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## The effect of different supplements on birth weight and kid growth on Red Sokoto goats in Adamawa State, Nigeria

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**Abstract** - This study was carried out at the Teaching and Research farm of Federal University of Technology; Yola, Nigeria, to evaluate the growth performance of kids which include birth weights growth rate, incidence of twinning, mortality rate and feed intake of Red Sokoto does. Four treatments of five does each were used. The animals in all treatment groups were allowed to graze on natural pasture after which supplemental feeds are given. Treatment one was used as a control group, treatment two was supplemented with maize bran, treatment three with cotton seed cake and four with groundnut hay. The result shows that the heaviest birth weight was recorded in treatment one (2.07kg) and the lowest birth weight was recorded in treatment three (1.25kg) at parturition. Significant different ( $p > 0.05$ ) exist between treatment one and the other three in respect of birth weight. For growth rate, there was no significant difference ( $p > 0.05$ ) between all the treatment groups. Daily supplementary feed intake which ranged between 361.10g and 399.50g did not show any significant difference ( $p > 0.05$ ) between all the treatment groups. The highest was recorded in treatment four (399.80g) and the lowest in treatment two (361.10g). Incidence of twinning was recorded twice in treatment two and three respectively. Mortality was recorded once in treatment one and three in treatment two. Animals supplemented with maize bran and cotton seed cake gave the best performance in productivity.

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**Abstract** - This study was carried out at the Teaching and Research farm of Federal University of Technology, Yola, Nigeria, to evaluate the growth performance of kids which include birth weights growth rate, incidence of twinning, mortality rate and feed intake of Red Sokoto does. Four treatments of five does each were used. The animals in all treatment groups were allowed to graze on natural pasture after which supplemental feeds are given. Treatment one was used as a control group, treatment two was supplemented with maize bran, treatment three with cotton seed cake and four with groundnut hay. The result shows that the heaviest birth weight was recorded in treatment one (2.07kg) and the lowest birth weight was recorded in treatment three (1.25kg) at parturition. Significant different ( $p>0.05$ ) exist between treatment one and the other three in respect of birth weight. For growth rate, there was no significant difference ( $p>0.05$ ) between all the treatment groups. Daily supplementary feed intake which ranged between 361.10g and 399.50g did not show any significant difference ( $p>0.05$ ) between all the treatment groups. The highest was recorded in treatment four (399.80g) and the lowest in treatment two (361.10g). Incidence of twinning was recorded twice in treatment two and three respectively. Mortality was recorded once in treatment one and three in treatment two. Animals supplemented with maize bran and cotton seed cake gave the best performance in productivity.

## I. INTRODUCTION

Ruminants differ from other livestock in that the rumen enables them to make use of feedstuff such as crop residues that are inexpensive, readily available, of no direct importance in human nutrition, and often regarded as an environmental nuisance after harvest and processing of crops (Aregheore and Chimwano, 1992). During adverse climatic conditions when low quality forages are not available the use of crop residues in stock feeding has been advocated and recommended to farmers (Aregheore, 1996). Aregheore (1994) also suggested ways of harvesting processing and preserving crop residues for use in livestock rations during adverse weather conditions. Various studies on small ruminants have indicated that it is possible to farmers (Aregheore,

1996). Aregheore (1994) also suggested ways of harvesting processing and preserving crop residues for use in livestock rations during adverse weather conditions. Various studies on small ruminants have indicated that it is possible to enhance productivity or to avoid body weight loss during the critical feed shortages periods of the year by supplementing poor quality pastures and crop residues with small quantities of high quality supplements. Okello *et al.*, (1996) reported that goats fed on supplemented elephant grass lost body weight where as supplementation with cotton seed cake, maize bran or banana peels increased body weight gain. Success of any livestock production enterprise largely depends on adequate and qualitative nutrition. Majority of small ruminant farmers in Nigeria practice the extensive system of management which does not make provision for adequate feeding. In northern region of Nigeria where most of the nations livestock are concentrated, there is a long and pronounced dry season lasting from six to nine months often causing serious feed shortages for animals. The prolonged dry season and high temperatures are also accompanied by rapid deterioration in the nutrient quality of the available pasture, hence the basic nutritional requirements of the animals during pregnancy or lactation are not met (Glatzle, 1991).

In Nigeria, the systems of ruminant management which is commonly known as Nomadic Fulani system or the scavenging system by sedentary farmers often do not yield much. However goat production in Nigeria is characterized by low productivity levels due mainly to nutritional constrains. Grazing and browsing on natural pastures is the main source of feed in the arid and semi-arid pastoral areas, while crop residues could contribute up 50% of the total quantity of fodder available which shows seasonal fluctuation. There is an acute shortage of feed supply during the dry season and the available feed during this period is of very poor quality. Poor nutrition results in low production performance, slow growth rate, loss of body condition and increased susceptibility to disease and parasites. This study was designed to determine birth weight, using different supplements and the daily supplementary feed intake of does.

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## II. MATERIALS AND METHODS

The study was carried out at the Teaching and Research farm of Federal University of Technology, Yola, Adamawa State. It is located in Girei local Government area of the state which lies between latitude 10 and 110 north and longitude 110 east of the Green which meridian. April is the hottest month with a mean temperature of 40°C and a mean lowest temperature of 26.7°C (Adebayo and Tukur, 1999).

The materials used were weighing balance, neck tag/ear tag, feeders, water, mineral salt, dewormer and supplemental feeds (maize bran, cotton seed cake and groundnut hay).

## III. EXPERIMENTAL STOCK AND MANAGEMENT

Sixteen (16) Red Sokoto does were used. The animals were ear tagged and their kids neck tagged. The kids were twenty in number among the four treatments groups. They were weighted after parturition to determine their birth weight and subsequently weekly to determine their growth. The study ended after a lactating period of three (3) months. The animals were kept under a semi-intensive system of management. The supplements given were maize bran, cotton seed cake and groundnut hay. Salt lick and good drinking water was provided ad libitum. The animals were divided into four (4) treatment groups and replicated four times. Group one (1) which is the control did not receive any supplement, group two (2) was supplemented with maize bran, group three with cotton seed cake and group four (4) with groundnut hay.

## IV. DATA COLLECTION

The parameters measured are birth weight of kids and subsequent weekly weight gain, incidence of twinning, mortality rate of kids reared to weaning and the feed intake of the does during lactation.

## V. DATA ANALYSIS

The data collection was subjected to analysis of variance using complete randomized block design and means were subsequently separated using LSD.

## VI. RESULT AND DISCUSSION

*Table 1* : Proximate composition of the diets

Diets	DM	CP	CF	ASH	EE
Maize bran	92.23	10.53	10.53	1.16	1.89
Cotton seed Cake	93.60	29.94	23.53	5.16	5.76
Groundnuts hay/ms	93.65	15.63	23.26	7.67	2.26

DM=Dry matter, CP=Crude protein, CF=Crude fibre, EE=Ether extract

*Supplementary feed intake of does*

Table 1 show the chemical composition of the different supplements. The result of the supplementary feed intake of the does shows that there is no significant difference ( $p > 0.05$ ) among the different treatment groups. Does on treatment four (4) consumed 399.8g/day, those on treatment three (3) consumed 363.5g/day while those on treatment two (2) consumed 361.1g/day. The mean birth weights (Table 2) were (2.07kg) in group one, (1.98kg) in group two, (1.74kg) in group three and (1.73kg) in group four sex and litter size affected the birth weight of kids. The birth weight is higher in the control group and the least birth weight was recorded in group four (4). Birth weight decreases with increases in litter size. Robinson et al., (1977) reported that for lambs in utero, as the number of fetuses increases, the number of caruncles attached to each fetus decreases, thus reducing the feed supply in the fetus and hence reduction in birth weight of the lambs. The birth weight of the kids reveals no significant difference Among the treatment groups at 0.05. the growth rate (Tables 2) which shows the response of kids to the supplements given to their dams also indicated no significant difference ( $p > 0.05$ ) among the treatment groups. However based on mean values of the kids in treatment one (0.43kg) seems to be better in growth rate than those of the other treatments. This is due to the fact that they were allowed to graze on the same pasture and the control groups graze longer thus supplementation did not have much effect on the kids growth rate. The growth rate was also affected by incidence of twinning in the supplemented groups. In this study single born kids grew faster than twins. Growth rate was affected due to the competition for the limited supply of the doe's milk. This was supported by Norton and Banda (1993) who found no difference in growth rate between single and twin born kids when subjected to artificial rearing incidence of twinning (Table 2) was recorded twice in treatments two and three respectively. This is as a result of the influence of the supplemental feeds. Mortality was recorded once in treatment one and three times in treatment two good body condition scores of animals have been linked to increased reproductive performance of goats and low body condition score reserves is implicated reduced productivity of does. Ovulation rate is also positively related to body condition score at mating, hence high reproductive performance is related with season of feed availability, kid birth weight and dam milk yield are positively related to feeding status which in turn positively affected kid survival rate (Zahraddeen *et al.*, 2008.)

Table 2 : Reproductive performances

Parameters	Treatment			
	1	2	3	4
Feed intake(g)	-	361.1	363.5	399.8
Birth weight(kg)	2.07	1.98	1.74	1.73
Growth rate(kg)	0.43	0.40	0.41	0.39
Incidence of twinning	-	2	2	-
Mortality	1	3	-	-

## VII. CONCLUSION

This study on effects of different supplements on some reproductive traits shows that supplementation have little effect on birth weight and growth rate. However it influences the twinning rate. Supplementation with good grazing could be used for improving the reproductive performance of goats.

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