

4. Average initial weight	431	430	434	432	432
5. Average final weight	543	590	591	618	652
6. Average gain..	112	160	157	186	220
7. Average daily gain .....	.79	1.13	1.11	1.32	1.56
8. Average daily ration, pounds:					
Ground shelled corn				2.00	4.00
Soybean pellets	2.00	1.00	1.00	1.00	1.00
Prairie hay ¹ ..	.04		12.24	10.84	9.83
Silage		28.23			
Bluestem pasture	Ad lib				
Salt .....	.07	.06	.06	.06	.06
9. Feed required for 100 pounds of gain:					
Ground shelled corn				151.61	256.36
Soybean pellets	251.79	88.13	89.91	75.81	64.09
Prairie hay ..	5.36		1099.57	821.88	630.05
Silage		2487.50			
Salt	9.02	5.50	5.17	4.65	3.64
10. Cost of feed per 100 pounds gain	\$ 14.89	\$ 11.30	\$ 10.55	\$ 11.59	\$ 12.24
11. Total feed cost per steer	\$ 16.67	\$ 18.08	\$ 16.56	\$ 21.56	\$ 26.92
12. Initial cost per steer at \$24.50 per cwt.	\$105.60	\$105.35	\$106.33	\$105.84	\$105.84
13. Initial cost per steer plus feed cost	\$122.27	\$123.43	\$122.89	\$127.40	\$132.76
14. Necessary selling price per cwt. to cover initial cost plus feed cost	\$ 22.52	\$ 20.92	\$ 20.79	\$ 20.61	\$ 20.36
15. Appraised value per cwt. on May 5, 1950 ..					
(1) Prairie hay was fed to Lot 1 only when snow covered the grass.					
(2) Feed prices: Ground shelled corn, \$1.25 bu.; Soybean pellets, \$75 per ton; Prairie hay, \$13 per ton; Silage, \$6.50 per ton; Bluestem pasture, \$6 for the winter season; Salt, \$12 per ton.					

Project 253-2: Wintering, Grazing and Fattening Heifers

FATTENING HEIFERS FOR THE SUMMER OR EARLY FALL MARKET 1948-1949

Ed F. Smith - Don L. Good - A. G. Pickett

INTRODUCTION

The purpose of this experiment is to develop a desirable system or systems of fattening heifer calves similar to the Deferred Full Feeding system for steer calves. The system developed for good quality steer calves consists of three phases (1) producing 225 to 250 pounds of gain during the winter, which usually requires the feeding of four to five pounds of grain per head daily; (2) grazing 90 days without grain; (3) full feeding 100 days in the dry lot. The results of several prior trials at this station with heifer calves were considered before planning this experiment.

Some of the problems which it is hoped this experiment will answer are: (1) How well should heifer calves be wintered that are going to be full fed following the winter period or full fed after a short period on grass? (2) Wintering, followed by full feeding vs. wintering, early summer grazing and then full feeding. (3) Should the full feeding of grain take place on grass or in the dry lot?

This is the second of a series of three tests. The first was reported at the 1949 Livestock Feeders' Day. Eighty good quality Hereford heifer calves were purchased for use in this test October 23, 1948, at \$26.50 per cwt. They were handled as follows.

EXPERIMENTAL PROCEDURE

Lot 1 - Wintered on atlas silage, prairie hay, dehydrated alfalfa pellets, 2 pounds of corn and then full fed 105 days in dry lot.

Lot 2 - Wintered on atlas silage, prairie hay, soybean oil meal, 2 pounds of corn and then full fed corn 105 days on brome grass.

Lot 3 - Wintered on atlas silage, prairie hay, dehydrated brome grass pellets and 2 pounds of corn; grazed from April 18 to June 1 on brome grass and full fed corn on brome grass from June 1 to July 1 at which time they were moved to dry lot and full fed until September 18, a total of 109 days on full feed.

Lot 4 - Wintered on atlas silage, prairie hay, cottonseed meal and 2 pounds of corn; grazed from May 1 to July 18 on bluestem pasture and then full fed corn on bluestem pasture for 103 days.

Lot 5 - Wintered on atlas silage, prairie hay, linseed meal and 2 pounds of corn; grazed from May 1 to July 18 on bluestem pasture and then full fed in the dry lot for 103 days.

Lot 6 - Wintered on atlas silage, prairie hay and cottonseed meal; grazed from May 1 to July 18 on bluestem pasture and then full fed corn on bluestem grass for 103 days.

Lot 7 - Wintered on atlas silage, prairie hay and cottonseed meal; grazed from May 1 to July 18 on bluestem grass and then full fed for 103 days in dry lot.

Lot 8 - Wintered on atlas silage, prairie hay and cottonseed meal; grazed on bluestem pasture from May 1 to August 15; fed 1½ pounds of soybean pellets per head daily in addition to the grass from July 18 to August 15; and then full fed 75 days in a dry lot.

OBSERVATIONS

Wintering Phase:

1. Approximately 2 pounds of corn fed per head daily in Lots 2, 4 and 5 increased the gain per head daily about one quarter of a pound over Lots 6, 7 and 8 where no corn was fed.

2. Heifers fed 1 pound of cottonseed meal, linseed meal or soybean oil meal (Lots 2, 4 and 5) on the average gained about a quarter of a pound more per head daily than heifers fed one and three quarter pounds of either dehydrated alfalfa pellets (15.4% protein) or dehydrated brome grass pellets (16.4% protein) Lots 1 and 3.

3. The addition of dehydrated alfalfa pellets or brome grass pellets to the ration decreased roughage consumption slightly.

4. Soybean oil meal (41% crude protein), cottonseed meal (41% crude protein) and linseed meal (36% crude protein) were found to be about equal in producing gains in this test.

5. The cost of feed per hundred pounds of gain and the total feed cost per heifer was appreciably increased for Lots 1 and 3 due to the feeding of dehydrated alfalfa and brome grass pellets to those lots.

Grazing Phase:

1. On the average, Lots 6 and 7 wintered on roughage and protein, without grain, gained about a quarter of a pound more per head daily on bluestem pasture than Lots 4 and 5 wintered on roughage, protein and 2 pounds of corn per head daily.

2. The well wintered heifers, Lots 4 and 5, averaged 16 pounds more gain per head, considering both the winter and summer phase, at the close of the grazing phase, then did Lots 6 and 7 which were wintered only on roughage and protein.

3. Lot 3, wintered on roughage, protein and 2 pounds of corn made a daily gain of 1.84 pounds per head daily on brome grass from April 18 to June 1. This is approaching the gain expected on full feed in the dry lot.

4. Lot 8 was fed 1½ pounds of soybean oil meal pellets per head daily from July 18 to August 15 and then moved to dry lot for full feeding. Although not shown, this lot gained 1.36 pounds per head daily up to July 18. From July 18 to August 15, the caking period, it gained 1.32 pounds per head daily which included a shrink in moving them to dry lot.

Full Feeding and Summary:

1. Heifers full fed for 105 days after the wintering period are ready for market at a time when this kind of cattle are usually highest in price.

2. According to this and the preceding test, heifers full fed corn on brome grass following the wintering period will not gain as rapidly nor finish as well as heifers full fed corn in the dry lot after the wintering period - see Lots 1 and 2. Due largely to the increased cost of feeding dehydrated alfalfa pellets to Lot 1, they failed to show as much profit as did Lot 2 (line 38).

3. The system of management which seemed to work best in this test was followed with Lot 3 in which well wintered heifers were turned on brome grass pasture April 18, fed corn on brome grass pasture June 1 to July 1, and then moved to dry lot. For completion of the full feeding period these heifers made good gains on brome grass and in the dry lot. Furthermore, they:

- Sold for more per cwt. than any other lot (line 36).
- Returned a greater profit per head (line 38).
- Outdressed all the other lots of heifers (line 40).
- Graded considerably higher than any other lot (line 41).

4. Full feeding corn on bluestem grass in this test was not as satisfactory as full feeding in the dry lot - see Lots 4, 5, 6 and 7. Dry lot fed heifers:

- Consumed slightly more corn.
- Sold for \$1.50 to \$2.00 more per cwt.
- Returned a greater profit per head, see line 38.
- Graded higher in the carcass, 7 out of 20 were in the good

grade whereas heifers full fed corn on grass yielded only one carcass out of 20 that graded good.

5. In this test on the basis of total gain, selling price and carcass grade the feeding of 2 pounds of corn per head daily during the winter period in addition to roughage and protein was not justified. Compare the well wintered Lots 4 and 5 to Lots 6 and 7 which were fed no corn during the winter. In other tests at this station, the feeding of 2 pounds of grain per head daily during the winter appeared to be desirable.

6. Heifers that were continued on grass after July 18 (Lot 8) and fed 1½ pounds of protein per head daily until August 15, 28 days, then moved to dry lot for full feeding graded just as high in the carcass as heifers full fed in the dry lot starting July 18 (Lot 7) both being marketed at the same time. However, they sold for \$1.00 a cwt. less than Lot 7 which was fed 103 days in dry lot. They also failed to return as much profit per head due to the lower selling price and to the fact that they failed to make as much total gain.

7. On the basis of this and other tests, heifer calves that are well wintered and then full fed or go to grass followed by full feeding require 100 days full feeding or longer to produce heifers that will grade U. S. Good.

FATTENING HEIFERS FOR THE SUMMER OR EARLY FALL MARKET

PHASE I—WINTERING

November 29, 1948 to May 1, 1949—153 Days

	1 ¹	2 ¹	3 ¹	4	5	6	7	8
1. Lot number	10	9	9	10	10	10	10	10
2. Number of heifers per lot	140	140	140	153	153	153	153	153
3. Number of days in phase								
4. Average daily ration, lbs.:								
Ground shelled corn	1.90	1.92	1.92	1.93	1.93	1.01	1.01	1.01
Cottonseed meal				1.00				
Soybean meal		1.00			1.04			
Linseed meal								
Dehydrated alfalfa pellets ..	1.75							
Dehydrated brome grass pellets			1.78					
Prairie hay	3.73	4.16	4.05	4.71	4.38	4.92	4.92	4.92
Atlas sorgo silage	19.67	20.00	19.85	19.90	19.90	19.95	19.95	19.95
Salt .....	.05	.04	.03	.06	.05	.02	.02	.02
5. Average initial weight, lbs. ...	446	463	444	460	463	446	450	440
6. Average final weight, lbs.	588	644	594	648	650	589	608	576
7. Average gain, lbs.	142	181	150	188	187	143	158	136
8. Average daily gain, lbs.	1.01	1.29	1.07	1.23	1.22	.93	1.00	.89
9. Cost of feed for cwt. gain	\$ 18.39	\$ 13.61	\$ 17.79	\$ 14.65	\$ 14.88	\$ 14.85	\$ 13.44	\$ 15.61
10. Feed cost per heifer	\$ 26.12	\$ 24.64	\$ 26.69	\$ 27.54	\$ 27.83	\$ 21.24	\$ 21.24	\$ 21.24

PHASE II—GRAZING

	1	2	3 ^a	4	5	6	7	8 ²
11. Lot number								
12. Management followed	Full fed in Dry lot	Full fed on brome grass	Grazed on brome grass April 18 to June 1, '49	Grazed on bluestem grass May 1 to July 18, '49	Grazed on bluestem grass May 1 to July 18, '49	Grazed on bluestem grass May 1 to July 18, '49	Grazed on bluestem grass May 1 to July 18, '49	Grazed on bluestem grass May 1 to Aug. 15, '49. Fed 1½ lbs. soybean pellets per head daily after July 18
13. Number of days in phase			44	78	78	78	78	106
14. Average initial weight, lbs...			594	648	650	589	608	576
15. Average final weight, lbs.			675	714	745	697	702	719
16. Average gain, lbs.			81	66	95	108	94	143
17. Average daily gain, lbs.			1.84	.85	1.22	1.38	1.21	1.35

PHASE III—FULL FEEDING

	1	2	3 ^a	4	5	6	7	8
18. Lot number								
19. Period when full fed and where	Apr. 18, '49 to Aug. 1, '49 Dry lot	Apr. 18, '49 to Aug. 1, '49 Brome grass	June 1, '49 to Sept. 18, '49 Brome grass Dry lot	July 18, '49 to Oct. 29, '49 Bluestem grass	July 18, '49 to Oct. 29, '49 Dry lot	July 18, '49 to Oct. 29, '49 Bluestem grass	July 18, '49 to Oct. 29, '49 Dry lot	Aug. 15, '49 to Oct. 29, '49 Dry lot
20. Number of days in phase	105	105	109	103	103	103	103	75
21. Average initial weight, lbs...	588	644	675	714	745	697	702	719
22. Average final weight, lbs.	809	830	884	866	933	884	909	867
23. Average gain, lbs.	221	186	209	152	188	187	207	148
24. Average daily gain, lbs.	2.10	1.77	1.92	1.48	1.83	1.82	2.01	1.97

PHASE III, Continued	1	2	3	4	5	6	7	8
25. Average daily ration, lbs.:								
Ground shelled corn	9.37	9.12	9.98	11.56	12.58	11.56	12.81	12.78
Soybean meal .....	.80	.67	1.22	1.56	1.66	1.56	1.66	1.76
Dehydrated alfalfa pellets ..	2.64		1.04					
Prairie hay	4.98				6.86		7.82	7.64
Alfalfa hay	6.06		4.79		1.75		1.75	1.81
Atlas silage	3.81							
26. Bushels corn fed per heifer during this phase	17.57	17.11	19.42	21.26	23.13	21.26	23.56	17.11
27. Feed per cwt. gain, lbs.:								
Ground shelled corn	445.29	515.11	520.31	783.13	689.04	636.55	637.25	647.43
Soybean meal	38.00	37.63	63.69	105.92	90.96	86.10	82.61	117.91
Dehydrated alfalfa pellets ..	125.34		54.22					
Prairie hay	53.53				375.90		388.94	387.36
Alfalfa hay	287.87		250.03		95.74		86.96	91.89
Atlas silage	181.00							
28. Cost of feed for 100 pounds of gain	\$ 18.97	\$ 17.77	\$ 19.56	\$ 21.44	\$ 22.55	\$ 17.42	\$ 21.10	\$ 22.68
29. Total feed cost this phase ..	\$ 41.93	\$ 33.05	\$ 40.88	\$ 32.58	\$ 42.40	\$ 38.38	\$ 43.67	\$ 33.57

SUMMARY OF PHASES 1, 2 AND 3

	1	2	3	4	5	6	7	8
30. Average total gain (all phases)	363	367	440	406	470	438	459	427
31. Average daily gain (all phases)	1.48	1.51	1.50	1.22	1.41	1.31	1.37	1.28
32. Feed cost for 100 pounds of gain (all phases)	\$ 18.75	\$ 15.72	\$ 16.05	\$ 17.77	\$ 17.50	\$ 15.03	\$ 16.75	\$ 15.65
33. Total cost of feed and grass per heifer	\$ 68.06	\$ 57.69	\$ 70.62	\$ 72.15	\$ 82.23	\$ 65.84	\$ 76.90	\$ 66.81

SUMMARY OF PHASES 1, 2 AND 3—Continued

	1	2	3	4	5	6	7	8
34. Initial cost per heifer at \$26.50 cwt.	\$118.19	\$122.70	\$117.66	\$121.90	\$122.70	\$118.19	\$119.25	\$116.60
35. Feed cost plus heifer cost	\$186.25	\$180.39	\$188.28	\$194.05	\$204.93	\$184.03	\$196.15	\$183.41
36. Selling price per cwt. at market	\$ 27.00	\$ 26.00	\$ 27.33	\$ 21.50	\$ 23.50	\$ 22.00	\$ 23.50	\$ 22.50
37. Selling price per heifer	\$211.68	\$209.56	\$235.86	\$179.53	\$212.68	\$188.54	\$208.92	\$188.33
38. Margin per heifer above feed cost and initial cost	\$ 25.43	\$ 29.17	\$ 47.58	\$-14.52	\$ 7.75	\$ 4.51	\$ 12.77	\$ 4.92
39. Percent shrink in shipping to market	3.09	2.89	2.38	3.58	3.00	3.05	2.20	3.46
40. Dressing percent	58.5	58.6	60.6	59.13	59.0	57.56	57.39	57.51
41. Carcass grades, U. S.:								
High Good			1					
Average Good			3		1			
Low Good	5		4		2	1	4	4
High Commercial	4	3	1	3	6	5	5	5
Average Commercial	1	5		6	1	3	1	1
Low Commercial		1		1		1		

- (1) For Lot number 2, 4 and 5 the winter period extended only to April 18, 1949.
- (2) One and one half pounds of soybean pellets were fed per head daily on bluestem pasture from July 18 to August 15, 1949.
- (3) Lot 3 was full fed corn on brome grass from June 1 to July 1 at which time they were moved to a dry lot and continued on full feed until September 18.
- (4) Feed prices: Ground shelled corn, \$1.25 per bu.; Cottonseed meal, Soybean oil meal or pellets, \$75 per ton; Linseed meal, \$80 per ton; Dehydrated alfalfa and brome grass pellets, \$60 per ton; Alfalfa hay, \$20 per ton; Prairie hay, \$15 per ton; Silage, \$6.50 per ton; Limestone and salt, \$12 per ton; Bluestem grass, \$12 per head; Brome grass, \$3 per head per month.