Table 30

Test station results (3 year summary).[1]

BOARS

Breed	No.	Av. daily gain, lbs.	Feed efficiency, lbs.	Age at 200 lbs.	Backfat, in.
D	56	1.92	273	149	1.19
H	68	1.79	282	152	1.08
Y	57	1.82	274	150	1.07
P	23	1.74	288	157	1.11
L	15	1.78	288	146	1.10
B	11	1.79	286	146	1.05
S	19	1.73	288	160	1.03
	249	1.82	280	151	1.10

BARROWS

Breed	No.	Av. carcass length, in.	Av. lean cuts, %	Av. loin eye area, sq. in.
D	36	28.8	47.4	3.38
H	42	29.1	49.3	3.77
Y	32	29.8	48.0	3.62
P	14	28.1	48.2	3.95
L	8	30.9	49.6	3.82
B	5	29.2	46.6	3.85
S	9	28.6	48.6	4.15
	146	29.2	48.3	3.69

1. Taken from Master's thesis of Mr. Ju Tung Yu, Taipei, Taiwan, Republic of China.

Table 31

Kansas swine testing ration (Prepared in University feed mill).

Sorghum grain	1511 lbs.
50% meat scraps	60 lbs.
44% soybean oil meal	200 lbs.
60% fishmeal	40 lbs.
17% dehydrated alfalfa meal	60 lbs.
Cane molasses	50 lbs.
Iodized salt	10 lbs.
Dicalcium phosphate	15 lbs.
Calcium carbonate	10 lbs.
Trace minerals (5% zinc)	1 lb.
B-complex vitamins (Merck 58-A)	2 lbs.
Vitamin A (10,000 I.U. per gram)	300 grams
Vitamin D (15,000 I.U. per gram)	20 grams
Vitamin E (20,000 I.U. per lb.)	1 lb.
Aurofac 1.8-1.8	6 lbs.
Arsanilic acid (Pro-gen)	1 lb.
DL-methionine	2 lbs.
Lyamine (20% lysine)	2 lbs.

Approximate analysis: 15% crude protein; 0.75% calcium; 0.62% phosphorus.

This ration is fed to boars and barrows until they weigh approximately 200 pounds. The boars are taken off test at 200 pounds and carried on a higher fiber ration (15% alfalfa) until sale time.

The barrows are taken off test at approximately 210 pounds bodyweight, shrunk over night and slaughtered. Arsanilic acid is removed from the barrow ration prior to slaughter as per F.D.A. regulations.

The ration is pelleted and self-fed at all times.

Sheep

Garden City Lamb Feeding Experiments, 1961-1962 (Project G.C. 111).

Myron Hillman, A. B. Erhart and Carl Menzies

Lambs

The 638 white-face feeder lambs used in these tests were received October 18, 1961, at the Zuni Indian Reservation south of Gallup, N.M. Average purchase weight was 71.2 lbs. per head. They arrived in Garden City, October 20, and weighed 64.1 lbs. per head off the cars.

General Procedure

Beginning October 21, half the lambs were given Aureomycin[1] in their drinking water at 35 mgs. per head daily and compared with the other half that received no antibiotic until November 14, when both groups went on experimental feeds.

During the pre-test period the lambs were fed dry sudan hay and chopped forage sorghums the first 10 days and sudan hay plus sorghum silage the next 14 days. The lambs gained approximately what they had shrunk during shipment.

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 ratio of 25% grain and 75% alfalfa pellets was fed at the start of the test. The grain was gradually increased over 50 days until a ratio of 45% grain and 55% alfalfa pellets was reached. Alfalfa straw was supplied free choice to lots 1 and 7.

Comparisons of whole sorghum grain, whole barley, ground pelleted sorghum grain, ground pelleted barley, a mixture of ½ whole sorghum grain and ½ whole barley and a mixture of ground pelleted ½ barley and ½ sorghum grain were made among lots 2, 3, 4, 5, 6 and 8. All these lambs were fed forage sorghum silage (all they would clean up), approximately ¾ lb. of alfalfa hay per head per day, and 1/10 lb. cottonseed meal.

Lot 9 was fed whole sorghum grain and alfalfa hay with no additional supplement.

Lambs in lot 10 were fed the standard ration minus the cottonseed meal; lot 11 was fed the standard ration minus the alfalfa hay. An additional 1/10 pound of protein supplement plus ground limestone was given to lot 11.

Lambs in lot 12 were grazed on volunteer wheat pasture. All lambs were implanted with 3 mgs. stilbestrol[2] at the start of the test.

Feed Prices

Complete pellet (35% grain, 65% hay)	$36.25 per ton
Dehydrated alfalfa pellets	40.00 per ton
Alfalfa hay	20.00 per ton
Alfalfa straw	5.00 per ton
Sorghum silage	7.00 per ton
Cottonseed meal	74.00 per ton
Sorghum grain	1.75 per cwt.
Barley grain	1.75 per cwt.
Pelleting grain	8.00 per ton
Mixing grain	.10 per cwt.
Grinding grain	.15 per cwt.
Pelleting	.30 per cwt.
Salt	1.50 per cwt.
Wheat pasture	.01 per head per day

1. Water-soluble Aureomycin powder furnished by American Cyanamid Co.
2. Furnished by Chas. Pfizer & Co., Inc., Terre Haute, Ind.

Table 32

Whole sorghum grain, whole barley, pelleted sorghum grain, pelleted barley, and a mixture of whole, ½ sorghum grain with ½ barley and the same mixture pelleted.

Lot no.	2	3	4	5	6	8
Treatment	Pelleted sorghum grain	Pelleted barley	Pelleted ½ barley ½ sorghum grain	Whole ½ barley ½ sorghum grain	Whole barley	Whole sorghum grain
No. of lambs	50	50	50	50	50	50
Days on feed	88	88	88	88	88	88
Av. initial wt., lbs.	71.3	70.8	71.0	71.6	71.0	72.0
Av. final wt., lbs.	108.4	109.3	108.0	109.6	110.7	106.8
Av. total gain, lbs.	37.1	38.5	37.0	38.0	39.7	34.8
Av. daily gain, lb.	.42	.44	.42	.43	.45	.40
Daily feed per lamb, lbs.:						
Whole sorghum grain	.....	.....	.....	.....	.....	.....
Pelleted sorghum grain	1.34	.....	.....	.....	.....	.....
Whole barley	.....	.....	.....	.....	1.34	1.34
Pelleted barley	.....	1.34	.....	.....	.....	.....
Whole ½ barley, ½ sorghum	.....	.....	.....	1.34	.....	.....
Pelleted ½ barley, ½ sorghum	.....	.....	1.34	.....	.....	.....
Alfalfa hay	.72	.72	.72	.72	.72	.72
Forage sorghum silage	3.39	3.40	3.40	3.39	3.36	3.62
Cottonseed meal	.10	.10	.10	.10	.10	.10
Salt	.02	.02	.02	.019	.02	.017
Av. lbs. feed per cwt. gain:						
Whole sorghum grain	.....	.....	.....	.....	.....	338.5
Pelleted sorghum grain	317.5	.....	.....	.....	.....	.....
Whole barley	.....	.....	.....	.....	296.7	.....
Pelleted barley	.....	305.9	.....	.....	.....	.....
Pelleted ½ barley, ½ sorghum	.....	.....	318.4	.....	.....	.....
Whole ½ barley, ½ sorghum	.....	.....	.....	310.0	.....	.....
Alfalfa hay	170.8	164.7	171.4	166.8	159.7	182.2
Forage sorghum silage	804.0	779.0	810.5	785.0	745.3	914.4
Cottonseed meal	23.7	22.8	23.8	23.2	22.2	25.3
Salt	5.1	4.7	4.9	4.5	4.8	4.3
Av. feed cost per cwt. gain	$12.34	$11.93	$12.41	$10.84	$10.35	$12.01
Av. feed cost per lamb	$ 4.58	$ 4.59	$ 4.59	$ 4.11	$ 4.10	$ 4.18
Cost per lamb start of test	$10.34	$10.27	$10.30	$10.38	$10.30	$10.44
Av. total cost per lamb	$14.92	$14.76	$14.89	$14.49	$14.40	$14.62
Av. total cost per cwt.	$13.76	$13.50	$13.78	$13.22	$13.01	$13.69

Observations

Gains for the 24-day, pre-test period were almost identical. There were no differences in the general appearances of lambs that obtained Aureomycin in their water. Weather conditions were favorable. No serious illness and no death loss occurred in either lot.

All rations, listed in Table 32, produced similar gains. There was a slight difference in the cost to produce 100 pounds of gain. Whole barley slightly increased rate of gain and produced cheaper gain more efficiently. Pelleting the mixture of ½ barley, ½ sorghum grain had no advantages over feeding it whole. This does not agree with 1960-61 work. Then, pelleting the grain increased rate of gain and feed efficiency.

Lambs in lot 1, fed a complete pelleted ration, gained faster and more efficiently than lambs fed other dry-lot rations. The feed cost per cwt. gain was higher than for most other lots except 7 and 11. Lambs in lot 7, fed sorghum and dehydrated alfalfa pellets, had the second fastest gain, and gained very efficiently. The dehydrated pellets made their cost of gain much higher.

The ration of whole sorghum grain and alfalfa hay fed to lot 9 produced reasonably good gains. This ration produced a cheaper gain than did the standard ration using silage and a protein supplement.

From lots 10 and 11, it appears that a protein supplement and alfalfa hay are needed in a lamb's ration. The ration fed lot 11 contained no

Table 33

Self-fed complete pelleted ration, sorghum grain with dehydrated alfalfa pellets, sorghum grain with alfalfa hay, and the standard ration compared with lambs.

Lot no.	1	7	9	8
Treatment	Self-fed complete pellet	Self fed sorghum grain, dehydrated alfalfa pellet	Sorghum grain, alfalfa hay	Standard ration
No. lambs per lot	50	49	50	50
Days on feed	88	88	88	88
Av. initial wt., lbs.	71.7	72.0	70.8	72.0
Av. final wt., lbs.	117.6	114.9	107.9	106.8
Av. total gain, lbs.	45.9	42.9	37.1	34.8
Av. daily gain, lbs.	.52	.48	.42	.40
Daily feed per lamb, lbs.:				
Complete pellets	4.02	.....	.....	.....
Whole sorghum grain	.....	1.44	1.34	1.34
Alfalfa hay	.....	.....	2.55	.72
Pelleted dehydrated hay	.....	2.35	.....	.....
Forage sorghum silage	.....	.....	.....	3.62
Cottonseed meal	.....	.....	.....	.10
Salt	.02	.02	.015	.017
Straw	.16	.18	.....	.....
Av. lbs. feed per cwt. gain:				
Complete pellets	770.4	.....	.....	.....
Whole sorghum grain	.....	296.0	317.5	338.5
Alfalfa hay	.....	.....	604.3	182.2
Pelleted dehydrated hay	.....	482.7	.....	.....
Forage sorghum silage	.....	.....	.....	914.4
Cottonseed meal	.....	4.7	3.5	26.3
Salt	4.2	4.7	.....	4.3
Straw	30.2	37.8	.....	.....
Av. feed cost per cwt. gain	$14.15	$15.06	$11.73	$12.01
Av. feed cost per lamb	6.49	6.46	4.35	4.18
Cost per lamb start of test	10.39	10.44	10.27	10.44
Av. total cost per lamb	16.88	16.90	14.62	14.62
Av. total cost per cwt.	14.35	14.71	13.55	13.69

alfalfa hay. It produced the slowest and least efficient gain, and cost the most to produce a cwt. gain. Lot 10, fed a ration with no protein supplement, gained slightly faster than lot 11, much more efficiently and at less cost. The standard ration containing both hay and supplement excelled in all respects, except cost per cwt. gain. Gains in lot 10 cost the least.

Wheat pasture did not produce so rapid gains as previously, but its cost per cwt. gain was still lowest.

Only one lamb died (lot 7) throughout the experiment.

Table 34

Whole sorghum grain with alfalfa hay, whole sorghum grain with cottonseed meal, standard ration, and wheat pasture compared with fattening lambs.

Lot no.	8	10	11	12
Treatment	Standard ration	No cottonseed meal	No alfalfa hay	Wheat pasture
No. lambs per lot	50	50	50	50
Days on feed	88	88	88	88
Av. initial wt., lbs.	72.0	71.8	72.5	71.1
Av. final wt., lbs.	106.8	105.2	98.2	97.6
Av. total gain, lbs.	34.8	33.4	25.7	28.5
Av. daily gain, lbs.	.40	.38	.29	.32
Daily feed per lamb, lbs.:				
Whole sorghum grain	1.34	1.34	1.34	.....
Alfalfa hay	.72	.72	.....	.....
Forage sorghum silage	3.62	3.46	4.14	.....
Cottonseed meal	.10	.....	.20	.....
Salt	.017	.02	.02	.....
Ground limestone	.....	.....	.015	.....
Wheat pasture	.....	.....	.....	free choice
Av. lbs. feed per cwt. gain:				
Whole sorghum grain	338.5	352.7	458.4	.....
Alfalfa hay	182.2	189.8	.....	.....
Forage sorghum silage	914.4	911.1	1417.1	.....
Cottonseed meal	25.3	.....	68.5	.....
Salt	4.3	5.4	7.8	6.31
Ground limestone	.....	.....	5.25	.....
Wheat pasture	.....	.....	.....	free choice
Av. feed cost per cwt. gain	$12.01	$11.41	$15.73	$ 3.24
Av. feed cost per lamb	4.18	3.81	4.04	.92
Cost per lamb start of test	10.44	10.41	10.51	10.31
Av. total cost per lamb	14.62	14.22	14.55	11.23
Av. total cost per cwt.	13.69	13.52	14.81	11.27

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

Myron Hillman, Carl Menzies, and Evans Banbury

This project at the Colby Branch Experiment Station is in cooperation with the Department of Animal Husbandry, Kansas State University.

In it 350 fine wool 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.

General objectives are to determine the value of various management practices, types of pasture, 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, 1960)

Experimental Procedure: 150 two-year-old ewes were divided into two groups April 25, 1960, and fed different rations until May 12, or 17 days. One group was given a low-energy ration of 2 pounds of alfalfa hay per ewe per day; the other, a normal ration of 2 pounds alfalfa hay, 3 pounds sorghum silage, and ¼ pound whole sorghum grain per ewe per day. May 13 each group was divided into six lots along with 200 yearling ewes. These six lots were fed the following ration 40 days:

Lot 1. Drylot—¾ pound whole wheat, 1¼ pounds alfalfa hay and free-choice sorghum silage. (Av. daily ewe silage consumption 5.6 pounds.)

Lot 2. Drylot—¾ pound whole sorghum grain, 1¼ pounds alfalfa hay and free-choice sorghum silage. (Av. daily ewe silage consumption 5.6 pounds.)

Lot 3. Cereal crop pasture, ½ pound whole sorghum grain.

Lot 4. Cereal crop pasture.

Lot 5. Buffalograss pasture, ½ pound whole sorghum grain.

Lot 6. Buffalograss pasture.

Two Hampshire rams were turned with each lot at night from May 28 to June 21, 1960. Rams were rotated to a new group twice each week. June 22, the end of the flushing period, all six lots were turned together and grazed during the day on buffalograss pasture. All 12 rams were turned with ewes each night until September 1.

Results and Discussion

Table 35 gives results of pre-flushing two-year-old ewes, and of flushing on weight gain of two-year-old and yearling ewes.

Table 35

Effect of pre-flushing and/or flushing on weight gain or loss.

	2-year-old ewes			2-year-old and yearling ewes	
Lot no. and ration	No. of ewes	Av. pre-flushing wt. loss per ewe, lbs.	Av. flushing gain per ewe, lbs.	No. of ewes	Av. flushing gain per ewe, lbs.
Lot 1				58	16.7
Low energy	13	—11.9	20.9		
Normal	12	— 8.1	20.1		
Lot 2				59	16.0
Low energy	13	—11.3	21.4		
Normal	12	— 7.3	16.8		
Lot 3				58	12.8
Low energy	13	—12.9	12.1		
Normal	12	— 7.3	12.4		
Lot 4				58	10.6
Low energy	12	—12.5	9.1		
Normal	13	— 6.3	6.6		
Lot 5				58	16.2
Low energy	12	—11.8	18.2		
Normal	13	— 9.4	17.3		
Lot 6				59	14.6
Low energy	12	—11.9	15.0		
Normal	13	— 8.2	12.4		
All lots					
Low energy	75	—12.0	16.2		
Normal	75	— 7.8	14.2		

Ewes on the low-energy pre-flushing ration lost an average of 4.2 pounds each more than ewes fed the normal ration, but gained an average of 2 pounds more than the normally fed ewes during the flushing period. Gain response to flushing by yearling ewes is not shown separately but is included with the two-year-old ewes in the righthand column of Table 36.