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

	Protein (Nx6.25)	Ether extract	Crude fiber	Moisture	Ash	N-free extract	Carbohydrates
	%	%	%	%	%	%	%
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).

C. S. Menzies, L. A. Holland, and R. E. John

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.

There has been no consistent difference in carcass grade of lambs from different ewe groups.

Lambing and weaning data from the lambs sired by Hampshire, Suffolk, Southdown, and Shropshire rams have not been consistent. The birth weights of lambs sired by the four breeds of rams have been about equal, with the Southdown-sired lambs being slightly lighter. Southdown-sired lambs were not the lightest at birth this year.

The Hampshire- and Suffolk-sired lambs have gained faster in this year's test than lambs from the other two sire groups; however, they were no more efficient in converting feed into gain than the Southdown- or Shropshire-sired lambs. In past years Hampshire- and Suffolk-sired lambs have gained faster and were heavier at weaning time, but this has not been consistent. The Shropshire-sired lambs have not gained as well as lambs from the other sire groups, probably because they are later lambs. Southdown-sired lambs have shown a slight advantage in carcass grade in some years but this superior quality has not been demonstrated consistently.

Table 13

1958 Lambing Data and Lamb Production from Ewes of Different Types and from Sires of Different Breeds.

	No. ewes bred	No. ewes lambing	Av. lambing date	Av. birth wt., lbs. Singles	Twins	% lambs born	No. lambs alive Mar. 22	Av. wt. lambs Mar. 22
Ewe groups:								
Finewools	46	40	Nov. 16	10.9	8.9	120	55	69.3
Northwest whiteface	38	30	Dec. 8	11.1	9.4	108	41	64.7
Northwest blackface	44	36	Nov. 28	9.1	7.6	109	48	67.7
Sire groups:								
Hampshire	32	29	Nov. 27	11.2	9.7	116	37	70.8
Southdown	32	28	Nov. 26	10.2	8.4	116	37	64.5
Suffolk	32	26	Nov. 21	10.1	8.7	109	35	75.2
Shropshire	32	23	Dec. 4	9.8	8.1	109	35	59.3

Table 14

Lamb Production by Ewes of Different Types and from Sires of Different Breeds, 1957.

	No. ewes bred	No. ewes lambing	No. lambs weaned	% lambs weaned	Lamb wt. at 100 days of age	Av. weaning wt., lbs.	Lbs. of lamb weaned per ewe bred
Ewe groups:							
Finewools	48	43	58	121	71.8	98.9	119.5
Northwest whiteface	38	31	44	116	72.2	99.5	115.2
Northwest blackface	47	40	57	121	72.1	96.4	116.9
Total	133	114	159	119.5	72.0	98.1	117.4
Sire groups:							
Hampshire	33	28	35	106	74.6	100.2	106.3
Suffolk	33	33	46	139	78.5	103.2	143.9
Southdown	34	24	32	94	69.4	92.9	87.5
Shropshire	33	29	46	139	65.2	95.2	132.7

Table 15

Feed Consumption and Lamb Production from Four Different Breeds of Rams and Three Types of Ewes.

	No. of lambs	Daily concentrate consumption in creep per lamb	Av. daily gain in lbs. per lamb	Gain per lb. of creep feed consumed
Sire groups:				
Hampshire	37	1.31	.60	.46
Suffolk	35	1.30	.57	.44
Southdown	37	1.22	.54	.44
Shropshire	35	1.13	.49	.44
Ewe groups:				
Finewools	55		.55	
Northwest whiteface	41		.61	
Northwest blackface	48		.55	

Table 16

Body Weights and Wool Production of Ewes of Different Types, 1956-1957.

	Grease wool production	Body wts. following lambing, lbs. per ewe
Finewool	12.3	145.5
Northwest whiteface	14.6	170.0
Northwest blackface	10.6	174.3

The Use of Management Techniques and Hormones to Control the Time, Rate, and Regularity of Lambing (Project BJ-441).

E. A. Nelson, Walter H. Smith and Carl S. Menzies

Fall lambing has been practiced in Kansas commercial ewe flocks for a good many years. Most breeders have reported that commercial ewes do not breed regularly during the summer months and that fall lambing periods tend to be extended with noticeable occasional lapses. In recent years there has been an appreciable amount of research conducted at several experiment stations which has been directed toward the determination of the extent to which each sex is involved in the summer fertility of sheep.

The experimental sheep used in conjunction with studies of summer fertility of sheep at the Kansas Agricultural Experiment Station consist of a commercial flock of approximately 136 head of western ewes of three predominant types (Texas or finewools, northwest blackface crossbreds, and northwest whiteface crossbreds) and four breeds of rams (Hampshire, Suffolk, Shropshire, and Southdown). Observations on the ewe flock during the past five years indicate that most ewes are sexually active during the summer months and that low summer fertility may be associated with the quality of the semen produced by the rams during the breeding season. During the summer of 1956, four of the eight rams used for summer breeding and observed for semen quality were classified as possessing low fertility on the basis of semen motility scores and concentration of spermatozoa. All four breeds of rams were included in the low fertility classifications. It is evident that individual rams tend to vary considerably more in regard to semen quality than do the breeds observed.

During the summer of 1957, 12 rams were observed for semen quality. Eight of these were in active breeding service, four were not. Six were subjected to a cooling treatment during the day by placing them in an air-conditioned room, starting on June 3 and continuing the practice until the end of the breeding season. One-half of the rams subjected to air

conditioning were shorn on June 24 and one-half of the rams not subjected to daytime cooling were shorn on the same date.

Weekly semen collections were made during the summer, starting on June 1 and terminating on August 14. Semen collections were observed for motility, ejaculate volume, sperm concentration, and percentage of abnormal spermatozoa.

All of the rams exhibited a definite decline in semen quality immediately after the start of the breeding season as indicated by all semen characteristics. Most of the rams showed progressive improvement during the breeding season, however. This improvement was more pronounced in rams not in active breeding use than in rams in active breeding use. Of the rams in breeding use, those subjected to daytime cooling displayed the most progressive improvement following the initial decline at the start of the summer breeding season. The effects of shearing were questionable. Shearing was apparently followed by a temporary decline in semen quality in most instances. Shearing may be most beneficial if it is done prior to the onset of the breeding season.

The effects of air conditioning or daytime cooling are also questionable in regard to the improvement of ram semen quality during the summer.

The Relationship of Physical Balance to the Utilization of Pelleted and Non-pelleted Rations for Lambs (Project 236). Three-Year Summary, 1955-56, 1956-57, 1957-58, and Results of 1957-58 Test.

C. S. Menzies, D. Richardson and R. F. Cox

Physical balance of lamb-fattening rations has been studied in this project for several years. These tests have been designed to study the effect of pelleting rations of varying proportions of roughages and concentrates upon feed-lot performance and feed efficiency compared with similar non-pelleted rations. For the past three years both dehydrated and field-cured alfalfa hay have been used as roughages.

Experimental Procedure

This is the third year that western feeder lambs have been divided into six lots and fed according to the following plan:

Lot 1—Pelleted ration, 60 percent field-cured alfalfa hay and 40 percent corn. In addition approximately .4 pound of chopped alfalfa hay was fed per lamb per day. Total ration was approximately 65 percent alfalfa hay and 35 percent corn.

Lot 2—Pelleted ration, 50 percent field-cured alfalfa hay and 50 percent corn. In addition each lamb received approximately .4 pound of chopped alfalfa hay per day. Total ration was approximately 55 percent alfalfa hay and 45 percent corn.

Lot 3—Non-pelleted ration, 65 percent chopped alfalfa hay and 35 percent ground corn.

Lot 4—Non-pelleted ration, 55 percent chopped alfalfa hay and 45 percent corn.

Lot 5—Pelleted ration, 60 percent dehydrated alfalfa hay and 40 percent corn. In addition each lamb received approximately .4 pound of chopped alfalfa hay per day. Total ration was approximately 65 percent alfalfa hay and 35 percent corn.

Lot 6—Pelleted ration, 50 percent dehydrated alfalfa hay and 50 percent corn. In addition about .4 pound of chopped alfalfa hay was fed per lamb per day. Total ration was approximately 55 percent alfalfa hay and 45 percent corn.

The alfalfa hay and dehydrated alfalfa hay used in these tests came from the same college field. A portion was dehydrated at the time of cutting and was later used with ground corn to make the pellets for lots 5 and 6. The remainder of the hay was baled and stored in the barn until part of it was ground and used with ground corn to make the pellets fed lots 1 and 2. The chopped hay used in all lots came from the baled-hay supply. This was chopped with an ensilage cutter. All the corn used in these tests has been purchased in bulk lots from a Manhattan mill.