Project 68: Factors Influencing the Salt Requirements of Beef Cattle,[1] 1951-52

The Effect of Withholding Salt on the Growth and Condition of Steers

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

The object of this test was to learn what effect withholding salt has on fattening calves. Twenty good quality Hereford steer calves were divided into two lots of 10 steers each and were self-fed a mixture of 1 pound of chopped alfalfa hay to 3 pounds of ground milo grain for 203 days in 1951-52. The only difference in treatment was that salt was withheld from one lot and offered free choice in the other lot.

The gains, feed consumption, and efficiency were about the same for both lots.

Table 32.—The Value of Salt in Steer Rations.

December 22, 1951, to July 12, 1952—203 days.

1. Lot number	1	2
2. Number steers per lot	10	10
3. Initial weight per steer, lbs.	502	503
4. Final weight per steer, lbs.	933	949
5. Gain per steer, lbs.	431	446
6. Daily gain per steer	2.12	2.19
7. Daily ration per steer:		
Milo grain	14.20	14.17
Alfalfa hay	6.77	6.66
Salt	.....	.02
8. Feed required per 100 lbs. gain, lbs.:		
Milo grain	668.56	645.24
Alfalfa hay	319.11	303.47
Salt	.....	.98
9. Cost of feed per 100 lbs. gain	$22.70	$21.86
10. Initial cost per steer	$210.84	$211.25
11. Feed cost per steer	$87.94	$83.98
12. Steer cost plus feed cost	$298.78	$295.34
13. Necessary selling price	$32.00	$31.02
14. Selling price per cwt.	$34.00	$33.50
15. Dressing percent	60.4	60.0
16. Carcass grades:		
Prime	1	1
Choice	9	7
Good	.....	2

Project 329: Factors Affecting Gains

F. W. Bell, E. F. Smith, and W. H. Smith

Introduction

When buying stocker or feeder cattle, the purchaser bids largely on the basis of his estimate of the probable gains the cattle will make.

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In feeding trials at this station, where each animal is weighed at regular periods during the trials, the records show considerable difference in rate of gain of individuals in the same lot. These differences in ability to gain can be explained only by differences in characteristics of individual animals, since all are under like conditions of feeding and care. We are trying to determine what differences in thin cattle are reliable indications of future gaining ability.

Experimental Procedure

Each stocker or feeder steer or heifer is a factory for converting raw materials into beef. The rate of gain for each animal depends on how well it is equipped to perform the body functions which are necessary for increase in weight; therefore, we are studying characteristics which may be related to rate of gain. These characteristics include head, chest, body, flank, bone, natural fleshing, and estimate of gaining ability.

Each animal was rated separately for each of the various characteristics studied. A range of six ranks was used in order to evaluate each factor as compared to the same factor in all other animals. For instance, individuals which had the best bone were ranked first in bone, and those having the poorest bone were ranked sixth. Others were ranked second, third, fourth, or fifth according to the judgment of the three men who made the ratings. The same procedure was followed for the other characteristics of each animal.

Statistical Analysis

After the feeding and grazing trials were completed, the figures of total gain in weight for each animal and the ratings of characteristics made at the start of the feeding experiment were analyzed by the statistical laboratory under the direction of Dr. H. C. Fryer. This was done to determine what characteristics of feeder and stocker cattle appear to be the most reliable guides to follow in estimating probable gains.

The statistical analysis of the data shows that the ratings for chest, body, and probable gain as made at the start of the feeding trials were closely correlated with the actual gains made by the cattle for all the lots studied. Ratings on bone also were reported as reliable.

Standards for Rating Characteristics

In order to make ratings which are reasonably accurate in expressing differences, it is necessary to follow a definite standard. A brief statement follows regarding the standards used in determining rankings for the characteristics which appear to be reliable guides to follow in estimating gains.

Head: moderately short, with good width, wide muzzle;

Chest: since the chest region encloses the lungs, cattle were ranked highest which showed the most width and depth through the forequarters and carrying back into the body. Those ranked lowest were narrower in front and lacked fullness in the heart girth;

Bone: individuals rated higher on bone were those which had sufficient bone of good quality to indicate that the animal could make rapid increase in weight and had a frame strong enough to carry the weight. Those with light bone were ranked lower;

Body: the individuals ranked higher were those which were wider and deeper throughout. The ratings were determined according to differences in body capacity in relation to the size of the animal;

Probable Gain: this rating was made by each investigator according to his estimate of the ability of each animal to make daily gain in weight. In making this rating, it was necessary to observe each characteristic of the individual in relation to the animal as a whole. One animal might have a good head, be wide and deep in body and have enough bone, but lack somewhat in width of chest; therefore, could not rank first in probable gain.