

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.<sup>1</sup> 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 <sup>1</sup>
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.

Table 64 (Continued).

Av. final wt., lbs. ....	714	723	725
Av. total gain, lbs. ....	257	269	269
Av. daily gain, lbs. ....	1.84	1.92	1.92
Av. daily ration, lbs.:			
Soybean meal .....	1.00	1.00	1.00
Ground milo .....	4.00	4.00	4.00
Atlas sorgo silage .....	29.04	29.05	28.92
Salt .....	.11	.10	.10
Mineral .....	.10	.09	.11
Feed per cwt. gain:			
Soybean meal .....	54.45	52.12	52.12
Milo .....	217.81	208.49	208.49
Atlas sorgo silage .....	1581.09	1514.89	1507.44
Salt .....	5.72	5.14	5.32
Mineral <sup>2</sup> .....	6.60	4.80	5.54
Feed cost per cwt. gains .....	\$13.99	\$13.38	\$13.38

1. The trace minerals were fed as a trace mineral premix added to the soybean meal to furnish the following amounts in milligrams per head: manganese, 25.0; iodine, 0.87; cobalt, 0.55; iron, 20.5; copper, 1.62; zinc, 1.52.  
 2. Mineral was 2 parts steamed bone meal to 1 part salt.  
 3. Feed prices listed on page 3 of this publication.

Improvement of Beef Cattle Through Breeding

Walter H. Smith and Lewis A. Holland  
 PROJECT 286

The purebred Shorthorn cattle breeding project, established to study the inheritance of physical characteristics, effectiveness of selection, and effects of inbreeding, was continued according to plan last year. Two inbred lines have been established by the use of the two herd sires—College Premier 29th 2368167 and Gregg Farm's Hoarfst 2492499. They are referred to as the Wernacre Premier and the Mercury lines, respectively. The Wernacre Premier line is in the second generation of inbreeding and the Mercury line has entered the first generation of inbreeding.

The calves of the Wernacre Premier line for 1953 were sired by College Premier 29th and those for 1954 were sired by College Premier 29th and one of his inbred sons, KSC Premier C 11th. College Premier 29th was sold in 1954 and KSC Premier 11th is now being used as the senior herd sire in the Wernacre Premier line.

The non-inbred calves in the Mercury line for 1953 and 1954 were sired by Gregg Farm's Hoarfst. The inbred calves for these two years were sired by one of his sons, KSC Mercury. Gregg Farm's Hoarfst died in the spring of 1955 and one of his sons, KSC Mercury 4th, is being used as the senior herd sire in the Mercury line. The 1955 Mercury calves were sired by this bull.

The females in the project are pasture-bred to calve in the spring of each year. The calves are not creep-fed during the suckling period and placed on individual feeding trials for 182 days after a three-week adjustment period following weaning.

The full-feed ration for the bulls and steers consists of 75 percent cracked corn and 25 percent chopped alfalfa hay; that for the heifers, 55 percent cracked corn and 45 percent chopped alfalfa hay.

The feeding trial data for the 1953 calf crop are summarized in Table 65, and a partial summary of the 1953 calf crop is presented in Table 66. The feeding trials for the 1953 calves have not been completed to date. The number of days of feeding is designated for each animal.

Table 65.—Summary of the 1953 Shorthorn calves of the Wernacre Premier and Mercury lines.

Tag number	Coefficient of inbreeding <sup>1</sup>	Birth weight	Weaning weight	Weaning score	Days fed	Initial weight	Final weight	Total gain	Average daily gain	Final score	Pounds corn per 100 pounds gain	Pounds alfalfa per 100 pounds gain
<b>Wernacre Premier Line</b>												
<b>Bulls</b>												
82	27.73	60	275	3	182	297	737	440	2.42	3—	361	176
<b>Steers</b>												
9	15.62	61	435	2—	182	470	815	345	1.90	3	452	225
69 760	14.06	79	425	3	182	450	857	407	2.24	4+	413	210
10	6.25	83	425	2	182	418	835	417	2.29	2	438	224
Av.	11.98	74	428	3+	182	446	836	390	2.14	3	434	220
<b>Heifers</b>												
92	15.62	71	360	2	182	393	675	282	1.55	3+	360	339
39	14.06	72	370	2	182	393	713	320	1.76	3	359	338
49	14.06	70	290	3—	182	318	650	332	1.82	3	316	292
79	7.80	70	320	2—	182	335	591	256	1.41	3	375	344
14	.....	64	300	3+	182	307	590	283	1.55	3	359	332
Av.	10.30	69	328	3+	182	349	644	293	1.62	3	354	329