EFFECT OF AGE AND BODY WEIGHT ON CONFORMATION TRAITS IN KANO BROWN DOES AT SMALL HOLDER SYSTEM

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ABSTRACT
The study was conducted to determine the effect of age and body weight on conformation traits in Kano brown does as well as to determine the relationship between the conformation traits and body weight using 110 Kano Brown Does at three age groups (9-12, 13-24 and 25-36 months). The body weight was taken and recorded in kilogram. The conformation traits used for the study were heart girth (HG), body depth (BD), withers height (WH), body length (BL), stature (ST), rump width (RW) and chest width (CW). These conformation traits were measured with flexible tape in centimeters. The experimental result showed that age significantly (P<0.01) influenced heart girth, body depth, stature and height at withers. However body length rump width and chest width had no significant influenced on age. All the body conformation traits except body length, rump width and chest width increased with increase in age. Body weight significantly (P<0.01) influenced all the conformation traits evaluated except that chest width had no significant (P>001; P>0.05) influenced on the body weight. The correlation coefficient obtained for the measured traits were positive and significant. Based on the result obtained from this study it's recommended that age and body weight should be taken in to consideration for selection and breeding in Kano Brown does.

Key words: Age, Body weight, Conformation traits, Kano brown does

INTRODUCTION
Small ruminants are important genetic resources in the tropics, where they play a predominant role in the sustenance of the livelihoods of impoverished families especially in the rural areas. In Nigeria, they represent about 63.70% of the total growing domestic animals (Yakubu *et al.*, 2010). The goat is a household animal in Nigeria and its importance cannot be over emphasized. Goats have provided mankind with useful products like meat, milk and skin (Akpa *et al.*, 1998). Body linear measurement is important for the prediction of live weight, Carcass weights and determination of certain body conformation traits that can be taken into consideration in selecting animals for genetic improvement (Akpa *et al.*, 2006). Traditionally, animals are visually assessed, which is subjective method of judgment (Abanicanda and Leigh, 2002). Therefore, the development of objective means through linear body measurements (conformation traits) in assessing and predicting their productivity would overcome many of the problems associated with visual evaluation. The present study is therefore aimed at determining the effect of age and body weight on conformation traits of Kano brown does so as to provide information on productivity and other characteristics of this breed of goat.

MATERIALS AND METHODS
The study was carried out in Babura local government area of Jigawa state. The state falls within the Sudan savannah vegetation zone, but there are traces of guinea savannah in the southern part of the state, and is found between latitude's 11^0 N and 13^0 N and longitude's 8^0 E and 10^0E with a tropical climate while the temperature varies at different times. Higher temperatures are normally recorded between the month of April and September. The daily minimum and maximum temperature are 15 degrees and 35 degrees Celsius. The rainy season lasts from May to September with average rainfall of between 600mm to 1000mm. The southern part of the state has higher rainfall percentage than the northern part (JARDA, 2010). A total of 110 Kano brown does were used for this study. They were sourced for from different households in the rural area. The animals were managed under traditional small holder system (extensive system). They were released for grazing in the morning and kraaled at night. The does were at three age group; 9-12, 13-24 and 25-36 months. The experiment lasted for two months. The linear measurements were measured in centimeters (cm) using flexible tape as described by Boisot *et al.* (2002). The heart girth (HG) was measured as the circumference of the body at a point immediately behind the fore legs perpendicular to the body axis (Osinowo *et al.*, 1992). The stature (ST) was measured from the top of the spine in between hips to the ground. The chest width (CW) was also measured from the inside surface between the top of the front legs. Withers height (WH) was measured as the highest point over the scapulae vertically to the ground. Body depth (BD) was measured as distance between the top of the

spine and the bottom of the barrel at the last rib. Body length (BL) was measured from the point of the shoulder to the ischium. Rump width (RW) was measured as the distance between the most posterior point of the pin bone. Prior to weighing the animals, the weight of the observer was taken and recorded. Then the body weight of each animal was taken by carrying the animal individually and standing on a weighing scale. The difference between this weight and observer's weight was taken as the weight of the animal (Akpa *et al.*, 1998). The ages of the animals were determined using dentition estimation of permanent teeth (Shoenian, 2007). Data collected were subjected to analysis of variance (ANOVA) using completely randomized design (CRD) of SAS, (2002). Means were separated using Duncan multiple range test (DMRT) Duncan, (1955). Correlation analysis was used to assess the relationship among the variables.

RESULTS AND DISCUSSIONS

Age significantly influenced the measured traits. The values obtained for heart girth, body depth, withers height and stature as shown in Table1 increased progressively as age increases and this was in agreement with findings of Akpa *et al.*, (2013); Suleiman and Adu (2012) and Ambali *et al.*, (2013). With respect to body weight as shown in Table 2, the result showed that body weight significantly influenced all body conformation traits except chest width. This observation indicated that body conformation traits increased with increase in body weight. This result supports the finding of Eugena, (2010); Suleiman and Adu, 2012 and Akpa *et al.*, (2013); they reported that as live weight increase, the linear body measurement increase in guinea pigs and ruminants. Concerning the correlation between body conformation traits and body weight in Table 3, the result indicates that increase in one trait would lead to the increase in others. The high and positive correlation of heart girth with body weight (0.64) in this study conformed to those reported by Suleiman and Adu, (2012). The strong positive and significant correlation between the body conformation traits is expected according to reports given that body conformation traits reflect element of size of the animals (Berry *et al.*, 2005). Therefore, the improvement of body weight within a selection objective may be achievable through the linear conformation traits (Akpa *et al.*, 2006).

Conclusion

Age and weight had influence on body conformation traits in Kano Brown Does and suggesting further step in working on the predictability of the traits measured. The two factors should be considered in preparing the does for effective breeding and reproduction.

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Table 1: Effect of age on body measurements in Kano Brown does

Age (months)	No	Heart Girth (cm)	Body Depth (cm)	Withers Height (cm)	Body Length (cm)	Stature (cm)	Rump Width (cm)	Chest Width (cm)
9-12	25	62.73^{c}	33.92^{b}	59.16^{b}	44.29	60.11^{b}	9.61	9.69
13-24	37	65.17^{b}	33.83^{b}	58.02^{b}	44.39	60.27^{b}	10.04	10.02
25-30	48	71.73^{a}	38.30^{a}	61.85^{a}	46.19	63.68^{a}	9.96	10.27
LOS		**	**	**	Ns	*	NS	NS
± SEM		0.35	0.45	0.52	0.38	0.42	0.13	0.13

(**=p<0.01);a,b,c means within the same column with different superscripts differ significantly (p<0.05). LOS: level of significance, ±SEM: standard error of mean, no: number of observation and (ns: not significant)

Table 2: Effect of body weight on body measurements in Kano Brown does

Body weight (kg)	No	Heart Girth (cm)	Body Depth (cm)	Withers Height (cm)	Body Length (cm)	Stature (cm)	Rump Width (cm)	Chest Width (cm)
11-20	43	64.18^{c}	34.18^{b}	59.22^{b}	44.28^{b}	61.06^{b}	9.81^{b}	9.85
21-30	55	68.38^{b}	36.11^{b}	59.58^{b}	45.04^{b}	61.27^{b}	9.78^{b}	10.06
31 above	12	75.13^{a}	40.21^{a}	64.29^{a}	48.75^{a}	66.13^{a}	10.79^{a}	10.73
LOS		**	**	*	*	*	*	Ns
± SEM		0.49	0.37	0.52	0.38	0.47	0.14	0.14

**=P<0.01: a,b,c means within the same column with different superscripts differ significantly (P<0.05). LOS: level of significance: ±SEM: standard error of mean

Table 3: Correlation Analysis among Body Measurements in Kano Brown Does

	BW	HG	BD	WH	BL	ST	RW	CW
BW	1.0	0.64**	0.49**	0.26*	0.29*	0.36**	0.14	0.11
HG		1.0	0.63**	0.21	0.26*	0.31*	0.061	0.21
BD			1.0	0.51**	0.51**	0.52**	0.12	0.21
WH				1.0	0.46**	0.61**	0.21	0.17
BL					1.0	0.47**	0.11	0.12
ST						1.0	0.18	0.11
RW							1.0	0.76**
CW								1.0

BW=body weight, HG=heart girth, BD=body depth, WH=withers height, BL=body length, ST=stature, RW=rump width, CW=chest width. **=P<0.01,*=P<0.05