

Table 14 (Continued)

Daily gain per steer	1.65	1.76	1.91
Feed cost per steer ¹	\$92.90	97.27	99.73
Feed cost per cwt. gain	\$16.33	16.10	15.18
Sale price per cwt., live weight, based on carcass value ²	\$27.40	26.93	27.13
Dressing percent	60.2	59.4	59.6
Carcass grade:			
Average choice	1		1
Low choice	1	1	1
High good	2	2	2
Average good	2	6	1
Low good	3	7	2
High standard	1	2	1
Average grade ³	17.1	16.6	17.4
Average marbling score ³	7.2	7.6	7.5

5. Sale price per cwt. was based on the following carcass values per cwt.: Choice, \$46.50; Good, \$45.50; Standard, \$43.50.

6. The USDA grade, low good, was assigned a numerical value of 16; average good, 17.

7. Degree of marbling: A score of 7 indicates small amount, 8 indicates slight amount. The higher the score, the less marbling.

Table 15

The effect of implanting steers with stilbestrol at different times during a wintering, grazing, and fattening program.

	Number of steers per treatment	Winter gain Dec. '57 to Apr. '58, 140 days	Summer gain Apr. '58 to Aug. '58, 105 days	Fattening gain Aug. '58 to Nov. '58, 99 days	Total gain Dec. '57 to Nov. '58, 344 days	Average carcass grade ¹
Pounds per head						
Implanted in December, 1957, with 24 mg. ...	6	228	83	282	593	16.7 ¹
Implanted in December, 1957, and April, 1958, with 24 mg. each time	6	214	110	276	600	16.8 ¹
Implanted in December, 1957, and August, 1958, with 24 mg. each time	6	199	98	321	618	16.3 ¹
Implanted in August, 1958, with 24 mg. ...	10	183	89	297	569	17.1 ¹

1. The USDA grade, low good, was assigned a numerical score of 16; average good, 17.

The Value of Stilbestrol Implants,¹ Stilbestrol Implants Plus Aureomycin,² and Shelter for Wintering Steer Calves, 1958-1959. Project 253-6.

E. F. Smith, B. A. Koch, F. W. Boren, and D. Richardson

Forty-four good to choice Hereford steer calves from near Paducah, Texas, were assigned to four treatments on the basis of weight. All lots were fed identical high roughage rations. They received per head daily: 4.7 pounds of sorghum grain, 0.5 pound of soybean meal, 0.1 pound of bonemeal, and 3 pounds of alfalfa hay. Sorghum silage was fed according to appetite, and salt was offered free choice.

1. The stilbestrol implants were furnished by Charles Pfizer and Co., Inc., Terre Haute, Ind.

2. The Aureomycin was furnished by the American Cyanamid Co., Pearl River, N.Y.

The experimental treatments were as follows:

Lot 1. Control.

Lot 2. Each steer implanted with 24 mgs. of stilbestrol in the right ear.

Lot 3. Each steer implanted with 24 mgs. of stilbestrol in the right ear plus 70 mgs. of Aureomycin per steer daily added to the soybean meal.

Lot 4. Access to a shedlike metal shelter closed to the north and above but open to the south, east, and west.

The steers were fed in dirt lots with wooden fences, and a low solid wooden fence on the north served as a windbreak for each lot.

The animals in this experiment will be grazed and fattened during the summer and fall of 1959; some will be reimplanted with stilbestrol to collect more information on the use of stilbestrol implants in a wintering, grazing, and fattening program.

Observations

A 24-mg. stilbestrol implant increased steer gains 0.21 pound per head daily, with a small improvement in efficiency. Increased gains have been obtained in previous trials at this station of about the same magnitude. No readily apparent change in appearance of the animals was noted; however, as the animals continue on test some differences may develop. Slight to severe changes in the tailhead region have been noted in previous trials, depending on the level of implant and level of nutrition.

Aureomycin failed to improve performance when fed to stilbestrol-implanted steers. Small but consistent gain increases have been noted in other trials when Aureomycin was fed to nonstilbestrol-implanted steers.

Shelter proved to be of little value in this experiment.

Table 16

The value of stilbestrol implants, stilbestrol implants plus Aureomycin, and shelter for wintering steer calves.

December 1, 1958, to March 30, 1959—120 days.

Treatment	Control	Stilbestrol implant	Stilbestrol implant and Aureomycin	Shelter
Lot number	1	2	3	4
Number of animals	10	12	12	10
Initial wt. per steer, lbs.	488	494	495	489
Final wt. per steer, lbs.	697	728	725	707
Gain per steer	209	234	230	218
Daily gain per steer	1.74	1.95	1.92	1.82
Daily ration per steer, lbs.:				
Soybean meal	0.5	0.5	0.5	0.5
Sorghum grain	4.7	4.7	4.7	4.7
Bonemeal	0.1	0.1	0.1	0.1
Alfalfa hay	3.0	3.0	3.0	3.0
Sorghum silage	23.3	24.4	24.3	23.2
Salt, free choice				
Stilbestrol implant, 24 mgs. ..		Yes	Yes	
Aureomycin, 70 mgs. per head daily			Yes	
Feed per cwt. gain, lbs.:				
Soybean meal	29	26	26	28
Sorghum grain	271	242	246	260
Alfalfa hay	172	154	157	165
Sorghum silage	1337	1253	1267	1278
Feed cost per cwt. gain ¹	\$11.48	10.44	11.21	10.99

1. Feed prices used are on the inside back cover.

Winter Management for Steer Calves on a Wintering, Grazing, and Fattening Program, 1957-1958. Project 253-6.

C. E. Lohrding, E. F. Smith, B. A. Koch, and F. W. Boren

Previous tests were reported in Circulars 349 and 358 from this station. The objective of this experiment is to determine if winter bluestem pasture can be supplemented in such a manner that calves wintered on it will compare favorably in yearly performance with steer calves wintered on good-quality roughage. It has been noted in the first two tests that, under the costs assigned, the steers wintered on high-quality roughage in drylot would have to grade higher and sell for more per cwt. to make as great a return as those wintered on dry grass.

Experimental Procedure

Twenty head of good to choice Hereford steer calves from near Clovis, N.M., were divided on the basis of weight into two lots of 10 each. The treatment assigned to each lot was as follows:

Lot 22. Wintered in drylot on sorghum silage, 4 pounds of ground sorghum grain, and 1 pound of soybean meal per head daily; grazed on bluestem pasture from April 24 to August 7; fattened in drylot from August 7 to November 14, 1958.

Lot 12. Wintered on bluestem pasture, 4 pounds of ground sorghum grain, and 1 pound of soybean meal per head daily, with the remainder of their treatment identical to that of lot 22.

Observations

The steers fed high-quality roughage in drylot gained 119 pounds more per head during the winter period than the steers wintered on pasture, but gained 112 pounds less during the summer pasture period, which made the winter and summer gain combined about the same for both lots.

The gains were approximately the same during the fattening period, and only small differences were observed in efficiency of gain. The steers wintered on pasture consumed slightly more grain, with little increase in gain, which increased slightly the quantity of grain they took per cwt. gain.

Steers in lot 12, wintered on dry grass, gained 13 pounds more per head, had a \$3 lower feed cost per cwt. gain, and returned \$8.97 more per head. The steers wintered on good-quality roughage in drylot sold for \$0.78 more per cwt. based on carcass value, dressed 0.8 percent more, and graded one third of a grade higher, producing slightly superior carcasses.

Table 17

Winter management for steer calves on a wintering, grazing, and fattening program, 1957-1958.

Phase 1—Wintering—December 5, 1957, to April 24, 1958—140 days.

Lot number	22	12
No. steers per lot	10	10
Place of wintering	Drylot	Bluestem pasture
Initial wt. per steer, lbs.	551	550
Final wt. per steer, lbs.	733	613
Gain per steer, lbs.	182	63
Daily gain per steer, lbs.	1.3	.45
Daily ration per steer, lbs.:		
Ground sorghum grain	4.0	4.0
Soybean oil meal	1.0	1.0
Sorghum silage	11.9	
Prairie hay	8.4	
Bluestem pasture		Free choice
Salt	Free choice	Free choice
Feed cost per steer ¹	\$39.75	20.05
Feed cost per cwt. gain ¹	21.84	31.82

Table 17 (Continued)

Phase 2—Grazing—April 24, 1958, to August 7, 1958—106 days.		
Initial wt. per steer, lbs.	733	613
Final wt. per steer, lbs.	823	825 ⁴
Gain per steer, lbs.	90	212
Daily gain per steer, lbs.85	2.0
Feed cost per steer	\$16.00	16.00
Phase 3—Full feeding—August 7, 1958, to November 14, 1958—99 days.		
No. steers per lot	10	9
Initial wt. per steer, lbs.	823	825
Final wt. per steer, lbs.	1120	1132
Gain per steer, lbs.	297	307
Daily gain per steer, lbs.	3.0	3.1
Daily ration per steer, lbs.:		
Ground sorghum grain, self-fed	19.8	22.0
Soybean oil meal	1.0	1.0
Alfalfa hay	5.2	5.2
Salt	Free choice	Free choice
Feed per cwt. gain, lbs.:		
Ground sorghum grain	661	704
Soybean oil meal	33.5	32.4
Alfalfa hay	174	169
Feed cost this phase ¹	\$59.06	63.98
Feed cost per cwt. gain ¹	19.89	20.84
Summary of Phases 1, 2, and 3—December 5, 1957, to November 14, 1958—345 days.		
Lot number	22	12
Total gain per steer, lbs.	569	582
Daily gain per steer, lbs.	1.65	1.69
Total feed cost per steer ¹	\$114.81	100.03
Feed cost per cwt. gain	20.18	17.18
Initial steer cost at \$25 per cwt. plus feed cost	252.56	237.53
Carcass sale price per cwt. based on carcass value ³	44.88	44.10
Sale price per steer ⁴	302.40	296.34
Return per steer	49.84	58.81
Dressing % ⁵	62.0	61.2
Carcass grade, USDA: ⁶		
Av. choice	1	1
Low choice	1	
High good	2	
Av. good	3	4
Low good	2	1
High standard	1	3
Av. USDA grade ⁶	17.3	16.4
Av. marbling score ⁷	7.4	8.3
Av. carcass conformation grade ⁸	19.3	19.4
Av. before ribbing grade ⁸	17.3	17.0

1. Feed prices: Sorghum grain, \$2.50 per cwt.; soybean oil meal, \$70 per ton; sorghum silage, \$8 per ton; alfalfa hay, \$25 per ton; salt, \$0.75 per cwt.; winter pasture, \$0.50 per head per month.

2. One steer removed during the grazing season because of an injury.

3. Based on carcass weights and grade with 600-700 pound carcass U.S. choice, 46c; U.S. good, 44½c; low U.S. good, 44c; and U.S. standard, 43c per pound. Five hundred to 600 pound U.S. choice, 47c; U.S. good, 46½c; low U.S. good, 46c; and U.S. standard, 44c per pound.

4. Based on carcass values as stated above.

5. Dressing percentage was determined by shrinking the Manhattan final live weight 3 percent and dividing hot carcass weight by that sum.

6. Average grade determined as follows: Average choice, 20; low choice, 19; high good, 18; average good, 17; low good, 16; high standard, 15.

7. Visual marbling score determined as follows: Small amount, 7; slight amount, 8; trace, 9.

8. Carcass conformation grade and before-ribbing grade determined as in footnote 6 above.

**Nutritive Value of Forages as Affected by Soil and Climatic Differences;
Value of Trace Minerals for Calves on Sandstone Pasture. Project 430.**

B. A. Koch, E. F. Smith, D. Richardson, and R. F. Cox

Data presented in Kansas Circular 358 seemed to indicate that beef cattle consuming forage grown on native limestone pasture gained somewhat more weight than those consuming forage grown on native sandstone pasture. Under the conditions of that study it was impossible to determine if any one factor was responsible for the apparent difference in weight gains.

The current study was designed to determine whether or not trace mineral supplementation is of any value when beef calves are grazing on native pasture growing on sandstone soil. Available analyses show little or no differences in trace mineral content of various Kansas soils. Likewise, data available do not indicate that Kansas feeds are deficient in trace mineral content. However, trace mineral supplementation is being promoted quite widely, and under practical conditions there is evidence that trace mineral supplementation may have been beneficial in certain cases.

Experimental Procedure

Twenty-four Hereford steer calves were turned onto native pasture in Woodson County, Kans., May 9, 1958. The calves were the lighter weight calves from a larger group obtained near Clovis, N.M. They had been wintered together in drylot at Manhattan. The winter ration consisted of alfalfa hay free choice plus 2 pounds of sorghum grain per head daily.

May 9, 1958, the calves were divided into two groups on the basis of weight. Each group of steers was placed in a pasture with other cattle. The pastures are quite similar insofar as parent soil material, contour, forage composition, and forage production are concerned. Cattle in one pasture have access to a mixture of plain salt and bonemeal, while those in the other pasture have access to a mixture of trace mineral salt¹ and bonemeal.

Observations

The cattle have been on pasture continuously since May 9, 1958. Winter supplementation consisted of 1½ pounds of soybean meal per animal per day plus prairie hay when snow covered the ground. They will remain on pasture through the 1959 pasture season. At the end of the 1958 pasture season there were no apparent differences in the animals in the two lots. Summer weight gains were essentially the same for all animals.

Results to date are summarized in Table 18.

1. Furnished by Morton Salt Company.

Table 18

Supplemental trace minerals for calves on sandstone pasture.

Treatment	Control	Trace mineral salt
Number animals	12	12
Av. initial wt., lbs.	551	550
Av. wt., 7-28-58, lbs.	652	631
Av. wt., 10-10-58, lbs.	701	697
Av. summer gain, lbs.	150	147

**The Use of Tranquilizer Compounds^{1,2} in Fattening Rations for Steers.
Project A-597.**

B. A. Koch, E. F. Smith, D. Richardson, and M. M. McCartor

The steers used in this fattening trial were part of a larger group used in a wintering study reported on page 54 of Kansas Circular 358. At the

1. Paxital is the brand name of a tranquilizer furnished by H. B. Penick and Co., New York, N.Y.

2. Tran-Q is the brand name of a tranquilizer furnished by Chas. Pfizer & Co., Inc., Terre Haute, Ind.

beginning of the fattening period the ration was gradually changed from a high roughage, wintering type, to a high energy, fattening type. Individual calves remained in the same experimental groups as during the wintering trials but the groups were moved from the outdoor lots to concrete lots in which shelter was available.

The steers were brought to a full feed of sorghum grain and alfalfa hay plus 1 pound of soybean meal per head per day during the first 4 weeks of the study. After the cattle were on full feed, sorghum grain and alfalfa hay were available to them at all times on a free-choice basis. The soybean meal was fed once per day and was scattered over the grain in the feed bunk. The tranquilizer compound for each treatment lot was carried in the soybean meal.

During this fattening period the cattle suffered from a severe outbreak of foot-rot. Almost all animals in all lots were under veterinary care at one time or another. Apparently some animals suffered very little from the infection, while others lost as much as 40 pounds in weight during a particular 28-day period. For this reason the data obtained are being reported with no conclusions or observations. In another study reported in this circular, Tran-Q apparently gave excellent results when added to the fattening ration.

Table 19

**The use of tranquilizer compounds^{1,2} in fattening rations for steers.
Project A-597.**

Fattening—April 24, 1958, to August 22, 1958—120 days.

Treatment	Control	Paxital ¹	Tran-Q ²
Number steers per lot	9 ³	10	10
Av. initial wt. per steer, lbs.	738	739	737
Av. final wt. per steer, lbs.	947	965	964
Av. total gain per steer, lbs.	209	226	227
Av. daily gain per steer, lbs.	1.74	1.88	1.89
Standard error	±.04	±.07	±.12
Daily ration per steer, lbs.:			
Ground sorghum grain	15.70	16.80	16.24
Soybean oil meal	1.00	1.00	1.00
Alfalfa hay	5.82	5.63	5.83
Salt	.04	.03	.03
Bonemeal-salt	.05	.04	.04
Paxital, mgs. ⁴		75	
Tran-Q, mgs. ⁴			2.5
Feed per cwt. gain, lbs.:			
Ground sorghum grain	902	864	859
Soybean meal	58	53	53
Alfalfa hay	334	299	308
Salt	2	2	2
Bonemeal-salt	3	2	2
Paxital, mgs.		3980	
Tran-Q, mgs.			133
Feed cost per cwt. gain ⁵	\$22.74	21.54	21.51
Carcass grades, U.S.D.A.:			
Av. choice			
Low choice	1	3	2
High good	3	3	5
Av. good	3		2
Low good	1	3	1
High standard	1	1	

1. Paxital is the brand name of a tranquilizer furnished by H. B. Penick and Co., New York, N.Y.

2. Tran-Q is the brand name of a tranquilizer furnished by Chas. Pfizer & Co., Inc., Terre Haute, Ind.

3. One animal died 47 days after test began.

4. Fed in the soybean meal.

5. Not including tranquilizer cost or mixing cost.