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# EFFECTS OF BREED OF EWE AND MANAGEMENT SYSTEM ON THE PRODUCTION OF LAMB AND WOOL

## PRODUCTION FOR FIRST LAMBING AT 12-14 MONTHS

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### Summary

Lamb and wool production at 12 months of age was evaluated for Targhee, Suffolk x Targhee and Finnsheep x Targhee ewe lambs. Ewe type of birth (single vs multiple) was also evaluated. Ewes (n = 421) were born in 1976, 1977 and 1978 and maintained at the Sheep Research Unit at Brookings, South Dakota. Ewes born as singles were heavier than multiple-born ewes at birth, weaning and breeding ( $P < .001$ ). Finnsheep x Targhee ewes were lighter at birth and weaning than Suffolk x Targhee or Targhee ewes. Breeds were equal in weight at breeding. Wool production was the highest for the Targhee ewes followed by similar production for the crossbred ewe lambs. Finnsheep x Targhee ewe lambs had higher fertility and produced more pounds of weaned lamb than did the Suffolk x Targhee or Targhee ewes<sup>1</sup>.

(Key Words: Sheep, Lamb, Wool, 12-Month Production, Breed, Type of Birth).

### Introduction

The ability of ewe lambs to produce a lamb crop at 12 months of age can improve the economic outcome for sheep production. In addition to environmental factors, breed differences in ewe lamb fertility exist. The Targhee is a typical ewe breed popular in range lambing systems. The Suffolk is a popular meat-type breed used in many farm flock systems. The Finnsheep is a breed known for multiple births and early maturity. Typically, fertility is improved by crossbreeding. The two most meaningful measures of ewe flock productivity are pounds of wool produced and pounds of lamb weaned per ewe exposed. This study evaluated the ewe lamb production of three breed groups of ewes.

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## Experimental Procedure

The experimental flock consisted of the female progeny of a group of straightbred Targhee ewes bred to Targhee, Suffolk or Finnsheep sires. The Targhee and Suffolk x Targhee ewe lambs were produced at the Antelope Range Livestock Station, Buffalo, South Dakota, and the Finnsheep x Targhee ewes were produced at the SDSU Sheep Research Unit, Brookings, South Dakota. Ewe lambs were born in 1976, 1977 and 1978 with the production reported here occurring in 1977, 1978 and 1979, respectively. Ewe lambs born at Antelope were raised on native range without supplemental feeding prior to weaning. All groups were weaned at approximately 10 weeks of age, at which time the Antelope groups were moved to Brookings and started on feed.

After adjusting to feed, the groups were co-mingled in a single lot with a self-fed ration of 60% cracked corn and 40% chopped hay. Approximately September 15, the ewe lambs were given access to pasture, free-choice chopped hay and 3/4 lb. of cracked corn per head per day. Teaser rams were placed with the ewes for 2 weeks starting September 15. The breeding season began on September 30 and lasted 5 weeks. All ewe lambs were group mated to Suffolk rams as a terminal sire. During gestation, the ewe lambs were given 2 lb. of the 60/40 cracked corn and alfalfa hay ration in addition to free-choice ground alfalfa hay.

Lambing practices were consistent with typical farm flock procedures used at the Brookings Station. This includes the use of drop pens for those ewes close to lambing, followed by individual jugs after lambing and group pens when the lambs were 2 to 3 days old. Routine lambing procedures included ear tagging, dipping of navel, docking and assisting in suckling. Male lambs were left intact and all lambs had access to creep feed from shortly after birth and were switched gradually to a grower ration prior to weaning at approximately 65 days. No ewe was allowed to nurse more than two lambs. Shearing of the ewes took place 30 to 60 days pre-lambing. Production of the experimental flock was evaluated using least-squares analysis of variance with ewe type of birth, breed of ewe and year as main effects. Additional variables were added as appropriate.

## Results

In order to determine if treatment groups differed prior to production of their first lamb crop, ewe birth weight, weaning weight and prebreeding weight were analyzed. The main effects were ewe type of birth and breed of sire. Least-squares means and standard errors are shown in table 1. Single-born ewe lambs were heavier than multiple-born ewe lambs at birth ( $P < .001$ ). The weight advantage for the single-born lambs continued through the weaning and prebreeding periods. At breeding time, the single-born ewes weighed 104 lb., while the multiple-born ewe lambs weighed 97 lb. ( $P < .001$ ). Finnsheep-sired ewe lambs were lighter at birth than Targhee or Suffolk-sired ewe lambs ( $P < .001$ ). Breeds did not differ in prebreeding weight. At prebreeding time, weights for Targhee-, Suffolk- and Finnsheep-sired ewes were 99, 103 and 99 lb., respectively.

The percentage of ewes lambing per ewe exposed (fertility) was also evaluated. No differences were found between single- and multiple-born ewe lambs (61 vs 59%). Breeds differed ( $P < .001$ ) in their ability to lamb at 1

TABLE 1. LEAST-SQUARES MEANS AND STANDARD ERRORS FOR BIRTH WEIGHT, WEANING WEIGHT AND PREBREEDING WEIGHT (LB.)

Parameter	Birth weight	Weaning weight	Prebreeding weight
Overall mean	10.30	59.0	99.7
Ewe type of birth	***	***	***
Single	11.48 ± .143 <sup>a</sup>	66.0 ± .99 <sup>a</sup>	104.3 ± 1.52 <sup>a</sup>
Multiple	9.66 ± .090 <sup>b</sup>	55.0 ± .64 <sup>b</sup>	97.0 ± .95 <sup>b</sup>
Breed of sire	***	***	
Targhee	10.74 ± .130 <sup>a</sup>	64.2 ± .90 <sup>a</sup>	99.4 ± 1.36
Suffolk	10.74 ± .123 <sup>a</sup>	64.0 ± .84 <sup>a</sup>	103.4 ± 1.30
Finnsheep	10.21 ± .400 <sup>b</sup>	53.5 ± 1.25 <sup>b</sup>	99.0 ± 1.91

\*\*\* P<.001.

<sup>a, b</sup> Means with unlike superscripts in the same column and within main effects differ (P<.05).

year of age. At this age, overall fertility was 60.3% with breed values of 40.5% for Targhee, 66.4% for Suffolk x Targhee and 72.2% for Finnsheep x Targhee.

Lamb and wool production was evaluated using 15 variables. Least-squares means and standard errors are shown in table 2. Single- and multiple-born ewes differed ( $P < .05$ ) for lamb birth weight and wool produced. Lambs from single-born ewes were .9 lb. lighter than lambs from multiple-born ewes. Single-born ewes produced .5 lb. more wool than multiple-born ewes.

Differences did exist between the breeds for some of the production traits. Although Finnsheep x Targhee ewes gave birth to lighter ( $P < .05$ ) lambs than Suffolk x Targhee or Targhee ewes, lamb weaning weight did not differ. Finnsheep x Targhee ewes gave birth to more lambs per ewe exposed and per ewe lambing as well as weaning more lambs and weaning more pounds of lamb per ewe exposed than did Suffolk x Targhee and Targhee ewes ( $P < .05$ ). Targhee ewes produced more pounds of wool than Suffolk x Targhee ewes who produced more than Finnsheep x Targhee ewes ( $P < .05$ ). Male lambs were not heavier ( $P > .05$ ) than female lambs at birth or weaning. Single-born lambs were heavier than multiple-born lambs ( $P < .05$ ). Lambs born as twins and reared as twins were lighter ( $P < .05$ ) than lambs born as singles or twins and raised as singles. Number of lambs born had no effect on the weight of wool shorn 30 to 60 days before lambing.

These data indicate that, for every 100 Targhee ewes exposed at 7 to 8 months of age, 41 lambed. Inclusion of one-half Suffolk breeding increased the number lambing to 66, while Finnsheep breeding increased the number to 71. Fertility is of major importance in determining ewe lamb performance, as it affects all of the lamb traits.

TABLE 2. LEAST-SQUARES MEANS AND STANDARD ERRORS FOR PRODUCTION OF EWES BRED AT 7 TO 8 MONTHS

	Lamb birth wt., lb.	No. born per ewe exposed	No. born per ewe lambing	Lamb wt. at wean- ing (lb.)	No. weaned per ewe exposed	Total wt. weaned per ewe exposed (lb.)	Wool (lb.)
Overall mean	10.0 ± 1.88	.79 ± .65	1.31 ± .41	49 ± 13.3	.52 ± .62	25 ± 20.7	7.6 ± 1.08
Ewe type of birth							
Single	9.6 ± .29 <sup>b</sup>	.86 ± .07	1.25 ± .05	45 ± 3.8	.55 ± .07	27 ± 3.3	7.9 ± .15 <sup>b</sup>
Multiple	10.5 ± .23 <sup>c</sup>	.74 ± .04	1.28 ± .04	50 ± 2.9	.48 ± .04	23 ± 2.0	7.4 ± .11 <sup>c</sup>
Breed of ewe <sup>a</sup>							
T	10.8 ± .48 <sup>b</sup>	.45 ± .06 <sup>b</sup>	1.08 ± .06 <sup>b</sup>	45 ± 5.9	.22 ± .06 <sup>b</sup>	11 ± 2.9 <sup>a</sup>	8.2 ± .22 <sup>b</sup>
SxT	10.6 ± .24 <sup>b</sup>	.80 ± .06 <sup>c</sup>	1.17 ± .04 <sup>b</sup>	50 ± 3.7	.49 ± .05 <sup>c</sup>	23 ± 2.7 <sup>b</sup>	7.6 ± .12 <sup>c</sup>
FxT	8.9 ± .26 <sup>c</sup>	1.14 ± .09 <sup>c</sup>	1.53 ± .07 <sup>c</sup>	48 ± 2.3	.83 ± .08 <sup>d</sup>	41 ± 4.0 <sup>c</sup>	7.2 ± .15 <sup>d</sup>
Year of production							
1977	10.5 ± .32	.58 ± .06 <sup>b</sup>	1.20 ± .06 <sup>b</sup>	54 ± 4.4	.52 ± .05	28 ± 2.6	8.1 ± .14 <sup>b</sup>
1978	9.8 ± .21	.95 ± .06 <sup>c</sup>	1.40 ± .05 <sup>c</sup>	46 ± 2.2	.59 ± .06	28 ± 2.9	7.7 ± .12 <sup>c</sup>
1979	9.9 ± .37	.86 ± .08 <sup>c</sup>	1.19 ± .06 <sup>b</sup>	42 ± 4.7	.42 ± .08	18 ± 3.9	7.2 ± .18 <sup>d</sup>

<sup>a</sup> T = Targhee, SxT = Suffolk x Targhee, FxT = Finnsheep x Targhee.

<sup>b,c,d</sup> Means with unlike superscripts in the same column and within main effects differ (P<.05).