

Table 55 (Continued).

Lbs. feed per 100 lbs. gain:		
Milo	284.55	238.50
Alfalfa hay	213.41	712.30
Alfalfa silage	1905.48
Salt	3.56	2.30
Mineral ¹	7.57	5.75
Feed cost per 100 lbs. gain ²	\$17.31	\$14.76

1. Mineral composed of 2 parts steamed bone meal and 1 part salt.
2. Feed prices listed on page 3.

Wintering and Grazing Steer Calves

Methods of Wintering Steer Calves That Are To Be Grazed a Full Season and Sold Off Grass, 1954-55.

PROJECT 253-1

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

This is a progress report of the wintering phase of the second trial of this experiment. The results of the first trial were reported in Kansas Agr. Exp. Sta. Cir. 308. The experiment is designed to study management methods, levels of feeding, and supplements for wintering steer calves that are to be sold as stocker or feeder yearlings. Results of the experiment are measured by the combined winter and summer performance of the steers.

The current test includes the following comparisons:

1. Wintering in dry lot compared with wintering on dry bluestem pasture.
2. Levels of protein feeding on dry bluestem pasture.
3. A combination of grain and protein concentrate compared with protein concentrate fed on dry bluestem pasture.

Experimental Procedure

Forty choice Hereford steer calves, purchased from the Lonker Ranch in Barber county, Kansas, were used in this experiment. The steers of Lot 1 were wintered in a dry lot at the experimental barn, while those of the other lots were wintered on dry bluestem pasture at the experimental range unit. The pastures had been stocked at a normal rate the previous summer; adequate grass remained for winter pasture. The calves of Lots 2, 3, and 4 were moved from pasture to pasture monthly to minimize any differences due to pasture.

The rations used in the test as well as the results are presented in Table 56.

Table 56.—Wintering and grazing steer calves.
(Nov. 10, 1954-April 6, 1955—147 days)

Lot number	1	2	3	4
Number of steers	10	10	10	10
Place of wintering	Dry lot	Bluestem pasture	Bluestem pasture	Bluestem pasture
Initial wt. of steer, lbs.	521	523	522	519
Final wt. of steer, lbs.	653	534	561	561
Gain per steer, lbs.	132	11	39	42
Daily gain per steer, lbs.	0.90	0.08	0.27	0.29

Table 56 (Continued).

Daily ration per steer, lbs.:				
Soybean pellets	1.00	1.00	1.00	2.00
Prairie hay	12.11	1.59	1.59	1.59
Corn			1.00	
Dry bluestem pasture		Free choice	Free choice	Free choice
Salt	Free choice	Free choice	Free choice	Free choice
Minerals	Free choice	Free choice	Free choice	Free choice
Feed cost per steer*	\$24.11	\$11.17	\$14.99	\$17.49

* Feed prices listed on page 3 of this publication.

Observations

1. The winter was rather severe for feeding cattle on pasture. This, along with the fleshy condition of the calves at the beginning of the winter, may be responsible for the low gains of all the steers wintered on pasture.
2. The condition of the calves at the end of the winter appears to be as good as in years when the gains were higher.
3. The steers wintered in dry lot made gains comparable to those of steers on the same ration in previous years.

Wintering, Grazing, and Fattening Heifers 1953-54.

PROJECT 253-2

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

This experiment was designed to study the effect of different wintering management systems on the grazing and fattening performance of beef heifers. Since this report concerns the third trial of the series, a brief summary table of the three years' results and the current year's results is included in the report.

Experimental Procedure

Twenty choice-quality Hereford heifer calves were used in the study. They were delivered to Manhattan, December 1, 1953, at \$18 per cwt., from the Pueblo, Colo., area. The system of management for each lot follows:

- Lot 1—wintered on dry bluestem pasture with 1.31 pounds of cottonseed cake per head daily, grazed on bluestem pasture until July 2, full-fed in dry lot 112 days.
- Lot 2—wintered on Atlas sorgo silage, 1 pound cottonseed meal, and 2 pounds ground milo per head daily, grazed on bluestem pasture until July 2, and full-fed in dry lot 112 days.

Observations

1. The winter of 1953-54 was mild and very favorable for wintering cattle on dry grass.
2. Although wintering heifers on dry bluestem pasture resulted in lower total gains, dressing percentages, carcass grades, and selling prices, they returned as much money above feed costs as did the heifers wintered in dry lot. This was due primarily to the higher grass gains the following summer and lower winter feed costs of the heifers wintered on bluestem pasture.

Table 57.—Wintering, grazing, and fattening heifers.

Phase 1—Wintering, 1953-54		
Lot number	1	2
Place wintered	Bluestem pasture	Dry lot
Number days in phase	111	140
Initial wt. of heifers, lbs.	360	357
Final wt. per heifer, lbs.	450	579
Gain per heifer, lbs.	90	222
Daily gain per heifer, lbs.	.81	1.59
Feed per head daily, lbs.:		
Cottonseed meal or cake	1.31	1.00
Milo		2.00
Sorghum silage		23.54
Dry bluestem pasture		Free choice
Salt	.035	.05
Mineral	.035	.05
Feed cost per 100 lbs. gain*	\$ 8.14	\$ 11.85
Feed cost per heifer*	7.33	26.31

Phase 2—Grazing

Dates of grazing	April 6- July 2	May 5- July 2
Number days grazing	87	58
Initial wt. per heifer	450	579
Final wt. per heifer	602	620
Gain per heifer	152	41
Daily gain per heifer	1.75	.71

Phase 3—Full-Feeding, July 3, 1954-October 23, 1954—112 Days

Initial wt. per heifer, lbs.	596	614
Final wt. per heifer, lbs.	824	878
Gain per heifer, lbs.	228	264
Daily gain per heifer, lbs.	2.04	2.36
Feed per head daily, lbs.:		
Ground corn	12.52	13.50
Cottonseed meal	1.67	1.63
Prairie hay	6.05	5.29
Ground limestone	.13	.13
Salt	.03	.03
Lbs. feed per cwt. gain:		
Ground corn	614.82	572.77
Cottonseed meal	81.80	69.32
Prairie hay	297.41	224.39
Ground limestone	6.45	5.38
Salt	1.54	1.33
Feed cost per cwt. gain*	\$ 24.03	\$ 21.63
Total feed cost this phase*	54.78	56.58

Table 57 (Continued).

Summary—Phases 1, 2, and 3

Total gain per heifer all phases, lbs.	464	521
Daily gain per heifer all phases, lbs.	1.50	1.68
Feed cost per cwt. gain	\$ 16.83	\$ 20.32
Total feed cost per heifer	78.11	98.89
Initial cost per heifer	64.80	64.26
Feed cost and heifer cost	142.91	163.15
Selling price per cwt. at market	\$ 22.50	\$ 23.50
Selling price per heifer	177.08	197.17
Profit per heifer	34.17	34.02
% shrink in shipment to market	4.5	4.4
Dressing %	58.7	61.1
Carcass grades U.S.:		
Choice +		1
Choice		1
Choice -	1	4
Good +	5	4
Good	4	

* Feed prices: Sorghum silage, \$8 ton; prairie hay, \$20 ton; corn, \$1.60 bu.; summer grazing, \$16; winter grazing, \$0.50 per month; cottonseed meal or cake, \$75 ton; mineral, \$4 cwt.; salt, \$12 ton.

Table 58.—Wintering, grazing, and fattening heifers, three-year summary.

Management	Wintered on dry bluestem	Wintered in dry lot
Lot number	1	2
Number heifers per lot	10	10
Initial wt. av., lbs.	428	428
Winter gain av., lbs.	85	200
Grass gain av., lbs.	151	67
Feed-lot gain av., lbs.	249	250
Final wt. av., lbs.	913	945
Total gain, lbs.	485	517
Feed cost per cwt. gain ¹	19.79	22.77
Dressing %	59.1	61.1
Carcass grade		
Choice	5	9
Good	5	1
Selling price per cwt.	\$ 24.67	\$ 25.75

1. Based on average prices each of the three years.

Table 59.—Comparison of different methods of managing bluestem pasture, 1954.

Pasture number	1	2	3	4, 5, 6	7	8	9
Management	Normal stocked	Over-stocked	Under-stocked	Deferred rotated	Early-spring burned	Mid-spring burned	Late-spring burned
Number head per pasture	17	25	13	51	12	12	12
Acres in pasture	60	60	60	3-60*	44	44	44
Number acres per head	3.53	2.4	4.62	3.53	3.67	3.67	3.67
Initial wt. per steer, lbs.	456	456	462	456	463	454	457
Final wt. per steer, lbs.	717	693	698	670	733	725	763
Gain per steer, lbs.	261	237	236	214	270	271	306
Daily gain per steer, lbs.	1.65	1.50	1.49	1.35	1.71	1.72	1.94
Gain per acre, lbs.	73.94	98.75	51.08	60.62	73.57	73.84	83.38

* Three 60-acre pastures.

Table 60.—Yearly account of cattle gains under different methods of grazing pastures.

Five-year summary, 1950-1954

Gain per steer in pounds for the summer season of approximately 150 days.

Pasture number	1	2	3	4, 5, 6	7	8	9
	Normal stocked	Over-stocked	Under-stocked	Deferred rotation grazing	Early-spring burned	Mid-spring burned	Late-spring burned
1950	221	210	214	205	216	254	230
1951	242	256	290	234	243	265	254
1952	246	209	228	197	251	278	283
1953	226	194	233	197	205	217	234
1954	261	237	236	214	270	271	306
Average	239	221	240	209	237	257	263

The Effect of Grazing Systems on Livestock and Vegetation
Comparison of Different Methods of Managing Bluestem Pastures,
1954.

PROJECTS 253-3 and 253-5
E. F. Smith, K. L. Anderson, and F. H. Baker

This experiment is to determine effects of different stocking rates, deferred grazing, and burning on livestock gains, productivity of pastures, and range condition as determined by plant population changes. In addition to the yearly report, a brief summary of the cattle gains for the first 5 years of this test is included.

Experimental Procedure

Good-quality Hereford yearling steers weighing about 460 pounds were used to stock the pastures. The method of management of each pasture was:

Pasture 1—Normal rate of stocking, 3.5 acres per head.

Pasture 2—Overstocked, 2.4 acres per head.

Pasture 3—Understocked, 4.6 acres per head.

Pastures 4, 5, 6—Deferred and rotation grazing, 3.5 acres per head.

All steers were held in two pastures until July 1, then turned in to the protected pasture until it seemed advisable to allow them the run of all three pastures.

Pasture 7—Burned February 23, 1954; rate of stocking, 3.67 acres per head.

Pasture 8—Burned April 10, 1954; rate of stocking, 3.67 acres per head.

Pasture 9—Burned April 24, 1954; rate of stocking, 3.67 acres per head.

Observations

1. The cattle grazing in all the pastures made satisfactory gains. However, greatest gains were made by steers in the late-spring burned pasture, and least gains by steers in pastures handled in the deferred and rotation grazing system.

2. June and July were very hot and dry, which reduced the growth of grass and lowered cattle gains. However, several August rains resulted in satisfactory regrowth of grass.

3. Effects of the various stocking treatments on the vegetation did not become apparent until 1952. Before that, the better than average moisture conditions resulted in better than average growth of forage. This tended to obscure the effects of heavy grazing. Despite the drought of the past three years, bluestem vegetation, as measured by vegetative population counts, improved under light stocking and under deferred grazing, while rather severe depletion developed under heavy stocking. Chief criterion for evaluating range condition is the vegetative population. Under conservative use the major forage species, big bluestem, little bluestem, Indiangrass, and switchgrass, are increasing while less productive forage species and weedy invaders are decreasing. Opposite trends are noted in the pastures stocked heavily and are beginning to be evident in early- and mid-spring burned pastures.

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

Experiments conducted at this station during the past five years have demonstrated that yearling steers can be successfully wintered