on dry bluestem pasture with 1½ to 2 pounds of cottonseed or soybean oil meal or cake per head daily. The experiment reported here is the second of a series of tests designed to determine if the level of winter protein feeding may be reduced without affecting the yearly performance of the steers. Results of the first trial indicated that yearling steers wintered and grazed on bluestem pasture made more economical annual gains when they received a winter ration of 1 pound of soybean cake daily than when fed 2 pounds of soybean cake daily.

Procedure

Twenty head of good-quality Hereford yearling steers, 10 per lot, were used. They were purchased as steer calves in the fall of 1953 from the Brite Ranch at Marfa, Texas, and used in summer grazing tests on bluestem pasture in 1953. During the winter phase of this test the steers were moved from pasture to pasture every 15 days to minimize any differences due to pastures. The winter pastures the steers were grazed in had been stocked at normal rate during summer, but had sufficient grass remaining to provide ample winter grazing.

In addition to dry bluestem pasture, the steers were fed in the following manner during the winter:

Lot 1—1 pound of cottonseed cake per head daily.
Lot 2—2 pounds of cottonseed cake per head daily.
The steers of both lots were grazed together during the summer of 1954.

Observation

The steers wintered on 1 pound of cake per head daily made 7 pounds more annual gain than those fed 2 pounds of cake per head daily during the winter.

Table 61.—Wintering and grazing yearling steers.

Phase 1—Wintering, October 26, 1953-April 1, 1954—158 days		
Lot number	1	2
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, lbs.	743	743
Final wt. per steer, lbs.	838	872
Gain per steer, lbs.	95	129
Daily gain per steer, lbs.	.61	.83
Daily ration per steer, lbs.:		
Cottonseed cake	1.00	2.00
Mineral (bone meal and salt)	.16	.12
Salt	Free choice	Free choice
Dry bluestem pasture	Free choice	Free choice
Feed cost per steer*	$11.47	$17.13
Phase 2—Grazing, April 1-August 4, 1954—122 days		
Initial wt. per steer, lbs.	838	872
Final wt. per steer, lbs.	1091	1084
Gain per steer, lbs.	253	212
Daily gain per steer, lbs.	2.07	1.74
Cost per 100 lbs. pasture gain*	$6.32	$7.55
Summary Phases 1 and 2		
Initial wt. per steer, lbs.	743	743
Final wt. per steer, lbs.	1091	1084
Gain per steer, lbs.	348	341
Total feed cost per steer*	$27.47	$33.13
Feed cost per cwt. gain*	$ 7.89	$ 9.72

* Feed prices: Cottonseed cake, $75 per ton; mineral (2 lbs. bone meal to 1 lb. salt), $4 per cwt.; salt, $0.75 per cwt.; winter pasture, $0.75 per month; summer grazing, $16.

Wintering and Grazing Yearling Steers

The Most Efficient Level of Winter Protein Feeding for Yearling Steers Wintered and Grazed on Bluestem Pasture, 1954-55.

PROJECT 253-4

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

This is a progress report of the wintering phase of the third trial of this experiment. The results of the first trial were reported in Kansas Agr. Expt. Sta. Cir. 308, and the second trial on page 63 of this publication. This experiment was conducted to determine if 1 pound or 2 pounds of soybean cake per head daily is the more profitable method to winter yearling steers on bluestem pasture. The results are to be measured by the combined winter and summer gains and the condition of the cattle.

Experimental Procedure

Twenty good-quality Hereford yearling steers were used in this test. They were purchased as steer calves in the fall of 1953 from the Joyce Ranch near Carlsbad, N.M. During the summer of 1953 the steers were used in pasture management experiments. The current test was initiated November 10, 1954, and continued to April 6, 1955. To minimize differences due to pastures, the steers were moved monthly from pasture to pasture.

Observations

1. The weather was quite severe for wintering cattle on dry grass pasture. This is reflected in the gains of both lots of steers. Compared with the two previous experiments, the gains were reduced about 50 percent.
2. The winter gains of the steers fed 2 pounds of cake were significantly higher than those of the lot fed 1 pound of cake. However, the economical and practical significance of the results cannot be determined until the end of the summer grazing phase of the test.

Table 62.—Wintering and grazing yearling steers.

Phase 1—Wintering Nov. 10, 1954-April 6, 1955—147 days		
Lot number	1	2
Method of feeding	1 lb. soybean cake daily on dry grass	2 lbs. soybean cake daily on dry grass
Number steers per lot	10	10
Initial wt. per steer, lbs.	601	597
Final wt. per steer, lbs.	633	663
Gain per steer, lbs.	32	66
Daily gain per steer, lbs.	0.22	0.45

Table 62 (Continued).

Daily ration per steer, lbs.:		
Soybean cake	1.00	2.00
Prairie hay*	1.83	1.83
Dry bluestem pasture	Free choice	Free choice
Salt	Free choice	Free choice
Mineral (bone meal and salt)	Free choice	Free choice
Feed cost per steer	$11.22	$17.24

* Fed only when snow covered the grass.

Wintering and Grazing Yearling Steers

Effect of Feeding a Protein Supplement During the Latter Part of the Grazing Season to Two-year-old Steers on Bluestem Pasture, 1954.

PROJECT 253-4

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

The nutritive value of bluestem pasture decreases materially after midsummer. Lower protein as well as certain other nutrients is known to be involved in the reduced value of the grass. This experiment was designed to determine the effect of feeding protein supplement after midsummer on cattle gains and condition.

Experimental Procedure

Twenty head of good quality two-year-old Hereford steers were used. They were wintered and summered on bluestem pasture until August 4, when this test was initiated.

The steers were divided into two uniform lots and grazed on bluestem pasture with the following treatment from August 4, 1954, to October 15, 1954:

Lot 1—No supplement.

Lot 2—2 pounds of cottonseed cake per head daily.

Observations

1. The 21 pounds of beef produced in Lot 2 as a result of protein supplementation was not enough to pay for the 144 pounds of cake required to produce this additional gain.
2. The cattle fed cake appeared fleshier, as judged by a committee of animal husbandmen.

Table 63.—Effect of feeding a protein supplement during the latter part of the grazing season to two-year-old steers on bluestem pasture, 1954.

(Aug. 4-Oct. 15, 1954—72 days)

Lot number	1	2
Number steers in lot	10	10
Cottonseed cake fed per steer daily, lbs.	0	2
Initial wt. per steer, lbs.	1087	1087
Final wt. per steer, lbs.	1183	1204
Gain per steer, lbs.	96	117
Daily gain per steer, lbs.	1.33	1.63
Gain in wt. contributed to cottonseed cake, lbs.	0	21
Total cottonseed cake fed per steer, lbs.	0	144

Table 63 (Continued).

Gain per steer by periods:		
Aug. 4-Sept. 3	35	23
Sept. 3-Oct. 2	42	71
Oct. 2-Oct. 23	19	23

Wintering, Grazing, and Fattening Steer Calves

1. The Value of Trace Minerals in a Wintering and Fattening Ration.[1] 2. Self-feeding Grain in Dry Lot Versus Self-feeding on Bluestem pasture.

PROJECT 253-6

F. H. Baker, E. F. Smith, C. S. Menzies, and R. F. Cox

This is a progress report of the wintering phase of the third trial of this experiment. Following this phase the steers will be grazed on bluestem pasture 90 days and then full-fed grain 100 days. One objective of the test is to determine the value of trace minerals (copper, cobalt, iron, manganese, iodine, and zinc) on the performance of steers in a wintering and a fattening ration. A second objective is to compare self-feeding grain in dry lot to self-feeding grain on grass during the full-feeding phase of the deferred full-feeding program.

Experimental Procedure

Thirty choice Hereford steer calves, 10 head to a lot, are being used. Eight steers of each lot were obtained in a shipment from the Lonker Ranch near Medicine Lodge, Kan. The remaining two steers of each lot were obtained from the Currie Ranch near Westmoreland, Kan. The system of management planned for each lot of steers follows:

Lot 15—Wintered on sorghum silage, 4 pounds of grain, and 1 pound of 41 percent protein concentrate per head daily, free access to mineral (bone meal and salt) and salt; bluestem pasture May 1 to August 1; self-fed grain on bluestem pasture after August 1 to choice grade.

Lot 10—Wintered on sorghum silage, 4 pounds of grain, and 1 pound of protein concentrate per head daily, free access to mineral (bone meal and salt) and salt; grazed on bluestem pasture May 1 to August 1; self-fed grain in dry lot after August 1 to choice grade.

Lot 9—Wintered on sorghum silage, 4 pounds of grain, and 1 pound of protein concentrate per head daily; free access to mineral (bone meal and salt) and salt; grazed on bluestem pasture, May 1 to August 1; self-fed grain in dry lot from August 1 until they grade choice. Trace minerals are being supplied to this lot of steers during the wintering and fattening phases of the test.

Observations

No differences due to treatment were apparent among the lots. The difference in gain between Lots 15 and 10, handled identically, demonstrates the variability in cattle gains.

Table 64.—The value of trace minerals in a wintering ration for steer calves.

Management	Standard ration	Standard ration	Trace minerals[1]
Lot number	15	10	9
Number of steers per lot	10	10	10
Av. initial wt., lbs.	457	454	456

1. The trace mineral premix used was supplied by the Calcium Carbonate Corporation, Chicago, Ill.