

EFFECT OF RATION PRESENTATION UPON PERFORMANCE OF FEEDLOT LAMBS

M.E. Nichols¹, G.Q. Fitch², and F.T. McCollum³

Story in Brief

A study was conducted to test the effects of ration presentation on performance, feed efficiency, and feed intake by feedlot lambs. The treatments were: 1) cafeteria-style with whole corn and alfalfa pellets presented in separate feeders allowing lambs to select each, 2) 30% alfalfa pellets and 70% whole corn mixed loose, and 3) a pelleted mix of 30% alfalfa and 70% ground corn. Half the pens on each treatment had cover. Lamb weights and feed intakes were monitored every two weeks. Two trials were conducted; trial 1 ran during August and September, while trial 2 began in late October and ended mid-December. Lambs on cafeteria style and loose alfalfa/whole corn treatments gained more than those on the pelleted ration. Daily gain was higher during the second trial. In trial 1, feed intake was greatest, and feed efficiency the poorest, for the cafeteria style treatment. In trial 2, feed efficiency was least for the pelleted diet treatment. When averaged over both trials, efficiency was greatest for the loose alfalfa/corn treatment. Gains in the first trial were higher for lambs in the covered pens, but in trial 2 cover did not effect gains. Cover had no effect on feed intake in either trial. Lambs with cover were most efficient in trial 1, but least efficient in trial 2. Results of this study suggest that cafeteria style fed rations can be as effective as rations that require further processing.

(Key Words: Feeder lambs, Rations, Intake, Performance, Efficiency)

Introduction

Lambs are very proficient at sorting components from mixed rations. A complete, pelleted diet is the best way to eliminate sorting and insure daily nutrient intake is adequate. However, the expense and inconvenience of grinding, mixing, and pelleting rations is often not affordable by small lamb feeding operations. Whole corn and alfalfa pellets are readily available commodities and require no further processing. Developing simplified

¹Graduate Assistant ²Assistant Professor ³Associate Professor

feeding programs which eliminate mixing and pelleting of the corn and alfalfa could increase efficiency of lamb feeding on farms. Cover providing shade in hot weather and protection in cold weather may improve performance but represents an additional cost and use of space.

The purpose of the trials reported in this paper were to 1) compare 3 methods of presenting self fed corn:alfalfa rations to finishing lambs, and 2) compare performance of lambs in covered and open pens.

Materials and Methods

One hundred fifty nine lambs(average weight = 78.8 lb) in trial 1 and one hundred fifty two lambs(average weight = 82.5 lb) in trial 2 were blocked by initial weight and sex within breed type and then assigned to one of three methods of presenting a self-fed corn:alfalfa ration. Ration 1 (CAF) was a cafeteria-style presentation of whole corn and sun-cured alfalfa pellets; the feeds were placed in separate feeders allowing the lambs to select the amount of each consumed. Ration 2 (PC) was a 70:30 mix of whole corn and sun-cured alfalfa pellets presented in a loose mix. Ration 3 (TMR) was a completely pelleted mix of 70% corn and 30% sun-cured alfalfa pellets. In each trial, half of the pens were located under a barn closed on 3-sides while the other half were completely open. CAF and PC treatments each had 2 pens with and 2 without cover for each trial, while TMR was assigned one pen with and one without cover for each trial. All lambs had ad libitum access to their respective ration and to water. A coccidiostat was fed during trial 2, because of problems incurred in the first trial.

Lambs were weighed every two weeks during the 56 d trials. Feed intake was recorded for each 14 d period. Pen feed efficiency was calculated by dividing total weight gain by total feed intake.

Statistical analysis was conducted using general linear models procedures (SAS 1985). The model included ration, trial, and cover as main effects and interactions of ration x trial, ration x cover, and trial x cover.

Results and Discussion

Average daily gain for the entire feeding period (0-56d) were higher ($P < .05$) in trial 2. This was due to performance differences from d 14-56 (Table 1). In trial 2 lambs also consumed more ($P < .05$) feed than those in trial 1 (4.14 versus $3.74 \text{ lb} \cdot \text{hd}^{-1} \cdot \text{d}^{-1}$) over the 56 d. CAF and PC pens gained more weight ($P < .05$) than the TMR over the 56 d period (Table 1), and the lambs in CAF pens ate more ($P < .05$) than the PC and TMR lambs (4.32

Table 1. Least square mean for average daily gain and feed efficiency by trial and ration.

Days	0-14	0-28	0-42	0-56
Daily gain				
lb/hd				
Trial				
1	0.39	0.42 ^a	0.49 ^a	0.53 ^a
2	0.40	0.58 ^b	0.61 ^b	0.60 ^b
Ration				
Cafeteria	0.4959 ^a	0.5953 ^a	0.6145 ^a	0.6141 ^a
PC	0.3362 ^b	0.4957 ^{ab}	0.5723 ^a	0.5843 ^a
TMR	0.3534 ^{ab}	0.4076 ^b	0.4675 ^b	0.5020 ^b
Feed Efficient				
lb feed/lb gain				
Trial				
1	13.76	8.20	8.23	7.36
2	5.49	6.45	7.11	7.23
Ration				
Cafeteria	7.03	7.02	7.59	7.51
PC	15.08	6.59	6.74	6.73
TMR	6.77	8.37	8.68	7.64

a,b Means in same column and block with different superscript are different ($P < .05$).

compared to 3.73 and 3.77 lb·hd⁻¹·d⁻¹, respectively). No significant trial or ration differences existed for feed efficiency.

The increased performance in trial 2 may be attributed to a healthier set of lambs that suffered less morbidity and death loss. The feeding of a coccidiostat in the free choice salt mix may also have reduced sickness and the resulting time off feed. The increased intake with CAF presented feed may be the result of lambs having less acidosis problems due to the ability to pick and choose. The overall corn:alfalfa ratio the lambs selected was 53:47 in both trials (individual pen ratios of corn:alfalfa ranged from 51:49 to 55:45).

Average daily gain was higher in trial 1 for lambs with access to cover ($P < .05$), but in trial 2 the lambs with no cover gained better ($P < .05$) (Table 3). Trial 1 was conducted when it was much hotter, and the shade provided by cover may have reduced energy lost trying to dissipate heat. Some wet

Table 2. Trial x Cover and Trial x Ration least square means for feed efficiency and feed intake.

	Trial 1	Trial 2
Initial lamb wt.(lb)	78.79	82.51
Feed efficiency	—————lb feed/lb gain—————	
Ration		
Cafeteria	8.69 ^a	6.33 ^b
PC	6.42 ^b	7.05 ^{ba}
TMR	6.96 ^b	8.31 ^a
Cover	6.29 ^a	7.48 ^a
No cover	8.42 ^b	6.98 ^a
Feed intake	—————lb/hd/day—————	
Ration		
Cafeteria	4.52 ^a	4.11
PC	3.32 ^b	4.14
TMR	3.37 ^b	4.17
Cover	3.63	4.23
No cover	3.85	4.05

a,b Means in same column and block with different superscript are different (P < .05).

Table 3. Trial x Cover least square means for average daily gain (lb/hd/d).

Condition	Trial 1	Trial 2
Cover	0.58 ^a	0.57
No cover	0.48 ^b	0.63

a,b Mean with in same column and block with different superscript are different(P < .05).

and cold weather was experienced in Trial 2, but with increased healthiness and overall weather being milder, the lambs outside responded better.

No significant difference in feed intake due to cover was observed in trials 1 or 2. In trial 1, CAF pens ate more feed ($P < .05$) but no difference in feed intake occurred in trial 2. Lambs in trial 1 were less efficient ($P < .05$) on the CAF treatment than either PC or TMR. In trial 2 however, the CAF lambs were significantly more efficient than TMR lambs, while the PC lambs did not differ ($P > .05$) from either. Differences in efficiency due to cover were significant ($P < .05$) in Trial 1, with inside pens being more desirable. Differences in Trial 2 were not significant.

The feed intake differences observed in trial 1 may be because lambs were not as healthy overall; the lambs in the CAF pens were able to select a diet with less concentrate which may have reduced time off feed as a result of less acidosis. To eliminate waste caused by lambs pawing feed out of feeders, the feeders were elevated off the ground prior to trial 2. Except for one TMR pen, this proved successful. The significant difference between treatment feed efficiencies in trial 2 may be due to one TMR pen which wasted an excessive amount of feed. This may also be why feed intake in trial 2 for TMR lambs was slightly higher. Differences in efficiency in Trial 1 may be attributed to poorer lamb health and the low ratio of corn:alfalfa selected in the CAF pens compared to what PC and TMR lambs ate. Lambs with cover may have been more efficient during trial 1 because they lost less energy trying to dissipate heat.

In conclusion, based on results found in this trial, it may be as effective from an economical standpoint for lamb feeders to present feeds in separate feeders. There were few, if any adverse affects on performance parameters, suggesting lambs will pick and choose their own diet quite effectively.

Literature Cited

- SAS Institute Inc. 1985. SAS User's Guide: Statistics, Version 5 Edition. Cary NC: SAS Institute Inc.