

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.

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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.

Table 19 (Continued)

Av. U.S.D.A. grade ⁶	11.2	11.4	11.8
Av. marbling score ⁷	8.0	7.2	7.0
Av. fat thickness score ⁸	3.2	3.2	3.6
Av. firmness score ⁹	4.5	4.1	4.2
Av. ribeye size, sq. in. ¹⁰	10.46	9.96	10.07

6. Average grade determined as follows: high choice, 15; average choice, 14; low choice, 13; high good, 12; average good, 11; low good, 10; high standard, 9.
 7. Visual marbling score determined as follows: moderate, 5; modest, 6; small amount, 7; slight amount, 8.
 8. Visual fat covering at 12th rib: moderate, 3; modest, 4; slightly thin, 5.
 9. Firmness of ribeye: firm, 2; moderately firm, 3; modestly firm, 4; slightly firm, 5.
 10. Measured at the 12th rib.

Stillbestrol¹ and Synovex² Implants (and Reimplants) for Steers on a Fattening Ration. Project 253-6.

B. A. Koch, Ed F. Smith, R. F. Cox, D. Richardson, and G. L. Walker

The steers used in this fattening trial were part of a larger group used in a wintering trial reported on page 46 of Kansas Circular 358. At the beginning of the fattening period the ration was gradually changed from a high roughage, wintering type, to a high energy, fattening type. Also at that time five of the steers in the stillbestrol lot were reimplanted with 24 mgs. of diethylstilbestrol and five steers in the synovex lot were reimplanted with synovex. Individual calves remained in the same experimental group as during the wintering study 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 trial. After they were on full-feed alfalfa hay and sorghum grain were available 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.

During this fattening trial the cattle suffered from a severe outbreak of foot-rot. Almost all animals in all lots were under veterinary care at some time and some individuals were treated for recurring cases of the infection. In some cases the animals apparently suffered very little while other animals showed large losses of body weight during the period of infection. For this reason the data obtained are being reported with no conclusions or observations. Previous tests reported in Kansas Circulars 349 and 358 have indicated that fattening calves do show a favorable response to both stilbestrol and Synovex implants and reimplants.

1. Supplied by Chas. Pfizer & Co. (24 mgs. per steer implanted in the ear; 24 mgs. reimplant also).

2. Supplied by E. R. Squibb & Sons. (Each implant contained 200 mgs. of progesterone plus 20 mgs. of estradiol benzoate.)

Table 20

The use of stillbestrol¹ and synovex² implants for steers during the fattening period. Project 253-6.

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

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Treatment	Control	Synovex ² implant	Stillbestrol ¹ implant
Number steers per lot	9 ¹	10	10
Av. initial wt. per steer, lbs.	738	783	758
Av. final wt. per steer, lbs.	947	1011	1002
Av. total gain per steer, lbs.	209	228	244
Av. daily gain per steer, lbs.	1.74	1.90	2.04
Standard error	±.04	±.11	±.07
Daily ration per steer, lbs.:			
Ground sorghum grain	15.70	16.88	16.30
Soybean oil meal	1.00	1.00	1.00
Alfalfa hay	5.82 ³	5.94 ³	5.72 ³
Salt04	.03	.03

Table 20 (Continued)

Bonemeal-salt05	.04	.04
Feed per cwt. gain, lbs.:			
Ground sorghum grain	902	888	799
Soybean oil meal	58	53	49
Alfalfa hay	334	313	280
Salt	2	2	2
Bonemeal-salt	3	2	2
Feed cost per cwt. gain	\$ 22.74	22.13 ⁴	19.96 ⁴
Carcass grades, U.S.D.A.:			
Av. choice	1		
Low choice	3	2	3
High good	3	1	2
Av. good	1	4	4
Low good	1	3	1
High standard	1	3	1
Av. U.S.D.A. grade ⁷	11.2	10.2	10.7
Av. marbling score ⁸	8.0	8.0	7.6
Av. fat thickness score ⁹	3.2	3.7	3.8
Av. firmness score ¹⁰	4.5	4.5	4.4
Av. ribeye size, sq. in. ¹¹	10.46	9.72	10.20

II—Treatment

Treatment	Control	Synovex ² implant	Synovex ² reimplant	Stillbestrol ¹ implant	Stillbestrol ¹ reimplant
Lot number	1	2	2	3	3
Number of steers per lot	9 ¹	5	5	5	5
Av. initial wt. per steer, lbs.	738	785	781	757	758
Av. final wt. per steer, lbs.	947	1017	1005	984	1020
Av. total gain per steer, lbs.	209	232	224	227	262
Av. daily gain per steer, lbs.	1.74	1.93	1.87	1.89	2.18
Standard error	±.04	±.14	±.18	±.12	±.07
Carcass grades, U.S.D.A.:					
Av. choice	1				
Low choice	3	1	1		3
High good	3	1		2	
Av. good	1	2	2	3	1
Low good	1	1	2	3	1
High standard	1	1	2	1	1
Av. U.S.D.A. grade ⁷ ..	11.2	10.4	10.0	10.4	11.0
Av. marbling score ⁸ ..	8.0	8.0	8.0	7.6	7.6
Av. fat thickness score ⁹	3.2	3.6	3.8	3.8	3.8
Av. firmness score ¹⁰ ..	4.5	4.4	4.6	4.4	4.4
Av. size ribeye, sq. in. ¹¹	10.46	9.40	10.14	10.08	10.32

1. Supplied by Chas. Pfizer & Co., Inc., Terre Haute, Ind.
 2. Supplied by E. R. Squibb and Sons, New Brunswick, N.J.
 3. Each implant contained 200 mgs. Progesterone plus 20 mgs. estradiol benzoate.
 4. One animal died 47 days after test began.
 5. Each animal also received 225 lbs. of sorghum silage during the first 15 days of this fattening period.
 6. Implant cost not included.
 7. Average grade determined as follows: high choice, 15; average choice, 14; low choice, 13; high good, 12; average good, 11; low good, 10; high standard, 9.
 8. Visual marbling score determined as follows: moderate, 5; modest, 6; small amount, 7; slight amount, 8.
 9. Visual fat covering at 12th rib: moderate, 3; modest, 4; slightly thin, 5.
 10. Firmness of ribeye: firm, 2; moderately firm, 3; modestly firm, 4; slightly firm, 5.
 11. Measured at the 12th rib.