

# Reproductive Performance of Crossbred Ewes of Finnsheep, Dorset and Rambouillet Breeding When Lambing in the Fall

David L. Thomas, Joe V. Whiteman, Debi J. Stritzke and John E. Fields

## Story in Brief

In March-April of 1971 and 1972, about 250 crossbred ewe lambs representing five combinations of Finnsheep (F), Dorset (D) and Rambouillet (R) breeding were produced at the Fort Reno Livestock Experiment Station, 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 reproductive performance of these ewes when lambing in the winter and early spring of 1972, 1973 and 1974 has been reported previously. After lambing in January-February, 1974, the flock was placed on a fall lambing schedule and lambed in October-November of 1974 and 1975.

When considering the combined results of the two fall lambings, the three  $\frac{1}{4}$  Finnsheep ewe groups had a lower percent ewes lambing than the two groups containing no Finnsheep breeding (62% vs. 80%). Lambs born per ewe lambing was greatest for the  $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R ewe groups (1.60 average) and least for the  $\frac{1}{4}$ D,  $\frac{3}{4}$ R and  $\frac{1}{4}$ F,  $\frac{3}{4}$ R ewe groups (1.33 average).  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes were intermediate for this trait with 1.48 lambs born per ewe lambing. Lambs born per ewe exposed, which is an overall measure of flock reproductive efficiency, was greatest for  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes (1.19) and lowest for the  $\frac{1}{4}$ F,  $\frac{3}{4}$ R ewes (.83). The remaining three ewe groups ( $\frac{1}{4}$ D,  $\frac{3}{4}$ R;  $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R) were similar and intermediate to the other two ewe groups for lambs born per ewe exposed with values of 1.05, 1.05 and .97, respectively.

The data indicate that of the five crossbred ewe groups studied, the  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes are the best suited to a fall-lambing program. The two  $\frac{1}{4}$  Finnsheep groups that contain both Dorset and Rambouillet breeding ( $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R) have high lambing rates and would be desirable for a fall lambing program if their percent ewes lambing could be increased above the poor level indicated in this study.

## Introduction

An increase in reproductive rate of the ewe flock offers the greatest single opportunity for increasing the efficiency of lamb meat production.

The commercial sheep industry of Oklahoma and the Southwest has been built around Rambouillet ewes. These ewes are relatively long-lived and shear heavy fleeces but are not highly prolific. Past research by the Oklahoma Agricultural Experiment Station has shown that crossbred ewes of DorsetxRambouillet breeding produce approximately 19% more lambs over their lifetime than do ewes of straight Rambouillet breeding when lambing in the fall. The Finnish Landrace (Finnsheep) breed from Finland, which has recently become available to American sheepmen, is noted for its superior prolificacy and offers a possible source of genetic material with which to further improve the commercial ewe flocks of the Southwest.

The purpose of this paper is to compare the reproductive performance of crossbred ewes of Dorset and Rambouillet breeding with similar ewes containing  $\frac{1}{4}$  Finnsheep breeding when lambing in the fall.

## 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. 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 only in 1972 and, as a group average, were about six months younger than the other four groups). The growth rates of these ewes as lambs and their reproductive performance when lambing in the late winter and spring of 1972, 1973 and 1974 has been reported previously in the *Animal Sciences and Industry Research Reports* of 1973, 1974 and 1975.

After lambing as coming two- and three-year olds in January and February of 1974, the flock was placed on a fall lambing schedule. All ewes were exposed to blackfaced rams in single sire groups of 30 to 31 ewes each over a 48-day breeding season from May 15 to July 2 and lambed in October and November of 1974. Following the May-July, 1974 breeding season, the entire flock was exposed to two blackfaced rams that were alternated daily from August 20 to September 24, 1974, in order to breed ewes that had not settled during the main May-July breeding season. Sixty-one ewes conceived during this clean-up breeding period and lambed in January and February of 1975. From May 14 to July 3, 1975, all ewes were again exposed to blackfaced rams in single-sire groups over a 50-day breeding season and lambed in October and November, 1975.

During all lambing seasons (fall, 1974; winter, 1975 and fall, 1975), ewes were lambed in a large lambing barn or in an adjoining lot or pasture under close supervision. Fall lambing ewes and their lambs were

allowed access to small grain pasture when the lambs reached five days of age. When the lambs were approximately 70 days of age, ewes were removed from their lambs and run on bermuda grass pasture to await the next breeding season. Their lambs remained on small grain pasture with access to a fattening ration. The small number of winter lambing ewes in 1975 were allowed limited access to small grain pasture daily while their lambs remained in drylot. The ewes were removed from their lambs permanently when the lambs reached approximately 70 days of age. The number of days from weaning until the beginning of the next breeding season on May 14, 1975 ranged from 16 to 50 days for these 61 winter lambing ewes.

Since all ewes were given an opportunity to lamb in January-February of 1974 and the ewes that did not conceive for lambing in the fall of 1974 were given an opportunity to lamb in January-February of 1975, the mating and lambing performance of the five groups in the fall may have been affected by whether or not they reared January-February born lambs. Table 1 ranks the five ewe groups from 1 to 5 for lambs born per ewe lambing, which is an overall measure of reproductive performance, for each of the seasons under consideration.

In 1974 the ranking of the five ewe groups was the same for the winter and the following fall lambing. If a high level of reproductive performance in the winter was detrimental to subsequent performance in the fall, those groups ranking high in the winter of 1974 should have ranked low in the fall of 1974. This was not the case and indicates that the differences between the ewe groups in the fall of 1974 was not affected greatly by the results of the previous winter lambing. In 1975, the ranking is similar from winter to fall for all ewe groups except the  $\frac{1}{4}$ D,  $\frac{3}{4}$ R and  $\frac{1}{4}$ F,  $\frac{3}{4}$ R groups. However, in general, there seems to be good agreement between rankings of the ewe groups among the two seasons each year which indicates that the winter lambing each year

**Table 1. Rankings of the Five Crossbred Groups for Lambs Born Per Ewe Exposed in the Winter and Fall of 1974 and 1975.**

Breeding Group	1974				1975			
	Winter		Fall		Winter <sup>1</sup>		Fall	
	Rank	(LBEE) <sup>2</sup>	Rank	(LBEE)	Rank	(LBEE)	Rank	(LBEE)
$\frac{1}{2}$ D, $\frac{1}{2}$ R	1	(1.71)	1	(1.20)	1	(1.64)	1	(1.17)
$\frac{1}{4}$ D, $\frac{3}{4}$ R	4	(1.31)	4	(0.96)	5	(1.38)	2	(1.14)
$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	2	(1.50)	2	(1.09)	3	(1.44)	3	(1.00)
$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	3	(1.46)	3	(0.98)	4	(1.40)	5	(0.96)
$\frac{1}{4}$ F, $\frac{3}{4}$ R	5	(1.30)	5	(0.69)	2	(1.47)	4	(0.97)

<sup>1</sup> Clean-up lambing from fall, 1974. 78 ewes available; 61 lambed.

<sup>2</sup> Lambs born per ewe exposed.

did not have a great effect on the differences observed among the five ewe groups when lambing in the fall.

## Results and Discussion

Table 2 shows the lambing performance of the five crossbred groups considering only the fall lambing results for 1974 and 1975. The table is divided into three parts: the first part presents the 1974 results, the second presents the 1975 results and the third presents the combined results of both years. Since the results from 1974 and 1975 are based on a rather small number of ewes and subject to year to year variation, the best estimate of the fall lambing performance of these ewes is obtained from evaluating the two-year summary given in the third part of the table.

Over the two years, the two groups containing no Finnsheep breeding had a greater percent ewes lambing than the three  $\frac{1}{4}$  Finnsheep groups (80% vs. 62%). Lambs born per ewe lambing was greatest for the two  $\frac{1}{4}$  Finnsheep groups that contained both Dorset and Rambouillet breeding ( $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R, 1.60 average) and least for the two groups containing the greatest amount of Rambouillet breeding ( $\frac{1}{4}$ D,  $\frac{3}{4}$ R and  $\frac{1}{4}$ F,  $\frac{3}{4}$ R, 1.33 average). The  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes were intermediate to these two group combinations with 1.48 lambs born per ewe lambing.

Lambs born per ewe exposed, which is an overall measure of flock

**Table 2. Lambing Performance of the Five Crossbred Groups when Lambing in the Fall of 1974 and 1975.**

Year	Breeding Group	No. Exposed	Ewes Lambing		Lambs Born		
			No.	%	No.	/Ewe Lamb.	/Ewe Expsd.
1974	$\frac{1}{2}$ D, $\frac{1}{2}$ R	54	43	79.6	65	1.51	1.20
	$\frac{1}{4}$ D, $\frac{3}{4}$ R	56	41	73.2	54	1.32	0.96
	$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	45	29	64.4	49	1.70	1.09
	$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	51	32	62.7	50	1.56	0.98
	$\frac{1}{4}$ F, $\frac{3}{4}$ R	35	20	57.1	24	1.20	0.69
1975	$\frac{1}{2}$ D, $\frac{1}{2}$ R	53	43	81.1	62	1.44	1.17
	$\frac{1}{4}$ D, $\frac{3}{4}$ R	57	50	87.7	65	1.30	1.14
	$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	43	28	65.1	43	1.54	1.00
	$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	51	30	58.8	49	1.63	0.96
	$\frac{1}{4}$ F, $\frac{3}{4}$ R	34	22	64.7	33	1.50	0.97
Summary (1974 and 1975)	$\frac{1}{2}$ D, $\frac{1}{2}$ R	107	86	80.4	127	1.48	1.19
	$\frac{1}{4}$ D, $\frac{3}{4}$ R	113	91	80.5	119	1.31	1.05
	$\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R	88	57	64.8	92	1.61	1.05
	$\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R	102	62	60.8	99	1.60	0.97
	$\frac{1}{4}$ F, $\frac{3}{4}$ R	69	42	60.9	57	1.36	0.83

reproductive efficiency, was greatest for the  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes (1.19) due to their high fertility and moderate lambing rates. The  $\frac{1}{4}$ F,  $\frac{3}{4}$ R ewes had the lowest number of lambs born per ewe exposed (.83) due to both poor fertility and low lambing rates. These rather poor levels of performance for the  $\frac{1}{4}$ F,  $\frac{3}{4}$ R ewes may be due in part to the fact that they are, on the average, about six months younger than the ewes of the other four groups. When going from 1974 to 1975, the  $\frac{1}{4}$ F,  $\frac{3}{4}$ R groups improved in percent ewes lambing and compared favorably with the other  $\frac{1}{4}$  Finnsheep groups for lambs born pre ewe exposed. The 1974 and 1975 summary probably penalizes these ewes unfairly for their younger age.

The remaining three ewe groups ( $\frac{1}{4}$ D,  $\frac{3}{4}$ R;  $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R) were similar and intermediate to the other two groups for lambs born per ewe exposed (1.05, 1.05, .97, respectively). The intermediate performance of these three ewe groups was a result of the low lambing rates of the  $\frac{1}{4}$ D,  $\frac{3}{4}$ R ewes and the poor fertility of the  $\frac{1}{4}$ F,  $\frac{1}{2}$ D,  $\frac{1}{4}$ D,  $\frac{1}{4}$ R and  $\frac{1}{4}$ F,  $\frac{1}{4}$ D,  $\frac{1}{2}$ R ewes.

These lambing results have special implications to the commercial sheep industry of Oklahoma. A majority of Oklahoma sheepmen lamb in the fall in order that lactating ewes and growing lambs may utilize the generally abundant supply of fall and winter wheat pasture. This management system also allows lambs to reach market weights early in the spring when lamb prices are generally high. These data indicate that of the five crossbred ewe groups studied,  $\frac{1}{2}$ D,  $\frac{1}{2}$ R ewes are the best suited to a fall lambing program. Ewes of this breeding have been recommended to commercial sheepmen of Oklahoma for a number of years.

These data also indicate that the infusion of  $\frac{1}{4}$  Finnsheep breeding into commercial flocks managed for fall lambing may cause a sizeable decrease in percent ewes lambing. However, ewes of  $\frac{1}{4}$  Finnsheep breeding in combination with both Dorset and Rambouillet breeding have very desirable lambing rates. If the ability of Finnsheep or Finnsheep-cross ewes to conceive to May-July breeding could be improved through selection or management techniques, crossbred Finnsheep ewes might be quite desirable for a fall lambing program.

## Future Plans

Following the fall lambing of 1975, the five crossbred ewe groups will be evaluated for their performance under an accelerated lambing program. The ewes will be mated to lamb every eight months over the next four years which will result in six lamb crops over the entire period or three lamb crops every two years. During the first two-year cycle, the ewes will lamb in June-July, 1976; February-March, 1977; and October-November, 1977.