

Table 35

The effects of cooling and exercising on fertilization and conception rate.

Treatment group ¹	Fertilization rate %	Ewes returning to heat %	Services per conception for 24 ewes lambing
Cooled	80	0	1.0
Noncooled	57 ²	50 ²	1.8 ³
Exercised	57 ³	17	1.4
Nonexercised	80	17	1.4

1. Each of the four treatment groups contained 12 ewes.

2. Significantly different from the cooled ewes.

3. Significantly lower than the nonexercised group.

**Garden City Lamb Feeding Experiments, 1960-61 (Project G.C. 111).
Carl Menzies and A. B. Erhart**

Lambs

The 600 head of Rambouillet wether feeder lambs used in these tests were received at Menard, Texas, October 10, 1960. They were sorted from 1100 wether lambs raised by Page Brothers of El Dorado, Texas. Average purchase weight was 75.1 pounds. Purchase price was \$14.50 per cwt. The lambs were sheared at Menard, averaging 3.9 pounds of wool that sold for 41½¢ per pound. Lambs weighed 62.7 pounds off trucks at Garden City October 12. Total trucking cost was \$482.40.

General Procedure

During the pre-test period, chopped alfalfa hay and sorghum silage were fed. All lambs were drenched with 7 cc. of trivermol October 31. Lambs were weighed, ear tagged, implanted with 3 mgs. stilbestrol, lotted, and started on test November 1. Final weights were taken January 28, 1961, after 88 days on test.

Comparisons of sorghum, corn, and grain sorghum silages were made between lots 2, 3, 10, 11, and 12. Lambs were fed all the silage they would consume. Lambs in lot 10 did not receive additional grain above that supplied in the silage. Those in lots 11 and 12 were fed sorghum grain after 60 days on test.

The grain sorghum silage was made from sorghum hybrid RS610 grown on winter-irrigated land. It produced about 5 tons of silage per acre with 50 bus. of grain. Forage sorghum silage consisted of two hybrids grown on winter-irrigated land. They made about 7½ tons per acre which contained 45 to 50 bus. of grain. The corn silage was hybrid 904W grown under full irrigation. It produced 21 tons per acre with an estimated yield of 80 bus. of grain per acre.

Whole sorghum grain, whole barley, ground pelleted sorghum grain, ground pelleted barley, or a mixture of ½ barley and ½ sorghum grain was fed as carbonaceous concentrates in lots 2, 9, 5, 6, and 8 respectively. All 5 lots received equal levels of grain, protein supplement, and alfalfa hay. Lambs were fed all the sorghum silage they would consume.

Lambs in lot 1 were self-fed a complete pelleted ration of 35% sorghum grain and 65% alfalfa hay. A mixed self-fed ration consisting of a whole sorghum grain and dehydrated alfalfa pellets was fed to lot 7. A ration of 25% grain and 75% alfalfa pellets was fed at the start of the test. The grain was gradually increased over about a 50-day period to a ration of 45% grain and 55% alfalfa pellets. Alfalfa straw was supplied free choice to lots 1 and 7.

One half pound dehydrated alfalfa pellets was substituted for ¾ pound alfalfa hay in lot 4.

Lambs in lot 13 were grazed on volunteer wheat pasture.

One half the lambs in each lot were given a 5-gm. cobalt bullet each that contained 90% cobalt oxide.

Table 36

Sorghum, corn, and grain sorghum silages compared for fattening lambs.

Lot number	2	3	10	11	12
Treatment	Sorghum silage	Corn silage	Grain sorghum silage, no sorghum grain	Grain sorghum silage, sorghum grain after 60 days on test	Corn silage, sorghum grain after 60 days on test
Number of lambs	44	43	44	44	43
Days on feed	88	88	88	88	88
Av. initial wt., lbs.	72.9	74.0	72.5	72.1	72.7
Av. final wt., lbs.	109.0	113.5	104.3	107.7	102.0
Av. total gain, lbs.	36.1	39.5	31.8	35.6	29.3
Av. daily gain, lb.:	.410	.449	.361	.404	.333
No cobalt	.391	.455	.364	.415	.327
Cobalt	.430	.443	.357	.395	.339
Daily feed per lamb, lbs.:					
Whole sorghum grain	1.31	1.31	.....	.40 ¹	.40 ²
Alfalfa hay	.74	.74	.74	.74	.74
Forage sorghum silage	3.81	.....	.....	.....	.....
Grain sorghum silage .....	.....	.....	5.32	5.11	.....
Corn silage .....	.....	4.43	.....	.....	5.39
Cottonseed meal	.10	.10	.10	.10	.10
Salt	.020	.022	.024	.017	.015
Av. lbs. feed per cwt. gain:					
Whole sorghum grain	319.3	291.5	.....	98.3	119.2
Alfalfa hay	180.7	165.0	205.3	183.4	222.5
Forage sorghum silage	928.5	.....	.....	.....	.....
Grain sorghum silage .....	.....	.....	1472.3	1264.3	.....
Corn silage .....	.....	986.0	.....	.....	1617.7
Cottonseed meal	24.4	22.3	27.7	24.8	30.0
Salt	4.8	4.9	6.6	4.2	4.5
Av. feed cost per cwt. gain ¹	\$10.25	\$10.10	\$10.75	\$10.56	\$11.23
Av. feed cost per lamb ¹	\$ 3.70	\$ 3.99	\$ 3.42	\$ 3.76	\$ 3.29
Cost per lamb start of test	\$10.69	\$10.85	\$10.63	\$10.57	\$10.66
Av. total cost per lamb ^{1 2}	\$14.39	\$14.84	\$14.05	\$14.33	\$13.95
Av. total cost per cwt. ^{1 2}	\$13.20	\$13.07	\$13.47	\$13.31	\$13.68

1. Includes cost of stilbestrol implant @ 9¢ but does not include cost of drench or cobalt bullets.

2. Does not include cost of lamb loss.

3. Grain consumption given as an average over the 88-day test, but no grain was fed for first 60 days.

Table 37

Rations of whole sorghum grain, whole barley, pelleted sorghum grain, pelleted barley, and a mixture of $\frac{1}{2}$ sorghum grain with $\frac{1}{2}$ barley compared with lambs.

Lot number	2	9	5	6	8
Treatment	Whole sorghum grain	Whole barley	Pelleted sorghum grain	Pelleted barley	$\frac{1}{2}$ whole sorghum grain $\frac{1}{2}$ whole barley
Number lambs	44	43	44	44	43
Days on feed	88	88	88	88	88
Av. initial wt., lbs.	72.9	73.1	74.1	73.6	73.4
Av. final wt., lbs.	109.0	109.5	115.7	114.8	112.9
Av. total gain, lbs.	36.1	36.4	41.6	41.2	39.5
Av. daily gain, lb.	.410	.414	.473	.468	.449
No cobalt	.391	.421	.479	.470	.465
Cobalt	.430	.408	.467	.467	.433
Daily feed per lamb, lbs.:					
Whole sorghum grain	1.31	.....	.....	.....	.65
Pelleted sorghum grain	.....	.....	1.31	.....	.....
Whole barley grain	.....	1.31	.....	.....	.65
Pelleted barley grain	.....	.....	.....	1.31	.....
Alfalfa hay	.74	.74	.74	.74	.74
Forage sorghum silage	3.81	3.27	3.39	3.41	3.78
Cottonseed meal	.10	.10	.10	.10	.10
Salt	.020	.021	.018	.013	.021
Av. lbs. feed per cwt. gain:					
Whole sorghum grain	319.3	.....	.....	.....	145.6
Pelleted sorghum grain	.....	.....	276.7	.....	.....
Whole barley grain	.....	316.2	.....	.....	145.6
Pelleted barley grain	.....	316.2	.....	.....	145.6
Alfalfa hay	180.7	179.0	156.7	158.3	165.0
Forage sorghum silage	928.5	788.9	717.1	729.0	841.2
Cottonseed meal	24.4	24.2	21.1	21.4	22.3
Salt	4.8	5.1	3.8	2.8	4.7
Av. feed cost per cwt. gain ¹	\$10.25	\$10.49	\$ 9.40	\$10.19	\$ 9.70
Av. feed cost per lamb ¹	\$ 3.70	\$ 3.82	\$ 3.91	\$ 4.20	\$ 3.83
Cost per lamb start of test	\$10.69	\$10.72	\$10.86	\$10.79	\$10.76
Av. total cost per lamb ^{1,2}	\$14.39	\$14.54	\$14.77	\$14.99	\$14.59
Av. total cost per cwt. ^{1,2}	\$13.20	\$13.28	\$12.77	\$13.06	\$12.92

1. Includes cost of stilbestrol implant @ 9¢ but does not include cost of drench or cobalt bullets.

2. Does not include cost of lamb loss.

Feed Prices

35% sorghum grain, 65% alfalfa hay pellets	\$34.00 per ton
Whole sorghum grain	1.25 per cwt.
Pelleted sorghum grain	1.55 per cwt.
Whole barley grain	1.50 per cwt.
Pelleted barley grain	1.80 per cwt.
Dehydrated alfalfa pellets	40.00 per ton
Alfalfa hay	20.00 per ton
Alfalfa straw	\$ 5.00 per ton
Forage sorghum silage	7.00 per ton
Grain sorghum silage	10.00 per ton
Corn silage	7.50 per ton
Cottonseed meal	74.00 per ton
Salt	1.05 per cwt.
Wheat pasture	1¢ per head per day

Table 38

Self-fed complete pelleted ration, self-fed whole sorghum grain and dehydrated alfalfa pellets, and dehydrated alfalfa pellets compared with Texas lambs.

Lot number	1	7	4	2
Treatment	Self-fed complete pellet	Self-fed mixed ration of whole sorg. grain and dehy. alf. pellets	Stand. ration with dehy. alf. pellets	Stand. ration with alfalfa hay
Number lambs	44	44	44	44
Days on feed	88	88	88	88
Av. initial wt., lbs.	73.6	73.6	74.3	72.9
Av. final wt., lbs.	127.6	123.4	108.7	109.0
Av. total gain, lbs.	54.0	49.8	34.4	36.1
Av. daily gain, lb.	.614	.566	.391	.410
No cobalt	.608	.556	.393	.391
Cobalt	.619	.577	.388	.430
Daily feed per lamb, lbs.:				
Complete pellet	3.92	.....	.....	.....
Whole sorghum grain	.....	1.36	1.31	1.31
Alfalfa pellets	.....	2.56	.49	.....
Alfalfa hay	.....	.....	.....	.74
Forage sorghum silage	.....	.....	4.17	3.81
Cottonseed meal	.....	.....	.10	.10
Salt	.024	.018	.028	.020
Alfalfa straw	.24	.22	.....	.....
Av. lbs. feed per cwt. gain:				
Complete pellet	638.1	.....	.....	.....
Whole sorghum grain	.....	240.3	334.8	319.3
Alfalfa pellets	.....	451.8	126.3	.....
Alfalfa hay	.....	.....	.....	180.7
Forage sorghum silage	.....	.....	1067.0	928.5
Cottonseed meal	.....	.....	25.6	24.4
Salt	3.9	3.2	7.2	4.8
Alfalfa straw	39.1	38.5	.....	.....
Av. feed cost per cwt. gain ¹	\$11.17	\$12.35	\$11.72	\$10.25
Av. feed cost per lamb ¹	\$ 6.03	\$ 6.15	\$ 4.03	\$ 3.70
Cost per lamb start of test	\$10.79	\$10.79	\$10.89	\$10.69
Av. total cost per lamb ^{1,2}	\$16.82	\$16.94	\$14.92	\$14.39
Av. total cost per cwt. ^{1,2}	\$13.18	\$13.73	\$13.73	\$13.20

1. Includes cost of stilbestrol implant @ 9¢ but does not include cost of drench or cobalt bullets.

2. Does not include cost of lamb loss.

Table 39
Data from wheat pasture and cobalt tests with lambs.

	13	All lots	
	Wheat pasture	Cobalt bullets	No cobalt bullets
Number lambs	44	283	285
Days on feed	88	88	88
Av. initial wt., lbs.	71.4	72.9	73.4
Av. final wt., lbs.	108.6	111.9	112.4
Av. total gain, lbs.	37.2	39.0	39.0
Av. daily gain, lb.	.423	.443	.443
No cobalt	.413		
Cobalt	.433		
Daily feed per lamb, lb.:			
Wheat pasture	free choice		
Salt	.014		
Av. lbs. feed per cwt. gain:			
Salt	3.3		
Av. feed cost per cwt. gain ¹ ..	\$ 2.63		
Av. feed cost per lamb ¹	\$.98		
Cost per lamb start of test ..	\$10.47		
Av. total cost per lamb ¹	\$11.45		
Av. total cost per cwt. ¹	\$10.54		

1. Includes cost of stilbestrol implant @ 9¢ but not cost of drench or cobalt bullets.

Observations

Lambs in lot 3 consumed about .5 pound more corn silage per lamb per day than those fed sorghum silage in lot 2. Because of this, slightly faster and cheaper gains were made by lambs fed corn silage. These results agree with those obtained in the 1959-60 test.

A ration of alfalfa hay, cottonseed meal, and free-choice grain sorghum silage produced satisfactory but slower and slightly more expensive gains than a ration of alfalfa hay, cottonseed meal, forage sorghum silage, and sorghum grain. Supplementing the grain sorghum silage ration with sorghum grain for the last 28 days of the 88-day period increased rate of gain. Lambs in lot 12 that were fed a corn silage ration supplemented with grain for the last 28 days of the test gained more slowly, less efficiently, and produced more expensive gains than lambs on the other silage rations.

Whole barley was equal to whole sorghum grain in this test. However, sorghum grain produced cheaper gains using current feed prices. Grinding and then pelleting sorghum grain or barley increased rate of gain, improved feed efficiency, and slightly reduced feed cost per cwt. gain. Lambs fed a grain mixture of ½ whole sorghum grain and ½ whole barley produced cheaper and slightly faster gains than lambs fed whole sorghum grain or whole barley.

Lambs in lot 1 fed a complete pelleted ration gained faster and more efficiently than lambs fed other drylot rations. The feed cost per cwt. gain was higher than for most of the other rations. However, because of the large total gain per lamb, and since the gain cost less per cwt. than the purchase price of the lamb, the total cost per cwt. was in line with other lots that produced slower but cheaper gains. A mixed self-fed ration of whole sorghum grain and dehydrated alfalfa pellets fed in lot 7 produced less efficient gains than the complete pelleted ration. However, lambs fed the mixed ration gained faster and more efficiently than lambs fed other rations. Replacing .75 pound of alfalfa hay with .5 pound dehydrated alfalfa pellets in lot 4 did not affect rate or efficiency of gain. However, replacing the alfalfa hay in lot 4 or the alfalfa hay and silage in lot 7 with dehydrated alfalfa pellets resulted in a higher feed cost per cwt. gain.

Wheat pasture produced as rapid gains as most rations at the lowest

feed cost per cwt. gain. One light snow fell during the test but it interfered only slightly with grazing.

Lambs treated with a 5-gm. cobalt bullet gained no faster than those given no supplemental cobalt.

Two lambs died prior to the start of the test. Four lambs, one from lots 3, 8, 9, and 12 respectively, died from enterotoxemia during the test period.

Charles Pfizer and Co., Inc., Terre Haute, Indiana, furnished the stilbestrol implants; Wm. Cooper and Nephews, Inc., Chicago, Illinois, supplied the cobalt bullets; and Trivermol drench was furnished by Jen-Sal Laboratories, Kansas City, Missouri. The dehydrated alfalfa pellets were supplied by Archer-Daniels Midland Company and National Dehydrating and Milling Company.

Investigations of Milk-fat Lamb Production Practices for Western Kansas (Project 584).

Carl Menzies and Evans Banbury

This sheep project was initiated in the spring of 1959 as a new research project at the Colby Branch Experiment Station in cooperation with the Department of Animal Husbandry, Kansas State University.

One hundred fifty-one finewool yearling ewes were purchased from near Del Rio, Texas, May 4, 1959. An additional 200 similar yearling ewes were purchased from the same area May 13, 1960. These ewes are handled in a typical Kansas early lambing program. The ewes are bred to purebred Hampshire rams and all lambs are sold in the spring as milk-fat lambs.

Over-all objectives of this project are to determine the productive and economic value of various management practices, types of pastures, feeds, feed additives, and combinations of these to maintain a commercial ewe flock and to produce milk-fat lambs for a spring market under western Kansas conditions.

Ewe Flushing Test—Spring 1959

One hundred fifty-one yearling ewes were divided into three lots and fed the following rations for 40 days (May 14-June 23).

Lot 1. Rye pasture and/or chopped green cereal crops. Rye pasture was grazed May 14 to May 27; from May 27 to June 13 chopped green wheat forage was fed in addition to rye pasture; and from June 13 to June 23 a ration of chopped green wheat forage and sorghum silage was fed. In addition to the rye pasture, 131 pounds of chopped wheat forage and 12 pounds of silage were fed per ewe during the flushing period. Both the rye and wheat had advanced to the soft-dough stage by the end of the flushing period.

Lot 2. Drylot. A ration of ¾ pound whole sorghum grain, 1 ¼ pounds alfalfa hay, and free-choice sorghum silage (4.7 pounds average consumption) was fed per ewe per day.

Lot 3. Buffalograss pasture. Ewes were grazed on 80 acres of very good buffalograss pasture.

Six yearling Hampshire rams were used to breed the ewes. Breeding season started May 25, about two weeks after ewes were placed on the different flushing rations. The six rams were divided into three pairs and were turned with the ewe groups each night and removed each morning. Each pair of rams was rotated to a different ewe lot twice a week. At the end of the flushing period, June 23, all ewes were turned together and grazed on buffalograss pasture. All six rams were turned with the entire flock each night until the end of the breeding season, September 1.