Effect of genotype, sex and multiple births on birth weight of goats

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Goats are reared primarily for meat purpose though milking is practiced occasionally. Meat production begins with pre natal growth. Many genetic and environmental factors influence the prenatal growth of goats, the magnitude of which can be estimated from birth weight of kids. This study was conducted to determine the effect of genotype (breed/cross), sex of the kid and type of birth (single, twin, triplet or quadruplet) on birth weight of the kids. The genotypes included Kottukachchiya (the only recognized local breed) and Jamnapari breeds and their crosses with Boer breed. Similar management practices were performed for dams of all genotypes including grazing (day time) with supplementary feeding of concentrates and fodders. Birth weight (kg) of a set of 565 kids from the above genotypes, their sex and birth type were recorded. Analysis of variance procedure was conducted to find out the significance of the influence of genotype, sex and birth type (fixed effects) on birth weight. Two factor and three factor interactions of fixed effects were also included in the model. Means among genotypes and among birth types were compared using Duncan's Multiple Range test.

The results showed that male kids (2.78 kg) were significantly ($P<0.05$) heavier than the females (2.60 kg). Mean weight per kid significantly ($P<0.05$) decreased when no. of kids per birth increased from single to quadruplets (2.93^{a}, $2.40^{a,b}$, $2.09^{b,c}$ and 1.50^{c}, respectively). Effect of genotype was also significant ($P<0.05$) though none of the interactions between fixed effects were significant. Kottukachciya breed reported significantly less birth weight (2.16^{a}) compared to Jamnapari, Boer x Jamnapari, and Boer x Kottukachchiya genotypes (2.56^{b}, 2.54^{b} and 2.57^{b}, respectively). During formation of the breed, Kottukachchiya goats were subjected to much less selection compared to the imported breeds, which is evident by their poor performance. However, their significant increase in birth weight when crossed to Boer goats show the potential for improvement of Kottukachchiya goats as a meat purpose breed.

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