COMPARISON OF SOME BODY MEASUREMENTS FOR SAANEN GOATS

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Abstract

The aim of this research was to compare some body measurements of goats and their kids. The measurements, namely the birth and the body weight, were taken during a 15-day- period for two months subsequent to the birth of the kids. The study was conducted on the Research Farm of Adnan Menderes University in Aydın province, Turkey. Within the data, parameters of 35 Saanen goats and of 46 kids of them, which were born in February and April in 2015, were compiled. The average live weights of the goats and of the kids were recorded after birth within 12 hours as 3.15kg and 47.78 respectively. A positive and significant correlation was found between the live weights of the goats and kids after birth (P<0.01). In addition, there was also a positive and significant correlation between the live weights of the goats which had multiple births and the live weights of the kids (P<0.01). The relationship between Withers height (WH)of goats and Withers height (WH)of kids at birth was found statistically non-significant (P<0.01); however, the correlation between Body Lengths (BL) of the kids, which were recorded in two months in every 15 days, was determined to be positive and significant (P<0.01). On the other hand, when the gender was taken into account, while there was a positive and significant correlation between the body lengths of the goats and male kids after birth, the correlation between the goats and female kids was found non-significant. In breeding selection from kids in the herd, characteristics, such as birth weight, live weight gain and body lengths (BL) are quite important; however, some research should also be conducted on the billy goat impact for some body measurements of their kids.

Key words: Saanen goats, kids**,** birth weight, body lengths

INTRODUCTION

The Saanen, which is known for its good body constitution and high adaptability, has one of the highest potential production levels of the dairy goats. Growth is fast in this breed and it could reach to puberty rapidly. Lactation period is between 260 and 280 days and average milk yield is 700 kg per year. Milk yield could be over 1000 kg in elite flocks. This breed has a high reproductive yield [2]. Saanen goats were brought to Turkey in 1959 and were used in various breeding studies [3].

Body measurements are important data sources in terms of reflecting the breed standards (Riva et al., 2002) and are also important in giving information about the morphological structure and development ability of the animals. Animal body length, height and weight are quite significant characteristics in selection of the breeding for sheep and goat breeders in Turkey and everywhere. Particularly the body length is the one that is extremely regarded by the breeders and buyers.

In this study, it was aimed to determine the effects of some body measurements of goats on the body measurements of the kids, and to compile data starting from the birth until the age of two months at 15 days intervals in order to compare the body measurements of goats and their kids.

MATERIAL AND METHODS

The study was conducted on the Research Farm of Adnan Menderes University in Aydın province, Turkey. It is 52 m above sea level and is on a plot coordinating as

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37°45′03.31″ N and 27°45′27.16″ E. The farm was an intensive farm where goats were fed without grazing throughout the year. Within the data, parameters of 35 Saanen goats and of 46 kids of them which were born in February and April in 2015 were compiled. The average Live Weights (LW), Withers Height (WH), Body Lengths (BL) of the goats and of the kids was recorded right after birth within 12 hours. The average live weights, Withers height (WH), Body Lengths (BL) of the kids were taken at every 15-day-period in two months subsequent to the birth of the kids. The differences between subjects were determined by the Tukey's test. The statistical analysis of data was processed with SPSS 17.0 statistical package program.

RESULTS AND DISCUSSION

Least squares means and their standard errors, minimum and maximum means for live weights (LWB) of does after birth, and kids birth weight, (LWB), live weights of kids (LW1, 2, 3, 4), which were taken at every 15 day-intervals during the two months, and Withers height (WH), Body Lengths (BL) of the does and of the kids were given in Table 1. The numbers included in the parameters as 1, 2, 3 and 4 indicate the 4 times data collection intervals in two months.

Least squares means (LWB) of does and kids were found as 47.78 and 3.15 kg; (WH), (BL) means of does were determined as 73.94, 75.93 and (WH 1, 2, 3, 4) and (BL 1, 2, 3, 4) of kids were found to be 34.67, 36.87, 37.91, 41.34 cm and 28.059, 33.17, 35.674, 41.82 cm, respectively. While there was approximately 1-2 cm difference among the first 3 values, there was a significant distinction between the last measurement and the previous ones. The last two measurements for WH and BL for kids displayed outstanding differences reaching approximately 5-6 cm (Table 1). The reason for this significant increase in the lengths is thought to be the environmental conditions, particularly the temperature and the feeding effects.

Table 1 Least squares means and their standard errors, minimum and maximum means of LWB,LW,WH,BL for does and kids

	N	Mean	Minimum value	Maximum value
	Statistic	Statistic	Statistic	Statistic
(LWB) of does	35	47.786±1.42	30.9	70.0
(LWB) of kids	35	3.159±0.08	1.9	5.0
(LW) of kids 1	37	3.627±0.14	2.1	5.7
(LW) of kids 2	41	4.951±0.19	2.7	8.0
(LW) of kids 3	46	5.509±0.23	2.6	9.2
(LW) of kids 4	46	7.517±0.28	3.8	11.9
(WH) of does	35	73.946±0.75	62.0	85.0
(WH) of kids1	34	34.676±0.64	24.0	42.0
(WH) of kids2	41	36.878±0.50	30.0	44.0
(WH) of kids3	46	37.913±0.54	30.0	46.0
(WH) of kids4	46	41.348±0.56	34.0	50.0
(BL) of does	35	75.935±1.08	63.0	92.0
(BL) of kids1	34	28.059±0.60	20.0	36.0
(BL) of kids 2	41	33.171±0.55	26.0	40.0
(BL) of kids 3	46	35.674±0.70	24.0	45.0
(BL) of kids 4	46	41.826±0.66	30.0	53.0

It was found that there were a positive and significant correlation (P<0.01) between the Live Weights (LWB) of does and kids which were taken within 12 hours after birth (r=0.430).

Table 2 Correlations coefficient for LWB and LW of does and kid

	(LWB)of kids	(LW) of kids 1	(LW) of kids 2	(LW) of kids 3	(LW) of kids 4
(LWB) of does	0.430**	0.544**	0.211	0.270	0.270
(LWB) of kids	1	0.918**	0.779**	0.770**	0.721**
(LW) of kids 1		1	0.908**	0.845**	0.742**
(LW) of kids 2			1	0.977**	0.917**
(LW) of kids 3				1	0.980**

** P<0.01

When the data were evaluated to determine whether there was a relationship between Withers Height (WH) of does and kids or not, it was found that the correlation between Withers Height (WH) of goats and Withers Height (WH) of kids was non-significant. On the other hand, the correlation between Withers Height (WH) measurements of kids 1, 2, 3 and 4 was found to be a positive and significant one (r= 0.791-0.986).

Table 3 Correlations coefficient for (WH) of does and kids

	(WH) of kids1	(WH) of kids 2	(WH) of kids 3	(WH) of kids 4
(WH) of does	0.294	-0.043	0.095	0.130
(WH) of kids 1	1	0.950**	0.791**	0.902**
(WH) of kids 2		1	0.910**	0.986**
(WH) of kids 3			1	0.967**

** P<0.01

The data was studied to see whether there was a relationship between the Body Lengths (BL) of does and kids or not, we found that there was a positive and significant correlation between the Body Lengths (BL) of does and the Body Lengths (BL) of kids (P<0.05). The correlation among the body length (BL) measurements of kids 1, 2, 3 and 4 was found to be a positive and significant correlation (r= 0.850-0.983) in Table 4.

Table 4 Correlations coefficient for (BL) of does and kids

	(BL) of kids1	(BL) of kids 2	(BL) of kids 3	(BL) of kids 4
(BL) of does	0.467*	0.115	0.144	0.156
(BL) of kids 1	1	0.851**	0.649**	0.794**
(BL) of kids 2		1	0.904**	0.983**
(BL) of kids 3			1	0.971**

** P<0.01,*P<0.05

With respect to gender, the correlation between live weight (LW) of does and the kids was found high and significant (r=0.486). It was shown in table 5 that correlations coefficient between LWM of does and LWM of kids were found to be positive and significant (P<0.01).

Table 5 Correlations coefficient for (LWB, WH) of does and kid According to multiple births

	(LWB) of kids	(LW) of kids1	(LW) of kids 2	(LW) of kids 3	(LW) of kids 4
(LWB) of does	0.513**	0.663**	0.245	0.293	0.289
(LWB) of kids	1	0.922**	0.775**	0.720**	0.662**
(LW) of kids 1		1	0.893**	0.817**	0.699**
(LW) of kids 2			1	0.986**	0.925**
(LW) of kids 3				1	0.978**

** P<0.01

Table 6 displays Pearson Correlation among Body Lengths (BL) of the does and of the female and male kids. Body Lengths (BL) of does were highly (P<0.05) correlated with

Body Lengths (BL) of male kids (r=0.609); however, Body Lengths (BL) of does were found non-significantly correlated with Body Lengths (BL) of female kids (r=0.127).

Table 6 Correlations coefficient for (LB) of does with male and female kids

Male kids

	(BL) of kids 1	(BL) of kids 2	(BL) of kids 3	(BL) of kids 4
(BL) of does	0.609*	0.130	0.131	0.140
(BL) of kids 1	1	0.669**	0.869**	0.816**
(BL) of kids 2		1	0.970**	0.980**
(BL) of kids 3			1	0.980**

Female kids

	(BL) of kids 1	(BL) of kids 2	(BL) of kids 3	(BL) of kids 4
(BL) of does	0.127	0.159	0.116	0.181
(BL) of kids 1	1	0.479	0.747**	0.670**
(BL) of kids 2		1	0.894**	0.985**
(BL) of kids 3			1	0.985**

Body weight is a very important characteristic in animal husbandry due to selection criteria and economical profit [1]. Live Weight plays an important role in determining several characteristics of the farm animals especially the ones having economical importance. Pesmen and Yardimci, 2008 reported that the average live weight, withers height, body length values of Saanen goats were found as 55.37 kg, 66.94, 109.75 respectively. The values of Live Weight and Withers Height in our study were found to be higher than these values. However, the body length values were lower than them. In another study, Teke et al. 2011 found that the average live weights of Saanen kids on birth was 3.29, which was higher than the value determined in our study (3.159 kg).

The effect of gender on body length was also found insignificant (P<0.05) [6].

In this study a positive and significant correlation was found between the live weights of the goats and kids after birth (P<0.01) and between the live weights of the goats which had multiple births and the live weights of the kids (P<0.01). While the relationship between Withers height (WH) of goats and Withers height (WH) of kids at birth was found statistically non-significant (P<0.01), the correlation between Body Lengths (BL) of the kids was determined to be positive and significant (P<0.01). On the other hand, the gender displayed altering functions in the study. While there was a positive and significant correlation between the body lengths of the goats and male kids after birth, the correlation between the goats and female kids was found non-significant. Consequently, correlation is one of the most common and useful statistics that describes the degree of the relationship between two variables. It was determined in this study under the lights of the displayed correlations that live weight at birth and body lengths (BL) are quite important correlations between does and the kids. However, in our study, the effects of the billy goats were not taken into account. It is thought to be a requirement that some more research should also be conducted on the billy goat impacts on some body measurements of their kids.

REFERENCES

[1]. Cam, M.A., Olfaz, M. and Soydan, E., 2010: Possibility of using morphometric characteristics as a tool for body weight prediction in Turkish Hair goat. Asian J. Anim. Vet. Advances, 5 (1): 52-59

[2]. Ertugrul, M., 1996: Small Ruminants Management Practices 2nd. Edition, Ank. Üniv. Agri. Fac. Publications, 1446, Ankara, 18-20 (in Turkish)

[3].Ozder, M., 2006: Keci Irklari. In: M. Kaymakci (editor), Keci Yetistiriciligi, Izmir, pp. 17-18.

[4]. Pesmen, G., Yardimci, M., 2008: Estimating the live weight using some body measurements in Saanen goats. Archiva Zootechnica 11:4, 30-40, 2008

[5]. Riva J., Rizzi R., Marelli S., Cavalchini G., 2002 : Body Measurements in Bergamasca Sheep, Small Ruminant Research, 221-227

[6]. Teke, B., Akdağ, F., Arslan, S., 2011: Some Fertility, Growth And Behavioral Traits Of Saanen Goats Raısed On Private Farm Condition. Fac. Vet. Med. İstanbul Üniv. 37 (1), 18.