

Effects of Concentrate Supplementation on Growth Performance and Response to Estrous Synchronization of Local Goats in Laos

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Degree MS
Course Animal Science
Study Thesis
Year 2016

Abstract

The study was divided into two (2) experiments as follows:

Experiment I: The study was aimed to investigate the effects of concentrate supplementation levels on growth performance and digestibility of local female goats in Laos fed with paper mulberry leaves (PML). The different levels (0, 200, 300, and 400 g/head/day in T1, T2, T3, and T4, respectively) of concentrate were supplemented using PML as a basal diet *ad libitum*. Twenty-four (24) local female goats with average 10 months and 22.5 ± 3.3 kg of live weight were divided in four groups. Randomized completely block design (RCBD) were used. The feeding trail of growth performance lasted for 92 days and digestibility lasted for seven (7) days after finishing the growth performance collection. Total DMI increased by the increasing levels of concentrate in the diet (830 ± 78 , 984 ± 60 , $1,101 \pm 31$ and $1,183 \pm 36$ g/head/day in T1, T2, T3 to T4, respectively). The apparent digestibility of DM, OM, CP, EE, and NFE of concentrate supplementation groups were significantly higher than the group without concentrate supplementation ($P < 0.01$), but the apparent digestibility of CF, ADF, ADF, and ADL were not significantly different. Average daily gain significantly ($P < 0.01$) increased by the increasing the levels of concentrate in the diet (35.0, 51.1, 58.7, and 65.2 g/head/day). FCR of goats fed with PML *ad libitum* was significantly highest (24.5 kg DM). In conclusion, the concentrate supplementation improved feed intake, ADG, and digestibility of goats, using concentrate level 400 g/head/day as feed, which is suggested for optimizing growth performance of local female goats in Laos.

Experiment II: The objective of the present study was to evaluate the effects of supplementation of the paper mulberry (*Broussonetia papyrifera*) leaf-based diets with concentrate on growth performance, preovulatory follicle diameter, response to estrous synchronization treatment, and productivity in local female goats in Laos. Nutritional treatment was conducted for a period of 61 days. Group 1, female goats were received the paper mulberry leaves (PML) as the basal diet (PML diet; n=12). Group 2, female goats were received the PML as the basal diet and 400 g/head/day of the concentrate (PML + CONc diet; n=12). On day 42 of the nutritional treatments, the periods of estrus were synchronized with controlled intravaginal drug release (CIDR) devices inserted for 14 days and injections of 300 IU of human chorionic gonadotropin (hCG) upon the removal of CIDR devices. The female goats were monitored for estrus twice daily with two teaser bucks within 12 h to 120 h after CIDR removal. The ovaries were scanned by transrectal ultrasonography on the day of CIDR

removal and every 12 h after the withdrawal of CIDR to evaluate the preovulatory follicle diameter and the ovulation time. The positive changes in the live weight of the female goats in the PML + CONc group were greater ($P < 0.05$) than those of the PML group. The synchronized goats that were fed only the PML diet tended to have a delay ($P = 0.09$) in the interval to the onset of estrus in comparison with the goats that were fed the PML + CONc diet. The proportion of synchronized goats displaying estrus at 48 h after the withdrawal of CIDR was significantly higher ($P < 0.05$) in the group that received the PML + CONc diet than in the group that received the PML diet. The goats that received the PML + CONc diet had greater ($P < 0.05$) diameters of the largest preovulatory follicle than the goats that received the PML diet. The synchronized goats that were offered only the PML diet tended to have a delay ($P = 0.09$) in the interval from the removal of CIDR to the ovulation in comparison with the goats that were offered the PML + CONc diet. The productivity tended to be greater ($P = 0.08$) in the goats that received the PML + CONc diet than in goats that received the PML diet. Thus, these data highlight that the positive changes in the live weight, the proportion of animals exhibiting estrus and the preovulatory follicle size of synchronized in local female goats in Laos were increased by the addition of the concentrate in diets based on PML.