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THE EFFECT OF TYPE OF BIRTH, BREED OF SIRE LEVEL OF POSTWEANING NUTRITION AND AGE OF FIRST BREEDING ON LIFETIME PRODUCTION OF TARGHEE AND SUFFOLK-TARGHEE RANGE EWES

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Summary

Lifetime production data were collected on 607 Suffolk-Targhee and Targhee ewes from 1971 to 1980. Approximately 120 ewes entered the project each year from 1971 to 1975. The data were analyzed for type of ewe birth, breed of sire, postweaning nutrition level, age of first breeding and year of production. Analyses revealed year of production and breed of sire had significant effects on lifetime productivity. Suffolk-Targhee ewes gave birth to more lambs, weaned more lambs and more pounds of lamb but produced less pounds of wool than the Targhee ewes. Single-born ewes and ewes from the postweaning high energy group produced more wool. The high postweaning treatment group also weaned more pounds of lamb at 12 months of age than the moderate energy postweaning group. When 12-month production was included, the ewes that conceived at 7 months of age gave birth to more lambs and weaned more lambs and more pounds of lamb than ewes that did not lamb at 12 months. On an individual year basis, the Suffolk-Targhee ewes had higher conception rates at 12 months of age than Targhee ewes. Multiple born ewes had higher conception rates at 24 and 36 months of age than single-born ewes. Single-born ewes survived longer and had less rectal and vaginal prolapses and udder problems. Targhee ewes bloated less frequently. The moderate energy postweaning group had fewer ewes culled for bad teeth. Ewes that were exposed at 7 months and did not conceive had less udder problems than all their contemporaries.

(Key Words: Lifetime Productivity, Ewes, Breed, Nutrition).

Introduction

Due to the present economic pressures, sheep producers must utilize every management tool available in the most profitable manner. Therefore, many traditional practices must be reevaluated. Research has suggested practices such as use of twins vs singles, use of crossbred ewes, mating at 7 to 8 months of age and proper nutrition levels may be used to increase productivity.

Originally Prepared for Research Field Day, Antelope Range Livestock Station, Buffalo, South Dakota, September 20, 1983.

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However, research is usually performed under conditions unique to those found at experiment stations and therefore may affect the application of the results to commercial producers. By conducting an experiment at several commercial operations, the results should be more applicable to commercial production units.

This investigation was initiated to determine which factors would be most beneficial to implement for range operations. This study involved five groups of ewes that were maintained for 5 or 6 years on several commercial range operations in western South Dakota.

Experimental Procedure

Initially 261 yearling Targhee ewes were purchased in 1970 and maintained at the Antelope Range Livestock Station for the production of five sets of ewes (1971-75) for this study. These ewes were randomly allotted into two equal groups with one group being exposed each fall to Suffolk rams and the other to Targhee rams for 35 days. These groups were rotated every year.

The ewes were shed lambed in late February and March and the lambs were weaned at an average age of 70 to 80 days. At weaning, approximately June 1 each year, the female progeny were trucked to the U.S. Irrigation and Dryland Field Station, Newell, South Dakota (1971), or to the South Dakota State University Sheep Unit, Brookings, South Dakota (1972-75), for their postweaning treatments. At this time, the ewe lambs were randomly assigned within type of birth and breed of sire to a high or moderate energy ration group. The moderate energy ration was designed to meet the NRC (1964) requirements for replacement ewe lambs and the high energy ration was designed to meet the NRC (1964) requirements for fattening lambs. All ewe lambs were fed in drylot for approximately 100 days on a 60% cracked corn, 40% alfalfa ration. The moderate energy level group was hand-fed what they would consume, up to 2.5 lb. per head per day for the first 70 days of the trial and 3.0 lb. per head per day for the remaining 30 days. The high energy group was self-fed. The ration was fed in ground form for all years except 1972, when it was fed as a pellet.

After the postweaning treatment period, the ewe lambs were randomly allotted within type of birth, breed of sire and postweaning treatment to be exposed to rams at either 7 or 19 months of age. Two-thirds of the ewe lambs were exposed for 34 days at 7 months of age and one-third were exposed for the first time at 19 months of age. Crossbred Finnsheep ram lambs were utilized during all breeding seasons except 1972, when Columbia ram lambs were used.

Following the breeding season, all ewes were combined and managed as a single flock until lambing season. At this time, all ewes that lambed at 12 months received supplemental grain prior to and following lambing. These ewes nursed their lambs for approximately 60 days. Following weaning each year in early June, the yearling ewes were sold as a group under a research contract to producers in northwestern South Dakota who agreed to provide lifetime production data to the university. These ewes were maintained under range conditions that are typical of the area.

During this study, no lambs were culled and mature ewes were only culled for bad udders or teeth or failing to lamb for two successive years. Ram lambs were usually castrated within 10 days of birth. If rams were left intact, it was random across all treatments within location. All lambs were weaned as a group within a location and ewes were shorn as a group prior to lambing.

Results and Discussion

Analyses of the lifetime production of the ewes were completed on an accumulative basis. Since only two-thirds of the ewes were exposed at 7 months of age, the data were analyzed including 12-month production and excluding 12-month production. The analysis with 12-month production was performed to analyze the total production of all ewes. The analyses without 12-month production were performed to observe the effect of 7-month breeding on lifetime production of those ewes exposed at 7 months of age. Selected results for accumulative production through 5 years including 12-month production are shown in table 1 and without 12-month production in table 2 on a per ewe entering the experiment basis.

Year of production affected wool production, number of lambs born and weaned and pounds of lamb weaned for both types of analysis. Year effect may be explained by the variation in weather, level of nutrition and location for each year. The Suffolk x Targhee ewes were more productive than Targhee ewes in number of lambs born and weaned and pounds of lamb weaned for both types of analysis. However, the Targhee ewes produced more wool in their lifetime.

Single-born ewes and ewes in the high energy group produced more wool from 12 months to 60 months of age than their contemporaries. The high energy group may have produced more wool than the low energy group because they were in better nutritional condition during the first year of their life. The high energy group also weaned more pounds of lamb at 12 months of age than the moderate energy group. Ewes that were not exposed at 7 months of age produced more wool than the exposed ewes from 12 months to 36 months of age. This supports the theory that wool production and lamb production are inversely related since no lambs were produced at 12 months of age. This effect vanished after 36 months of age.

The ewes that were exposed at 7 months of age and conceived gave birth to more lambs and weaned more lambs than the ewes that did not conceive at 7 months of age or the ewes that were not exposed at 7 months of age (table 1). It has been suggested that this practice can be used as a selection tool, since only the most productive ewes are able to produce lambs at 12 months of age. However, those ewes with lambs at 12 months of age were not more productive when the lifetime productivity was measured without 12-month production. Year of production and breed of ewe affected the number of ewes that conceived at 7 months of age. More Suffolk x Targhee ewes conceived at 7 months of age than Targhee ewes. Multiple-born ewes also had a higher conception rate than single-born ewes at 24 and 36 months of age.

The single-born ewes tended to survive longer than the multiple-born ewes and have less rectal and vaginal prolapses and less udder problems.

The Targhee ewes appeared to bloat less than the Suffolk x Targhee ewes. The moderate energy group had better teeth throughout the experiment than the high energy group of ewes. The ewes that were exposed at 7 months of age and did not conceive appeared to have less udder problems than those that conceived and those that were not exposed at 7 months of age.

TABLE 1. LEAST-SQUARES MEANS FOR ACCUMULATIVE LIFETIME PRODUCTION THROUGH 5 YEARS OF AGE. (INCLUDING 12-MONTH PRODUCTION)

Main Effect	No. Lambs Born[a]	No. Lambs Weaned[a]	Pounds Lamb Weaned[a]	Pounds Wool Produced[a]	Percent Conception[b]	Percent Ewes Remaining at 60 mo.[a]
Breed of Ewe	*	**	***	***		
Suffolk x Targhee	4.74	3.40	268.79	31.48	87.16	47.47
Targhee	4.17	2.90	211.11	36.60	80.80	47.74
Type of Ewe Birth				*		
Single	4.52	3.19	242.60	35.60	81.08	50.68
Multiple	4.39	3.12	237.31	32.45	85.65	45.85
Postweaning Nutrition Level				*		
High	4.57	3.31	250.18	35.45	84.84	46.60
Moderate	4.34	2.99	229.72	32.61	83.05	48.66
Age at first Breeding[c]	***	***				
Exposed at 7 mo	5.34[a]	3.69[a]	259.13	32.52		46.98
Exposed at 19 mo	4.26[b]	3.01[b]	243.85	36.07		54.55
Exposed at 7 mo (did not conceive)	3.77[b]	2.75[b]	216.87	33.51		46.15

[a]Per ewe entering experiment.

[b]Average conception rate of all 5 years, per ewe present.

[c]Means in the same column within main effects with different superscripts differ ($P<.05$).

*Significant at .05 level.

**Significant at .01 level.

***Significant at .005 level.

TABLE 2. LEAST-SQUARES MEANS FOR ACCUMULATIVE LIFETIME PRODUCTION THROUGH 5 YEARS OF AGE. (EXCLUDING 12-MONTH PRODUCTION)

Main Effect	No. Lambs Born[a]	No. Lambs Weaned[a]	Pounds Lamb Weaned[a]	Pounds Wool Produced[a]	Percent Conception[b]
Breed of Ewe	*	*	***		
Suffolk x Targhee	4.30	3.09	255.25	25.02	91.04
Targhee	3.80	2.65	201.35	29.43	88.76
Type of Ewe Birth					
Single	4.13	2.92	230.47	28.48	87.31
Multiple	3.97	2.82	226.11	25.95	91.45
Postweaning Nutrition Level					
High	4.15	2.99	236.73	28.31	89.92
Moderate	3.94	2.75	219.84	26.13	89.85
Age of First Breeding					
Exposed at 7 mo	4.13	2.85	225.14	25.91	89.36
Exposed at 19 mo	4.25	3.01	243.15	28.64	91.47
Exposed at 7 mo (did not conceive)	3.77	2.75	216.60	27.12	88.46

[a]Per ewe entering experiment

[b]Average conception rate for lambing at 24 through 60 months of age, per ewe present.

*Significant at .05 level.

**Significant at .005 level.