

POLYTHENE BAG INGESTION BY RUMINANT ANIMALS AT MAIDUGURI CENTRAL ABATTOIR

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Abstract

This study was carried to find out the incidence of polythene bag ingestion by ruminant animals at Maiduguri Central abattoir based on sex and specie of cattle sheep and goat. Data was collected for seven consecutive weeks between the months of April and May, 2013. A checklist was used for the collection of data. 100 samples each of cattle, sheep and goats (50 males and 50 females) were used for the study. Data was also collected on polythene ingestion based on the specie and sex of the animal. Weight of polythene bag was also taken per specie and sex. Results indicated no difference ($P>0.05$) on number of animal affected by species. However, a difference ($P>0.05$) was observed based on the total weight of the polythene bag and weight of the bags per animal as affected by the species. Results indicated a high difference ($P>0.05$) in polythene bag produced across the species as affected by the sex of animal. Ewe and cow had significantly ($P<0.05$) higher values in terms of polythene bag presence. Cows had the highest ($P<0.05$) weight of polythene bags per animal. It was also concluded that 29% of the animals were found with polythene bag ingestion. Female animals ingested more polythene bag than their male counterparts.

Keywords: Bags, Polythene, Ingestion, Ruminants, Maiduguri Abattoir.

Introduction

Polythene bags are nuisance to the environment and they affect the health and nutrition of animals especially in Nigeria, Maiduguri Ingestion of non-dietary material is mainly related to nutritional deficiencies and feeding management of animals and causes various problems in different organs of animals. Impaction of the rumen is one possible health problem which can be caused by the ingestion of foreign bodies by ruminants Sastry (1983). In most parts of the tropics, the common foreign substances found to be ingested by grazing ruminants were plastic objects such as polythene bags and rubber materials, Batarseh (1991). Similar report from different parts of the world have shown that the incidence of ingestion of foreign bodies by domestic ruminants is considerably high causing poor body condition and looses in productivity Ramaswamy and Sharma (2011). Impaction of the rumen resulting from accumulation of foreign substances such as plastic or polythene bags causes interference with flow of ingesta leading to distention of the rumen, Abdullahi et al, (1984).

The presence of these foreign materials in the rumen and reticulum also hampers the absorption of volatile fatty acids and consequently reduce the rate of animal fattening Igbokwe et al., (2003). The present management system of ruminants practiced in Nigeria in which most of the ruminants are managed under extensive or semi-intensive system of production especially in Northern region of the country where most of the ruminant animals are found has contributed tremendously to the foreign bodies found in the fore-stomachs of ruminants especially during period of feed scarcity Mohammed (2004), The presence of polythene bags and other foreign bodies in the fore-stomachs of ruminants would be a growing problem in Nigeria as grazing lands become more and more polluted with plastic or polythene bags, ropes, hairs, wool and metals, Mohammed (2004). Most of the ruminants especially those found in towns and nearby villages perform natural free grazing and they are not reared in the farm, as intensive management system of animal production.

In the urban and sub-urban centres, exposure of livestock generally to polythene materials is facilitated by the improper disposal of polythene in urban and suburban areas. All over Nigeria, polythene materials are used to packaging of food like snacks, meats, oil, salts, water and so on. These are not properly disposed after use. More so, in the sahel zone due to the long period of dry season (October to May) both animals and humans do migrate from the rural areas to urban and suburban areas in search of water. This leads to early exhaustion of available forage due to lack of forage and discriminate disposal of polythene materials with some food remnants on. Thus, these animals are attracted to them and end up consuming the polythene materials along. Polythene ingestion is thus a major threat to livestock production Singh (2005). Assessing the prevalence of polythene bag ingestion by ruminant at Maiduguri Central abattoir may give useful information that may call for the improvement on the management system of ruminants in the country.

The objective of the research was to find out the incidence of polythene bag ingestion in a random sample of 300 ruminant (if any) and to find out the quantity of polythene bag ingestion (if any) in the fore-stomachs of different sampled ruminant animals.

Materials and Methods

The study was conducted at Maiduguri Central abattoir between the months of April and May, 2013. Data was collected for seven consecutive weeks using a checklist. Information was gathered on the ingestion of polythene bag according to the specie and sex of the animals. A sample of 100 matured animals each from cattle, sheep and goats (50 males and 50 females each) were randomly selected for the study. Two major examinations were carried out on the animals - ante-mortem and postmortem examinations. Ante-mortem examination was performed in the lairage to determine the breed, sex and examination for foreign body (polythene) as described by Blood et al, (2005) and Khan (2005).

For each of the animals selected, after slaughter, fore-stomach digesta were thoroughly investigated for the presence or absence of polythene bag and recorded and those detected were

subsequently weighed using spring balance according to specie and sex of the animals. Information obtained was statistically analysed using Analysis of Variance (ANOVA) and simple descriptive statistics using Statview Statistical Package SAS (2002).

Results and Discussion

As shown in Table 1 below, 88 out of 300 sampled ruminants animals slaughtered during the period of the observation have polythene bags in their fore-stomach. Cattle had a higher ($P<0.05$) percentage (38.6%) compared to 36.4% and 25% for sheep and goats respectively. This finding could be related to the report of Hailat et al, (1996) which showed that sheep and goats ingested less foreign substances compared to cattle. Furthermore, Remi et al, (2004) reported that rumen foreign body occurred less frequently in goats.

Mohammed et al, (1999) also reported that rumen foreign bodies were more in sheep than goats. The quantity of polythene bag ingestion also followed similar trend as that of the percentage number of animals, with polythene bag. Cattle had the highest ($P<0.05$) quantity of polythene bag (34+81) in the fore-stomach than sheep and goats. The ingestion of higher quantity of foreign body by the cattle may be connected with increase in pollution of grazing land with polythene bags and the higher demand by cattle in terms of quantity of feed above that of sheep and goats.

Table 1: Specie Distribution of Ruminant Animal with Polythene bag in the Fore-Stomachs

Animal specie	No. observed	No. with poly bag	Percentage No. of Animals	Weight of polythene bag (kg)	Weight of Poly bag (Aminal/kg)
Cattle	100	34±81 ^{NS}	38.64±9.2 ^{NS}	50.1±12.7 ^a	1.47±0.90 ^a
Sheep	100	32±81 ^{NS}	36.36±9.2 ^{NS}	21.2±7.2 ^b	0.66±0.72 ^b
Goats	100	22±5.2 ^{NS}	25.00±5.9 ^{NS}	9.4±3.6 ^c	0.43±0.32 ^c

a,b,c means along the columns with different superscripts are significantly different ($P<0.05$)

P = polythene.

Table 1 shows the percentage of ruminant animals based on sex and specie with incidence of polythene bag ingestion. The results revealed that ewes higher ($P<0.05$) percentage (23.9%) of polythene bag in the fore-stomachs had although not significantly different from that cows (21.6%). Bucks the lowest ($P>0.05$) percentage (5.70%) of polythene bag ingestion compared to the rest of the animals. The result relates with other findings that sex was found to have a significant interaction with fore-stomachs foreign

substances of ruminant animals, Remi et al., (2004). Fore-stomach's foreign substances were found to occur more frequently in females, Remi et al. (2004). This result could be compared with the findings of Roman and Yesuwork (2010) who reported a higher incidence of polythene bag ingestion in female small ruminant than their male counterparts.

The result showed that female animals had higher ($P < 0.05$) percentage of polythene bag ingestion than male animals. This is also similar to the work of Igbokwe et al, (2005) who reported a higher prevalence of polythene bag ingestion in female animals than in males. This may be associated with increased appetite of female animals due to their nutritional demands during pregnancy and lactation. Additionally, females are kept longer than males for breeding and hence predisposition to polythene bag ingestion could be more than that of male animals. The high prevalence of foreign bodies reported in this study might be attributed to the fact that most of the animals were grazing freely or may be due to the shortage of forage or as a result of inadequate nutrients especially minerals and vitamins in the diets of the animals.

Table 2: Sex and specie distribution of ruminant animals with polythene bag in the fore-stomachs

Animal Specie and sex	No. observed	No. of animals with Polythene bag	Percentage (%)	Weight of polythene bag (kg)	Weight of polythene bag/animal (kg)
Bull	50	15±1.76 ^b	17.08±1.97 ^b	16.1±3.46 ^b	1.04±0.11 ^b
Cow	50	19±0.58 ^{ab}	21.60±0.66 ^{ab}	34±2.60 ^a	1.80±0.19 ^a
Ram	50	11±1.16 ^c	12.50±1.31 ^c	9.2±2.94 ^{bc}	0.80±0.19 ^{bc}
Ewe	50	21±0.58 ^a	23.90±0.66 ^a	12±3.46 ^{bc}	0.56±0.15 ^{bc}
Buck	50	5±0.37 ^d	5.70±0.66 ^d	2.4±0.91 ^d	0.54±0.25 ^c
Doe	50	17±1.16 ^b	19.30±1.31 ^b	7±0.28 ^c	0.40±0.01 ^c

a,b,c Means along the columns with different superscripts are significantly different ($P < 0.05$)
P = polythene

Conclusions

The results of the study showed that polythene was found in the fore-stomach of 88 animals out of the 300 sampled which represent 29% of the animals. Females had a higher percentage of polythene bag ingestion than males. Cattle had the highest incidence and quantity of polythene bag ingestion than sheep and goats.

Recommendations

To curtail the menace of polythene (foreign substances), the following are recommended:

- Improved management system should be practiced where adequate housing, feeding and mineral supplements will be provided.
- Grazing centres should be established for animals to graze to avoid contamination with polythene materials.
- Proper disposal and or recycling of polythene or other waste materials in the urban and suburban areas by appropriate authorities, agencies and industries.
- Proper reorientation of producers, users and urban sanitation authorities for production and disposal of more environmental friendly packaging materials, other waste products.
- Provision of basic social amenities in rural areas such as adequate water supply for both human and livestock in the dry season. This will reduce the transhuman influence to the urban and suburban centre where a lot of improperly disposed material exists. Thus, in this survey it is observed that the incidence of polythene (foreign bodies) on ruminants stomach is both environmental and management.

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