

AN ASSESSMENT OF PRE-WEANING PERFORMANCE OF RED SOKOTO GOAT KIDS RAISED ON A COMPLETE DIET OF DIFFERENT ENERGY LEVELS

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ABSTRACT

This study was conducted at the Livestock Teaching and Research Farm, Federal University Dutsin-Ma to determine the pre-weaning performance of red Sokoto Goat kids raised on a complete diets containing different energy levels. Four experimental diets were formulated containing graded energy level 2400, 2200, 2000, 1800kcal ME/kg designated as treatment T1, T2, T3, and T4, respectively, in a completely randomized design (CRD). Result obtained indicated no significant ($P>0.05$) difference in terms of morphometric characteristics, milk consumed, though treatment T4 recorded the highest value. Conversely significant ($P<0.05$) were recorded in terms of average daily gain (ADG), with treatment T1 having the highest value followed by treatment T4. Similarly, result of the cost of feed formulated (N/kg) showed significant ($P<0.05$) that treatment T1 had the highest cost (₦ 49.14) followed by treatment D (₦ 42.46); while treatment T2 had the least cost (₦ 40.78).

Key words: *pre-weaning, morphometric test, red sokoto kids, energy levels*

INTRODUCTION

Goats are raised extensively on natural grazing lands, crop residues, farm weeds and sometimes supplemented with agro-industrial by-products. Under extensive management system, supplementation has frequently been advocated as the main solution to nutritional constraint faced by livestock during the long dry season Malami, *et al.*, (2006). Goats are known as the poor man's cow because of their ability to provide sufficient meat, milk, skins and fibre for the smallholder Smith (1988). Multiplication and distribution of high quality goat would increase small ruminant animal production and protein supply in Nigeria. Banerjee, (2007).

The semi-arid area of Nigeria is endowed with abundant livestock resources FDLPCS (1992). Nutrition is a serious challenge to goat productivity in Nigeria Nuru, (1982). Goat and other ruminant animals are unable to meet both protein and energy needs Nuru, (1982). especially during the long dry season when high quality forage is scarce and it is therefore important to ensure adequate feeding in order to enhance productivity Nuru, (1982). It is known that animals generally eat to satisfy their energy requirement NRC (1985). This becomes more important in the semi-arid zones which is characterized by high seasonal changes in temperature Payne, and Wilson (1999).

Material and Methods

The experiment was conducted at Livestock Teaching and Research Farm. Four experimental diets (designated as diets T1, T2, T3 and T4) was formulated to contain 1800, 2000, 2200 and 2400 kcal metabolizable energy (ME)/kg. 20 red Sokoto goat were purchased from Dutsin-Ma and Batsari markets. The animals were quarantined for two weeks, and allowed to acclimatize to the environment, later the animal were bred and allow to deliver. The total number of 29 kids were used for the study.

The kids with their dams were allocated to four treatments group and replicate five times.

Weighing scale (20 and 50kg capacity), were used in measuring feed ingredient during formulating diet and the total weight of the diet after compounding, it also used in measuring weight of the kids.

Measuring tape (60cm length: measuring tape was used in measuring the morphometric of the kids which are: Body length (distance between the shoulder and the pin bone), height at withers (distance from the withers to the floor perpendicular to the body axis of the animal), chest width (width of the rib cage between the fore legs), iliac crest (distance between the right and left tuber coxae), chest depth (longest length of the chest at rib level), knee to floor height (height of the knee perpendicular to the axis of the body), hock to floor height (height of the hock perpendicular to the axis of the body), horn Length. Maximum and Minimum Thermometer: was used in measuring the temperature of the experimental unit. The experimental kids were allowed to suckle their dams for period of one week, and additional one week before the commencement of data collection to achieve for the filamentary period.

A complete randomized experimental design (CRD) (Steel and Torrie, 1980) and 5 degree of freedom was used in this study. 29 Sokoto red goat kids with their dams was allocated randomly to each dietary treatment. The research lasted for 84 days. Milk consumption, live weight gain and morphometric changes of the kids were monitored. Feeding is done twice daily. Milk intake were also calculated by subtracting the final weight of the kids after suckled (lactating) the milk, from the initial weight of the kids before suckling the milk from dam. Daily room temperature was recorded using a maximum and minimum thermometer. The morphometric changes were also recorded weekly using measuring tape.

RESULT AND DISCUSSION

Table 1: Pre – Weaning Performance of Red Sokoto Goat Kids Fed Diets Containing Different Energy Levels.

Parameters	T1 (2400)	T2 (2200)	T3 (2000)	T4 (1800)	SEM
Birth weight	1.9	1.95	2.095	1.98	0.31
Final weight	7.8	7.07	5.99	7.27	1.96
Milk intake (ml/d)	566	638	446	502	56.7
ADG (g/d)	70.24 ^a	60.95 ^c	46.37 ^d	62.97 ^b	7.76
Height at a wither	2.06	3.67	1.82	4.23	0.89
Body length	2.49	3.10	2.30	3.48	0.61
Chest width	1.18	0.76	0.66	1.18	0.21
Chest girth	2.43	2.79	2.28	3.74	0.56
Iliac crest	4.91	3.92	2.57	3.98	1.06
Chest depth	0.58	0.45	0.45	0.46	0.10
Knee to flow	0.97	1.04	1.03	1.25	0.20
Hock to flow	1.86	1.91	1.72	1.97	0.45

Means with different superscripts in the same row are significantly different ($P < 0.05$)

Results from table 1 indicated that the pre-weaning performance of sokoto red kids fed diets containing different energy levels. It could be observed from that no significant differences ($P > 0.05$) were recorded between treatments means for all the parameters with the exception of average daily gain (ADG). However, ADG was higher in treatments 1 and 4 containing 2400Kcal/Kg ME and 1800Kcal/Kg ME respectively, treatment 3 with 2000Kcal/Kg ME recorded the lowest mean (46.37g/d). Though the mean milk intake (MI) did not differ significantly between all the treatments but decreased from 638ml/day in treatment T2 containing 2200Kcal/Kg to 446ml/day in treatment T3 containing 2000Kcal/Kg. Values of obtained for Chest width, Chest girth and Iliac crest were numerically higher in the group of kids fed with 1,800 Kcal/Kg ME while group fed 2,000 Kcal/Kg recorded the lowest values of 0.66, 2.28 and 2.57 respectively. Similarly treatment 4 (1,800Kcal/Kg ME) had numerically higher values (4.23 and 3.48) of height at wither and body length compared to treatment 3 which recorded the lowest values (1.82, 2.30). Though Knee to flow did not differ significantly ($P > 0.05$) between all the treatments, highest mean was obtained in treatment T4 (1.25) and the least is in treatment 1 (0.97). Equally Hock to flow was numerically higher in treatment 4 containing (1800Kcal/Kg ME) compared to treatments T1, T2 and T3 containing 2400Kcal/Kg, 2200Kcal/Kg and 2000Kcal/Kg ME respectively.

The result from this study shows that the higher value average daily gain of (70.24^a) obtained from treatment T1 fed (2400 kcal/ME/kg) could be attributed as a result of parity, sex, nutrients contents in the nursing dam milk. Similarly, kids born single gained higher daily weights than those born as twins, genetic make-up, environmental influence, and health status could be the attributing factors as to why T1 has the highest ADG (70.24^ag/d) even though, the Milk Intake (566ml/d) was less than T2 with ADG of 60.95^c g/d and Milk Intake of (638ml/d).

It was similarly agreed that sex, parity, nutrients contents, twin kids or single are some of the factors that leads to the variations in ADG and Milk Intake Maigandi, and Nasiru (2006). Male kids were heavier than females, singles were heavier than doubles and doubles were heavier than triplets Montaldo *et al.*, (1981). The effect of the sex of kid and the type of kidding on birth weight, as found in this work, is well documented (Singh, *et al.*, 1990, Mavrogenis, *et al.*, 1984, Fernandes, *et al.*, 1985, and Tukur *et al.*, 2013).

Birth weight as an early measurable traits is of great interest because of its positive genetic correlation with further live weights. [16].

CONCLUSION

In conclusion, it was observed that an optimum energy level to be used in compounding a complete diet for ruminant animals (Goat) growing and lactating in semi-arid zone is 2400 Kcals ME/ kg respectively. And can also use 15% CP and 23% CF during formulation in the semi-arid zone.

RECOMMENDATION

From the above findings, it is recommended that, further studies should be conducted to determine the energy requirement of red Sokoto goat at different physiological condition (pregnancy, Lactation, and growth) in the semi-arid zone of Nigeria in-order to alleviation the problems of malnutrition especially during the long dry season.

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