

# Sheep

Feed Lot and Pasture-Fattening Tests with Feeder Lambs, 1957-58. Studies Carried on by the Department of Animal Husbandry and the Garden City Branch Experiment Station (Project 111-GC).

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Tests this year include both feed-lot and wheat-pasture studies. Feed-lot tests were designed to determine the value of the following feed additives and hormone treatments: (1) aureomycin, (2) hydroxyzine tranquilizer, (3) 3 mgs. stilbestrol implants, (4) 6 mgs. stilbestrol implants and (5) Synovex implants consisting of 2.5 mgs. estradiol benzoate, 25 mgs. progesterone and 27.5 mgs. inert material. The following roughage combinations were also compared for fattening lambs in the feed lot: (1) sorghum stover, (2) sorghum silage and alfalfa hay, and (3) wheat silage and alfalfa hay. Lambs in one lot fed in the feed lot were shorn at the start of the test on November 7.

Two lots of lambs were grazed on wheat pasture for the entire 123-day experimental period. Lambs in one of these, lot 5, were also shorn at the start of the test on November 7. One-third of the lambs in each lot received a 3-mg. stilbestrol implant, 1/3 received a 6-mg. stilbestrol implant and the remaining 1/3 served as the hormone control.

Two lots of lambs were used in a combination feed-lot and wheat-pasture study. One of these lots was grazed on wheat pasture for 60 days and then was switched to the feed-lot for the remaining 63 days of the test. The second lot was started in the feed-lot and was then switched to wheat pasture. One-third of the lambs in these two lots were implanted with 3 mgs. stilbestrol, 1/3 received a 6-mg. stilbestrol implant and the remaining 1/3 received no hormone.

Irrigated wheat pasture was used until February 21, after which dryland wheat pasture was used.

All the lambs were shorn during the period January 31 to February 2 with the exception of the lambs that were shorn November 7.

## Lambs

Lambs used in these tests were secured from near Bernalillo, N.M., and consisted primarily of whiteface lambs with a small number of blackface crossbreds. These were predominantly wether lambs. They averaged 73.1 pounds at the loading point and 66.6 pounds off the cars at Garden City on October 24. They were started on test November 7.

## Feed Prices Used

Sorghum grain .....	\$ 1.70	per cwt.
Sorghum stover .....	7.50	per ton
Sorghum silage .....	6.00	per ton
Wheat silage .....	6.00	per ton
Alfalfa hay .....	20.00	per ton
Cottonseed meal .....	70.00	per ton
Pelleted ration .....	40.00	per ton
Salt .....	1.00	per cwt.
Limestone .....	.50	per cwt.
Aurofac 2A .....	.40	per lb.
Hydroxyzine tranquilizer premix .....	.80	per lb.
Stilbestrol implants .....	.09	per implant
Synovex implants .....	.50	per implant—varies with quantity purchased
Wheat pasture .....	.30	per head per month

Table 7.—Feed-Lot Tests.

Lot number	1	2	3	4	5	9
Treatment	Sorghum stover ration	Stover ration + aureomycin	Slover ration + hydroxyzine trans.	Sorghum silage ration	Sorghum silage ration, fall shorn	Wheat silage ration
Number lambs per lot	39	39	39	39	37	39
Days on feed	123	123	123	123	123	123
Av. initial wt. per lamb, lbs.	77.2	77.2	78.1	77.2	72.6 <sup>2</sup>	77.3
Av. final wt. per lamb, lbs.	93.3	93.3	92.8	100.4	107.5	93.1
Av. wt. shorn fleece, lbs.	5.2	5.2	5.6	5.3	3.5	5.2
Av. total gain per lamb, lbs. <sup>1</sup>	21.3	21.3	20.4	28.5	34.9	21.0
Av. daily gain per lamb, lb.	.173	.173	.166	.232	.284	.171
Av. daily feed gain per lamb:						
Whole sorghum grain, lbs.	1.21	1.13	1.21	1.21	1.21	1.21
Sorghum silage, lbs.	...	...	...	3.82	4.23	...
Sorghum stover, lbs.	2.49	2.47	2.30	...	...	...
Wheat silage, lbs.	...	...	...	...	...	...
Cottonseed meal, lbs.	.21	.19	.21	...	...	3.55
Alfalfa hay, lbs.	...	...	...	...	...	...
Salt, lbs.	.016	.018	.016	.77	.77	.77
Limestone, lbs.	.015	.015	.015	.019	.011	.015
Aureomycin, mgs.	...	30	...	...	...	...
Hydroxyzine activity, mgs.	...	...	3	...	...	...
Av. lbs. feed per cwt. gain:						
Whole sorghum grain	699.9	652.5	731.6	523.9	427.4	709.9
Sorghum silage	1436.1	1431.1	1394.3	1651.2	1491.9	...
Sorghum stover	...	...	...	...	...	...
Wheat silage	118.4	111.9	123.7	...	...	2074.6
Cottonseed meal	...	...	...	...	...	...
Alfalfa hay	9.1	10.1	9.4	332.2	271.0	449.8
Salt	8.8	8.6	9.0	8.3	3.82	8.9
Limestone	21.64	22.20	23.53	17.26	14.50	22.87
Av. feed cost per cwt. gain, <sup>3</sup> \$	...	...	...	...	...	...
Tranquilizer cost per lamb, \$	...	...	...	...	...	...
Aureomycin cost per lamb, \$	...	...	...	...	...	...
Av. feed cost per lamb, <sup>3</sup> \$	4.61	4.72	4.80	4.92	5.06	4.81
Initial cost per lamb, \$	16.84	16.84	17.03	16.84	16.60	16.86
Number lambs lost	...	...	...	...	...	...
Cost of lamb loss, \$	...	...	...	...	...	...
Av. total cost per lamb, \$	21.45	21.93	22.13	21.76	22.67	21.67
Av. total cost per cwt., \$	22.97	23.50	23.85	21.67	21.09	23.28

1. Weight of shorn fleece included in total gain in all cases except in Lot 5.  
 2. Lambs were shorn before initial weight was taken.  
 3. Includes cost of tranquilizer and aureomycin in the lots in which these were fed.

Table 8.—Wheat Pasture Tests.

Lot number	13 <sup>1</sup>	6 <sup>1</sup>	13 & 16 <sup>2</sup>	13 & 6 <sup>2</sup>	13 & 6 <sup>2</sup>
Treatment	Unshorn	Fall shorn	No hormone	3-mg. stilbestrol implant	6-mg. stilbestrol implant
Number lambs per lot	39	39	26	26	26
Days on feed	123	123	123	123	123
Av. initial wt. per lamb, lbs.	77.4	76.5	76.6	78.7	75.5
Av. final wt. per lamb, lbs.	95.8	104.0	96.0	102.2	101.5
Av. wt. shorn fleece, lbs.	6.2	3.5	5.3	5.0	4.9
Av. total gain per lamb, lbs. <sup>3</sup>	24.6	31.0	24.7	28.5	30.9
Av. daily gain per lamb, lb.:					
No hormone	.20	.252	.201	.232	.251
3-mg. implant	.171	.220	....	....	....
6-mg. implant	.20	.264	....	....	....
6-mg. implant	.23	.272	....	....	....
Av. daily feed per lamb, lbs.:					
Wheat pasture	Free choice	Free choice	Free choice	Free choice	Free choice
Salt	.009	.009	.009	.009	.009
Av. feed cost per cwt. gain, \$	5.04	4.01	5.03	4.36	4.02
Av. feed cost per lamb, \$	1.24	1.24	1.24	1.24	1.24
Hormone cost per lamb, \$	.06	.06	.00	.09	.09
Av. initial cost per lamb, \$	16.88	16.88	16.70	17.16	16.47
Number of lambs lost	....	....	....	....	....
Av. total cost per lamb, \$	18.18	17.98	17.94	18.49	17.80
Av. total cost per cwt., \$	18.97	17.29	18.69	18.09	17.54

1. One-third of the lambs received no hormone, 1/3 implanted with 3 mgs. stilbestrol and 1/3 implanted with 6 mgs. stilbestrol.

2. Includes lambs from lots 6 and 13 that received similar hormone treatments.

3. Weight of shorn fleece included in total gain.

Table 9

Combination Wheat Pasture and Feed-Lot Tests.

Lot number	12 <sup>1</sup>	14 <sup>1</sup>
Treatment	Dry-lot 80 days, then to wheat pasture 63 days	Wheat pasture 60 days, then dry-lot 63 days
Number lambs per lot	39	39
Days on feed	123	123
Wheat pasture	63	60
Feed lot	60	63
Av. initial wt. per lamb, lbs.	75.8	76.3
Av. final wt. per lamb, lbs.	88.3	102.6
Av. wt. shorn fleece, lbs.	5.6	6.4
Av. total gain per lamb, lbs. <sup>2</sup>	18.2	32.6
Av. daily gain per lamb, lb.	.148	.265
No hormone	.127	.238
3 mgs. stilbestrol	.160	.279
6 mgs. stilbestrol	.160	.280
Wheat pasture	.035	.279
Dry-lot	.267	.252

(12)

Table 9 (Continued)

Av. daily feed per lamb (dry-lot):		
Whole sorghum grain	1.14	1.28
Sorghum silage	3.48	4.54
Alfalfa hay	.77	.77
Salt	.014	.020
Av. daily feed per lamb (w. pasture)		
Wheat pasture	Free choice	Free choice
Salt	.009	.009
Av. lbs. feed per cwt. gain:		
Whole sorghum grain	376.7	247.5
Sorghum silage	1148.7	876.9
Alfalfa hay	254.0	148.5
Salt	7.8	6.5
Av. feed cost per cwt. gain, \$	15.93	10.23
Hormone cost per lamb, \$	.06	.06
Av. feed cost per lamb, \$	2.90	3.34
Initial cost per lamb, \$	16.52	16.64
Number of lambs lost	....	....
Av. total cost per lamb, \$	19.48	20.04
Av. total cost per cwt., \$	22.06	19.53

1. One-third of the lambs received no hormone, 1/3 implanted with 3 mgs. stilbestrol, 1/3 implanted with 6 mgs. stilbestrol.

2. Weight of shorn fleece included in total gain.

(13)

Table 10.—Feed-Lot Hormone Tests.

Lot number	4	7	8	11	10a <sup>2</sup>	10b <sup>2</sup>
Treatment	No hormone	3 mgs. stilbestrol	Synovex implant <sup>1</sup>	6 mgs. stilbestrol	No hormone, pelleted ration <sup>3</sup>	6-mg. stilbestrol implant, pelleted ration <sup>3</sup>
Number lambs per lot	39	39	39	39	20	19
Days on feed	123	123	123	123	123	123
Av. initial wt. per lamb, lbs.	77.2	75.6	77.4	77.2	78.9	74.6
Av. final wt. per lamb, lbs.	100.4	103.9	106.1	104.6	109.7	115.6
Av. shorn fleece wt., lbs.	5.3	5.6	5.8	5.7	5.9	6.3
Av. total gain per lamb, lbs. <sup>4</sup>	28.5	33.9	34.5	33.0	36.8	47.2
Av. daily gain per lamb, lb.	.232	.276	.281	.268	.299	.384
Av. daily feed per lamb, lbs:						
Whole sorghum grain	1.21	1.21	1.21	1.21	....	....
Sorghum silage	3.82	4.0	4.24	3.91	....	....
Alfalfa hay	.77	.77	.77	.77	....	....
Pellet—free choice	....	....	....	....	4.23	4.23
Wheat straw—free choice	....	....	....	....	.05	.05
Salt	....	....	....	....	.028	.028
Av. lbs. feed per cwt. gain:	.019	.015	.02	.017	....	....
Whole sorghum grain	533.9	439.5	423.4	452.2	....	....
Sorghum silage	1651.2	1448.0	1511.3	1459.2	....	....
Alfalfa hay	332.2	278.7	274.2	286.8	....	....
Pellet—free choice	....	....	....	....	1415.7	1103.1
Wheat straw	....	....	....	....	16.7	13.0
Salt	8.3	5.4	7.3	6.5	9.4	7.3
Av. feed cost per cwt. gain, \$ <sup>5</sup>	17.26	14.66	14.70	15.00	28.41	22.13
Hormone cost per lamb, \$	....	.09	.50	.09	....	.09
Av. feed cost per lamb, \$	4.92	4.98	5.07	4.95	10.45	10.45
Av. initial cost per lamb, \$	16.84	16.49	16.88	16.84	17.21	16.27
Number of lambs lost	....	....	....	....	....	....
Av. total cost per lamb, \$	21.76	21.56	22.45	21.88	27.66	26.81
Av. final cost per cwt., \$	21.67	20.75	21.16	20.92	25.21	23.19

(14)

1. 2.5 mgs. estradiol benzoate, 25 mgs. progesterone, and 27.5 mgs. inert material.

2. Lambs in lots 10a and 10b were fed together.

3. Pellet consisted of 28% sorghum grain, 7% molasses, 40% alfalfa hay and 25% sorghum stubble.

4. Wt. of shorn fleece included in total gain.

5. Does not include cost of hormone.

Table 11  
Average Gain per Lamb per Day by Periods.

Lot No.	1st 60 days	Next 24 days	Next 39 days	Entire 123-day period
	Nov. 7-Jan. 6	Jan. 6-Jan. 30	Jan. 30-Mar. 10	
1	.218	.271	.044	.173
2	.162	.313	.101	.173
3	.217	.171	.082	.166
4	.242	.275	.190	.232
5	.260	.267	.331	.284
6	.30	.246	.182	.252
7	.305	.429	.136	.276
8	.308	.421	.151	.281
9	.185	.250	.100	.171
10	.412	.321	.245	.341
11	.277	.421	.164	.268
12	.267	.046	.026	.147
13	.278	.250	.049	.200
14	.280	.408	.156	.266

## Observations

Gains made by all lambs during the 123-day feeding trial were lower than expected. The chart, above, showing the average daily gain per lamb by periods indicates that the lambs gained fairly well until they were shorn. Lambs in lot 5, the fall-shorn lot, were the only ones that gained an appreciable amount during the last 39 days of the test. The fall-shorn lambs in lot 6, that were on wheat pasture, gained less during the last 39-day period than during the previous period. However, they still gained considerably more than their control lot (13) during the last 39 days.

The addition of 30 mgs. of aureomycin or 3 mgs. of hydroxyzine tranquilizer per lamb per day to a standard sorghum stover, sorghum grain, cottonseed meal and limestone ration failed to increase the rate of gain or feed efficiency under conditions of this test.

Lamb gains were increased by 34 percent or by .06 pound per lamb per day by replacing sorghum stover and cottonseed meal with sorghum silage and alfalfa hay. This increased rate of gain resulted in a considerably cheaper feed cost per cwt. gain. Wheat silage was not eaten as readily as sorghum silage. It was also higher in water content and much lower in percent nitrogen-free extract and therefore produced slower, more expensive gains than sorghum silage. This agrees with results obtained in a previous test. Fall-shorn lambs in lot 5 gained 22 percent faster than the controls in lot 4 and required 13 percent less feed per cwt. gain.

Lambs in lot 7 that were implanted with 3 mgs. stilbestrol gained 19 percent faster than their controls; lambs in lot 8 that received Synovex implants gained 21 percent faster, and lambs in lot 11 that were implanted with 6 mgs. of stilbestrol gained 16 percent faster than the controls. The increased gains were made on 13.5 percent, 11.5 percent and 12 percent less feed per cwt. gain for lots 7, 8 and 11, respectively.

The pelleted ration fed to lot 10 did not have a control and cannot be compared directly with any of the unpelleted rations. The lambs in lot 10 that were implanted with 6 mgs. of stilbestrol gained 28 percent faster than those receiving no hormone in that lot. Since these lambs were fed together, the exact amount of feed required to produce a cwt. of gain is not known for the two treatments. The feed cost per cwt. gain was high for the pelleted lambs.

Lambs implanted with 3 mgs. or 6 mgs. of stilbestrol and grazed on wheat pasture gained 15 percent and 25 percent faster than those not implanted. The fall-shorn wheat pasture lambs gained 26 percent faster than those shorn the last of January. Irrigated wheat pasture produced 191 pounds of gain per acre during the period November 7 to February 21.

(15)

Table 12  
Chemical Analysis of Feeds Used in Garden City Lamb Feeding Trials, 1957-1958.

	Protein (N x 6.25) %	Ether extract %	Crude fiber %	Moisture %	Ash %	N-free extract %	Carbo- hydrates %
Alfalfa hay .....	16.81	1.75	26.69	9.76	8.95	36.04	65.73
Pellets .....	9.50	1.74	19.62	9.06	8.40	51.68	71.30
Sorghum grain No. 1 .....	10.25	3.10	1.66	14.19	1.53	69.27	70.93
Sorghum grain No. 2 .....	10.44	3.19	1.72	11.96	1.52	71.17	72.89
Sorghum grain No. 3 .....	10.38	3.05	1.63	10.54	1.42	72.98	74.61
Green wheat .....	5.02	0.84	6.42	70.00	4.03	13.69	20.11
Wheat silage .....	2.40	0.33	8.78	76.36	2.76	9.37	18.15
Sorghum stover .....	3.39	1.25	18.31	33.33	8.18	35.54	53.85
Sorghum silage .....	2.84	0.56	8.67	63.63	3.25	21.05	29.72

Lambs in lot 14 that were grazed on wheat pasture for 60 days and then brought into the feed-lot produced faster and cheaper gains than lambs in lot 12 that were switched from the dry-lot to wheat pasture after 60 days. Lambs in these two lots that were implanted with either 3 mgs. or 6 mgs. of stilbestrol gained faster than those not implanted.

Only two lambs were lost during these tests. One lamb died of pneumonia and one died of urinary calculi. Both of the lambs were from lot 5. Although this treatment may not have been responsible, it was charged with the cost of the lambs and the feed they consumed in determining the total cost per lamb and the final cost per cwt. gain.

Assistance from the following firms is gratefully acknowledged: Syntex Animal Products Division of Foundation Laboratories Inc., New York, for Synovex implants; American Cyanamid Co., New York, for the Aurofac 2A; Chas. Pfizer and Co., Inc., Terre Haute, Ind., for the stilbestrol implants and hydroxyzine tranquilizers.

#### Adaptability of Breeds of Rams and Breed Types of Range Ewes to Market Lamb Production in Kansas (Project 347).

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Western ewes of the three predominant types (Texas ewes or finewools, Northwest blackface crossbreds, and Northwest whiteface crossbreds) commonly found in Kansas were obtained as ewe lambs in the fall of 1951 and bred to Hampshire, Suffolk, Shropshire, and Southdown rams for six seasons. A different set of rams has been used each year, and the ewes are rotated so that no ewes are bred to the same breed of ram each year. Wool and lamb production records have been kept on the different types of ewes, and lamb production figures have been obtained for the four sire groups

#### Results

Lamb production figures for the 1956-57 lamb crop are presented in Table 14 and the preliminary lambing data and lamb production for 1957-58 are shown in Table 13.

All lambs born on or before January 27 were separated into sire groups and fed separately. Twenty-five lambs born between January 27 and February 10 were added to their respective sire groups February 10. Twice daily each group of lambs was creep fed a concentrate mixture consisting of 5 parts by weight of grain sorghum, 1 part cracked corn, and 1 part wheat bran. The lambs were also fed good, leafy alfalfa hay in the creep. The ewes in the different lots were fed similar rations consisting of 1 pound grain, 2 pounds alfalfa hay, and 6 pounds sorghum silage per ewe per day. Records were kept on the feed consumption of the different groups of lambs and ewes.

Table 15 gives the gains and feed consumption of the different groups of lambs and Table 16 gives the average body weights following lambing in the fall of 1956 and early part of 1957 as well as the grease wool shorn in the spring of 1957.

#### Discussion and Observations

As in the past years, the Texas finewool ewes bred and lambed earlier this year than the other two types of ewes. The finewool ewes averaged lambing 12 days earlier than the Northwest blackface and 20 days earlier than the Northwest whiteface ewes.

Because of the earlier lambing date, lambs from the Texas finewool ewes usually reach market weights earlier than lambs from the other ewe groups. Lambs from the Blackface crossbred ewes and from the Northwest whiteface ewes usually gain faster than the finewool lambs and are therefore slightly heavier at 100 days of age. So far in this year's test the lambs from the Whiteface crossbred ewes have outgained lambs from the other two ewe groups.

The whiteface crossbred ewes, followed by the finewools, generally have produced the heaviest fleeces. There have been no consistent differences among the three types of ewes in lambing and weaning percentages.