



Short Communication

RELATIONSHIP OF BODY WEIGHT FROM MORPHOMETRIC TRAITS IN SIROHI GOAT

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Abstract: The study was conducted in Korea District, Chhattisgarh to determine the relationship between live weight and linear measurements in Sirohi goat under semi intensive system. Data on live body weight, linear body measurements were collected from selected 20 female goats over one year. The mean body length, height at wither, heart girth and bodyweight of adult Sirohi Doe were recorded to be 27.5 ± 0.80 inch, 24.91 ± 0.88 inch, 24.91 ± 0.88 inch and 25.25 ± 0.75 kg, respectively. Significant positive correlation coefficients between live weight and body measurement characteristics viz. body length (BL), height at withers (HT) and heart girth (HG), (0.618, 0.680 and 0.700 respectively) were observed. The relatively high value of correlation coefficient between live body weight and heart girth assumed it to be more significant indicators of live body weight in Sirohi goat.

Keywords: Body measurements, Body weight, Correlation

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Introduction

India has diversified agro ecology and various topography features, which served as a home for indigenous livestock species. Goat is a multi-functional animal and plays a significant role in the economy and nutrition of landless, small and marginal farmer generally nontechnical and poor economic background. They generally reared goat for multipurpose such as sources of milk, meat and hide and plays a significant role in the economy and nutrition of landless, small and marginal farmers in India. The growth and production pattern of goat is important economical factor which influenced by adult body weight. In such case, body length and heart girth may be used as good reliable predictors to assess live weight [2,6]. Selective breeding using linear body measurements can be helpful in improving meat yield of the breed by increasing its live weight [1]. From this point of view, morphometric measurement is inevitable for the selection and to predict the body weight as well as their production performances. Increasing meat yield from these breeds requires genetic improvement of their live weights. Earlier reports also indicated that selection based upon the body measurements should improve the meat production [2,3]. Proper measurement of this trait, which is often hard in rural areas due to the lack of weighing scales of rural farmers. The livestock weight assessment practically is required for ration computation, determining the price of the animal, deciding the therapeutic dose rate of animals etc [9]. Weighing scales, though accurate, are not commonly available or convenient for use in an Indian field setting. There are many studies that have aimed to estimate weights from various body measurements, but these often require several measurements per animal, which is inconvenient, time-consuming and possibly dangerous. There is relationship in between body measurements and sex, age and breed/ecotype and that these measurements which can be exploited in predicting live body weight and hence the economic value of goats [7]. The present study was carried out to establish the relationship between live weight and some body measurements in Sirohi goat helping body weight in future selection and other purposes.

Material and Methods

This study was conducted in Korea districts in Chhattisgarh (23.25°N 82.55°E). A study was conducted to determine the variability in body morpho-metric measurements and their application in determining live bodyweight of Sirohi goats. A total of 20 adult female Sirohi goats over one year of age were considered in present study. The animals are reared in semi intensive managemental system. A different linear body trait such as body length, heart girth, and height at withers rump height along with body weight was recorded. Live body weight of each animal was taken individually and measured in kilograms prior to feeding and watering. Digital weighing balance was used for measurement of individual animal weight. The heart girth body length and height at wither were measured by flexible measuring tape as described by [8]. The animal welfare was taken care off during handling and restraining the animals, pregnant doe and sick animals were not the part of study. The correlation between body weight and other linear body characteristics were analyzed with Pearson correlation analysis. Statistical analysis was done by Least Square techniques [5]. The goodness of fit (R^2) was tested to determine the contribution of these three independent variables.

Result and Discussion

The mean body length, height at wither, heart girth and bodyweight of adult sirohi Doe were recorded to be 27.5 ± 0.80 inch, 24.91 ± 0.88 inch, 26.83 ± 0.85 inch and 25.41 ± 0.68 kg, respectively. Our results are more or less similar to that of [10]. The "r" values were found to be 0.618, 0.680 and 0.700 for body length height at wither, and heart girth, respectively. All r values were positive and significant. The magnitude of correlation between body weight and heart girth among the linear body measurements was the highest (0.688) in present study. Also, the high and significant correlation coefficient between height at wither and bodyweight at over one year's age groups suggests that either of this variable or their combination would provide a good estimate for predicting live body weight in Sirohi goats. The result is in agreement with findings of [10] who reported high and positive correlation value of bodyweight with chest circumference.

Multiple linear regression analysis based on body length, height at wither and heart girth was found to be moderate. In our study it was observed that over one year of age, R^2 value was around 72% indicating that it may be fairly good estimator of live weight of sirohi doe under present study. Studies further indicated that generally body weights of more number were predicted accurately as R^2 of models increased. Multiple regression analysis based on three body measurements was also supported by [7].

The multiple regression models that can be used when measurement is to be based on animal body length height at wither and chest girth and as shown below live weight = $1.169 + 0.370BL + 0.192HT + 0.368HG$. The results suggested that any of these variables or their combinations would provide a good estimate of predicting live body weight in Sirohi goat. Live body weight is an important economic trait in the selection of animals.

Conclusion

The body measurements had high correlation with the body weight, this may be used as selection criteria and devolvement of body weight prediction equation.

Application of research: Study help to determine the variability in body morphometric measurements and their application in determining live bodyweight of Sirohi goats

Research Category: Livestock Production and Management

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Study area / Sample Collection: Korea districts in Chhattisgarh

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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