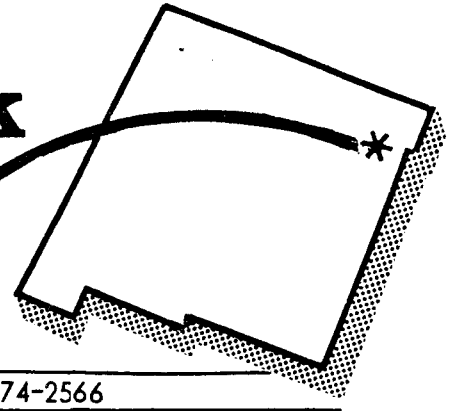




Clayton Livestock Research Center

PROGRESS REPORT



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INFLUENCE OF RESTRICTED FEEDING IN FINISHING BEEF CATTLE

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In 1969 an experiment was reported in which cattle fed a restricted intake of a 90% concentrate ration gained less rapidly but more efficiently than a comparable group fed the same ration free-choice (California Feeders Day Report, p. 64, 1969). Both groups were fed 141 days and were then slaughtered. It was obvious that the limited fed cattle were under-finished and if fed longer to reach the desired finish their conversion advantage would disappear.

Because of recent interest in various types of restricted feeding (New Mexico Stockman, 48:62, 1983) an experiment was conducted to obtain information on limited but frequent feeding a high energy ration for finishing cattle.

One-hundred and seventy-six weaner calves weighing approximately 420 lb were obtained from a ranch near Folsom, NM. The calves were received at the Clayton Livestock Research Center and were given the typical CLRC processing and receiving program for four weeks. They were then fed a 75% concentrate ration for a two week transition period before being fed an 85% concentrate finishing ration. Eighty-eight calves were fed in 6 replications with the 85% concentrate fed free-choice. Fresh feed was placed in the feed bunks once daily. Paired to each of the 6 free-choice pens was a pen containing the same number of cattle. These cattle were fed 90% of the consumption of their pair mates on a metabolic body size basis which was divided into four feedings per day. Feed

Table 1. Performance, costs and returns

Item	Method of feeding	
	Free choice	Restricted
Number of calves	88	88
Initial weight, lb	471	480
Number of days fed	187	201
Daily feed intake, lb	18.86 ^b	16.89 ^a
Daily weight gain, lb	2.81 ^b	2.49 ^a
Feed per pound gain, lb	6.71	6.78
<u>Carcass data</u>		
Final net weight, lb	996	980
Carcass weight, lb	636	623
Dressing percent	63.9	63.6
Fat cover over rib, in	.58 ^d	.43 ^c
Rib eye area, sq in	12.2	12.3
Yield grade	2.9 ^d	2.2 ^c
Marbling score ¹	5.1 ^d	4.7 ^c
Quality grade score ²	12.5 ^d	11.9 ^c
<u>Costs and returns</u>		
Initial cost, ³ \$	345.05	351.65
Feed cost, ⁴ \$	253.58	244.09
Total, ⁴ \$	598.63	595.74
Selling price, ⁵ \$	639.69	615.84
Net return, \$	38.06	20.10

- 1 3=traces, 4=slight, 5=small, 6=modest
- 2 11=high good, 12=low choice, 13=choice
- 3 Ingredient cost plus \$15 per ton.
- 4 Does not include interest.
- 5 Actual price received for free-choice cattle was \$100.38 per cwt of carcass and \$98.85 per cwt of carcass for the restricted cattle.
- ab Significant at P<.01.
- cd Significant at P<.05.

¹ Appreciation is expressed to Dr. T. H. Montgomery, WTSU for collection of the carcass data and to Iowa Beef Processors, Inc., Amarillo, for their cooperation.

was adjusted every 4 weeks to 90% of the feed consumed by the free-choice fed pen on a metabolic body size basis ($W^{.75}$). The average number of days on feed for the free-choice fed groups was 187 days while the restricted cattle remained on feed for 201 days.

The performance, carcass data, costs and returns are shown in table 1. It is interesting to note some of the items in the two sets of data. The restricted cattle ate 90% as much feed as these fed free-choice but gained 89% as much weight resulting in a slightly poorer feed conversion for the restricted cattle. The difference was not large, however. The more important differences were the lower total weight gain, and the lower carcass quality as indicated by the lower marbling scores and the lower quality grades even though these cattle were fed two weeks longer than those fed free-choice. The dressing percent, yield grade, fat cover over the rib and the rib eye area were all adequate. The lower finish indicated by the lower marbling and quality grade scores resulted in the packer paying \$1.73 less per cwt of carcass for the restricted cattle.

When the observed performance is compared with that which was expected based on net

energy intake and requirements (table 2) both groups performed about as expected showing little effect of restriction and four times daily feeding on energy utilization.

Table 2. Expected performance

Item	Method of feeding	
	Free choice	Restricted
<u>NE of feed:</u>		
NE _m , Mcal/100 lb	85	85
NE _g , Mcal/100 lb	52	52
Feed required for maintenance, lb	7.06	6.90
Feed left for gain, lb	11.80	9.90
NE _g deposited, Mcal	6.14	5.15
Expected daily gain, lb	2.82	2.44
Observed/expected gain	.996	1.020

Since the dressing percent, carcass weight, fat cover over the rib, rib eye area, and yield grade were all satisfactory one wonders if the marbling score and quality grades for finished cattle need to be revised. Of course, this has been under consideration for some time and the most recent decision was to leave them as they are. Thus, under present grading standards it appears that cattle will return more when fed free-choice compared to a 90% restriction fed four times daily.

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