

Sheep

Summer Lambing Performance of Crossbred Ewes of Finnsheep, Dorset and Rambouillet Breeding When Mated to Purebred or Crossbred Rams

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Story in Brief

Reproductive performance and body weights of four and five-year old crossbred ewes representing five combinations of Finnsheep (F), Dorset (D) and Rambouillet (R) breeding were evaluated when lambing in the summer (June-July, 1976). The five breed combinations represented were $\frac{1}{2}$ D, $\frac{1}{2}$ R; $\frac{1}{4}$ D, $\frac{3}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R and $\frac{1}{4}$ F, $\frac{3}{4}$ R. Breeding effectiveness of purebred and crossbred rams of Hampshire and Suffolk breeding was also compared when mated to these ewes.

Body weights taken before both breeding and lambing indicated that substitution of either Dorset or Finnsheep breeding for Rambouillet breeding resulted in decreased body weight but that less of a decrease resulted from the Finnsheep substitution than from the Dorset substitution.

Results of the summer lambing were quite favorable with the entire flock averaging 1.5 lambs born per ewe exposed. Fertility did not differ greatly among the five crossbred ewe groups with at least 93 percent of the ewes in each crossbred group lambing. The $\frac{1}{4}$ -Finnsheep ewes had a higher lambing rate than did ewes of only Dorset and Rambouillet breeding (1.64 vs. 1.47). This resulted in $\frac{1}{4}$ -Finnsheep ewes giving birth to 22 more lambs per 100 ewes exposed than crossbred ewes of only Dorset and Rambouillet breeding.

With January-February mating, reproductive performance of ewes when mated to either crossbred or purebred rams was virtually the same whether measured by fertility, lambs born per ewe lambing or lambs born per ewe exposed. These results are in contrast to previous findings involving two years of May-June mating where these same ewes when mated to crossbred rams

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gave birth to an average of 19 more lambs per 100 ewes exposed than those ewes mated to purebred rams.

Introduction

An increase in reproductive rate of the commercial ewe flock offers the greatest single opportunity for increasing efficiency of lamb meat production. Two ways that reproductive rate can be increased are by: (1) infusion of germ plasm of more prolific breeds into our commercial flocks, and (2) adoption of some type of accelerated lambing program to shorten the interval between lambings.

Past research by the Oklahoma Agricultural Experiment Station has shown that crossbred ewes of Dorset x Rambouillet breeding are more productive under Oklahoma farm flock conditions than traditionally used Rambouillet ewes. The Finnish Landrace (Finnsheep) breed from Finland, which is now available to American sheepmen, is noted for its superior lambing rate and offers a possible source of genetic material with which to further improve productivity of commercial ewe flocks of the Southwest.

An accelerated program of lambing every eight months seems feasible when a 5-month gestation period, and a 1.5-month breeding season are considered. Research at this station has shown that ewes of Dorset x Rambouillet breeding produce desirable lamb crops when lambing in either the winter or fall of the year. An accelerated lambing program involving an eight month lambing interval, and incorporating a winter and fall lambing, however, must also include an early summer lambing.

The purpose of this paper is to compare reproductive performance of four and five-year old crossbred ewes of Dorset and Rambouillet breeding with similar ewes containing $\frac{1}{4}$ -Finnsheep breeding when lambing in the summer of 1976. Some data is also included on breeding effectiveness of purebred and crossbred rams when mated to these same ewes.

Materials and Methods

In March and April of 1971 and 1972, approximately 250 crossbred ewes of five combinations of Finnsheep (F), Dorset (D) and Rambouillet (R) breeding were produced at the Southwestern Livestock and Forage Research Station (Ft. Reno), El Reno, Oklahoma. The five breed combinations represented were $\frac{1}{2}$ D, $\frac{1}{2}$ R; $\frac{1}{4}$ D, $\frac{3}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R and $\frac{1}{4}$ F, $\frac{3}{4}$ R. The $\frac{1}{4}$ F, $\frac{3}{4}$ R ewes were produced in 1972 only. Reproductive performance of these ewes when lambing in the winter of 1972, 1973 and 1974 and the fall of 1974 and 1975 has been reported previously in the *Animal Sciences and Industry Research Reports of 1974, 1975 and 1976*.

After lambing in October and November of 1975, ewes nursed their lambs for 70 days or until January 13, 1976. Condition scores could range from one to

nine with a score of one indicating a very thin ewe and a score of nine indicating a very fat ewe.

On January 15, 1976, ewes were divided into single sire breeding groups of 36 to 37 ewes each. Breeding groups were equalized as closely as possible for number of ewes of each crossbred group and for number of ewes rearing zero, one or multiple lambs the previous lambing. A Hampshire, Suffolk, Hampshire x Suffolk or Suffolk x Hampshire sire of approximately 24 months of age was placed with each breeding group for the duration of the 50 day breeding season.

Prior to commencement of lambing on June 2, 1976, body weights and condition scores were again obtained on each ewe. Lambing started on June 10, 1976, and continued through July. Ewes were lambing under close supervision in a shed or adjacent pasture. Ewes and lambs grazed alfalfa and sudan during the majority of the summer months. Toward the end of summer, dry weather forced the feeding of supplemental baled alfalfa hay. Lambs had access to creep feed during the entire preweaning period. At approximately 70 days of age, lambs were weaned from their dams and switched from creep feed to a feedlot ration.

Results and Discussion

Weights and Scores

Presented in Table 1 are mean weights and condition scores of the five crossbred ewe groups before breeding and lambing. As would be expected, the five crossbred ewe groups ranked the same for weight at both weighings. The $\frac{1}{2}$ D, $\frac{1}{2}$ R ewes were the lightest, and the $\frac{1}{4}$ F, $\frac{3}{4}$ R ewes were the heaviest followed closely by the $\frac{1}{4}$ D, $\frac{3}{4}$ R ewes. Among the two ewe groups containing only Dorset and Rambouillet breeding and among the three ewe groups containing $\frac{1}{4}$ -Finnsheep breeding, body weights increased as the proportion of Rambouillet breeding increased. One would expect this since Rambouillets reach heavier mature weights than either Dorsets or Finnsheep. It is also of interest to note that when comparing two crossbred ewe groups with the same proportion of Rambouillet breeding, ewes with the greatest proportion of

Table 1. Weights and scores of the five crossbred ewe groups before breeding and lambing

Breeding Group	Before breeding			Before lambing		
	No.	Weight (lbs.)	Score	No.	Weight (lbs.)	Score
$\frac{1}{2}$ D, $\frac{1}{2}$ R	52	132	4.6	50	158	5.3
$\frac{1}{4}$ D, $\frac{3}{4}$ R	56	149	4.6	56	175	5.3
$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	43	140	4.8	41	172	5.5
$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	51	147	5.3	48	174	5.4
$\frac{1}{4}$ F, $\frac{3}{4}$ R	34	151	5.0	33	180	5.8

Finnsheep breeding were the heaviest ($\frac{1}{4}$ F, $\frac{3}{4}$ R - 151 pounds vs. $\frac{1}{4}$ D, $\frac{3}{4}$ R - 149 pounds, and $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R - 147 pounds vs. $\frac{1}{2}$ D, $\frac{1}{2}$ R - 132 pounds for breeding weights; and $\frac{1}{4}$ F, $\frac{3}{4}$ R - 180 pounds vs. $\frac{1}{4}$ D, $\frac{3}{4}$ R - 175 pounds, and $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R - 174 pounds vs. $\frac{1}{2}$ D, $\frac{1}{2}$ R - 158 pounds for lambing weights). These weights would indicate that substitution of either Dorset or Finnsheep breeding for Rambouillet breeding will result in decreased body weights, but less of a decrease will result from the Finnsheep substitution than from the Dorset substitution.

Crossbred ewe groups did not differ greatly in condition score with all groups scoring very close to a five both times. A five score indicates that the ewes were in average condition.

Ewe Reproductive Performance

The flock average of 1.5 lambs born per ewe exposed to the ram (Table 2) was quite good; especially when it is taken into consideration that this was the first experience with summer lambing at this station and that a majority of these ewes had given birth to lambs approximately eight months previously. In addition to the very acceptable level of reproductive performance, ewes seemed to milk extremely well, and lambs seemed to adjust quickly to the hot temperatures of summer.

Fertility did not differ greatly among the five crossbred ewe groups with at least 93 percent of the ewes in each crossbred group lambing. The $\frac{1}{4}$ -Finnsheep ewes had a higher lambing rate than did ewes containing only Dorset and Rambouillet breeding (1.64 vs. 1.47). The $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R ewes had the highest average lambing rate (1.75) and the $\frac{1}{4}$ D, $\frac{3}{4}$ R ewes had the lowest (1.42).

Average number of lambs born per ewe exposed is a function of both fertility and lambing rate and is an overall measure of reproductive performance. Since fertility was similar among crossbred ewe groups, ranking of ewe groups for number of lambs born per ewe exposed was similar to that observed for lambing rate. The $\frac{1}{4}$ -Finnsheep ewes gave birth to more lambs per ewe exposed (1.60) than did Dorset-Rambouillet ewes (1.38). The $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R and $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R ewes produced the highest average number of lambs born

Table 2. Lambing performance of the five crossbred ewe groups when lambing in the summer of 1976

Breeding group	No. exposed	Ewes lambing		Lambs born		
		No.	%	No.	/Ewe lambing	/Ewe exposed
$\frac{1}{2}$ D, $\frac{1}{2}$ R	49	46	94	70	1.52	1.43
$\frac{1}{4}$ D, $\frac{3}{4}$ R	56	52	93	74	1.42	1.32
$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	40	40	100	65	1.62	1.62
$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	47	44	94	77	1.75	1.64
$\frac{1}{4}$ F, $\frac{3}{4}$ R	33	33	100	51	1.55	1.55
Total	225	215	96	337	1.57	1.50

per ewe exposed (1.64 and 1.62, respectively), and the $\frac{1}{4}$ D, $\frac{3}{4}$ R ewes produced the fewest (1.32).

These preliminary results would indicate that a very acceptable level of reproductive performance may be obtained from the ewe flock with June-July lambing and that $\frac{1}{4}$ -Finnsheep ewes of the breeding used in this study give superior performance over crossbred ewes of Dorset and Rambouillet breeding only. In two years, these same ewes will again be mated to lamb in June and July. If the results of that lambing are as positive as the results of the present study, this station will be in position to recommend to Oklahoma sheepmen an accelerated lambing program (eight month lambing interval) utilizing summer lambing.

Purebred vs. Crossbred Rams

In the 1976 *Animal Science and Industry Research Report*, it was reported that when these same ewes lambed in the fall of 1974 and 1975, ewes mated to crossbred rams (Hampshire x Suffolk or Suffolk x Hampshire) gave birth to an average of 19 more lambs per 100 ewes exposed than ewes mated to purebred rams (Hampshire or Suffolk). The rams tested were approximately 16 months of age at the beginning of the 1974 and 1975 mating seasons.

Five of the eight rams used to produce the lambs born in the fall of 1975 (two purebreds and three crossbreds) and three of their contemporaries (two purebreds and one crossbred) who were retained as reserves but never used in 1975, were used to produce the lambs born in the summer of 1976. Table 3 presents lambing performance of the ewes when mated to either purebred or crossbred rams. Reproductive performance of the two groups was virtually the same whether measured by fertility, lambs born per ewe lambing or lambs born per ewe exposed. These results are certainly in disagreement with the fall lambing results. Some possible explanations for this discrepancy are:

1. When used in January, 1976, these rams were eight months older than when used for the first time in May, 1975 (24 vs. 16 months of age).

Table 3. Lambing performance of the crossbred ewes when mated to purebred and crossbred Hampshire and Suffolk rams during January and February, 1976

Item	Type of ram	
	Purebred	Crossbred
Rams, no.	4	4
Ewes exposed, no.	112	113
Ewes lambing, no.	108	107
Ewes lambing, %	96	95
Lambs born, no.	170	167
Lambs/ewe lambing	1.57	1.56
Lambs/ewe exposed	1.52	1.48

Crossbred rams may reach sexual maturity earlier than purebred rams. Differences in their breeding effectiveness would thus be greater at younger than older ages.

2. Season of mating may have been a major factor. May and June is a season of low sexual activity in the ewe, and conception rates are generally lower to matings during this period than to matings at other times during the year. If crossbred rams are more aggressive in the breeding pastures than purebred rams, crossbred rams may stimulate some ewes to a higher level of sexual activity which will allow them to conceive. This would account for the crossbred ram advantage with May-June mating.

The high fertility rates of all ewes when mated in January and February suggests that a very high proportion of the ewes were sexually active during this period. This high level of sexual activity in the ewes would not allow the increased aggressiveness of crossbred rams to show itself in the form of greater conception rates.

Future Plans

The ewes will remain on the accelerated lambing program (eight month lambing interval) and evaluation of purebred and crossbred rams will continue.
