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

2. PRODUCTION FOR EWES FROM ONE TO SIX YEARS OF AGE

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Summary

A variety of lamb and wool production traits were evaluated for a group of Targhee, Suffolk x Targhee and Finnsheep x Targhee ewes. A random half of the ewes were maintained at the Sheep Research Unit, Brookings, South Dakota. The second half was maintained at the Antelope Range Livestock Station, Buffalo, South Dakota. All ewes were allowed six opportunities to lamb unless eliminated by death, failure to lamb at two consecutive opportunities or severe reproductive abnormalities. Percentage of ewes lambing (fertility) was lowest for 1-year-old ewes with 60.3% lambing. Values for fertility ranged from 85.1% to 93.6% for ewes 2 through 6 years of age. Number of lambs born per ewe exposed was lowest for 1-year-old ewes and increased to 1.72 for 6-year-old ewes. Number of lambs weaned per ewe exposed was lowest for 1-year-old ewes and peaked at 1.34 for 4-year-old ewes. Pounds of lamb weaned per ewe exposed increased from 1-year-old ewes to 4-year-old ewes and remained at that level through 6 years. Pounds of wool produced showed a curvilinear response with age of ewe.

(Key Words: Sheep, Lamb, Wool, Breed, Age of Ewe, Management System.)

Introduction

Most research reports indicate that very young and very old ewes have lower levels of lamb and wool production than do middle-aged ewes. The most documented findings are that production will be lowest for ewe lambs bred to lamb at 12 to 14 months of age. Although the trend is fairly well-established, individual breeds may mature and produce at different rates. When selecting those ewes which will remain in the flock, it is important to remember that the production at 1 year of age is not an absolute indicator of eventual production levels. Nevertheless, those ewes that exhibit superior production at a young age may continue to produce at levels exceeding contemporaries. If a producer is doing a good job of selection, it would be possible for the young ewes in the flock to outproduce some of the older ewes because of genetic superiority. This study evaluated how the age of the ewe affects her production of lamb and wool.

Prepared for Sheep Day, June 6, 1985.

Experimental Procedure

The development of the experimental flock was outlined in part 1 of this series of articles (SHEEP 85-6). Following weaning of the first lamb crop, one-half of the experimental flock in each breed group was assigned to the Antelope Range Livestock Station, Buffalo, South Dakota, and one-half to the Sheep Research Unit, Brookings, South Dakota, for collection of lifetime production data. The split was done to test the effect of management system (location) on lamb and wool production.

Management practices at the Brookings (farm) location were the same as those described in part 1. Management practices at the Antelope (range) location included late fall breeding, reliance on grazing and limited feed supplementation during gestation, spring lambing and summer grazing of ewe and lamb pairs. Breeding seasons for range ewes were for a duration of 35 days, beginning between November 5 to 15. At lambing, ewe and lamb pairs were given access to housing for approximately 2 days. Routine management practices included ear tagging, dipping of the navel, docking and assistance in receiving colostrum. Male lambs were castrated and no lambs received creep feed. Only ewes surviving to the time of location allocation were included in the study. Experimental flock ewes were mated such that each group had an opportunity for six lamb crops. Ewes were culled from the flock as a result of death, failure to lamb in two consecutive opportunities (including 12-month lambing) or for severe reproductive abnormalities such as damaged udder or prolapse. Lamb and wool production values are based on those ewes present at breeding time each year. Due to ewes leaving the experiment, the performance of older ewes is derived from fewer individuals (table 1). Each age of ewe in the analysis includes three calendar years. Lamb and wool production traits were evaluated using least-squares analysis of variance. Results of that evaluation with breed of ewe and age as the main effects are shown in table 2.

Results

A total of 15 lamb and wool production variables were evaluated on the experimental flock. Five of the variables are shown in table 2. Percentage of ewes lambing of those exposed (fertility) was the lowest for 1-year-old ewes (60.3%). After year 1, there were no differences in fertility for any age group or between any of the three breeds. Peak fertility for all breeds occurred at 4 years of age. The overall mean for that age was 93.6%.

The number of lambs born per ewe exposed was lowest for 1-year-old ewes. Values obtained for years 2 through 6 did not differ statistically but did continue to rise for the life of the ewes. At all ages, Finnsheep x Targhee ewes gave birth to more lambs per ewe exposed than did Suffolk x Targhee and Targhee ewes. Finnsheep x Targhee ewes ages 1, 2 and 4 years of age weaned more lambs per ewe exposed than Suffolk x Targhee and Targhee ewes. For the remaining 3 years, Finnsheep x Targhee ewes held a numerical advantage for number of lambs weaned. Number of lambs weaned per ewe exposed increased between 1- and 2-year-old ewes and between 3- and 4-year-old ewes. Peak number of lambs weaned (1.34) was at 4 years of age.

Finnsheep x Targhee ewes ages 1, 2 and 4 years of age weaned more pounds of lamb than Suffolk x Targhee and Targhee ewes (P<.05). Weight of lamb weaned was greater (P<.05) for 2-year-old ewes than 1-year-old ewes. Weight of lamb weaned was greater (P<.05) for 4-year than 3-year-old ewes. Weight of lamb weaned per ewe exposed seemed to level off after 4 years of production.

Fleece weight increased (P<.05) at 2, 3 and 4 years of age. For each age of ewe, Targhee ewes produced more (P<.05) wool than Finnsheep x Targhee ewes. Targhee ewes ages 1, 2 and 5 years of age produced more (P<.05) wool than Suffolk x Targhee ewes. The results of this study indicate that for most lamb and wool production traits ewe lambs will have lower production than mature ewes. It also appears that production tends to stabilize for 4-, 5- and 6-year-old ewes.

TABLE 1. NUMBER OF EWES OF EACH AGE FOR EACH YEAR.

Year	Age of ewes in years					
	1	2	3	4	5	6
1977	154					
1978	168	141				
1979	95	160	113			
1980		91	133	103		
1981			77	116	84	
1982				64	86	60
1983					55	70
1984						47

TABLE 2. LEAST-SQUARES MEANS FOR LAMB AND WOOL PRODUCTION FOR EWES FROM ONE TO SIX YEARS OF AGE.

Parameter	Age of Ewe								
	1	2	3	4	5	6			
Percentage of Ewes Lambing	60.3	85.1	87.0	93.6	80.5	87.1			
Targhee	40.5	86.8	85.3	92.9	91.4	82.8			
Suffolk x Targhee	66.4	84.0	89.1	92.3	80.2	87.9			
Finnsheep x Targhee	72.2	84.6	86.4	95.8	91.8	90.6			
No. Born/Ewe Exposed	.79	*	1.36	1.48	1.63	1.62	1.72		
Targhee	.45 ^a		1.12 ^a	1.20 ^a	1.42 ^a	1.43 ^a	1.50 ^a		
Suffolk x Targhee	.80 ^b		1.20 ^b	1.35 ^a	1.44 ^a	1.33 ^a	1.52 ^a		
Finnsheep x Targhee	1.14 ^c		1.94 ^b	1.80 ^b	2.15 ^b	2.05 ^b	2.24 ^b		
No. Weaned/Ewe Exposed	.52	*	1.02	1.15	*	1.34	1.25	1.21	
Targhee	.22 ^a		.82 ^a	1.01		1.22 ^a	1.23	1.25	
Suffolk x Targhee	.48 ^b		.84 ^a	1.11		1.25 ^a	1.10	1.16	
Finnsheep x Targhee	.83 ^c		1.27 ^b	1.32		1.66 ^b	1.47	1.55	
Weight Weaned/Ewe Exposed (lb)	25	*	59	64	*	74	76	76	
Targhee	11 ^a		50 ^a	54		67 ^a	79	77	
Suffolk x Targhee	23 ^b		54 ^a	63		75 ^a	72	76	
Finnsheep x Targhee	41 ^c		67 ^b	67		94 ^b	91	92	
Fleece Weight	7.6	*	8.8	*	9.2	*	9.6	9.6	9.2
Targhee	8.2 ^a		9.6 ^a		9.9 ^a		10.5 ^a	10.3 ^a	9.2 ^a
Suffolk x Targhee	7.6 ^b		8.8 ^b		9.8 ^a		10.0 ^a	9.2 ^b	9.1 ^a
Finnsheep x Targhee	7.2 ^c		8.4 ^b		8.7 ^b		8.7 ^b	8.5 ^b	7.4 ^b

* Adjacent overall means differ (P<.05).

abc Means with unlike superscripts in the same column and within main effect differ (P<.05).