Fattening Rations
Fed to Steers
Result of Feeding Trials, Including Marketing
Margins, at the Dickinson Experiment Station
By Larkin H. Langford1 and Raymond J. Douglas2

On October 15, 1954, four lots of 10 yearling steers each were
placed in feed lots at the Dickinson Experiment Station for fattening
on corn silage and various supplements. This was the fourth
successive experiment aimed at determining the practicability of
finishing beef cattle in North Dakota on locally produced roughage
with a minimum use of supplements. In this experiment the 40
steers were fed for 153 days, then sold by lots at a local public
auction ring, after which dressing percentages and carcass grades
were furnished by the packers who bought the steers. The rations
and feeding results are summarized in Table I.

All lots were fed corn silage twice daily in as large amounts as
they would clean up reasonably well. Each lot was fed a different
supplement. Lot I received 3.5 pounds per head daily of a supple-
ment similar to Purdue "A" (see footnote to Table I.) Lot II
received 2 pounds soybean oilmeal, 2.5 pounds alfalfa hay, 2 pounds
steamed bonemeal, and .07 pound trace mineralized salt per steer
daily. Lot III was fed the same ration as Lot II for the first 60 days
of the period, after which a ground grain mixture of barley and
oats, two to one, was added at the rate of 4 pounds per head daily.
Lot IV was fed the same ration as Lots II and III for the first
60 days, then the allowance of soybean oilmeal was reduced from
2 pounds daily to 1½ pounds daily, and 1 pound of ground grain
was added per head daily.

The first three lots were fed about the same rations as were
used in an earlier experiment reported in Bimonthly Bulletin,
Vol. XVI, No. 6, for July-August, 1954, and the average daily gains
were almost identical for the two years. In Lot IV, the substitution
of 1 pound of grain for ½ pound of soybean oilmeal kept the daily
ration cost about constant, held total digestible nutrients intake up,
and reduced out-of-pocket cost of the ration.

The differences in rate of gain between the four lots were not
significant because of the great variation within lots. There were,
evertheless, differences in feed cost per 100 pounds gain, large enough
to mean feeding at a loss in Lot I, while feeding for a profit in
Lots II, III, and IV.

The ration used in Lot I has proved the least efficient in convert-
ing feed to beef in both of the trials in which it was used. Each

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2Superintendent, Dickinson Substation.
TABLE I.—1954-1955 Steer Feeding Results, Dickinson Experiment Station.

<table>
<thead>
<tr>
<th>Lot</th>
<th>Number of Steers</th>
<th>Avg. Initial wt.</th>
<th>Avg. Final wt.</th>
<th>Gain Per Steer</th>
<th>Daily Gain Per Steer</th>
<th>Days on Feed</th>
<th>Daily Feed Consumption Per Steer</th>
<th>Feed per 100 lb. Gain</th>
<th>Feed Cost per 100 lb. gain</th>
<th>Initial Cost per cwt.</th>
<th>Initial Value per Steer</th>
<th>Feed Cost per Steer</th>
<th>Selling price per cwt.</th>
<th>Value per head (avg.)</th>
<th>Avg. net return per steer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot I</td>
<td>10</td>
<td>759</td>
<td>1054</td>
<td>205</td>
<td>1.92</td>
<td>153</td>
<td>64.3</td>
<td>3336</td>
<td>25.70</td>
<td>19.00</td>
<td>144.21</td>
<td>75.80</td>
<td>20.60-7 hd.</td>
<td>213.22</td>
<td>-8.79</td>
</tr>
<tr>
<td>Lot II</td>
<td>10</td>
<td>759</td>
<td>1054</td>
<td>205</td>
<td>1.92</td>
<td>153</td>
<td>63.7</td>
<td>3306</td>
<td>23.65</td>
<td>19.00</td>
<td>144.21</td>
<td>75.80</td>
<td>19.10-3 hd.</td>
<td>233.46</td>
<td>19.60</td>
</tr>
<tr>
<td>Lot III</td>
<td>10</td>
<td>759</td>
<td>1054</td>
<td>205</td>
<td>2.20</td>
<td>153</td>
<td>60.4</td>
<td>2749</td>
<td>22.15</td>
<td>19.00</td>
<td>144.21</td>
<td>75.80</td>
<td>213.86</td>
<td>245.28</td>
<td>26.65</td>
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<tr>
<td>Lot IV</td>
<td>10</td>
<td>759</td>
<td>1054</td>
<td>205</td>
<td>2.14</td>
<td>153</td>
<td>64.0</td>
<td>2992</td>
<td>21.22</td>
<td>19.00</td>
<td>144.21</td>
<td>75.80</td>
<td>218.63</td>
<td>239.14</td>
<td>25.44</td>
</tr>
</tbody>
</table>

*After 60 days.
**After 60 days reduced to 1.5 lbs.

100 pounds of gain required 3,336 pounds of corn silage and 180 pounds of supplement, which at prices used meant a cost of $25.70 per hundredweight gain.

The steers in Lot II made somewhat slower gains in this trial than the same ration produced in the earlier trial, yet feed consumption per day was much higher in this trial. Daily silage consumption jumped from 54.3 pounds to 63.7 pounds at the same time that daily gains slipped from 2 pounds to 1.92 pounds. Lot II returned a profit, but this was possible only by virtue of a margin in selling price above purchase price.

Lot III steers received 4 pounds grain per day for the final three months of the feeding period, with the result that they were the best finished lot at market time, and they sold for the highest price, $22.40 per hundredweight. The net profit per head was $26.65 in Lot III, the highest of the four lots.
Steers in Lot IV made relatively better gains than was expected considering the small amount of supplements fed. The final weight of 1,087 pounds per head, only eight pounds lower than in Lot III is one indication that Lot IV steers were second only to Lot III animals in finish. Feed cost per steer was lower in Lot IV than in any other lot, though about the same as in Lot II.

Dressing percentages and carcass grades were furnished by the packers. Lot III was bought by a local packer and those steers were butchered one day sooner than those of the other three lots, which went to a distant packing house. Data on the carcasses of each lot are summarized in Table II.

<table>
<thead>
<tr>
<th>Date Sold</th>
<th>Date Killed</th>
<th>Dressing %</th>
<th>Carcass Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot I*</td>
<td>3/17/55</td>
<td>3/22/55</td>
<td>58.08</td>
</tr>
<tr>
<td>Lot II</td>
<td>3/17/55</td>
<td>3/22/55</td>
<td>57.45</td>
</tr>
<tr>
<td>Lot III</td>
<td>3/17/55</td>
<td>3/21/55</td>
<td>61.94</td>
</tr>
<tr>
<td>Lot IV</td>
<td>3/17/55</td>
<td>3/22/55</td>
<td>57.30</td>
</tr>
</tbody>
</table>

1Condition and covering was satisfactory for grade of choice. Graded good because of darker color.
2Some of this lot would have graded prime except for darker color.
3Three lighter steers from Lot I were cut back by buyers and sold as feeders.

Lots I, II, and IV all dressed about the same percentage, 57 to 58 per cent. Lot III, which was not shipped any appreciable distance and was butchered one day earlier than the other lots, dressed 61.9 per cent. Carcass grades were in line with rate of gain and final weight, as one lot relates to another. All 10 carcasses from Lot III graded choice, five were choice and five good from Lot IV, three were choice and seven good from Lot II and of the seven steers that were selected by the packer in Lot I only one graded choice. Both packing houses mentioned the darker color of fat on the carcasses, probably due to high carotene in the ration, as being detrimental to grade.

Summary

Another in a series of experiments designed to determine the most suitable supplements to corn silage for fattening cattle in North Dakota is reported. Four lots of yearling steers each were full-fed corn silage with varying supplements from October 15 to March 17, then sold by lots at auction. Carcass data were secured. The best gaining and highest selling and grading lot was full-fed corn silage plus 2½ pounds alfalfa hay, 2 pounds soybean oilmeal, 0.2 pounds steamed bonemeal, 0.07 pound trace mineralized salt, and 4 pounds grain after the initial 60 days on feed. The next best lot in gain and grade and the lot making most economical gains was fed the same as the best lot during the initial 60 days, after which soybean oilmeal was reduced to 1½ pounds and 1 pound grain was added.

Carcass grades were affected by the yellow color of fat, which can be attributed to the type of rations fed.