

NOTA BREVE

RELATIONSHIP BETWEEN SOME PHYSICAL PARAMETERS OF GRAZING YANKASA EWES IN THE HUMID ZONE OF NIGERIA

ESTUDIO SOBRE LAS RELACIONES ENTRE ALGUNOS PARÁMETROS FÍSICOS DE OVEJAS YANKASA EN PASTOREO EN LA ZONA HÚMEDA DE NIGERIA

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ADDITIONAL KEYWORDS

Linear body measurements. Grazing season. Age.

PALABRAS CLAVE ADICIONALES

Medidas corporales. Estación de pastoreo. Edad.

SUMMARY

Linear body measurements of Yankasa ewes kept under the semi-intensive system of management were used for the study. The following morphometric variables: live weight (LW), height at withers (HW), chest girth (CG) and trunk length (TL) were taken weekly for a period of six months. Animals were grouped according to their age to see if there would be any significant difference within the parameters by age. A very high correlation was observed between the body morphometric variables ($r=0.80-0.97$) of the animals during the period of study. CG (x, cm) was found to be the best parameter for predicting the live body weight (Y, kg) of the animal ($Y = -44.14 + 2.55x$). Age was found to have a high significant influence ($p < 0.01$) on the body parameters. Also, season had significant effect ($p < 0.01$) on the body parameters as they all tend to be higher in the wet season.

RESUMEN

Se estudiaron medidas corporales lineales de ovejas Yankasa, en manejo semi-intensivo.

Durante seis meses se tomaron semanalmente las siguientes medidas: peso vivo (LW) alzada a la cruz (HW), perímetro torácico (CG) y longitud del tronco (TL). Los animales se agruparon de acuerdo con su edad para comprobar si existía alguna diferencia significativa por esta causa. La correlación fue muy alta entre las variables morfológicas durante el periodo estudiado. CG (x, cm) fue la mejor variable para predecir el peso vivo del animal (Y, kg) ($Y = -44,14 + 2,55x$). La edad tiene elevada influencia ($p < 0,01$) sobre las medidas corporales y también la estación.

INTRODUCTION

Yankasa sheep are the most widely distributed and most numerous sheep breed in Nigeria. The low initial investment required for these animals which are usually kept in small units by peasant farmers in villages and urban areas makes it attractive to small scale farmers (Oni, 2002). The economic value of these animals is usually acce-

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ssed using weighing scale. However, the cost of weighing scales has risen astronomically in the recent years and can only be afforded by government and commercial farms and not by village farmers who control the largest proportion of these animals.

This study was therefore carried out to examine a cheaper and alternative way of determining LW through the following morphometric variables: height at withers (HW), chestgirth (CG), and trunk length (TL) of female Yankasa sheep in Nigeria. The likely effects of the age and season on animal's body weights and measurements were also examined and compared.

MATERIALS AND METHODS

EXPERIMENTAL SITE AND ANIMAL MANAGEMENT

The study was carried out at the Teaching and Research farm of the Federal University of Technology, Akure, Nigeria. Twenty two (22) Yankasa ewes kept under the semi intensive system of management were used for the study. These animals were allowed to graze daily for a period of

five hours. There was no supplementary feed for the animals during the experiment.

DATA COLLECTION

The linear body measurements and the body weights of the ewes were taken on Friday mornings of every week before grazing for a period of six months.

The HW, TL and CG were determined using a tape rule as described by Searle *et al.* (1989) while the LW was measured through a weighing scale. The age was determined using the dentition method as described by Davendra and Mcleroy (1982). The animals were grouped by age as shown below:

Group	Age range (days)	Number of animals
A	0-365	4
B	366-731	5
C	732-1096	4
D	1097-1461	4
E	1462-1827	5

STATISTICAL ANALYSIS

Correlation coefficient was used to find the relationship between the

Table 1. Summary of overall means for each body parameter taken on Yankasa ewes. (Medias generales de cada variable medida sobre ovejas Yankasa).

Parameters	No of observations	Mean	Standard error	Min	Max
LW (kg)	22	22.86	5.388	13.7	32.7
CG (cm)	22	26.28	1.992	22.6	29.6
Age (days)	22	1019.22	543.46	330	1680
TL (cm)	22	23.45	0.931	21.4	25.1
HW (cm)	22	25.18	11.64	11.64	26.8

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RELATIONSHIP BETWEEN BODY MEASUREMENTS OF YANKASA EWES IN NIGERIA

Table II. Correlation of body measurement of Yankasa ewes. (Correlación entre medidas corporales de ovejas Yankasa).

Body parameters	LW	CG	Age	TL	HW
LW	1.00	0.97	0.95	0.89	0.82
CG		1.00	0.93	0.91	0.80
Age			1.00	0.83	0.75
TL				1.00	0.72
HW					1.00

parameters observed, while regression analysis was carried out to obtain the prediction equation. Analysis of variance was used to determine the effect of age on the animals linear body measurements while the mean comparison was performed using the follow-up test.

RESULTS AND DISCUSSION

The overall mean for LW, CG, TL, HW and age of ewes are shown in **table I**. The study shows that there was a high correlation ($p < 0.01$) of LW with CG, TL, HW and age, which agrees with the work of Loto (1988) that reported that LW of West African dwarf goats was found to be highly correlated ($p < 0.01$) with other body parameters. CG had the highest correlation ($r = 0.97$) and HW ($r = 0.82$) having the least as shown in **table II**.

The regression analysis in this study shows that, CG could best be used to predict the LW of the animals. The prediction equation derived was $Y = -44.14 + 2.55(x)$ where $Y =$ liveweight (kg) and $x =$ chestgirth (cm). This was

similar to the result of Benyi, (1997) that observed that sheep's LW could best be predicted using CG.

The effect of age on Yankasa ewes was also observed. Age was found to have a high significant difference ($p < 0.01$) on LW and CG of the animals which shows that LW and CG increases with age. TL and HW increased steadily and significantly ($p < 0.01$) with age for animals on groups 1, 2 and 3 and then decreased slightly for animals in groups 4 and 5 (**table III**), this may be attributed to the faster growth rate observed in the younger ewes compared to the older ones, which is similar to the findings of Searle *et al.* (1989) who reported that skeletal dimensions especially TL and HW increases significantly ($p < 0.05$) in the first year of sheep's life.

However, there was a seasonal variation in the body weights of the animals. **Table IV** shows that the mean

Table III. Estimated gross means for age of Yankasa ewes effect on the different body parameters. (Efectos medios estimados para la edad de ovejas Yankasa sobre medidas corporales).

Age range	Parameters			
	HW (kg)	TL (cm)	CG (cm)	LW (cm)
0-365	23.73 ^a	24.48 ^b	25.58 ^a	15.10 ^a
366-731	14.48 ^{ab}	22.82 ^{ab}	25.20 ^b	19.50 ^b
732-1096	25.58 ^{bc}	23.08 ^{ac}	25.80 ^{cb}	21.85 ^{cb}
1097-1461	25.40 ^{b^c}	24.03 ^{ac}	27.30 ^c	25.50 ^d
1462-1827	26.35 ^c	24.60 ^a	28.78 ^d	29.35 ^c

Means on the same column with different superscripts are significantly different ($p < 0.01$).

Table IV. Overall mean for different body parameters of Yankasa ewes for wet and dry season. (Medias generales para medidas corporales de la oveja Yankasa en las estaciones húmeda y seca).

Body parameters	Dry season	Wet season
LW (kg)	21.29 ^a	24.39 ^b
CG (cm)	25.68 ^a	26.81 ^b
Age (days)	1056.36 ^a	1150.91 ^b
TL (cm)	23.13 ^a	23.73 ^b
HW (cm)	24.71 ^a	25.26 ^b

Means on the same column with different superscripts are significantly different ($p < 0.01$).

of various parameters (LW, CG, TL and HW) was significantly higher in rainy season than in the dry season. This could be attributed to the fact that during the dry season, feeding stuffs for these animals were not sufficiently

available. This however led to considerable weight loss and death of some of these animals while searching for green forage in the absence of feed supplement.

In conclusion, the findings in this study shows that CG (cm) can best be used to predict LW of Yankasa ewes using the equation $Y = -44.14 + 2.55(x)$ where Y= live weight (kg) and x= chestgirth (cm).

Also, age played a major role on the body parameters as there was a significant difference ($p < 0.01$) between each of the age groups. Season was also found to have effects on the body parameters especially on live body weight of the animals as it tends to increase during the wet season. Supplementary feeding programme is however essential especially during the dry season to compensate for weight loss in grazing small ruminants as a result of seasonal fluctuation.

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