



Original Article

**Seasonal Variation in One Humped-Camel (*Camelus dromedarius*)
Foetal Wastage at Sokoto Abattoir, Sokoto State, Nigeria**

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ABSTRACT

The slaughter of camels at the Sokoto abattoir was evaluated over one year period from May 2009 to April 2010 with the aim of determining foetal wastage due to slaughter of pregnant camels. The total number of camels slaughtered during the period of study at the Sokoto abattoir was 3366 out of which 1625 were females and 113(7%) of these number were pregnant. In the study the highest wastage was observed in the month of April, followed by March and the least wastage was observed in the month of September and November. In relation to season it was observed that more female camels were slaughtered in the late dry season followed by early rainy season. However, the highest percentage of foetal wastage was in the early rainy season and least in the early dry season. It was observed that of the 113 foetuses, 35 (30.97%) were in the first trimester, 52 (46.02%) were in the second trimester while 26 (23.01%) were in the third trimester. Estimated financial losses over a ten year period through annual slaughter of 113 pregnant camels at Sokoto abattoir was eleven million two hundred thousand naira (N11,200,000). It was concluded that Government intervention in camel marketing remain essential particularly in the enforcement of policies relating to sales of pregnant camel for slaughter. Adequate ante-mortem inspection be intensified, literacy campaigns amongst butchers and farmers on the implication on slaughtering pregnant animals be intensified as effort to improve camel production in Nigeria.

Keywords: Seasonal variation, Foetal wastage, Camel, Abattoir.

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INTRODUCTION

The dromedary camels are pad-footed artidactyl domestic mammals belonging to the species *Camelus dromedaries* (Lawal *et al.*, 2007). They are important livestock species that adapted to hot and arid environments (Elzubeir *et al.*, 2006, Al-Dobaib, 2009). They are used for a variety of purposes(Ghazi *et al.*, 2008).Camels are traditionally used for transport and supplementing animal protein for human in terms of its milk and meat (Abubakar *et al.*, 2008). Camel milk is a very important source of nutrient for human(Ahmed *et al.*, 2010) and

used for curing some diseases (Hassan *et al.*, 2007; Alikhan and Alzohairi, 2011) Camels are increasingly gaining popularity in Africa and indeed Nigeria where they are used as a source of meat (Falope, 1991) and for transportation. Mohammed and Hoffmann (2006) estimated the population of camels in northern Nigeria as 74,360. About 60% of the 74,360 camels' were in the former Sokoto state. Foetal Wastage through the slaughter of pregnant females is probably one of the most destructive practices man has ever used against his own production endeavours (Abassa, 1995). Even though slaughter of pregnant animals is forbidden by law in nearly all countries of the world (ECA, 1988) the practice is still continued. A lot has been written on foetal wastages by different workers in Nigeria, with respect to camel (Ribadu, 1988; Ataja and Uko, 1994; Bello *et al.*, 2008), cattle (Oyekunle *et al.*, 1992; Ogundipe and Olaifa, 2000; Abdulkadir *et al.*, 2008), small ruminants (Ogwuegbu *et al.*, 1987). A huge financial loss is incurred annually as a result of result of destruction of thousands of fetuses at the abattoirs. ECA (1988) estimated the economic losses from slaughtering of 17000 pregnant cows in a single year in Nigeria over a ten year period to be about fourteen million US dollars (US \$14 million). Ribadu (1988) estimated a financial loss of six million, seventy five thousand (N6,075,000) over a ten year period from destruction of 4,500 camel fetuses annually at Kano abattoir. Umaru (1997) reported an estimated annual loss of eight hundred and twenty eight thousand naira (N828,000) from Sokoto abattoir. Similar projection was made by Bello *et al.* (2008) of about ten million naira (N10,000,000) for destruction of 341 fetuses in a year in the same abattoir. Even though a lot had been written on foetal wastage still the problem is persisting. Therefore this work was carried out to quantify the magnitude of wastages of camel foetus at Sokoto abattoir across different seasons.

MATERIALS AND METHODS

Sample Collection and Analysis

From May 2009 to April 2010 a total of 113 camel fetuses were collected on a daily visit from slaughtered pregnant camel dams at Sokoto abattoir for this study. The fetuses were collected immediately after slaughter from the uteri of the slaughtered dams. They were properly identified as male or female fetuses by physical examination of their genitalia and data were compiled and analyzed using proportional (percentage). Economic loss was estimated as described by Ribadu (1988).

Foetal Age Estimation

The age of the fetuses were estimated using a formula ($GA = (CVR + 23.99)/0.366$) as described by Elwishy *et al.* (1981).

RESULTS

Number of camels slaughtered

A total of 3366 camels were slaughtered between May 2009 to April 2010 in the Sokoto abattoir out of which 1741(51.72%) were males and 1625 (48.25%) were females (Table 1).

Number of pregnancy

Of the 1625 female camels examined 113 (13.42%) were pregnant when slaughtered (Table 1).

Foetuses recovered and their sexes

Out of the 113 fetuses recovered 120 (55.05%) were males, 85 (38.99%) were females, while 13 (5.96%) their sexes were not recognized (Table 2).

Table 1: Number of Camels slaughtered at Sokoto metropolitan abattoir between May 2009 to April 2010

Month	Number of Camels slaughtered		
	Male	Female	Total
May	119	131	250
June	135	131	266
July	124	98	222
August	147	111	258
September	148	111	259
October	178	103	281
November	186	94	280
December	141	130	271
January	158	163	321
February	133	153	286
March	133	204	337
April	139	196	335
Total	1741 (51.72%)	1625 (48.25%)	3366 (100%)

Table 2: Total number of foetuses recovered from pregnant female camels slaughtered at Sokoto abattoir between May 2009 and April 2010

Month	Male	Female	Sex not determined	Total
May	4	6	1	11
June	5	4	0	9
July	6	5	0	11
August	3	2	0	5
September	2	3	1	6
October	5	2	1	8
November	2	4	0	6
December	4	2	0	6
January	5	3	1	9
February	4	3	1	8
March	7	8	1	16
April	13	5	0	18
Total	60(53.05%)	47(41.70%)	6 (5.3%)	113(100%)

Stages of pregnancy

It was observed that out the 113 foetuses recovered 35(30.97%) were in first trimester, 52(46.02%) were in second trimester and 26(23.01%) were in third trimester (Table 3).

Table 3: First, second and third trimester fetuses recovered from female camels slaughtered at Sokoto abattoir between May 2009 and April 2010

Trimester	Number of fetuses Recovered	Percentage (%)
First	35	30.97
Second	52	46.02
Third	26	23.01
Total	113	100

Wastage across seasons

In the late dry season (January-March) 510 females were slaughtered out of which 65 (12.75%) were pregnant. In the early rainy season (April-June) 458 females were slaughtered and 71 (15.50%) were pregnant. In the late rainy season (July-September) 320 females were

slaughtered out of which 46 (14.50%) were pregnant. In the early dry season (October-December) 327 females were slaughtered out of which 36 (11.01%) were pregnant (Table 4).

Table 4: Foetal wastage across seasons among female camels slaughtered between May 2009 and April 2010

Season	Number of females	Number pregnant(%)
Late dry(January-March)	520	33 (6.30)
Early rainy(April-June)	458	38 (8.30)
Late rainy(July-September)	320	22(6.6)
Early dry(October-December)	327	20 (6.1)

DISCUSSION

The magnitude of the problem of pregnancy wastage in camel in Sokoto can be extrapolated from this study. The total number of camels slaughtered annually at the Sokoto abattoir was 3366 out of which 1625 were females and 7% of this number was pregnant. This number may not be that big but if you multiply it by the expected number from other abattoirs in the country especially Kano and Maiduguri where the slaughter is almost twice that of Sokoto (personal communication), the economic loss may be enormous. The number of pregnancy wastages in camel in this study is low compared to the previous reports of 49.64% in Kano abattoir (Ribadu, 1988), 23.99% (Bello *et al.*, 2008) in Sokoto abattoir and 34.2% in Maiduguri abattoir (Abubakar *et al.*, 2010). However, camel foetal wastages in this study were low compared to previous reports in other animal species: 50.9 % of cattle in Zaria (Ojo *et al.*, 1978), 22.1% of cattle in Cameroun (Ndi *et al.*, 1993). But the finding was higher than reported for cattle, 5.55% (Ogundipe and Olaifa, 2000), 3.9% (Abdulkadir *et al.*, 2008) and 5.01% (Cadmus and Adesokan, 2010). The most likely reason for lower number of wastages in the present study compared to some previous reports may be the increase in awareness that might have been enhanced by veterinary services and also awareness on the part of farmers. Lower number of wastage reported previously, compared to the present study, may be due to the fact that little or no camels were considered for meat in the past. With the current increase in the contribution of camel meat to the daily animal protein requirement (Agaie *et al.*, 1997), which could be responsible for slaughter of more camels, this figure has the tendency to increase as envisaged previously (Bello *et al.*, 2008). That the proportion of male camels slaughtered was found to be higher ($P>0.05$), than females. This finding is similar to that of Garba *et al.* (1992), Ndi *et al.* (1993) in cattle in Sokoto and Cameroun. The present study differed from the findings of Bello *et al.* (2008) in camel in Sokoto in which more females were found to be slaughtered than males. It was suggested to be due to higher demand of males for use in traction which translated into higher cost; such that butchers go for cheaper females in order to maximize profits.

In relation to season, it was observed that more females were slaughtered in the late dry season followed by early rainy season. However, the highest percentage of foetal wastage was in the early rainy season and least in the early dry season. The trend of females slaughtered in the late dry season was similar to the findings of Boeckm *et al.* (1974), Germen (1975), and Abdulkadir *et al.* (2008) in cattle. This trend was attributed to the fact that the periods were characterized by drought and hunger which exposed animals to poor nutrition and diseases. To forestall losses due such disasters, farmers sell their animals. Also cost of treatment against helminthes during early rainy season may be some of the reasons of selling their animals. Higher foetal wastage during early rainy season, followed by late rainy season was similar to the findings of Ojo *et al.* (1978) in cattle.

It was observed in the present study that there were more male foetuses recovered than female foetuses, although the difference was not statistically significant ($P>0.05$). The average sex ratio (male to female) of recovered foetuses in this study was 53.05% to 47.70%.

This varied from the observations of Shalash (1965), Ribadu (1988), Umaru (1997) and Bello *et al.* (2008) who obtained 47.48% to 52.52%, 47.2% to 52.8%, 47.48% to 52.52% and 47.76% to 52.24% male to female ratio, respectively. In this study, it was observed that of the 113 fetuses recovered, 30.97% were in the first trimester, 46.02% in the second trimester while 23.01% were in the third trimester. These suggested that most of the farmers were aware of the pregnancy of their animals before slaughter because 69.03% of the animals were in advanced stages of pregnancy (second and third trimesters), as such the pregnancy could easily be diagnosed without much difficulty.

In the present study, the results obtained showed an estimated financial loss over a ten year period by the slaughter of 113 pregnant camels at Sokoto abattoir in a year to be as high as eleven million two hundred thousand naira (N11,200,000). This estimate was lower than what was reported by Bello *et al.* (2008) which was N24,960,000, but higher than what Umaru (1997) reported which was N 828,000 in the slaughter of pregnant camels from the same abattoir. Similar projection of about N6,000,000 was made by Ribadu (1988) from the wastage of 4,500 camel fetuses in Kano abattoir. Furthermore, ECA (1988) estimated the economic losses from the slaughtering of 17,000 pregnant cows in a single year in Nigeria over a ten year period to be about fourteen million dollars (\$14,000,000).

CONCLUSION

The financial loss due to slaughter of pregnant camels nationwide is worrisome and this may likely continue so long as consumption of camel meat is on the increase. The Government intervention in camel marketing remains essential particularly in the enforcement of policies relating to sales of pregnant camel for slaughter. Adequate ante-mortem inspection be intensified, literacy campaigns amongst butchers and farmers on the implication on slaughtering pregnant animals also intensified as efforts towards improvement of camel production in Nigeria.

REFERENCE

- Abassa, K.P. 1995. Reproductive losses in small ruminants in Sub-Saharan Africa: A review. *Int. Liv. Cent. Afr.* (ILCA) Working document Addis Ababa, Ethiopia.
- Abdulkadir, U., E.Z. Jiya and S.A. Kosu. 2008. Survey of Foetal Wastages: A Case Study of Makurdi Abattoir in Benue State from 1997 to 2002. *Pakistan J. Nutr.*, 7: 450-452. DOI: 10.3923/pjn.2008.450.452 URL: <http://scialert.net/abstract/?doi=pjn.2008.450.452>.
- Abubakar, M.B., A.B. Sanda, A.D. EL-Yuguda and S.S. Baba. 2008. Seroprevalence of Morbillivirus Antibody and Abattoir Survey of One Humped Slaughtered Camels (*Camelus dromedarius*) in Maiduguri Municipal Abattoir Maiduguri, Nigeria. *Asian J. Sci. Res.* 1: 85-89. DOI: 10.3923/ajsr.2008.85.89 URL: <http://scialert.net/abstract/?doi=ajsr.2008.85.89>
- Abubakar, U.B., F.U. Mohammed, S.A. Shehu, and R.A. Mustapha. 2010. Foetal Wastage in Camels Slaughtered (*Camelus dromedarius*) at Maiduguri Abattoir, Borno State, Nigeria. *Int. J. Trop. Med.* 5(4):86-88.
- Agaiye, B.M., A.A. Magaji, and M.L. Sonfada. 1997. Slaughter of food animals in Sokoto metropolitan abattoir and meat availability in Sokoto. *Nigerian J. Bas. Appl. Sci.* 6:65-70.
- Alabi, O. 1993. Antimortem and postmortem inspection of food animal. Paper presented at a workshop on meat inspection held at the College of Agriculture and Animal Science, Mando Road, Kaduna, 23-30.
- Amjad, A.K. and M.A. Alzohairy. 2011. Hepatoprotective Effects of Camel Milk against CCl₄-induced Hepatotoxicity in Rats. *Asian J. Bioch.* 6: 171-180.
- Ataja, A.M. and O.J. Uko. 1994. Slaughter of the single-humped camel (*Camelus dromedarius*) for meat at the sokoto abattoir, Nigeria. *Nigerian J. Anim. Prod.* 21: 181-185.
- Bello, M.B., H.S. Garba, and M.L. Sonfada. 2008. Foetal wastages in camels slaughtered at Sokotomunicipal abattoir. *Sokoto J. Vet. Sci.* 7(1): 46-49.
- Boeckm, E., O. Bremand, R. Dumus, J.E. Ituhu, and R. Compare. 1974. Study of actual situation of livestock breeding in the countries of the sahel and preventive measures to be considered. Brussels, EEC.
- Cadmus, S. I. B. and H. K. Adesokan. 2010. Bovine foetal wastage in Southwestern

- Nigeria: a survey of some abattoirs. *Trop. Anim. Hlth Prod.* 42:619-621. DOI: 10.3923/ajb.2011.171.180, URL: <http://scialert.net/abstract/?doi=ajb.2011.171.180>
- Economic Commission for Africa. 1988. Technical Publication on sub-regional co-operation on prevention, reduction and elimination of losses and waste in the livestock of West Africa and Cameroun. Ouagadougou, Burkina Faso, pp:1-6.
- El-Zubeir, E.M. Ibtisam and E.M. Nour. 2006. Studies on Some Camel Management Practices and Constraints in Pre-urban Areas of Khartoum State, Sudan. *Int. J. Dair. Sci.* 1: 104-112. DOI: 10.3923/ijds.2006.104.112 URL: <http://scialert.net/abstract/?doi=ijds.2006.104.112>.
- Falope, O.O. 1991. Camel Trypanosomiasis in Nigeria, New prevalent rate. *Bull. Anim. Hlth Prod. Afri.* 39:1-2.
- Garba, H.S., W.A. Hassan, and B.T. Akingbemi. 1992. Foetal Wastage through slaughtering of pregnant cattle at the Sokoto abattoir. *Trop. Vet.* 10:123-126.
- Germen, D. 1975. Survey of livestock marketing and prices in Harare Province. Dire Dawa, Ethiopia.
- Ghazi, Y.A., A.A. Farghaly, Gh. Karima, M. Mahmoud and A.A. Ghazy. 2008. Preliminary Studies on Chromosomal Abnormalities and Sister Chromatid Exchanges Associated with Trypanosomiasis in Relation to Male Camel Fertility. *Asian J. Anim. Vet. Adv.* 3: 254-262. DOI: 10.3923/ajava.2008.254.262, URL: <http://scialert.net/abstract/?doi=ajava.2008.254.262>
- Lawal, M.D., I.G. Ameh and A. Ahmed. 2007. Some Ectoparasites of *Camelus dromedarius* in Sokoto. *Nigeria J. Ent.* 4: 143-148. DOI: 10.3923/je.2007.143.148, URL: <http://scialert.net/abstract/?doi=je.2007.143.148>
- Mohammed, I., and I. Hoffmann. 2006. Management of draught camels (*Camelus dromedarius*) in crop livestock production systems in Northwest Nigeria. *Liv. Res. Rur. Dev.* 18(1).
- Ndi, C., N.E. Tambi, and N.W. Agbharieh. 1993. Reducing calf wastage from slaughtering of pregnant cows in Cameroon. *Wrl. Anim. Rev.* 77: 38-43.
- Nwakpu, P.E. and I.I. Osakwe. 2007. Trends in volume and magnitude of foetal waste of slaughter animals (2000-2005) in Ebonyi State of Nigeria. *Res. J. Anim. Sci.* 1(1):30-35.
- Ogundipe, G.A.T., A.K. Olaiifa. 2000. The magnitude of Wastage and Socio-Economic Implications of the Slaughtering of Pregnant Cows for meat in Oyo State Nigeria. *Trop. Vet.* 18:55-63.
- Ogwuegbu, S.O., B.O. Oke, A.I.A. Osuagwuh, M.U. Akusu, and T.A. Aire. 1987. Preliminary survey on kid losses at a typical abattoir in Ibadan. *Abstract 12th Annual Conference of Nigerian Society of Animal Production.* p:71.
- Ojo, S.A., S.M. Dennis, and H.W. Leipold. 1978. Pregnancy in slaughtered cows in Zaria: Relation-ship to age, season, stage of gestation and carcass weight, *Nigerian Vet. J.* 7(1&2):9-15.
- Oyekunle, M.A., O.O. Olubanjo, and O.E. Fashina. 1992. Foetal Wastage in abattoirs and its implication; situation report from Ogun State, Nigeria. *Nigerian J. Anim. Prod.* 19:57-63.
- Ribadu, A.Y. 1988. Morphometric, Histologic and Pathologic studies of the genitalia of one-humped female camels (*Camelus dromedarius*) in Northern Nigeria MSc thesis Ahmadu Bello University, Zaria, Nigeria.
- Rihab, A.H., E.M. Ibtisam, E. Zubeir and S.A. Babiker. 2007. Effect of Pasteurization of Raw Camel Milk and Storage Temperature on the Chemical Composition of Fermented Camel Milk. *Int. J. Dair. Sci.* 2: 166-171. DOI:10.3923/ijds.2007.166.171 URL: <http://scialert.net/abstract/?doi=ijds.2007.166.171>
- Salma Kh. A., R. Haroun and M.O. Eisa. 2010. Banana Frozen Yoghurt from Camel Milk. *Pakistan J. Nutri.* 9:955-956. DOI: 10.3923/pjn.2010.955.956, URL: <http://scialert.net/abstract/?doi=pjn.2010.955.956>
- Shalash, M.R. 1965. Some reproductive aspects in the female camel. *Wrl. Rev. Anim. Prod.* 1(4):103-108.
- Soliman N. Al-Dobaib. 2009. Effect of Palm Oil Supplementation on the Milk Yield and Composition of Dromedary She-Camels. *Pakistan J. Nutri.* 8: 710-715. DOI:10.3923/pjn.2009.710.715. URL: <http://scialert.net/abstract/?doi=pjn.2009.710.715>.
- Umaru, M.A. 1997. Biometric, pathogenic, bacteriologic and foetal wastages studies on the female reproductive tract of the camel (*Camelus dromedarius*). M.Sc Thesis University of Ibadan, Nigeria.