Adeskan, 2009). Moreover, the Sahel region is noted for short rainy season that result in scanty feeds for most of the year (Bokko and Ghaudhar, 2000; Bokko*et al.*, 2003). Grazing animal over wide areas in search of feed coupled with harsh climate force livestock to thrive at subsistence level. This further precipitates a continual reduction of livestock number in the region. Earlier report indicated that pregnancy wastage through slaughter of gravid dams ranged from 3.7 to 13.65% for sheep and 13 to 40% for goats. (Bourzai, 1980; Dumas, 1990; Wilson, 1992; Okoh, 1996).

Though, the slaughter figure returned from different Abattoir in the country have been questioned by some studies (Okoli *et al.*, 2006), the magnitude of errors in such data and their possible effect are however not known. Nevertheless, in Borno state thousands of food animal are slaughtered each year but there are no records of proper evaluation of the level of foetal wastage and disease prevalence among slaughtered animals. Therefore, the objective of the study is to determine the foetal wastage and disease prevalence among slaughtered livestock in Maiduguri Abattoir.

Material and Method

Description of the study area

The study was carried out in Maiduguri, the capital and largest urban centre in Borno state, Nigeria. It lies between latitude $11^{0}05$ N and $11^{0}40$ N and longitude $13^{0}05$ E and $13^{0}25$ E (Mbaya*et al.*, 2008). The state has a total area of 76,604.5sqkm and is the largest of 36 states in Nigeria in terms of land mass and has a human population of 4,151,193 based on

2006 census (NBS, 2011). It lies within the semi-arid zone of North-western Nigeria with a low rainfall of 3 – 4 months between late June and early October followed by a prolonged dry season. (Hess *et al.*, 1995). The state is bordered by three countries namely Niger, Chad and Cameroun and it is situated in the North east corner of the country and shares border with Adamawa, Gombe and Yobe (Mbaya*et al.*, 2008).

Data Collection

Maiduguri, central Abattoir was selected for this study and is under the supervision of Ministry of Animal and Forest Resources of the Borno State Government. Permission was obtained from the relevant authority. Records were collected from the Maiduguri Abattoir Management for the purpose of the study. This record included foetal wastage and disease prevalence among animals slaughtered livestock at the Abattoir.

Statistical Analysis

The data obtained were subjected to Analysis of variance with season and species as fixed factor, while significant means were separated by LSD.

Statistical Model

$$Y_{ijk} = \mu + A_i + B_j + e_{ijk}$$

Y_{ijk} = Individual observation based on the ijk classification

μ = Overall mean

A_i = Effects of species

B_j= Effect of season

E_{ijk} = Random error

Result and discussion

Effects of season and species on disease prevalence

The effects of season and species on disease prevalence of slaughtered livestock at the Maiduguri Abattoir is presented in Table one (1). The mean values of CBPP, *pneumonia*, T.B, *taeniasis,abscess, fascioliasis, nodular worm, dermatophilosis, cirrhosis* were 5.10, 4.10, 11.32, 5.84, 3.34, 17.93, 7.04, 2.53, 2.65 respectively. *Fascioliasis* had the highest prevalence rate followed by T.B while *dermatophilosis* had the least prevalence rate. *Fascioliasis* and T.B prevalence may be due to poor management of animal, personal and environmental hygiene, and management system. This is also in agreement with Anosike*et al.*, (2001) who reported that *fascioliasis* prevalence may be due to the poor management, seasonality, and difference in geographical location in relation to the bionomic of their snail intermediate host. The isolation of only *Fasciolagigantica* agrees with Shah-Fischer and Ralph-Say (1989) and Gboeloh (2012) that, it is exclusively tropical and predominate in Africa. While the trend of the occurrence of T.B may be due to the lack of proper management of animal against important zoonotic disease, failure to adopt the test and slaughter policy in Nigeria and the influx of infected animal from neighbouring countries due to porosity of our border (Aliyu*et al.*, 2009).

There is significant difference ($P<0.05$) in CBPP, *fascioliasis* and *nodular worm* between wet and dry season. While other disease prevalence had no significant difference ($P>0.05$) between dry and wet season. The continuous prevalence of the disease in Borno state can be attributed to poor vaccination coverage (Ameh*et al.*, 1998) lack of proper control of the continuous migration of cattle from the enzootic area of the neighbouring countries (Chad, Cameroun and Niger) and the insidious nature of the disease which hinder its early diagnosis (Egwu*et al.*, 1996). Generally, more cases occurred during the dry season than the wet season. This is in agreement with the observation made by Nwanta and Umoh (1992) who showed that more cases occur during the dry season when animal come in contact with health susceptibility to animal as they converge at river or drinking pool.

There is significant difference ($P<0.05$) in CBPP, T.B, *Taeniasis, Fascioliasis, Cirrhosis* between species while other disease prevalence such as *pneumonia, abscess, dermatophilosis* are not significantly different ($P>0.05$) among species. This variation of prevalence may be due to personal and environmental hygiene, poor management of animals. This prevalence can be attributed to poor vaccination coverage and failure to adopt the test and slaughter in Nigeria (Ameh*et al.*, 1995).

Effects of Season and Species on Foetal Losses

Table 2 showed the effect of season and species on foetal losses. There was no significant difference ($P>0.05$) between season. Though numerical values indicated that dry season had the highest number of foetal losses. The possible reasons for this could be attributed to farmers retaining the males for fattening against festivity (Okunlda, 1991) and also an indication that more animals were available for slaughter in the dry season than the wet season (Alade*et al.*, 2011). Nosignificant difference

(P>0.05) occurred between species, despite the difference in the numerical figureof foetal losses, this could be attributed to differences in the number of animals of different species available

Table 1: Effect of season and Species on disease prevalence

Parameters	No	CBPP	*Pneumonia*	T.B	*Taeniasis*	*Abscess*	*Fascioliasis*	*Nodular worm*	*Dermatophilus*	*Cirrhosis*
Grand mean		5.1042±0.99	4.1042±0.59	11.323±3.12	5.8437±1.44	3.3437±0.60	17.927±4.77	7.0401±1.27	2.5313±1.06	2.6458±0.59
Season										
Dry	16	6.8750±1.3137^{a}	4.3750±0.9477^{a}	10.813±3.4757^{a}	7.5625±1.8170^{a}	4.3125±0.9092^{a}	23.438±3.7899^{a}	10.000±1.6605^{a}	3.6875±0.7642^{a}	2.5000±0.9476^{a}
Wet	24	3.3333±1.0726^{b}	3.8333±0.7738^{a}	11.833±2.8379^{a}	4.1250±1.4835^{a}	4.8938±1.1561^{a}	12.417±3.0944^{b}	4.080±1.3874^{b}	1.3750±0.6240^{a}	2.7917±0.7737^{a}
Species										
Cattle	10	10.754±1.6703^{a}	4.8542±1.2050^{a}	36.298±4.4192^{a}	2.044±2.3102^{b}	4.8938±1.1561^{a}	62.302±4.8187^{a}	11.692±2.1115^{a}	5.4313±0.9717^{a}	1.7708±1.2047^{a}
Sheep	10	3.154±1.6703^{b}	4.9542±1.2050^{a}	3.098±4.4192^{b}	15.544±2.3102^{a}	2.2937±1.1561^{a}	3.102±4.8187^{b}	9.692±2.1115^{ab}	0.8312±0.9717^{a}	2.7708±1.2049^{b}
Goat	10	3.754±1.6703^{b}	3.6542±1.2050^{a}	4.898±4.4192^{b}	3.744±2.3102^{b}	1.7937±1.1561^{a}	2.902±4.8187^{b}	4.892±2.1115^{bc}	1.6313±0.9717^{a}	2.1708±1.2049^{b}
Camel	10	2.754±1.6703^{b}	2.9542±1.2050^{a}	0.998±4.4192^{b}	2.044±2.3102^{b}	4.3938±1.1561^{a}	3.402±4.8187^{b}	1.884±2.2172^{c}	2.2313±0.9713^{a}	3.8708±1.2049^{b}

Means with different superscript are significantly different ($P<0.05$)

Table 2: Effect of season and Species on foetal losses

Parameters	Slaughtered female	Foetal losses
Grand Mean		24.139
Season		
Dry	15,113	20.466±3.1817[a]
Wet	10,454	27.813±2.597[a]
Species		
Cattle	7954	20.480±4.0455[a]
Sheep	7492	26.434±4.045[a]
Goat	7721	25.145±4.045[a]
Camel	2794	20.494±4.0455[a]

Means with the same superscript are not significantly different (P>0.05).

for slaughter (Aladeet *al.*, 2011). This can be inferring that sheep (26.43) had the highest foetal losses followed by goat (25.145), cattle (24.480) and camel (20.49).

Effect of Month on Foetal Losses

Figure 1 shows the monthly trend in foetal losses at the Maiduguri Abattoir. Generally, losses for all species reached a peak at the month of May and is least in January. Goats had highest number of feotal losses in month of May (65%), followed by sheep (59%), cattle (54%) and camel (36%). All species i.e cattle, goat, sheep and camel recorded the least foetal loss in January with goat and sheep recording 10% each, cattle 8% and camel 2%. This show that the month of May is the month in which most of the foetal losses occurred in all species and coincided with the advent of the rain which is characterized by farming activities and increased demand for money for such activities. Majority of those who keep those animal are peasant farmers, therefore they tend to dispose some of their animal in exchange for money which they used to purchase farm implement and input (Ngbedeet *al.*, 2012) and it is in agreement with the report of (Chandhariet *al.*, 2000). It may also be an indication that the reproductive efficiency of livestock in Nigeria follows seasonal pattern i.e more conception occur during the rainy season (Idahoret *al.*, 2009). In addition, most livestock farmers sell off their animals without confirming the fertility stage due to poverty, illiteracy and disease condition of the animal (Toulmin, 1996).

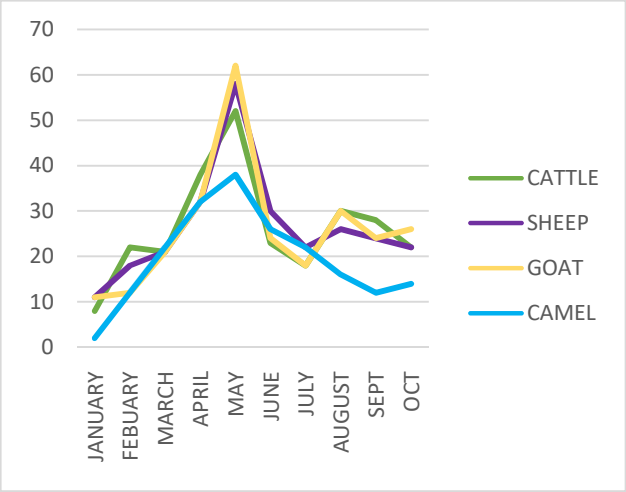

Figure 1. Monthly trend of foetal losses at the Maiduguri Abattoir.

Conclusion

This study revealed that foetal wastage and disease prevalence in Maiduguri Abattoir occurs throughout the year resulting in losses to livestock production industry and financial economy of the country in general. There is significant difference in CBPP, *fascioliasis* and *nodular worm* between dry and wet season, while other disease prevalence has no significant difference and *fascioliasis* has the highest overall means. CBPP, T.B, *taeniasis, fasciolosis*, *nodular worm* and *cirrhosis* has significant difference between species. Month has no effect on foetal losses and month of May have the highest foetal losses percentage while January has the least foetal loss.

Recommendation

To achieve high production and have a sustainable livestock industry capable of meeting the nutritional demands of Nigerians, remedial measures have to be taken to stop liquidation of pregnant female animals through slaughtering of pregnant animals and proper management of livestock against disease. This will only be feasible if: the government can come in with clear policy and legislation prohibiting the slaughter of any pregnant animal; proper anti and post-mortem inspections are conducted on every animal at the lairage before and after slaughter. Through this process, pregnant and diseased animals can be detected and stopped from being slaughtered. The extension agents should be used to educate the farmers and butchers on the danger posed by slaughtering pregnant, infected animals and the

benefits to be reaped thereafter if the animal is allowed to give birth to the foetus. This could be achieved through mass mobilization and enlightenment campaigns.

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