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Effect of Body Condition Score and Short-Term Nutritional Flushing on the Reproductive Performances of Spanish Female Goats and their Crosses with Male Boer Goats

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Abstract

Goat production has become an attractive alternative livestock enterprise for limited resource farmers in many tropical and subtropical countries. The objective of this experiment was to evaluate the effect of body condition score (BCS) and the subsequent short-term supplementation with high levels of energy and protein sources on the reproductive performance 90 Spanish and 90 Spanish × Boer (60 $\frac{1}{2}$ Boer = F1-cross and 30 $\frac{3}{4}$ Boer = F2-cross). Each genotype was equally distributed to treatments of 2 body condition groups (BCG, low and high) and 3 flushing treatments consisting of no supplementation (control), supplementation with protein mixture (PM) alone and PM + ground corn (PE) (2 × 3 factorial arrangements). The flushing period lasted for 11 days after which does were exposed to sexually active Boer bucks for 42 days long. The results indicated that flushing with PM and PE diets numerically increased the body weight and body condition score values of all genotypes categorised in high BCG. In low BCG, however, flushing with PM and PE diets significantly ($p < 0.05$) increased the body weight of F1-cross and Spanish does, respectively. Moreover, in low BCG, flushing with PE diet increased ($p < 0.05$) the BSC values by 26.7%, 18.1% and 29% in Spanish, F1- and F2-crosses, respectively. Similarly, flushing with PM diet increased ($p < 0.05$) the BSC values in Spanish and F1 genotypes by 19.6% and 10.7%, respectively. In high BCG, does of the Spanish and F1-cross flushed with PE diet had higher ($p < 0.05$) pregnancy and multiple birth rates than F2 genotype. In low BCG, the pregnancy and kidding rates of Spanish does flushed with PM diet was higher ($p < 0.05$) than those of F2-cross. Similarly, the F2-cross supplemented with PM and PE diets had significantly ($p < 0.05$) higher pregnancy and multiple birth rates than both Spanish and F1 genotypes. The litter size was significantly ($p < 0.05$) higher for F1 and F2 genotypes supplemented with PE diet. In conclusion, flushing with protein and energy sources for short period of time was found to be beneficial for improving the body weight and body condition score and subsequently, the reproductive efficiency of does characterised by poor body condition.

Keywords: Body condition score, body weight, Bore goats, nutritional flushing, reproductive traits, Spanish goats, Spanish × Boer crossbreeds