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

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Initial implants</th>
<th>Oral Chlortetracycline</th>
<th>Oral Chlortetracycline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 50</td>
<td>23</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>No steers per lot</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Av. initial wt., lb.</td>
<td>845</td>
<td>814</td>
<td></td>
</tr>
<tr>
<td>Av. final wt., lb.</td>
<td>1186</td>
<td>1163</td>
<td></td>
</tr>
<tr>
<td>Av. total gain, lb.</td>
<td>280</td>
<td>298</td>
<td></td>
</tr>
<tr>
<td>Av. daily gain, lb.</td>
<td>2.14</td>
<td>1.76</td>
<td></td>
</tr>
<tr>
<td>Standard error of mean</td>
<td>±0.66</td>
<td>±0.67</td>
<td></td>
</tr>
<tr>
<td>Av. daily ration, lb.</td>
<td>22.1</td>
<td>21.8</td>
<td></td>
</tr>
<tr>
<td>Sorghum grain</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Prairie hay</td>
<td>5.9</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>Sorghum silage</td>
<td>1.7</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>Av. feed per cwt. gain</td>
<td>1937</td>
<td>1917</td>
<td></td>
</tr>
<tr>
<td>Sorghum silage</td>
<td>47</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Prairie hay</td>
<td>977</td>
<td>974</td>
<td></td>
</tr>
<tr>
<td>Sorghum silage</td>
<td>72</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Feed cost per cwt. gal.</td>
<td>$233.34</td>
<td>$235.28</td>
<td></td>
</tr>
</tbody>
</table>

Shrink data:

- Av. shrink June 2, 1961
  - Pounds: 30.2
  - %: 3.6
- Av. shrink to market:
  - Pounds: 50.6
  - %: 4.6
- Av. overnight wt. change, lb.:
  - Pounds: +9.5
  - %: -10.5

Carcass data:

- Avg. carcass wt., lb.: 632
- Avg. packer yield, %: 60.6
- Avg. U.S.D.A. grade: 11.0
- Avg. fat thickness, in.: 1.01
- Avg. rib eye area, sq. in.: 11.14

1. Based on feed price 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 15 miles to Kansas City, and individually weighed off trucks.
4. Cattle were fed and watered during overnight stay in Kansas City stockyards.
5. Began 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 1134 rib.

Response of Fattening Steers to Oral or Injected Vitamin A, with Observations on Shrink (Project 438).

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

Steers used in an antibiotic study and a trace mineral study reported elsewhere in this publication were also used in a study designed to 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 diet fed and the management procedures followed were similar to those in studies at other stations where supplemental vitamin A was evaluated.

Experimental Procedure

May 3, 1961, 50 steers, five groups of 10 each, were randomly divided within lots. The steers received an intramuscular injection of 10,000 IU of vitamin A palmitate in oil; three received a bolus containing 250,000 IU of vitamin A oil, and four served as controls. The steers were fed in two pairs between May 17 and June 26, 1961. During that period each treatment animal received 100,000 IU 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, sorghum oil meal and prairie hay. Forty of the steers used had been implanted with 24 mg of diethylstilbestrol per head March 17, 1961, and all 50 received 74 mg of chlortetracycline per head daily 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, 49° F; maximum temperature, 89° F; average temperature, 72° F; average humidity, 51 at 8 a.m. and 56 at 2 p.m. precipitation, 0.46 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 (135 miles) and individually weighed off the trucks at the stockyards. Climatic data follow. Minimum temperature, 78° F; maximum temperature, 95° F; average temperature, 84° F; average humidity, 54 at 2 a.m. and 56 at 2 p.m. precipitation, 0.25 inch moderate from the west.

Observations

Carcass 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 in comparison.

No visible differences in hair coat, joint stiffness, liveliness, health of the animals 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.

*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 24, 1961—121 days.  

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cattle</th>
<th>Injected vitamin A</th>
<th>Oral vitamin A</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. steers per group</td>
<td>20</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>Av. initial wt., lbs.</td>
<td>888</td>
<td>842</td>
<td>866</td>
</tr>
<tr>
<td>Av. final wt., lbs.</td>
<td>1128</td>
<td>1122</td>
<td>1222</td>
</tr>
<tr>
<td>Av. total gain, lbs.</td>
<td>230</td>
<td>230</td>
<td>274</td>
</tr>
<tr>
<td>Av. daily gain, lbs.</td>
<td>2.11</td>
<td>2.14</td>
<td>2.09</td>
</tr>
<tr>
<td>Standard error of mean</td>
<td>±0.08</td>
<td>±0.09</td>
<td>±0.10</td>
</tr>
</tbody>
</table>

Shrink data:  
Av. shrink June 2, 1961:
- Pounds: 44  28  29
- Percent: 2.8  3.7  3.6
Av. shrink to market:
- Pounds: 46  55  61
- Percent: 6.1  7.4  4.3

Carcase data:
- Av. carcas wt., lbs.: 776  692  686
- Av. packer yield, %: 71.2  61.9  60.6
- USDA carcase grade: 17.7  32.5  11.4
- Av. fat thickness, in.: 0.72  6.75  6.74
- Av. rib eye sq., in.²: 11.46  11.66  11.42

1. Each steer received an intramuscular injection of 375,000 IU of vitamin A on May 5, May 19, June 2, June 6, and June 30.
2. Each steer received a bolus containing 375,000 IU of vitamin A on May 5, May 19, June 2, June 6, and June 30.
3. One steer was removed due to injury.
4. Cattle were individually weighed, loaded on trucks, hauled 60 miles, and unloaded on trucks and returned to pens.
5. Cattle were individually weighed, loaded on trucks, hauled 123 miles to Kansas City, individually weighed, and hauled to stockyards.
6. Cattle were handled on stock trucks at stockyards.
8. Mean of 12th rib.

Trace-Mineral Salt for Steers on a Fattening Ration (Concrete and Shelter vs. Dirt and No Shelter) with Observations on Marink (Project 695).  
B. A. Koch, F. F. Smith, D. Richardson and M. M. McCartney

Previous data 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 values of supplemental dietary trace minerals when cattle are on concrete and have shelter available and when they are 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 283, May 6, 1961.

The 10 Hereford steers used were held off feed and water 18 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

Each animal remained in the same group. Treatment groups were as follows:
- Lot 11: Plain salt (concrete with shelter available).
- Lot 12: Trace-mineral salt (concrete with shelter available).
- Lot 18: 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 26 days, each steer also received 10 pounds of sorghum silage per day. The amount of sorghum grain fed was gradually increased until the steers were 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 self-feed. Each pound of soybean oil meal fed contained 79 mg. of chlorotetracycline (Apramycin). Each steer received a 24-mg. implant of dihydrostreptomycin on the first day of the fattening period.

All animals had two-choice access to the designated salt mix and to a mixture of salt and bone meal. Water was always available from automatic waterers.

The steers also were used in collecting further data on shrinkage during transport: June 1, 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, 62°F; maximum temperature, 66°F; average temperature, 72°F; relative humidity, 75% at 6 a.m. and 35% at 2 p.m.; precipitation, 0.49 inch while the cattle were being moved; wind light from the east.

July 31, 1961, the steers were individually weighed off trucks and hauled to Kansas City (125 miles), and individually weighed off trucks at stockyards. Climatic data were: Minimum temperature, 65°F; maximum temperature, 72°F; average temperature, 75°F; relative humidity, 60% at 8 a.m. and 65% at 2 p.m.; precipitation, 0.49 inch; 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 stay at the stockyards caused the average weight of the cattle to increase slightly.

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

1. Apramycin (chlorotetracycline) was supplied by the American Cyanamid Co., Peekskill, N.Y.
2. Subcutaneous implants were supplied by Chas. Pfizer & Co., Inc., Torrance, Calif.