

TABLE I. A COMPARISON OF HEREFORD STEERS Sired BY SMALL, MEDIUM AND LARGE SIZE BULLS

(Preliminary Report—Not For Publication)

November 29, 1948 to April 18, 1949—140 Days

1—System of Feeding and Management.	I Immediate Full Feeding					II Deferred Full Feeding					III Wintering and Grazing Two Seasons				
	1	2	3	4	5	6	7	8	9		1	2	3	4	5
2—Lot Number	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
3—Size of Sires	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
4—Number of Steers Per Lot	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
5—Initial Weight Per Steer	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
6—Gain Per Steer	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
7—Final Weight Per Steer	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
8—Daily Gain Per Steer	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
9—Daily Ration Per Steer:															
Ground Shelled Corn	8.22	8.66	8.66	8.66	8.66	8.66	8.66	8.66	8.66		.....	.....	.....	.....	.....
Soybean Meal	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00		.....	.....	.....	.....	.....
Silage	10.02	10.02	10.02	10.02	10.02	10.02	10.02	10.02	10.02		.....	.....	.....	.....	.....
Prairie Hay	2.07	2.06	1.98	3.09	3.60	3.91	5.25	4.69	5.07		.....	.....	.....	.....	.....
Ground Limestone	.10	.10	.10	.10	.10	.10	.10	.10	.10		.....	.....	.....	.....	.....
Salt	.01	.02	.01	.05	.06	.05	.05	.08	.04		.....	.....	.....	.....	.....
10—Feed Required per 100 Lbs. of Grain:															
Ground Shelled Corn	402.65	388.81	386.01	269.69	257.97	235.24	.....	.....	.....		.....	.....	.....	.....	.....
Soybean Meal	97.90	90.00	89.42	70.70	67.63	61.67	106.06	106.06	90.90		.....	.....	.....	.....	.....
Silage	490.73	449.83	445.38	1385.10	1332.12	1223.56	2066.29	2115.53	1800.32		.....	.....	.....	.....	.....
Prairie Hay	101.60	92.69	88.50	219.98	243.67	241.18	557.80	498.03	461.10		.....	.....	.....	.....	.....
Ground Limestone	4.54	4.07	4.49	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
11—Cost of Feed Per 100 Lbs. Gain	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
12—Appraised Value Per Cwt. May 7, 1949	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....	.....	.....	.....	.....
FEED PRICES: Ground Shelled Corn, \$1.35 per Bu.; Soybean Meal, \$75.00 per ton; Prairie Hay, \$15.00 per ton; Silage, \$6.50 per ton.															

Project 253-2—Factors Influencing Profitable Grass Utilization and Sound Pasture Management. Wintering, Grazing, and Fattening Heifers.

FATTENING HEIFERS FOR THE SUMMER OR EARLY FALL MARKET

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Experiment IV - 1947-1948

INTRODUCTION

The previous tests with heifer calves have been completed. Pasture was not used in these tests but instead, heifer calves were fed a full feed of grain, three-fourths feed, one-half feed, one-fourth feed and no grain, respectively with silage and a protein supplement. As a result of these tests it was determined that for heifer calves which are to be full fed grain in the dry lot or which are to be grazed 75 to 100 days and then full fed grain for approximately 100 days, two to two and one-half pounds of grain in the winter ration will produce enough flesh to result in U. S. Good carcasses after 100 days of full feeding, yet not too much flesh to justify grazing 75-100 days before full feeding. Beginning with this, the fourth test, a study was initiated to determine the best way to utilize bluestem and brome grass in fattening heifers.

Experimental Procedure

- Lot 1 - Wintered with grain, cottonseed meal, silage and prairie hay; grazed without grain on bluestem grass April 27 to July 15 (78 days); full fed in dry lot July 15 to October 12 (90 days.)
- Lot 2 - Wintered with grain, soybean meal, silage and prairie hay; grazed without grain on bluestem grass April 27 to July 15 (78 days); fed 1.5 pounds of cotton seed meal on bluestem grass July 15 to Oct. 12 (90 days); full fed on bluestem grass Oct. 12 to November 9 (28 days); full fed in dry lot November 9 to January 8 (60 days).
- Lot 3 - Wintered with grain, linseed meal, silage and prairie hay; grazed without grain on bluestem grass April 27 to July 15 (78 days); full fed on bluestem grass July 15 to October 30 (108 days.)
- Lot 4 - Wintered with grain, dehydrated alfalfa pellets, silage and prairie hay; full fed in dry lot April 27 to July 31 (95 days.)
- Lot 5 - Wintered with grain, dehydrated brome grass, silage and prairie hay; full fed on brome grass pasture April 27 to July 31 (95 days.)
- Lot 6 - Wintered with silage, prairie hay and mustard seed meal; grazed without grain on bluestem grass April 27 to July 15 (78 days); full fed dry lot July 15 to October 30 (108 days.)
- Lot 7 - Wintered with silage, cottonseed meal and prairie hay; grazed without grain on bluestem grass April 27 to July 15 (78 days); fed 1.5 pounds cottonseed meal July 15 to October 12 (90 days); full fed on bluestem grass October 12 to November 9 (28 days); full fed in dry lot November 9 to January 8 (60 days.)
- Lot 8 - Wintered with silage, prairie hay, cottonseed meal and dehydrated brome grass; grazed without grain on bluestem grass April 27 to July 15 (78 days); full fed on bluestem grass July 15 to October 30 (108 days.)

OBSERVATIONS

Wintering Phase

1. Cottonseed meal, soybean meal, linseed meal and mustard seed meal proved to be of equal value as protein supplements in wintering heifers.
2. Two pounds of dehydrated alfalfa or two pounds of dehydrated brome grass testing 19.9 percent and 20.4 percent protein respectively were required to equal one pound of the oil-seed meals in wintering heifers. Two pounds daily of the dehydrated products also replaced approximately one pound of hay in the ration.
3. The price of the dehydrated products caused the wintering costs for lots four and five and the full feeding cost of lot four to be relatively higher.
4. Winter gains were approximately one-fourth pound per head daily higher than would normally be expected from the rations fed.

Grazing Phase

1. Summer gains from May 1 to July 15 were smaller by about one-fourth pound daily than would normally be expected, due probably to unusually large winter gains.
2. Lots 1, 2 and 3 wintered with two pounds of grain gained approximately 50 pounds more during the winter than lots 6, 7, and 8 wintered without grain. The well-wintered lots maintained 40 pounds of this advantage on July 15. That is, well wintered lots gained almost as well during the early grazing season as did those which were rough wintered. This confirms results of the previous season's grazing.
3. Foul foot was prevalent throughout the first two and one-half months of the grazing season.
4. Lots 2 and 7 were fed 1.5 pounds of cottonseed meal daily from July 15 to October 15 and gained 1.38 pounds and 1.44 pounds daily respectively. The well-wintered group, lot two, still maintained its weight advantage at the close of the grazing season.

Full Feeding Phase

1. Full feeding grain in dry lot, contrary to the 1947 results did not give the same advantage in the 1948 tests over full feeding during the latter half of the grazing season. In 1947 dry lot feeding gave a daily gain of 2.5 pounds on one and one-half bushels less corn. The heifers fed on pasture gained only 1.87 pounds. The 1948 test showed dry lot and pasture gains to be approximately the same. Pasture feeding gave slightly higher gains than in the previous year while dry lot gains averaged a little less than two pounds daily or approximately .6 of a pound less daily.
2. Lots 1 and 6 fed in dry lot sold for 50 cents per hundredweight more than lots 3 and 8 fed on bluestem pasture.
3. Heifers full fed in dry lot yielded higher grading carcasses than those full fed on pasture. This was particularly true of lot 1 which had been wintered well.
4. The well wintered lots still held most of their winter weight advantage when marketed.
5. Grazing a full season, then feeding 1.5 pounds of cotton seed cake per heifer daily from July 15 to October 12 produced satisfactory gains, but feeding on grass after October 12 did not. Lots 2 and 7, fed on grass from October 12 to November 9, lost three-fourths of a pound daily. They gained over three pounds daily the next month in a dry lot.
6. Heifers grazed a full season and then fed out were too large and began to show "hooky". They were not desirable to the packer.

7. Wintering well and finishing with a full feed of grain on brome grass was not as profitable as finishing in the dry lot. Dry lot fed heifers:
 - A. Gained 2.03 pounds daily compared to 1.60 pounds made by those full fed on brome grass.
 - B. Sold for \$2.00 per hundred more.
 - C. Graded one-third of a grade higher and packers called them a much better buy at \$2.00 per hundred more.
 - D. Dressed one-half percent higher.
 - E. Made \$18.00 more net profit per head.

General Observations

1. Heifers fed two pounds of grain daily during the winter made larger gains than those wintered without grain. They maintained 50 to 75 percent of this weight advantage through the grazing and full feeding periods.
2. The effect of including two pounds of grain in the winter ration was definitely noticeable in the carcasses whether the heifers are full fed grain after wintering or after grazing 75 to 100 days.
3. When the selling price of fat heifers was based on the value of the dressed beef, it paid to use two pounds of grain in the winter ration.
4. Two pounds of grain in the winter ration helped also to get heifers off to an earlier market, which is desirable both from the standpoint of carcass weight and price.
5. At least 100 days of full feeding appeared to be necessary to make the heifers grade U. S. Good.
6. On the basis of gains produced, the advantage in favor of feeding in dry lot instead of on bluestem grass the last of the grazing season was not as large from a gain standpoint as in 1947 but it was responsible for a higher degree of finish.
7. The over-all results indicated a decided advantage in favor of dry lot feeding.
8. These tests show that heifer calves give a good amount of themselves as consumers of roughage, grass and grain.
9. Heifer calves offer a definite possibility for producers with winter feed but with little if any pasture or good early pasture.

Fattening Heifers for the Summer or Early Fall Market

Phase 1—Wintering November 11, 1947 to April 27, 1948—168 Days

	1	2	3	4	5	6	7	8
1—Lot Number	10	10	10	10	10	10	10	10
2—Number of heifers in lot								
3—Average daily ration, lbs								
Silage	19.96	19.96	19.96	19.96	19.96	19.96	19.96	19.96
Prairie hay	4.74	4.72	4.62	3.91	4.34	4.98	5.01	4.80
Ground shelled corn	1.98	1.98	1.98	1.98	1.98		1.00	.51
Cottonseed meal	1.01							
Soybean meal		1.01						
Linseed meal			1.01					
Dehyd. alfalfa pellets				1.69	1.68			
Dehyd. brome grass						1.00		
Mustard seed meal								
4—Feed consumed per heifer, lbs								
lbs								
Silage	3,354.00	3,354.00	3,354.00	3,354.00	3,354.00	3,354.00	3,354.00	3,354.00
Prairie hay	794.00	790.00	748.00	629.00	697.00	808.00	836.00	882.00
Ground shelled corn	334.00	334.00	334.00	360.00	360.00		170.00	86.00
Cottonseed meal	170.00							
Soybean meal		170.00						
Linseed meal			170.00					
Dehyd. alfalfa pellets				302.00				
Dehyd. brome grass					300.00			110.00
Mustard seed meal						170.00		
5—Initial wt. per heifer	408.00	406.00	405.00	404.00	404.00	406.00	406.00	404.00
6—Final wt. per heifer	666.00	655.00	658.00	636.00	635.00	610.00	604.00	595.00
7—Gain per heifer	258.00	249.00	253.00	232.00	231.00	204.00	198.00	191.00
8—Daily gain per heifer	1.54	1.48	1.51	1.38	1.38	1.21	1.18	1.14
9—Feed cost per heifer	31.12	31.09	31.19	33.19	33.64	23.17	23.38	23.88

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10—Initial cost of heifers at 21.50 per cwt.	87.72	87.29	87.07	86.86	86.86	87.29	87.29	86.86
11—Heifer cost plus feed cost	118.84	118.38	118.26	120.05	120.50	110.00	110.46	110.74
12—Necessary selling price per cwt. to pay for feed and initial cost	17.84	18.07	17.97	18.88	18.98	18.11	18.32	18.61
13—Appraised value per cwt. May 1 1948	27.00	27.50	26.50	27.50	27.50	26.50	26.00	26.25

Phase 2—Grazing, Early Summer Period April 27 to July 15, 1948—78 Days

Lot Number	1	2	3	4	5	6	7	8
14—Management followed	Grazed on Bluestem grass			Full fed in dry lot	Full fed on Brome grass	Grazed on Bluestem grass		
15—Initial weight per heifer	663.00	655.00	658.00			610.00	604.00	595.00
16—Final weight per heifer	722.00	703.00	716.00			683.00	665.00	656.00
17—Gain per heifer	58.00	48.00	58.00			73.00	61.00	61.00
18—Daily gain per heifer	.72	.62	.74			.94	.78	.78

Phase 3—Grazing, Late Summer Period July 15 to October 12, 1948—90 days

19—Management followed	Full fed in dry lot	C. S. M. on Blue-stem	Full fed on Blue-stem			Full fed in dry lot	C. S. M. on Blue-stem	Full fed on Blue-stem
Lot Number	1	2	3	4	5	6	7	8

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20—Cottonseed meal per heifer daily, lbs -----		1.5					1.5	
21—Total Cottonseed meal fed per heifer -----		135.					135.	
22—Initial weight per heifer -----		703.					665.	
23—Final weight per heifer -----		827.					795.	
24—Gain per heifer -----		124.					130.	
25—Daily gain per heifer -----		1.38					1.44	

Phase 4—Full Feeding

Lot Number -----	1	3	6	8	2	7	4	5
	July 15 to Oct. 30 1948	July 15 to Oct. 30 1948	July 15 to Oct. 30 1948	July 15 to Oct. 30 1948	Oct. 12, 1948 Jan. 8, 49	Oct. 12, 48 Jan. 8, 49	Apr. 27 to July 31, 1948	Apr. 27 to July 31, 1948
26—Period when full fed -----								
27—Where fed -----	Dry Lot	Blue-stem Grass	Dry Lot	Blue stem Grass	Blue-stem Grass and Dry Lot *	Blue-stem Grass and Dry Lot *	Dry Lot	Brome Grass
28—Number of days in this phase ----	108	108	108	108	88	88	95	95
29—Daily ration per heifer, lbs -----								
Ground shelled corn -----	10.2	10.5	10.6	10.5	11.7	11.7	10.5	9.8
Cottonseed meal -----	1.5	1.5	1.5	1.5	1.55	1.55		1.5
Dehyd. alfalfa and brome grass -----							5.9	
Atlas silage -----					10.7	10.7	1.7	
Prairie hay -----	4.2		4.9				6.4	

* October 12 to November 9, 1948 on Bluestem grass.

Phase 4, cont.

Lot Number -----	1	3	6	8	2	7	4	5
29—Daily ration, etc., Cont.								
Alfalfa hay -----	6.5	July 15 to Oct. 30 1948	6.6	July 15 to Oct. 30 1948	1.1 Oct. 12 to Nov. 9, 1948	1.1 Oct. 12 to Nov. 9, 1948		Apr. 27 to July 31, 1948
Bluestem grass -----								
Brome grass -----								
30—Feed Consumed per heifer during this phase: -----								
Corn (Bu.) -----	19.7	20.2	20.4	20.2	18.4	18.4	17.9	16.5
Cottonseed Meal (Lbs) -----	162.	162.	162.	162.	136.	136.		14
Dehyd. alfalfa and brome grass (Lb.) -----								
Silage (Lbs.) -----					941.	941.	559.	
Prairie hay (Lbs.) -----	453.		527.		98.	98.	160.	
Alfalfa hay (Lbs.) -----	707.		710.				606.	
Bluestem grass -----		July 15 to Oct. 30, 48	July 15 to Oct. 30 1948	Oct. 12 to Nov. 9 1948	Oct. 12 to Nov. 9 1948			Apr. 27 to July 31 1948
Brome grass -----								
31—Initial weight per heifer -----	722.	716.	683.	656.	827.	795.	636.	636.
32—Final weight per heifer -----	921.	920.	895	869	951	931	829	788
33—Gain per heifer -----	199.	204.	212	213	124	136	193	152
34—Daily Gain per heifer -----	1.84	1.89	1.96	1.97	1.41	1.55	2.03	1.60