17. Average initial weight .......... 690 704 690 687 725
18. Average final weight .......... 877 895 883 898 853
19. Average gain ....... 187 191 193 211 128
20. Average daily gain .......... 1.82 1.85 1.87 2.05 1.66

21. Average daily ration, pounds:
   Corn .................. 12.14 11.11 11.91 11.11 10.94
   Soybean oil .......... 1.49 1.82 1.49 1.82 1.49
   Meal pellets ....... 1.96 — 1.77 — 2.00
   Alfalfa hay ...... 5.76 — 5.44 — 5.12
   Prairie hay ...... — — — — —
   Salt ........... 0.02 — 0.03 — 0.03
   Limestone ..... — 0.08 0.09 0.08 0.10

22. Bushels corn fed per heifer during this phase .. 22.33 20.43 21.91 20.43 15.05

23. Feed per cwt. of gain, pounds:
   Corn ........... 668.72 598.90 635.70 542.13 658.32
   Soybean oil .... 82.09 93.18 79.44 88.87 89.84
   Meal pellets ..... 108.02 — 94.21 — 120.31
   Alfalfa hay ..... 317.32 — 290.49 — 307.81
   Prairie hay .... — — — — —
   Salt ........ 1.19 — 1.50 — 1.56
   Limestone .. 5.40 4.29 4.76 3.88 6.02

24. Cost of food per 100 pounds gain $21.17 $17.05 $20.02 $15.45 $21.30
25. Total cost of food this phase ........ $39.59 $32.59 $38.64 $32.59 $27.26

Summary of Phases I, II, III
26. Average total gain
   (all phases) ...... 459 473 465 478 496
27. Average daily gain
   (all phases) ...... 1.35 1.41 1.37 1.41 1.29

28. Feed cost for 100 pounds gain
   (all phases) ...... $17.33 $15.20 $15.39 $14.37 $13.97
29. Total cost of feed, grass
   per heifer .......... $79.54 $72.65 $71.56 $68.69 $60.91
30. Initial cost per
    heifer at $23.50 cwt. ...... $98.23 $98.00 $98.23 $98.70 $98.00
31. Selling price per
    cwt. at market .. $29.00 $29.00 $28.50 $29.00 $27.50
32. Selling price
    per heifer .......... $248.24 $247.37 $246.24 $250.85 $231.83
33. Margin per heifer above feed cost, initial cost $70.47 $76.72 $76.46 $83.46 $72.92
34. Per cent shrink in shipping to market ...... 2.4 4.7 2.2 3.7 1.2
35. Dressing per cent ........ 60.3 61.9 59.6 61.3 57.3
36. Carcass grades, U. S.
   Average good .... — — — 1 —
   Low good ...... 3 3 — 2 —
   High commercial ... 5 3 5 5 3
   Average commercial ... 2 5 6 2 5
   Low commercial ... — — — 2 —

Feed prices: Ground shelled corn, $1.25 per bu.; cottonseed meal and soybean pellets, $75.00 per ton; sorghum silage, $6.50 per ton; prairie hay, $13.00 per ton; alfalfa hay, $17.00 per ton; salt and ground lime stone, $12.00 a ton.

Project 253-2: Wintering, Grazing and Fattening Heifers, 1949-50

The Use of Brome Grass in Fattening Yearling Heifers as Compared to Fattening in a Dry Lot—1950.
E. F. Smith, R. F. Cox, D. L. Good, D. L. Mackintosh

INTRODUCTION

The purpose of this study is to develop a system of fattening heifers for feeders who do not have native pasture or have no pasture. The plan of production is to buy good quality heifer calves in the fall, winter them well (which entails the feeding of about two pounds of grain per head daily in addition to roughage and protein). Following the winter period there are three alternatives being tested: full feed in dry lot; full feed on brome grass pasture; graze brome pasture early then full feed in dry lot.

EXPERIMENTAL PROCEDURE

Thirty good quality Hereford heifer calves were divided into three lots and wintered on 20 pounds of silage, 4-5 pounds of prairie hay and 2 pounds of corn per head daily, with different protein supplements and different roughage supplements and different brome grass pastures. The heifers were reeled on April 15 after the wintering period and received the following treatment after that date:

Lot 1—Full fed 104 days in dry lot (April 15-July 28)
Lot 2—Full fed 104 days on brome pasture (April 15-July 28)
Lot 3—Grazed 48 days on brome pasture (April 15-June 2);
Lot 4—Grazed 48 days on brome pasture (April 15-June 2);
Lot 5—Grazed 48 days on brome pasture (July 1-September 15), a total of 106 days on full feed.

OBSERVATIONS

1. Lot 5, which was grazed on brome 48 days and then full fed for
105 days, made the largest total gain, the largest full fed gain, returned more per heifer and graded the highest in the carcass.

2. Lot 2, full fed out on bromegrass, gained slightly more than Lot 1 full fed in dry lot. In two previous tests, the reverse was true.

3. Feed costs per heifer were higher for feeding out on bromegrass than in dry lot due to the cost of bromegrass charged at 10¢ per head per day.

**TABLE I—Full Feeding in Dry Lot vs. Bromegrass, 1950**

<table>
<thead>
<tr>
<th>Lot number</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number heifers per lot</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method of management</th>
<th>Wintered well on bromegrass</th>
<th>Wintered well on bromegrass</th>
<th>Wintered well on bromegrass</th>
</tr>
</thead>
<tbody>
<tr>
<td>In dry lot for 104 days</td>
<td>Wintered well on bromegrass</td>
<td>Wintered well on bromegrass</td>
<td>Wintered well on bromegrass</td>
</tr>
<tr>
<td>Pasture for 104 days</td>
<td>Wintered well on bromegrass</td>
<td>Wintered well on bromegrass</td>
<td>Wintered well on bromegrass</td>
</tr>
<tr>
<td>April 15</td>
<td>June 6</td>
<td>Full fed 105 days</td>
<td>Full fed 105 days</td>
</tr>
<tr>
<td>from June 6</td>
<td>Sept. 15,</td>
<td>the first 15 days on bromegrass</td>
<td>and the cost in dry lot</td>
</tr>
</tbody>
</table>

**Average initial weight** | 583 | 582 | 585 |
**Average final weight** | 785 | 800 | 870 |
**Average pasture gain (48 days)** | 46  | 46  | 46  |

**Average full fed gain (104 days):**

<table>
<thead>
<tr>
<th>Lot 2</th>
<th>Lot 3, 105 days</th>
<th>202</th>
<th>218</th>
<th>239</th>
</tr>
</thead>
</table>

**Average total gain—pasture and full fed** | 202 | 218 | 235 |

**Full feeding ration—average daily, pounds:**

| Ground shelled corn | 12.06 | 12.00 | 11.63 |
| Soybean oil meal pellets | 1.39 | .53 | 1.11 |
| Alfalfa hay | 1.67 | — | 1.45 |
| Prairie hay | 3.29 | — | 2.16 |
| Sorghum silage | 1.78 | — | — |
| Ground limestone | — | .05 | .07 |
| Salt | .05 | Free access | .02 |
| Brome grass | — | 4/15-7/28 | 6/2-7/1 |

| Corn consumed per heifer, bushels | .224 | .223 | .213 |

| Initial cost per heifer @ appraised value of $26.25 cwt. = 4/15-50 | $153.04 | $152.78 | $153.56 |
| Food cost per heifer | $38.00 | $40.31 | $42.36 |
| Heifer cost plus feed cost | $191.04 | $193.09 | $195.92 |
| Selling price per cwt. @ market | $29.00 | $29.00 | $28.40 |
| Selling price per heifer | $227.65 | $223.00 | $247.98 |
| Margin per heifer above feed cost and initial cost | $36.69 | $38.91 | $51.16 |

**Carcass grades—U. S.:**

| Average good | 2 | 2 | 4 |
| Low good | 8 | 6 | 4 |
| High commercial | — | — | 2 |

**Feed prices:**
- Corn, $1.25 a bu.
- Soybean pellets, $75 a ton
- Alfalfa hay, $17.00 a ton
- Prairie hay, $13.00 a ton
- Silage, $6.50 a ton
- Ground limestone or salt, $12.00 a ton
- Brome grass, 10¢ per head per day

**Project 253-2: Wintering, Grazing and Fattening Heifers**

WINTERING HEIFER CALVES THAT ARE TO BE FATTED FOR THE SUMMER OR EARLY FALL MARKET, 1950-51

E. F. Smith, D. L. Good, R. F. Cox

**INTRODUCTION**

This is a report of the wintering phase of this test. Following this phase the different lots will either be full-fed or go to grass and be full-fed after the grazing period. The objective of the test is to develop a method of fattening heifers similar to the deferred full-feeding system for steer calves.

The 1950-51 wintering test included:

1. a comparison of grain and no grain in the wintering ration of heifer calves;
2. a comparison of expeller type soybean oil meal pellets and hydraulic extracted cottonseed oil meal pellets.

**EXPERIMENTAL PROCEDURE**

Seventy good quality Hereford heifer calves were used in this test. They were divided into seven lots of 10 head each. The system of management planned for each lot follows:

Lot (1) wintered with 2 pounds grain, soybean oil meal pellets (expeller type), sorghum silage and prairie hay; grazed May 1 to July 15 on bluestem pasture; full-fed 100 days in dry lot.

Lot (2) wintered with 2 pounds grain, soybean oil meal pellets (expeller type), sorghum silage, prairie hay; grazed April 16 to July 1 on brome pasture; started on feed on brome pasture June 1; moved to dry lot July 1 for completion of 100-day full-feeding period.

Lot (3) wintered with 2 pounds grain, cottonseed oil meal pellets (hydraulic extracted), sorghum silage, prairie hay; full-fed on brome pasture for 100 days following winter period.

Lot (4) wintered with 2 pounds grain, cottonseed oil meal pellets (hydraulic extracted), sorghum silage, prairie hay; full-fed 100 days in dry lot after wintering period.

Lot (6) wintered with 4 pounds of grain, soybean oil meal pellets, sorghum silage, prairie hay; full-fed 100 days in dry lot following the winter period.

Lot (6) wintered with sorghum silage, prairie hay, soybean oil meal pellets; bluestem pasture May 1 to July 15; full-fed in dry lot 100 days after July 15.

Lot (7) wintered with sorghum silage, prairie hay, soybean oil meal pellets; bluestem pasture May 1 to August 10; fed protein July 15 to August 10 on bluestem pasture; full-fed in dry lot after August 10 for about 15 days.

**OBSERVATIONS**

1. The addition of 2 pounds of milo grain to the ration increased the gain approximately a quarter of a pound per head daily. Compare Lots (1) and (2) with Lots (6) and (7).
2. The addition of 4 pounds of milo grain to the ration increased