Project 329: Factors Affecting Gains

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Cattle in the same feedlot differ considerably in their rate of gain. These differences in ability to gain can be explained only by differences in characteristics of individual animals, since all are under the same conditions of feeding and care. In this study we are trying to determine what differences in thin cattle are reliable indications of gaining ability. A record of several characteristics is made of each animal at the beginning of the feeding trials. Each animal is rated for each of the following parts and factors:

1. Head
2. Front legs
3. Chest
4. Body
5. Flank
6. Bone
7. Hips
8. Hindquarters
9. Hind legs
10. Natural fleshing
11. Disposition
12. Frame
13. Probable gain

Six different ratings are used for each factor, a rating of one being given where the part is especially good, and a rating as low as six when a part is very poor. All ratings are made by three members of the staff to obtain an average rating for each factor.

These ratings will be treated statistically to determine the degree of correlation of each factor with the actual gains made by the cattle. When a sufficient amount of this material can be analyzed and interpreted by our statistical laboratory, further conclusions can be drawn concerning factors which influence rate of gain. The following tables list the estimated rank in ability to gain as compared to actual gains of the cattle.

Table I

Three lots of steer calves—full-fed grain 225 days.

Ranking	First	Second	Third	Fourth	Fifth	Sixth
No. steers ranked	1	6	9	8	4	0
Av. gain per steer, lbs.	553	497	485	460	431	

Table II

Three lots of yearling steers wintered without grain—205 days.

Ranking	First	Second	Third	Fourth	Fifth	Sixth
No. steers ranked	2	9	10	6	3	0
Av. gain per steer, lbs.	283	263	194	139	93	

Table III

Three lots of yearling steers—wintered without grain—grazed May 8 to October 15—313 days total.

Ranking	First	Second	Third	Fourth	Fifth	Sixth
No. steers ranked	2	9	10	6	3	0
Av. gain per steer, lbs.	420	383	349	310	275	

Project 253-1: Wintering and Grazing Steer Calves

Methods of Wintering Steer Calves That Are To Be Grazed a Full Season and Sold Off Grass—1950-51.

E. F. Smith, R. F. Cox, D. L. Good

Introduction

The primary objective of this test was to find the most satisfactory method or methods of wintering steer calves that are going to be

grazed on bluestem pasture during the summer and sold off grass as feeder yearlings. This is the second in a series of three tests. The third test is now under way and the wintering phase is reported in this publication.

Experimental Procedure

Five lots of good quality Hereford steer calves, 10 head to a lot, were used in this study. All were wintered in a dry lot except Lot 1, which was fed out on bluestem pasture. The different lots received the following wintering rations from December 5, 1950, to May 1, 1951, and were then grazed together on bluestem pasture until October 5, 1951.

Lot 1—bluestem pasture and 2 pounds of soybean pellets per head daily.

Lot 2—sorghum silage (Tennessee orange) and 1 pound of soybean pellets per head daily.

Lot 3—prairie hay and 1 pound of soybean pellets per head daily.

Lot 4—prairie hay, 2 pounds of ground milo grain, and 1 pound of soybean pellets per head daily.

Lot 5—prairie hay, 4 pounds of ground milo grain, and 1 pound of soybean pellets per head daily.

The calves used in this test originated in the vicinity of Sonora, Texas, and arrived at Manhattan November 3, 1950. They were a part of a shipment of 120 head. From November 3 until they were placed on test they received prairie hay, sorghum silage, and a small amount of alfalfa. They were also taught to eat a protein concentrate during this period. They were sprayed with B.H.C. for lice.

The calves had free access to salt at all times during the test and were given free access to a mixture of 2 parts bonemeal and 1 part salt about the last third of the wintering period.

A feedstuff analysis of the feeds used in the test may be found in the back of this publication.

The final weights are full weights and should be shrunk at least 3 percent for a more complete picture of steer gain.

Observations

1. The results of this test indicate the most satisfactory method of wintering may be on dry bluestem pasture. This was also true in Experiment 1, conducted in 1949-50. The large winter gain obtained both years is probably due largely to the bluegrass present in the sheltered creek bottom pasture where the calves were wintered. The winters of 1949-50 and 1950-51 were mild and ideal for wintering cattle on dry grass in this area.

2. Lot 2, wintered on sorghum silage and 1 pound of soybean pellets, failed to make as much yearly gain as any of the other lots. This was probably due to the poor quality silage fed. It looked good but was quite acid, contained little gain, and the calves didn't like it.

3. The calves fed prairie hay cut about September 1, and 1 pound of soybean pellets daily made a larger winter gain, larger yearly gain, and returned more per steer than those fed poor quality sorghum silage.

4. The results of this test indicate it is not profitable to add grain to the wintering ration of steer calves that are going to be grazed a full season and sold off grass. Lot 4 was fed 2 pounds of grain per head daily and Lot 5 received 4 pounds of grain per head daily in addition to prairie hay and 1 pound of soybean pellets per head daily; both had a larger yearly feed cost per 100 pounds of gain and a larger yearly feed cost per steer, and returned less per steer than Lot 3 fed only prairie hay and 1 pound of soybean pellets per head daily.

Phase I—Wintering

December 5, 1950, to May 1, 1951—147 days[1]

	1	2	3	4	5
1. Lot number					
2. No. of steers per lot	10	12	10	10	10
3. Place wintered ..	Bluestem pasture	Dry lot	Dry lot	Dry lot	Dry lot
4. No. of days in phase[2]	134	147	147	147	147
5. Av. daily ration, lbs.:					
Ground milo grain				2.00	4.00
Soybean pellets	2.00	1.00	1.00	1.00	1.00
Prairie hay	.50		12.92	11.18	10.49
Sorghum silage (Tenn. orange)		28.35			
Salt	.03	.15	.05	.06	.06
Mineral mixture[3]	.02	.01	.01	.01	.01
Bluestem pasture	ad lib				
6. Av. initial weight	419	419	419	418	418
7. Av. final weight	532	529	574	597	640
8. Av. gain	113	110	155	179	222
9. Av. daily gain ..	.84	.75	1.05	1.22	1.50
10. Feed required for 100 lbs. gain, lbs.:					
Ground milo grain				164.80	264.86
Soybean pellets	237.17	134.09	95.16	82.40	66.22
Prairie hay	59.12		1225.61	917.99	694.68
Silage		3788.88			
Salt	3.20	19.66	5.12	4.99	4.26
Mineral mixture	2.94	.75	.65	.56	.45
Bluestem pasture	ad lib				
11. Feed cost per cwt. gain[5]	$13.88	$17.32	$11.61	$12.91	$13.14
12. Feed cost per steer[5]	$15.68	$19.05	$18.00	$23.11	$29.17

Phase II—Grazing

May 1, 1951, to October 5, 1951—157 days[1]

	1	2	3	4	5
1. Lot number					
2. No. of days in phase	170	157	157	157	157
3. Av. initial weight	532	529	574	597	640
4. Av. final weight	836	809	833	839	848
5. Av. gain	304	280	259	242	208
6. Av. daily gain ..	1.79	1.78	1.65	1.54	1.32
7. Cost of grazing per steer	$15.00	$15.00	$15.00	$15.00	$15.00
8. Cost of 100 lbs. pasture gain	$ 4.93	$ 5.36	$ 5.79	$ 6.20	$ 7.21

Summary of Phases I and II

December 5, 1950, to October 5, 1951—304 days

	1	2	3	4	5
1. Lot number					
2. Av. initial weight	419	419	419	418	418
3. Av. final weight	836	809	833	839	848
4. Average gain ..	417	390	414	421	430
5. Av. daily gain ..	1.37	1.28	1.36	1.38	1.41
6. Feed required for 100 lbs. gain:					
Milo grain				70.07	136.74
Soybean pellets	64.27	37.82	35.63	35.04	34.19
Prairie hay	16.02		458.86	390.31	358.65
Silage		1348.79			
Salt	.87	5.55	1.92	2.12	2.20
Mineral mixture	.80	.21	.24	.24	.23
Winter bluestem pasture ..	ad lib				
Summer bluestem pasture ..	ad lib	ad lib	ad lib	ad lib	ad lib
7. Feed cost per 100 lbs. gain[5] ..	$7.36	$8.73	$7.97	$9.05	$10.27
8. Feed cost per steer[5]	$30.68	$34.05	$32.99	$38.11	$44.18
9. Initial cost per steer at $31.50 cwt.	$131.99	$131.99	$131.99	$131.67	$131.67
10. Total cost of feed and steer ..	$162.67	$166.04	$164.98	$169.78	$175.85
11. Selling price per steer at $35.00[4] cwt.	$283.85	$274.75	$282.80	$284.90	$288.05

12. Return per steer above initial cost and feed cost	$121.18	$108.71	$117.82	$115.12	$112.20

1 Grazing phase for Lot 1 began April 18, 1951, rather than May 1, 1951.
2 Prairie hay was fed to Lot 1 only when snow covered the grass.
3 Mineral mixture consisted of 2 parts bonemeal and 1 part salt. Fed only last ⅓ of wintering period.
4 Selling price per steer is based on a selling price of $35.00 cwt., and market weight, which represents an average shrink of 3 percent from home weights.
5 Feed prices: Milo grain, $2.30 cwt.; Soybean pellets, $75.00 ton; Prairie hay, $13.00 ton; Sorghum silage, $6.50 ton; Salt, $12.00 ton; Steamed bonemeal, $5.50 cwt.; Winter pasture, $5.00 season; Summer pasture, $15.00 season.

Project 253-1: Wintering and Grazing Steer Calves

Methods of Wintering Steer Calves That Are To Be Grazed a Full Season and Sold Off Grass, 1951-52.

E. F. Smith, D. L. Good, and R. F. Cox

Introduction

This is a report on the wintering phase of this test. It will be completed at the close of the grazing season in 1952. This study is to determine the best method of wintering good quality steer calves that are to be grazed on bluestem pastures the following summer and sold off grass.

Experimental Procedure

Five lots of good quality Hereford steer calves, 10 head to a lot, were used in this study. They were a part of the light end of a group of 150 steer calves originating at Marfa, Texas, and purchased for experimental purposes.

They were received November 8, 1951, and started on test December 22, 1951. Until they were started on test, they were fed sorghum silage, prairie hay, and 1 pound of cottonseed cake per head daily with free access to salt. During the experiment all were fed in dry lot, except Lot 1, which was fed out on dry bluestem pasture. All lots had free access to a mineral mixture (bonemeal and salt) and salt during the winter. The different lots received the following rations from December 22, 1951, to April 5, 1952:

Lot 1—bluestem pasture and 2 pounds cottonseed meal pellets per head daily, salt, and bonemeal and salt mineral mixture.

Lot 2—sorghum silage and cottonseed cake per head daily, salt, and mineral (bonemeal and salt).

Lot 3—prairie hay and 1 pound cottonseed cake per head daily, salt, and mineral (bonemeal and salt).

Lot 4—prairie hay, 2 pounds milo grain, and 1 pound cottonseed cake per head daily, salt, and mineral (bonemeal and salt).

Lot 5—prairie hay, 4 pounds milo grain, and 1 pound cottonseed cake per head daily, salt, and mineral (bonemeal and salt).

All lots will be grazed on bluestem pasture a full season in 1952 and sold as feeder yearlings in the fall.

Observations

1. The steer calves in Lot 1, wintered on dry bluestem pasture, were strong and thrifty and made a satisfactory gain. With the exception

of the month of December and the first week of March, the winter was very favorable for wintering outside. The calves were wintered in a 190-acre bluestem pasture with 10 heifer calves. The pasture was stocked at a normal rate during the summer season, but a plentiful supply of dry, dead grass remained.

2. Lot 2, fed sorghum silage (Tennessee Orange the first half of the winter and Atlas and Black Amber mixed the last half) consumed a smaller amount of silage than normal, due to poor quality silage. They also failed to gain as much as the calves in Lot 3 fed prairie hay.

3. The steers in Lot 3 made a satisfactory gain on good quality prairie hay that was cut August 10-20.

4. The addition of grain to the wintering rations of Lots 4 and 5 increased the gains in those lots to the extent that they could be sold for less per cwt. than any of the other lots and pay initial costs plus feed costs.

Wintering and Grazing Steer Calves

Phase I—Wintering

(December 22, 1951, to April 5, 1952—105 days[1])

1.	Lot number	1	2	3	4	5
2.	No. steers in lot	10	10	10	10	10
3.	Place of wintering	Bluestem pasture	Dry lot	Dry lot	Dry lot	Dry lot
4.	Av. initial weight, lbs.	388	389	389	390	391
5.	Av. final weight, lbs.	446	463	484	527	547
6.	Av. gain, lbs. ..	58	74	95	137	156
7.	Av. daily gain, lbs.	.57[1]	.70	.90	1.30	1.49
8.	Av. daily ration, lbs.:					
	Ground milo grain				2.00	4.02
	Cottonseed cake, or pellets	1.99	1.00	1.00	1.00	1.00
	Prairie hay ..	1.42[2]		10.78	10.23	10.37
	Sorghum silage		20.67			
	Salt	.05	.12	.06	.07	.06
	Mineral mixture[3]	.04	.14	.12	.12	.09
	Dry bluestem pasture	ad lib				
9.	Feed required for 100 lbs. gain, lbs.:					
	Ground milo grain				153.28	270.51
	Cottonseed cake or pellets	346.55	141.89	110.53	76.64	67.31