

existed. The sorghum grain and sorghum silage were lower in protein than currently used tables of nutritive composition indicated for them.

Alfalfa pasture produced fast, very cheap gains at the charged price. Two periods of low gains obtained on alfalfa pasture probably are explained by the causes listed in Table 36.

#### ACKNOWLEDGMENTS:

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Stilbestrol implants were supplied by Charles Pfizer and Company, Inc., Terre Haute, Indiana.

#### Investigations of Milk-fat Lamb Production Practices for Western Kansas. Results for 1961-62 and Preliminary Results, 1962-63.

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#### Experimental Sheep

The Colby ewe flock consists of approximately 325 four- and five-year-old fine-wool ewes, that were purchased in southwest Texas as yearlings. Purebred Hampshire rams are used.

Table 35

Average daily gain per lamb by 15-day periods and total average daily gain for all lots, pounds.

Lot no.	Period						Total
	1	2	3	4	5	6	
1	.34	.35	.29	.31	.45	.35	.346
2	.32	.24	.26	.30	.47	.39	.329
3	.38	.07	.35	.26	.29	.14	.268
4	.42	.09	.36	.29	.31	.39	.310
5	.47	.17	.46	.31	.37	.37	.355
6	.43	.12	.26	.37	.41	.37	.327
7	.25	.44	.58	.54	.49	.49	.464
8	.44	.20	.24	.36	.57	.38	.323
9	.29	.15	.37	.36	.49	.41	.250
10	.35	.13	.40	.31	.43	....	.297
11	.35	.07	.16	.30	.41	....	.225
12 <sup>1</sup>	.45	.53	.78	.12	.61	.71	.379

1. Dogs chased and tore up several lambs during Period 1, and lambs were changed to new alfalfa pasture at end of Period 1.

Table 36  
Death losses and cause by lots.

Lot no.	Entericosis	Urinary calculi
1	1	2
2	0	0
3	2	1
4	1	0
5	0	1
6	0	2
7	1	0
8	11	0
9	5	0
10	0	1
11	1	1
12	0	0

#### General Procedure

This flock is handled in an early-lambing program, with the breeding season starting the last of May and extending to September 1. All lambs are sold as milk-fat lambs during spring and early summer.

Three separate tests are conducted during the year. The first attempts to determine the effect that varying the energy intake of ewes during a preflushing period has on lambing performance of the ewes. The second test compares various rations for flushing ewes, and the third studies various management practices and rations for ewes and lambs.

#### Preflushing Test—Spring, 1961

Procedure: 340 two- and three-year-old ewes were divided into two groups on the basis of age and number of lambs produced the previous year (April 24, 1961), and fed either of two rations for 17 days. One group was fed a low-energy ration of 2 pounds of alfalfa hay per ewe per day and one group received 2 pounds of alfalfa hay,  $\frac{1}{2}$  pound sorghum grain and 3 pounds of sorghum silage per ewe per day. At the end of this period an equal number of ewes from each lot were placed in each of six lots and fed different flushing rations for 40 days. (See flushing test, 1961, page 64.) Ewes were exposed to rams eight days after being placed on flushing rations.

#### Results and Discussion

Table 37

Gain and lambing performance of preflushed ewes—spring, 1961.

Preflushing ration	No. of ewes	Av. pre-flushing gain per ewe, lbs. <sup>1</sup>	Av. flushing gain per ewe, lbs. <sup>2</sup>	Cumulative % ewes lambing						% lamb crop <sup>3</sup>
				Days after first lamb birth						
				10	20	30	40	100		
Low energy	171	-2.0	+13.1	2.9	18.1	80.7	91.2	95.8	120	
Normal	169	+4.0	+9.0	5.3	20.7	79.3	86.4	94.7	117	

1. 17-day period.

2. 10-day period.

3. Includes lambs dead at birth.

Ewes fed the low-energy ration lost weight during the preflushing period, and therefore made larger gains during the following flushing period. This group also had a slightly earlier average lambing date and a 3% larger lamb crop.

#### Preflushing Test—1962

Procedure: 327 three- and four-year-old ewes were allotted April 23, 1962, on the same basis and fed the same rations as in 1961. At the end of the 17-day preflushing period, ewes were again divided into six flushing lots (see flushing test, 1962, page 65) and were exposed to rams 17 days after going on flushing rations.

#### Results and Discussion

Table 38

Gain and lambing performance of preflushed ewes—spring, 1962.

Preflushing ration	No. of ewes	Av. pre-flushing gain per ewe, lbs. <sup>1</sup>	Av. flushing gain per ewe, lbs. <sup>2</sup>	Cumulative % ewes lambing					% lamb crop <sup>3</sup>
				Days after first lamb birth					
				10	20	30	40	100	
Low energy	161	-11.6	14.6	16.8	48.4	91.3	93.2	95.6	123.0
Normal	163	.2	5.0	16.6	44.8	87.7	92.0	96.3	126.4

1. 17-day period.

2. 41-day period.

3. Includes lambs dead at birth.

Ewes fed the low-energy ration during the preflushing period lost considerable weight; the difference in gain response during the flushing period was the largest obtained during three test years. However, the lambing performance was not as expected nor as in past years. The ewes fed a low-energy preflushing ration tended to lamb slightly earlier, but the other group of ewes had a 3.4% larger lamb crop.

#### Ewe Flushing Test—Spring, 1961

**Procedure:** May 11, 1961, the two groups of preflushed ewes were divided equally into six lots on the basis of age, number of lambs produced by each ewe the previous year and preflushing treatment. Ewes were adjusted to flushing rations for three days and then fed their respective rations for 40 days, May 14 to June 22, 1961.

Twelve Hampshire rams were used to breed the ewes. Breeding season started May 22, eight days after ewes were started on flushing rations. The 12 rams were divided into six pairs and were with the ewes during the nights but not during days. Each pair of rams was rotated to a different ewe lot twice weekly. At the end of the flushing period, June 22, all ewes were turned together and grazed on buffalograss pasture. All rams were turned together with the ewe flock each night until the end of the breeding season, September 1.

Flushing rations for lots were as follows:

Lot 1.  $\frac{3}{4}$  pound whole sorghum grain, full feed of alfalfa hay (average hay consumption per ewe per day was 4.8 pounds).

Lot 2.  $\frac{3}{4}$  pound whole sorghum grain,  $1\frac{1}{4}$  pounds alfalfa hay, full feed sorghum silage (average silage consumption per ewe per day was 5.5 pounds).

Lot 3. Cereal crop pasture plus  $\frac{1}{2}$  pound whole sorghum grain.

#### Results and Discussion

Table 39

Ewe gains and lambing performance for six flushing rations, May 14, 1961, to June 22, 1961—40 days.

Lot no.	No. of ewes	Average total gain per ewe, lbs.	No. ewes lambing	No. total lambs <sup>1</sup>	No. sets of twins	% lamb crop <sup>1</sup>
1	57	17.3	54	68	14	119.3
2	57	9.9	56	62	6	108.8
3	56	8.0	53	71	18 + 1 triplet	126.8
4	57	8.0	53	73	18	128.1
5	56	11.1	53	61	8	108.9
6	57	12.1	55	68	13	119.3

1. Includes lambs dead at birth.

Table 40

Cumulative % ewes lambing by periods after first lamb birth—October 15, 1961.

Lot no.	Days after October 15				
	10	20	30	40	100
1	5.3	15.8	75.4	87.7	94.7
2	5.3	21.0	71.9	86.0	96.5
3	3.6	16.1	75.0	83.9	94.6
4	1.8	12.3	80.7	86.0	93.0
5	...	19.6	78.6	87.5	94.6
6	3.5	14.0	79.0	94.7	96.5

Lot 4. Cereal crop pasture.

Lot 5. Buffalograss pasture plus  $\frac{1}{2}$  pound whole sorghum grain.

Lot 6. Buffalograss pasture.

Ewes grazing cereal crop pasture alone or supplemented with grain during the flushing period gained least, but had larger percentage lamb crops because of more multiple births. As in past years the lot receiving buffalograss pasture alone had one of the larger percentage lamb crops. There was no marked difference in early lambing between flushing rations as indicated in Table 4, and it should be noted that about 85% of the ewes in all lots lambed within a 40-day period.

#### Ewe Flushing Test—Spring, 1962

**Procedure:** May 11, 1962, the two groups of preflushed ewes were divided equally into six lots on the basis of age, number of lambs produced by each ewe the previous year, and preflushing treatment. These lots were fed different flushing rations for 41 days until June 21. Twelve Hampshire rams were used to breed the ewes starting May 28, 17 days after ewes were started on flushing treatments. Rams and ewes were handled the same as outlined for 1961 flushing tests.

Flushing rations for lots were as follows:

Lot 1.  $\frac{3}{4}$  pound whole sorghum grain,  $1\frac{1}{4}$  pounds alfalfa hay, and full feed of sorghum silage.

Lot 2.  $1\frac{1}{2}$  pounds whole sorghum grain,  $1\frac{1}{4}$  pounds alfalfa hay, and full feed sorghum silage.

Lot 3.  $\frac{3}{4}$  pound whole sorghum grain,  $\frac{1}{2}$  pound 41% pelleted soybean oil meal, and full feed sorghum silage.

Lot 4. Cereal crop pasture plus  $\frac{1}{2}$  pound whole sorghum grain.

Lot 5. Cereal crop pasture.

Lot 6. Buffalograss pasture.

#### Results and Discussion

Table 41

Ewe gains and lambing performance for six flushing rations, May 11, 1962, to June 21, 1962—41 days.

Lot no.	No. of ewes	Average total gain per ewe, lbs.	No. ewes lambing	No. total lambs <sup>1</sup>	No. sets of twins	% lamb crop <sup>1</sup>
1	55	10.4	52	59	7	107.3
2	54	13.0	52	63	11	116.7
3	53	9.2	51	58	7	109.4
4	55	9.3	54	85	29 + 1 triplet	154.6
5	54	7.1	50	72	22	133.3
6	53	9.6	52	67	15	126.4

1. Includes lambs dead at birth.

Table 42

Cumulative % ewes lambing by periods after first lamb birth—October 23, 1962.

Lot no.	Days after October 23				
	10	20	30	40	100
1	23.6	50.9	94.6	94.6	94.6
2	20.4	40.7	88.9	90.7	96.3
3	13.2	50.9	88.7	92.4	96.2
4	12.7	50.9	89.1	94.6	98.2
5	13.0	44.4	88.9	88.9	92.6
6	17.0	41.5	86.8	94.3	98.1

Ewes in Lot 2, fed twice as much grain as Lot 1, gained more during the flushing period and had about 10% more lambs. While ewes in Lot 3 fed  $\frac{1}{2}$  pound soybean meal in place of alfalfa hay did not gain so much weight as ewes in Lot 1, they produced just as many lambs. As in past years ewes flushed with cereal crop pasture, cereal crop pasture plus grain, or with buffalograss pasture produced larger lamb crops than ewes fed other flushing rations. This was true even though ewe weight gain during flushing was not so large as with other rations.

Approximately 90% of the ewes lambing within a 30-day period, so differences among lots in date of lambing were small.

#### Lamb Feeding Tests (Winter 1961-62)

**Procedure:** Ewes and lambs were divided into six lots according to prior ewe treatment, date of lamb birth, and type of birth. A one-week adjustment after lamb birth was allowed before ewes and lambs were placed in their respective lots. Lambs were docked and castrated during that week. Creep rations were self-fed when lambs were one week old. Lambs were sent to market in periodic shipments as sufficient lambs weighing at least 95 pounds each were ready. All lambs not already sold or weaned were weaned April 20, 1962.

Treatments and rations fed various lots were:

Lot No.	Daily ewe ration	Self-fed lamb creep ration and treatment
1	1 pound whole sorghum grain $1\frac{1}{4}$ pounds alfalfa hay Full feed sorghum silage	Whole sorghum grain Alfalfa hay
2	1 pound whole barley $1\frac{1}{4}$ pounds alfalfa hay Full feed sorghum silage	Whole barley Alfalfa hay
3	1 pound whole sorghum grain $1\frac{1}{4}$ pounds alfalfa hay Full feed sorghum silage	Whole sorghum grain Wheat hay
4	1 pound whole sorghum grain $1\frac{1}{4}$ pounds alfalfa hay Full feed sorghum silage	Pelleted ration of 45% sorghum grain and 55% sun-cured alfalfa hay Alfalfa hay
5	Rye pasture	Rye pasture Whole sorghum grain Alfalfa hay
6	1 pound whole sorghum grain $1\frac{1}{4}$ pounds alfalfa hay Full feed sorghum silage	Whole sorghum grain Alfalfa hay (Weaned 8-10 weeks of age)

After weaning, each ewe received 1 pound alfalfa hay and 6 pounds sorghum silage.

#### Results and Discussion

Performance and cost of gains of lambs fed the various creep rations are reported in Table 43.

Average lamb sale age varied from 137.2 days for Lot 5 to 188.5 days for Lot 3. Lambs in Lot 5 fed a creep of whole sorghum grain and alfalfa hay on rye pasture made fastest and cheapest gains. Lambs in Lot 4 fed the pelleted creep ration gained very well, but total cost of gain was highest of all lots except number 3. However, there were fewer digestive disturbances and death losses in Lot 4 (pelleted) than in other lots.

Lambs fed barley gained practically the same as those fed sorghum grain. Cost per cwt. gain was slightly higher with barley.

Lot 3 lambs gained slowest. Their creep ration was changed to include sorghum silage February 23, because the lambs appeared unthrifty and refused to eat much wheat hay. Their ration was again changed May

Table 43  
Performance and cost of gains by lambs fed various creep rations—Fall, 1961, and Spring, 1962.

Lot no.	1	2	3	4	5	6
Treatment	Sorghum grain, alfalfa hay	Barley, alfalfa hay	Sorghum grain, wheat hay	Pelleted ration, 45% sorghum grain, 55% alfalfa hay	Rye pasture, sorghum grain, alfalfa hay	Early weaned sorghum grain, alfalfa hay
No. lambs	58	63	50	56	61	62
Av. market wt., lbs.	102	102.2	93.6	107.5	107.8	101.7
Av. total gain, lbs.	91.5	91.4	82.2	97.0	97.1	93.0
Av. daily gain, lbs.	.55	.52	.44	.69	.71	.50
Single lambs, lbs.	.58	.57	.49	.75	.76	.51
Twin lambs, lbs.	.50	.46	.32	.60	.62	.47
Av. market age, days	166.5	174.1	188.5	141.2	137.2	183.3
Daily feed per lamb, lbs.	1.18	1.14	1.12	.....	1.33	1.30
Whole sorghum grain	.....	.....	.....	.....	.....	.....
Whole barley	.....	.....	.01	2.22	.....	.....
Pelleted ration	.....	.60	.70	.19	.10	.92
Alfalfa hay	.....	.....	.08	.....	.....	.....
Wheat hay	.....	.....	.36	.....	.....	.....
Sorghum silage	.....	.....	.....	.....	.....	.....
Av. lbs. feed per cwt. gain:	214.1	217.0	257.5	.....	187.6	261.1
Whole sorghum grain	.....	.....	.....	.....	.....	.....
Whole barley	.....	.....	.....	.....	.....	.....
Pelleted ration	.....	.....	.....	322.7	.....	.....
Alfalfa hay	103.4	114.2	23.0	27.6	14.1	184.8
Wheat hay	.....	.....	.....	.....	.....	.....
Sorghum silage	.....	.....	82.8	.....	.....	.....
Lamb feed cost per cwt. gain <sup>1</sup>	\$4.93	\$ 5.34	\$ 5.11	\$ 7.28	\$ 3.29	\$ 6.80
Ewe feed cost to April 20 per cwt. gain <sup>2</sup>	9.38	9.32	12.75	8.31	4.37	7.01
Total feed cost per cwt. gain	14.31	14.66	17.86	15.59	7.66	13.81

1. Ration changed February 23, due to feeding problems.

2. Market weight minus average birth weight for lambs in each lot.

3. No charge made for rye pasture for lambs in Lot 5. This was charged to ewe feed cost.

4. Includes cost of feeding nursing ewes and dry ewes having lambs weaned early up to April 20 when all lambs were weaned.

18 to whole sorghum grain, 45% sorghum grain-55% alfalfa hay pellets, and alfalfa hay. Results with the wheat hay emphasize that low-quality feeds should be avoided in creep feeding lambs.

Average weaning age of early weaned lambs in Lot 6 was 68 days, and average weaning weight was 51.7 pounds for single lambs and 41.9 pounds each for twins. These lambs gained slightly slower and consumed more feed (may not be actual, since lambs in non-weaned lots ate some feed with the ewes) than lambs nursing ewes and fed the same creep ration in Lot 1. It cost \$1.87 more per cwt. gain for early weaned lambs; however, considering the reduced ewe feed cost to April 20 for Lot 6 the total feed cost per cwt. gain was \$0.50 less for early weaned lambs.

**Table 44**  
Lamb death losses and treatments by cause in indicated lots.

Lot no.	Urinary calculi	Enterotoxemia	Lameness and stiffness	Scours	Other causes	Death loss
1	3	2	1	9	..	4 <sup>1</sup>
2	1	..	..	5	..	..
3	2	6	1	4	1	6 <sup>2</sup>
4	..	..	..	..	3	..
5	1	..	..	1	3	..
6	..	3	1	14 <sup>3</sup>	3	..

1. Two died of enterotoxemia, one of respiratory infection, and one foundered.

2. Three died of enterotoxemia, two from urinary calculi, and one was killed when shed collapsed.

3. Scours were not serious.

Feed prices used to calculate cost of ewe and lamb feeds were: rye pasture, 1½ cents per ewe per day; whole sorghum grain, \$1.65 per cwt.; whole barley, \$1.75 per cwt.; alfalfa hay, \$27 per ton; sorghum silage, \$8 per ton; 45% sorghum grain-55% sun-cured alfalfa hay pellets, \$42.75 per ton (includes \$8 per ton for processing and \$2.60 per ton for sacks).

#### Lamb Feeding Tests (Winter, 1962-63)

**Procedure:** Ewes and lambs were managed the same during the week adjustment period as in 1961-62 feeding tests.

Following are the 1962-63 treatments:

Lot no.	Nursing ewe daily ration	Lamb ration creep
1	Standard ration 1 pound whole sorghum grain 1½ pounds alfalfa hay Sorghum silage (full feed)	Standard ration Whole sorghum grain Alfalfa hay
2	Standard ration	Dry rolled sorghum grain Alfalfa hay
3	Standard ration	Dry rolled sorghum grain containing 10% soybean oil meal Alfalfa hay
4	Standard ration	Dry rolled sorghum grain containing 5% salt Alfalfa hay
5	Rye pasture—standard ration when needed	Standard ration Rye pasture

6	Standard ration Maintenance ration after lambs were weaned	Standard ration Wean lambs 8 to 10 weeks of age
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One half the single male lambs in each lot were castrated and one half left as ram lambs.

Results of the above test in progress will be reported in the 1963 annual report.

#### Value of 3-mg. Stilbestrol Implants<sup>1</sup> for Young Lambs. Carl Menzies, Myron Hillman and Doynce Lenhart

Considerable work has been conducted at this station and at the Garden City Branch Station to determine the value of various hormone treatments for feeder lambs. In a previous test (Circular 378) young lambs implanted with 3 mgs. Stilbestrol or Synovex gained less and shrank more enroute to market than controls. This test was conducted to obtain more information on Stilbestrol implants for young lambs.

##### Experimental Procedure

Forty-two crossbred lambs sired by Suffolk rams and out of commercial fine-wool ewes were used. Twenty-one were implanted with 3 mgs. Stilbestrol each.

Lambs averaged 24 days of age when started on test, February 17. They nursed their mothers until May 1, when all were weaned. A pelleted ration of 45% sorghum grain, 2.5% soybean oil meal, 7.5% molasses, 45% dehydrated alfalfa meal, and 10 mgs. aureomycin per pound was self-fed in a creep before lambs were weaned and in a self-feeder after that. Loose alfalfa hay was fed free choice in addition to the pellets.

##### Results and Discussion

Results are presented in Table 45. There was no significant difference in rate of gain. Since all lambs were fed together, feed efficiencies for different treatments could not be determined.

<sup>1</sup> Supplied by Chas. Pfizer & Co., Inc., Terre Haute, Ind.

**Table 45**  
3-mg. stilbestrol implants for young lambs.  
February 17 to May 30, 1962—102 days.

Treatment	Control	3-mg. stilbestrol implants
No. lambs per lot <sup>1</sup>	21	21
Av. age at start of test, days	24	24
Initial wt. per lamb, lbs.	19.8	21.3
Final wt. per lamb, lbs.	76.8	79.9
Total gain per lamb, lbs.	57.0	58.6
Av. daily gain per lamb, lbs.	.559	.574

1. Control group consisted of 10 ewe and 11 wether lambs and the implanted group had 7 ewe and 14 wether lambs.