8—Feed required for 100 pounds gain		
Ground shelled corn	510.	488.
Atlas sorgho silage	436.	700.
Cottonseed meal	72.	63.
Alfalfa hay	108.	99.
Prairie hay	45.	62.
Ground limestone	5.	5.
9—carcass grades	1 choice 9 good	4 choice 6 good

OBSERVATIONS

1. Both lots of calves ate practically the same amount of corn.
2. Lot 2 consumed considerably more silage than lot 1.
3. The calves in lot 2 made an average gain of 49 pounds more per head than the calves in lot 1.
4. The carcasses were graded by a government grader. In lot 2, four carcasses graded choice and six graded good. In lot 1, one carcass graded choice and nine graded good.
5. This test indicates that feeder cattle can be selected which in addition to making faster gains in the feedlot, will also utilize a greater proportion of roughages to concentrates during the fattening period. It also indicates that these advantages in economy of gains can be combined with a higher market value of the beef produced.

Project 78—Factors Influencing Rate of Gain, Quantity of Feed Consumed and Carcass Grade.

F. W. Bell - D. L. Mackintosh - A. G. Pickett

Preliminary Report - 1948-49

INTRODUCTION

This report is on two lots of heifer calves now on test in the study of the characteristics of feeder calves which are associated with differences in:

1. Rate of gain
2. Kind and amount of feeds required to produce gains.
3. Value of the carcass.

EXPERIMENTAL PROCEDURE

The two lots were selected from 100 heifer calves purchased in November 1948 for feeding tests. These calves graded good to choice as feeders. There was more difference in the condition of the calves when received than there was in those used in the similar trial of 1947-48. This fact may account in part for the differences in results to date as compared with last year's results.

The two lots in this trial were sorted by the same method used last year, on the basis of differences in body capacity, chest room, fleshing, form and general appearance. The ten calves in lot 1 are those which were somewhat deficient in one or more of the above characteristics as compared to those in lot 2. All calves were graded individually by using a standard feeder cattle chart.

Differences in the initial weight of the calves was not considered in sorting the two lots, since the object of this experiment is to determine the relation of the various body features to rate of gain, kind and amount of feeds consumed, and the value of the carcass produced.

The calves in both lots are receiving the same kinds of feed, consisting of all the ground corn and silage they will eat plus two pounds of prairie hay, one and three fourths pounds of soybean meal and .07 of a pound of ground limestone per head daily.

PRELIMINARY REPORT

November 15, 1948 to April 18, 1949—154 Days

1—Lot Number	1	2
2—Number of heifers in lot	10	10
3—Average daily ration:		
Ground shelled Corn	8.81	9.48
Atlas Sorgo Silage	9.41	10.50
Soybean Meal	1.79	1.78
Prairie hay	2.04	2.04
Ground Limestone	.07	.07
4—Average Initial Weight	403	492
5—Average Final Weight	738	814
6—Average Total Gain	335	322
7—Average Daily Gain	2.17	2.09

OBSERVATIONS

1. Heifers in lot 1 have gained 13 pounds more per head than the heifers in lot 2.
2. Consumption both of corn and silage, has been nearly the same in the two lots considering the difference in initial weight of the calves.
3. The heifers in lot 2 appear to be more nearly finished and, if this difference continues, the heifers in lot 1 will require a longer fattening period to reach the same degree of finish.

Project 222-2—Fundamental Nutrition Studies of Sorghum Roughages and Grains. II—A Study of the Digestibility of Sorghum Silage.

EFFECT OF GRINDING ON THE NUTRITIVE VALUE OF GRAIN SORGHUMS FOR FATTENING STEER CALVES

Ed F. Smith - D. B. Parrish - A. G. Pickett

I. Digestibility study of Milo Grain.

A digestion trial was conducted with twelve steers which were allotted into three lots of four steers each. A ration of Atlas sorgo silage, cottonseed meal and milo grain was fed in all lots. Whole grain was fed in lot 1, coarsely ground grain to lot 2, and finely ground grain to lot 3.

Table I shows that the coefficients of digestibility of the dry matter, crude protein, ether extract, and nitrogen-free extract were highest for the steers in lot 3, and lowest for those in lot 1. Crude fiber was digested most efficiently by the steers in lot 1. These results confirm those of previous work done at this station.

It may be concluded from the results of this test that so far as digestibility is concerned milo grain is best utilized when finely ground. However the question of how fine milo grain should be ground for fattening cattle cannot be fully answered until feed lot trials are conducted and such factors as palatability, rate of gain and efficiency of gain are investigated.

TABLE I
Effect of Grinding on the Digestibility of Milo Grain

Lot Number	1	2	3
Ration	Whole Milo Atlas Silage Cottonseed Meal Salt Gr. Limestone	Coarsely Ground Milo Atlas Silage Cottonseed Meal Salt Gr. Limestone	Finely Ground Milo Atlas Silage Cottonseed Meal Salt Gr. Limestone
Average Percentage of Each Nutrient Digested:			
Dry Matter	48.04	52.34	60.19
Crude Protein	42.72	46.81	54.93
Ether Extract	50.10	64.68	72.46
Crude Fiber	56.42	50.34	50.96
Nitrogen Free Extract	51.39	57.29	65.05

II. Coarsely Ground vs. Finely Ground Milo Grain in the Fattening Ration.

The twelve steers used in part I of this experiment were divided into two lots of six steers each at the close of the digestion trial. Lot 1 was fed coarsely ground milo grain, one and one-half pounds of cottonseed meal, alfalfa and prairie hay. Lot 2 was fed the same except the milo was finely ground. The alfalfa and prairie hay fed to both lots were of poor quality and much of it was wasted by the steers.

Observations

1. There was little difference between the two lots in amount of gain or efficiency of gain.

2. Lot 1, fed coarsely ground milo crowded the bunk at feeding time while lot 2, fed finely ground milo ate more reluctantly. This would indicate either that the steers fed the finely ground milo found it unpalatable, or that they derived more value from their feed and therefore did not have as great an appetite.

3. The steers in lot 2 were fatter at the close of the experiment than those in lot 1 and were appraised $1.00 per hundred weight higher.

TABLE II—Full Feeding
May 25 to September 24, 1948—122 Days

1—Lot Number	1	2
2—Number of steers per lot	6	6
3—Daily ration per steer, pounds		
Coarsely ground Milo grain	13.02	
Finely ground Milo grain		13.02
Cottonseed meal	1.50	1.50
Alfalfa hay	7.12	7.41
Prairie hay	6.81	6.37
4—Initial weight per steer	540.	540.
5—Gain per steer	295.	303.
6—Final weight per steer	835.	843.
7—Daily gain per steer	2.42	2.48
8—Feed required for 100 pounds grain:		
Coarsely ground Milo grain	538.59	
Finely ground Milo grain		524.37
Cottonseed meal	61.86	60.23
Alfalfa hay	294.52	298.18

(Continued from preceding page)

Prairie hay	281.52	256.49
9—Appraisal value per cwt., Sept. 24, 1948	$ 29.00	$ 30.00

Project Commercial 68: Factors Influencing the Salt Requirements of Beef Cattle.

SELF FEEDING COTTONSEED MEAL MIXED WITH SALT TO STEERS AS A PROTEIN SUPPLEMENT ON BLUESTEM GRASS*

A. G. Pickett and Ed. F. Smith

Considerable interest has developed in the possibilities of self feeding a protein supplement to cattle on grass. Self feeding is a labor saving and eliminates the need for rounding up cattle every day. Under usual circumstances, it is impossible to control the amount of supplement consumed when it is self-fed. In an attempt to overcome this limitation a few cattlemen have self-fed a mixture of salt and cottonseed meal. It was found that the salt limited the amount consumed and that by varying the proportion of salt in the mixture it was possible to obtain the desired consumption of cottonseed meal.

Preliminary tests were conducted in 1948-49 with two-year old steers on bluestem grass during the last 90 days of the summer grazing season and during the winter with one lot of yearling steers wintered on dry bluestem grass.

Experimental Procedure

Lot 1 - A mixture of 30 poounds of salt and 100 pounds of cottonseed meal was self fed from July 15 to October 15.

Lot 2 - Three pounds of cottonseed cake was fed daily from July 15 to October 15

Lot 3 - Yearling steers wintered on bluestem grass December 1, 1948 to April 18, 1949.
When this test was started a mixture of 30 pounds of salt and 100 pounds of cottonseed meal was self fed. The salt content of the mixture was increased from time to time until it reached 40 pounds salt to 100 pounds of cottonseed meal. This was done to limit the consumption of cottonseed meal.

RESULTS OF SELF FEEDING COTTONSEED MEAL MIXED WITH SALT TO STEERS ON BLUESTEM GRASS

1—Lot Number	1	2	3
2—Ration self fed	30 lbs. salt Mixed with 100 lbs. cottonseed meal	Cottonseed cake	30 to 40 lbs. salt mixed with 100 lbs. Cottonseed Meal
3—When Fed	Summer July 15 to October 15		Winter Dec. 1, '48 to to Apr. 18, '49
4—Length of feeding period	94	94	138
5—No. Steers per lot	6	6	10
6—Initial weight per steer	963	960	755
7—Final weight per steer.	1093	1130	786

*Financed in part by a grant from the Salt Producers Association.