

**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

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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 pounds 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.

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8—Total gain per steer	130	170	31
9—Daily gain per steer	1.38	1.81	.22
10—Feed consumed per steer daily:			
Cottonseed Meal	3.54	3.00	2.83
Salt	1.09	--	.89
11—Total feed consumed			
Cottonseed meal	333.3	282.00	391.00
Salt	103.3	--	123.00

Observations

1. Self feeding a salt-cottonseed meal mixture to steers on grass in the summer was not profitable in this test. The steers in lot 2 which were hand fed cottonseed meal gained .43 of a pound more per day on .54 of a pound less of cottonseed cake, than those self fed the mixture.
2. The extra gain of the steers which were hand fed was sufficient just about to pay for the three pounds cottonseed cake fed per steer daily or 12 cents using prices prevailing at the close of this test.
3. The hair on the steers getting the salt mixture was rough and they were not as fleshy as those which were hand fed cottonseed cake.
4. While grazing on green grass the steers ate slightly over one pound of salt daily.
5. Lots 1 and 2 were fed out at the close of this test and made practically the same daily gains.
6. Lot 3 wintered on dry grass, did not eat as much salt per day as the steers on green grass.
7. The lot 3 steers wintered in strong, thrifty condition.
8. Lot 3 does not have a comparison in the foregoing table but appears as lot 2 in the test entitled, "Wintering Yearling Steers on Bluestem Grass."
9. This should be considered as only a preliminary test and no definite conclusions are justified at this time.

**Project Commercial 68—Factors Influencing the Salt Requirements of Beef Cattle \***

**PART I—THE EFFECT OF WITHHOLDING SALT ON GROWTH AND CONDITION OF BEEF CATTLE AND ON DIGESTIBILITY OF FEED CONSTITUENTS**

Ed F. Smith and D. B. Parrish

The first phase of this experiment pertaining to the effect of withholding salt on growth and condition of steer calves has been completed. The second phase dealing with the effect of withholding salt on the digestibility of the feed nutrients, is in progress.

Twelve steer calves, six having free access to salt and six not having access to salt were wintered on bluestem pasture. Each lot received one and one-half pounds of soybean pellets per head daily. Prairie hay was fed when snow covered the grass.

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

**THE EFFECT OF WITHHOLDING SALT ON GAINS OF STEER CALVES**

December 18, 1948 to April 18, 1949—122 Days

Lot Number	1	2
Number of Steers per lot	6	6
Average Daily rations:		
Soybean Pellets	1.50	1.50
Salt	.04	
Bluestem grass	ad lib.	ad lib.
Prairie hay**		
Initial weight per steer	477.00	473.00
Final weight per steer	527.00	466.00
Gain or Loss per steer	50.00	—7.00
Daily gain or loss per steer	.41	—0.6

OBSERVATIONS

1. Lot 2, which did not have access to salt, evidenced a craving for salt early in the feeding period. It was necessary to fence old salting grounds to prevent the steers from eating the dirt around them.
2. The steers having free access to salt gained 50 pounds per head while those receiving no salt lost 7 pounds per head during the winter phase of 122 days.
3. The only evidence of salt deficiency in the calves of lot 2 was the loss of weight, thin condition, and rougher appearance, compared with those of lot 1.

**PART II—THE EFFECT OF THE COMPOSITION OF THE RATION ON SALT CONSUMPTION BY BEEF CATTLE**

Salt consumption was checked in 17 lots of cattle being fed various rations in the dry lot, to determine what factors influence the salt consumption. Fourteen of these lots were divided into four groups depending on the ration they received. A complete analysis will be made of all feeds used, to determine whether any differences in salt consumption appear to be related to the composition of the feeds.

The results of this first test indicate that the greater the consumption of silage and prairie hay in relation to corn, the higher is the consumption of salt.

**CONSUMPTION OF SALT BY CALVES FED VARIOUS RATIONS**

Group	1	2	3	4
Number per group	30	50	30	30
Age and Sex	Steer Calves	Heifer Calves	Steer Calves	Steer Calves
Daily ration per animal, lbs.....				
Silage	19.74	20.00	19.70	10.02
Prairie hay	5.00	4.12	3.53	2.04
Protein concentrate	1.00	1.00	1.00	2.00
Corn		2.00	3.81	8.51
Gr. Limestone				.10
Salt consumed per head monthly (ounces)	27.36	21.12	25.44	6.24
Initial weight per steer	441.00	456.00	440.00	442.00
Final weight per steer	580.00	619.00	650.00	746.00
Gain per steer	139.00	163.00	210.00	304.00
Daily gain per steer	.99	1.16	1.50	2.17

\*\*—Prairie hay was fed only when snow covered the grass. A total of 260 pounds of hay was consumed by each steers.