

EFFECT OF SEX ON SOME LINEAR BODY MEASUREMENTS IN WEST AFRICAN DWARF GOATS REARED UNDER SEMI-INTENSIVE MANAGEMENT SYSTEM IN A TROPICAL ENVIRONMENT

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ABSTRACT

This research was conducted to evaluate the effect of sex on linear body measurements in West African Dwarf (WAD) goat in Nigeria, using 14 WAD goat, which comprised of 7 males and 7 females. The parameters measured include body weight, distance between the eyes, ear length, ear width, and tail length. Data was collected on weekly basis for four 4 months. The results showed that body weights and other body measurements had no significant ($P>0.05$) difference in both sexes of the WAD goats although tail length and body weight of the female goats have higher values than that of the males. Correlation coefficients among body measurements were positive and significant. Thus, as body measurement increase, the rate of growth also increases.

INTRODUCTION

The most wide- spread breed of domestic animals in terms of adaptability are the goats JOSHI *et al* (2004) they are bred in almost every country in the world and in all climatic zones from the mountains of Siberia to the deserts and the tropical parts of Africa (Luikart *et al.*, 2001). Goat is a multi-functional animal and plays a significant role in the economy and nutrition of landless small and marginal farmers in the world and its rearing is an enterprise which has been practiced by a large section of population in rural area. In Nigeria, goats are the most numerous of all types of livestock numbering above 53 million (FAO, 2010). The average number of sheep and goats per owner is three to four animals with goats predominating (Abu *et al.*, 2011). These animals are kept primarily for meat and milk production although the skin is valuable to different industries for the production of different goods. The Federal Ministry of Agriculture (FMA, 1981) estimated the goat contributed about 17 percent of the total meat supply in Nigeria. The importance of goat cannot be over emphasized. Its importance which can be viewed from the national economy is the provision of animal protein that is rich in essential amino acids to sustain human life through such product, like meat and milk (Adewumi *et al.*, 2003). Goats typically inhabit areas where other livestock species cannot survive and are hence found in large populations in areas with scarce vegetation and water source, where the conditions for breeding other domestic animals especially Bovine cattle, are fearless favorable. Today there are

various systems of goat breeding from the most extensive to the intensive, all having different production goals (Mioc and Pavic, 2002). In order to get a broad view of the production of West African dwarf (WAD) goats, if therefore becomes necessary to estimate the body weight and some of the linear measurement parameters through the use of weighing scale and measuring type. Therefore the purpose of this study is to determine the relationship between male and female on linear body measurement and weight.

MATERIALS AND METHODS

The experiment was carried out at the goat and sheep unit of the Teaching and Research farms of the Delta State University, Asaba Campus, Asaba is located at latitude 06°49' North of the equator. Asaba has its rainy season from March, with a mean annual rain fall of 1500 – 1849.3mm. It has a moderate climate with a very high temperature during the dry season with a mean annual temperature and precipitation of 28°C ± 6°C and 1117mm respectively. Fourteen West African Dwarf (WAD) goats were used for this experiment. The goats were purchased from the Hausa Fulani herds men at Oko Cattle market, Asaba Delta State.

Animal Management

The goats were allowed to graze on mixed pasture for 6 – 8 hours daily and were given 0.3 – 0.5kg per day of 17 – 20% crude protein concentrate supplement depending on the live weight. The supplement consist of wheat offal dry brewers' grain, bone meal and common salt. All animal

were vaccinated against PPR, and dipped regularly. Cool, clean drinking was provided.

Data Collection

Data were collected on the tail length, ear length, ear width and distance between eyes. Distance between eyes: This was the length in centimeters (cm) between the two eyes across the nose of the goat using a pair of divider and then determined by a transparent ruler. A flexible tape rule was used to take the measurement of the tail length, ear length and ear width. The body weight was measured with a weighing scale (kg) and a cage to confine the animal while weighing.

Data collected were subjected to analysis of variance as described by Steel and Torrie (1980). Significant means were separated using SAS/STAT, 1999 software to compare the relationship among parameters.

RESULT AND DISCUSSION

The effect of sex on body measurement parameters in West African Dwarf (WAD) goats are presented in Table 1. The result shows that difference between distance between eyes, ear length, ear width, tail length were not significantly ($P>0.05$) affected by sex among the treatment means. Body weight were significantly ($P<0.05$) affected by sex among treatment means. For body weight, West African Dwarf (WAD) goats female mean value are higher than those of males ($F=17.65$ and $M=12.57$). This is in consonance with the report of Osinowo *et al.* (1998) who showed same in Red Sokoto goat. The coefficients of correlation of body measurement parameter in West African Dwarf (WAD) goats are presented in Table 2. Results indicate that body measurement parameters were positively related to body weight in this breed of goats, thus indicating that as the body measurement parameter increase, the body weight of goats also increase. The report of this present study is in agreement with report of Akpa *et al.* (1998) who reported significant influence of breed on udder size of Red Sokoto (RES) goats.

CONCLUSION AND RECOMMENDATION

In the study it is shown that there is positive Correlation between increases in body parameter measured and weight gain. The study also shown that sex does not have any influence on weight gain in WAD goats. All body parameter measured

against sex did not significant difference in weight gain of the animals.

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Table 1: Effect of Sex on Body Measurement Parameters in West African Dwarf Goats

Variables	Female		Male	
	N	X $\pm$ SE	N	X $\pm$ SE
Distance between eyes	7	6.00 $\pm$ 0.35 ^a	7	6.99 $\pm$ 0.56 ^a
Ear Length	7	7.56 $\pm$ 0.34 ^a	7	7.77 $\pm$ 0.38 ^a
Ear Width	7	4.36 $\pm$ 0.16 ^a	7	4.14 $\pm$ 0.25 ^a
Tail Length	7	9.25 $\pm$ 0.62 ^a	7	8.48 $\pm$ 0.70 ^a
Body Weight	7	17.65 $\pm$ 3.78 ^a	7	12.57 $\pm$ 1.75 ^b

a, b, means of the same row with different superscript differ significantly (P < 0.05).

Table 2: Pearson Correlation Coefficient of Body Measurement Parameters in Goats

	Age GRP	Eyes	Ear Length	Ear Width	Tail Length	Body Weight
Body WT	1.001	0.137	-0.087	0.381	0.563	0.596
	-	0.641	0.771	0.181	0.037	0.026
Eyes	-	1.001	0.397	0.788	0.775	0.619
			0.160	0.002	0.002	0.019
Ear LT			1.001	0.306	0.066	0.672
				0.289	0.825	0.009
Ear Width				1.001	0.799	0.672
					0.001	0.009
Tail LT					1.001	0.851
						0.000
Body WT						1.001

Age GRP=Age Group; Eyes=Distance between eyes; Ear LT=Ear Length; Ear WDT=Ear Width; Tail LT=Tail Length; Body WT=Body Weight