

17. Daily gain per steer (all phases)	1.26	1.21	1.27	1.31	1.38
18. Feed cost per 100 lbs. gain	\$8.55	\$10.13	\$9.53	\$10.74	\$11.87
19. Total cost of feed	\$32.12	\$36.78	\$36.14	\$42.23	\$49.04
20. Initial cost/steer @ \$32.33 cwt.	\$133.52	\$133.52	\$133.85	\$133.52	\$133.85
21. Selling price per steer @ \$29.67 cwt. for Lots 3, 4, 5; \$29.33 for Lots 1 and 2	\$231.41	\$227.60	\$235.28	\$239.14	\$245.37
22. Return/steer above steer and feed cost	\$65.77	\$57.30	\$65.29	\$63.39	\$62.48
1. In 1949-50, ground shelled corn was fed; in 1950-51 and 1951-52, ground milo grain was fed.					
2. Prairie hay was fed to Lot 1 only when snow covered the grass.					
3. Mineral fed last two years only; 2 parts steamed bonemeal to 1 part salt.					
4. Feed prices: corn, \$1.25 bu.; milo, \$2.45 cwt.; soybean pellets, \$83.33 ton; prairie hay, \$13.67 ton; sorghum silage, \$6.50 ton; salt, \$12.00 ton; mineral, \$5.25 cwt.; dry bluestem pasture, \$5.50 per head per month; summer bluestem pasture, \$17.33 per head for season.					

Project 253-2: Wintering, Grazing, and Fattening Heifers

Wintering Heifer Calves That Are To Be Fattened for the Fall Market, 1952-53.

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

This is a report of the wintering phase. Following this phase the heifers will be grazed until July 15 and full-fed grain 100 days in the drylot. The object of this test is to compare different methods of wintering heifer calves that are going to be full-fed after a summer grazing period.

Experimental Procedure

Thirty good quality Hereford heifer calves, 10 head to a lot, are being used in this study. They were delivered to Manhattan, Kansas, on September 15, 1952, at a cost of 29 cents per pound. They originated in the Sterling City, Texas, area. From delivery date until November 15, 1952, they were fed prairie hay and 1 pound of soybean oil meal pellets per head daily. The system of management planned for each lot follows.

Lot 19—Wintered on brome pasture supplemented when necessary with protein; grazed on brome pasture until July 15; full-fed in the drylot 100 days.

Lot 7—Wintered on dry bluestem pasture supplemented with 1½ to 2 pounds of concentrate feed per head daily; grazed on bluestem pasture until July 15; full-fed in drylot 100 days.

Lot 8—Wintered on Atlas sorgo silage, prairie hay, 1 pound of soybean pellets and 2 pounds of corn per head daily; grazed on bluestem pasture May 1 to July 15; full-fed in drylot 100 days.

A bonemeal and salt mixture and salt were offered free choice to all lots.

It was necessary to move Lot 19 to drylot on January 1 due to a shortage of grass which resulted from a lack of moisture during the summer and fall. They will be returned to pasture in April, 1953.

Prairie hay was fed to Lot 7 only when snow covered the grass.

Observations

1. The winter in general was mild and favorable for wintering on grass with the exception of three storms; one in the latter part of November left snow on the ground covering the grass for three weeks.

2. The heifers wintered on dry bluestem pasture, Lot 7, made a very favorable gain at a rather low feed cost. They had sufficient dry grass to winter on in pastures that were normally stocked during the previous summer.

3. The heifers in Lot 8 made an exceptionally good gain of 1.64 pounds per head daily and show considerable "fleshing."

Table 17.—Wintering Heifer Calves That Are To Be Fattened for the Early Fall Market.

Phase I—Wintering—November 15, 1952, to April 9, 1953—
145 days (for Lot 7 to April 1, 1953—137 days)

1. Lot number	19 on brome pasture	7	8
2. Place of wintering	On brome to January 1 then to drylot	Dry bluestem pasture	Drylot
3. Number of heifers per lot	10	10	10
4. Initial weight per heifer	446	443	445
5. Final weight per heifer	625	546	683
6. Gain per heifer	179	103	238
7. Daily gain per heifer	1.24	.75	1.64
8. Daily ration per heifer:			
Soybean oil meal pellets	1.00	1.28	1.00
Ground shelled corn .....	.....	.32	1.92
Atlas sorgo silage	17.76	.....	20.21
Prairie hay	6.66	2.29	5.84
Salt .....	.09	.05	.04
Mineral (bonemeal and salt) .....	.18	.04	.07
Dry bluestem pasture .....	.....	ad lib	.....
Brome pasture	ad lib		
9. Feed cost per heifer ¹	\$38.20	\$16.33	\$40.59
10. Feed cost per 100 lbs. gain	\$21.34	\$15.85	\$17.05

1. Feed prices may be found on the last page of this publication.

Project 253-2: Wintering, Grazing, and Fattening Heifers, 1951-52

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

The objective of this test is to compare different methods of wintering heifer calves that are to be grazed until mid-summer and then finished for fall marketing. Of particular interest is the influence of

the wintering treatment on the finishing ability of the heifers.

Experimental Procedure

Forty-five good quality Hereford heifer calves were purchased in south-central Kansas for use in this test. They were fed silage, prairie hay, 1 pound of protein, and 2 pounds of milo grain per head daily until the test started December 11, 1951. The five lightest heifers were discarded and the 40 remaining were divided into four lots of 10 heifers each. The system of management for each lot follows:

Lot 1—Wintered on sorghum silage, prairie hay, 1 pound of cottonseed cake, and 2 pounds of milo grain per head daily, free access to mineral (bonemeal and salt) and salt; grazed on bluestem pasture May 1 to July 15; full-fed in dry lot to choice grade.

Lot 2—Wintered on dry bluestem pasture, 2 pounds cottonseed oil meal pellets per head daily, mineral (bonemeal and salt), and free access to salt; grazed on bluestem pasture until July 15; full-fed in dry lot to the choice grade.

Lot 3—Wintered on brome pasture supplemented when necessary with protein, free access to mineral (bonemeal and salt) and salt; grazed on brome pasture until July 15; full-fed in dry lot to the choice grade.

Observations

1. The heifers were in good "flesh" at the start of the test, which was probably a disadvantage for Lots 2 and 3 (Table 18) being wintered on a low plane of nutrition on grass. The weather was favorable for wintering out on dry grass except during the month of December and a storm the first week in March.

2. The heifers in Lot 2, Table 18, wintered on dry bluestem pasture were strong and healthy at the close of winter. They were wintered in a 190-acre bluestem pasture with 10 steer calves. The pasture was stocked during the previous summer at a normal rate, but plenty of dry dead grass remained.

3. The heifers in Lot 3 wintered on brome pasture were in strong condition and thin. They received no supplemental feed from the start of the test until February 1. From February on they were fed 2 pounds of cottonseed oil meal pellets daily; alfalfa hay was fed for a short period to break them into coming up for the cake. The brome was fertilized the previous winter with about 100 pounds of ammonium nitrate per acre. It was not grazed after July 1, and had a fair amount of dead top growth when the heifers were started on test December 11. The brome was stocked at the rate of 1½ to 2 acres per head.

4. The silage fed to Lot 1 during the winter was of poor quality. The first part of the winter it was Tennessee Orange, which was immature, excessively acid with very little grain. The second part of the winter, mixed Atlas Sorgo and volunteer Black Amber were fed. This was dry with hardly any grain.

5. Lot 3, wintered on brome pasture, were the poorest performers in the overall test. Lot 1, wintered inside, was equal to or better than the other lots in every respect except it lost more money than Lot 2 wintered on bluestem pasture, primarily because of the cheaper feed costs for Lot 2.

Table 18.—Wintering, Grazing, and Fattening Heifers.

Phase I—Wintering ¹			
1. Lot number	1	2	3
2. Place of wintering	Dry lot	Bluestem pasture	Brome pasture
3. Number heifers per lot	10	10	10

4. Number of days in phase	146	133	137
5. Initial weight per heifer	482	480	479
6. Final weight per heifer	592	500	540
7. Gain per heifer	110	20	61
8. Daily gain per heifer .....	.75	.15	.44
9. Feed per heifer daily:			
Ground milo grain	2.00		
Cottonseed oil meal pellets	1.00	1.99	.87
Sorghum silage	19.21		
Prairie hay	1.30	.70 ²	.80 ²
Alfalfa hay .....			.83 ³
Pasture		ad lib	ad lib
Mineral ⁴ .....	.11	.03	.15
Salt .....	.11	.05	.12
10. Cost of feed per cwt. gain ⁵	\$23.60	\$88.75	\$22.02
11. Feed cost per heifer	\$25.96	\$17.75	\$13.43

Phase II—Grazing

12. Place and time of grazing	Bluestem pasture May 5 to July 14, 1952	Bluestem pasture April 22 to July 14, 1952	Brome pasture April 26 to July 14, 1952
13. Number days grazed	71	84	79
14. Initial weight per heifer	592	500	540
15. Final weight per heifer	701	672	671
16. Gain per heifer	109	172	131
17. Daily gain per heifer	1.53	2.17	1.65

Phase III—Full Feeding—July 14, 1952, to November 8, 1952

—117 days

18. Initial weight per heifer	701	672	671
19. Final weight per heifer	985	958	929
20. Gain per heifer	274	286	258
21. Daily gain per heifer	2.34	2.44	2.21
22. Feed per heifer daily:			
Ground corn	16.07	15.18	14.76
Cottonseed oil meal pellets	1.91	1.91	1.91
Prairie hay	5.39	5.84	6.33
Ground limestone .....	.10	.10	.10
Salt .....	.03	.03	.03
23. Feed per cwt. gain:			
Ground corn	686.53	621.01	669.53
Cottonseed oil meal pellets	81.57	78.15	86.63
Prairie hay	232.77	238.92	287.17
Ground limestone	4.27	4.09	4.53
Salt	1.24	1.18	1.34
24. Feed cost per cwt. gain	\$29.19	\$26.83	\$29.27
25. Total feed cost this phase	\$79.96	\$76.73	\$75.51

Summary of Phases I, II, and III

26. Total gain per heifer (all phases)	504	478	450
27. Daily gain per heifer (all phases)	1.51	1.43	1.35
28. Feed cost per cwt. gain	\$25.98	\$25.00	\$25.32
29. Total cost of feed per heifer	\$130.96	\$119.48	\$113.94
30. Initial cost per heifer @ \$40.00 cwt.	\$192.80	\$192.00	\$191.60
31. Feed cost plus heifer cost	\$323.76	\$311.48	\$305.54
32. Selling price per cwt. at market	\$29.50	\$29.50	\$28.50
33. Selling price per heifer	\$279.95	\$273.76	\$254.40
34. Loss per heifer	\$43.81	\$37.72	\$51.14
35. Percent shrink in shipping to market	3.63	3.13	3.87
36. Dressing percent	60.8	59.8	59.1
37. Carcass grades, U.S.:			
Low prime	1	....	....
High choice	4	4	....
Average choice	1	1	2
Low choice	2	4	6
High good	2	....	....
Average good .....	....	1	1

1. Wintering period for Lot 1, December 11, 1951, to May 5, 1952; Lot 2, December 11, 1951, to April 22, 1952; Lot 3, December 11, 1951, to April 26, 1952.
2. Fed only when snow covered the grass.
3. Fed for about two weeks while breaking the heifers to eat pellets.
4. Mineral was 2 parts steamed bonemeal and 1 part salt.
5. Feed prices: Milo grain, \$2.80 cwt.; Corn, \$1.90 bu.; Cottonseed oil cake or pellets, \$100.00 ton; Prairie hay, \$15.00 ton; Alfalfa hay, \$25.00 ton; Sorghum silage, \$6.50 ton; Dry bluestem pasture, .50 per head per month; Winter brome pasture, \$1.00 per head per month; Summer bluestem and brome, \$25.00 per head for the summer season; Salt and limestone, \$12.00 ton.

Project 253-4: Wintering and Grazing Yearling Steers

The Most Efficient Level of Winter Protein Feeding for Yearling Steers Wintered and Summer Grazed on Bluestem Pasture, 1952-53.

Ed F. Smith, R. F. Cox, and L. A. Holland

Yearling steers have been successfully wintered at this station on dry bluestem pasture for the past five winters by feeding 1½ to 2 pounds of cottonseed or soybean oil meal per head daily. The objective of this test is to determine if the level of protein feeding may be reduced without affecting the yearly performance of the steers. This is a report of only the wintering phase of this test. The steers will be grazed together during the summer of 1953 and will be sold off grass as feeder steers in the fall.

Experimental Procedure

Twenty head of good quality Hereford yearling steers, 10 head to a lot, were used in this study. They originated in southeastern Colorado and were purchased as calves in the fall of 1951 for 42 cents a pound. They were used in summer grazing tests on bluestem pasture in 1952. From November 1 until December 31, 1952, when this test started, they were on bluestem pasture supplemented with 1 pound of soybean pellets. During this test the steers were moved from pasture to pasture every 15 days to minimize any differences due to pastures. The pastures in which the steers were grazed were of such size as to vary the stocking rate from 6 to 19 acres per head. All pastures used in this winter test had sufficient grass remaining on them for winter use, although they were stocked at a normal rate for the summer of 1952.

Observations

The gain made by both lots of steers was larger than would be expected, compared with past years' results. The steers in Lot 12 fed 1 pound of soybean pellets per head daily gained considerably less than the Lot 6 steers fed 2 pounds. However, they wintered in strong, thrifty condition. The winter was mild with the exception of three snowstorms; one the latter part of November covered the grass for about three weeks. The results of the level of protein feeding studied here can best be evaluated at the close of the summer grazing season in 1953.

Table 10.—Wintering and Grazing Yearling Steers.

Phase I—Wintering—December 31, 1952, to April 1, 1953—91 days.

1. Lot number	6	12
2. Number steers per lot	10	10
3. Method of feeding	2 pounds soybean pellets daily on dry grass	1 pound soybean pellets daily on dry grass
4. Initial weight per steer	720	718
5. Final weight per steer	816	785
6. Gain per steer	96	67
7. Daily gain per steer	1.06	.74
8. Daily ration per steer:		
Soybean oil meal pellets	2.01	1.00
Mineral (bonemeal and salt) .....	.19	.18
Salt .....	.05	.04
Dry bluestem pasture	ad lib	ad lib
Prairie hay	1.65	1.65
9. Feed cost per steer ¹	\$13.71	\$9.30

1. Feed prices may be found on the last page of this publication.

Project 253-3: The Effect of Grazing Systems on Live-stock and Vegetation

Comparison of Different Methods of Managing Bluestem Pastures, 1952.

E. F. Smith and K. L. Anderson

The objectives of this experiment are to determine the effects of different stocking rates, deferred grazing, and burning on livestock gains, productivity of pastures, and the bluestem vegetation itself.