

2. The average daily gain by the various lots does not vary greatly at this stage of the trial; however, it is slightly higher in Lot 2.

3. The grain required per hundred pounds of liveweight gain has increased as the level of grain in the ration has increased.

Table 1.—Ratio of Roughage to Grain for Fattening Steer Calves  
(December 22, 1951, to March 29, 1952—98 days)

Lot number	1	2	3
Number steers per lot	10	10	10
Average initial weight, lbs.	502	503	504
Average final weight, lbs.	735	748	735
Average gain per steer, lbs.	233	245	231
Average daily gain per steer, lbs.	2.38	2.50	2.36
Average daily feed consumed, lbs.:			
Milo grain	9.43	12.58	12.62
Alfalfa hay	11.88	8.22	7.10
Salt	.05	.05	.04
Feed required per cwt. gain, lbs.:			
Milo grain	396.87	503.46	535.23
Alfalfa hay	499.78	329.10	301.13
Salt	2.16	2.04	1.55
Feed cost per cwt. gain	\$17.37	\$18.22	\$18.76

A Comparison of Rolled, Coarsely Ground, and Finely Ground Milo Grain for Fattening Steer Calves.

R. F. Cox and E. F. Smith

Good to choice quality Hereford steer calves were used in this test. There were three lots, 10 head to a lot, all being fed the same except for the difference in grain preparation. The calves originated in the vicinity of Sonora, Texas. They were maintained on a roughage ration properly supplemented for about six weeks prior to starting on test on December 5, 1950. They were sprayed with B.H.C. for lice. At the start of the test, they were fed all of the sorghum silage they would clean up each day, 2 pounds of alfalfa hay and 1½ pounds of soybean oil meal pellets per head daily.

The grain was started at the rate of 1 pound per head daily and raised about 1 pound per head weekly. When the calves reached a daily grain consumption of 14 to 15 pounds per head, they were placed on a self-feeder and the silage was omitted from the ration and replaced with 3 to 4 pounds of alfalfa hay per head daily and a small amount of prairie hay. The hay and protein supplement were fed in a separate bunk from the self-fed grain.

The rolled milo was dry rolled and appeared satisfactory upon emergence from the roller; however, after sacking and when it was finally fed to the cattle, it was broken into small particles and somewhat powdered. The coarsely ground or cracked milo was the product of a burr mill. A hammer mill was used to prepare the finely ground milo, which was ground to a coarse, mealy mixture.

Observations

All three lots made about the same daily gain. The steers receiving coarsely ground milo consumed slightly more grain and thereby required slightly more grain per 100 pounds of gain than either of the other lots; however, they also graded higher in the carcass and had a

higher dressing percent. The differences present in this test were small.

A Comparison of Rolled, Coarsely Ground, and Finely Ground Milo Grain for Fattening Steer Calves  
(Dec. 5, 1950, to July 9, 1951—216 days)

Lot number	6	7	8
Management.....	Finely ground milo	Coarsely ground milo	Rolled milo
No. steers per lot	10	10	10
Initial weight per steer, lbs.	418	419	418
Final weight per steer, lbs.	899	902	898
Gain per steer, lbs.	481	483	480
Daily gain per steer, lbs.	2.23	2.24	2.22
Daily ration per steer, lbs.:			
Milo	11.59	11.94	10.95
Soybean pellets	1.37	1.37	1.37
Sorghum silage	6.74	7.55	7.36
Alfalfa hay	2.36	2.51	2.45
Salt	.04	.05	.03
Prairie hay	.45	.45	.53
Feed required per 100 pounds gain, lbs.:			
Milo	520.40	533.95	492.58
Soybean pellets	61.68	61.43	61.81
Sorghum silage	304.68	337.47	331.35
Alfalfa hay	105.82	112.22	110.21
Salt	1.97	2.03	1.19
Prairie hay	20.27	20.19	23.96
Cost of feed per 100 lbs. gain	\$ 16.45	\$ 16.92	\$ 15.98
Initial cost of steer @ \$31.50 cwt.	\$131.67	\$131.99	\$131.67
Feed cost per steer	\$ 79.11	\$ 81.72	\$ 76.70
Steer cost plus feed cost	\$210.78	\$213.71	\$208.37
Necessary selling price per cwt.	\$ 23.47	\$ 23.69	\$ 23.20
Selling price per cwt.	\$ 34.45	\$ 34.45	\$ 34.45
Dressing percent	59.5	60.9	59.5
Carcass grades:			
Prime	5	6	1
Choice	5	4	9
(Packer grades)			

Project 222: Fundamental Nutrition Studies of Sorghum Roughages and Grain

Digestibility of Finely Ground, Cracked, and Rolled Milo Grain, 1951.

E. F. Smith and D. B. Parrish

A digestion trial was conducted with 12 steers which were allotted into three lots of 4 steers each. A ration of sorghum silage (Tennessee Orange), soybean oil meal pellets and milo grain, salt and ground lime-

stone was fed to each lot. Lot 1 received finely ground milo, Lot 2 cracked milo and Lot 3 rolled milo.

An adjustment and preliminary period was followed by a collection period of 10 days. During the collection period, feces were collected for chemical analysis.

The digestibility of dry matter, protein, crude fiber, ether extract and nitrogen-free extract was higher for the rolled milo ration than for the cracked or finely ground milo rations. With the exception of crude fiber the digestibility of the nutrients of the cracked milo grain ration was the lowest of the three rations.

#### Effect of Rolling, Coarse and Fine Grinding on the Digestibility of Milo Grain

Lot No.	No. of steers	Ration	Av. apparent coefficient of digestibility percent—				N.F.E.
			Dry matter	Crude protein	Ether extract	Crude fiber	
1	4	Fine milo, sorghum silage, soybean pellets, salt, ground limestone .....	71.97	60.8	72.4	51.0	78.6
2	4	Cracked milo, sorghum silage, soybean pellets, salt, ground limestone .....	67.60	58.8	68.0	55.0	72.4
3	4	Rolled milo, sorghum silage, soybean pellets, salt, ground limestone .....	75.80	63.2	73.1	56.8	82.5

### Project 68: Factors Influencing the Salt Requirements of Beef Cattle<sup>1</sup>

The Effect of Withholding Salt on the Growth and Condition of Steers, 1950-51.

E. F. Smith, D. B. Parrish, and E. J. Splitter

This test was to find what effect the withholding of salt has on the performance of steers on either fattening rations or wintering rations.

Forty-two head of good quality Hereford steer calves were used in the test. There were four lots, 10 head to each lot, except that one lot contained 12 head. Two of the lots were full-fed grain and two of the lots were fed wintering rations. For the two lots receiving wintering rations, the test was terminated May 2, 1951. The two lots on a full feed of grain were fed until July 9, 1951. A feedstuff analysis of the feeds used in the test may be found on page — of this bulletin.

#### Observations

1. Lot 1, on a full feed of grain and given free access to salt, gained only slightly more than Lot 2, which also was full-fed but from which salt was withheld. There was practically no difference in amount of feed consumed or in efficiency of gain (see table, Lots 1 and 2). Lot 2 sold for less per hundredweight and graded lower in the carcass. On foot, Lot 2 did not appear to be as well finished as Lot 1.

1. This study was supported in part by the Salt Producers' Association of Detroit, Michigan.

2. The gain of steer calves on a roughage (wintering) ration was decreased appreciably when salt was withheld (see table, Lots 3 and 4). The calves given free access to salt consumed slightly more feed and were much more efficient in converting their feed into pounds of beef.

#### The Effect of Withholding Salt on the Growth of Steer Calves.

December 5, 1950, to July 9, 1951—Lots 1 and 2  
December 5, 1950, to May 1, 1951—Lots 3 and 4

1. Lot number .....	1	2	3	4
2. No. steers in lot .....	10	10	12	10
3. Management .....	Full fed		Wintered	
4. Initial weight per steer ..	419	418	419	418
5. Final weight per steer ....	902	889	529	505
6. Gain per steer .....	483	471	110	87
7. Daily gain per steer .....	2.24	2.18	.75	.59
8. Daily ration per steer, lbs.:				
Ground milo grain .....	11.94	11.92		
Soybean oil meal pellets ..	1.37	1.37	1.00	1.00
Sorghum silage (Tenn. Orange) .....	7.55	6.87	28.35	27.52
Alfalfa hay .....	2.51	2.45		
Prairie hay .....	.45	.53		
Salt, free access .....	.05		.15	
9. Feed required per 100 lbs. gain, lbs.:				
Ground milo grain .....	533.95	546.82		
Soybean oil meal pellets ..	61.43	62.45	134.09	168.97
Sorghum silage (Tenn. Orange) .....	337.47	312.87	3788.88	4649.43
Alfalfa hay .....	112.22	111.81		
Prairie hay .....	20.19	24.05		
Salt .....	2.03		19.66	
10. Selling price per cwt., dollars .....	34.45	34.05		
11. Carcass grades:				
Prime .....	6	4		
Choice .....	4	5		
Good .....		1		

The Effect of Withholding Salt on the Growth and Condition of Steers, 1951-52.

E. F. Smith, D. B. Parrish, and E. J. Splitter

#### Preliminary Report

#### Introduction

This is a progress report on an experiment to be completed this summer, 1952, to find out what effect the withholding of salt has on the growth and fattening of steers.