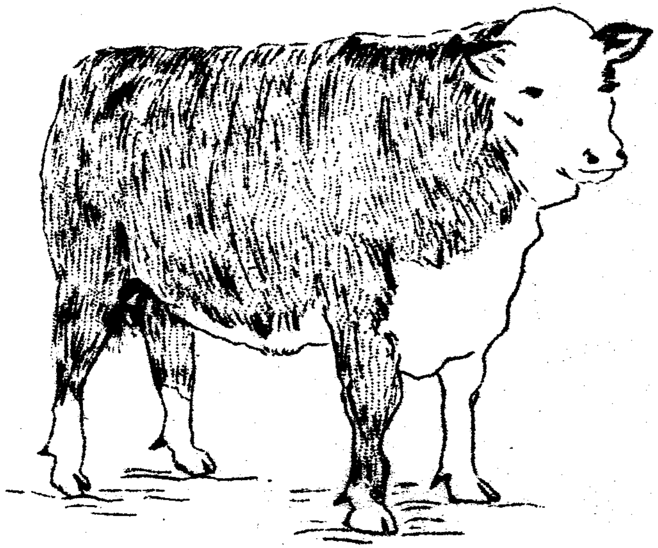
Miscellaneous Series Paper 209-A

Steer Feeding Experiment - 1942-'43



WARTIME FEED CONSERVATION

IN CATTLE FATTENING

Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

Homer J. Henney, Director

Miscellaneous Series #209-A

STEER FEEDING EXPERIMENT
Colorado Agricultural Experiment Station, Ft. Collins, Colorado
Fed 170 days - Dec. 23, 1942 to June 11, 1943
(Table based on one average steer)

Lot Number	1	2	3	4	5	6	7
Number of steers	10	10	10	10	10	9	10
Feeds Fed: Salt self-fed in all lots	Gr. Corn C.S. Cake Wet Pulp Alf. Hay	Gr. Corn C.S. Cake Wet Pulp Chop.Alf.	Gr. Corn Wet Pulp Alf. Hay	Gr. Corn Wet Pulp Alf. Hay Phos.Acid Gr.Limestone	Gr. Corn Wet Pulp Beet Tops Alf. Hay	Gr. Corn C.S. Cake Bran Corn Sil. Chop. Alf.	Gr. Corn Wet Pulp Beet Top Sil. Alf. Hay
Initial Weight	656.5	650.0	652.2	654.5	653.5	667.4	655.5
Final Weight	1036.3	1063.3	1041.5	1001.7	1021.2	1094.8	1018.8
Total Gain	379.8	413.3	389.3	347.2	367.7	427.4	363.3
Daily Gain	2.23	2.43	2.29	2.04	2.16	2.51	2.14
Average Daily Ration							
Ground Corn	9.79	9.99	10.46	10.07	5.08	14.84	5.08
Cottonseed Cake	.49	.49				.47	
Bran						.84	
Wet Beet Pulp	20.10	20.39	20.35	19.98	39.84		39.69
Beet Tops					9.07		
Beet Top Silage							18.34
Corn Silage						6.92	
Alfalfa Hay	7.70		6.96	6.04	5.55		5.42
Chopped Alfalfa Hay		8.01				2.18	
Phosphoric Acid				.163			
Ground Limestone				.023			
Salt	.025	.028	.023	.027	.027	.022	.043
Feed Required Per Cwt. Gain							
Ground Corn	438.0	410.8	456.6	493.1	234.7	590.0	237.5
Cottonseed Cake	22.0	20.3				18.9	
Bran						33.6	
Wet Beet Pulp	899.8	838.6	888.4	978.6	1842.3		1857.2
Beet Tops					419.3		
Beet Top Silage							857.9
Corn Silage						275.4	
Alfalfa Hay	344.7		304.1	295.7	256.5		253.8
Chopped Alfalfa Hay		329.3				86.5	
Phosphoric Acid				8.0			
Ground Limestone				1.1			
Salt	1.1	1.1	1.0	1.3	1.2	.9	2.0
Feed Cost Per Cwt. Gain	12.25	11.84	11.79	13.35	9.02	14.29	9.41

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STEER FEEDING EXPERIMENT
FINAL MARKET DATA
Colorado Agricultural Experiment Station, Ft. Collins, Colorado
Fed 195 days - Dec. 23, 1942 to July 6, 1943
(Table based on one average steer)

Lot Number	1	2	3	4	5	6	7
Number of steers	10	10	10	10	10	9	10
Feeds Fed: Salt self-fed in all lots. Phosphoric acid and ground limestone hand-fed in lot 4.	Gr. Corn C.S. Cake Wet Pulp Alf. Hay	Gr. Corn C.S. Cake Wet Pulp Chop.Alf.	Gr. Corn Wet Pulp Alf. Hay	Gr. Corn Wet Pulp Alf. Hay	Gr. Corn Wet Pulp Beet Tops Alf. Hay	Gr. Corn C.S. Cake Bran Corn Sil. Chop.Alf.	Gr. Corn Wet Pulp Beet Top Sil. Alf. Hay
Initial Weight	656.5	650.0	652.2	654.5	653.5	667.4	655.5
Market Weight (Denver)	1047.0	1085.0	1066.0	1014.5	1045.0	1073.3	1036.5
Total Gain	390.5	435.0	413.8	360.0	391.5	405.9	381.0
Daily Gain	2.00	2.23	2.12	1.85	2.01	2.08	1.95
Average Daily Ration							
Ground Corn	10.05	10.23	10.70	10.36	5.94	14.65	5.94
Cottonseed Cake	0.49	0.49	----	----	----	0.46	----
Bran	----	----	----	----	----	0.83	----
Wet Beet Pulp	19.30	19.54	19.51	19.19	37.09	----	36.96
Beet Tops	----	----	----	----	8.59	----	0.68
Beet Top Silage	----	----	----	----	----	----	15.98
Corn Silage	----	----	----	----	----	6.51	----
Alfalfa Hay	7.62	----	6.79	6.12	5.64	----	5.46
Chopped Alfalfa Hay	----	7.75	----	----	----	2.10	----
Phosphoric Acid	----	----	----	0.145	----	----	----
Ground Limestone	----	----	----	0.035	----	----	----
Salt	0.025	0.027	0.021	0.028	0.027	0.020	0.039
Feed Required Per Cwt. Gain							
Ground Corn	501.9	458.4	504.0	561.2	296.0	703.8	304.1
Cottonseed Cake	24.6	22.2	----	----	----	22.2	----
Bran	----	----	----	----	----	40.1	----
Wet Beet Pulp	963.5	876.1	919.2	1039.5	1847.6	----	1891.8
Beet Tops	----	----	----	----	427.6	----	34.7
Beet Top Silage	----	----	----	----	----	----	818.1
Corn Silage	----	----	----	----	----	312.8	----
Alfalfa Hay	380.6	----	319.9	331.3	281.0	----	279.3
Chopped Alfalfa Hay	----	347.4	----	----	----	100.7	----
Phosphoric Acid	----	----	----	7.9	----	----	----
Ground Limestone	----	----	----	1.9	----	----	----
Salt	1.2	1.2	1.0	1.5	1.4	1.0	2.0
Feed Cost Per Cwt. Gain	13.86	13.00	12.86	14.97	10.41	16.98	10.94

STEER FEEDING EXPERIMENT
FINANCIAL STATEMENT BASED ON SALE OF STEERS
Colorado Experiment Station, Fort Collins, Colorado
Fed 195 days - Dec. 23, 1942 to July 6, 1943
(Table based on one average steer)

Lot Number	1	2	3	4	5	6	7
Number of steers	10	10	10	10	10	9	10
Feeds Fed:	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn
Salt self-fed in all lots	C.S. Cake	C.S. Cake				C.S. Cake Bran	
Phosphoric acid and ground limestone hand-fed in lot 4	Wet Pulp Alf. Hay	Wet Pulp Chop.Alf.	Wet Pulp Alf. Hay	Wet Pulp Alf. Hay	Wet Pulp Beet Tops Alf. Hay	Corn Sil. Chop.Alf.	Wet Pulp Beet Top Sil. Alf. Hay
Initial Weight	656.5	650.0	652.2	654.5	653.5	667.4	655.5
Shipping Weight	1075.8	1110.3	1087.0	1051.8	1070.0	1115.3	1059.3
Market Wt. (Denver)	1047.0	1085.0	1066.0	1014.5	1045.0	1073.3	1036.5
Total Mkt. Gain	390.5	435.5	413.8	360.0	391.5	405.9	381.0
Daily Mkt. Gain	2.00	2.23	2.12	1.85	2.01	2.08	1.95
Shrink to Market	287.5	252.5	210.0	372.5	250.0	377.5	227.5
Percent shrink to market	2.7	2.3	1.9	3.5	2.3	3.8	2.2
Cost per steer in feedlot @ $14.45 per cwt.	94.86	93.93	94.24	94.58	94.43	96.44	94.72
Feed cost per steer	54.12	56.55	53.22	53.89	40.76	68.93	41.68
Est. fixed costs including int., labor & equipt.	6.82	6.78	6.79	6.81	6.80	6.89	6.81
Shipping & selling expense	3.18	3.29	3.24	3.08	3.17	3.26	3.15
Total cost at mkt. (Denver)	158.98	160.55	157.49	158.36	145.16	175.52	146.36
Total est. operating costs	64.12	66.62	63.25	63.78	50.73	79.08	51.64
Return per steer to cover operating costs	67.95	75.87	69.92	60.64	67.02	71.54	65.42
Price per cwt. flat (Denver)	15.55	15.65	15.40	15.30	15.45	15.65	15.45
Return per steer	162.81	169.80	164.16	155.22	161.45	167.98	160.14
Profit per steer	3.83	9.25	6.67	-3.14	16.29	-7.54	13.78
Necessary selling price per cwt. to break even	15.18	14.80	14.77	15.61	13.89	16.35	14.12
Margin over purchase price needed to break even	0.73	0.35	0.32	1.16	-0.56	1.90	-0.33

Feed Costs Used:

Ground Corn	$40.00 per ton	Wet Pulp	$2.25 per ton	Corn Silage	$5.50 per ton	Phosphoric Acid	$9.50 per cwt.
Cottonseed Cake	54.00 " "	Beet Tops	4.25 " "	Alfalfa Hay	11.00 " "	Ground Limestone	1.00 " "
Bran	38.00 " "	Beet Top Silage	2.75 " "	Chopped Alfalfa Hay	13.00 " "	Salt	1.00 " "

STEER FEEDING EXPERIMENT
SLAUGHTER AND CUTTING DATA
Slaughter, Grading and Cutting at Swift & Co., Denver, July 9-12, 1943
Report by Swift & Co. Personnel and U.S. Gov't Inspector
(Report based on steers by lots)

Lot Number	1	2	3	4	5	6	7
Number of steers	10	10	10	10	10	9	10
Feeds Fed:	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn	Gr. Corn
Salt self-fed in all lots	C.S. Cake	C.S. Cake				C.S. Cake	
						Bran	
Phosphoric acid and ground limestone hand-fed in lot 4	Wet Pulp	Wet Pulp	Wet Pulp	Wet Pulp	Wet Pulp		Wet Pulp
					Beet Tops	Corn Sil.	Beet Top Sil.
	Alf. Hay	Chop.Alf.	Alf. Hay	Alf. Hay	Alf. Hay	Chop.Alf.	Alf.Hay
Live Weight	1047.0	1085.0	1066.0	1014.5	1045.0	1073.3	1036.5
Dressed Weight (Cold)	647.3	673.8	649.1	639.8	638.8	690.0	635.3
Dressing Percent	61.8	62.1	60.9	63.1	61.1	64.3	61.3
Dressed Cost	24.17	24.44	24.16	24.14	24.24	23.38	24.22
Swift & Co. Carcass Grades							
Number 10	----	2	----	----	----	5	----
Number 11	2	2	----	1	4	4	4
Number 12	6	6	7	6	5	----	5
Number 13	2	----	3	3	1	----	1
Government Carcass Grades							
Choice	6	7	4	5	8	9	7
Good	4	3	6	5	2	----	3
Inspection of Livers							
Abscess	3	----	2	----	1	3*	2*
Sawdust	----	----	----	----	----	1*	----
Telangiectasis	----	----	4	----	1	5	3*
Livers Passed							
Number	7	10	4	10	8	1	6
Percent	70	100	40	100	80	11	60
Livers Condemned							
Number	3	----	6	----	2	8	4
Percent	30	----	60	----	20	89	40

*One liver had both.

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STEER FEEDING EXPERIMENT
SOME HIGHLIGHTS AND OBSERVATIONS
Colorado Agricultural Experiment Station, Ft. Collins, Colorado
1942-1943

1. In this experiment, the rations including beet tops and using a small amount of grain were by far the most economical and profitable. The steers in Lots 5 and 7 were the only ones which could have sold for less per hundredweight than the original feeder cost without financial loss. A small amount of grain fed with beet tops, wet pulp, and alfalfa, produced carcasses of quality and dressing percentage fully equal to those produced with a medium amount of grain, even though the rate of gain was slightly lower. For these reasons, these low grain-beet by-product rations are the ones recommended for the Colorado farmer-feeder in the beet producing areas under present conditions.

2. In this test chopped alfalfa hay fed in a standard beet by-product ration of corn, cottonseed cake, and alfalfa (Lot 2) produced more desirable results from each standpoint studied than when the hay was fed whole (Lot 1).

3. In two years' experiments a ration of grain, wet pulp, and alfalfa hay has fattened steers efficiently without the use of additional protein supplement, as shown by carcass studies. However, the steers receiving cottonseed cake in the feedlot showed more bloom and received a higher appraisal value.

4. A large amount of concentrates fed in a ration of corn, wheat bran, cottonseed cake, corn silage, and chopped alfalfa produced the outstanding carcasses and the highest dressing percentage, 64.3 per cent, in the experiment. The cost per hundred pounds of beef produced was greatest in this lot. This type of ration should be considered as adapted to specialized operating conditions where a premium product is desired.

5. The feeding of phosphoric acid and ground limestone in Lot 4 stimulated both appetite and gain at intervals, but this lot finished with the lowest average gain and least desirable carcasses. Further studies of these supplements should be made.

6. The loss from condemned livers, while very considerable, is by no means unusual in fed cattle in this region. The cause is at present unknown, but results of this experiment suggest that a highly concentrated grain ration may well be a factor of importance.

7. The extra handling of the steers during the period between the final feedlot studies (Table - page 1), and the market studies (Table - page 2), probably caused some of the changes in weights and gains. During this period, the steers in Lot 7 were fed dried beet tops instead of the stacked beet top silage. Two steers each from Lots 1 and 4 were kept in metabolism stalls during part of the experiment.