The Feasibility of Feeding Lambs During The Summer, and The Effect of Two Concentrate:Roughage Ratios on Certain Live Measurements and Carcass Composition

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Many Oklahoma lambs born during February and March fail to reach market weight by the middle of June. These lambs are either sold as feeders or carried through the summer and fattened during the fall months. In either system there is an economical loss to the state. With the improvement made in rations in recent years, it was considered desirable to further test the feasibility of feeding lambs in dry-lot during the summer months.

Also, considerable interest has been shown in recent years in the use of high concentrate rations for fattening cattle and lambs. Most feeding trials have indicated satisfactory gain and feed efficiency of lambs to high energy rations; however, very little work has been reported on the effect of ration on carcass composition. This research was initiated to study both the feasibility of feeding lambs during the summer and to study the effect of two concentrate to roughage ratios on the feedlot performance, and carcass characteristics of lambs sired by rams of different breeds.

PROCEDURE

Forty-eight, 4-month-old lambs born of Rambouillet ewes and sired by either Dorset, Hampshire, or Suffolk rams were assigned to the experiment. Twenty-four were Dorset (DxR) and 24 were black-face (H or SxR). Lambs of each breed were randomly allotted into two lots of 12 lambs each, except that twins were separated. Treatments consisted of two concentrate:roughage (C:R) ratios (50:50, 92:8) which were factorially arranged with two breeding groups (Dorset and black-face). Ingredient composition and nutrient analyses of the self-fed rations are given in table 1. The primary differences between the rations were the differences in crude fiber and TDN.

All lambs were drenched with phenothiazine and sheared two days prior to the initiation of the experiment. A 24-hour shrunk weight was taken when the lambs were allotted. Live measurements of loin width, leg circumference, rump length, body length, and heart girth circumference were also taken at this time. The lambs were started on feed gradually and by the 6th day were on full feed.

Individual lambs were removed from the experiment when they reached approximately 97-103 pounds non-shrunk weight. At this time, the live measurements were repeated. The animals were shrunk for 24 hours, reweighed, and slaughtered. Following a 48-hour chill period, specific gravities were obtained on each carcass. The carcasses were then

ribbed (between 12-13 ribs) and the backfat was measured over the inside edge, the center, and outside edge of the *Longissmus dorsi* (loin-eye) muscle two different times an averaged. Duplicate tracings of the *Longiss mus dorsi* (loin-eye) were averaged.

The carcasses were broken (using standard cutting procedure) into the four lean cuts. The cuts were trimmed to leave not more than ¼ inch of outside fat. A semi-physical separation of fat and lean was made on each of the four lean cuts as well as the remainder of the carcass. All the separated lean and fat of the carcass was ground twice (separately). Duplicate samples of each were taken for chemical analysis.

RESULTS AND DISCUSSION

The average number of days on feed and the average initial, final, shrunk, and cold carcass weights are given in table 2. Although some

Table 1. Composition of Rations (%)

Breed	Dorset		Black-face	
Ration	Standard[1]	HE	Standard[1]	HE[2]
Ingredient				
Ground milo	45	80	45	80
Ground alfalfa hay	50	8	50	8
Cane molasses	5	5	5	5
Soybean oil meal	--	7	--	7
Nutrient analyses				
Dry matter	88.97	88.44	88.97	88.44
Crude protein	11.70	11.49	11.70	11.49
Crude fiber	15.34	4.54	15.34	4.54
TDN	63.77	75.78	63.77	75.78
Calcium	0.78	0.77	0.78	0.77
Phosphorus	0.25	0.29	0.25	0.29

[1] Standard rations were supplemented with 10 pounds of salt and 2 pounds of Aurofac 10 per ton of feed.
[2] HE rations were supplemented with 10 pounds of salt, 1.5 pounds of Vitamin A (10,000 I.U. per gram), 2 pounds of Aurofac 10, and 30 pounds of calcium carbonate per ton of feed.

Table 2. Average Number of Days on Feed and Average Initial, Final, Shrunk, and Cold Carcass Weights

Breed	Dorset		Black-face	
Ration	Standard	HE	Standard	HE
Measurement				
Days on feed	69.25	61.83	53.83	60.25
Initial wt., lbs.	69.67	72.83	75.08	74.17
Final wt., lbs.	98.50	100.25	102.75	101.17
Shrunk wt., lbs.	89.29	89.58	91.04	90.08
Cold carcass wt., lbs.	47.08	49.81	47.45	48.41

variation existed between lots when the initial and final weights were taken, average total gain during the feeding period were quite similar, ranging from 27 to 28.83 pounds.

SUMMER FEEDING

Both rations produced very satisfactory gains (.47 to .50 pound per day). This is in agreement with previous summer feeding trials (see M.P. 67) at the Ft. Reno Station. It would appear that lamb can be fed quite satisfactorily through the summer months.

THE EFFECT OF RATION

There was no significant difference in the average daily gain due to ration. No digestive disturbances or death loss occurred with either ration, thus indicating the feasibility of self-feeding rations varying considerably in energy (TDN) content (63-76%).

The percentage of the carcass as trimmed loin was significantly greater from the standard fed lambs than those fed the high energy ration. There was a trend for the lambs fed the standard ration to have more loin eye area, less backfat thickness, less total fat, and a greater percentage of lean per cwt. of carcass, and a lower dressing percentage than the lambs fed the high-energy ration. (Table 3) These differences would indicate—even with the average daily gain essentially the same—that the composition of the carcass is effected by ration even during a relatively short feeding period (approx. 70 days).

THE EFFECT OF BREED (SIRE)

The Dorset-sired lambs were fatter as indicated by both average backfat thickness and percentage fat in carcass. This would be expected as Dorsets mature at lighter weights than the black-faced breeds.

The black-faced sired lambs had significantly more trimmed leg and a slightly larger percentage lean in the carcass than the Dorset-sired lambs.

CORRELATIONS

Correlations indicated that the percentage of trimmed loin and leg typified carcass composition to a higher degree than any other measure studied.

Table 3. Average For Selected Live Animal and Carcass Measurements.

Breed	Dorset		Black-face	
Ration	Standard	HE	Standard	HE
Measurement				
Av. Daily Gain, Lbs.	0.46	0.47	5.54	0.47
Loin Width Inc.*, In.	0.82	0.68	0.76	0.60
Leg Cir. Inc.*, In.	0.74	0.45	0.45	0.47
Rump Length Inc.*, In.	2.13	1.79	2.14	2.00
Body Length Inc.*, In.[3]	2.65	1.84	2.92	3.00
Hg. Cir. Inc.*, In.	4.35	4.23	4.05	4.13
Dressing Percent[6]	52.73	55.59	52.13	53.77
Specific Gravity[5]	1.0463	1.0335	1.0426	1.0384
LEA[1]/cwt. Carcass, Sq. In.	4.28	4.18	4.43	4.36
BF[2]/cwt. Carcass In.	0.66	0.76	0.63	0.67
Percent Trmd. Leg[4]	22.62	21.70	23.60	23.49
Percent Trmd. Loin[5]	6.77	6.45	7.07	6.46
Percent Trmd. Rack	5.56	5.61	5.61	5.48
Percent Trmd. Shoulder	20.75	21.05	20.97	21.48
Yield Trmd. Lean Cuts (Live Wt. Basis)[5]	29.34	30.35	29.83	30.56
Percent Lean In Carcass	52.39	50.98	53.10	52.44
Percent Fat In Carcass[3]	29.84	32.47	28.29	29.54
Percent Bone In Carcass[4,5]	14.54	13.41	15.81	14.84

*Increase of, during feeding period
[1] Loin-eye area
[2] Backfat
[3] Significant difference ($P < .05$) between breeds
[4] Significant difference ($P < .01$) between breeds
[5] Significant difference ($P < .05$) between rations
[6] Significant difference ($P < .01$) between rations

Trace Minerals In Beef Cattle Feeding In Oklahoma

Allen D. Tillman

INTRODUCTION

Many localized areas in the United States have been found to be unsatisfactory for the raising of beef cattle because of severe endemic disorders. By close study of such disorders, which result primarily from trace mineral deficiencies in the indigenous forage, new areas are being found each year. Such acute deficiency symptoms are important, but it must be emphasized that the greatest loss in beef production results from the subclinical deficiencies. In such cases no definite symptoms appear.