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South Dakota Sheep Field Day Proceedings and  
Research Reports, 1993

Animal Science Reports

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1993

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## Recommended Citation

Iman, N.; Slyter, A. L.; Swan, Ron; and Read, Bruce, "Lifetime productivity of Targhee vs. Finn-Dorset-Targhee ewes managed as farm vs. range flock" (1993). *South Dakota Sheep Field Day Proceedings and Research Reports, 1993*. Paper 2.  
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# Lifetime productivity of Targhee vs. Finn-Dorset-Targhee ewes managed as farm vs. range flock

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SHEEP 93-2

## Summary

Data from 119 Targhee (T) and 265 1/4 Finn-1/4 Dorset-1/2 Targhee (FDT) ewes were examined for the effects of ewe breed and management system on lifetime productivity. Ewes were managed as a typical farm or range flock operation. Ewes were born in 1984 and 1985 and lambed their first time as 2-year olds. Data from 1490 exposures (449 T and 1041 FDT) were collected from the ewes over 5 years of production. Targhee ewes produced heavier lambs at birth, had a higher fertility rate, and produced heavier fleeces. Finn-Dorset-Targhee ewes had a higher prolificacy rate, weaned more lambs per ewe exposed, and had more lamb weight weaned per ewe exposed. These data indicate that the introduction of Finnsheep and Dorset breeds have increased overall flock productivity in both management systems.

Key Words: Sheep, Ewe breed, Management system, Wool, Lifetime production

## Introduction

Number of lambs born and marketed per ewe per year is a major factor in ewe flock productivity. Previous research has shown that this number can be increased by using high prolific sheep such as the Finnsheep. Therefore, the Finnsheep were chosen because of their prolificacy. The Dorset breed was chosen because of its milking ability, whereas the Targhee ewes were chosen because of their wool quality and hardiness. Because information is

lacking in the performance of high prolific ewes in various management systems typical to South Dakota, this study was conducted to evaluate the lifetime performance of Targhee and 1/4 Finn-1/4 Dorset-1/2 Targhee ewes managed as a farm or range flock.

## Experimental Procedure

April-born Targhee (T) and 1/4 Finn-1/4 Dorset x 1/2 Targhee (FDT) ewe lambs born in 1984 and 1985 at the Antelope Range Livestock Research Station, Buffalo, SD, were evaluated in this study. These lambs were weaned in late August and moved to the Sheep Research and Teaching Unit at Brookings, SD. After arrival, lambs were placed in a drylot, treated for internal and external parasites, sheared, and started on a grower ration that consisted of 50% alfalfa hay and 50% corn. At 1 year of age, ewes were assigned within breed to either the farm or range system. Those ewes assigned to the range system were returned to Antelope Station where they remained for subsequent lifetime production.

Management practices common to both systems included use of Hampshire rams as terminal sires, a 35-day breeding season, shearing 30 to 60 days prior to lambing and shed lambing. Ewes in both locations with newborn lambs were placed in individual lambing pens within the lambing shed for 1 to 2 days. Ewes and lambs were moved into grouping pens when the lambs were 2 to 3 days old. Lambs had access to a creep ration (16-18% CP) in the farm system starting shortly after birth.

The range flock ewes grazed native range to provide nutrient needs with limited supplementation (mostly with alfalfa hay and high energy cake) when snow cover or range conditions warranted. Farm flock ewes were pastured in the summer, bred on pasture with 1 lb of corn per head per day for 2 weeks preceding and 2 weeks into the breeding period beginning in early October, and maintained in the drylot from approximately November 1 until lambs were weaned in April to May.

Ewes were not allowed to nurse more than two lambs. Lambs in excess of two or lambs that appeared to be doing poorly were classified as "bums" and sold. Male lambs were castrated within 24 hours of birth in the range system, whereas in the farm system lambs were left intact in 1986 and 1987 and castrated within 24 hours of birth from 1988 to 1991. All lambs were weaned and/or weights were taken at a mean age of approximately 65 to 75 days, except in 1991 when mean age was 92 days at Brookings and 96 days at Antelope. Ewes remained in the flock for five lambing seasons, except if they were culled for not lambing in 2 consecutive years or if they were in a poor health condition. Traits evaluated in this study were fertility (number of ewes lambing per ewe exposed), prolificacy (number of lambs born per ewe lambing), ewe fleece weight, lamb birth weight, lamb weaning weight, lamb survival, and total lamb weight weaned per ewe exposed.

## Results

Number of ewes exposed each year are shown in Table 1. Targhee ewes had a higher fertility rate (90.1 vs 88.3%) and produced heavier fleeces (9.8 vs 7.7 lb) compared to FDT ewes (Table 2). Finn-Dorset-Targhee ewes had a higher prolificacy rate (2.14 vs 1.76 lambs), weaned more lambs per ewe exposed (1.36 vs 1.15 lambs), and had more lamb weight weaned per ewe exposed (82.3 vs 73.4 lb) than T ewes.

Lambs from T ewes were heavier at birth (10.8 vs 9.5 lb) compared to lambs from FDT ewes (Table 3). Lamb weaning weight was similar for the two breeds (60 and 59.7 lb, respectively). Targhee and FDT ewes had similar lamb survival rate (76.3 vs 75.5%, respectively, Table 2).

Ewes in the farm flock had a higher prolificacy rate (2.06 vs 1.84 lambs) and produced more wool (9.2 vs 8.4 lb) compared to range ewes (Table 2). Ewes in the farm system had heavier lambs at birth (10.3 vs 9.9 lb), but the weights were similar at weaning (60.0 vs 59.7 lb). Range flock ewes had a higher fertility rate (93.2 vs 85.2%) and better lamb survival (82.9 vs 68.8%).

Male lambs were heavier at birth and at weaning compared to female lambs. Single born lambs were heavier than twin born lambs at birth

Table 1. Number of ewes exposed per year for age of ewe, management system, and ewe breed

Age of ewe (yr)	Farm flock		Range flock	
	Targhee	FDT <sup>a</sup>	Targhee	FDT
2	58	133	61	132
3	50	121	59	117
4	41	113	55	109
5	34	93	42	91
6	20	67	33	70

<sup>a</sup> 1/4 Finn-1/4 Dorset-1/2 Targhee.

Table 2. Ewe lifetime productivity by fertility, prolificacy, lamb survival, fleece weight, and total lamb weight weaned per ewe exposed

Item	Fertility (%)	Prolificacy (lambs)	Lambs weaned per ewe exposed	Lambs weaned per ewe lambing	Lamb survival (%)	Fleece weight (lb)	Total lamb wt weaned per ewe exposed (lb)
<b>Ewe breed</b>							
Targhee	90.1	1.76 <sup>c</sup>	1.15 <sup>c</sup>	1.28 <sup>c</sup>	76.3	9.8 <sup>b</sup>	73.4 <sup>c</sup>
FDT <sup>a</sup>	88.3	2.14 <sup>b</sup>	1.36 <sup>b</sup>	1.53 <sup>b</sup>	75.5	7.7 <sup>c</sup>	82.3 <sup>b</sup>
<b>Management system</b>							
Farm flock	85.2 <sup>c</sup>	2.06 <sup>b</sup>	1.14 <sup>c</sup>	1.33 <sup>c</sup>	68.8 <sup>c</sup>	9.2 <sup>b</sup>	78.6
Range flock	93.2 <sup>b</sup>	1.84 <sup>c</sup>	1.37 <sup>b</sup>	1.47 <sup>b</sup>	82.9 <sup>b</sup>	8.4 <sup>b</sup>	77.1
<b>Age of ewe (year)</b>							
2	92.3 <sup>b</sup>	1.76 <sup>d</sup>	1.31 <sup>bc</sup>	1.42 <sup>c</sup>	82.7 <sup>b</sup>	7.8 <sup>d</sup>	71.9 <sup>c</sup>
3	93.6 <sup>b</sup>	1.91 <sup>c</sup>	1.37 <sup>b</sup>	1.47 <sup>bc</sup>	79.5 <sup>b</sup>	9.3 <sup>b</sup>	79.3 <sup>b</sup>
4	87.6 <sup>c</sup>	1.96 <sup>c</sup>	1.32 <sup>b</sup>	1.51 <sup>b</sup>	79.8 <sup>b</sup>	8.8 <sup>c</sup>	77.7 <sup>b</sup>
5	86.6 <sup>c</sup>	1.99 <sup>c</sup>	1.09 <sup>d</sup>	1.24 <sup>d</sup>	67.6 <sup>c</sup>	9.1 <sup>c</sup>	79.1 <sup>b</sup>
6	85.9 <sup>c</sup>	2.12 <sup>b</sup>	1.19 <sup>cd</sup>	1.37 <sup>cd</sup>	69.7 <sup>c</sup>	8.9 <sup>c</sup>	81.4 <sup>b</sup>

<sup>a</sup> 1/4 Finn-1/4 Dorset-1/2 Targhee.

<sup>b,c,d</sup> Means within a column within a main effect lacking a common superscript letter differ (P<.05).

and at weaning. Twin born lambs, in turn, were heavier than triplet born lambs at birth and at weaning. Lambs reared as singles were heavier at weaning than those reared as twins.

The percentage of ewes present at the end of the study was lower for the Targhee ewes compared to the FDT ewes (44.5 vs 51.7%, respectively, Table 4). A lower percentage of ewes remained in the farm flock after 5 years compared to the range flock (45.5 vs 53.4%).

### Discussion

The introduction of Finnsheep and Dorset breeds increased overall flock productivity mainly by increasing the number of lambs born per ewe lambing. The FDT ewes had .38 more lambs born per ewe per year compared to the T ewes. Over the five lambing seasons, this increase was

almost 2 lambs per ewe. Because of this increase in prolificacy, the total lamb weight weaned per ewe exposed was higher for the FDT ewes. The FDT ewes produced approximately 45 lb more lamb weight per ewe in their lifetime compared to the T ewes.

As expected T ewes produced heavier fleeces than the FDT ewes. Over their lifetime, T ewes produced 10.5 lb more wool per ewe than the FDT ewes.

Farm flock ewes produced 1.1 more lambs born per ewe, 4 lb of wool, and 7.5 lb more lamb weight per ewe compared to range flock ewes over their lifetime. The range flock ewes, on the other hand, had better lamb survival compared to farm flock ewes. Lamb survival was lower in the farm flock in 1990 lambing season due to inclement weather and management.

Table 3. Lamb birth and weaning weights as affected by ewe breed, management system, age of ewe, lamb sex, lamb birth type, and lamb rearing type

Item	Birth weight (lb)	Weaning weight (lb)
<b>Ewe breed</b>		
Targhee	10.8 <sup>b</sup>	60.0
FDT <sup>a</sup>	9.5 <sup>c</sup>	59.7
<b>Management system</b>		
Farm flock	10.3 <sup>b</sup>	59.9
Range flock	9.9 <sup>c</sup>	59.8
<b>Age of ewe (year)</b>		
2	9.6 <sup>c</sup>	56.2 <sup>d</sup>
3	9.7 <sup>c</sup>	59.1 <sup>c</sup>
4	10.3 <sup>b</sup>	60.1 <sup>c</sup>
5	10.5 <sup>b</sup>	63.6 <sup>b</sup>
6	10.5 <sup>b</sup>	60.2 <sup>c</sup>
<b>Lamb sex</b>		
Male	10.5 <sup>b</sup>	60.9 <sup>b</sup>
Female	9.8 <sup>c</sup>	58.8 <sup>c</sup>
<b>Birth type</b>		
Single	12.0 <sup>b</sup>	63.8 <sup>b</sup>
Twin	10.1 <sup>c</sup>	58.9 <sup>c</sup>
Triplet	8.3 <sup>d</sup>	56.8 <sup>d</sup>
<b>Rearing type</b>		
Single	NA <sup>e</sup>	62.7 <sup>b</sup>
Twin	NA	57.0 <sup>c</sup>

<sup>a</sup> 1/4 Finn-1/4 Dorset-1/2 Targhee.

<sup>b,c,d</sup> Means within a column within a main effect lacking a common superscript letter differ ( $P < .05$ ).

<sup>e</sup> NA = not applicable.

Table 4. Percentage of ewes present by age of ewe, ewe breed, and management system

Age of ewe (yr)	Breed		Management system	
	Targhee	FDT <sup>a</sup>	Farm	Range
2	100	100	100	100
3	91.6	89.8	89.5	91.2
4	80.7	83.8	80.6	85.0
5	63.9	69.4	66.5	68.9
6	44.5 <sup>b</sup>	51.7 <sup>c</sup>	45.5 <sup>b</sup>	53.4 <sup>c</sup>

<sup>a</sup> 1/4 Finn-1/4 Dorset-1/2 Targhee.

<sup>b,c</sup> Means in the same row within a main effect with a different superscript differ ( $P < .05$ ).