Table 19

Chemical Analyses of Feeds Fed in This Test and in the Digestion Trial Reported on Pages 14 and 15.

	Protein (Nx6.25), %	Ether extract, %	Crude fiber, %	Moisture, %	Ash, %	N-free extract, %	Carbo-hydrates, %
Ground corn	11.31	3.86	2.14	8.55	1.83	72.31	74.45
60-40 field-cured pellets	15.38	2.81	15.15	6.58	6.43	53.65	68.80
60-40 dehydrated pellets	15.38	3.63	18.12	6.03	8.55	48.29	66.41
50-50 field-cured pellets	14.13	3.07	13.10	6.85	5.48	57.37	70.47
50-50 dehydrated pellets	13.56	4.39	15.51	6.47	6.65	53.42	68.93
Chopped alfalfa hay*	15.50	1.66	29.30	5.94	9.28	38.32	67.62
Chopped alfalfa hay*	18.00	1.78	25.59	5.77	10.02	38.84	64.43

* These two samples were both obtained from the same lot of chopped field-cured hay.

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

E. Nelson, W. Smith, J. Wheat, T. D. Bell, and C. S. Menzies

Large, uniform lambs of high quality on the market at the right time provide the sheep man with his margin of profit. Because this is true, there has been considerable concern among producers of fall lambs concerning the control of the time, rate, and regularity of fall lambing. Many producers have found that their ewes will not breed regularly during the summer months and the lambing interval tends to be extended with lapses occurring occasionally.

To attack this problem, it is necessary to have basic information concerning the influence of each sex in the production of fall lambs.

The animals used in connection with this study were a 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 these sheep at this station during the past four summers indicate that the ewes may be sexually active during the summer months, at least above marginal levels, and failure to settle may be due to poor semen-quality production by the rams used. Factors affecting semen quality are being observed at Kansas State College.

Some seasonal variation in semen quality has been observed at this station. However, the data now being collected are still incomplete, and no definite conclusions can be drawn from them. It is evident that individual rams tend to vary considerably more in regard to semen quality than do the breeds being observed. During the summer of 1956, four of the eight rams used on the experimental ewes exhibited some sterility for varying periods during the active breeding season (June 1 to September 7). One ram of each breed was so affected.

This preliminary observation indicates that a smaller ratio of ewes per ram be allowed during the summer than for normal fall breeding, and that even small groups of ewes should have at least two rams available. Other management techniques that tend to show promise are the feeding of high roughage rations, providing as cool a place as possible for the rams during the day, and shearing the rams at the beginning of the breeding season or shortly thereafter.

The scope of the entire project has not been fully investigated. Hormones have not been used in this study to attempt to change reproductive efficiency, because of their inconsistent results in previous studies (reported in Circulars 283, 1952; and 308, 1954). Their use, however, is still considered to be a possible method of control for fall lambing.

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

Carl Menzies, T. D. Bell, L. A. Holland, and Edward Nelson

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 five seasons. A different set of rams has been used each year, and the ewes have been rotated so that they were bred to a different breed of ram each year. Lamb and wool 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 1955-56 lamb crop are presented in Table 15 and the preliminary lambing data and lamb production for 1956-57 are shown in Table 16.

January 30, all lambs were separated into sire groups except 12 late lambs that were added to their respective groups February 26. Each group

of lambs was creep-fed, twice a day, a concentrate mixture consisting of 6 parts by weight of milo; 1 part whole oats; 1 part wheat bran; 1 part cracked corn; 1 part dehydrated alfalfa meal, molasses, and corn pellets. Approximately 2 percent salt was added to this mixture. 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 20 gives the gains and feed consumption of the different groups of lambs.

Discussion and Observations

As in the past four years, the Texas finewool ewes bred and lambed earlier this year than the other two types of ewes. The finewool ewes lambed 23 days (average) earlier than the Northwest Blackface ewes and 28 days before 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 groups. The lambs from the other groups, however, usually gain slightly faster than the finewool lambs and are heavier at 100 days of age. So far in this year's test the lambs from the finewool ewes have gained about .05 pound less per day than lambs from the other ewe groups.

The Whiteface crossbred ewes generally have produced the heaviest fleeces, followed by the finewools. 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; however, lambs from the Blackface Crossbreds have in some years graded slightly higher.

Lambing and weaning data from the lambs sired by Hampshire, Suffolk, Southdown, and Shropshire rams have not been consistent. The average birth weights of lambs sired by Hampshire, Suffolk, and Shropshire rams have varied from year to year but have been about equal. The lambs sired by Southdown rams usually averaged lighter at birth than lambs sired by the other breeds.

The Hampshire- and Suffolk-sired lambs so far have gained faster in this year's test than Southdown- or Shropshire-sired lambs; however, they were no more efficient in converting feed into gain. In past years Hampshire- and Suffolk-sired lambs have usually gained slightly faster and have been heavier at weaning than the Southdown- and Shropshire-sired lambs. However, this trend has not been consistent. In 1954-55 the Southdown- and Shropshire-sired lambs gained equally as fast as the lambs sired by the other two breeds. The Southdown-sired lambs have shown a slight advantage in carcass grade in some years but this superior quality has not been demonstrated consistently.

Table 20

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	35	1.46	.600	.41
Suffolk	46	1.45	.644	.44
Southdown	32	1.16	.559	.48
Shropshire	46	1.32	.541	.41
Ewe groups:				
Finewools	58		.552	
Northwest Whiteface	44		.615	
Northwest Blackface	57		.604	

Beef Cattle

Three-Year Summary-Level of Winter Supplementation for Steer Calves Both Winter and Summer Grazed on Bluestem Pastures, 1952-53, 1954-55, 1955-56 (Project 253-1).

E. F. Smith, R. F. Cox, B. A. Koch, and F. H. Baker

The primary object of this test was to find the most desirable level of protein supplementation for wintering steer calves on dry bluestem pasture that are to be sold off summer grass as stocker or feeder yearlings.

Experimental Procedure

Three 10-head lots of good-quality Hereford steer calves were used in this study each year. The animals remained on bluestem pasture both winter and summer.

Respective lots were fed the below indicated supplements during the winter:

Lot 1—1 pound of soybean pellets per head daily.
Lot 2—2 pounds of soybean pellets per head daily.
Lot 3—1 pound of soybean pellets and 1 pound of ground corn per head daily.

Salt was available to the steers at all times. A bonemeal and salt mixture was offered free choice during the winter for the first two trials. In the third test, six of the steers in each lot were implanted with 36 mgs. of stilbestrol. The stilbestrol phase of the study is reported elsewhere.

Observations

Some additional gain was obtained by increasing the supplemental feed level from 1 to 2 pounds per head daily. For the combined winter and summer periods an additional 128 pounds of soybean pellets fed per animal to lot 2 produced 28 pounds of gain per steer compared with lot 1. In lot 3, 128 pounds of corn produced 20 pounds more gain per animal compared with lot 1 where only 1 pound of soybean pellets was fed per head daily.

Although the differences were not large, there appears to be some advantage to increasing the supplemental level from 1 to 2 pounds per head daily. One pound of soybean pellets and 1 pound of corn produced about the same gain as 2 pounds of soybean pellets per head daily in this summary. This is the case in two of the three years tested. Apparently 1 pound of soybean pellets per head daily comes close to meeting the calves' protein needs when combined with an energy feed such as corn.

Table 21

Three-Year Summary—Level of Winter Supplementation for Steer Calves Both Winter and Summer Grazed on Bluestem Pastures, 1952-53, 1954-55, 1955-56.

Phase 1—Wintering—125.7 days.

Lot number	1	2	3
Number of steers	10	10	10
Initial wt. per steer, lbs.	505	508	507
Final wt. per steer, lbs.	551	584	572
Gain per steer, lbs.	46	76	65
Daily gain per steer	.37	.52	.60
Daily ration per steer, lbs.:			
Soybean pellets	1.00	2.00	1.00
Ground corn			1.00
Prairie and alfalfa hay[1]	1.47	1.44	1.44
Dry bluestem pasture	Free choice		Free choice
Salt	Free choice		Free choice
Feed cost per steer[2]	$10.25	$14.63	$13.91