

OKLAHOMA  
AGRICULTURAL AND MECHANICAL COLLEGE  
AGRICULTURAL EXPERIMENT STATION  
ANIMAL HUSBANDRY DEPARTMENT  
STILLWATER, OKLAHOMA

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# CATTLE FEEDING INVESTIGATIONS

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## *Cattle Feeding Investigations*

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### FINISHING BABY BEEF

#### Object

1. To determine the comparative value of corn and sunflower silage for fattening baby beef.
2. To determine the value of a grain ration with silage as compared with a grain ration without silage.
3. To determine the amount of sunflower silage that cattle will consume.
4. To determine the value of full feeding of silage versus limited feeding of silage.
5. To determine the advisability of feeding heifer calves.

#### Cattle Used

The cattle used in this test were selected from the Skinner Ranch at Medicine Lodge, Kansas, just over the Oklahoma line. They were high grade Herefords, all sired by registered Hereford bulls. They were being fed on dry rough feed when selected in late December and shipped to Stillwater.

Before the experiment was started, a sufficient length of time was allowed for the cattle to regain the shrinkage caused in shipping. Each calf was labeled with a strap and number. The average weight for three consecutive days was used as the initial weight.

Hogs followed the cattle throughout the entire feeding period.

#### Feeds Used

Lot I. Corn silage limited, cotton seed meal, shelled corn and alfalfa hay.

Lot II. Sunflower silage limited, cotton seed meal, shelled corn and alfalfa hay.

Lot III. Sunflower silage full fed, cotton seed meal, shelled corn and alfalfa hay.

Lot IV. Shelled corn, cotton seed meal, alfalfa hay, no silage.

## Fattening Baby Beef

December 27, 1921, to July 9, 1922.

Lot Numbers	I	II.	*III	IV.
No. calves per lot .....	8	8	8	8
Kind of calves, heifers .....				
Ave. initial weight per calf at feed lot .....	351.25	361.25	351.66	349.16
Ave. final weight per calf at feed lot .....	694.58	645.51	656.25	657.08
Ave. total gain per calf in feed lot .....	341.16	294.16	304.58	307.92
Ave. daily gain per calf in feed lot .....	1.79	1.52	1.57	1.58
Ave. daily ration per calf:				
Corn .....	7.87	7.87	7.36	7.87
Cotton seed meal .....	.76	.76	.76	.76
Corn silage .....	9.36			
Sunflower silage .....		9.36	11.24	
Alfalfa hay .....	1.48	1.48	1.48	4.55
Feed required for 100 pounds gain:				
Corn .....	408.84	510.33	468.35	469.11
Cotton seed meal .....	42.93	50.09	48.52	48.06
Corn silage .....	517.56			
Sunflower silage .....		604.30	716.27	
Alfalfa hay .....	82.41	96.22	94.48	286.73
Ave. initial cost of each calf .....	22.83	22.83	22.86	22.69
Ave. freight cost of each calf .....	1.00	1.00	1.00	1.00
Interest on investment of each calf .....	1.66	1.66	1.65	1.64
Ave. labor on each calf .....	2.00	2.00	2.00	2.00
Ave. feed cost .....	18.66	18.66	18.54	18.46
Total cost per steer, not including hog profits .....	46.15	46.15	46.05	45.79
Cost per 100 pounds gain .....	6.344	6.312	6.083	5.988
Hog profits per steer .....	3.53	2.80	3.12	3.77
Total cost per steer plus hog profits .....	42.62	43.35	42.93	42.02
Necessary selling price to break even at feed lot .....	6.136	6.715	6.54	6.39
Shrink in pounds from feed lot .....	32.01	24.16	37.50	25.83
*Selling price per hundred .....	9.75	9.75	9.75	9.75
Selling expense per steer .....	2.34	2.34	2.34	2.34
Ave. Wt. per steer at stock yards, Okla. City .....	662.50	621.25	618.75	631.25
Profit per head .....	19.63	14.88	15.05	17.18
Dressing percent .....	57.1	53.7	53.6	55.00

Price of Feeds: Shelled corn 42 cents per bu.; C. S. meal \$35.00 per ton; alfalfa hay \$15.00 per ton; silage \$3.50 per ton.

\*Lot III received a full feed of sunflower silage first 90 days and a limited grain ration.

\*Sold to Morris & Co., Oklahoma City, July 11, at \$9.75, top of the year.

## Summary

1. Baby beef proves to be profitable.
2. Lot I receiving a ration of corn silage, cotton seed meal, alfalfa hay and shelled corn shows the largest daily gain and the most profit per head.
3. Lot I also shows the highest dressing percent and the carcasses from Lot I were graded first of the four lots.
4. Lot III which received a full feed of sunflower silage the first 90 days and a limited grain ration was superior to Lot II which was fed similar to Lot I with the exception that sunflower silage was substituted for corn silage.
5. The corn silage proved to be superior to the dry lot No. IV in both rate of gain and profit.
6. Lot II receiving sunflower silage showed less shrink in shipment than any of the other lots. This is the third successive year that cattle receiving sunflower silage have shown less shrinkage in shipment.

7. While the two lots receiving sunflower silage did not return as much as the corn silage lot, on the other hand they made a nice profit and considering the gains made there seems to be considerable merit in sunflower silage, as this is the third successive year that sunflower silage has given satisfactory results. Last year, sunflower silage calves were slightly superior to corn silage calves. This year the corn silage was made from better corn and probably accounts for the superiority of the same.

8. The results of this feeding test further show that it pays to feed heifer calves as well as steer calves. These calves cost \$1.00 per hundred less than steer calves of the same quality and weight would have cost.

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## *Cattle Feeding Investigations*

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The Animal Husbandry department receives annually many inquiries about the feeding and production of beef cattle. Many wish to know about the adaptability of such feeds as kafir, barley, wheat, darso, silage, cotton seed meal and alfalfa hay for the feeding of cattle. They also want to know how these grains compare with corn in feeding value. There are also many questions about the advisability of feeding baby beef.

### **Object**

Fully realizing the importance of these questions and problems, the Animal Husbandry department of the Oklahoma Experiment station started a feeding test on February 6, 1923, to determine the relative value of ground corn, ground kafir and ground barley when used as a grain ration with cotton seed meal, alfalfa hay and sorghum silage for the finishing of baby beef.

### **Description of the Steers**

The cattle used in this feeding test were selected from a large number of calves produced on the Cooper Ranch at Supply, Oklahoma. They were high grade Herefords as the Cooper ranch has used good pure bred Hereford bulls for a number of years. They were selected as to uniformity, weight, quality, condition and ability to make the best of their feed. The cattle consisted of 8 heifers and 23 steers. They were selected about the middle of January and shipped to Stillwater and put on feed about a week later.

### **Method of Valuing the Cattle**

The initial value of the cattle were based upon the purchase price which was about the average price paid for feeder cattle in the state at the time of purchase. At the end of the finishing period, they were sold on the open

market at Oklahoma City at the price of 10 cents per pound for 23 head, the highest price paid since 1920 on the Oklahoma City market.

#### **Weights**

Before the experiment started, a sufficient length of time was allowed for the cattle to regain the shrinkage caused by shipping them from Supply. Each animal in the experiment was identified by a numbered brass tag and a strap fastened around the neck. The cattle were weighed three consecutive days, at the beginning and at the end of the experiment. The average of the three weights at the beginning and end of the feeding period were taken as initial and final weights, respectively. Cattle were weighed by groups every 30 days.

#### **Method of Feeding**

The cattle were fed twice a day, 7 a. m. and 6:30 p. m. Cotton seed meal and grain were mixed with the silage at the time of feeding. The hay was fed in racks. Salt was kept before the cattle at all times. They also had access to plenty of clear water. The cattle were housed in sheds with sacks hanging to protect them from the flies.

#### **Feeds Used**

The rations used in this test consisted of a combination of the following feeds:

- Lot I. Ground corn, cotton seed meal, sorghum silage and alfalfa hay.
- Lot II. Ground kafir, cotton seed meal, sorghum silage and alfalfa hay.
- Lot III. Ground darso, cotton seed meal, sorghum silage and alfalfa hay.
- Lot IV. Ground barley, cotton seed meal, sorghum silage and alfalfa hay.

#### **Method of Starting the Cattle on Feed**

The cattle were divided about one week previous to the initial date so they would become accustomed to being in a smaller lot and to become familiar with the feeds. When the experiment started, cotton seed meal was fed rather sparingly. They were started on  $\frac{1}{8}$  pound per head daily and increased  $\frac{1}{8}$  pound about every 10 days until they reached the maximum.

#### **Hogs**

Hogs followed the cattle throughout the entire feeding period. No tankage was fed and the hogs lived entirely on the droppings from the cattle. Pigs used were of good feeding kind. During the early part of the period, they were hungry most of the time. This was probably due to the fact that ground feed was fed.

## Fattening Baby Beef

February 6, 1923, to August 13, 1923

(Total feeding period 188 days)

Lot Numbers .....	I	II	III	IV
Number head in lot .....	7	8	8	8
Kind of cattle .....	Steers	Heifers	Steers	Steers
Ave. initial wt. per calf at feed lot .....	290	294	300	314
Ave. final wt. per calf at feed lot .....	670	640	604	680
Ave. total gain per calf in feed lot .....	380	346	304	366
Ave. daily gain per calf in feed lot .....	2.02	1.84	1.62	1.94
Ave. daily ration per calf:				
Corn .....	10.47			
Kafir .....		11.25		
Darso .....			10.77	
Barley .....				11.06
Cotton seed meal .....	.72	1.00	.70	.70
Silage .....	8.67	9.66	8.87	8.63
Hay .....	.99	1.03	1.02	1.03
Feed required for 100 lbs. gain:				
Corn .....	518			
Kafir .....		611		
Darso .....			666	
Barley .....				568
Cotton seed meal .....	35.7	54.5	43.4	36.1
Silage .....	429	525	549	443
Hay .....	49.2	55.8	63.5	53.2
Feed Cost per 100 lbs. gain:				
Corn .....	\$6.47			
Kafir .....		\$7.09		
Darso .....			\$7.72	
Barley .....				\$7.10
Cotton seed meal .....	.89	1.36	1.08	.90
Silage .....	.75	.92	.96	.77
Hay .....	.45	.50	.57	.49
Total feed cost per 100 lbs. gain .....	\$8.56	\$9.87	\$10.33	\$9.26
Pork credited .....	121	180	99	47
Pork returns at 8 cents .....	9.68	14.40	7.92	3.76
Initial cost per calf .....	\$26.00	\$26.00	\$26.00	\$26.00
Feed cost per calf .....	32.53	\$34.15	\$31.40	\$33.89
Actual selling price (Oklahoma City) .....	.10	.10	4 hd., .08 2 hd., .06 2 hd., .10	6 hd., .10 2 hd., .065
Gross returns per calf .....	62.71	60.62	45.92	58.48
Pork returns per calf at 8 cents .....	1.38	1.80	.99	.47
Total gross returns per calf .....	64.09	62.42	46.91	58.95
Selling expense (commission, freight, etc.) per calf .....	2.74	2.74	2.74	2.74
Profit or loss per calf crediting pork::				
Gain .....	2.32		13.23	3.68
Loss .....		.47		
Ave. weight (Oklahoma City) per calf .....	629	606	565	632
Shrinkage per calf .....	41	34	39	48
Dressing percentage .....	56.4	56.2	53.4	55.6
Grade (Oklahoma City) .....	Good	Good	6 head M. good 2 head M. fair	Good

## Price of Feed Used—

Kafir, 65 cents per bu.  
 Darso, 65 cents per bu.  
 Barley, 60 cents per bu.  
 Corn, 70 cents per bu.  
 Cotton seed meal, \$50.00 per ton.  
 Alfalfa hay, \$18.00 per ton.  
 Sorghum silage, \$3.50 per ton.

**Summary**

1. Lot I received a ration of ground corn, cotton seed meal, sorghum silage and alfalfa hay, and showed the largest daily gain; also a profit of \$2.32 per head after crediting the pork produced.

2. Lot I required less feed for 100 pounds gain than any of the above lots. This lot also gave the highest dressing percentage; it is slight, however. Lots I, II and IV all graded good. While lot III contained 6 head that graded medium good and 2 head that graded only medium fair.

3. Lot II received the same ration as Lot I, except kafir was substituted for ground corn. Lot III received the same ration as Lot I, except darso was used to replace ground corn. Lot IV also received the same ration as Lot I except barley was substituted for ground corn.

4. Lot II ranked next to Lot I on cost of gains but showed a loss of 47 cents per head after crediting pork. This lot showed less shrinkage than any of the others but the difference is perhaps not significant. It should be noted that this lot gave the greatest pork returns, Lot I ranking second, Lot III third and Lot IV fourth in this comparison.

5. The lowest gains were found in Lot III, Lot I ranking first, Lot IV second, Lot II third. Lot III also ranks lowest on returns, showing a loss of \$13.23 per calf. This lot consumed the greatest amount of feed per 100 pounds gain.

6. Ground corn proved to be superior to any of the other grains when fed with cotton seed meal, sorghum silage and alfalfa hay, from the standpoint of gains made, and also cost of gains and net returns.

7. The variation in selling price of Lot III explains the heavy loss per calf in this lot. At the close of the test it was evident that there were 6 calves not finished sufficiently to bring the top price. It is believed that calves were of equal quality when started. This may be due to darso or a variation in individuality.

8. It is evident that if these calves had been finished on the farm where produced thus eliminating the shipping and speculative part of it, they would have showed good returns. The high price of feeds materially caused the losses in Lots II, III and IV.

9. Kafir and barley especially proved to be excellent feeds for making gains and finish.