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# Evaluating Breeding Seasonality in the Ewe

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# EVALUATING BREEDING SEASONALITY IN THE EWE
## (Progress Report)

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## Summary

The objective of trials reported in this study was to evaluate fall lambing performance of purebred and crossbred ewes in 1989 and 1990. Fall lambing results following hormone treatment were highly variable. Maiden ewes in general did not lamb in the fall. For mature ewes, approximately 80% of the Finn-Dorset x Targhee (FDT) ewes lambed in September compared to 66% for Columbia, 76.5% for Finn-Dorset (FD) and 0.0% for Hampshire ewes. Additional data and statistical analyses are needed before conclusions are drawn.

(Key Words: Ewe, Seasonality, Lambing Performance.)

## Introduction

The seasonality of production continues to plague the sheep and lamb industry. Reducing or eliminating the seasonal breeding constraints would provide a more uniform, constant supply of product to the packing and merchandising segment of the industry as well as a more stable supply available for the consumer. Smoothing the production curve should stabilize prices, making returns more projectable and hopefully more profitable for all segments of the industry. Previous work at SDSU indicated the potential to develop breeding stock and/or management systems to achieve fall lambing. The objectives of the following studies are to evaluate various ewe stock and management systems to achieve predictable fall lambing performance.

## Experimental Procedure

Trial 1. Spring-born, virgin yearling purebred Hampshire and Columbia ewes were fed .30 mg of an orally active progestin (melengestrol acetate) April 3 through April 10, 1989, or .1 mg April 2 through April 12, 1990. PMSG (750 I.U.) was given on the last day of progestin feeding and semen-tested rams were joined with the ewes for a 35-day breeding period in single sire groups. Date and type of lambing were recorded at lambing.

Trial 2. Spring lambing purebred Hampshire and Columbia ewes were removed from their lambs on April 14, 1989. Following a 2-week restricted intake period, ewes were dewormed and placed on brome pasture. Semen-tested rams were joined with ewes from May 15 to June 20 in single sire mating groups. Procedures were similar in 1990 with ewes weaned April 30 and exposed from May 10 to June 14.

Trial 3. Purebred Hampshire and Columbia ewes that have either lambed previously in the fall or were born in the fall were exposed from April 10 through May 15, 1989, and April 12 through May 17, 1990, in single sire mating groups. In addition, a group of Finn x Dorset (FD) and Finn-Dorset x Targhee (FDT) ewes were exposed at the same time. The Finn x Dorset ewes were exposed to one FD ram and the FDT ewes to three Hampshire rams. Number of animals are shown in Table 3.

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## Results and Discussion

Trial 1. The results of trial 1 are summarized in Table 1. Results following hormonal treatment in 1990 were very similar to those reported previously for 1988. Hampshires have responded to hormone treatment slightly better than Columbias. No ewes lambed in 1989 following hormone treatment, although breeding activity appeared similar to the other two years. No explanation is apparent for the difference observed between years. One of the problems commonly associated with exogenous hormone treatments is variability in response. This variation may include true year effects, hormone potency differences and ram difference. The design of this trial and ewe numbers did not allow us to separate these factors.

Trial 2. Rebreeding spring lambing purebred ewes in May has not been very successful (Table 2). Results of three years (1988 reported previously) have shown slightly better success for Columbia than Hampshire ewes. The level of success achieved offers little benefit from a practical standpoint, although it has allowed us over a 3-year period to build a small group of fall lambing ewes for use in the research described in trial 3.

Trial 3. Lambing performance of the various ewe breed groups is shown in Table 3. None of the Hampshire ewes in the fall flock lambed in 1989 or 1990. Approximately 66% of the mature Columbia ewes in the fall flock lambed in September. Lambing percentage at 11 to 12 months of age for September-October born purebred Hampshire and Columbia ewe lambs has been near zero (<5%). However, 10 of 19 (52.6%) Finn-Dorset ewe lambs of similar age lambed. This compares to 76.5% of the mature Finn-Dorset ewes lambing in September 1990. In 1989, 97.1% of the mature Finn-Dorset x Targhee (FDT) ewes lambed in September compared to 65.2% in 1990. None of the April-born FDT ewe lambs that were exposed at 12 months of age lambed in 1990 compared to 12% in 1989.

Preliminary evaluation of the results of this study to date supports previously commonly held beliefs. Fall lambing results following hormone stimulation are highly variable. Success of breeding maiden ewes for first lambing in the fall is low. Success of fall lambing is higher in crossbred ewes than straightbred ewes of the breeds tested. However, these data provide evidence that mature crossbred ewes managed properly can achieve acceptable September lambing performance. Fall lambing success in mature Columbia ewes has been higher than expected ( 66%). Additional data and statistical analyses are needed before final conclusions are drawn.

TABLE 1. FALL LAMBING PERFORMANCE OF YEARLING PUREBRED EWES

| Breed of ewe | Year | Total no. | No. lambing | Percent lambing | Lambing date | Lambs born per ewe lambing |
|---|---|---|---|---|---|---|
| Hampshire | 1989 | 25 | -- | -- | -- | -- |
| | 1990 | 32 | 13 | 40.6 | 9-5 | 1.85 |
| Columbia | 1989 | 25 | -- | -- | -- | -- |
| | 1990 | 32 | 6 | 18.8 | 9-11 | 1.17 |

TABLE 2. FALL LAMBING PERFORMANCE OF PUREBRED EWES BRED FOLLOWING WEANING OF SPRING LAMB CROP

| Breed of ewe | Year | Total no. | No. lambing | Percent lambing | Lambing date | Lambs born per ewe lambing |
|---|---|---|---|---|---|---|
| Hampshire | 1989 | 56 | 0 | -- | -- | -- |
| | 1990 | 44 | 10 | 22.7 | 10-15 | 1.40 |
| Columbia | 1989 | 48 | 6 | 12.5 | 10-24 | 1.33 |
| | 1990 | 50 | 19 | 38.8 | 10-17 | 1.05 |

TABLE 3. SEPTEMBER LAMBING PERFORMANCE OF VARIOUS EWE BREEDS

| Breed of ewe | Year | No. exposed | No. lambing | Percent lambing | Lambs born per ewe lambing |
|---|---|---|---|---|---|
| Hampshire | 1989[a] | 11 | -- | -- | -- |
| | 1990[b] | 9 | -- | -- | -- |
| Columbia | 1989[c] | 17 | 8 | 47.1 | 1.3 |
| | 1990[d] | 32 | 14 | 43.8 | 1.1 |
| Finn-Dorset | 1989[e] | 19 | 12 | 63.2 | 1.4 |
| | 1990[f] | 23 | 13 | 56.5 | 2.1 |
| FDT | 1989 | 35[g] | 34 | 97.1 | 1.9 |
| | | 42[h] | 5 | 11.9 | 2.0 |
| | 1990 | 69[g] | 45 | 65.2 | 1.5 |
| | | 38[h] | -- | -- | -- |

[a] Contained four ewe lambs.
[b] Contained 0 ewe lambs.
[c] Contained five ewe lambs, none lambed.
[d] Contained 12 ewe lambs, one lambed.
[e] Contained 13 ewe lambs, ten lambed.
[f] Contained six ewe lambs, none lambed.
[g] Ewes greater than 30 months of age at lambing.
[h] Maiden ewes 18 months or less of age at lambing.