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Research Article

Studies on Body Weight, Condition and Scrotal-Testicular Measurements of Rams in Doma and Lafia Metropolis

Faith EA[1]*, Sabuwa ABM[2] and Owoeye AO[3]

[1]*Department of Animal Science, College of Agriculture Lafia, Nasarawa State, Nigeria*

[2]*Department of Animal Science, Faculty of Agriculture, Nasarawa State University, Keffi, Shabu-Lafia Campus, Lafia, Nigeria*

[3]*Department of Agricultural Education, Federal College of Education (Technical) Gusau, Zamfara State, Nigeria*

***Corresponding Author**: Faith EA, Department of Animal Science, College of Agriculture Lafia, Nasarawa State, Nigeria.

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Abstract

This study was carried out in two selected Local Government Area of Nasarawa State, Nigeria to evaluate body weight, condition and scrotal-testicular measurements of Rams in Doma and Lafia metropolis. Data were obtained from a total of two hundred Rams of the West African Dwarf breed of equal number each (100 Rams) in Doma and Lafia. The Rams were selected in their breeding tracts in a certain herds of the two locations. The Rams' age were between 1 - 1.5 years and were determine by dentition following the standard protocol. The followings traits were measured: body weight, scrotal length, testicular diameter, scrotal circumference and body condition following standard protocol. The General Linear Model of SPSS 22 was used in the analyses of the data on the body weight, scrotal length, testicular diameter, scrotal circumference and body condition as well as the effect of the location in which the study was conducted. The means and standard errors are body weight (30.718, 0.197), scrotal length (15.764, 0.090), testicular diameter (6.673, 0.040), scrotal circumference (25.869, 0.105) and body condition (2.960, 0.069). The results indicates that there was no significant difference ($P < 0.05$) in the body weight, scrotal length, testicular diameter, testicular circumference and body condition of Rams in Doma and Lafia metropolis and this similarities could be attributed to similar management, breed and environmental conditions. This findings could provide basis for breeding management in the selected area in Nasarawa State, Nigeria.

Keywords: *Condition; Scrotal-Testicular; Rams; Doma; Lafia; Metropolis*

Introduction

Reproductive parameters determine several aspects of sheep production including genetic improvement, so adequate data on reproduction is very essential for reproductive management and to set up feasible breeding schedule [1]. In livestock production, Ram fertility influences flock performance and reproductive efficiency compared to the fertility of individual Ewe; thus, selection of highly fertile male is essential for improvement in production [2]. Therefore, to improve production in the tropics, the reproductive efficiency and fertility of the males need to be looked into [3]. In contrast, fertility studies in livestock have generally tended to focus on the female side with less emphasis on the male [3].

A large body size is an indicator of good growth rate, an important trait when marketing sheep within different communities (Mtimet., *et al.* 2014). In the absence of live weight data, breed and visually assessment of size are the most important factors in determining the price for live animals (Mtimet., *et al.* 2014). It is important for farmers to know what the market prefer in order to align their breeding strategy with the market demands (Ojango., *et al.* 2014).

Information on reproductive organs characteristics values is necessary in breeding soundness evaluation to determine fertility efficiency of breeding males. These information includes scrotal circumference measurements, an integral part of animals with a pendulous

scrotum particularly, in bulls due to their high correlations with testicular size and sperm production capacity [4]. Parameters such as body size and testicular measurements are also commonly employed in breeding soundness evaluations, among the selection criteria, testicular size is the most suitable parameter to indirectly improve the reproductive performance of female and a reliable parameter of the status of reproductive growth, spermatogenesis, and seminal characteristics [5].

Materials and Methods

Experimental site, animal management and data collection

This study was carried out in two selected Local Government Area of Nasarawa State, Nigeria (Doma and Lafia). The area falls within the Guinea Savanna agroecological zone and is found between latitudes 7°52 N and 8°56 N and longitudes 7°25 E and 9°37 E respectively. It has two distinct seasons. The wet season lasts from about the beginning of May and ends in October. The dry season last between November and April. Annual rainfall figures range from 1100 to 2000 mm. The mean monthly temperatures in the State range between 20 and 34ºC, with the hottest months being March/April and the coolest months being December/January [6]. **The animals are fed on** forages and prepared concentrates respectively.

Data were obtained from a total of two hundred Rams of the West African Dwarf breed of equal number each (100 Rams) in Doma and Lafia. The Rams were selected in their breeding tracts in a certain herds of the two locations. The Rams' age were between 1 - 1.5 years and were determine by dentition following the procedure of Matika**.,** *et al* [7]**.** The followings traits were measured: body weight, scrotal length, testicular diameter, scrotal circumference and body condition of the Rams following standard protocol [8]**.**

Statistical analysis

The General Linear Model of SPSS 22 was used in the analyses of the data on the body weight, testicular length, testicular diameter, scrotal circumference and body condition as well as the effect of the location in which the study was conducted [9].

The linear model below was adopted

$Y_{ij} = \mu + Li + e_{ij}$

Where:

Y_{ij} = Individual mean population

μ = General mean of the population

L_i = Location effect

e_{ij} = Error term

Results and Discussion

Table 1 showed the grand mean and standard error of the Rams studied in the two location.

Traits	Mean	Standard error
Body weight	30.718	0.197
Scrotal length	15.764	0.090
Testicular diameter	6.673	0.040
Scrotal circumference	25.869	0.105
Body condition	2.960	0.069

Table 1: *Grand mean and standard error of the Rams in Doma and Lafia Metropolis.*

Body weight (Kg), Scrotal length (cm), Testicular diameter (cm), Scrotal circumference (cm).

The mean and standard error are body weight (30.718, 0.197), scrotal length (15.764, 0.090), testicular diameter (6.673, 0.040), scrotal circumference (25.869, 0.105) and body condition (2.960, 0.069) respectively.

The values of the body weight and testicular traits obtained in this study is in normal range with the report of Faith., *et al* [10].

The values of the body weight and testicular traits obtained in this study is in normal range with the report of **Goyal and Memon** [4]. Body weight and condition influence the reproductive potential of domestic animals and body weight itself is affected by breed, age and nutritional status of the male animal [11]**.**

Effect of location on body weight, condition and testicular measurement of Rams were presented in table 2.

Traits	Doma Mean ± SE	Lafia Mean ± SE	P -value
Body weight	30.697 ± 0.279	39.740 ± 0.278	0.913^{NS}
Scrotal length	15.768 ± 0.127	15.761 ± 0.127	0.966^{NS}
Testicular diameter	6.677 ± 0.057	6.670 ± 0.057	0.933^{NS}
Testicular circumference	25.869 ± 0.149	25.870 ± 0.149	0.995^{NS}
Body condition	2.955 ± 0.098	2.965 ± 0.098	0.940^{NS}

Table 2: *Effect of location on the body weight, condition and scrotal-testicular measurements of rams.*

NS: Not significant; SE: Standard error of mean, Significant at 95% (P < 0.05).

The results indicates that there was no significant difference (P < 0.05) in the body weight of Rams in Doma and Lafia metropolis and this similarities in the weight of the ram in the two location could be attributed to similar management system, breed types and environmental conditions (temperature and humidity).

Nevertheless, the weight of the Rams were in normal range and are in agreement with the work of Faith., *et al*. [10] and Faith., *et al.* [12] who reported same for WAD and Yankasa Ram in their study.

The mean values for scrotal length, testicular diameter and testicular circumference of the Rams in the two location were not statistically different (P<0.05), although the mean values were slightly different. However, this similarities are an indication that the Rams shared similar management.

The result of the body condition for the two location were not significantly different (P < 0.05) although there may be slight differences in the mean values [13].

Conclusion

The results indicates that there, were no significant difference (P < 0.05) in the body weight, scrotal length, testicular diameter, testicular circumference and body condition of Rams in Doma and Lafia metropolis and this similarities could be attributed to similar management practices, breed and environmental conditions. This findings could provide basis for breeding management in the selected area in Nasarawa State, Nigeria.

Conflict of Interest

The author declared that no conflicts of interest exit pertaining this manuscript.

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