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Effect of Type of Birth, Breed of Sire and Postweaning Nutrition
on Growth of Ewe Lambs. I. Growth Parameters

A. L. Slyter and D. G. Levis

The practice of breeding ewes as lambs and thereby gaining an additional lamb crop during a ewe's lifetime offers one possibility to increase lifetime productivity of a ewe. This should reduce the cost of raising replacement ewes since they come into production at an earlier age and increase profitability.

A research project was initiated in the fall of 1970 to evaluate the effect of breed of sire, level of postweaning nutrition, age at first breeding and type of birth on subsequent reproductive performance of the ewe. Data from the growth phase of lambs produced in this study from 1971 through 1975 are presented in this report.

Experimental Procedure

Two hundred fifty straightbred Targhee ewes were purchased in the fall of 1970 and maintained at the Antelope Range Field Station. Each year one-half of these ewes were mated (35-day exposure) to Targhee rams and one-half to Suffolk rams to produce the straightbred and crossbred ewe lambs utilized in this study. Lambs were born in late February through March and weaned at an average age of 70 to 80 days. Postweaning they were randomly assigned within previous treatment and type of birth groups to a high or moderate energy level and fed in drylot for approximately 100 days on a 60% cracked corn, 40% ground alfalfa hay ration. The moderate energy level group was hand-fed what they would eat, up to 2.5 lb. per head per day, and received 3 lb. per head per day the last 30 days. The high energy group was self-fed. These two levels were designed to supply approximately the N.R.C. requirements for replacement ewe lambs vs fattening lambs. The ration was fed in ground form except in 1972 when it was pelleted.

Results and Discussion

Least squares means for growth parameters are shown in table 1. There was a significant year effect for all five parameters reported. However, year and age of dam are confounded. Average date of birth ranged from the 60th day of the year in 1971 to the 69th day in 1973. Part or all of this effect was the result of a slight variation in the breeding season imposed by management of the flock. Lambs born from 2-year-old ewes (1971) were lighter at birth ($P < .01$) than lambs from 3 year and older ewes (1972-1975). Ewe weaning weight, 7-month weight and 7-month height were lowest in 1971. Since 1971 lambs were from 2-year old dams, this may have been the result of age of dam effect rather than year.

No difference was noted in the date of birth for single vs twin, 63.7 vs 63.6, respectively. Singles were 1.8 lb. heavier (P<.005) at birth, 11.4 lb. heavier (P<.005) at weaning, 10.5 lb. heavier (P<.005) at 7 months and .6 inches taller at 7 months than twins. This supports the concept that, when given adequate opportunity postweaning, twins will gain as rapidly as singles. In fact, partial compensation postweaning reduced the weight differential noted at weaning time between single- and twin-born lambs.

Suffolk crossbred ewe lambs were .8 lb. heavier (P<.005) at birth, 5.4 lb. heavier (P<.005) at weaning and 10.4 lb. heavier (P<.005) at the 7-month prebreeding weight than straightbred Targhee lambs. However, breed did not affect wither height at 7 months of age.

Ewe lambs developed on the high level of nutrition postweaning were 11.9 lb. heavier (P<.005) and .5 inch taller (P<.005) than those on the moderate level at the 7-month prebreeding weighing. Postweaning average daily gain and feed consumption are shown in table 2. Feed consumption for the high ration level averaged 3.5 lb. per head per day with an average daily gain of .46 pound. Average feed consumption for the moderate ration level was 2.6 lb. with a daily gain of .33 pound.

Significant (P<.005) interactions were found for ewe weaning weight between year and type of birth, for 7-month prebreeding weight between year and breed and between year and postweaning treatment and for 7-month height between year and breed. These significant interactions when plotted revealed all to be of the same direction within year with the exception of the year x breed of sire interaction for wither height in 2 of 5 years.

Summary

Suffolk crossbred ewe lambs were heavier at birth, weaning and prebreeding than straightbred Targhees. After weaning, twin gains were comparable to or slightly better than single gains. The high level of postweaning nutrition resulted in heavier, larger ewes at 7-month prebreeding time. Postweaning, the high group consumed on the average .9 lb. more feed per head per day and gained .13 lb. more per day than the moderate group.

Table 1. Least Squares Means for Date of Birth, Birth Weight and 7-Month Prebreeding Weight and Height

Variable	Date of birth 603 (day)	Birth weight 605 (lb.)	Weaning weight 583 (lb.)	7-month	
				Weight 586 (lb.)	Height 585 (inches)
Year of birth					
1971	59.8 ^a	10.1 ^a	49.0 ^a	91.0 ^a	22.9 ^a
1972	63.3 ^{bc}	10.9 ^b	69.4 ^d	108.0 ^c	24.9 ^c
1973	68.6 ^d	10.8 ^b	56.0 ^b	116.7 ^d	23.9 ^b
1974	61.5 ^{ab}	11.0 ^b	68.8 ^c	103.7 ^{bc}	24.9 ^c
1975	65.0 ^c	10.7 ^b	57.5 ^b	102.7 ^b	24.1 ^b
Type of birth					
Single	63.7	11.6 ^e	65.8 ^e	109.7 ^e	24.4 ^e
Twin	63.6	9.8 ^f	54.4 ^f	99.2 ^f	23.8 ^f
Breed of ewe					
Targhee	64.2	10.3 ^e	57.4 ^e	99.2 ^e	24.2
Suffolk x Targhee	63.1	11.1 ^f	62.8 ^f	109.6 ^f	24.1
Postweaning treatment					
High				110.4 ^e	24.4 ^e
Moderate				98.5 ^f	23.9 ^f

a, b, c, d Means within columns and variables with different superscripts differ significantly (P<.01).

e, f Means within columns and variables with different superscripts differ significantly (P<.005).

Table 2. Postweaning Average Daily
Feed Consumption and Gain

Treatment	Ration level	
	High	Moderate
<u>Year</u>		
1971	2.9 (.37) ^a	2.5 (.30)
1972	4.0 (.51)	2.6 (.32)
1973	3.9 (.51)	2.7 (.49)
1974	3.1 (.35)	2.6 (.21)
1975	3.5 (.52)	2.5 (.34)
Average	3.5 (.46)	2.6 (.33)

^a Feed consumption (lb.) followed in parentheses
by daily gain (lb.).