

Mathematical evaluation of the relationships between some objective measurements and prices of breeding bucks and does in Nasarawa State, Nigeria

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Abstract

Body size is one of the most important traits in the breeding objectives and marketing of goats in sub-saharan Africa. This study aimed at determining objectively the relationships between some morphometric measurements and the prices of breeding bucks and does in Nasarawa State, north central Nigeria. Data were collected from a total of 1,012 randomly selected live adult goats of both sexes covering the three Nigerian indigenous breeds of goats [332 West African Dwarf (197 males and 135 females), 374 Red Sokoto (216 males and 158 females) and 306 Sahel goats (172 males and 134 females)]. The animals were sampled in Karu/Keffi and Akwanga/Lafia markets. The traits measured were body weight (BW), chest circumference (CC), scrotal circumference (SC) and udder circumference (UC) including the determination of the price of each animal. General linear model (GLM) was used to test the fixed effects of breed, sex and location including their interactions on the body traits. Pearson's coefficients of correlation among the various traits were computed. The prediction of price from body parameters was done using stepwise regression analysis. The univariate analysis revealed that Sahel goats had significantly ($P<0.05$) higher morphometric variables compared to other breeds. They also commanded ($P<0.05$) highest price than the other two breeds. Sex also influenced ($P<0.05$) all the body parameters with higher values recorded for males, while there was no effect ($P>0.05$) of market location on the body traits. Among the various interactions, only interaction between sex and location were significant ($P<0.05$) on price. Coefficients of phenotypic correlation between the traits were positive and significant ($P<0.01$), ranging from 0.55-0.98. Across all the three breeds, CC appeared to be the best single measurement to determine the prevailing market price of goat. The present information will be useful in determining objectively the prices of goats to the advantage of the farmers, sellers and consumers of meat including researchers who need this information to determine selection index and policy makers for decision making.

Keywords: breeding, goat, marketing, Nigeria, prediction

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Target audience: Goat producers, marketers, consumers, breeders/geneticists, policy makers
