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PERFORMANCE OF YANKASA SHEEP GRAZING NATURAL PASTURE SUPPLEMENTED WITH MAIZE OFFAL

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ABSTRACT- An experiment was conducted to assess the performance of yankasa sheep grazing natural pasture at the University Livestock Teaching and Research Farm in Mubi. Twelve (12) yankasa sheep with average weight of 23.2kg were allotted to four levels of concentrates at 0, 100, 150 and 200g which constitute the treatments designated T_1, T_2, T_3 and T_4 respectively. Treatment one had zero supplementation and served as the control. The result of weight gain indicated significant variation ($p < 0.05$). Treatment three (150g maize offal) and treatment four (200g maize offal) recorded the highest weight gains of 29.13kg and 29.67kg respectively. The results of concentrate intake also revealed significant difference ($p < 0.05$). The intake ranges from 49.08g to 77.28g. No mortality was recorded throughout the experimental period. Supplementation of maize offal up to 200g is recommended for sheep grazing natural pasture. Further studies should be conducted on the utilization of sorghum offal and millet offal with a view to assess their nutritional value to sheep.

Keywords: Yankasa sheep, Performance, grazing, maize offal

1. INTRODUCTION:

Sheep was among the first domestic animals and their role in ancestral agro-ecosystems was critical for the advancement of human civilization (Gatenby, 2002). As ruminants they serve a multitude of functions ranging from food to organic fertilizer- that are essential to human life in both rich and poor countries (Gatenby, 2002). Sheep are important part of the global agricultural economy, and they play a major role in many local economies (Weaver, 2005). In many parts of the world, particularly in the temperate regions, meat is the major product and the importance of sheep in meat production is increasing (Owen, 1981). Traditionally, sheep and goats have served as means of ready cash and a reserve against

economic and agricultural production hardship (Hamito, 2008).

In temperate zones, sheep are kept often for wool and meat production (NDD, 2004). Small ruminant animals contribute significantly to the economy of third world countries, for example, about 50% of the sheep of the world are found in the third world countries (NRC, 2011). The world population of sheep has been estimated as 1,130.8 million (FAO, 2004). According to NRC, (2011) Africa has 16.3% of the sheep population. The distribution of sheep population by ecological zones of the tropical Africa as obtained from Jahnke, (1982) showed that 71.50% of sheep are from the Savannah zone and the estimated population of 22.1 million sheep in Nigeria (RIM, 1992). The sheep breeds in Nigeria are meat producers that have adapted to the various eco-zones in which they are found. The reason why sheep farming is important for the African humid tropics is not for the size of sheep population but rather for the fact that sheep are kept by many small peasant farmers who often have a diet that is deficient in animal protein and also have considerable potential for expansion in an area where there is often a plentiful supply of forage resources and agricultural by-products (Charray and Levif, 1992). These animals (sheep) eat low quality feeds particularly fibrous vegetations which cannot be eaten by humans and non-ruminant animals such as pigs and poultry. Thus people keep sheep because they are convenient way of converting poor quality feeds in to desirable products like meat, milk, wool, skin and manure. According to FAO (2004), the sheep are entirely of the hairy thin tailed, West Africa long legged type kept primarily for their meat and skins. These includes the Uda (Bali-bali) sheep of Northern Nigeria, the Borno in the North West and Yankasa have been recorded in all part of Nigeria (Owen, 1981). Domestic sheep belong to the Phylum *Chordata*, Class *Mammalian*, Order *Artiodactyla*, family *Bovidae*, Genus *Ovis*, and species *Ovis aries* (Banerjee, 2008).

Sheep contribute 5.0% of total domestically produced meat in Nigeria, which has been estimated at 813,000 tonnes annually. Furthermore, these small ruminants produce skins that can feed the local leather industry. Sheep skin has been estimated at 7,500 tonnes annually (FAO, 2004). The short generation interval of sheep coupled with high frequency of multiple birth allowed for rapid increases in animal numbers (Markos, 2006). In traditional sheep fattening, feeds are always provided ad-hoc and in an unregulated fashion, which is rather wasteful (Ayantunde, 2007). This study aimed to assess the concentrate intake, weight gain of sheep supplemented with maize offal.

Sheep production in Northern Nigeria is characterized by the extensive system of management which entails little or no supplementary feed. Under traditional system, the performance of sheep has thus remained generally low due to poor management and low plane of nutrition. Seasonal variation in the supply of forage is one of the problems facing sheep production in Nigeria. In the dry season, the grasses and most browse plant dry up and there is dehydration with a high degree of lignifications as a result grazing animal loss weight. There is therefore a need to integrate supplementation of concentrate and natural grazing as a strategy to improve feeding of sheep. The objective of this study is to assess the performance of Yankasa sheep grazing natural pasture supplemented with maize offal as concentrate.

Sheep are prolific and multipurpose animals that thrive better in difficult conditions than other species of livestock (Williamson and Payne, 1984, FAO, 1980). A report has shown that apart from poultry, sheep are the third most numerous when compared to other domestic livestock species in Nigeria (Uptan, 1985). Therefore, supplementation of sheep will augment the performance requirement of the grazing sheep.

The result of this research will provide useful information on performance of yankasa sheep grazing natural pasture supplemented with maize offal as concentrate. It will further reveal information on the best level of concentrate feed to be offered to sheep grazing natural pasture.

2. MATERIALS AND METHODS

3. Experimental Site.

The experiment was conducted at the Livestock Teaching and Research Farms (small ruminant unit) of the Adamawa State University Mubi, which lies within the Northern Guinea Savannah of Adamawa State. It is located on latitude $10^{o}20^{'}$ North and longitude $13^{o}50^{'}$ East and covers an area of 24000Km^2. Mubi has the mean annual rain fall which ranges between 700 and 900 mm, with the highest rainfall recorded in the month of August. The area has average minimum and maximum temperatures of 15^{0}c and 35.7^{o}c respectively (Adebayo, 2004).

4. Experimental Animals and Management.

The animals were managed on semi-intensive system. They were allowed to go out for grazing from 8.00 am to 5.00 pm. The animals were housed at night in pens made of cement blocks. The animals were dewormed with albendazole before the commencement of the experiment, further they were weighed and divided into four groups according to weight. Each group was adapted to the supplements for seven (7) days before measurement were taken. The supplement was weighed and fed daily at 7.00 am before going out for grazing. Water was provided *ad-lib*. The animals were weighed once in a week throughout the experimental period. The experiment last for nine (9) weeks.

5. Experimental Design.

Twelve (12) yankasa rams were randomly allocated to four treatment diets in a Complete Randomize Block Design (CRBD) with three replicates containing one ram each.

6. Experimental Diets and Treatments.

One hundred grams (100g), one hundred and fifty grams (150g) and two hundred grams (200g) levels of maize offal were offered to the animals before daily grazing. The animals that received no supplement were treatment one (T_1) and served as the control while the animals that were fed with maize offal were treatment two (T_2), three (T_3) and four (T_4) respectively.

7. Parameters Measured.

The following parameters measured were;

1. Concentrate intake (CI): This was determined by the difference between concentrate offered and concentrate left over. That is;
   CI = concentrate offered – left over concentrate.
2. Weight Gain (WG): Weight gain was determined weekly by weighing the animal weekly and the difference in weekly weight were taken as the weight gain.

8. Statistical Analysis.

Data obtained were subjected to analysis of variance (ANOVA) of the Complete Randomize Block Design (CRBD) and where significant differences exist, Least Significant Difference (LSD) was used to separate the treatment means (Steel and Torrie, 1980).

9. RESULTS AND DISCUSSION

10. Live weight Gain

The results of weight gain of Yankasa sheep grazing natural pasture supplemented with maize offal is presented in Table 1. The result revealed that, the concentrate levels have caused significant variation (P□ 0.05) among the treatments. However, there was no significant differences between treatment two (T_2) and treatment three (T_3). The overall performance showed that treatment four (T_4) recorded the highest weight gain with mean values of 29.67kg, while treatment one (T_1) recorded the lowest (27.21kg). The significant difference obtained in this study might be due to different levels of concentrate used in the experiment. The result of this study on a general trend revealed that, weight gain increases with increase levels of the concentrate (maize offal), because treatment four (T_4) having the high level of supplement recorded the highest value of mean weight gain. These results are in agreement with the experimental findings of Gabrovska and Ganovski, (1986), who found that 75% supplementation of concentrate, enhances better weight gain. These findings are further supported by Mahgoub *et al.* (2000) who studied the effect of dietary energy density on feed intake and body weight gain of Omani lambs and observed higher body weight gains by increasing energy levels in the diet.

The lowest weight gain recorded in treatment one (T_1) may be attributed to the zero (0g)

supplementation of concentrate. This indicated that concentrate supplementation has positive effect on live weight gain of sheep. This is in line with the findings of Ferdous *et al.* (2011) who reported that higher levels of concentrate supplementation increases live weight gain. This result corroborates the report of Mahajan *et al.* (1976) reported that grazing alone is not sufficient for better live weight gain and supplementation of concentrate showed better performance of sheep grazing natural pasture. Kabir *et al.* (2002) also found that sheep grazing natural pasture supplemented with concentrate performed better than grazing sheep without supplementation. Huston, *et al.*, (1988) further pointed out that the average daily live gain of sheep grazing natural pasture supplemented with concentrates were significantly higher. Weight gain of sheep increases with increasing levels of supplemented concentrate.

11. Concentrate Intake

The results of concentrate intake of yankasa sheep grazing natural pasture supplemented with maize offal is presented in table 2. The results of concentrate intake showed significant variation (P□ 0.05) among the treatments. While the means treatment two (T_2) and three (T_3) showed no significant difference. The overall concentrate intake showed that treatment four recorded the highest (77.28g) value.

The significant differences obtained in this result might be attributed to the variation in the levels of concentrate offered. It may also be due to the differences in the animals' appetites towards the experimental diet. The highest feed intake recorded in treatment four (T_4) might be due to increase in the level of concentrate supplement. This result was in agreement with the findings of Kabir *et al.* (2002) who recorded that feed intakes were significantly (P□ 0.05) higher in sheep supplemented with concentrate than those of control group without supplementation of concentrate. This result was also similar to the findings of (Jabbar *et al.*, 2008 Mahgoub *et al.*, 2000). Bowman and Asplund, (1988) observed significant (P□ 0.05) increased in feed intake and performance in sheep grazing natural pasture supplemented with concentrate.

12. Mortality

There was no mortality recorded among the experimental animals throughout the experimental period. The zero mortality recorded was an indication that concentrates supplementation (maize offal) has no deleterious effect on the Yankasa sheep grazing natural pasture beside good husbandry practices.

13. CONCLUSION AND RECOMMENDATIONS

The result of this study revealed that maize offal when used as concentrate supplement has positive effect on the performance of Yankasa sheep grazing natural pasture. It also revealed that maize offal has a good potential as feed resource for sheep and could be used as supplement without any harmful effect.

That this study should be conducted for a longer period of time to capture the further effect of maize offal and natural pasture on Yankasa sheep so as to highlight on variability of seasonal effect on sheep supplementation.

Table 1: Live Weight Gain Performance of Yankasa Sheep Grazing Natural Pasture supplemented with Maize Offal.

Treatments	An initial average Weight (kg)/Trt	Mean Weight Gain (kg)/Trt	SEM	Mortality
T_1 (0g m/o)	22.20	27.21^{b}	1.30	0.00
T_2 (100g m/o)	23.20	28.17^{ab}	0.49	0.00
T_3 (150g m/o)	23.20	29.13^{ab}	0.61	0.00
T_4 (200g m/o)	23.20	29.67^{a}	0.36	0.00

Mean values with different superscripts are significantly different (P□ 0.05).
M/O – Maize Offal,

Table 2: Concentrate intake of Yankasa Sheep Grazing Natural pasture supplemented with Maize Offal.

Treatments	Level of Supplementation (g)	Concentrate intake (g)/ Trt	Mean concentrate intake (g)/Trt	SEM
T_1	0.00	0.00	0.00^C	0.00
T_2	100	1177.90	49.08^b	3.01
T_3	150	1257.10	52.38^b	2.10
T_4	200	1854.80	77.28^a	6.85

Mean values with different superscripts are significantly different (P□ 0.05)

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