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Effects of Breed of Ewe and Management System on the Production of Lamb and Wool 4. Cumulative Production Per Ewe Entering the Study

W. J. Busch
South Dakota State University

A. L. Slyter

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

4. CUMULATIVE PRODUCTION PER EWE ENTERING THE STUDY

W. J. BUSCH AND A. L. SLYTER

Department of Animal and Range Sciences
Agricultural Experiment Station

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Summary

Cumulative production of lamb and wool was evaluated for Targhee, Suffolk x Targhee and Finnsheep x Targhee ewes. Ewes were maintained under either farm (Brookings, South Dakota) or range (Buffalo, South Dakota) conditions. All ewes were allowed six opportunities to lamb unless eliminated by death, failure to lamb at two consecutive opportunities, or severe reproductive abnormalities. Cumulative production was calculated by adding a ewe's previous production to the year being evaluated. Results after 6 years are reported here. All ewes entering the study were included in the analyses. Single-born ewes produced more wool ($P<.05$) over their lifetime than multiple-born ewes. Finnsheep x Targhee ewes gave birth to and weaned more lambs ($P<.05$) than Suffolk x Targhee or Targhee ewes. Targhee ewes produced more wool ($P<.05$) than Suffolk x Targhee or Finnsheep x Targhee ewes. Farm flock ewes exceeded the production of range flock ewes in number of lambs born, weight of lambs born, weight of lambs weaned and weight of wool produced ($P<.05$).

(Key Words: Sheep, Lamb, Wool, Breed, Lifetime Production, Management System).

Introduction

Total lifetime weight of lamb weaned and weight of wool produced per ewe of the original flock is a meaningful way of expressing the overall economic advantage in production from various breeds or production situations because it takes longevity into consideration. Longevity will have an impact on lifetime production. Very few accurate figures are available for attrition rates for various groups of ewes. It is reasonable to figure an overall reduction from culling and death of about 5% the first year and 10% per year thereafter. At least part of the breed or production system differences in cumulative lamb and wool production is dependent upon differences in longevity.

Experimental Procedure

Development of the experimental flock and production for each age of ewe was outlined in parts 1 and 2 of this series of articles (SHEEP 85-6

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and SHEEP 85-7), respectively. Cumulative production per ewe entering the experiment was generated by adding a ewe's previous production to the year being evaluated. Accumulations were made after years 2, 3, 4, 5 and 6. Production after 6 years is presented in this paper. Zeros were added to a ewe's production for years in which she failed to lamb or for each year after which she left the flock. Production was tested using a least-squares analysis of variance with ewe type of birth, breed of ewe and management system as main effects.

Results

The percentage of ewes present at breeding time for each age of ewe is presented in table 1. At breeding time of the sixth year, 46% of the original ewes were present. Among Suffolk x Targhee ewes, 45% were present in the farm flock and 46% in the range flock. A higher percentage of Targhee survived under farm conditions (53% vs 44%). Finnsheep x Targhee survival was also greater for farm flock than for range flock ewes, 54% vs 33%, respectively. For the sixth year, 50.4% of the farm flock ewes were still present and 41.2% of the range flock were present.

Least-squares means and standard errors for the five cumulative traits tested are found in table 2. After 6 years of production, single-born ewes had produced 42.4 lb. of wool, while multiple-born ewes had produced 36.2 lb. ($P<.05$). There were no differences between single- and multiple-born ewes for any of the lamb production traits tested.

Finnsheep x Targhee ewes gave birth to and weaned more lambs ($P<.05$) than Targhee and Suffolk x Targhee ewes. Numbers weaned were 5.57, 4.27 and 4.20, respectively. After 6 years, Finnsheep x Targhee ewes had weaned 60 lb. more lamb than Targhee ewes ($P<.05$). After 6 years, Targhee ewes had produced 4.9 lb. more wool than the Suffolk x Targhee ewes and 8.0 more lb. of wool than the Finnsheep x Targhee ewes ($P<.05$).

Farm flock ewes had greater production than range flock ewes for number of lambs born, weight of lambs born and weaned and pounds of wool produced ($P<.05$).

These data would indicate that for every 100 Targhee ewes brought into the breeding flock, 24,200 lb. of weaned lamb and 4,360 lb. of wool were produced after 6 years. Substituting one-half of the genetic base with Suffolk breeding resulted in a nonsignificant decrease of 488 lb. of wool produced after 6 years. The use of one-half Finnsheep breeding resulted in 6,160 lb. more lamb and 800 lb. less wool than for the Targhee ewes.

TABLE 1. PERCENTAGE OF EWES PRESENT AT BREEDING TIME FOR EACH AGE OF EWE.

Age in Years	Total	Management system/breed[a]					
		Farm			Range		
		T	ST	FT	T	ST	FT
1	100	100	100	100	100	100	100
2	99	100	97	99	97	100	100
3	82	87	79	90	79	84	73
4	71	80	70	78	68	73	52
5	60	66	61	69	57	57	47
6	46	53	45	54	44	46	33

[a] T = Targhee; ST = Suffolk x Targhee; FT = Finnsheep x Targhee.

TABLE 2. LEAST-SQUARES MEANS AND STANDARD ERRORS FOR CUMULATIVE PRODUCTION AFTER SIX YEARS[d].

	Number of Lambs Born	Number of Lambs Weaned	Weight of Lambs Born (lb)	Weight of Lambs Weaned (lbs)	Weight of Wool (lbs)
Overall mean	6.25	4.72	64.3	268	38.7
Ewe Type of Birth					
Single	6.52±.349	4.87±.288	67.2±3.59	282 ±16.9	42.4±1.59[a]
Multiple	5.92±.218	4.48±.288	61.0±2.24	255 ±10.5	36.2±0.99[b]
Breed of Ewe					
Targhee	5.24±.315[a]	4.20±.260[a]	61.8±3.24	244 ±15.2[a]	43.6±1.44[a]
Suffolk x Targhee	5.59±.296[a]	4.27±.244[a]	60.2±3.05	257 ±14.3[ab]	38.7±1.35[b]
Finnsheep x Targhee	7.82±.441[b]	5.57±.364[b]	70.3±4.54	304 ±21.3[b]	35.6±2.02[b]
Management System					
Farm	6.81±.267[a]	4.97±.221	71.0±2.75[a]	288 ±12.9[a]	41.0±1.22[a]
Range	5.62±.286[b]	4.39±.236	57.2±2.94[b]	249 ±13.8[b]	37.6±1.31[b]

[ab] Means with unlike superscript in the same column and within main effects differ (P<.05).

[d] All values based on a per ewe entering the experiment basis.