

Developing a Fertile Line of Fall Lambing Dorset x Finnish Landrace Sheep: Preliminary Observations

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Story in Brief

This report summarizes briefly the collection of a group of 1/2 Dorset, 1/2 Finnish Landrace males and females by purchase and production to start a project to develop a special female line of sheep. The line will be selected for fertility and prolificacy under spring breeding and fall lambing conditions.

Preliminary observations show percent of ewes mated during the spring was 90.0, 88.6, 72.4 and 93.1 for the spring of 1976, 1977, 1978 and 1979. Early April appears to be more conducive to breeding than May or June. Percent lambed were 40.0, 17.1, 25.9 and 44.4 for spring matings. It is known that some ewes do mate but do not ovulate. For those ewes that lambed in the fall, lambs per ewe lambing has averaged 1.75, 2.00, 2.13 and 1.75 for 1976, 1977, 1978 and 1979.

Twenty percent of the F₁ initial crossbred ewes have produced well in the fall lamb production making selection possible for a line of fertile fall lambing sheep. Many Dorset x Finnsheep crossbred ram lambs and yearlings have not been aggressive or fertile in matings in April, May and June, but a few have been adequate. Future research will attempt to develop procedures to help in identifying the most fertile males and females in each generation.

Introduction

The sheep industry needs a line of sheep that will breed readily in the spring and be highly prolific when lambing in the fall. Currently the only major breed available for fall lambing is the Rambouillet. The Rambouillet is available either locally or in numbers from areas south and west of Oklahoma. The other breed genetically suitable for fall lambing is the Dorset, which has a higher lambing rate, although not the quality of wool nor livability of the Rambouillet.

Research has shown that the combination of these two breeds (Dorset x Rambouillet) outproduces either or both of the parent breeds and is the best kind of breeding ewe available to Oklahoma sheep producers at the present time. However, the fall lamb production from this cross does not equal its spring lamb production because of fewer twins (low prolificacy). In order to attempt to increase fall lamb production in terms of the number of lambs born per ewe exposed a different sire line is needed to use on the readily available Rambouillets or other Western ewes.

A Finnish Landrace-Dorset crossbred has the potential to fit this sire line. The Dorset would furnish the germ plasm for fall lambing while the Finnish Landrace would furnish the germ plasm for increased numbers of lambs born.

The purpose of this study is to attempt to develop a superior fall lambing, highly prolific line of Finnish Landrace x Dorset crossbred sheep. The purpose of the line

would be to produce rams to breed to commercial ewe flocks to produce replacement ewes ($\frac{1}{4}$ Dorset x $\frac{1}{4}$ Finn x $\frac{1}{2}$ Rambouillet) for increased fall lamb production.

Materials and Methods

The genetic base for developing the Finn x Dorset line was started in 1975 by purchasing 10 crossbred ewes and two crossbred rams from two sources. Twenty-five crossbred ewes and several rams were produced in 1976 from the mating of purchased Finnish Landrace rams to Dorset ewes leased from four Oklahoma ranchers. In 1977, 29 aged crossbred ewes were purchased from Nebraska and added to the flock. Through 1978 and 1979 approximately 23 Finn x Dorset ewe lambs and several ram lambs were raised from Finnish Landrace ewes purchased from Kansas and bred to Oklahoma State University Dorset rams. Approximately six ewe lambs were added in 1978 through a leasing arrangement with an Oklahoma Dorset flock. The current F_1 or first generation crossbred breeding flock consists of 93 ewes and 18 rams.

Mating plan

All first cross (F_1) ewes are exposed to F_1 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 (F_2) lambs available.

All F_2 and future generations will be exposed only in the spring, and selection of fall lambing ewes will be based on the progeny from these matings. Selection pressure will also be placed on the rams utilizing testis observations, birth type and time of birth. No hormone therapy will be applied to any of the ewes or rams.

The Finn x Dorset crossbreds may have some adaptation problems to the Oklahoma climate. The crossbred line will be initially managed on a pasture system utilizing Oklahoma grasses and wheat pastures. Variations of this system will be undertaken to establish what management practices increase the adaptability of this line to Oklahoma. The ewes and rams will have supplemental feeding if need be during breeding, lambing and times of stress.

Results and Discussion

Only early observations are available on the F_1 line and it must be noted that different management alternatives may be used in future years.

Table 1 represents the reproduction performance of the F_1 ewes. Of the ewes exposed, a high percentage have mated in the spring. In all but the spring of 1978, spring matings have been comparable to the fall matings in 1978. The percent lambing is considerably lower than the percent mated. Blood tests on some of these ewes indicate that some of the ewes are not ovulating. This ovulation failure would account for some of the lower percent lambing in Table 1.

Column 4 of Table 1 indicates an excellent lamb crop for the ewes lambing. They are averaging just under two lambs born per ewe, with no selection for increased lambing rate.

The last column of Table 1 indicates that birth weights are lighter for this line of sheep, especially on the fall born lambs. Livability is less for these small lambs. It is expected that the crossbred lamb will have a lighter birth weight because of the multiple birth trait of the Finnish Landrace breed. However, it is believed that summer heat stress is the principal factor for the extremely small lambs.

Individual variation is accounting for a large portion of the lamb production noted in Table 1. This variation is noted both in the ewe and the ram, especially during the spring breeding period in regard to infertility.

Sixty-six F_1 ewes have been exposed at least twice in the spring. Thirteen ewes have produced 21 of the present 23 grown F_2 ewes from these matings. This large

Table 1. Reproductive performance of F₁ ewes.

	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*	2.27	6.97
Spring 1979	72	93.1	44.4	1.75	5.36

*Not 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.

individual variation also shows up in the rams, where only four rams, out of the total of 18 rams exposed to ewes, have sired almost all the fall born F₂ lambs.

This variation creates a situation where all F₂ fall born lambs were produced by ewes and rams that were fertile during the spring. Through selection, an attempt will be made to develop a superior reproductive line of sheep to use for fall lambing programs from this group of Finn x Dorset sheep.

The Value of Scoring Mating Behavior as Indicated by Chalk Marks During Different Breeding Seasons

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Story in Brief

An effort has been under way since 1976 to determine if scoring the contact between rams and ewes at each estrus would improve the value of the mating records. Rump marks indicating 1-2 mounts were scored L (light), 3-5 marks M (medium) and 6 or more marks H (heavy). The records from five breeding periods involving about 250 ewes and eight rams each period were included in these preliminary summaries.

These summaries attempted to determine if the mating intensity scores (L, M & H) tended to be different during different periods of the year when breeding efficiency is different. During May and June more of the first contacts (estrusses) between rams and