

EFFECTS OF DAM, SIRE AND BIRTH TYPE ON LAMB PRODUCTION

R. L. Phillips, M. Vavra and J. A. B. McArthur 1/
Eastern Oregon Experiment Station
Union, Oregon 97883

Breeding ewes at 7 months of age to lamb as yearlings has become an increasingly popular practice among sheep producers. Ewes lambing at a year of age have not reached mature size; therefore, it might be desirable to use rams from breeds of smaller mature size to encourage lighter birth weights. Smaller lambs born to ewe lambs should decrease the incidence of dystocia. To be profitable, however, this practice should not jeopardize the performance of the lamb by introducing undesirable breed of sire characteristics.

The purpose of this study was to compare preweaning and feedlot performance of lambs born as singles or twins as well as to compare the performance of lambs from Dorset or Cheviot sires and from Columbia, Targhee, Suffolk-crossbred and Hampshire-crossbred ewe lambs.

Experimental Procedure

The study was conducted for three consecutive years. Columbia, Targhee, Suffolk-whiteface crossbred and Hampshire-whiteface crossbred ewe lambs were mated to Dorset or Cheviot rams. Lambs born as singles were reared as singles and twin-born lambs were reared as twins. Type of birth and type of rearing therefore mean the same in the text. Lambs were weaned at an average age of 65 days. At the beginning of the feeding trial each lamb was drenched with thiabendazole and implanted with 3 mg of DES. Lambs were fed ad libitum in self-feeders. The ration contained 14% crude protein and was made up of 20% alfalfa hay, 26% cull peas, 30% wheat flour screenings, 18% beet pulp, 5% molasses and 1% trace mineralized salt. Initial and final weights were taken after an overnight shrink off feed and water. Weight gains during the feeding period were calculated using a two-week post weaning weight as the initial weight, and a final weight as the lambs left the feedlot.

Least Squares analysis was used to compare treatments for all parameters except twinning rate. Treatment means were compared using an L.S.D. Twinning rates were compared using a Chi-Square analysis (Steel and Torrie, 1970).

1 Technical Paper No. 3810. Oregon Agricultural Experiment Station, Corvallis, Oregon, 97331.

Results and Discussion

Type of birth

Single lambs had higher preweaning average daily gains and weighed more at weaning (table 1). Single lambs also weighed significantly ($P < 0.05$) more as they left the feed lot and hence produced heavier carcasses than lambs raised as twins. However, lambs raised as twins gained about the same during the finishing period and graded as well as the single lambs.

Glimp (1971) reported that type of rearing had more effect on pre-weaning gains than did type of birth, with little compensatory post-weaning growth response to compensate for pre-weaning differences. He also reported that single reared lambs weighed more at weaning and at slaughter than did twin or triplet lambs. Dean, Rice and Hulett (1973) reported similar findings.

Breed of sire

There were no significant differences in birth weight, suckling gains, weaning weight, feedlot performance or carcass grade between lambs sired by Dorset or by Cheviot rams (table 1).

Shelton and Carpenter (1970) bred Rambouillet, Hampshire, Dorset, Suffolk, Columbia, Delaine Merino and Border Leicester rams. They concluded that sex, year or season and carcass weight influenced carcass quality more than breed of sire. The Dorset sires produced lambs that grew rather slowly but graded higher and had a larger percent of wholesale and retail loin than progeny of rams of other breeds.

Breed of dam

Suffolk-crossbred dams gave birth to more sets of twins than did any of the other three breeds of dam (table 2). Matthew, Madson and Bennett (1970) reported that Targhee X Suffolk ewes had a higher lambing percent than Targhee ewes. Breed of dam had no effect on birth weight of lambs. Average daily suckling gains were highest for lambs from Suffolk-crossbred ewes. There was no difference in average daily suckling gains for lambs from Columbia or Hampshire-crossbred dams, while lambs from Targhee ewes gained the slowest. Lambs from Columbia, Suffolk-crossbred and Hampshire-crossbred ewes weighed significantly ($P < 0.05$) more at weaning than lambs from Targhee ewes. While in the feedlot, lambs from Hampshire-cross-

bred ewes gained slightly more than lambs from ewes of the other breeds. Breed of dam had no effect on carcass weight or U.S.D.A. carcass grades. Bradley et al. (1972) reported that lambs from Suffolk ewes tended to grade higher than lambs from Targhee ewes.

Summary

One hundred and thirteen lambs from four breeds of dam and two breeds of sire were used to study the effects of type of birth, breed of sire and breed of dam on pre- and post-weaning performance of lambs. When compared to lambs born and raised as twins, lambs born and raised as singles weighed more at birth, gained faster while nursing their mothers and weighed more at slaughter but did not gain faster in the feedlot. There were no differences in the performance of lambs sired by Dorset or Cheviot rams. Breed of dam had no effect on lamb birth weight. Suffolk-cross bred ewes gave birth to more sets of twins. Lambs from Suffolk-crossbred ewes gained fastest while nursing their mothers. There was no difference between average daily suckling gains for lambs from Columbias or Hampshire-crossbred ewes. Lambs from Targhee ewes were the lightest at weaning. Lambs from Hampshire crossbred ewes gained slightly faster in the feedlot and there was no difference in feedlot gains for lambs from ewes of the other three breeds.

Literature Cited

Bradley, B. P., A. B. Chapman, A. L. Pope and C. O. Rydberg. 1972. Two-and three-way crosses estimating combining ability of Suffolk, Targhee and Shropshire breeds of sheep. *J. Anim. Sci.* 34:541.

Deen, R. E.; R. W. Rice and A. Hulet. 1973. Supplemental feeding of ewes with methionine hydroxy analog. *Proc. West. Sec. Amer. Soc. Anim. Sci.* 24:363.

Glimp, Hudson A. 1971. Effect of sex alteration, breed, type of rearing and creep feeding on lambs' growth. *J. Anim. Sci.* 32:859.

Matthews, D. H., M. A. Madson and J. A. Bennett. 1970. Lambing performance of Targhee and Suffolk-Targhee crossbred ewes. *Proc. West. Sec. Amer. Soc. Anim. Sci.* 21:369.

Shelton, Maurice and Z. Carpenter. 1970. The influence of sex, breed, and sire on certain carcass traits of lambs. *Proc. West. Sec. Amer. Soc. Anim. Sci.* 21:339.

Steel, R. G. and J. H. Torrie. 1960. Principles and procedures of statistics. McGraw-Hill Book Co., New York.

TABLE 1. THE EFFECTS OF TYPE OF BIRTH, BREED OF SIRE AND BREED OF DAM ON BIRTH WEIGHT, SUCKLING GAIN AND FEEDLOT PERFORMANCE OF LAMBS FROM EWE LAMBS

	Type of birth		Breed of sire		Breed of dam			
	Single	Twins	Dorset	Cheviot	Columbia	Targhee	Suffolk crossbred	Hampshire crossbred
Birth wt. ^d	4.7 ^a	4.0 ^b	4.4	4.3	4.6	4.2	4.4	4.2
Avg. daily suckling gain ^d	0.28 ^a	0.22 ^b	0.26	0.25	0.25 ^b	0.22 ^c	0.28 ^a	0.26 ^b
Weaning weight ^d	23.0 ^a	19.5 ^b	21.5	21.5	22.0 ^a	20.0 ^b	21.5 ^a	21.6 ^a
Final weight ^d	44.5 ^a	40.4 ^b	42.9	42.4	42.9	40.5	42.0	44.1
Total feedlot gain ^d	21.3	20.6	21.5	21.0 ^b	20.0 ^b	20.9 ^b	19.6 ^b	22.6 ^a
Avg. daily gain ^d	0.33	0.32	0.34	0.32	0.33	0.33	0.30	0.35
Carcass weight ^d	22.7 ^a	20.4 ^b	21.9	21.3	21.1	20.4	21.8	22.3
U.S.D.A. grade ^e	18.5	17.7	18.0	18.2	18.0	17.9	18.3	18.1

a,b,c Means within main effects with different superscripts were different at $P < 0.05$.

d All weights given in kilograms.

e Prime is equal to 20 and choice is equal to 17.

TABLE 2. THE NUMBER OF EWES THAT GAVE BIRTH TO TWINS AND SINGLES

Breed	Type of birth		Ewes that gave birth to twins %
	No. of twin	No. of single	
Columbia	12	23	34
Targhee	8	15	35
Suffolk-crossbred ^a	22	17	56
Hampshire-crossbred	19	32	37

a Chi-Square analysis showed a significantly ($P < 0.05$) higher incidence of twinning.