

# **A review on cattle foetal wastage during slaughter and its impacts to the future cattle herds in Tanzania**

**H E Nonga**

*Department of Veterinary Medicine and Public Health, Faculty of Veterinary Medicine, Sokoine University of Agriculture,  
PO Box 3021, Chuo Kikuu,, Morogoro, Tanzania.  
[nongahezron@yahoo.co](mailto:nongahezron@yahoo.co)*

## **Abstract**

Indiscriminate slaughter of pregnant cows and heifers is rampant in many developing countries in particular those in sub Saharan Africa. This practice retards the livestock industry, it is against animal welfare and it ends up giving poor quality meat to the consumers. A review of the published and unpublished literature on the prevalence of slaughter of pregnant cows and heifers, foetal wastage and its likely impacts to the future cattle herds in Tanzania was performed. Eight articles and reports from six slaughterhouses in Tanzania were assessed and the results summarized.

It was observed that the prevalence of slaughter of pregnant cows and heifers ranged between 15.6 % for the cows and heifers slaughtered at Bukoba Municipal slaughterhouse and 46 % for the cows slaughtered at Dodoma Municipal abattoir. Slaughtered cow/heifer: pregnant cow/heifer ratio ranged from highest level of every two slaughtered cows/heifers, one was pregnant (ratio of 2:1) to lowest of every six slaughtered cows/heifers, one was pregnant (ratio of 6:1). The magnitude of foetal wastage due to slaughter of pregnant cows and heifers is huge in Tanzania that threatens the livestock industry and therefore undermines government efforts to increase food production. Moreover, the slaughter of pregnant cows disregards animal welfare legislation. Therefore, concerted efforts are necessary in order to reduce or halt the incidences of slaughtering pregnant cows and heifers in Tanzania.

**Key words:** *cattle population, cows, heifers, pregnancy, slaughterhouses*

## **Introduction**

Tanzania has the second highest cattle population in sub-Saharan Africa after Ethiopia and Sudan. The country has 21 million herds of cattle, which over 95% are known as Tanzania shorthorn zebu (TSHZ) (MLDF 2014). The animals are kept with less veterinary attention and the majority of them suffer from different infectious diseases. Endemicity of transboundary diseases such as Foot and Mouth disease has been an obstacle to export of meat, milk and other animal products (Kasanga et al 2012). Nevertheless, these traditional herds supplies more than 90 % of the beef and 75 % of the milk locally consumed in Tanzania, and account for 40 % of the 6.1 percent contribution of livestock industry to total GDP (Kurwijila et al 2009; Njombe et al 2009; Swai and Karimuribo 2011).

The TSHZ are of poor genetical potential and are kept under poor resource investment. Their body size is small which weighs up to 200 kg live weight for the adult female cattle and up to 300 kg for the bulls (MLFD 2010). The milk production is very low which sums to maximum of 3 litres per cow/day (MLFD 2010). Farmers who keep such animals usually use them as an asset, which are sold in case of need for money like school fees and other costs for children, in cases of sickness or any other problem that need a relatively high amount of money that warrant sell of cattle. Lack of breeding programmes contributes to over dependency on natural mating whereby bulls are left to extensively graze together with the cows and heifers. With such kind of management, it is difficult for a farmer to know which cows and heifers are pregnant. This gives a lot of unreliability on the calving period, such that sometimes the animal calves during the dry season with less supply of feed. As the result, calf mortalities are high of up to 60 % which is more exacerbated by tick-borne diseases in particular east coast fever (Kivaria 2006).

Selling of cattle to livestock market is a common practice to farmers for the purpose of getting income. To get good prices, farmers always select animals by visual assessment (eyeball judgement) looking on body size/well-nourished and fat animals and sell them to cattle traders in livestock markets. Because of limited veterinary and extension services in rural areas, farmers just sell animals without knowing their pregnancy status. The majority of cattle traders buy animals for slaughter and sell meat. Studies in many African countries show that many of the local cattle slaughtered in different slaughterhouses are pregnant (Zakari et al 1988; Zulu et al 2013; Nantongo et al 2013). This leads to foetal wastage which otherwise would have increased the cattle herds that ultimately increase the protein supply to the ever increasing human populations in African countries like Tanzania. This paper summarizes the results from eight different studies that report on the magnitude of slaughter of pregnant cattle in Tanzania. The results will provide important information which will help policy makers and regulators to strengthen the veterinary services especially in rural areas where majority of the cattle are kept.

## **Materials and methods**

The present review focuses on the literature of slaughter of pregnant cows and heifers from six slaughterhouses in Tanzania. Identification and collection of data was done through manual and electronic search in database published in peer reviewed journals, dissertations and other research reports.

Electronic databases included PubMed, EMBASE, Commonwealth Abstract Bulletin (CAB) and Medline database. Manual identification of unpublished literature sources, including unpublished project surveys, university theses, conference papers and public health organization reports was conducted at Sokoine University of Agriculture National Library. A review of the literature was carried out to collect: (i) data on slaughtered cows and heifers; (ii) data on prevalence of slaughter of pregnant cows and heifers; (iii) type of published data (prospective or retrospective); and (iv) period (duration) the data were collected. To identify relevant studies on slaughter of pregnant cows and heifers in Tanzania, the keyword combination words used in the search were: cattle or slaughter or pregnant or foetal wastage or Tanzania.

## **Results**

It was observed that the magnitude of foetal wastage because of slaughter of pregnant cows and heifers range from 15.6 % for the cows and heifers slaughtered at Bukoba Municipal slaughterhouse to 46 % for the cows and heifers slaughtered at Dodoma Municipal abattoir (Table 1). Compared to foetal wastage in other African countries (Table 2), the levels recorded in Tanzania are at the higher side. The majority of slaughtered animals in most of the slaughterhouses were bulls. However, in some cases like Bukoba and Tanga Municipal slaughterhouses, and Manyoni slaughter slab showed a high rate of slaughter of cows and heifers (Table 1). The slaughtered cows/heifers: pregnant cow/heifer ratio ranged from highest level of every two slaughtered cows and heifers, one could be pregnant (ratio of 2:1) to lowest level of every six slaughtered cows and heifers, one could be pregnant (ratio 6:1). Nevertheless, the two levels are high enough to show the extent of reproductive losses in slaughtered cows and heifers in Tanzania (Table 1).

**Table 1.** Magnitude of slaughter of pregnant cows and heifers at different slaughter places in Tanzania

<b>Slaughter places</b>	<b>Morogoro Municipal slaughterhouse</b>	<b>Arusha Municipal abattoir</b>	<b>Morogoro Municipal slaughterhouse</b>	<b>Tanga Municipal slaughterhouse</b>	<b>Tanga Municipal slaughterhouse</b>	<b>Bukoba Municipal slaughterhouse</b>	<b>Dodoma Municipal abattoir</b>	<b>Manyoni district slaughterhouse</b>
Study duration	Twice a month sampling for one year survey (1997 – 1998)	Three years survey (2005 - 2007)	One year survey (2010 – 2011)	One month survey (September 2013)	Three month survey (April - June, 2014)	One month survey (January, 2014)	One month survey (December, 2013)	One month survey (September 2014)
Type of study	Prospective	Retrospective	Prospective	Prospective	Prospective	Prospective	Prospective	Prospective
Total cattle slaughtered	nr	115 186	30 713	1 214	3 643	692	2 438	401
Total bulls / castrates slaughtered	nr	83 018	23 033	850	1 387	212	1 644	166
Total cows/ heifers slaughtered	402	32 168	7 680	364	2 256	480	794	235
% of cows/ heifers slaughtered	nr	27.9	25.0	30.0	61.9	69.4	32.6	58.6
No. of pregnant cows slaughtered	217	9874	1 823	147	655	75	365	63
% of pregnant cows/heifers slaughtered	54	30.7	23.7	40.5	29.1	15.6	46.0	26.8
Slaughtered cow /heifer: pregnant cows/heifers ratio	1.9	3.3	4.2	2.5	3.4	6.5	2.2	3.7
Annual foetal loss	nr	3291	1 823	1764	2620	900	4380	756
References	Assey et al (1998)	Mellau et al (2011)	Luwumba (2011)	Maro (2014)	Swai and Hyghaimo (2014)	Msafiri (2014)	Tembo and Nonga (2015)	Iloti (2015)

*nr: not recorded; na: not applicable*

**Table 2.** Magnitude of slaughter of pregnant cows and heifers in other selected African countries

Slaughterhouses	% of pregnant cows and heifers slaughtered	References
Younde, Cameroon	16.6	Tchoumboue (1984)
Maiduguri, Nigeria	23.3	Zakari et al (1988)
Enugu, Nigeria	2.6	Wosu (1988)
Faisalabad, Pakistan	8.6	Khan and Khan (1989)
Sokoto, Nigeria	9.5	Garba et al (1992)
Lafenwa & Ijebu-Igbo, Nigeria	14	Onyekunle et al (1992)
Bamenda, Cameroon	22.1	Ndi et al (1993)
Bameda & Younde, Cameroon	22.1 & 45	Ndi et al (1993)
Some abattoirs in Mali	15.5	Wilson et al (1998)
Ebonyi, Nigeria	9.2	Nwakpu and Osakwe (2007)
Ebonyi State, Nigeria.	9.2	Nwakpu and Osakwe (2007)
Ogun State, Nigeria	8.2	Fayemi et al (2008)
Doma, Nigeria	4.3	Idahor et al (2009)
Lagos, Nigeria	1.5 - 2.1	Ademola (2010)
Mubi, Adamawa Nigeria	1.3 - 1.6	Addas et al (2010)
Some abattoirs in southwestern Nigeria	5.01	Cadmus and Adesokan (2010)
Zaria, Nigeria	7	<i>Salami et al (2010)</i>
Mongu, Zambia	35.7	Zulu et al (2013)
Lafenwa, Nigeria	10.7	Oduguwa et al (2013)
Lafenwa, Nigeria	10.7	Oduguwa et al (2013)
Kumas, Ghana	18.4	Atawalna et al (2013)
Some abattoirs in Kampala, Uganda	31	Nantongo et al (2013)
Yola, Nigeria'	14.4	Ardo et al (2013)
Tamale, Ghana	6.8	<i>Jarikre et al (2014)</i>

## Discussion

Developing countries like Tanzania are overwhelmed by the increasing human population particularly in urban areas which need to go along with the protein supply of which the current output of livestock has not been able to provide. Cattle are the most dependable sources of animal proteins as it contributes more than 53 % of the consumed meat in Tanzania (MLFD 2011). Njombe and Msanga (2009) reported that in 1984, there were 12.5 million cattle while in 2006, there were 18.5 million cattle equivalent to about 2.7 % annual growth rate which is lower than the rate of human population growth (3.0 %) in Tanzania. In 2012, Tanzania had the cattle population of 21 400 889 (MLDF 2012) while the human population was 44.9 million (PHCT 2013). The increase in cattle population is at a retarded trend. Several factors may be considered which apart from many other factors like poor genetic potential, poor animal husbandry and livestock diseases; slaughter of pregnant cows and heifers also plays a big role (Table 1). The annual cattle slaughter rate in Tanzania is about 2.7 million cattle (FAOSTAT 2012; NBS 2012).

The current review work shows high rates (15.6 – 46 %) of slaughter of pregnant cows and heifers in different slaughterhouses in Tanzania (Table 1). The slaughtered

cows/heifers: pregnant cow/heifer ratio ranged from highest level of every two slaughtered cows/heifers, one could be pregnant (ratio of 2:1) to lowest level of every six slaughtered cows/heifers, one could be pregnant (ratio of 6:1) (Table 1). Calculations of the annual average of foetal wastage due to slaughter of pregnant cows and heifers ranged from 756 in small slaughter slabs like those in Manyoni Singida (Iloti 2015) to 3 291 – 4 380 in large abattoirs like Arusha and Dodoma (Mellau et al 2011; Tembo and Nonga 2015). The disparities in slaughter of pregnant animals may be due to the differences in the number of cattle slaughtered depending on the population of the consumers in the city or town where the abattoirs are located. The data (Table 1) show the extent of reproductive losses in slaughtered cows and heifers in Tanzania and is quite alarming. Efforts should be geared towards instituting routine veterinary checks including pregnancy diagnosis at farm level, livestock markets, cattle control posts and abattoirs. The levels of foetal wastage in Tanzania are similar to the findings by Ndi et al (1993) in Cameroon (22.1 & 45 %), Zulu et al (2013) in Zambia (35.7 %), Nantongo et al (2013) in Uganda (31 %) and Zakari et al (1988) in Nigeria (23.3%). However, the results of foetal wastage in Tanzania are higher compared to reports in several other countries as shown in Table 1 & 2. In general, percentages of foetal wastage for Tanzania are higher than any other African countries which have reported prevalence of slaughter of pregnant cows and heifers (Tables 1 & 2). Slaughter of pregnant cows that lead to foetal wastage in Tanzania could be contributed by many reasons that include:

Need for money by farmers which is accrued through selling of livestock to meet the household needs. During certain periods of the year especially in December, January and February, farmers sell many animals regardless of their reproductive status to get money for many needs including school fees, festivals, ceremonies and agricultural activities. However, so many other needs may arise at any time of which the only reliable dependable bank for a farmer is cattle herds. Indeed, the best choice of cattle to sell is the healthy animal with more weight and shining hair coat, so that the farmers can get good prices from the cattle traders. Unfortunately such animals if are cows and heifers majority of them are pregnant. In a study by Maro (2014), incidences of slaughter of pregnant cows and heifers was very high during December to March and the advanced reasons among others was plenty of pastures since that period of the year is during the rainy season which enhances cattle to breed more. Similar observation was also reported by Voh et al (1993); Taiwo et al (2011) and Zulu et al (2013).

The other possible reason for slaughter of pregnant cows and heifers is shortage of animal feed during the prolonged draught which has become a common phenomenon in recent days. During June to November, many places in Tanzania experience a period of dry season which sometimes becomes so harsh. Availability of pasture and

water sometimes becomes difficult and the farmers are obliged to sell as many animals as possible to minimize risks of losses due to mortality (Addass et al 2010). The sales of animals are always skewed to aged cows and less productive females in the extreme period to meet household cash needs (Atawalna et al 2013). Often than not, the sales at this period hardly consider the fertility status than survival of the herd. Studies have also shown that most cattle sold for slaughter during the dry seasons are adult females including the pregnant ones (Abdulkadir et al 2008; Addass et al 2010; Atawalna et al 2013; Zulu et al 2013; Maro 2014).

Presence of diseases in a location may be another factor for selling indiscriminately pregnant and non-pregnant animals. When outbreaks of livestock diseases occur, it forces farmers to start selling their animals regardless of their reproductive status. The selling is meant to minimize losses due to mortalities but also to get money that is used to meet veterinary costs. Many outbreaks of livestock diseases occur in Tanzania and are always associated with big losses to farmers (Kusiluka and Sudi 2003; Kasanga et al 2012). Studies by Oduguwa et al (2013) in Nigeria and Zulu et al (2013) in Zambia reported livestock diseases as among the major factors of selling pregnant cows and heifers for slaughter.

At the start of rainy season, pastoralists and agropastoralists in rural areas in Tanzania always suffer from shortage of food to meet the family requirements. At the same time, it is a time for cultivation of land to grow crops. The two events all together need a large amount of money which inevitably forces farmers to sell animals to traders and butchers. This is another reason that may accelerate slaughter of pregnant animals.

Lack of awareness on pregnant animals is also a problem since farmers have less knowledge on pregnancy diagnosis (Idahor et al 2009; Fayemi and Muchenje 2013; Zulu et al 2013). Traditional cattle keeping involve extensive grazing system whereby cows and heifers are always mixed with bulls and it is difficult for farmers to know when the animals are mated by bulls. Farmers in rural areas also don't keep any records of their livestock. This ends on selecting any animal for sale and increases the possibilities of slaughtering pregnant animals. Sometimes farmers may decide to cull the emaciated cows during dry season which in turn may be found to be pregnant after slaughter (Idahor et al 2009; Zulu et al 2013). To overcome this problem, farmers need to be educated on proper breeding and record keeping.

Furthermore, limited availability of veterinary and livestock extension services in rural areas of Tanzania is another reason for selling of pregnant cows and heifers for slaughter. Most of the cattle reared in Tanzania are under the traditional sector kept by the pastoralists and agropastoralists who live in remote rural areas whereby veterinary services are limited (MLFD 2010; Karimuribo et al 2013). According to Animal

Disease Act of 2003 in Tanzania, all animals for sell have to be examined for health and pregnancy by veterinarians or livestock extension officers before are taken to the livestock market (Tanzania Animal Diseases Act 2003). Again at the livestock market, all animals need to be further examined for health and pregnancy before are sent for slaughter. If veterinarians and livestock extension officers were available in all these set ups would have greatly minimized possibilities for sending pregnant animals at the slaughterhouses.

Lack of enforcement of legislation against slaughtering of pregnant cows in some wards, livestock markets and slaughterhouses where veterinary and livestock extension officers are available. In Tanzania, according to Animal Disease Act of 2003 and its Ante and Postmortem Inspection regulations of 2007 Section 6 (7); it is not allowed to slaughter cows that are pregnant and or any female animals (Tanzania Animal Diseases Act 2003). In some wards and livestock market, livestock extension officers are available and among their duties are to advice the farmers about animals to sell including examination for pregnancy to cows and heifers. Detection of foetuses in slaughter cows and heifers even to animals that come from farmers where the livestock extension officers are available indicates lack of enforcement of legislations. Nevertheless, even at the slaughterhouse levels, a veterinary officer or his representative is supposed to check all animals before slaughter and restrict slaughter of pregnant animals. Unfortunately, this is compounded with diseases control measures that do not allow animals to leave the slaughterhouse premises once they have come for slaughter (Tanzania Animal Diseases Act 2003).

Traders of cattle are also not interested with keeping of calves. Even after the cows and heifers are detected to be pregnant after they have been purchased or at the slaughterhouse level, the animals will be slaughtered. Cattle traders are not interested to keep calves but rather to get meat and animal by-products for sell. This further complicates the situation such that it makes the pregnant animals at the slaughterhouse level to be not easy to be served. Similar observations in different countries have also been reported (Zulu et al (2013; Fayemi and Muchenje 2013).

On the other hand, slaughter of pregnant cows and heifers is associated with several drawbacks which some of them are hereby discussed: First, calves are the life-line of the current and future herds of the nation. The huge foetal wastage in Tanzania threatens growth of the livestock industry and therefore undermines the government efforts to increase food production. As stated earlier, the increasingly human population growth in Tanzania needs to keep pace with the supply of protein of animal origin. Cattle are the main source of meat in Tanzania and therefore, the population has to increase. The indiscriminate foetal wastage need to be averted by ensuring that all cows and heifers sold for slaughter are subjected to mandatory pregnancy diagnosis and avoiding slaughter to any animal found to be pregnant.



Secondly, the slaughter of pregnant cows is a violation of the provisions in the Animal Welfare Act in Tanzania (URT 2008) and Animal Disease Act of 2003 and its Ante and Postmortem Inspection regulations of 2007 Section 6 (7) which prohibits any slaughter of pregnant cows and demands that pregnancy diagnosis be conducted prior to slaughter thereby withdrawing pregnant animals from being slaughtered. The practice of slaughter of pregnant animals should be discouraged as it is even cruel to animals and contrary to the principles of animal welfare.

Thirdly, from the consumers' point of view, the quality of meat from pregnant animals is questionable. Wythes et al (1990) reported that meat from the pregnant animals has very high post-mortem pH values of up to 24 making it to be unsound meat that cause undesirable effects on meat quality. In addition, meat from a pregnant animal is more tender and watery and has poor eye appeal and sometimes abnormal smell due to high levels of pregnancy hormones in tissues. Furthermore, cows and heifers in late pregnancy have lower mean initial yield (IY) and peak force (PF) shear values for *longissimus dorsi* muscles than non-pregnant cows and heifers (Wythes et al 1990). All these have negative consequences on the meat quality. This downgrades the meat quality and may be rejected at market levels.

Fourthly, pregnant cows and heifers have lower dressing percentage of up to 10 % less compared to the non-pregnant cows and heifers (McKiernan et al 2007). A study by Wythes et al (1990) found that in pregnant cows and heifers the carcass weight and dressing proportion tend to decrease by 2.95 kg and 6 g/kg, respectively, for each month of pregnancy. The drop in dressing percentage is related to the size of the foetus, the uterus and embryonic tissues and fluids. Animals at markets are sold depending on the live weight and therefore if it happens that it is pregnant, cattle traders get losses due to low dressing percentage.

Fifthly, if the pregnant cows and heifers were allowed to reach full term and calves' financial value assessed at birth, the resulting losses are huge. In a study by Maro (2014), it was established that a newly born calf in Tanga, Tanzania would cost up to TZS 50 000 (equivalent to \$25). Otherwise a fully grown female Tanzanian short horned Zebu is sold up to TZS 700 000 (\$350) and a bull up to TZS 1 000 000 (\$500) in Tanzanian livestock markets.

## **Conclusions**

- The magnitude of foetal wastage due to slaughter of pregnant cows and heifers is huge in Tanzania that threatens the livestock industry and therefore undermines government efforts to increase food production.

- The slaughter of pregnant cows disregards animal welfare legislation.
- Control of foetal wastage in abattoirs may increase the population of livestock in Tanzania and help to curb the prevailing malnutrition due to shortage of animal protein.

## Acknowledgements

The author acknowledges the support provided by the Sokoine University of Agriculture National Library during the search of literature which served as data for this work. The authors of different published and unpublished research work are acknowledged for the work done.

## References

- Abdulkadir U, Jiya E Z and Kosu S A 2008** Survey of fetal wastages: a case study of Makurdi abattoir in Benue State from 1997 to 2002. *Pakistan Journal of Nutrition* 7(3): 450–452.
- Adass P A, Midau A, Milka M and Tizhe M A 2010** Assessment of abattoir foetal wastage of cattle, sheep and goats in Mubi Main Abattoir Adamawa State, Nigeria. *World Journal of Agricultural Sciences* 6 (2): 132-137.
- Ademola A I 2010** Incidence of foetal wastage in cattle slaughtered at the Oko-Oba abattoir and lairage, Agege, Lagos, Nigeria. *Veterinary Research* 3(3): 54-57.
- Ardo M B, Lawal H and Aliyara Y H 2013** Economic implication of bovine foetal wastage in Yola modern abattoir, Adamawa state, Nigeria. *International Journal for Agro Veterinary and Medical Sciences*7(2): 1- 10.
- Assey R J, Kessy B M, Matovelo J A and Minga U 1998** Incidence of gross reproductive abnormalities in Small East African Zebu cattle. *Tropical Animal Health and Production* 30: 361-368.
- Atawalna J, Emikpe B O, Shaibu E, Mensah A, Eyarefe O D and Folitse R D 2013** Incidence of fetal wastage in cattle slaughtered at the Kumasi Abattoir, Kumasi, Ghana. *Global Veterinaria* 11 (4): 399-402.
- Cadmus S I B and Adesokan H K 2010** Bovine fetal wastage in Southwestern Nigeria: A survey of some abattoirs. *Tropical Animal Health and Production* 42(4): 617–621.
- FAOSTAT 2012** Data Information, FAO Rome, Viale delle Terme di Caracalla 00100 Rome Italy.
- Fayemi A O, Taiwo B B A, Okubanjo A O and Adekunmisi A A 2008** Frequency of slaughtering gravid cows in some selected parts of Ogun State. *Proceedings of the 33<sup>rd</sup> Annual Conference of the Nigeria Society of Animal Production*. September, 2008. Ayetoro pp 234 -237.
- Fayemi P O and Muchenje V 2013** Maternal slaughter at abattoirs: history, causes, cases and the meat industry. *SpringerPlus* 2: 125.

**Garba S, Hassan W A and Akingbemi B T 1992** Foetal wastage through slaughtering of pregnant cattle at Sokoto Abattoir. *Tropical Veterinary* 10: 123-126.

**Idahor K O, Omeje J N, Agu V E, Audi P, David S R and Luka B D 2009** Awareness of foetal losses from ruminants slaughtered at Lafia abattoir. *Journal of Life and Physical Sciences* 3: 44-48.

**Iloti A B 2015** Pathological conditions causing condemnation of organs/carcasses and their financial losses and magnitude of foetal wastage in cattle at Manyoni slaughter slab, Singida Tanzania. Unpublished Special Project for Award of Bachelor of Veterinary Medicine Degree at Sokoine University of Agriculture, Morogoro, Tanzania.

**Jarikre T A, Emikpe B O, Folitse R D, Odoom T K, Fuseini A and Shaibu E 2014** Assessment of fetal wastage in cattle, goat and sheep slaughtered at tamale abattoir, northern region, Ghana. *Bulletin of Animal Health and Production in Africa* 62(1): 31-35.

**Karimuribo E D, Kimbita E N, Silayo R S, Mgongo F O K, Mpanduji D G, Wambura R M, Batamuzi E K, Matiko M K, Massawe L B, Sendalo D, Mwakalobo A B S and Rich K 2013** Animal health constraints perceived to be important in Kilosa and Gairo Districts, Morogoro, Tanzania: Implications on disease prevention and control. *Tanzania Veterinary Journal* 28(2): 6-13.

**Kasanga C J, Sallu R, Kivaria F, Mkama M, Masambu J, Yongolo M, Das S, Mpelumbe-Ngeleja C, Wambura, P N, King D P and Rweyemamu M M 2003** Foot-and-mouth disease virus serotypes detected in Tanzania from 2003 to 2010: Conjectured status and future prospects. *Onderstepoort Journal of Veterinary Research* 79(2): 1- 4.

**Khan M Z and Khan A 1989** Frequency of pregnant animals slaughtered at Faisalabad Abattoir. *Journal of Islamic Academy of Sciences* 2: 1- 82.

**Kivaria F M 2007** The control of East Coast Fever in Africa: A constant battle for impoverished dairy farmers. *The Veterinary Journal* 174: 221-222.

**Kurwijila L R, Omore A and Staal S 2009** Dairy Sub Sector Development Strategy, East Africa Regional Initiatives in Value Chains. Lesson from on- going R & D initiatives in Dairy value chains, Rural Livelihood Development Company. Version Board 17- 04 - 2009. [[www.rldc.co.tz/docs/rldcdairy](http://www.rldc.co.tz/docs/rldcdairy)] site visited on 24/3/2012.

**Kusiluka L J S and Sudi F F 2003** Review of successes and failures of contagious bovine pleuropneumonia control strategies in Tanzania. *Preventive Veterinary Medicine* 59: 113 -123.

**Luwumba D 2011** The causes and frequency of carcass and organs condemnation in cattle slaughtered at Morogoro Municipal abattoir, Tanzania. Unpublished Special Project for Award of Bachelor of Veterinary Medicine Degree at Sokoine University of Agriculture, Morogoro, Tanzania.

**Maro D M 2014** Assessment of slaughtering of pregnant cows and its financial losses at Tanga municipal abattoir. Unpublished Special Project for Award of Bachelor of Veterinary Medicine Degree at Sokoine University of Agriculture, Morogoro, Tanzania.

**McKiernan B, Gaden B and Sundstrom B 2007** Dressing percentages for cattle. *Primefact* 340: 1-3.

**Mellau L S B, Nonga H E and Karimuribo E D 2011** Slaughter stock abattoir survey of carcasses and organs/offal condemnations in Arusha region, northern Tanzania. *Tropical Animal Health and Production* 43: 857–864.

**MLDF (Ministry of Livestock Development and Fisheries) 2012** National sample census of small holder agriculture: Livestock Sector, National Report, National Bureau of Statistics, Dar es Salaam.

**MLFD (Ministry of Livestock and Fisheries Development) 2010** Livestock sector development programme.

**MLFD (Ministry of Livestock and Fisheries Development) 2011** Livestock sector development programme.

**Msafiri P A 2014** Assessment of causes of condemnations and financial implications of cattle slaughtered at Bukoba Municipal abattoir, Kagera, Tanzania. Unpublished Research Paper for Award of Master of Preventive Veterinary Medicine Degree at Sokoine University of Agriculture, Morogoro, Tanzania.

**Nantongo Z, Kwizera H and Mpairwe D 2013** Foetal wastage, a challenge for Uganda's beef industry. LAP LAMBERT Academic Publishing, 56pp.

**NBS (National Bureau of Statistics) and the Office of the Chief Government Statistician, Zanzibar 2012** The United Republic of Tanzania. National Sample Census of Agriculture, 264pp available at [www.nbs.go.tz](http://www.nbs.go.tz) accessed on 12/05/2015.

**Ndi C, Tambi N E and Agharib N W 1993** Reducing calf wastage from the slaughtering of pregnant cows in Cameroon. Institute of Animal Research, (IRZ) Bamenda Cameroon.

**Njombe A P and Msanga Y N 2009** Livestock and Dairy Industry Development in Tanzania. [www.mifugo.go.tz](http://www.mifugo.go.tz) Accessed on 06/05/2015.

**Njombe A P, Msanga Y N, Temba A E and Tsoxo M 2009** Effort to increase improved dairy cattle in Tanzania. [[www.mifugo.go.tz](http://www.mifugo.go.tz)] site visited on 12/03/2013.

**Nwakpu P E and Osakwe I I 2007** Trends in volume and magnitude of foetal waste of slaughter animals in Ebonyi State of Nigeria. Research Journal of Animal Science 1(1): 30 – 35.

**Oduguwa B O, Raimi C O, Talabi A O and Sogunle O M 2013** Fetal losses from slaughtering pregnant cows at Lafenwa abattoir in Abeokuta, South Western Nigeria. Global Journal of Biology, Agriculture and Health Sciences 2(2): 38-41.

**Oyekunle M A, Olubanjo O O and Fasina O E 1992** Foetal wastage in abattoirs and its implication. Situation report from Ogun State, Nigeria. Nigerian Journal of Animal Production 19: 57-63.

**Population and Housing Census of Tanzania (PHCT) 2013** The 2012 PHCT General Report', National Bureau of Statistics, Dar es Salaam.

**Salami S O, Raji M A and Ameh J A 2010** Foetal wastage through slaughtering of pregnant cows in Zaria, Nigeria. Sahel Journal of Veterinary Sciences 9(1): 21-24.

**Swai E S and Hyghaimo A 2014** The slaughtering of increased numbers of pregnant cows in Tanga City Abattoir, Tanzania - A cause for concern? A paper presented at the 23rd Tanzania Veterinary Association Annual Scientific Conference, held at Arusha International Conference Centre Arusha, Tanzania 25<sup>th</sup> - 27<sup>th</sup> November, 2014.

**Swai E S and Karimuribo E D 2011** Smallholder dairy farming in Tanzania: Current profiles and prospects for development. Outlook on Agriculture 40: 21 - 27.

**Taiwo B B A, Fayemi A O, Okubanjo A O and Adekunmisi A A 2011** Frequency of slaughtering gravid cows and its economic implications in some selected parts of Ogun State, Nigeria. Journal of Food, Agriculture and Environment 9 (3&4): 538-541.

**Tanzania Animal Diseases Act 2003** Available at <http://faolex.fao.org/docs/pdf/tan53026.pdf> accessed on 12/05/2015.

**Tchoumboue J 1984** Calves lost through pregnant cows slaughtering: a particular case in Yaounde abattoir, Cameroon, Review Elevege Medicine Veterinaire' Pays Tropicaux, 37(1): 70 - 72.

**Tembo W and Nonga H E 2015** A slaughterhouse survey of causes of cattle organ/carcass condemnations and financial implications at Dodoma Abattoir, Tanzania. Onderstepoort Journal of Veterinary Research 82(1): 855, 7 pages. <http://dx.doi.org/10.4102/ojvr.v82i1.855>.

**United Republic of Tanzania (URT) 2008** The Animal Welfare Act, Government Printer, Dar es Salaam.

**Voh (Jr) A A, Mohammed A K, Otchere EO and Adewuyi A A 1993** Prevalence and seasonality of disease in ruminants under traditional agro-pastoral management in Nigeria. Bulletin of Animal Health and Production, Africa 41: 233-238.

**Wilson R T and Traore A 1988** Livestock production in central Mali: Reproductive wastage in ruminants in the agropastoral system. Theriogenology 29: 931-944.

**Wosu L O 1988** Calf wastage through slaughtering of pregnant cows in Enugu Abattoir (Nigeria). Journal of Animal Husbandry and Veterinary Medicine 41 (1): 97-98.

**Wythes J R, Shorthose W R, Fordyce G and Underwood D W 1990** Pregnancy effects on carcass and meat quality attributes of cows. Animal Production 51(03): 461-468.

**Zakari H, Sivachelvan M N and Chibuzo G A 1988** The comparative study of animal slaughter records in Maiduguri prior to and after the 1983 Rinderpest outbreak. Annals of Borno 5: 224-233.

**Zulu V, Mwanza A M, Banda F C, Yasuda J and Yoshida M 2013** Cattle reproductive wastage in Zambia: A case of Mongu abattoir', Bulletin of the Faculty of Agriculture, Kagoshima University 63: 49-54.

*Received 19 May 2015; Accepted 30 November 2015; Published 1 December 2015*

[Go to top](#)