

Winter And Fall Lambing Performance Of Crossbred Ewes Of Finnsheep, Dorset, Rambouillet and White Face Western Breeding When Mated To Purebred Or Crossbred Rams

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Story in Brief

Reproductive performance of four, five and six-year old crossbred ewes representing six combinations of Finnsheep (F), Dorset (D), Rambouillet (R), and White Face Western (WFW) breeding were evaluated when lambing in the winter (February-March, 1977) and in the fall (October-November, 1977). The six breed combinations represented were $\frac{3}{8}$ F, $\frac{5}{8}$ WFW; $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R; $\frac{1}{4}$ F, $\frac{3}{4}$ R; $\frac{1}{2}$ D, $\frac{1}{2}$ R; and $\frac{1}{4}$ D, $\frac{3}{4}$ R. Breeding effectiveness of purebred and crossbred rams of Hampshire and Suffolk breeding was also compared when mated to these ewes.

Results of the winter lambing were more favorable than that of fall lambing with the entire flock averaging 1.8 lambs born per ewe exposed for winter and .53 lambs born per ewe exposed for the fall. Ewes of $\frac{3}{8}$ F, $\frac{5}{8}$ WFW breeding had a higher number (2.32) of lambs born per ewe exposed when lambing in the fall. They were followed by ewes of $\frac{1}{2}$ D, $\frac{1}{2}$ R breeding (1.81), ewes of $\frac{1}{4}$ Finnsheep breeding (1.74) and $\frac{1}{4}$ D, $\frac{3}{4}$ R breeding were lowest (1.56). When lambing in the fall ewes of $\frac{1}{2}$ D, $\frac{1}{2}$ R breeding had a higher number (.69) of lambs born per ewe exposed in face of a generally disappointing lamb crop. Ewes of $\frac{1}{4}$ D, $\frac{3}{4}$ R breeding followed with .56; ewes of $\frac{3}{8}$ F, $\frac{5}{8}$ WFW breeding had .46 and the average of the three $\frac{1}{4}$ Finnsheep breeding groups was .46 also.

Comparing September-October, 1976 and May-June, 1977 matings, reproductive performance of ewes when mated to either crossbred or purebred rams in September-October was virtually the same whether measured by percent ewes lambing, lambs born per ewe lambing or lambs born per ewe exposed. For May-June mating, at least 3 out of 4 crossbred yearling rams used outperformed purebreds in getting more ewes settled, in lambs born per ewe lambing, and in lambs born per ewe exposed.

Introduction

An increase in the reproductive rate of the commercial ewe flock offers the greatest single opportunity for increasing the efficiency of lamb meat produc-

tion. Two desirable ways of increasing reproductive rate 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 interval between lambings.

The commercial sheep industry of Oklahoma and the Southwest has been built around Rambouillet ewes which are relatively long-lived and shear heavy fleeces but are slow maturing and not very prolific. 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. Broadening the genetic base of ewe flocks by the introduction of the Finnish Landrace (Finnsheep) from Finland, which is noted for its superior lambing rate, is a possible method of improving the productivity of the commercial sheep flocks of the Southwest.

An accelerated program of lambing every eight months may be feasible because ewes have a 5-month gestation period. Research at this station has shown that ewes of Dorset-Rambouillet breeding produce desirable lamb crops when lambing in either the fall, winter or the spring of the year. An early summer lambing is a part of this program.

The purpose of this paper is to compare the reproductive performance of four, five and six-year old crossbred ewes of Dorset and Rambouillet breeding with similar ewes containing $\frac{1}{4}$ and $\frac{3}{8}$ Finnsheep breeding when lambing in the winter and the fall of 1977. Some data is also included on breeding effectiveness of purebred and crossbred rams when mated to these same ewes.

Materials and Methods

During the winter and spring months of 1971, 1972 and 1973 approximately 250 crossbred ewes of six combinations of Finnsheep (F), Dorset (D), Rambouillet (R) and White Face Western (WFW) (a group that were predominantly Rambouillet) breeding were produced at the Southwestern Livestock and Forage Research Station (Ft. Reno), El Reno, Oklahoma. The six breed combinations represented were $\frac{3}{8}$ F, $\frac{5}{8}$ WFW; $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R; $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R; $\frac{3}{4}$ R; $\frac{1}{2}$ D, $\frac{1}{2}$ R and $\frac{1}{4}$ D, $\frac{3}{4}$ R. Reproductive performance of some of these ewes when lambing in the winter of 1972, 1973 and 1974; the fall of 1974 and 1975 and the summer of 1976 has been reported previously in the Animal Sciences and Industry Research Reports of 1974, 1975, 1976 and 1977.

After each lambing, ewes nursed their lambs for approximately 70 days except that ewes that lambed late had their lambs weaned at younger ages because of the next breeding season. Condition scores and weights were taken on the ewes each time before breeding and before lambing. Scores ranged from one to nine with a score of one indicating a very thin ewe and a score of nine indicating a very fat ewe.

Prior to September 15, 1976 and May 15, 1977 ewes were divided into single sire breeding groups of 32 to 34 and 32 to 33 each for breeding which

resulted in the winter and fall, 1977 lambings, respectively. 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 was placed with each breeding group for the duration of the 50-day breeding season. The rams used in September and October of 1976 were about 2½ years old. The rams used in May and June of 1977 were about 15-16 months old and inexperienced.

Winter lambing started on February 9, 1977 and continued through March. Fall lambing commenced on October 2, 1977 and continued through November. Ewes lambing under close supervision in a shed or adjacent pasture. Ewes and lambs grazed small grain pasture after the lambs were about a week old. Ewes had access to some dry hay and had about ½ lb of grain per day for a month or two. Lambs had access to creep feed during the preweaning period. At approximately 70 days of age lambs were weaned from their dams except that late born lambs were weaned 4-5 days before ewes were to be bred.

Results and Discussion

Ewe reproductive performance

Lambing performance of the six crossbred ewe groups when lambing in the winter and the fall of 1977 are presented in Table 1. A flock average of 1.8 lambs born per ewe exposed to the rams indicated excellent winter lambing results. Lambing records indicated there were 65 single births, 148 sets of twins, 26 sets of triplets and 5 sets of quadruplets. Fourteen out of the 259 ewes exposed to the rams did not lamb the winter of 1977.

Fertility, as measured by percent of ewes lambing did not differ very much across the six breeds in the winter of 1977. The lowest percent ewes lambing of any breed group was the ¼F, ¼D, ½R group showing 89 percent and ewes of ½D, ½R breeding were most fertile, 96.8 percent (Table 1a). These results are similar to those produced in the winter of 1974 by many of these ewes.

Lambing rate (lambs born per ewe lambing) was very high for the few ⅜F, ⅝WFW ewes (2.4) and lowest for the ¼D, ¾R ewes (1.6). The other ewe groups ranged from 1.7 for the ¼D, ¾R to 2.1 for the ¼F, ½D, ¼R group.

Lambs born per ewe exposed is an overall measure of reproductive performance and a combination of both fertility and lambing rate. Ewes with ⅜F, ⅝WFW had the highest lambs per ewe exposed (2.32) and ewes with ¼D, ¾R had the lowest lambs per ewe exposed (1.56). The other ewe groups ranged from 1.59 for the ¼F, ½D, ¼R to 1.94 for the ¼F, ¾R group. A comparison of ewes containing ⅜ Finnsheep, ¼ Finnsheep, ½ Dorset and ¼ Dorset breeding for lambs born per ewe exposed showed ⅜ Finns doing much better (2.32) followed by ewes of ½ Dorset (1.81), the ¼ Finn ewes were next with an average of 1.74 and ¼ Dorset ewes were the poorest with 1.56. A

Table 1. Lambing performance of the six crossbred ewe groups when lambing in the winter and the fall of 1977

| a) Winter 1977 lambing results | $\frac{3}{8}$ F, $\frac{5}{8}$ WFW | $\frac{1}{4}$ F, $\frac{1}{2}$ D $\frac{1}{4}$ R | $\frac{1}{4}$ F, $\frac{1}{4}$ D $\frac{1}{2}$ R | $\frac{1}{4}$ F, $\frac{3}{4}$ R | $\frac{1}{2}$ D, $\frac{1}{2}$ R | $\frac{1}{4}$ D, $\frac{3}{4}$ R | Total |
|--------------------------------|---------------------------------------|---|---|-------------------------------------|-------------------------------------|-------------------------------------|-------|
| No. available | 25 | 39 | 47 | 34 | 62 | 50 | 259 |
| No. lambing | 24 | 36 | 42 | 32 | 60 | 52 | 244 |
| % lambing | 96.0 | 92.3 | 89.4 | 94.1 | 96.8 | 96.2 | 94.2 |
| Lambs born | 58 | 62 | 79 | 66 | 112 | 81 | 458 |
| Lambs/Ewe lambing | 2.42 | 1.72 | 1.88 | 2.06 | 1.87 | 1.62 | 1.88 |
| Lambs/Ewe exposed | 2.32 | 1.59 | 1.68 | 1.94 | 1.81 | 1.56 | 1.77 |
| b) Fall 1977 lambing results | $\frac{3}{8}$ F, $\frac{5}{8}$ WFW | $\frac{1}{4}$ F, $\frac{1}{2}$ D $\frac{1}{4}$ R | $\frac{1}{4}$ F, $\frac{1}{4}$ D $\frac{1}{2}$ R | $\frac{1}{4}$ F, $\frac{3}{4}$ R | $\frac{1}{2}$ D, $\frac{1}{2}$ R | $\frac{1}{4}$ D, $\frac{3}{4}$ R | Total |
| No. available | 24 | 39 | 47 | 33 | 62 | 52 | 257 |
| No. lambing | 8 | 13 | 14 | 12 | 32 | 20 | 99 |
| % lambing | 33.3 | 33.3 | 29.8 | 36.4 | 51.6 | 38.5 | 38.5 |
| Lambs born | 11 | 17 | 21 | 16 | 43 | 29 | 137 |
| Lambs/Ewe lambing | 1.38 | 1.31 | 1.50 | 1.33 | 1.34 | 1.45 | 1.38 |
| Lambs/Ewe exposed | .46 | .44 | .45 | .48 | .69 | .56 | .53 |

Table 2. Lambing performance of the crossbred ewes when mated to purebred and crossbred rams of Hampshire and Suffolk breeding during September-October, 1976 and May-June, 1977

| | September-October, 1976 | | May-June, 1977 | |
|-------------------|-------------------------|-----------|----------------|-----------|
| | Purebred | Crossbred | Purebred | Crossbred |
| Rams, no. | 4 | 4 | 4 | 4 |
| Ewes exposed, no. | 128 | 131 | 129 | 128 |
| Ewes lambing, no. | 120 | 124 | 32 | 67 |
| Ewes lambing, % | 93.8 | 94.7 | 24.8 | 52.3 |
| Lambs born, no. | 224 | 234 | 41 | 96 |
| Lambs/ewe lambing | 1.87 | 1.89 | 1.28 | 1.43 |
| Lambs/ewe exposed | 1.75 | 1.79 | .32 | .75 |

comparison of ewes of $\frac{1}{4}$ Finnsheep with ewes of Dorset-Rambouillet breeding only (1.74 *vs.* 1.69) did not show a very large difference. The lambing rate for very well (2.42) and in fact did better than all other breeds for the winter 1977 lambing.

Fall, 1977 lambing results are shown in Table 1b. A flock average of .53 lamb born per ewe exposed to the ram was very poor for fall lambing. This was as a result of a low percent of ewes lambing (38.5 percent) for fall, 1977 compared to 94.2 percent of ewes lambing in the winter of 1977. This poor lamb crop could be due to the fact that the breeding records indicated that there was not very intense mating among the females and also due to the fact that the ewes had a very good lambing season the winter of 1977 — that is 8 months prior to lambing in the fall. The breed group comparison for the fall of 1977 lambings followed the pattern of fall lambing results previously reported in Animal Science Research Reports for 1975 and 1976. The same breeding groups tended to be better though all groups gave generally low percent ewes lambing.

Percent of ewes lambing was highest for ewes of $\frac{1}{2}$ D, $\frac{1}{2}$ R breeding (51.6) and lowest for ewes of $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R (29.8). Other ewe breeds ranged in fertility from 33.3 for $\frac{3}{8}$ F, $\frac{5}{8}$ WFW and for $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R to 38.5 for $\frac{1}{4}$ D, $\frac{3}{4}$ R.

Lambing rate (lambs born per ewe lambing) did not differ very much between breeds and it ranged from 1.31 for $\frac{1}{4}$ F, $\frac{1}{2}$ D, $\frac{1}{4}$ R to 1.50 for $\frac{1}{4}$ F, $\frac{1}{4}$ D, $\frac{1}{2}$ R.

The overall measure of reproductive performance (lambs born per ewes exposed) was highest for ewes of $\frac{1}{2}$ D, $\frac{1}{2}$ R breeding (.69) followed by ewes of $\frac{1}{4}$ D, $\frac{3}{4}$ R breeding (.56). Ewes of $\frac{3}{8}$ F, $\frac{5}{8}$ WFW breeding and ewes of $\frac{1}{4}$ Finnsheep breeding were low with an average of .46 lambs born per ewe exposed.

Purebred *vs* crossbred rams

Table 2 shows the lambing performance of the ewes when mated to either purebred or crossbred rams in September-October, 1976 and May-June, 1977. In the fall breeding season, reproductive performance of ewes mated to purebred or crossbred rams was virtually the same whether measured by fertility (93.8 percent *vs* 94.7 percent) lambs born per ewe lambing (1.87 *vs* 1.89), or lambs born per ewe exposed (1.75 *vs* 1.79).

In the late spring breeding season, crossbred rams did substantially better than purebreds in fertility (52.3 percent *vs* 24.8 percent), lambs born per ewe lambing (1.43 *vs* 1.28), and in lambs born per ewe exposed (.75 *vs* .32). A comparison of individual ram's performance across the breeds for the late spring season, showed at least three of the crossbred rams to have mated more actively than any of the purebreds and the most active purebred ram was better than only the least active crossbred ram. The ewes were also scored for

the number of times mated (rams wore marking harnesses) and the records indicated that not very many ewes mated more than once or twice to the ram indicating that the intensity of sexual activity was very low during the late spring.

The fertility obtained in September-October, 1976 mating was similar to that obtained in January-February, 1976 mating. This suggests that a high proportion of the ewes were sexually active in these two seasons and; therefore, there was little difference whether a pure- or crossbred ram was used. The fertility obtained in May-June, 1977 would suggest again the low sexual activity of ewes in this season. If crossbred rams were therefore more aggressive in the breeding pastures than purebred rams, crossbred rams might stimulate ewes to allow more matings resulting in more ewes conceiving thus the crossbred ram advantage in May-June mating. A similar crossbred ram advantage was obtained in May-June 1974 and 1975 matings. In two years' May-June matings, crossbred rams sired an average of 19 more lambs per 100 ewes exposed. In 1977 May-June mating the advantage was 33 more lambs per 100 ewes exposed.

These and past results suggest the use of crossbred rams when mating in May-June. All of our comparisons of purebred with crossbred rams have involved late spring breeding with yearling rams and we do not know what the results would have been with older rams.

Future Plans

Further evaluation of pure and crossbred rams will continue on the accelerated lambing program. The ewes will be bred to lamb three more times in the next two years.
