

Comparative nutrient utilization and growth performance of Jalauni lambs and Bundelkhandi kids grazed on *Hardwickia binata* based silvopasture system

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*Corresponding author e-mail: mmdas1964@rediffmail.com**Keywords:** *Bundelkhandi* kids, Growth performance, *Jalauni* lambs, Nutrient utilization, Silvopasture**Introduction**

Goats and sheep play a significant role in the subsistence economy in India. Goats and sheep are multipurpose animals which provide hair, wool, meat, milk and skin. The production of meat from goats and sheep play a vital role in the supply of animal protein for the people of our country. Small ruminant production in village systems in tropical countries is often characterized by poor growth rates and high mortality (Devendra and Burns, 1970). The productivity of small ruminants can be improved by improving the nutrition either through concentrate feeding or provision of additional forage (Pathasarathy *et al.*, 1984). In the present experiment, the animals therefore were allowed to graze in *H. binata* based silvopasture system to evaluate their nutrient availability from grazing as well as their productive performance.

Materials and Methods

The study was conducted on 25 each of jalauni lambs and Bundelkhandi goats and allowed to graze on 2.33 ha of *Hardwickia binata* based silvopasture (*Cenchrus ciliaris*, *Chrysopogon fulvus*, *Panicum maximum* and *Stylosanthes hamata*) during growing (August-October) as well as non growing season (Nov- Jan) at Central Research Farm, Indian Grassland and Fodder Research Institute, Jhansi. The animals were allowed to graze for 7-8 hours daily. All the animals were also supplemented with concentrate mixture (consisted of barley, mustard cake, wheat bran, mineral mixture and common salt; 40: 30: 27: 2: 1) @ 1.0% of their body weight. Body weights of animals were recorded fortnightly. After 50 days of experimental grazing, digestion trial of 7 day duration was conducted in the month of September and December on 6 animals each from lambs and goat following lignin as internal marker. Total faeces voided for 24 hrs were collected using faeces collection bags. The representative samples of feeds and faeces collected during digestion trial were analyzed for proximate constituents (AOAC, 1995) and cell wall fractions (Goering and Vansoest, 1970). The data were analyzed statically (Snedecor and Cochran, 1989).

Results and Discussion

Chemical analysis of pasture herbage indicated that average crude protein content was 8.37% in September and reduced to 6.81% in December whereas neutral detergent fiber content increased from 71.00% to 74.8%. Lignin content of the herbage also increased from 6.45% in September to 8.42% in December. Daily dry matter (DM) intake as % body weight was 4.1% in lambs and 3.93% in kids during September (Table 1). Digestibility of DM, CP and NDF were (64.4%, 55.57% and 61.85%) in lambs and (66.7%, 56.7% and 63.38%) in kids, respectively. DCP and TDN intake (g/d) were (49g and 496 g) in lambs and (47g and 478g) in kids. Daily gain was 48.9 g in kids and 53.9 g in lambs, respectively. During the month of December, DMI% BW was 4.23% in lambs and 4.18% in kids. DM and OM digestibility were (64.12 and 66.48%) in lambs and (66.89 and 68.85%) in kids. CP digestibility was also comparable in lambs (43.76%) and kids (45.75%). DCP intake (g/d) was similar in lambs (36.99) and kids (34.41). DCP and TDN contents of the pasture based diets were (4.03% and 63.17%) in lambs and (4.4% and 65.42%) in kids. During non growing season daily gain in lambs and kids was 40.9 and 38.5 g/d, respectively.

Table 1: Nutrient utilization and growth performance of *Jalauni* lambs and *Bundelkhandi* kids grazed on *H. binata* based silvopasture system

Particulars	Lambs		Kids	
	Growing season	Non growing season	Growing season	Non growing season
Body wt (kg)	18.96±1.34	18.53±1.23	21.88±0.57	21.56±1.03
DMI (g/W ^{0.75} kg)	85.60± 2.57	81.36±3.05	91.36±4.86	89.85±5.02

DCPI (g/d)	48.99±1.50	47.67±2.42	36.99±1.30	39.46±1.40
TDNI (g/d)	496±21.33	477±18.32	582±16.36	588±15.98
Digestibility coefficients (%)				
DM	64.40± 0.98	66.70± 0.39	64.12± 0.91	66.89±0.58
OM	67.39±0.83	69.09± 0.48	66.48±0.83	68.85±0.59
CP	55.57±1.38	56.70± 1.90	43.46±1.10	45.78±1.97
NDF	61.85±1.22	63.38± 1.01	62.42±1.12	64.58±0.69
EE	73.21±1.09	74.23± 0.42	71.79± 0.95	73.55±0.57
NFE	65.40 ^a ±1.27	69.68 ^b ±0.97	66.25± 1.45	68.99±0.95
Nutrient contents (%)				
DCP (g/100g diet)	6.32±0.19	6.56±0.18	4.03±1.13	4.38±0.19
TDN (g/100g diet)	63.88± 2.07	65.81±0.68	63.17± 0.79	65.42±0.55
Daily gain (g/d)	53.9± 1.48	48.9± 1.58	40.5±1.26	38.5±1.34

Means with different superscripts in a row differ significantly (P<0.05)

Conclusion

It can be concluded that nutrient utilization and growth performance were comparable between lambs and kids, however, digestibility of CP was reduced significantly (P<0.05) during non growing season in both the species.

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