

# Fattening Rations Fed to Steers

## *Result of Feeding Trials, Including Marketing Margins, at the Dickinson Experiment Station*

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On October 15, 1954, four lots of 10 yearling steers each were placed in feed lots at the Dickinson Experiment Station for fattening on corn silage and various supplements. This was the fourth successive experiment aimed at determining the practicability of finishing beef cattle in North Dakota on locally produced roughage with a minimum use of supplements. In this experiment the 40 steers were fed for 153 days, then sold by lots at a local public auction ring, after which dressing percentages and carcass grades were furnished by the packers who bought the steers. The rations and feeding results are summarized in Table I.

All lots were fed corn silage twice daily in as large amounts as they would clean up reasonably well. Each lot was fed a different supplement. Lot I received 3.5 pounds per head daily of a supplement similar to Purdue "A" (see footnote to Table I.) Lot II received 2 pounds soybean oilmeal, 2.5 pounds alfalfa hay, 2 pounds steamed bonemeal, and .07 pound trace mineralized salt per steer daily. Lot III was fed the same ration as Lot II for the first 60 days of the period, after which a ground grain mixture of barley and oats, two to one, was added at the rate of 4 pounds per head daily. Lot IV was fed the same ration as Lots II and III for the first 60 days, then the allowance of soybean oilmeal was reduced from 2 pounds daily to 1½ pounds daily, and 1 pound of ground grain was added per head daily.

The first three lots were fed about the same rations as were used in an earlier experiment reported in Bimonthly Bulletin, Vol. XVI, No. 6, for July-August, 1954, and the average daily gains were almost identical for the two years. In Lot IV, the substitution of 1 pound of grain for ½ pound of soybean oilmeal kept the daily ration cost about constant, held total digestible nutrients intake up, and reduced out-of-pocket cost of the ration.

The differences in rate of gain between the four lots were not significant because of the great variation within lots. There were, however, differences in feed cost per 100 pounds gain, large enough to mean feeding at a loss in Lot I, while feeding for a profit in Lots II, III, and IV.

The ration used in Lot I has proved the least efficient in converting feed to beef in both of the trials in which it was used. Each

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TABLE I.—1954-1955 Steer Feeding Results, Dickinson Experiment Station.

	Lot I	Lot II	Lot III	Lot IV
Number of Steers.....	10	10	10	10
Avg. Initial wt.....	759	759	759	759
Avg. Final wt.....	1054	1054	1095	1087
Gain Per Steer.....	295	295	336	328
Daily Gain Per Steer.....	1.92	1.92	2.20	2.14
Days on Feed.....	153	153	153	153
Daily Feed Consumption Per Steer				
Corn Silage.....	64.3	63.7	60.4	64.0
Purdue Supp. A <sup>1</sup> .....	3.5			
Soybean Oilmeal.....		2.0	2.0	2.0**
Alfalfa Hay.....		2.5	2.5	2.5
Grain.....			4*	1*
Steamed Bonemeal.....		.2	.2	.2
Trace Min. Salt.....		.07	.07	.07
Feed per 100 lb. Gain				
Corn Silage.....	3336	3306	2749	2992
Purdue Supp. A.....	180.3			
Soybean Oilmeal.....		103.2	90.5	78.9
Alfalfa Hay.....		129.0	113.1	116.0
Grain.....			108.3	27.8
Steamed Bonemeal.....		10.3	9.1	9.3
Trace Min. Salt.....		3.59	3.15	3.24
Feed Cost per 100 lb. gain.....	\$ 25.70	\$ 23.65	\$ 22.15	\$ 21.22
Initial Cost per cwt.....	19.00	19.00	19.00	19.00
Initial Value per Steer.....	144.21	144.21	144.21	144.21
Feed Cost per Steer <sup>2</sup> .....	75.80	69.65	74.42	69.49
Total Cost per Steer.....	220.01	213.86	218.63	213.70
Selling price per cwt.....	20.60—7 hd. 19.10—3 hd.	22.15	22.40	22.00
Value per head (avg.).....	213.22	233.46	245.28	239.14
Avg. net return per steer.....	-6.79	19.60	26.65	25.44

\*After 60 days.

\*\*After 60 days reduced to 1½ lbs.

Steamed bonemeal and trace mineralized salt were available in all lots in addition to that in the ration.

<sup>1</sup>Mixed as follows: 1301 lbs. soybean oilmeal (44%), 280 lbs. beet molasses, 280 lbs. alfalfa meal, 104 lbs. steamed bonemeal, 34 lbs. trace mineralized salt, and 1 lb. Vitamin A. & D. feeding oil.

<sup>2</sup>Feed prices used: Corn silage \$10.00 ton; Soybean Oilmeal \$100 ton; Purdue "A" \$100 ton; Alfalfa Hay \$20.00 ton; Barley and Oats Mixture \$40.00 ton; Steamed Bonemeal \$110 ton; Trace Mineral Salt \$54.00 ton.

100 pounds of gain required 3,336 pounds of corn silage and 180 pounds of supplement, which at prices used meant a cost of \$25.70 per hundredweight gain.

The steers in Lot II made somewhat slower gains in this trial than the same ration produced in the earlier trial, yet feed consumption per day was much higher in this trial. Daily silage consumption jumped from 54.3 pounds to 63.7 pounds at the same time that daily gains slipped from 2 pounds to 1.92 pounds. Lot II returned a profit, but this was possible only by virtue of a margin in selling price above purchase price.

Lot III steers received 4 pounds grain per day for the final three months of the feeding period, with the result that they were the best finished lot at market time, and they sold for the highest price, \$22.40 per hundredweight. The net profit per head was \$26.65 in Lot III, the highest of the four lots.

Steers in Lot IV made relatively better gains than was expected considering the small amount of supplements fed. The final weight of 1,087 pounds per head, only eight pounds lower than in Lot III is one indication that Lot IV steers were second only to Lot III animals in finish. Feed cost per steer was lower in Lot IV than in any other lot, though about the same as in Lot II.

Dressing percentages and carcass grades were furnished by the packers. Lot III was bought by a local packer and those steers were butchered one day sooner than those of the other three lots, which went to a distant packing house. Data on the carcasses of each lot are summarized in Table II.

TABLE II

	Date Sold	Date Killed	Dressing %	Carcass Grade	
				Choice	Good
Lot I*	3/17/55	3/22/55	58.08	1	6 <sup>1</sup>
Lot II	3/17/55	3/22/55	57.45	3	7 <sup>1</sup>
Lot III	3/17/55	3/21/55	61.94	10 <sup>2</sup>	0
Lot IV	3/17/55	3/22/55	57.30	5	5 <sup>1</sup>

<sup>1</sup>Condition and covering was satisfactory for grade of choice. Graded good because of darker color.

<sup>2</sup>Some of this lot would have graded prime except for darker color.

\*Three lighter steers from Lot I were cut back by buyers and sold as feeders.

Lots I, II, and IV all dressed about the same percentage, 57 to 58 per cent. Lot III, which was not shipped any appreciable distance and was butchered one day earlier than the other lots, dressed 61.9 per cent. Carcass grades were in line with rate of gain and final weight, as one lot relates to another. All 10 carcasses from Lot III graded choice, five were choice and five good from Lot IV, three were choice and seven good from Lot II and of the seven steers that were selected by the packer in Lot I only one graded choice. Both packing houses mentioned the darker color of fat on the carcasses, probably due to high carotene in the ration, as being detrimental to grade.

### Summary

Another in a series of experiments designed to determine the most suitable supplements to corn silage for fattening cattle in North Dakota is reported. Four lots of yearling steers each were full-fed corn silage with varying supplements from October 15 to March 17, then sold by lots at auction. Carcass data were secured. The best gaining and highest selling and grading lot was full-fed corn silage plus 2½ pounds alfalfa hay, 2 pounds soybean oilmeal, 0.2 pounds steamed bonemeal, 0.07 pound trace mineralized salt, and 4 pounds grain after the initial 60 days on feed. The next best lot in gain and grade and the lot making most economical gains was fed the same as the best lot during the initial 60 days, after which soybean oilmeal was reduced to 1½ pounds and 1 pound grain was added.

Carcass grades were affected by the yellow color of fat, which can be attributed to the type of rations fed.