UNIVERSITY OF IDAHO
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# Delayed Concentrate Feeding of Steers

## 1. As Affected by Time and Type of Roughage

R. F. JOHNSON
T. B. KEITH
W. P. LEHRER, JR.

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## Digest

IT should be of considerable interest to the livestockman of Idaho to know that feeding only alfalfa hay or an alfalfa-hay-corn silage roughage mixture during the early part of the fattening period may reduce feed costs as much as 49.2 percent.

The length of time a roughage alone may be fed will depend upon price relationships of grades of steers and roughage-to-concentrate mixtures.

The feeding of the total allotted concentrate allowance during the last half of the fattening period saved 14.1 percent of the cost of 100 lb. gain over the cost of gains of steers fed the concentrate mixture equally proportioned over the entire feeding period.

Feeding a concentrate mixture throughout the fattening period will produce the most rapid steer gains.

# Delayed Concentrate Feeding of Steers

## 1. As Affected by Time and Type of Roughage

R. F. JOHNSON, T. B. KEITH, and W. P. LEHRER, JR.*

Beef cattle feeders frequently encounter price situations in which the feeding of a concentrate mixture over a long fattening period is too expensive for profitable returns. Under conditions common to the irrigated areas in Idaho, where beef cattle feeding operations are located, roughages are generally cheaper and more prevalent than concentrates. Corn silage and alfalfa hay are available in large quantities in many sections of Idaho. When a mixture of these two roughages is fed to fattening steers, the palatability of the ration is improved. The alfalfa hay supplies a high-quality protein and easily available calcium. Any system of feeding that will increase the efficiency of the utilization of these two roughages would contribute to a more economical steer feeding program for Idaho.

### Objectives

The main objectives were to determine:

(1) The maximum time a roughage may be fed to fattening steers previous to the concentrate allowance to obtain optimum monetary returns.

(2) The length of time the concentrate mixture should be fed to fattening steers to insure the greatest monetary returns.

(3) The kind and combination of roughages for optimum returns of fattening steers fed an all-roughage ration during the initial stages of the fattening period.

### Test I (1954-55)

#### OBJECTIVES

The objectives of the first test were to determine the number of days that a roughage mixture may be fed to fattening steers previous to feeding the concentrate mixture with a roughage for optimum returns in feed utilization and for greatest monetary returns of the carcass.

* Superintendent of the University of Idaho Branch Station, Caldwell, Idaho. (Deceased —March 13, 1958); Animal Husbandman; Associate Animal Husbandman, respectively, University of Idaho Agricultural Experiment Station.

## EXPERIMENTAL PROCEDURE

Sixty yearling Hereford steers were purchased at a local sale yard. They were divided into 6 lots of 10 each and fed by the group-feeding method for a period of 168 days from November 30, 1954 to May 17, 1955. The experimental feeding design, shown in Table 1, was as follows: One group (Lot 1) was fed a concentrate mixture with the roughage mixture throughout the entire feeding period of 168 days. The second group (Lot 2) was fed only the roughage mixture during the first 28 days and a daily allowance of a concentrate mixture with the roughage mixture

**Table 1. Comparative gains, feed intakes, and feed requirements of steers fed a roughage combination 28 to 140 days before feeding the concentrate mixture (total feeding period 168 days—November 30, 1954 to May 17, 1955)**

| Lot No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| No. steers | 10 | 10-9* | 10 | 10 | 10-8* | 10-9* |
| Initial wt. lb. | 748 | 746 | 756 | 750 | 757 | 756 |
| Days fed only roughage | none | 28 | 56 | 84 | 112 | 140 |
| Days fed roughage & conc. | 168 | 140 | 112 | 84 | 56 | 28 |
| Total days on feed | 168 | 168 | 168 | 168 | 168 | 168 |
| Final weight, lb. 112 days | 995 | 967 | 980 | 961 | 944 | 972 |
| 140 days | 1045 | 1024 | 1019 | 996 | 969 | 1080 |
| 168 days | 1109 | 1098 | 1084 | 1063 | 1071 | 1064 |
| Av. daily gain, lb. | | | | | | |
| 112 days | 2.21 | 1.97 | 1.99 | 1.88 | 1.67 | 1.92 |
| 140 days | 2.12 | 1.98 | 1.88 | 1.76 | 1.51 | 1.54 |
| 168 days | 2.15 | 1.94 | 1.95 | 1.86 | 1.71 | 1.74 |
| Av. daily conc. lb. | | | | | | |
| 112 days | 7.6 | 5.6 | 3.6 | 1.7 | none | none |
| 140 days | 7.7 | 6.1 | 4.5 | 3.0 | 1.4 | none |
| 168 days | 7.8 | 6.6 | 5.2 | 4.0 | 2.6 | 1.3 |
| Av. daily hay, lb. | | | | | | |
| 112 days | 10.0 | 11.5 | 11.9 | 12.3 | 13.2 | 13.6 |
| 140 days | 10.1 | 11.4 | 11.5 | 11.7 | 12.8 | 13.9 |
| 168 days | 9.6 | 10.9 | 10.8 | 11.0 | 12.3 | 13.1 |
| Av. daily silage, lb. | | | | | | |
| 112 days | 14.8 | 16.8 | 19.2 | 20.7 | 21.8 | 21.8 |
| 140 days | 15.1 | 16.6 | 18.5 | 19.7 | 21.1 | 22.2 |
| 168 days | 15.1 | 16.7 | 18.0 | 19.0 | 20.8 | 21.9 |
| Feed per 100 lb. gain, lb. | | | | | | |
| 112 days | 1467 | 1720 | 1740 | 1841 | 2098 | 1846 |
| 140 days | 1547 | 1723 | 1840 | 1957 | 2328 | 2348 |
| 168 days | 1515 | 1758 | 1745 | 1821 | 2082 | 2086 |

*Number of steers on test after 140 days.

during the remaining 140 days. The third group (Lot 3) was fed only the roughage mixture for the first 56 days, and the concentrate mixture with the roughage mixture during the remaining 112 days. The fourth group (Lot 4) was fed only the roughage mixture for the first 84 days, and the concentrate mixture with the roughage mixture during the remaining 84 days. The fifth group (Lot 5) was fed only the roughage mixture for the first 112 days, and the concentrate mixture with the roughage mixture for the remaining 56 days. The sixth group (Lot 6) was fed only the roughage mixture the first 140 days, and a concentrate mixture with the roughage mixture for the remaining 28 days. The concentrate mixture was composed of 49 parts ground barley, 24.5 parts ground oats, 24.5 parts dried molasses beet pulp and 2 parts

salt. The roughage mixture was composed of 40 parts alfalfa hay and 60 parts of corn silage.

## EXPERIMENTAL RESULTS

The data on the details of gain, feed consumption and feed requirements for the various periods of feeding of the six lots are shown in Table 1. The steers (Lot 1) fed the concentrate mixture with the roughage mixture for the entire period made 20, 40 and 37 percent more rapid gains than Lots 4, 5 and 6 respectively, during the first 140 days of feeding. The steers in Lot 4 were fed

**Table 2. Average daily fed intake by feedstuffs and periods (1954-55)**

| Period | Days in period | Alfalfa hay | Corn silage | Concentarte mixture | Total |
|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. |
| | | | Lot 1 | | |
| 1 | 28 | 10.3 | 15.4 | 6.3 | 32.0 |
| 2 | 28 | 10.4 | 15.4 | 8.0 | 33.8 |
| 3 | 28 | 9.4 | 14,0 | 8.0 | 31.4 |
| 4 | 28 | 9.7 | 14.5 | 8.0 | 32.2 |
| 5 | 28 | 10.7 | 16.0 | 8.0 | 34.7 |
| 6 | 28 | 7.2 | 15.3 | 8.8 | 31.2 |
| | | | Lot 2 | | |
| 1 | 28 | 14.6 | 21.3 | — | 35.9 |
| 2 | 28 | 11.9 | 17.4 | 6.5 | 35.8 |
| 3 | 28 | 9.6 | 14.0 | 8.0 | 31.6 |
| 4 | 28 | 9.9 | 14.5 | 8.0 | 32.4 |
| 5 | 28 | 11.0 | 16.0 | 8.0 | 35.0 |
| 6 | 28 | 8.0 | 16.0 | 9.3 | 34.2 |
| | | | Lot 3 | | |
| 1 | 28 | 13.2 | 21.3 | — | 34.5 |
| 2 | 28 | 14.3 | 23.1 | — | 37.5 |
| 3 | 28 | 11.0 | 17.8 | 6.4 | 35.2 |
| 4 | 28 | 9.0 | 14.5 | 8.0 | 31.5 |
| 5 | 28 | 9.9 | 16.0 | 8.0 | 33.9 |
| 6 | 28 | 7.2 | 15.3 | 8.8 | 31.3 |
| | | | Lot 4 | | |
| 1 | 28 | 12.7 | 21.3 | — | 34.0 |
| 2 | 28 | 13.7 | 23.1 | — | 36.9 |
| 3 | 28 | 12.5 | 21.0 | — | 33.5 |
| 4 | 28 | 10.2 | 17.2 | 6.9 | 34.4 |
| 5 | 28 | 9.5 | 16.0 | 8.0 | 33.5 |
| 6 | 28 | 7.2 | 15.3 | 8.8 | 31.3 |
| | | | Lot 5 | | |
| 1 | 28 | 12.9 | 21.3 | — | 34.2 |
| 2 | 28 | 14.0 | 23.1 | — | 32.2 |
| 3 | 28 | 12.7 | 21.0 | — | 33.7 |
| 4 | 28 | 13.2 | 21.8 | — | 34.9 |
| 5 | 28 | 11.0 | 18.1 | 7.0 | 36.2 |
| 6 | 28 | 9.0 | 19.1 | 10.0 | 30.4 |
| | | | Lot 6 | | |
| 1 | 28 | 13.3 | 21.3 | — | 34.6 |
| 2 | 28 | 14.5 | 23.1 | — | 37.6 |
| 3 | 28 | 13.1 | 21.0 | — | 34.1 |
| 4 | 28 | 13.6 | 21.8 | — | 35.3 |
| 5 | 28 | 15.0 | 24.0 | — | 39.0 |
| 6 | 28 | 8.5 | 20.2 | 8.5 | 37.1 |

the roughage mixture alone for 84 days and those in Lots 5 and 6, 112 and 140 days, respectively. These differences in gain were significant.

When a comparison of gains for the 168-day feeding period was made, the steers in Lot 1 gained 10, 10, 13, 20 and 19 percent faster than the steers in Lots 2, 3, 4, 5 and 6, respectively. The 13, 20 and 19 percent differences in gains were significant.

The average daily feed intake of the concentrate mixture, alfalfa hay and corn silage for the periods of time ending at 112, 140 and 168 days for each group is shown in Table 1. The average daily feed intake of the concentrate mixture, alfalfa hay and corn silage for each period within each lot is shown in Table 2.

The estimated dressing percent, grade value per 100 lb. of live weight and market grades of the steers of each lot are shown in Table 3. These values were estimated at the end of 140 days of feeding. This was done to get the approximate comparative value of the steers with Lot 6 which had been fed alfalfa hay and corn silage without the concentrate mixture.

Four steers were ready for market at the end of 140 days of feeding: One from Lot 2, which received the roughage mixture alone for 28 days and the concentrate mixture with the roughage mixture for 112 days; two from Lot 5, which received the rough-

**Table 3. Estimated market grades, price per 100 lb. live weight, and dressing percentage at the end of 140 days of feeding**

| Lots | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Estimated dressing percentage | 59 | 58 | 57 | 57 | 56 | 55.5 |
| Estimated grade value per 100 lb. | $20.85 | $20.54 | $19.53 | $19.33 | $18.27 | $18.65 |
| Market grades (actual) | Number per lot | | | | | |
| Choice | 2 | | | | | 1 |
| Low choice | 2 | 4 | | | | |
| High good | 2 | 1 | 2 | 1 | 1 | |
| Good | 3 | 4 | 3 | 2 | | |
| Low good | 1 | | 3 | 6 | 2 | 3 |
| High commercial | | 1 | 2 | 1 | 4 | 3 |
| Commercial | | | | | 1 | 3 |
| Low commercial | | | | | 1 | |
| Utility | | | | | 1 | |

**Table 4. Time required for the steers in each treatment to be ready for market (grade basis)**

| Lot No. | No. of steers fed 140 days | No. of steers fed 168 days | No. of steers fed 206 days | Total steer days for market |
|---|---|---|---|---|
| 1 | | 9 | 1 | 1718 |
| 2 | 1 | 9 | | 1652 |
| 3 | | 4 | 6 | 1908 |
| 4 | | 2 | 8 | 2320 |
| 5 | 2 | 3 | 5 | 1814 |
| 6 | 1 | 1 | 8 | 1956 |

age mixture alone for 112 days and the concentrate mixture with the roughage mixture for 28 days; and, one from Lot 6 which received the roughage mixture only for 140 days (Table 1). Lots 4 and 6 had eight steers each that required 206 days of feeding to be ready for market. The ration combination fed in Lots 1, 3 and 5 required 206 days to market one, six and five steers respectively. Those steers that were not ready for market at the end to 168 days were fed 10 lb. of the concentrate mixture with the roughage for 38 days (Table 4). No live weight data were recorded.

The relative cost of total gain per steer was calculated for each treatment. This was done by using average prices for alfalfa hay, corn silage and the ingredients of the concentrate mixture. A comparison of the percentage differences in feed costs of the six groups of steers is shown in Table 5.

The steers fed roughage alone for the first 140 days and 8.5 lb. of the concentrate mixture during the last 28 days had a 49.2 percent saving in feed cost over those steers fed roughage and concentrate for the entire 168 days. The total feed cost per steer decreased with delayed concentrate feeding from 15.1 to 49.2 percent of Lot 1 over Lots 3, 4, 5 and 6 (Table 5).

**Table 5. Percentage increase in feed costs between each of the 6 different treatments**

| Lot comparison | Increased feed cost | Lot comparison | Increased feed cost | Lot comparison | Increased feed cost |
|---|---|---|---|---|---|
| 1 over 2 | 4.5 | 2 over 3 | 20.2 | 3 over 4 | 9.4 |
| 1 over 3 | 15.1 | 2 over 4 | 31.5 | 3 over 5 | 20.3 |
| 1 over 4 | 25.9 | 2 over 5 | 44.6 | 3 over 6 | 28.8 |
| 1 over 5 | 38.4 | 2 over 6 | 51.8 | 4 over 5 | 9.1 |
| 1 over 6 | 49.2 | | | 4 over 6 | 17.8 |
| | | | | 5 over 6 | 7.1 |

## SUMMARY (TEST 1)

The steers fed the concentrate mixture throughout the entire 168 days of feeding made the most rapid gains.

The steers fed the roughage mixture for 140 days and fed 8.5 lb. of the concentrate mixture with the roughage during the last 28 days made 49.2 percent more economical gains than those steers fed the concentrate mixture with the roughage during the entire 168 days. However, they required approximately 28 days additional feeding with 10 lb. of the concentrate mixture and the roughage mixture to be ready for market.

## Test 2 (1955-56)

### OBJECTIVES

The objectives of Test 2 were to determine the quantity of corn silage to use in the roughage mixture when the feeding of the concentrate mixture was delayed until the latter part of the feeding test, and when the same total quantity of concentrate mixture was allowed for each group of 10 steers.

### EXPERIMENTAL PROCEDURE

Sixty yearling Hereford steers were purchased and divided into 6 groups of 10 each on the basis of live weight and fed by the

**Table 6. Comparative gains, feed intakes and feed requirements of steers fed roughage without the concentrate mixture, 154, 84 and 77 days before feeding the concentrate mixture. (Total feeding period of 154 days—November 29, 1955 to May 1, 1956)**

| Lot No. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| No. steers | 10 | 10 | 10 | 10 | 10 | 10 |
| Initial, wt. lb. | 758 | 758 | 757 | 752 | 755 | 750 |
| Days fed only roughage | none | none | 70 | 70 | 77 | 77 |
| Days fed roughage plus concentrate | 154 | 154 | 84 | 84 | 77 | 77 |
| Total days on test | 154 | 154 | 154 | 154 | 154 | 154 |
| Silage percentage | 60 | 75 | 60 | 75 | 60 | 75 |
| Final wt. lb. | | | | | | |
| 112 days | 1018 | 1018 | 1010 | 979 | 950 | 955 |
| 140 days | 1056 | 1073 | 1076 | 1038 | 1069 | 1042 |
| 154 days | 1084 | 1101 | 1108 | 1074 | 1112 | 1093 |
| Av. daily gain lb.* | | | | | | |
| 112 days | 2.32 | 2.32 | 2.27 | 2.01 | 1.74 | 1.84 |
| 140 days | 2.14 | 2.25 | 2.29 | 2.03 | 2.24 | 2.09 |
| 154 days | 2.12 | 2.23 | 2.28 | 2.08 | 2.48 | 2.23 |
| Av. daily conc. lb. | | | | | | |
| 112 days | 7.6 | 7.6 | 5.3 | 5.3 | 4.6 | 4.6 |
| 140 days | 7.7 | 7.6 | 6.6 | 6.6 | 6.4 | 6.4 |
| 154 days | 7.7 | 7.7 | 7.1 | 7.1 | 7.2 | 7.3 |
| Av. daily hay, lb. | | | | | | |
| 112 days | 10.6 | 7.2 | 11.8 | 8.0 | 11.6 | 8.3 |
| 140 days | 10.9 | 7.3 | 11.5 | 7.6 | 10.8 | 7.8 |
| 154 days | 11.0 | 7.4 | 11.3 | 7.4 | 10.6 | 7.7 |
| Av. daily silage, lb. | | | | | | |
| 112 days | 16.9 | 21.2 | 18.8 | 23.8 | 18.4 | 24.6 |
| 140 days | 17.2 | 21.8 | 18.0 | 22.6 | 17.1 | 23.2 |
| 154 days | 17.2 | 22.0 | 17.7 | 22.2 | 16.2 | 23.4 |
| Feed per 100 lb. gain, lb. | | | | | | |
| 112 days | 1516 | 1544 | 1591 | 1825 | 1980 | 2048 |
| 140 days | 1673 | 1633 | 1584 | 1801 | 1533 | 1799 |
| 154 days | 1698 | 1663 | 1591 | 1759 | 1463 | 1686 |

*Differences were not statistically different

group-feeding system for a period of 154 days from November 29, 1955 to May 1, 1956. The concentrate mixture was the same as used in Test 1.

The feeding procedure was as follows: One group (Lot 1) was fed a roughage mixture of 40 parts alfalfa hay and 60 parts corn silage (actual weight basis) with 8 lb. of the concentrate mixture during the feeding period of 154 days. One group (Lot 2) was fed a roughage mixture of 25 parts alfalfa and 75 parts corn silage with 8 lb. of the concentrate mixture during the feeding period of 154 days. One group (Lot 3) was fed a roughage mixture of 40 parts alfalfa hay and 60 parts corn silage for 70 days and approximately 12 lb. of the concentrate mixture with the roughage for the remaining 84 days. One group (Lot 4) was fed a roughage mixture of 25 parts alfalfa hay and 75 parts corn silage for 70 days and approximately 12 lb. of the concentrate mixture with the roughage for the remaining 84 days. On group (Lot 5) was fed a roughage mixture of 40 parts alfalfa hay and 60 parts corn silage for 77 days, and approximately 14 lb. of the concentrate mixture with the roughage for the remaining 77 days. One group (Lot 6) was fed a roughage mixture of 25 parts alfalfa hay and 75 parts corn silage for 77 days and approximately 14 pounds of the concentrate mixture with the roughage for the remaining 77 days of the feeding test.

The comparative gains, feed intakes and feed requirements of the steers in each lot are shown in Table 6. These steers in Lots 1 and 2, which were fed the concentrate mixture throughout the test period, made the most rapid gains during the first 112 days. The steers fed roughage alone (Lot 5) the first 77 days and the concentrate mixture with the roughage the remaining 77 days made the most rapid gains, averaging 2.48 lb. per day. However, these gains were not significantly greater statistically than the gains made by the steers fed the other five rations.

The cheapest gains for each 100 lb. increase in live weight were made by the steers of Lots 5 and 6. These were $15.22 and $15.59, respectively. The most expensive gains were made by the steers in Lot 1. This was $17.73 for each 100 lb. gain in live weight. The cost of 100 lb. gain for the steers in Lots 2, 3, and 4 was $15.89, $16.13, and $16.36, respectively.

**Table 7. Average daily feed intake by feeds and periods (1955-56).**

| Period | Days in period | Alfalfa hay | Corn silage | Concentrate mixture | Total |
|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. |
| | | | Lot 1 | | |
| 1 | 28 | 10.7 | 20.0 | 6.3 | 36.9 |
| 2 | 28 | 10.4 | 15.6 | 8.0 | 34.0 |
| 3 | 28 | 10.4 | 15.6 | 8.0 | 34.1 |
| 4 | 28 | 11.1 | 16.6 | 8.0 | 35.8 |
| 5 | 28 | 12.0 | 18.0 | 8.0 | 37.9 |
| 6 | 14 | 12.0 | 18.0 | 8.0 | 38.0 |
| | | | Lot 2 | | |
| 1 | 28 | 8.1 | 23.1 | 6.2 | 37.5 |
| 2 | 28 | 6.0 | 18.0 | 8.0 | 32.0 |
| 3 | 28 | 6.1 | 18.4 | 8.0 | 32.6 |
| 4 | 28 | 8.5 | 25.4 | 8.0 | 41.9 |
| 5 | 28 | 8.0 | 24.0 | 8.0 | 40.0 |
| 6 | 14 | 8.0 | 24.0 | 8.0 | 40.0 |
| | | | Lot 3 | | |
| 1 | 28 | 12.6 | 23.0 | — | 35.8 |
| 2 | 28 | 14.0 | 21.0 | — | 35.0 |
| 3 | 28 | 11.0 | 16.5 | 9.1 | 36.6 |
| 4 | 28 | 9.7 | 14.6 | 12.0 | 36.3 |
| 5 | 28 | 10.0 | 15.0 | 12.0 | 37.0 |
| 6 | 14 | 10.0 | 15.0 | 12.0 | 37.0 |
| | | | Lot 4 | | |
| 1 | 28 | 9.5 | 27.9 | — | 37.5 |
| 2 | 28 | 9.5 | 28.5 | — | 38.0 |
| 3 | 28 | 7.2 | 21.5 | 9.1 | 37.8 |
| 4 | 28 | 5.7 | 17.2 | 12.0 | 35.0 |
| 5 | 28 | 6.0 | 18.0 | 12.0 | 36.0 |
| 6 | 14 | 6.0 | 18.0 | 12.0 | 36.0 |
| | | | Lot 5 | | |
| 1 | 28 | 12.4 | 22.9 | — | 35.4 |
| 2 | 28 | 14.0 | 21.0 | — | 35.0 |
| 3 | 28 | 14.0 | 21.0 | 3:6 | 38.7 |
| 4 | 28 | 5.8 | 8.7 | 14.6 | 29.1 |
| 5 | 28 | 7.9 | 11.8 | 14.0 | 33.7 |
| 6 | 14 | 8.0 | 7.7 | 14.0 | 29.7 |
| | | | Lot 6 | | |
| 1 | 28 | 9.6 | 27.3 | — | 37.0 |
| 2 | 28 | 9.5 | 28.5 | — | 38.0 |
| 3 | 28 | 9.5 | 28.5 | 3.6 | 41.7 |
| 4 | 28 | 4.7 | 14.2 | 14.6 | 33.6 |
| 5 | 28 | 5.9 | 17.7 | 14.0 | 37.6 |
| 6 | 14 | 6.0 | 18.0 | 14.0 | 38.0 |

The actual daily feed consumption for each period of each group is shown in Table 7. The total feed consumption per steer for the total feeding period of 154 days is shown in Table 8. The average concentrate mixture consumption per steer for the six groups

ranged from 1184 lb. for Lot 1 to 1099 lb. for Lots 5 and 6. The experiment was designed to feed a total of 1200 lb. of concentrate per steer in each treatment.

**Table 8. Total consumption of feeds per steer during 154 days.**

| Lot | Concentrate mixture | Alfalfa hay | Corn silage |
|---|---|---|---|
| | lb. | lb. | lb. |
| 1 | 1184 | 1695 | 2650 |
| 2 | 1183 | 1140 | 3384 |
| 3 | 1095 | 1745 | 2732 |
| 4 | 1095 | 1146 | 3417 |
| 5 | 1099 | 1626 | 2499 |
| 6 | 1099 | 1182 | 3506 |

No actual significant differences were observed in the rate and economy of gains between those groups fed the 60 percent corn silage roughage and 75 percent corn silage roughage. A summary of the data on the steers fed each level of corn silage are presented in Table 9.

**Table 9. Comparative results of gains of steers fed two levels of corn silage.**

| | Silage level | |
|---|---|---|
| | 60 percent | 75 percent |
| No. steers | 30 | 30 |
| Initial, wt. lb. | 756 | 753 |
| Final, wt. lb. | 1101 | 1089 |
| Total gain, wt. lb. | 345 | 336 |
| Av. daily gain, wt. lb. | 2.24 | 2.19 |
| Feed per 100 lb. gain, wt. lb. | 1569 | 1702 |

The market grades of the steers within lot treatments were determined at the end of the feeding test and are shown in Table 10. Ten steers in each lot are considered insufficient for an accurate estimate of the effect of these rations on market grades. The steers fed the concentrate mixture (Lot 5) during the last 77 days of the 154 days of feeding made more economical gains than the steers fed the concentrate mixture during the entire 154 days as was done in Lot 1. A saving of $2.51 per 100 lb. of live weight gain could easily offset the difference in market value of the two lots of steers under average sale prices.

**Table 10. Market grades of steers within each system of feeding (May 1, 1956)**

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Market grades: | Number per lot | | | | | |
| Choice | 7 | 8 | 8 | 5 | 6 | 1 |
| Good | 3 | 2 | 2 | 4 | 4 | 9 |
| Standard | | | | 1 | | |

### SUMMARY (TEST 2)

In a 154-day feeding test, steers fed the same quantity of the concentrate mixture during the last half (77 days) made the most economical gains.

The market grades of those steers fed the concentrate mixture during the 154 days were higher than those fed the same total concentrate mixture during the final 77 days of feeding.

No differences in rate and economy of gains and market grades were observed between lots of steers fed 60 percent corn silage in the roughage mixture as compared to the lots fed 75 percent corn silage.

## Conclusions

Delaying the concentrate mixture feeding to the last 28 days of a 168-day fattening period reduced the feed costs per steer 49.2 percent.

The feeding of 1099 lb. of the concentrate mixture per steer during the last 77 days of the 154-day fattening period saved 14.1 percent of the cost of 100 lb. gain when compared to the feed cost of steers fed 1184 lb. of the concentrate mixture for the entire 154 days.

Steers fed the concentrate mixture at the beginning of the fattening period and fed at a constant daily rate had a slightly higher market grade.

The difference between the market price for choice and good steers should be relatively high to offset the difference in feed costs of steers fed the concentrate mixture during the latter part of the fattening period as compared to those fed the concentrate mixture the entire fattening period