

Fall Lambing Performance of Dorset x Finnish Landrace Sheep

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Story in Brief

This report summarizes the reproductive performance of Dorset x Finnish Landrace (Finn) crossbred ewes. These ewes form the base group of sheep to be selected for fertility and prolificacy under fall lambing conditions.

Mating records indicate 90.0, 88.6, 72.4, 93.1 and 78.0 percent of the F₂ ewes mated during the springs of 1976 to 1980. April is more conducive to breeding than May or June. Percent lambing were 40.0, 17.1, 25.9, 44.4 and 50.0 during the past five falls. Plasma progesterone levels in 1979 indicated approximately 20 percent of the mated ewes failed to ovulate, 20 percent of the ewes that ovulated failed to conceive or maintain early pregnancy and 20 percent of the ewes that were pregnant 60 to 80 days postmating failed to lamb. Lambs per F₁ ewe lambing in the fall are 1.75, 2.00, 2.13, 1.75 and 1.63 from 1976 to 1980. Preliminary observations on F₂ ewes are also reported.

Dorset x Finn crossbred ewes and rams vary considerably in spring reproductive behavior. Some individuals perform excellently, others not at all. The reproductive variation will make selection possible when numbers are increased. Future research will attempt to develop procedures to identify the more fertile rams and ewes in each generation.

Introduction

The Rambouillet, Dorset or Dorset x Rambouillet cross are the only major sheep types currently suitable for fall lambing. However, the fall lamb production from these types does not equal spring lamb production because of fewer twins (lower prolificacy).

The Rambouillet is readily available, has excellent wool and has a long productive life. The Dorset has a higher lambing rate than the Rambouillet and produces a good market lamb. The Dorset x Rambouillet cross ewe combines the previously mentioned traits and produces more lambs than most straight-bred Dorset or Rambouillet ewes. Western Rambouillet ewes bred to Dorset rams is the common method used to produce the cross.

A ewe that is $\frac{1}{4}$ Dorset x $\frac{1}{4}$ Finn x $\frac{1}{2}$ Rambouillet should have the potential to produce more twins in the fall. The addition of the $\frac{1}{4}$ Finn would utilize the high prolificacy of the Finn. However, the Finn does not breed well in the spring. Thus, fewer ewes would be expected to lamb in the fall, but the ewes that lamb should have more twins. Western Rambouillet ewes would need to be bred to $\frac{1}{2}$ Dorset x $\frac{1}{2}$ Finn crossbred rams to produce the $\frac{1}{4}D\frac{1}{4}F\frac{1}{2}R$ ewe.

Dorset x Finn rams selected for the fall lambing trait of Dorsets and increased twins of the Finn would help overcome the poor spring breeding aspects of Finn and Finn crossbreds. These selected rams would form a superior sire line to breed to western Rambouillet ewes to produce better fall-lambing $\frac{1}{4}D\frac{1}{4}F\frac{1}{2}R$ ewes. Currently, sufficient numbers of selected Finn-Dorset rams do not exist, and improvement is still needed.

The purpose of this project is to develop a superior fall-lambing, highly prolific line of Finnish Landrace x Dorset crossbred sheep to produce rams to breed to commercial Rambouillet ewes. The ewe lambs from this cross would be kept as improved $\frac{1}{4}D\frac{1}{4}F\frac{1}{2}R$ ewes for fall lamb production. This is a progress report on the project.

Materials and Methods

Fifteen different sources of breeding stock were used to establish the genetic base for developing the Finn x Dorset line. Future germ plasm will be added as needed. Currently, the flock numbers 179 Finn x Dorset ewes and 55 Finn x Dorset rams.

All F₁ ewes are exposed to F₁ rams for two consecutive springs to check their willingness and ability to breed in the spring. Following this check they are exposed in the fall to increase the number of second generation (F₂) lambs available.

All F₂ and future generations are exposed only in the spring, and selection of fall lambing ewes will be based on the progeny from these matings. Selection procedures to detect the most fertile rams are being developed. No hormone therapy will be used.

Ewes bred in the spring of 1979 and 1980 were bled 6 to 12 days and 60 to 80 days following matings. Plasma progesterone levels over 1 nanogram per milliliter was interpreted to mean that a ewe ovulated or was pregnant. Plasma progesterone levels were used to classify nonlambing ewes. The classifications were: mated but failed to ovulate, ovulated but failed to conceive or maintain early pregnancy and fetus lost late in pregnancy.

The crossbred line will be managed under Oklahoma pasture systems utilizing grass and wheat pasture. Supplemental feeding will be used as needed.

Results and Discussion

Table 1 shows the reproductive performance of the F₁ ewes. Spring mating activity averaged slightly less than the fall mating activity. Individual variation is accounting for a large portion of ewes in the "percent lambled" column of Table 1. Some ewes routinely breed in the spring while others will not. The lambs per ewe lambing is high for the F₁ ewes; however, lamb mortality has been high.

In 1979, 59 F₁ ewes were bled for plasma progesterone and this procedure helped explain the difference between ewes mated and ewes lambled. Fifty one of the ewes ovulated during estrus, while eight ewes expressed estrus, bred, but failed to ovulate. Thirteen of the 51 ewes that ovulated failed to conceive or maintain early pregnancy. Thirty eight of the original 59 cycling ewes maintained pregnancy 60 to 80 days, but only 30 of the ewes lambled.

In summary of the blood analysis data, approximately 20 percent of the ewes that bred failed to ovulate, approximately 20 percent of the ewes that ovulated failed to

Table 1. Reproductive performance of F₁ ewes

Breeding season	Ewes exposed	Percent mated	Percent lambled	Lambs per ewe lambing	Average birth wt
Spring 1976	10	90.0	40.0	1.75	5.23
Spring 1977	35	88.6	17.1	2.00	5.86
Spring 1978	58	72.4	25.9	2.13	5.70
Fall 1978	31	90.3	35.5 ^a	2.27	6.97
Spring 1979	72	93.1	44.4	1.75	5.36
Fall 1979	53	88.0	81.1	2.33	6.66
Spring 1980	32	78.0	50.0	1.63	6.22

^aNot a true estimate of fall breeding potential; several rams were found to be infected with Brucellosis ovis (epididymitis) following the breeding season. These rams were relatively infertile or sterile.

conceive or maintain early pregnancy and approximately 20 percent of the ewes that maintained pregnancy for 60 to 80 days lost their lambs prior to lambing. These observations involve small numbers, but do imply some of the problems when breeding nonadapted sheep during the spring.

Table 2 represents the reproductive performance of young, unselected F₂ ewes. The performance is similar to the F₁ ewes; however, lamb livability is lower. The last column in Tables 1 and 2 indicates the light birth weights, especially on the fall-born lambs and F₂ ewes. Finnish Landrace breeding, summer heat stress and nutritional complications are probably the principal factors involved in the light birth weights.

Table 2 indicates the early maturing patterns involving Finn crossbred sheep. Three-fourths of the 8-month-old ewe lambs bred in the spring at weights under 100 lb and one-third lambled.

A few ewes in the flock continue to be excellent producers during the fall and spring. These are the ewes that the selected line will be based upon to develop a superior reproductive line of fall-lambing sheep.

Table 2. Reproductive performance of F₂ ewes

Breeding season	Ewes exposed	Percent mated	Percent lambled	Lambs per ewes lambing	Average birth wt
Spring 1979	20	95.0	50.0	1.50	4.47
Spring 1980					
Aged ewes	17	64.0	29.4	1.80	5.24
Ewe lambs ^a	19	73.7	31.6	1.67	4.52 ^b

^aEwes less than 9 months old.

^bOnly six recorded birth weights.

Repeatability of Ewe Reproductive Performance

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Story in Brief

Lifetime reproductive records of the crossbred ewe flock (initially 263 ewes) at the Southwest Livestock and Forage Research Station were analyzed to investigate the consistency (repeatability) of reproductive performance of the ewes. The ewes were born in 1971 and 1972 during the spring and bred to lamb at 1 year of age. They lambled one or two more times during late winter, lambled twice during the fall (1974 and 1975) and then followed an accelerated lambing program involving six lambings during the next 4 years. Thus, the 75 to 80 percent of the ewes surviving had 10 or 11 lambing opportunities.

The first analysis determined average subsequent reproductive rates of ewes that produced 0, 1 or 2 lambs at 1 year of age to be 1.33, 1.49 and 1.60 respectively. The performance of the ewes at 1 year was a much better indicator of average lifetime performance than was the ewes' second record where ewes producing 0, 1, 2 or 3 lambs subsequently produced an average of 1.36, 1.42, 1.47 and 1.56 lambs per opportunity.