

### Observations

The steers that had been implanted gained significantly faster than those that had not been implanted.

The diethylstilbestrol implant apparently had no effect on shrink during shipping.

There were no significant differences in carcass characteristics measured.

Table 10

Diethylstilbestrol implants plus oral chlortetracycline vs. oral chlortetracycline alone for fattening steers.

March 17, 1961, to July 26, 1961—131 days.

Treatment	24-mg. implant plus oral chlortetracycline	Oral chlortetracycline
Lot no.	23	25
No. steers per lot	10	10
Av. initial wt., lbs.	\$46	\$14
Av. final wt., lbs.	1126	1043
Av. total gain, lbs.	280	229
Av. daily gain, lbs.	2.14	1.75
Standard error of mean	±0.09	±0.07
Av. daily ration, lbs.:		
Cracked sorghum grain	22.1	21.3
Soybean oil meal	1.0	1.0
Prairie hay	5.9	6.2
Sorghum silage	1.7	1.7
Av. feed per cwt. gain:		
Sorghum grain	1037	1217
Soybean oil meal	47	57
Prairie hay	277	354
Sorghum silage	78	97
Feed cost per cwt. gain <sup>1</sup>	\$23.84	\$28.29
Shrink data:		
Av. shrink June 2, 1961 <sup>2</sup>		
Pounds	38.5	35.0
%	3.6	3.5
Av. shrink to market <sup>3</sup>		
Pounds	50.0	48.5
%	4.3	4.4
Av. overnight wt. change, lbs. <sup>4</sup>	+9.5	-10.5
Carcass data:		
Av. carcass wt., lbs.	682	634
Av. packer yield, % <sup>5</sup>	61.1	60.6
Av. U.S.D.A. grade <sup>6</sup>	10.9	11.2
Av. fat thickness, in. <sup>7</sup>	0.61	0.73
Av. rib eye, sq. in. <sup>7</sup>	11.71	11.16

1. Based on feed prices listed on page 2.

2. Cattle were individually weighed, loaded on trucks, hauled 60 miles, weighed off trucks, and returned to pens.

3. Cattle were individually weighed, loaded on trucks, hauled 125 miles to Kansas City, and individually weighed off trucks.

4. Cattle were fed and watered during overnight stand in Kansas City Stockyards.

5. Based on off-truck weight at Kansas City.

6. Average grade determined as follows: Low choice, 13; high good, 12; average good, 11; low good, 10; high standard, 9.

7. Measured at 12th rib.

### Response of Fattening Steers to Oral or Injected Vitamin A, with Observations on Shrink (Project 430).

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Steers used in an antibiotic study and a trace mineral study reported elsewhere in this publication were also used in a study designed to further evaluate the use of supplemental vitamin A during the fattening period. The animals used showed no visual symptoms of vitamin A deficiency any time. However, the diets fed and the management practices followed were similar to those in studies at other stations where supplemental vitamin A was evaluated.

### Experimental Procedure

May 5, 1961, 50 steers, five groups of 10 each, were randomly divided within lots. Three steers in each lot received an intramuscular injection of 250,000 I.U. of vitamin A palmitate in oil; three received a bolus containing 250,000 I.U. of vitamin A oil, and four served as controls. The vitamin A treatment was repeated each two weeks between May 5 and June 30, 1961. During that period each treatment animal received 1,250,000 I.U. of supplemental vitamin A. All cattle, including control animals, were driven down the chute and caught in the squeeze at each treatment time.

The cattle had been on a wintering ration of sorghum silage, alfalfa hay and soybean oil meal. During the fattening period they received a ration of ground sorghum grain, soybean oil meal and prairie hay. Forty of the steers used had been implanted with 24 mgs. of diethylstilbestrol per head March 17, 1961, and all 50 received 70 mgs. of chlortetracycline per head per day in their supplemental soybean oil meal. All the steers had been started on a fattening ration March 17, 1961.

Salt, either plain or trace-mineralized, and a mixture of salt and bone-meal were available at all times. Water was always available from automatic waterers.

This group of 50 steers was used also to collect data on shrink during movement of cattle.

June 2, 1961, the steers were individually weighed onto trucks and hauled 60 miles, then weighed off the trucks individually and returned to feeding pens. Climatic data follow: Minimum temperature, 63° F.; maximum temperature, 80° F.; average temperature, 72° F.; relative humidity, 100 at 6 a.m. and 88 at 2 p.m.; precipitation, 0.40 inch while the cattle were being moved; wind light from the east.

July 31, 1961, the steers were individually weighed onto trucks and hauled to Kansas City (125 miles) and individually weighed off the trucks at the stockyards. Climatic data follow: Minimum temperature, 73° F.; maximum temperature, 95° F.; average temperature, 84° F.; relative humidity, 100 at 6 a.m. and 68 at 2 p.m.; precipitation, 0; wind was moderate from the west.

### Observations

Gain and carcass data are summarized in Table 11. Since control and treated steers were fed together, feed efficiency data could not be determined.

No real differences in average daily gain, carcass yield, carcass grade or carcass composition are indicated between control animals and those that received supplemental vitamin A. The supplemental vitamin A apparently had no effect on shrink of the animals during movement.

No visible differences in hair coat, joint stiffness, lacrimation, health of epithelial tissues or appetite were noted between treated and untreated animals in the same lot.

Under conditions of this test supplemental vitamin A apparently improved neither performance nor health of the cattle involved.

1. Present address: Department of Animal Husbandry, Panhandle A & M College, Goodwell, Oklahoma.

**Table 11**  
**Response of fattening steers to oral or injected vitamin A.**  
 March 17, 1961, to July 26, 1961—131 days.

Treatment	Control	Injected vitamin A <sup>1</sup>	Oral vitamin A <sup>2</sup>
No. steers per group	20	15	14 <sup>3</sup>
Av. initial wt., lbs.	833	842	860
Av. final wt., lbs.	1113	1122	1134
Av. total gain, lbs.	280	280	274
Av. daily gain, lbs.	2.14	2.14	2.09
Standard error of mean	±0.08	±0.09	±0.10
<b>Shrink data:</b>			
Av. shrink June 2, 1961 <sup>4</sup>			
Pounds	41	38	39
Percent	3.9	3.7	3.6
Av. shrink to market <sup>5</sup>			
Pounds	48	55	51
Percent	4.1	4.7	4.3
<b>Carcass data:</b>			
Av. carcass wt., lbs.	678	689	688
Av. packer yield, % <sup>6</sup>	61.2	61.9	60.6
Av. USDA carcass grade <sup>7</sup>	11.7	11.5	11.4
Av. fat thickness, in. <sup>8</sup>	0.72	0.75	0.74
Av. rib eye, sq. in. <sup>9</sup>	11.46	11.66	11.43

1. Each steer received an intramuscular injection of 250,000 I.U. of vitamin A palmitate in oil May 5, May 19, June 2, June 16 and June 30.
2. Each steer received a bolus containing 250,000 I.U. of vitamin A in oil May 5, May 19, June 2, June 16 and June 30.
3. One steer foundered badly and was not used in calculations.
4. Cattle were individually weighed, loaded on trucks, hauled 60 miles, weighed off trucks and returned to pens.
5. Cattle were individually weighed, loaded on trucks, hauled 125 miles to Kansas City and individually weighed off trucks.
6. Based on off-truck weight at Kansas City.
7. Average grade determined as follows: Low choice, 13; high good, 12; average good, 11; low good, 10; high standard, 9.
8. Measured at 12th rib.

**Trace-mineral Salt for Steers on a Fattening Ration (Concrete and Shelter vs. Dirt and No Shelter) with Observations on Shrink (Project 695).<sup>1</sup>**

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Previous data reported from this station seem to indicate that supplemental dietary trace minerals may be valuable under certain feeding conditions. Those data also indicated that trace minerals might be related to weight loss during shipping. This study was designed to further determine the value of supplemental dietary trace minerals when cattle were on concrete and had shelter available and when they were on dirt with no shelter.

**Experimental Procedure**

A report of the wintering phase of this study along with a description of the steers used and their previous treatment is on page 3 of Kansas Circular 383, May 6, 1961.

The 40 Hereford steers used were held off feed and water 15 hours before being weighed for the fattening phase of the study. Treatment groups remained the same as for the wintering phase of the study and

1. Partially supported by the Salt Producers Association, 33 N. LaSalle Street, Chicago 2, Ill.
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each animal remained in the same group. Treatment groups were as follows:

- Lot 11. Plain salt (on concrete with shelter available).
- Lot 12. Trace-mineral salt (on concrete with shelter available).
- Lot 13. Trace-mineral salt (dirt lot, no shelter).
- Lot 23. Plain salt (dirt lot, no shelter).

The fattening ration included cracked sorghum grain, soybean oil meal, and prairie hay. During the first 20 days each steer also received 10 pounds of sorghum silage per day. The amount of sorghum grain fed was gradually increased until the steers went on self-feed. The soybean oil meal was spread over the grain each morning. Initially 10 pounds of prairie hay per head per day were fed. This was cut to 4 pounds per head per day after the cattle were on full feed. Each pound of soybean oil meal fed contained 70 mgs. of chlortetracycline (Aureomycin).<sup>3</sup> Each steer received a 24-mg. implant of diethylstilbestrol<sup>4</sup> on the first day of the fattening period.

All animals had free-choice access to the designated salt and also to a mixture of that salt and bonemeal. Water was always available from automatic waterers.

The steers also were used in collecting further data on shrinkage during transport. June 2, 1961, the steers were individually weighed and hauled 60 miles. They were then weighed off trucks individually and returned to feeding pens. Climatic data were as follows: Minimum temperature, 63° F.; maximum temperature, 80° F.; average temperature, 72° F.; relative humidity, 100 at 6 a.m. and 88 at 2 p.m.; precipitation, 0.40 inch while the cattle were being moved; wind light from the east.

July 31, 1961, the steers were individually weighed onto trucks and hauled to Kansas City (125 miles), and individually weighed off the trucks at the stockyards. Climatic data follow: Minimum temperature, 73° F.; maximum temperature, 95° F.; average temperature, 84° F.; relative humidity, 100 at 8 a.m. and 68 at 2 p.m.; precipitation, 0; wind moderate from the west.

The cattle were held over night to feed and water and were sold on the Kansas City market August 1, 1961.

**Observations**

Results of the study are summarized in Table 12.

Trace-mineralized salt had no apparent effect on average daily gain or feed efficiency of steers fattened under conditions of this study.

Steers fed on concrete with shelter available gained somewhat faster than those on dirt with no shelter. Differences were less than during the wintering period.

No significant differences in shrink due to treatment were found when the cattle were trucked on two different occasions. Feeding and watering the cattle during the overnight stand in the stockyards changed the average weight of the cattle only slightly.

Treatment apparently did not affect carcass yield, carcass grade, or other carcass characteristics studied.

3. Aureomycin (chlortetracycline) was supplied by the American Cyanamid Co., Pearl River, N.Y.

4. Stilbestrol implants were supplied by Chas. Pfizer & Co., Inc., Terre Haute, Ind.