

EFFECT OF FEEDING FREQUENCY ON THE GROWTH PERFORMANCE OF BEETAL GOAT KIDS DURING WINTER SEASON

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ABSTRACT

Eighteen Beetal goat kids of about same age (one month) and average weight (3.2 kg) were selected from the prevailing flock and were divided randomly into three groups with 6 replicates in each group. These kids were kept separately to study the effect of feeding frequency on the growth performance during winter season. Green fodder was offered *ad-libitum* and concentrate was given @ 1% of the body weight to each kid. Group A (control), B and C were fed two, three and four times daily, respectively. The parameters studied were feed intake, weight gain, body measurements like height, girth and length, environmental temperature and relative humidity. There was a significant difference in the DMI ($P<0.01$), weight gain ($P<0.05$), body height ($P<0.01$) between treatments (feeding frequency). Body girth and body length also had a significant difference ($P<0.05$) for group A with B and C where as non significant results were found between kids of group B and C on fortnightly basis. The kids of group C performed well in terms of weekly body weight gain, daily dry matter intake, and body measurement as compared to group A and B.

Keywords: Feeding frequency, Growth Performance, Beetal goat kids, Winter Season.

INTRODUCTION

Pakistan is a developing country having more than 184.35 million inhabitants that are growing at the rate of 2% annually. At present approximately 6.5 million families directly or indirectly are depending on livestock for their livelihood. Amongst the country's livestock population, goats own the highest number (64.9 million heads), most of them are reared by small and land-less farmers (Anonymous, 2013). Goat plays a momentous role in the economy and nutrition of landless, small and trivial farmers in Pakistan. Goat nurture is an activity which has been accomplished by a large section of population in rural areas. They can efficiently live on available shrubs and trees in adverse harsh atmosphere and make a payment to livestock industry in terms of milk, meat, skin and hair. In spite of their importance, goats have received little scientific attention (Hamayun *et al.*, 2006). Meat production by goats has become an important livestock enterprise in several parts of the world. Nevertheless, energy and protein requirements of meat goats have not been defined thoroughly (Fernandes *et al.*, 2007).

The feeding management of the herd's young goats is critical to the overall success of the farm enterprise, regardless of the production system i.e., meat, milk and mohair. In all three systems, young goat kids are raised either as replacement stock or for slaughter purpose. The farmers have to take care about physiological changes which a young goat's digestive system has to observe throughout life. Nutritional needs of young goats are fulfilled by the type and amount of feed. It also depends upon the management techniques (Akram, 1987). The feed supply balance sheet indicated that the livestock feed pool was deficient in dry matter (21 %), energy (29 %) and crude protein (33 %) availability. The area under fodder crops has reduced during the past decade without any significant corresponding increase in per hectare yield. Animals are getting only 75% of the required amount of digestible energy and 40 % of the digestible crude protein (Akram, 1987; Qureshi, 1992). Keeping in view the importance of the existing problem faced by the goat farmers in order to successfully raise the replacement stock of Beetal goat (*Capra hircus*) as high productive animals on a least cost basis, this study was planned to observe the effect of feeding frequencies on the growth performance of kids.

MATERIALS AND METHODS

This research was carried out at Small Ruminants Training and Research Center, UVAS Ravi Campus, Pathoki to investigate the effect of feeding frequency on the growth performance of Beetal goat (*Capra hircus*) kids. The

experimental period continued from the 1st week of November 2007 to the 1st week of March 2008. The ambient temperature and relative humidity ranged from 2.8 to 32°C and 20 to 80%, respectively during the entire period of experiment. Eighteen Beetal goat kids were selected of about same age (one month) and average weight (3.2kg). The kids were assigned different groups randomly i.e. A, B, and C with 6 replicates in each group. The kids of group A were denoted as control. The kids under individual groups were housed in well ventilated clean and dry shed having concrete floor supplied with bedding material of rice straw. The animals of all three groups were kept separately. All husbandry practices like feeding and watering were kept uniform within each group. Green fodder was offered *ad-libitum* and concentrate was given @ 1% of the body weight to each kid. Group A, B and C were offered their feed twice (9 am and 9 pm), thrice (9am, 3pm and 9pm) and four times (9am, 1pm, 5pm and 9pm) daily, respectively.

Feed intake, weight gain, body measurements (height, girth and length), and environmental factors (minimum and maximum inside shed and open area temperatures by hanging thermometer and humidity by using hygrometer twice / day i.e. morning and evening) were recorded during the experiment. The data were analyzed by using analysis of variance (ANOVA) under completely randomized design (CRD) (Steel *et al.*, 1997). When the differences observed were significantly different among groups, the data were subjected to multiple comparison test like least significant difference (LSD) with at least 5% probability level (Steel *et al.*, 1997).

RESULTS AND DISCUSSION

The future of any goat farm depends on the successful rearing of kids and young stock for herd replacements. Successful kid rearing is very dependent on the skill, experience and empathy of the stock person who is looking after the animals. Farmers have to cull or lose about 20 percent of stock from their herd each year due to health, kidding problems or culling due to old age or low production (Akram, 1987). The kid mortality in goat farming is a major problem and over 25% mortality in kids occurs from first to six months of age. Kids are not given due care and are kept under traditional management. In Pakistan kids are generally reared in ordinary conditions along with their dams. Due to this, kids have to face poor management and prone to prevailing disease, like white scour, pneumonia etc and ultimately to death.

In this study it was evaluated that all kids kept in the same condition of temperature and humidity had different dry matter intake (DMI). The average DMI of the kids in group A, B and C was 36.47±0.70, 45.52±0.65 and 53.41±0.65 gms, respectively (table 1). There was a significant difference (P<0.01) in the DMI between treatments. There was a statistically significant difference (P< 0.01) in the DMI between the kids of group A, B and C. The group C has the highest DMI. This may be due to better digestion and more feeding frequency. The results of present study are in agreement with the findings of Campbell and Morita (1961), Abilay *et al.* (1985) and Abijaoude *et al.* (2000), who concluded that daily intake by dairy goats was significantly high (P<0.01) on frequent diets. Similar to our findings, the earlier literature (Shabi *et al.*, 1990; Mantysaari *et al.*, 2006; Cecava *et al.*, 1990) also reported that the intake were greater when high forage diet was fed. Unlike to our results, the other findings (Stanley and Morita, 1967; Laguna, 1985; Nocek and Brand, 1985; Yang and Varga, 1989; Klusmeyer *et al.*, 1990; Robles *et al.*, 2007) concluded that feeding frequency had no effect on dry matter intake (P>0.01). The findings of the present study are also not in line with Robinson and McQueen (1994) who reported that dry matter intake, was not influenced by treatments.

Table 1. Feed intake, weight gain and body measurements in Beetal goat kids

Parameters	Groups			P-value
	A (Mean±S.E)	B (Mean±S.E)	C (Mean±S.E)	
Feed intake (DMI) gm	36.47 ^c ±0.70	45.52 ^b ±0.65	53.41 ^a ±0.65	<0.0001
Weight gain (Kg)	0.12 ^b ±0.05	0.38 ^a ±0.05	0.43 ^a ±0.04	0.0006
Length (cm)	40.13 ^a ±3.81	41.44 ^a ±3.22	43.54 ^a ±3.22	0.5095
Girth (cm)	42.50 ^a ±4.90	43.62 ^a ±4.26	47.39 ^a ±4.38	0.4339
Height (cm)	44.80 ^a ±6.59	45.93 ^a ±5.45	49.65 ^a ±5.74	0.6057

Means having different superscripts in a row are statistically significant

The results of the body weight gain are given in table 1 showed significant differences (P<0.05). These are inline with those of Abilay *et al.* (1985) and Rauw *et al.* (2006) who reported that barrows that consumed more feed were fatter (P<0.01). Conversely to our findings, Laguna (1985) concluded that feeding frequency did not influence the

growth of African mutton Marino. The observation collected so far justify that the frequency of feeding should be increased instead of morning and evening feeding to the animals.

Body measurements were recorded in kids on fortnightly basis for each experimental group (A, B and C). The average changes on fortnightly basis in body height were observed ($P < 0.05$) between groups A, B, C and are given in table 1. This might be due to better utilization of feed. Result of the present study are in agreement with the finding of Heinrichs *et al.* (1992) who studied relationships between body weight, wither height and various other body traits, including heart girth, and body length. The body girth was 42.50 ± 4.90 , 43.62 ± 4.26 and 47.39 ± 4.38 cm in group A, B and C, respectively. Significant difference was observed between the measurements of body girth of the kids of group C and A and also between groups B and A however, there was no difference ($P > 0.05$) between the kids of group B and C. The results of the present study are in agreement to those Bassano *et al.* (2003) who found relationship between weight and body measurements which changed with sex and season. These results are also in agreement with Atta and El-khidir (2004) who concluded that heart girth is highly correlated with weight.

The average fortnightly measurement of body length ($P < 0.05$) in the kids of groups A, B and C is given in table 1. Our results agree with Thiruvankadan (2005) who collected data on body weight and body measurements individually from Kanni Adu kids.

Shed temperature and humidity %age range was observed between -2.8 to 32°C and 20-80%, respectively throughout the period of experiment. The kids of group C performed well in terms of weekly body weight gain, daily dry matter intake and body measurements as compared to group A (control) and B.

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