Impact of Genetic and Environmental Factors on Production and Reproduction Traits of Saanen Goats Raised Under Sudan Conditions

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ABSTRACT
The aim of this study was to investigate the genetic and environmental factors affecting milk production and reproduction traits of Saanen goats raised under Sudan semi-arid conditions. Data were extracted from the Goat Improvement Project records covering the period from 2004 to 2011. They were classified according to place of birth, season and year of kidding and parity number for all studied traits. However, birth weight was classified in addition to the above, according to sex and type of birth. Data were subjected to analysis of variance, using Harvey’s computer software. Least squares means, heritabilities and genetic and phenotypic correlations of the studied traits were estimated. The least squares means of milk yield (MY), daily milk yield (DMY) and lactation length (LL) were 340.78 kg, 1.50 kg and 203.99 days, respectively. While those means for birth weight (BW), age at first kidding (AFK), number of services per conception (NSC) and kidding interval (KI) were 3.25 kg, 458.11 days, 1.53 times and 315.29 days, respectively. On the other hand, the average conception rate over five breeding years ranged from 90.09% to 96.87% and kidding percentage ranged from 151.6 to 162.12%. The estimates of heritability from full sibs component of variance were 0.44, 0.82 and 0.34, 0.39, 0.10 and 0.27 for MY, DMY, LL, BW, NSC and KI, respectively. The results indicated that year of kidding had a significant (P<0.01) effect on all studied traits, while season had insignificant effect on BW and AFK. Place of birth was significantly affected LL only. Parity order significantly affected BW and AFK. Place of birth was significantly affected LL only. Parity order significantly affected BW, MY and DMY. It is concluded that productive and reproductive performance of Saanen breed was suitable for milk and kid production under Sudan conditions, but it can be improved by management, nutritional and breeding practices.

Key words: Saanen goats; genetic and environmental factors; Sudan