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Konkan Kanyal Goats morphometric characterization in its breeding tract

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Abstract

The present research was carried out at Dapoli Krishi Vidyapith and in Konkan region of Maharashtra. Total 200 Konkan Kanyal goats were divided into four groups of 25 males and 25 females in each group to study their morphometric characterizations at different age. The groups were formed of age 1-3, 4-6, 7-12 and 13-18 months. The data on body measurements of total 200 Konkan Kanyal individual goats were collected by taking actual measurements of each individual with different sex. According to the predefined test groups, 25 males and 25 females were assessed from each group of study. It was observed that, average heights at wither was 51.04 ± 0.90 and 48.58 ± 0.92 , 54.12 ± 1.02 and 53.38 ± 0.79 , 64.12 ± 0.38 and 59.62 ± 1.86 , 68.96 ± 0.71 and 67.60 ± 0.70 cm in 1-3, 4-6, 7-12 and 13-18 months of age, respectively. Average tail length was 13.20 ± 0.30 and 12.66 ± 0.25 , 15.38 ± 0.23 and 14.88 ± 0.26 , 17.80 ± 0.25 and 15.97 ± 0.29 , 20.80 ± 1.92 and 19.9 ± 0.37 cm in 1-3, 4-6, 7-12 and 13-18 months of age respectively. Average ear length in male and female was 13.10 ± 0.17 and 13.03 ± 0.15 , 14.23 ± 0.22 and 13.34 ± 0.12 , 17.05 ± 0.20 and 16.25 ± 0.20 , 18.28 ± 0.14 and 17.60 ± 0.39 cm in 1-3, 4-6, 7-12 and 13-18 months of age respectively. Average ear width was 5.68 ± 0.08 and 5.28 ± 0.21 , 5.88 ± 0.61 and 5.76 ± 0.91 , 7.02 ± 0.12 and 6.73 ± 0.08 , 7.69 ± 0.08 and 7.64 ± 0.22 cm in 1-3, 4-6, 7-12 and 13-18 months of age respectively. Average horn length was 2.94 ± 0.28 and 2.24 ± 0.26 , 4.50 ± 0.23 and 4.31 ± 0.31 , 12.66 ± 0.56 and 9.44 ± 0.6 , 13.46 ± 0.42 and 12.44 ± 0.47 cm in 1-3, 4-6, 7-12 and 13-18 months of age of male and female respectively.

Keywords: Morphometric characterization, Konkan Kanyal goats

Introduction

India comprises largest bovine population of 192.49 million cattle and 109.85 million buffalo (20th Livestock Census). Referring to present time the population of goat 148.88 million which is about to be about 14.66 percent of world population and comparison to china country ranks second in goat population. Out of India's total goat population (20th Livestock Census). Maharashtra comprises of 10.60 million which contributes to 7.11% of the India's total goat population (20th Livestock Census).

Considering the 37 goat breeds which are overall distributed in India, four are present in Maharashtra viz., Sangamneri, Osmanabadi, Konkan Kanyal and Berari. Konkan Kanyal is unique goat of such populations, developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, through intensive selection method, survives well and performs satisfactorily in heavy rainfall hilly terrain of Kokan region of Maharashtra state. An attempt was made by the National Bureau of Animal Genetic Resources (ICAR), to study the distribution, morphology, performance and management practices of these goats in their native area.

The prediction of the probable value of an animal forms as a vital role in judging the animal which is done after taking the body measurements attribute to obtain sufficient idea on the development of vital organs chest girth, body length and height which indicates he progress of various body cavities. Skeletal growth of the animals can be found out with the help of body measurements. The measures of bone growth can be determined with the help of body length and height at withers. Are the whilst the development of muscles, bones and fat is signified by the chest girth an in turn closely related to live weight.

Although, NBAGR has documented morphometric characterization of this breed and has declared it as a recognized goat breed of Maharashtra but its periodic verification and reassessment is also very essential to authenticate the available data. As the time frame and the changing environmental conditions with varied feed resources and management may alter the phenotype of animal, this outline entitled “Study on morphometric characterization of Konkani Kanyal goat in its breeding tract” has been designed as research work.

Materials and Methods

The data on body measurements of total 200 Konkani Kanyal individual goats were collected by taking factual measurements of each individual with distinguish sex. According to the predefined test groups, 25 males and 25 females will be assessed from each group of study. On the basis of the breed characteristics documented by NBAGR, true type Konkani Kanyal goat male & female will be selected randomly from its breeding tract. Body dimension and body mass at different age (i.e. 1-3 months, 4-6 months, 7-12 months, 13-18 months) will be considered for present study. The fundamental tools for the current study will be measuring tape, weighing balance and visual examination. The body dimension and body mass will be evaluated from each goat of either Sex at different age (i.e. 1-3 months, 4-6 months, 7-12 months and 13-18 months) by using the standard metallic tape and hanging electronic or digital platform weighing balance. All the data obtained were subjected to analysis as per two sample t-test and Pearson's correlation test. The results of the statistical analysis so obtained was spread over results and discussion.

Results and Discussion

Tail Lengths

The average tail length at different age groups in Konkani Kanyal goat with respect to sex in their breeding tract are presented in table no. 01. The average tail length at different age *viz.* (1-3, 4-6, 7-12 and 13 - 18 months) for both male and female of Konkani Kanyal were studied in present study. The tail length of Konkani Kanyal goats at 1-3 months of age was 13.20 ± 0.30 and 12.66 ± 0.25 cm in agreement with Rahman *et al.*, (2008) [8] who reported 6.10 ± 0.26 cm in Black Bengal buck and higher value reported by Maroof Ahmed *et al.*, (2009) [4] who reported 15.73 ± 0.15 and 14.16 ± 0.13 cm in male and female Beetal kid, respectively. The Tail length of Konkani Kanyal goats at 4-6 months of age was 13.20 ± 0.30 cm male and in females were 12.66 ± 0.25 cm. which is in agreement with Chaudhari *et al.*, (2010) [3] as reported 10.34 ± 0.28 cm in Osmanabadi goat while the higher values were reported by Shinde *et al.*, (2000) [11] in Osmanabadi goat as reported as 14.57 ± 0.38 cm and Verma *et al.*, (2009) [12] who reported as 12.88 ± 0.26 cm in Malbari goat, respectively. The tail length of Osmanabadi goats at 7-12 months of age were recorded as 17.80 ± 0.25 cm in males while 15.97 ± 0.29 cm in females which is in agreement with Shinde (2000) [11] who reported as 15.26 ± 0.28 cm in Osmanabadi goat and Verma *et al.*, (2009) [12] who reported as 14.67 ± 0.35 cm in Malbari goat whereas lower value was reported by Chaudhari *et al.* (2010) [3] who reported as 11.77 ± 0.35 cm in Osmanabadi goat. The tail length for the Konkani Kanyal goats at 13-18 months of age were recorded as 20.80 ± 1.92 cm which is in agreement with Shinde (2000) [11] who reported as 17.49 ± 0.23 cm in Osmanabadi goat. The tail length in males was higher than females within all the groups. From the obtained

data and its statistical analysis showed higher tail length was at 7-12 month age. Hence, it highly significant differences recorded. However, the tail length showed statistically non-significant difference found in at 1-3, 4-6 and 13-18 month age group.

Ear lengths

The average ear length in distinguish age groups in Konkani Kanyal goat with respect to sex in their breeding tract are presented in Table No. 01. The average length of ears of Konkani Kanyal goat in male and female in distinguish age groups *viz.* (1-3, 4-6, 7-12, and 13 - 18 months) were studied in present study. The average length of ears of male at age of 1-3 months was 13.10 ± 0.17 cm and in females was 13.03 ± 0.15 cm. The corresponding measurements for length of ears of 4-6 months of age were 14.23 ± 0.22 cm in males and 13.34 ± 0.12 cm in females respectively. In the 7-12 months age group, the length of ear was 17.05 ± 0.20 cm in males while 16.25 ± 0.20 cm in females. Similarly, for 13-18 months old male these values were 18.28 ± 0.14 cm and in females as 17.60 ± 0.39 cm respectively. The average length of ear in males was higher than females within all the groups. 1st and 4th age group samples were not significantly different. Sample was significantly different at 1% level of significance observed in 2nd and 3rd age group. The results of 1-3 month age groups of the present parameter were in close agreement with Salagar (2010) [10] who revealed 11.71 ± 0.06 cm., Mule *et al.*, (2011) [5] who reported 11.58 ± 0.06 cm., Nikam *et al.*, (2012) [7] reported 11.48 ± 0.05 cm in Osmanabadi goat and Ahmad Fahim *et al.*, (2013) [1] as reported as 13.79 ± 0.32 cm in Rohilkhand local goat, respectively. The length ear of the Konkani Kanyal at 4-6 months of age were recorded as 14.23 ± 0.22 cm male and 13.10 ± 0.15 cm in female which is in agreement with Raskar (2008) [9] who reported as 13.36 ± 0.44 cm. Mule *et al.*, (2011) [5] who reported as 13.99 ± 0.13 cm and Nikam *et al.*, (2012) [7] who reported as 13.65 ± 0.10 cm in Osmanabadi goat. The length of ear of Konkani Kanyal goats at 7-12 months of age were recorded as 18.28 ± 0.14 cm in male and 17.60 ± 0.39 cm for female which is in agreement with Raskar (2008) [9] who reported as 15.58 ± 0.44 cm. Mule *et al.*, (2011) [5] as reported as 15.16 ± 0.55 cm and Nikam *et al.*, (2012) [7] who reported as 14.68 ± 0.20 cm in Osmanabadi goat whereas higher value was reported by Chaudhari *et al.*, (2010) [3] who reported as 16.37 ± 0.30 cm in Osmanabadi goat. The length of ear for the Konkani Kanyal goats at 13-18 months of age were recorded as 18.28 ± 0.14 cm in male and 17.60 ± 0.39 cm in female which is in agreement with Shinde (2000) [11] who reported as 16.32 ± 0.18 and 17.49 ± 0.23 cm in the males and females, Osmanabadi goat and Ahmad Fahim *et al.*, (2013) [1] who reported 14.67 ± 0.24 cm in Rohilkhand local goats, respectively.

Ear widths

The average ear width in distinguish age groups in Konkani Kanyal goat with respect to sex in their breeding tract are presented in Table No. 01. The average width of ear Konkani Kanyal goat in male and female in different age groups *viz.* (1-3, 4-6, 7-12, and 13 - 18 months) was studied in present study. The average ear width of male at age of 1-3 months was 5.68 ± 0.08 cm and in females was 5.28 ± 0.21 cm. The corresponding measurements for 4-6 months of age were 5.88 ± 0.61 cm in males and 5.76 ± 0.91 cm in females respectively. In the 7-12 months age group, the width of ear was 7.02 ± 0.12 cm in males while 6.73 ± 0.08 cm in females. Similarly, for 13-18 months old male these values were

7.69±0.08 cm and in females as 7.64±0.22 cm respectively. The average width of ear in males was higher than females within all the groups. Statistically 5% significant differences were observed for the ear width for all the 1st, 2nd, 3rd and 4th age group. The width of ear of Konkan Kanyal goats at 1-3 months of age 5.68±0.08 cm for male and in females were 5.28±0.21 cm which is in agreement with the value reported by Rahman *et al.*, (2008) [8] as 4.12 ± 0.14 cm in Black Bengal buck whereas higher ear width reported by Maroof Ahmed *et al.*, (2009) [4] as reported as 8.74 ± 0.14 and 8.56 ± 0.17 cm in Beetal kids. The width of ear of Konkan Kanyal goats at 4-6 months of age was 5.88±0.61cm in male and 5.28±0.21 cm in female which is in agreement with Rahman *et al.*, (2008) [8] as reported as 5.30 ± 0.09 cm in Black Bengal buck.

Horn length

The average length of horn in different age groups in Konkan kanyal goat with respect to sex in their breeding tract are presented in Table No. 01. The average length of horn of

Konkan Kanyal goat in male and female in different age groups *viz.* (1-3, 4-6, 7-12 and 13 - 18 months) was studied in present study. Average length of horn for 1-3 months of age was 2.94±0.28 cm in males and 2.24±0.26 cm in females. For 4-6 months age group, the horn length was 4.50±0.23 cm in males while 4.31±0.31 cm in females. In 7-12 months old male these values were 12.66±0.56 cm in male and 9.44±0.6 cm in female respectively. However, at 13-18 months old male these values were 13.46±0.42 cm and in females as 12.44±0.47 cm respectively. The average length of horn in females was higher than males within all the groups. Statistically non-significant difference was observed in all age group. Mule *et al.*, (2011) [5] studied Osmanabadi goats for body measurements in Nanded and Hingoli districts and reported the horn length in Osmanabadi goats at 0-3, 4-6, 7-9, 18-36 months of age were 0.34 ±0.01 cm, 2.72 ±0.07 cm, 3.50 ±0.66 cm, 7.82 ±0.30 cm respectively. These values are different than the present study values which may be due to breed variation.

Table 1: Average Body weight and Body Measurements of Konkan Kanyal goats.

	1-3 Months		4-6 Months		7-12 months		13-18 months	
	M	F	M	F	M	F	M	F
TL	13.20±0.30	12.66±0.25	15.38±0.23	14.88±0.26	17.80±0.25	15.97±0.29	20.80±1.92	19.90±0.37
EL	13.10±0.17	13.03±0.15	14.23±0.22	13.34±0.12	17.05±0.20	16.25±0.20	18.28±0.14	17.60±0.39
EW	5.68±0.08	5.28±0.21	5.88±0.61	5.76±0.91	7.02±0.12	6.73±0.08	7.69±0.08	7.64±0.22
HL	2.94±0.28	2.24±0.26	4.50±0.23	4.31±0.31	12.66±0.56	9.44±0.60	13.46±0.42	12.44±0.47

Conclusion

Average Ear length, Tail length, Ear width and Horn length were found more in male as compared with female. However, at early age up to 3 month both the sexes exhibited somewhat similar body growth. Further it is observed that, the rate of growths were found to be maximum during 7-12 month of age specifically in male animals. The highly significant effect of sex on body weight and highly significant to significant for the different body dimensions in Konkan Kanyal goat at 7-12 months of age may lead to the conclusion that the intermediary phase of attaining puberty must have played important role in exhibiting these traits. Significant effect on few body measurements may lead to conclusion that the geographical variation in climatic condition and available feed resources play major role in expressing these traits. (male) of animal govern on all the traits under observation, whereas insufficient nutrient availability may cause to be the reason for declined performance in growth. From these observations, it can be revealed that, individual differences in the growth pattern in Konkan Kanyal goat breed can be studied after 3 months of age and it usually showed positive linear co-relation with the advancement of age up to 18 months during the present investigation.

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