

Table 4.—Effect of Feeding a Protein Supplement During the Latter Part of the Grazing Season to Two-Year-Old Steers on Bluestem Pasture, 1953.

August 5-October 23, 1953—79 days.

Lot number	1	2
Steers in lot	10	10
Management	No soybean pellets fed	Fed two pounds soybean pellets per head daily
Initial wt. per steer	1014	1009
Final wt. per steer	1079	1112
Gain per steer	65	103
Daily gain per steer .....	.82	1.30
Gain in wt. contributed to soybean pellets	0	38
Total soybean pellets fed per steer, lbs.	0	158
Gain per steer by periods:		
Aug. 5-Sept. 3	51	38
Sept. 3-Oct. 2	16	52
Oct. 2-Oct. 23	-2	13

Wintering and Grazing Yearling Steers

The Most Efficient Level of Winter Protein Feeding for Yearling Steers Wintered and Summer Grazed on Bluestem Pasture, 1953-54.

PROJECT 253-4

E. F. Smith, F. H. Baker, R. F. Cox, and L. A. Holland

This is a progress report covering only the wintering phase of this test. One other test has been completed for 1952-53, and is reported in this publication (page 6). The purpose of this experiment is to determine which is the more profitable method of wintering on dry bluestem pasture for yearling steers, feeding 1 or 2 pounds of cottonseed cake per head daily.

The results are to be measured by the combined winter and summer gains and the condition of the cattle.

The steers will be grazed together during the summer of 1954 and will be sold off grass as feeder steers in the fall.

Experimental Procedure

Twenty head of good quality Hereford yearling steers were used in this study. They were purchased from the Brite Ranch at Marfa, Texas, in the fall of 1952 as calves for 28 cents a pound. They were used in summer grazing tests on bluestem pasture in 1953. This test started at the close of the summer grazing season on October 26, 1953, and extended to April 1, 1954. During this test the steers were moved from pasture to pasture every 15 days to minimize any differences due to pastures.

During March one-half of the steers in each lot had access to molasses-sprayed grass in a pilot test to find out if this method of feeding might have some possibilities. 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 for winter use. They were lightly stocked during the summer of 1952.

Observations

1. The winter was mild, dry, open, and favorable for wintering on dry grass. The additional pound of cottonseed cake fed per head daily to Lot 19 increased the winter gain enough to pay for its use. However, this may not be true by the end of summer.

The results of the level of protein feeding studied here can best be evaluated at the close of the summer grazing season in 1954 and will be reported at next year's livestock feeders' day.

Table 5.—Wintering and Grazing Yearling Steers.

Phase 1—Wintering, October 26, 1953, to April 1, 1954—158 days.

Lot number	18	19
Number of steers per lot	10	10
Method of feeding	1 lb. cottonseed cake daily on dry grass	2 lbs. cottonseed cake daily on dry grass
Initial wt. per steer	743	743
Final wt. per steer	838	872
Gain per steer	95	129
Daily gain per steer .....	.61	.83
Daily ration per steer, lbs.:		
Cottonseed cake	1.00	2.00
Mineral (bonemeal and salt) .....	.16	.12
Salt	Free choice	Free choice
Dry bluestem pasture	Free choice	Free choice
Feed cost per steer ¹	\$11.47	\$17.13

1. Feed prices may be found on page 27 of this publication.

Wintering, Grazing, and Fattening Steer Calves

1. The value of trace minerals in a wintering and fattening ration.¹
2. Self-feeding grain in drylot vs. self-feeding on bluestem pasture, 1952-53.

PROJECT 253-6

E. F. Smith, R. F. Cox, and F. H. Baker

This is the second trial of this experiment; the first is reported in Kansas Agricultural Experiment Station Circular 297. The steers were all wintered, grazed and then full fed. One objective of the test was to find out the value of trace minerals, copper, cobalt, iron, manganese, iodine, and zinc on the performance of steers on a wintering and a fattening ration. Another objective was to compare self-feeding grain on grass to self-feeding grain in drylot for steers on the deferred full-feeding program. The system of production called deferred full-feeding uses good-quality steer calves and consists of three phases: (1) producing 225-250 pounds of gain during the winter; (2) grazing 90 days without grain; and (3) full feeding 100 days in the drylot.

1. The trace mineral premix used in this study was furnished by the Calcium Carbonate Company of Chicago, Ill.

Experimental Procedure

Thirty head of good quality Hereford steer calves, 10 head to a lot, were used in the study. They were the lightest calves of a shipment of 220 steer calves from the Brite Ranch at Marfa, Texas. They cost 29 cents a pound delivered to Manhattan, Kan., November 3, 1952.

They were fed prairie hay and 1 pound of soybean pellets until they were started on test December 19, 1952. All weights are full weights taken about 7:00 a.m. before feeding, except the initial and final weights of the full-feeding period, which were taken after an overnight stand in drylot.

The trace minerals were fed as a trace mineral premix added to the soybean oilmeal to furnish the following amounts in milligrams per head daily in the wintering and fattening ration, respectively: manganese 25.0, 56.3; iodine .87, 1.97; cobalt .55, 1.25; iron 20.5, 46.13; copper 1.62, 3.65; and zinc 1.52, 3.42.

The system of management for each lot follows:

Lot 1—wintered on Atlas sorgo silage, prairie hay, 5 pounds of ground grain, and 1 pound of 41 percent protein concentrate per head daily, free access to mineral (bonemeal-salt mix) and salt; bluestem pasture May 1 to August 1; self-fed grain on bluestem pasture after August 1 to choice grade.

Lot 2—wintered on Atlas sorgo silage, prairie hay, 5 pounds of grain, and 1 pound of protein concentrate per head daily, free access to mineral (bonemeal and salt mixture) and salt; grazed on bluestem pasture May 1 to August 1; self-fed grain in drylot after August 1 to choice grade. During the winter and full-feeding phase they received trace minerals.

Lot 3—wintered on Atlas sorgo silage, prairie hay, 5 pounds of grain, and 1 pound of protein concentrate per head daily; free access to mineral (bonemeal and salt mixture) and salt; grazed on bluestem pasture, May 1 to August 1; self-fed grain in drylot from August 1 until they graded choice.

Observations

1. The addition of trace minerals to the wintering ration failed to produce a favorable response. The winter gains in all lots were exceptionally good. On this type of ration a gain of about 1½ pounds per head daily has been obtained in the past compared with about 2 pounds in this test for both the trace mineral and check lots.

2. Self-feeding grain on grass to Lot 1 produced just as large a gain with slightly less grain and a lower feed cost as self-feeding grain in drylot to Lot 3. This lower feed cost enabled Lot 1 to show a greater return per steer above initial cost, plus feed cost.

3. The trace minerals fed to Lot 2 during the full-feeding phase increased the gain .58 of a pound daily over Lot 3 fed no trace mineral. This increase was most notable during the last 30 days of the test. Lot 2 fed trace minerals ate more grain (all lots were self-fed grain), utilized it more efficiently, and produced higher grading carcasses than Lot 3 fed no trace minerals. Lot 2 also made a slightly greater return per steer over initial cost, plus feed cost.

Table 6.—Wintering Steer Calves.

Phase 1—December 19, 1952-May 4, 1953—136 days.

Lot number	1	2	3
Number steers in lot	10	10	10
Management	Standard ration	Standard ration plus trace mineral	Standard ration
Initial wt. per steer	360	361	357
Final wt. per steer	639	644	641

10

Gain per steer	279	283	284
Daily gain per steer	2.05	2.08	2.09
Daily ration per steer:			
Soybean pellets	1.00	1.00	1.00
Corn	5.07	5.07	5.07
Sorghum silage	19.56	19.26	19.15
Prairie hay	1.72	2.07	2.23
Mineral ¹	.08	.09	.10
Salt	.07	.05	.05
Trace minerals ²	No	Yes	No
Feed cost per cwt. gain ³	\$15.27	\$15.19	\$15.26
Feed cost per steer	42.60	42.98	43.34

Phase 2—Grazing—May 4, 1953-July 31, 1953—88 days.

Initial wt. per steer	639	644	641
Final wt. per steer	751	727	738
Gain per steer	112	83	97
Daily gain per steer	1.27	.94	1.10

Phase 3—Full Feeding—July 31, 1953-November 7, 1953—99 days

Management	Self-fed grain on grass	Self-fed grain in drylot plus trace-mins.	Self-fed grain in drylot
Initial wt. per steer	751	727	738
Final wt. per steer	994	1026	980
Gain per steer	243	299	242
Daily gain per steer	2.45	3.02	2.44
Daily ration per steer, lbs.:			
Soybean pellets	1.44	1.46	1.44
Corn	13.72	15.88	14.09
Prairie hay		4.62	4.88
Ground limestone	.10	.10	.09
Salt	Free choice	.08	.09
Trace minerals ²	No	Yes	No
Feed per cwt. gain, lbs.:			
Soybean pellets	58.85	48.41	58.88
Corn	558.84	525.25	576.61
Prairie hay		153.14	166.81
Ground limestone	4.01	3.30	3.84
Salt	Free choice	2.57	3.72
Cost of feed per cwt. gain ³	\$18.65	\$19.10	\$21.23
Total feed cost this phase	45.32	57.10	51.37

Summary of Phases 1, 2, and 3

Total gain per steer (all phases)	644	665	623
Daily gain per steer (all phases)	1.99	2.06	1.93

Feed cost per cwt. gain (all phases)	\$16.13	\$17.72	\$17.77
Total cost of feed per steer	103.92	116.08	110.71
Initial cost per steer at 29 cwt. .	104.40	104.69	103.53
Feed cost + steer cost	208.32	220.77	214.24
Selling price per cwt. at market	22.00	22.00	22.00
Selling price per steer	218.68	225.72	215.60
Return per steer above initial cost + feed cost	10.36	4.95	1.36
Percentage wt. change in shipping to market	-1.00	+1.00	-1.00
Dressing percentage	60.0	60.7	60.6
Carcass grades, US*:			
Choice+			
Choice		1	
Choice-	2	3	1
Good+	1	3	2
Good	3	2	4
Good-	3		3
Commercial+	1	1	

1. Mineral was 2 parts steamed bonemeal to 1 part salt.
2. The trace minerals were fed as a trace mineral premix added to the soybean oilmeal to furnish the following amounts in milligrams per head daily in the wintering and fattening ration, respectively: manganese 25.0, 56.3; iodine .87, 1.97; cobalt .55, 1.25; iron 20.5, 46.13; copper 1.62, 3.65; zinc 1.52, 3.42.
3. Feed prices: corn \$1.60 per bu.; soybean pellets \$95 a ton; sorghum silage \$10 a ton; prairie hay \$25 a ton; mineral \$5 cwt.; salt \$12 a ton; blue-stem pasture \$16 per head.
4. The carcasses were graded the following day as follows: Lot 1—1 commercial, 7 good and 2 choice; Lot 2—1 commercial, 5 good and 4 choice; and Lots 3-9 good and 1 choice.

Wintering, Grazing, and Fattening Heifers, 1952-53

PROJECT 253-2

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

This test was to compare different methods of wintering heifer calves that are going to be full fed grain after a short summer grazing period. Lot 1 was wintered on dry bluestem pasture. Lot 2 was wintered in drylot. It was planned to winter Lot 3 on brome pasture but lack of moisture and bromegrass growth made it necessary to move the heifers in Lot 3 into drylot January 1.

Experimental Procedure

Thirty good quality Hereford heifer calves, 10 head to a lot, were used in the study. They cost 29 cents a pound delivered to Manhattan, Kansas, September 15, 1952. 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 oilmeal pellets per head daily. The system of management for each lot follows:

Lot 1—wintered on dry bluestem pasture supplemented with 1½ to 2 pounds of concentrate feed per head daily, grazed on bluestem pasture May 1 to July 15, full fed in drylot 100 days.

Lot 2—wintered on Atlas sorgo silage, prairie hay, 1 pound of soy-

bean pellets, and 2 pounds of corn per head daily; grazed on blue-stem pasture May 1 to July 15; full fed in drylot 100 days.

Lot 3—wintered on brome pasture until January 1, then moved to drylot. In drylot they were fed sorghum silage, prairie hay, and 1 pound of soybean pellets per head daily. From April 9, 1953, to July 14, 1953, they were grazed on brome pasture; starting July 14 they were full fed grain 100 days in drylot.

Observations

1. The winter of 1952-53 in general was mild and favorable for wintering on dry grass as demonstrated by the gain made by Lot 1 at a low feed cost. There were three snowstorms; one the latter part of November left snow covering the grass three weeks.

2. The heifers in Lots 2 and 3 made favorable winter gains. Lot 2 was showing considerable "fleshing" at the close of the winter period. This probably affected the summer gain to some extent, lowering it to .64 pound per head daily.

3. The heifers were self-fed grain during the fattening period and all lots made good gains. Lot 2 continued gaining at a lower rate than the other two lots, probably due to the additional finish they appeared to be carrying.

4. Lot 2, wintered at the highest level, sold for more than the other two lots and produced the highest grading carcasses.

5. Lot 3 wintered at a slightly lower level than Lot 2, made about the same gain, and had about the same dressing percentage. They lost a little more money than Lot 2, primarily because of a lower selling price.

6. Lot 1 wintered in dry bluestem produced the lowest total gain, selling price, dressing percentage, and carcass grade. However, in money lost they ranked favorably, along with Lot 2, largely because of lower feed costs.

Table 7.—Wintering, Grazing, Fattening Heifers.

Phase 1—Wintering 1952-53

Lot number	1	2	3
			Drylot and brome pasture
Place of wintering.....	Bluestem pasture	Drylot	
No. heifers per lot	10	10	10
Number of days in phase	170	170	145
Initial wt. per heifer	443	445	446
Final wt. per heifer	588	714	625
Gain per heifer	145	269	179
Daily gain per heifer .....	.85	1.58	1.24
Feed per head daily:			
Soybean pellets	1.16	1.00	1.00
Corn .....	.30	1.94	
Prairie hay	1.85	5.35	6.45
Sorghum silage		21.47	17.76
Mineral .....	.04	.06	.18
Salt .....	.04	.05	.09
Cost of feed per cwt. gain	10.37	17.65	17.15
Feed cost per heifer	18.05	47.52	34.86