

CERTIFICATION

I hereby declare that this submission is my own work towards the M. Phil. and that, to the best of my knowledge, it contains no material previously published by another person or material which has been accepted for the award of any other degree of the University, except where the due acknowledgement has been made in the text.

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ABSTRACT

In a bid to determine the link between nutrition and reproduction, the effects of two levels of a local feed supplement intake on the physical body measurements, metabolic and gonadotropin status of West African Dwarf (WAD) goats at breeding were studied in a flushing experiment lasting 45 days. The levels of supplement feed provided 60% (High) and 20% (Low) of the estimated daily dry matter requirement of goats. Forty WAD does aged between 3 and 6 years (inclusive) were grazed on grass (*Panicum maximum*) pasture and randomized within these supplementation levels as 3-4yr and 5-6yr age groups, resulting in a 2x2 factorial of randomized complete block design. After estrual synchronization with PGF_{2α}, does were mated by 6 fertile bucks. The parameters measured included body condition score (BCS), body weight, serum levels of total protein, glucose, calcium, insulin, gonadotropins (FSH and LH), fertility rate and prolificacy. In addition, the reproductive implications of interactions among these parameters were investigated. The results showed that West African Dwarf (WAD) does responded positively to luteolytic estrus synchronization with PGF_{2α} and flushing with high energy/protein supplementation for six weeks at the end of a long dry season, in the semi-arid or transitional ecozone of Ghana. The probable optimum age, BCS and body weight at mating for improved reproductive response were 4 years, 2.0 – 2.5 and 15 -17 kg, respectively. Flushing improved BCS, body weight and prolificacy of WAD does by 23.86%, 10.25% and 29.0% respectively. The study results also corroborated suggestion of insulin as a possible metabolic-reproductive hormone. It was recommended that these findings be further verified in other parts of the breeding year, ecozones of Ghana, and the traditional (extensive) goat farming system. Blood sampling protocol for gonadotropin assay may have to start earlier than 31h after estrus-inductive administration of PGF_{2α} and to consider determination of lipostatic status and leptin-insulin effects on prolificacy due to flushing. Programmed breeding, regular body condition scoring and culling of aged breeders were recommended for effective flushing with supplement feed.

