

TABLE I: A COMPARISON OF DIFFERENT METHODS OF MANAGING BLUESTEM PASTURE

Pasture number	May 8, 1950 to October 5, 1950—150 days					Late Spring burned My. 2,50
	1	2	3	4	5	
Management	Normally stocked	Over-stocked	Under-stocked	Deferred and rotated	Early Spring burned Mr. 24, '50	Medium Spring burned Ap. 13, '50
Number head per pasture	15	20	10	50	11	11
Acres in pasture	60	60	60	3—60 acre pastures	44	44
Number acres per head	4	3	6	3.6	4	4
Average initial weight	619	619	619	619	622	619
Average final weight	840	829	833	824	838	873
Average gain	221	210	214	205	216	254
Average daily gain	1.47	1.40	1.43	1.37	1.44	1.69
Average gain per acre	55	70	36	57	54	63.5
Initial cost per steer @ \$27.12 per cwt. plus \$12 per head for summer pasture	\$179.87	\$179.87	\$179.87	\$179.87	\$180.69	\$179.87
Average net selling price per steer ²	\$219.61	\$216.67	\$217.74	\$215.34	\$219.08	\$228.40
Average return per steer	\$39.74	\$36.80	\$37.87	\$35.47	\$38.39	\$48.53

1. Only 10 steers were used to compute results—one steer developed an infected ear in August and did not do well. He remained in pasture entire season.
 2. Net selling price per steer is based on selling price of \$28.15 per cwt. and market weight which represents a 5.3% shrink from home weight less average marketing costs of \$4.32 per head.
 3. Deferred and rotated grazing—all steers were held in two pastures until June 20, then moved into protected pasture until August 1, at which time they were allowed the run of all three pastures.

Project 68: Factors Influencing the Salt Requirements of Beef Cattle¹

I. The Effect of Withholding Salt on the Growth and Condition of Steers—1949-1950.

E. F. Smith, D. B. Parrish, A. J. Clawson

Ten good quality Hereford steer calves were used in this study. They were divided into two equal lots. Both lots were treated similarly except salt was withheld from one lot. The calves were started on the test December 14, 1949, wintered, used in a spring digestion trial, full-fed in dry lot and marketed on November 2, 1950.

OBSERVATIONS

1. During the wintering phase, the calves allowed access to salt consumed slightly more silage and gained 139 pounds per head, as compared to 80 pounds per head for those not fed salt.
2. The non-salt steers required about 60 per cent more silage and 74 per cent more soybean pellets per 100 pounds of gain during the wintering phase.
3. During the dry lot, full-feeding phase, the gains were as follows: steers allowed access to salt, 363 pounds; steers from which salt was withheld, 386 pounds. The steers from which salt was withheld drank more water and used slightly less feed per 100 pounds of gain.
4. Over the entire test, the steers allowed free access to salt gained 22 pounds more than those not given salt. There was little difference in carcass grades between the two lots and the selling price per hundred weight was the same.
5. It is significant that in this test and in a similar test conducted in 1948-49 during those periods where the ration was composed largely of roughage, the steers allowed access to salt gained considerably more than those fed no salt, whereas when the ration was composed largely of grain, this difference did not appear.

TABLE I—The Effect of Withholding Salt on the Growth and Condition of Steers

Phase I—Wintering—Dec. 14, '49-April 25, '50—132 days

	Salt free access	No salt access
1. Management	1	2
2. Lot number	5	5
3. Number of head per lot		
4. Average daily ration, pounds:		
Atlas Sorgo silage	28.37	26.14
Soybean oil meal	1.00	1.00
Salt	.054	None
5. Average initial weight, pounds	448.00	448.00
6. Average final weight, pounds	587.00	528.00
7. Average total gain, pounds	139.00	80.00
8. Average daily gain, pounds	1.05	.61
9. Feed required per 100 pounds gain, pounds:		
Atlas Sorgo silage	2694.24	4312.50
Soybean oil meal	94.96	165.00
Salt	5.18	None

(1) This study is supported by the Salt Producers Association, Detroit, Mich.

Phase II—Full-Feeding—May 26, '50-Nov. 12, '50 (170 days)

10. Average daily ration, pounds:		
Prairie hay	6.44	6.42
Alfalfa hay	1.98	1.98
Corn	11.60	11.88
Soybean meal	1.05	1.05
Water (gallons)	7.27	8.89
Salt03	None
11. Average initial weight, pounds	557.00	510.00
12. Average final weight, pounds	920.00	896.00
13. Average total gain, pounds	363.00	386.00
14. Average daily gain, pounds	2.14	2.27
15. Feed required per 100 pounds gain, pounds:		
Prairie hay	302.70	282.59
Alfalfa hay	92.56	87.05
Corn	543.11	523.26
Soybean oil meal	49.45	46.50
Salt	1.19	None

Summary of Phases I and II—Dec. 14, '49-Nov. 12, '50 (333 days)

16. Initial weight per steer, pounds	448.00	448.00
17. Final weight per steer, pounds	920.00	896.00
18. Total gain per steer, pounds	472.00	448.00
19. Daily gain per steer, pounds	1.42	1.35
20. Dressing per cent	58.3	59.3
21. U. S. carcass grades:		
Low good	2	1
High commercial		2
Average commercial	3	2
22. Selling price per cwt. at market	\$28.00	\$28.00

II. THE EFFECT OF WITHHOLDING SALT ON THE DIGESTIBILITY OF RATIONS BY STEERS

(1948-49 and 1949-50 data)

In three different trials, using a total of 22 animals, the digestibility of rations (silage and protein supplement only) by steer calves that for four to five months had received no salt, was compared with that by steers that had received the same rations plus either 20 or 28 gm. of salt daily. In each of the trials the average apparent coefficients of digestibility of dry matter, crude protein, ether extract, crude fiber, and nitrogen free extract, were from 0 to 4 (av. 1.6) per cent greater by steers receiving salt than by those not receiving salt. Thus, a trend toward greater digestibility of the rations by steers receiving salt was evident, but differences were small.

TABLE II—Comparison of Coefficients of Digestibility of Rations by Steers Receiving No Salt and by Steers Receiving the Same Rations Plus Salt.

Trial	No. of Steers	Ration	Av. apparent coefficient of digestibility of					
			Dry Matter	Crude Protein	Ether Extract	Crude Fiber	N.F.E.	Ash
1	3	C. S. M. silage salt ¹	61	62	66	58	64	41

3	C. S. M. silage	60	62	66	57	63	36	
2	3	Dehy. Alf. pellets, silage salt ¹	60	62	61	49	68	48
3	Dehy. Alf. pellets, silage	57	60	59	45	66	41	
3	5	S. B. M. silage salt ²	60	66	67	61	63	40
5	S. B. M. silage	59	65	65	59	62	37	

1. 28 gms. salt daily during the digestion trial; for previous 5 months these steers had consumed approximately 18 gms. of salt per head daily ad lib.

2. 20 gms. salt daily during the digestion trial; for previous 5 months these steers had consumed approximately 22 gms. of salt per head daily ad lib.

Project 68: Factors Influencing the Salt Requirements of Beef Cattle

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

E. F. Smith, D. B. Parrish, E. J. Splitter
Preliminary Report

INTRODUCTION

This is a progress report on an experiment to be completed this summer, 1951. The purpose of the test is to find out what effect the withholding of salt has on the growth of steers.

EXPERIMENTAL PROCEDURE

Forty-two head of good quality Hereford steer calves are on this test. There are four lots, 10 head to each lot except one lot which contains 12 head. Two of the lots are full-fed and two of the lots are being wintered. Salt is withheld from one lot on each feeding regimen.

The two full-fed lots will be marketed in July, 1951 after about 225 days of feeding. The two lots receiving wintering rations will be weighed about May 1, 1951 and that part of the test terminated. Sodium and chloride studies of the blood will be made, and of tissues where possible.

OBSERVATIONS

1. Gains of steer calves on full-feed or on wintering rations were decreased appreciably when salt was not fed.

2. Steers having access to salt consume more feed, especially on full-feed; compare Lots 1 and 2. They are also more efficient gainers.

3. In this test, full-fed steers consuming about five cents worth of salt and \$2.00 worth of extra feed gained about 50 pounds more than steers not receiving salt.