

Effects of Heat Treatment of Proportions of Sorghum Grain in Fattening Lamb Rations (Project 236)

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Research indicates that treating grains with heat may improve feedlot performance of ruminant animals. Previous work here indicated that treating all grain or roughage with heat resulted in reduced palatability. This test was designed to determine the effect of treating¹ various proportions of the grain in the ration.

Experimental Procedure

The 132 finewool wether lambs used were shorn, drenched with pheno-thiazine-lead arsenate, vaccinated with 5 cc. Clostridium perfringens type D toxoid and implanted with 3 mg. stilbestrol and placed on test November 10, 1965. Lambs were weighed, randomly divided into 12 lots and duplicate lots were self-fed a ration consisting of 55% dehydrated alfalfa (15% protein) and 45% sorghum grain treated as follows:

Lot no.	Lamb ration
5 & 11	Control, ground-mixed.
3 & 9	15% heat treated sorghum grain, ground-mixed.
4 & 10	30% heat treated sorghum grain, ground-mixed.
2 & 8	45% heat treated sorghum grain, ground-mixed.
6 & 12	45% steam rolled sorghum grain, mixed.
1 & 7	Entire ration treated and fed in form of expanded pellet.

Wheat straw was fed free choice to all lambs.

Results and Discussion

Results are reported in table 28. Daily feed consumption decreased as the percentage of heat treated (expanded) sorghum grain increased. Slowest gains and poorest feed efficiency were by lambs in lots 2 and 8 fed a ration with all sorghum grain heat treated. However, most efficient gains were made by lambs in lots 4 and 10 fed a ration containing 30% (two-thirds of the grain portion) heat treated grain. Most rapid gains were made by lambs receiving steam rolled sorghum grain.

1. Processed through an expansion pelleting machine at the Wenger Mixer Manufacturing Company, Sabetha, Kansas. Treated ingredients were steam heated to 300°F in the process.

Table 28
Performance of Lambs Fed Heat Treated Rations, November 10 to February 14 - 96 days

Treatment	Control		15% Treated Sorghum grain		30% Treated Sorghum grain		45% Treated Sorghum grain		45% Steam Rolled Sorghum grain		Expanded	Pellet
Lot no.	5	11	3	9	4	10	2	8	6	12	1	7
No. lambs	11	10	11	9	11	10	11	9	10	10	11	10
Av. initial wt., lb.	65.6	69.4	70.4	69.1	69.6	70.3	66.2	66.2	70.3	70.5	70.2	70.2
Av. final wt., lb.	108.5	109.1	103.5	107.5	108.9	108.6	92.4	99.6	115.4	111.8	106.6	111.0
Av. total gain, lb.	42.9	39.7	33.1	38.4	39.3	38.3	26.2	33.4	45.1	41.3	36.4	40.8
Av. daily gain, lb.	0.44	0.41	0.35	0.40	0.41	0.40	0.27	0.34	0.47	0.43	0.38	0.42
Daily feed/ lamb, lb. ¹	3.49	4.05	3.12	3.27	3.11	2.97	3.12	2.84	3.56	3.38	3.36	3.50
Feed/cwt. gain, lb.	783.2	978.8	904.1	818.6	761.3	744.9	1139.4	822.8	758.1	786.7	886.0	824.5
Averages for Duplicated Treatments												
Av. daily gain, lb.	0.431		0.370		0.404		0.307		0.450		0.401	
Daily feed/ lamb, lb.	3.76		3.19		3.05		2.99		3.47		3.43	
Feed/cwt. gain, lb.	872.4		862.2		755.0		973.9		771.1		855.4	

1. Lambs in Lot 11 wasted considerable feed which accounts for part of the high daily consumption.