

# AGRICULTURAL EXPERIMENT STATION

KANSAS STATE AGRICULTURAL COLLEGE  
MANHATTAN, KANSAS

DEPARTMENT OF ANIMAL HUSBANDRY



FAT LAMBS GOING TO MARKET, JANUARY 6, 1920

## LAMB FEEDING INVESTIGATIONS, 1919-20

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Feeding lambs is an excellent way to market farm crops, especially the cheap rough feeds that are otherwise difficult to market or have little market value. It is also a splendid method of assisting in maintaining soil fertility which is so essential to permanent agriculture.

The Department of Animal Husbandry of the Kansas Agricultural Experiment Station fed out 410 lambs during the winter of 1919-20 for the purpose of securing additional information that might be helpful to sheep feeders. These investigations may be divided into two groups.

## GROUP I

### LAMB FEEDING INVESTIGATIONS

The specific objects of this group of experiments were:

1. To compare the efficiency and economy of handfeeding and self-feeding corn and oilmeal to light compactly built lambs, these feeds in each case being fed with alfalfa hay and silage.
2. To determine whether it is advisable to grind corn for fattening lambs when fed with alfalfa hay and silage.
3. To determine whether shelled corn may be replaced by whole barley when both are fed with alfalfa hay and silage.
4. To determine the value of stock tonic when fed with corn, oilmeal, alfalfa hay, and silage.

#### FEEDING PLAN

Two hundred close-wool, low-set, compact lambs were purchased on the Kansas City market at \$11 per hundredweight. On November 2, 1919, they were divided into five lots of 40 head each, care being taken to have each lot as uniform in weight and conformation as possible.

Each lot was weighed on three consecutive days and the average of the three weights used as the initial weight. They were weighed every 20 days and the final weight used in determining the results of the experiment was the actual selling weight on the Kansas City market.

The lambs were started on feed slowly. The silage was fed in the evening and the alfalfa hay in the morning. They were fed for a period of 64 days.

#### QUARTERS

The lambs were quartered in a shed open to the south which provided 280 square feet of shed space for each lot.

The lot space outside the shed occupied by each group was 13 feet wide and 100 feet long. The lots had ample slope to give proper drainage which made the yards fairly dry at all times. The handfed lambs were fed in combination racks, and the self-fed lambs in self-feeders. All lambs had access to fresh water and salt throughout the experiment.

## LAMB FEEDING INVESTIGATIONS

### RESULTS

Detailed results secured in feeding Group I are given in Table I.

TABLE I.—RESULTS OF LAMB FEEDING INVESTIGATIONS, GROUP I  
(Feeding period, 64 days)

| Lot No.....  | (a) 1         | (b) 2         | (b) 3         | (b) 4         | (b) 5         |
|--|---------------|---------------|---------------|---------------|---------------|
| Number of lambs in lot.....  | 40            | 40            | 40            | 40            | 40            |
|  | <i>Pounds</i> | <i>Pounds</i> | <i>Pounds</i> | <i>Pounds</i> | <i>Pounds</i> |
| Average initial weight per lamb at feedlot.....                    | 55.87         | 56.03         | 55.43         | 56.41         | 55.20         |
| Average final weight per lamb at feedlot.....                      | 88.34         | 86.79         | 85.39         | 83.85         | 85.09         |
| Average daily gain per lamb.....                                   | .51           | .48           | .47           | .43           | .47           |
| Average selling weight per lamb at Kansas City.....                | 83.00         | 80.25         | 79.25         | 78.25         | 79.25         |
| Average daily ration per lamb:                                     |               |               |               |               |               |
| Shelled corn.....  | 1.40          | 1.25          |               |               | 1.25          |
| Ground corn.....   |               |               | 1.25          |               |               |
| Whole barley.....  |               |               |               | 1.25          |               |
| Linseed oilmeal.....   | .55           | .14           | .14           | .14           | .14           |
| Alfalfa hay.....   | 1.04          | 1.27          | 1.26          | 1.27          | 1.23          |
| Cane silage.....   | 1.38          | 1.86          | 1.86          | 1.86          | 1.83          |
| Stock tonic.....   |               |               |               |               | Ad libitum    |
| Feed required for 100 pounds gain:                                 |               |               |               |               |               |
| Shelled corn.....  | 275.83        | 260.82        |               |               | 268.39        |
| Ground corn.....   |               |               | 267.79        |               |               |
| Whole barley.....  |               |               |               | 292.35        |               |
| Linseed oilmeal.....   | 108.51        | 29.42         | 30.21         | 32.98         | 30.28         |
| Alfalfa hay.....   | 205.54        | 263.75        | 269.12        | 296.08        | 264.29        |
| Cane silage.....   | 271.36        | 386.48        | 396.80        | 434.10        | 390.99        |
| Stock Tonic.....   |               |               |               |               | Ad libitum    |
| Cost of feed for 100 pounds gain.....                              | \$15.82       | \$13.27       | \$13.88       | \$15.65       | \$13.54       |
| Average initial cost per lamb at feedlot.....                      | 6.27          | 6.28          | 6.22          | 6.33          | 6.19          |
| Average labor cost per lamb.....                                   | .30           | .40           | .40           | .40           | .40           |
| Average feed cost per lamb.....                                    | 5.17          | 4.12          | 4.20          | 4.28          | 4.08          |
| Interest per lamb on investment at 8 percent.....                  | .159          | .146          | .146          | .148          | .144          |
| Interest per lamb on equipment at 6 percent.....                   | .067          | .067          | .067          | .067          | .067          |
| Shipping and selling cost per lamb.....                            | .33           | .33           | .33           | .33           | .33           |
| Total cost per lamb when sold at Kansas City.....                  | 12.296        | 11.343        | 11.363        | 11.655        | 11.211        |
| Selling price per lamb at Kansas City.....                         | 15.56         | 14.85         | 14.78         | 14.24         | 14.58         |
| Net profit per lamb.....   | 3.264         | 3.507         | 3.417         | 2.585         | 3.369         |
| Necessary selling price per cwt. at Kansas City to break even..... | 14.81         | 14.13         | 14.34         | 14.89         | 14.59         |
| Selling price per cwt. at Kansas City.....                         | 18.75         | 18.50         | 18.65         | 18.20         | 18.40         |
| Percent of shrinkage in marketing.....                             | 6.04          | 7.54          | 6.01          | 6.68          | 6.60          |
| Dressing percent.....  | 50.6          | 49.1          | 48.8          | 48.2          | 49.5          |

(a) Grain and protein supplement, self-fed.  
(b) Grain and protein supplement, handfed.

Price of feeds: Shelled corn, \$1.55 per bushel; ground corn, 10 cents per hundred additional for grinding; barley, \$1.45 per bushel; linseed oilmeal, \$84 per ton; alfalfa hay, \$25 per ton; silage, \$8 per ton.

### SUMMARY

1. The self-fed lambs (lot 1) made 0.03 of a pound greater average daily gain per lamb than the lambs in the handfed lot (lot 2) receiving the same ration. These handfed lambs, however, made 100 pounds of gain for \$2.75 less and made a profit of 24 cents per lamb more than the self-fed lambs.
2. The lambs fed shelled corn (lot 2) made 0.01 of a pound greater average daily gain per lamb than those fed ground corn (lot 3). The lambs fed shelled corn, moreover, made 100

pounds of gain for 61 cents less and made a profit of 9 cents per lamb more than the lambs fed ground corn.

3. The lambs fed shelled corn made 0.05 of a pound greater average daily gain per lamb than those (lot 4) fed whole barley. Further, the lambs fed shelled corn made 100 pounds of gain for \$2.39 less and made a profit of 82 cents per lamb more than those fed whole barley.

4. The lambs fed the stock tonic (lot 5) made 0.01 of a pound less average daily gain than those in lot 2 receiving the same ration other than the stock tonic. Further, the lambs receiving no stock tonic produced 100 pounds of gain for 27 cents less and made a profit per lamb 14 cents greater than those receiving stock tonic.

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## GROUP II

### LAMB FEEDING INVESTIGATIONS

On February 8, 1920, a band of 210, growthy, rather rangy lambs with long open wool were purchased on the Kansas City market at \$17 per hundredweight. They were divided into six lots of 35 head each, and fed for 30 days. This group of experiments was handled under the same conditions and in the same manner as Group I. The purpose of the test was:

1. To determine the relative value to large growthy lambs of a ration of shelled corn and oilmeal handfed, and the same ration, self-fed, these feeds in each case being supplemented by alfalfa hay and silage handfed.

2. To determine the value of adding linseed oilmeal to a self-fed ration of corn with alfalfa hay and silage handfed.

3. To determine the value of adding silage or silage and linseed oilmeal to a ration consisting of corn and alfalfa hay.

4. To determine whether or not corn gluten feed can be economically substituted for linseed oilmeal when 50 percent more gluten than linseed oilmeal is fed.

RESULTS

Detailed results secured in feeding Group II are given in Table II.

TABLE II.—RESULTS OF LAMB FEEDING INVESTIGATIONS, GROUP II  
(Feeding period, 80 days)

| Lot No. . . . .  | (a) 1     | (a) 2     | (b) 3     | (b) 4     | (b) 5     | (b) 6     |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
| Number of lambs in lot. . . . .  | 35        | 35        | 35        | 35        | 35        | 35        |
|  | Pounds    | Pounds    | Pounds    | Pounds    | Pounds    | Pounds    |
| Average initial weight per lamb at feedlot. . . . .                    | 72.95     | 72.44     | 73.60     | 73.12     | 73.63     | 73.70     |
| Average final weight per lamb at feedlot. . . . .                      | 89.45     | 88.56     | 90.12     | 87.08     | 90.49     | 86.36     |
| Average daily gain per lamb. . . . .                                   | .55       | .54       | .55       | .47       | .56       | .42       |
| Average selling weight per lamb at Kansas City. . . . .                | 84.00     | 85.43     | 83.72     | 84.00     | 83.14     | 82.86     |
| Average daily ration per lamb:   |           |           |           |           |           |           |
| Shelled corn. . . . .  | 1.52      | 1.62      | 1.10      | 1.10      | 1.10      | 1.10      |
| Linseed oilmeal. . . . .   | .49       |           | .23       |           |           |           |
| Corn gluten feed. . . . .  |           |           |           |           | .84       |           |
| Alfalfa hay. . . . .   | 1.05      | 1.05      | 1.07      | 2.32      | 1.08      | 1.08      |
| Corn silage. . . . .   | .98       | 1.10      | 2.10      |           | 1.96      | 1.98      |
| Feed required for 100 pounds gain:                                     |           |           |           |           |           |           |
| Shelled corn. . . . .  | 276.27    | 301.77    | 190.66    | 225.66    | 186.78    | 248.76    |
| Linseed oilmeal. . . . .   | 88.86     |           | 41.82     |           |           |           |
| Corn gluten feed. . . . .  |           |           |           |           | 61.02     |           |
| Alfalfa hay. . . . .   | 190.86    | 195.27    | 195.16    | 498.63    | 191.70    | 255.30    |
| Corn silage. . . . .   | 177.88    | 205.46    | 332.27    |           | 348.73    | 468.85    |
| Cost of feed for 100 pounds gain (feedlot weights) . . . . .           | \$14.42   | \$11.56   | \$10.95   | \$12.44   | \$11.06   | \$11.91   |
| Average initial cost per lamb at feedlot. . . . .                      | 12.63     | 12.54     | 12.74     | 12.66     | 12.75     | 12.76     |
| Average labor cost per lamb. . . . .                                   | .14       | .14       | .19       | .19       | .19       | .19       |
| Average feed cost per lamb. . . . .                                    | 2.33      | 1.86      | 1.81      | 1.74      | 1.87      | 1.51      |
| Interest per lamb on investment at 8 percent. . . . .                  | .105      | .101      | .102      | .102      | .102      | .099      |
| Interest per lamb on equipment at 6 percent. . . . .                   | .055      | .055      | .055      | .055      | .055      | .055      |
| Shipping and selling cost per lamb. . . . .                            | .43       | .43       | .43       | .43       | .43       | .43       |
| Total cost per lamb when sold at Kansas City. . . . .                  | 15.740    | 15.126    | 15.327    | 15.177    | 15.397    | 15.044    |
| Selling price per lamb at Kansas City. . . . .                         | 15.75     | 14.95     | 15.278    | 14.28     | 15.381    | 14.293    |
| Net profit per lamb. . . . .   | .010      | -.176     | -.049     | -.897     | -.016     | -.751     |
| Necessary selling price per cwt. at Kansas City to break even. . . . . | 18.74     | 17.71     | 18.31     | 18.07     | 18.52     | 18.16     |
| Selling price per cwt. at Kansas City. . . . .                         | 18.75     | 17.50     | 18.25     | 17.00     | 18.50     | 17.25     |
| Average shrink per lamb in marketing. . . . .                          | 5.45 lbs. | 3.13 lbs. | 6.40 lbs. | 3.08 lbs. | 7.35 lbs. | 3.50 lbs. |
| Percent of shrinkage in marketing. . . . .                             | 6.00      | 3.53      | 7.10      | 3.54      | 8.12      | 4.05      |

(a) Grain and protein supplement, self-fed.

(b) Grain and protein supplement, handfed.

Price of feeds: Shelled corn, \$1.54 per bushel; linseed oilmeal, \$84 per ton; corn gluten feed, \$70 per ton; alfalfa hay, \$25 per ton; corn silage, \$8 per ton.

SUMMARY

1. The self-fed (lot 1) and handfed (lot 3) lambs made the same average daily gain, 0.55 of a pound per lamb based on feedlot weights. It cost \$3.47 less, however, to make 100 pounds of gain on the handfed lambs, yet due to the difference in the selling price the self-fed lot made a profit of 1 cent per lamb while the handfed lot made a loss of 5 cents per lamb. The self-fed lot ate more corn and less silage, developed a higher finish, and shrank less than the handfed lot.

2. When linseed oilmeal was added to shelled corn self-fed, and both these concentrates self-fed and supplemented by

alfalfa hay and silage handfed, the lambs (lot 1) made a greater average daily gain by 0.01 of a pound than the lambs (lot 2) receiving the same ration with the exception of the oilmeal. The cost of 100 pounds of gain, however, was \$0.286 more in lot 1, receiving oilmeal, than in lot 2, receiving no oilmeal. Nevertheless, due to the higher finish, the lambs in lot 1 made a profit of 19 cents per head greater than the lambs in lot 2. It is significant to note that the three lots receiving rich protein concentrates sold for \$1.25 a hundredweight higher than the three lots which did not receive a rich protein concentrate.

3. When silage was added to a ration of corn and alfalfa hay (lot 6) it did not produce larger gains but reduced the cost of gain \$0.53 per hundredweight and increased profits 15 cents per head. (Lots 6 and 4 compared.) When both silage and linseed oilmeal were added to a ration of corn and alfalfa hay (lot 3) they produced larger gains, reduced the cost of gains \$1.49 per hundredweight, and increased profits 85 cents per head. (Lots 3 and 4 compared.)

4. The lambs in lot 3 fed linseed oilmeal made 0.01 of a pound less average daily gain per lamb than those receiving corn gluten feed (lot 5) as a protein concentrate. Further, the cost of 100 pounds of gain was 11 cents more in lot 3, receiving linseed oilmeal, than in lot 5, receiving corn gluten feed. However, the lambs fed corn gluten feed showed a net return of 3 cents more per head than the lambs receiving linseed oilmeal. This was due both to the higher finish and the higher selling price of the gluten feed fed lambs.

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## CONCLUSION

Fat lambs weighing from 80 to 85 pounds are in greatest demand on the market. They, therefore, bring the highest price. Because of this fact, light, close-made lambs weighing around 55 pounds are the most profitable type to feed. The larger type of feeding lamb is not fat enough at 85 pounds and is too heavy when fully fattened to command prices that will make as much profit as the smaller type of feeding lamb.