



Effects of dietary concentrate level and limited feed access on feed intake and performance by lactating Alpine dairy goats

L. P. S. Ribeiro, R. Puchala, T. A. Gipson, R. V. Lourencon, and A. L. Goetsch
American Institute for goat research, Langston University, Langston, OK

INTRODUCTION

Results of some studies have suggested potential benefits in production systems of lactating dairy goats from limiting the time of access to feed and restricting it to certain periods. However, there were not clear or consistent effects of the treatments on which recommendations for limited access treatments could be based, suggesting need for further research.

The objective of this study was to determine if effects of different limited feed access treatments on performance by lactating Alpine dairy goats vary with dietary concentrate level.

MATERIAL & METHODS

- 58 Alpine goats: Primiparous (29; 55.2±0.8 kg BW) and multiparous (29; 70.2±1.06 kg).
- Were used in a 24-wk study of 3 8-wk phases beginning at 7.1±0.37 days after kidding.
- Diets of 40 or 60% concentrate (40C and 60C, respectively) were offered free-choice in Calan gate feeders.
- The treatments: access continuously (CON), for 8 h between morning and afternoon milkings (DAY), or for 2 h after each milking (FRH).

RESULTS AND DISCUSSION

- There were many interactions involving phase.
- Nonetheless, ADG and intake of DM during the entire study was greater for CON vs. FRH.
- Milk fat concentration was greatest among treatments for FRH.
- There were interactions between concentrate level and access treatment in milk yield and protein concentration.
- Milk protein concentration was lowest among treatments for 60C:FRH except for 40C:DAY.
- Milk energy yield was greater for 60C vs. 40C with CON and DAY but lower for 60C with FRH.
- The ratio of milk energy to DMI did not markedly vary with access treatment.



Effects of dietary concentrate level and feeder access treatment on BW, ADG, body condition score, feed intake, and milk yield and composition

Item ¹	40C			60C			ATD ²
	CON	DAY	FRH	CON	DAY	FRH	
BW (kg)	55.7	53.9	55.9	59.6	56.9	56.3	
ADG (g)	-26	-39	-65	-13	-43	-57	C>F
BCS	2.75	2.75	2.81	2.99	2.91	2.88	
DM intake							
g/day	2173	2028	2010	2289	2070	1801	C>F
% BW	3.92	3.77	3.67	3.85	3.67	3.27	C>F
g/kg BW ^{0.75}	106.8	102.0	99.6	106.8	100.3	88.8	C>F
Milk concentration							
Fat (%)	2.79	2.77	3.18	2.86	2.89	3.02	F>C&D
Protein (%)	2.65 ^{bc}	2.55 ^{ab}	2.60 ^{abc}	2.67 ^c	2.70 ^c	2.49 ^a	
Lactose (%)	4.36	4.31	4.38	4.39	4.46	4.39	
SNF (%)	7.72 ^{abc}	7.56 ^a	7.67 ^{ab}	7.79 ^{bc}	7.92 ^c	7.58 ^{ab}	
Energy (MJ/kg)	2.41	2.37	2.56	2.45	2.48	2.47	
Log SCC	7.21	7.04	6.84	7.13	6.94	7.13	
SCC	2339	1534	1853	1871	1473	2021	
Milk yield							
Total (kg/d)	2.55 ^{abc}	2.41 ^{ab}	2.61 ^{bc}	3.21 ^c	2.66 ^{bc}	2.27 ^a	
Fat (g/d)	71 ^{ab}	66 ^a	83 ^{cd}	91 ^d	77 ^{bc}	68 ^{ab}	
Protein (g/d)	68 ^{bc}	62 ^{ab}	68 ^{bc}	85 ^d	71 ^c	57 ^a	
Lactose (g/d)	112 ^{abc}	104 ^{ab}	115 ^{bc}	141 ^d	118 ^c	100 ^a	
SNF (g/d)	197 ^{bc}	182 ^{ab}	201 ^{bc}	249 ^d	210 ^c	173 ^a	
Energy							
MJ/d	6.14 ^{ab}	5.70 ^a	6.67 ^b	7.83 ^c	6.58 ^b	5.61 ^a	
MJ/kg DMI	3.01 ^{ab}	2.87 ^a	3.37 ^c	3.47 ^c	3.28 ^{bc}	3.18 ^{abc}	

¹BCS = body condition score; SNF = solids-non-fat; TS = total solids; SCC = somatic cell count.

²ATD = differences (P < 0.05) between feeder access treatments.

CONCLUSION

Overall, limited feeder access treatments did not improve performance and, in fact, the shortest access treatment increased BW loss. Although, efficiency of feed DM usage for milk energy yield was not adversely impacted.