Phase 2—Grazing

Lot number	1	2	3
	Bluestem pasture	Bluestem pasture	Brome pasture
Place and time of grazing	May 4-July 14, 1953	May 4-July 14, 1953	April 9 to July 14,1953
Number of days grazed	71	71	96
Initial wt. per heifer	588	714	625
Final wt. per heifer	717	759	749
Gain per heifer	129	45	124
Daily gain per heifer	1.82	.64	1.29

Phase 3—Full Feeding
July 14, 1953, to October 22, 1953—100 days.

Lot number	1	2	3
Initial wt. per heifer	717	759	749
Final wt. per heifer	949	970	970
Gain per heifer	232	211	221
Daily gain per heifer	2.32	2.11	2.21
Feed per head daily:			
Ground corn	14.48	13.67	13.97
Soybean oilmeal pellets	1.49	1.47	1.48
Prairie hay	5.68	5.35	6.19
Ground limestone	.10	.09	.09
Salt	.07	.06	.07
Feed per cwt. gained:			
Ground corn	624.35	648.82	632.13
Soybean pellets	64.11	69.78	67.30
Prairie hay	245.00	253.40	280.00
Ground limestone	4.22	4.60	4.43
Salt	3.02	2.80	3.53
Feed cost per cwt. gain	23.64	24.71	24.45
Total feed cost this phase	54.81	52.09	54.01

Summary of Phases 1, 2, and 3

Lot number	1	2	3
Total gain per heifer all phases	506	525	524
Daily gain per heifer all phases	1.48	1.54	1.54
Feed cost per cwt. gain	17.56	22.02	20.01
Total cost of feed per heifer	88.84	115.59	104.85
Initial cost per heifer	128.47	129.05	129.36
Feed cost and heifer cost	217.31	244.64	234.21
Selling price per cwt. at market	22.00	24.25	23.00
Selling price per heifer	208.34	236.20	221.49
Loss per heifer	8.97	8.44	12.72
Percentage shrink in shipping to market	.20	.40	.40
Dressing percentage	58.9	61.9	61.6
Carcass grades, U.S.:			
Prime		1	
Prime—		1	
Choice+		2	1
Choice		1	
Choice—	4	4	5
Good+	2	1	2
Good	2		2
Good—	2		

1. Wintering period for Lots 1 and 2 was November 15, 1952, to May 4, 1953, 170 days; Lot 3, November 15 to April 9—145 days.
2. Feed prices were corn $1.60 a bu.; soybean pellets $95 a ton; prairie hay $25 a ton; sorghum silage $10 a ton; mineral $5 a hundred and salt $12 a ton.
3. Mineral was two parts steamed bonemeal, one part salt.
4. Fed only when snow covered the grass.

A Comparison of Alfalfa Silage and Alfalfa Hay for Wintering Heifer Calves, 1953-54.

R. B. Cathcart, E. F. Smith, F. H. Baker, D. Richardson, and R. F. Cox

Introduction

Results of two years' trials previously indicated that alfalfa silage did not produce satisfactory winter gains on beef calves and that it was distinctly inferior to alfalfa hay fed free choice. This year's test was planned to study certain supplements when the dry matter intakes of hay and silage were held equal.

Experimental Procedure

Forty Texas Hereford heifer calves averaging 360 pounds each were divided into four lots of 10 head each. The feeding test was conducted from December 17, 1953, to April 8, 1954, or 113 days.

The alfalfa silage and hay were made from first-cutting feed in the same field, when it was approaching one-half bloom. One lot of silage was preserved with cornmeal at the rate of 150 pounds per ton of green forage. The other silage was made without preservative. Both silages were field-chopped and hauled immediately to the silos.

The first feeding plan was to add concentrates to the roughages at the same rate as the corn in the alfalfa-cornmeal silage. However, since consumption and gains of all the calves were so unsatisfactory at the end of 29 days of feeding, the plan was altered so that all groups were fed concentrates at the rate of 4 pounds per head daily, allowance being made in Lot 3 for the corn contained in the silage.

Table 8.—Alfalfa Silage and Hay for Wintering Heifer Calves.
(December 17, 1953-April 8, 1954—113 days)

Lot number	3	4	5	6
Number heifers per lot	10	10	10	10
Rations fed	Alfalfa-corn meal silage,[1] corn	Alfalfa silage, corn	Alfalfa silage, corn, cottonseed meal	Alfalfa hay, corn
Av. initial wt., lbs.	360	360	360	360

1. Contained .07 pound corn per pound of silage.

Av. final wt., lbs.	492	491	500	532
Av. gain, lbs.	132	131	140	172
Av. daily gain, lbs.	1.17	1.15	1.23	1.52
Av. daily ration, lbs.:				
Alfalfa silage	22.72[1]	22.12	22.13	
Alfalfa hay	.38[2]			7.18
Ground shelled corn	1.45	3.04	2.08	3.04
Cottonseed meal			.96	
Mineral[3]	.06	.07	.05	.06
Salt	.04	.04	.03	.04
Feed required per 100 lbs. gain, lbs.:				
Alfalfa silage	1943.98[1]	1912.65	1841.48	
Alfalfa hay	32.17			472.83
Ground shelled corn	123.69	263.50	173.34	200.35
Cottonseed meal			79.68	
Mineral[3]	5.00	5.98	4.12	3.85
Salt	3.48	3.45	2.65	2.62
Daily feed cost per head	$ .18	$ .18	$ .19	$ .18
Feed cost per 100 lbs. gain	15.29	15.48	15.50	11.81

1. Contained .07 pound corn per pound of silage.
2. Fed January 2 to January 13 only.
3. Composed of two parts steamed bonemeal and one part salt.

Observations

1. The greatest gains were produced by alfalfa hay plus 3.04 pounds of corn (Lot 6). These gains were statistically significant. Comparing Lot 6 with Lot 4, about 473 pounds of hay and 200 pounds of corn replaced 1913 pounds of silage and 264 pounds of corn in producing 100 pounds of winter gains. Likewise, the gains were distinctly more economical with the hay than with silage.

2. Gains and efficiency of gains on the cornmeal-preserved alfalfa silage and non-preserved silage plus corn were practically equal (Lots 3 and 4).

3. The substitution of .96 pound of cottonseed meal for an equal amount of ground shelled corn increased the average daily gains .08 pound but the difference was not statistically significant (Lots 4 and 5).

Fattening Heifers on Milo Grain and Sorghum Silage.

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

Milo grain and sorghum silage are extensively used in fattening rations for beef cattle in Kansas. A fattening ration composed of milo grain and sorghum silage contains sufficient protein to meet the recommended protein allowances of fattening beef cattle. It seems possible that the protein supplement fed with such a ration could be materially reduced if not completely eliminated.

Feedstuffs commonly used for fattening cattle in Kansas contain sufficient trace minerals to prevent deficiencies. However, numerous field reports suggest that the addition of trace minerals to a fattening ration may improve cattle gains.

An experiment has been initiated to study the protein and trace mineral needs of beef cattle fattened on milo grain and sorghum silage. Twenty Hereford heifers were divided into four lots of five heifers each. The heifers of Lot 14 are fed only sorghum silage, milo grain, and 1/10 pound of ground limestone per head daily, while those in Lot 15 are fed the same ration plus a trace mineral mixture containing manganese, iodine, cobalt, copper, iron, and zinc. The heifers of Lots 16 and 17 are fed 1 pound of cottonseed meal in addition to the respective rations of Lots 14 and 15. The milo grain is being self-fed to the heifers, while the remainder of the ration is fed once daily.

No conclusion can be made at this time; however, the results to date indicate that cattle gains can be increased by adding protein to a milo grain-sorghum silage ration and that trace minerals are not beneficial in such a ration.

Wintering, Grazing, and Fattening Heifers; Wintering Heifer Calves To Be Fattened for the Fall Market, 1953-54.

PROJECT 253-2

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

This is a progress report on the wintering phase of this test. Following this phase, the heifers will be grazed together on bluestem until July 15, then full fed 100 days in drylot. The purpose of this test is to determine if heifers can be wintered on dry grass or a low plane of nutrition, grazed during the early summer, and produce satisfactory slaughter animals for the fall market after a short full-feeding period.

Experimental Procedure

Twenty good quality Hereford heifer calves, 10 head to a lot, were used in this study. They originated in the vicinity of Pueblo, Colo., and were delivered to Manhattan, Kan., for 18.5 cents a pound. About one week after arrival, they were branded and vaccinated. One week later, December 17, 1953, they were started on test.

The system of management planned for each lot follows:

Lot 7—wintered on dry bluestem pasture supplemented with 1 to 2 pounds of cottonseed cake per head daily; grazed on bluestem pasture May 1 to July 15; full fed in drylot 100 days.

Lot 8—Wintered in drylot on Atlas sorgo silage. 1 pound of cottonseed meal, and 2 pounds of milo grain per head daily; grazed on bluestem pasture May 1 to July 15; full fed in drylot 100 days.

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

Lot 8 was fed 1 pound of cottonseed cake per head daily all winter, except during March and the first part of April, when the cake was increased to 2 pounds per head daily.

Table 9.—Wintering Heifer Calves To Be Fattened for the Early Fall Market.

Phase 1—Wintering—December 17, 1953-April 7, 1954—112 days

Lot number	7	8
Place of wintering	Dry bluestem pasture	Drylot
Number of heifers per lot	10	10
Initial wt. per heifer	360	357
Final wt. per heifer	450	547
Gain per heifer	90	190
Daily gain per heifer	.80	1.70
Daily ration per heifer (av.):		
Cottonseed meal or pellets	1.32	1.00
Milo		2.00