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Estrous Synchronization, Crossbreeding and Antibiotic Feeding  
for Improved Ewe and Lamb Performance

Leon F. Bush and Frank Whetzal

Increased productivity and more efficient management of the ewe flock will enable the sheep industry to better compete with other livestock operations. Improved lambing percentage, decreased mortality of lambs from birth to weaning and a more uniform lamb crop will assure a greater return on ewe investment. Controlled breeding would achieve a shortened lambing period and a more uniform lamb crop. The better management necessary for a shortened, more rapid lambing may result in more lambs saved and marketed. More vigorous lambs and a lower death loss may be expected from crossbreeding and the use of antibiotics in the ewe ration at lambing time.

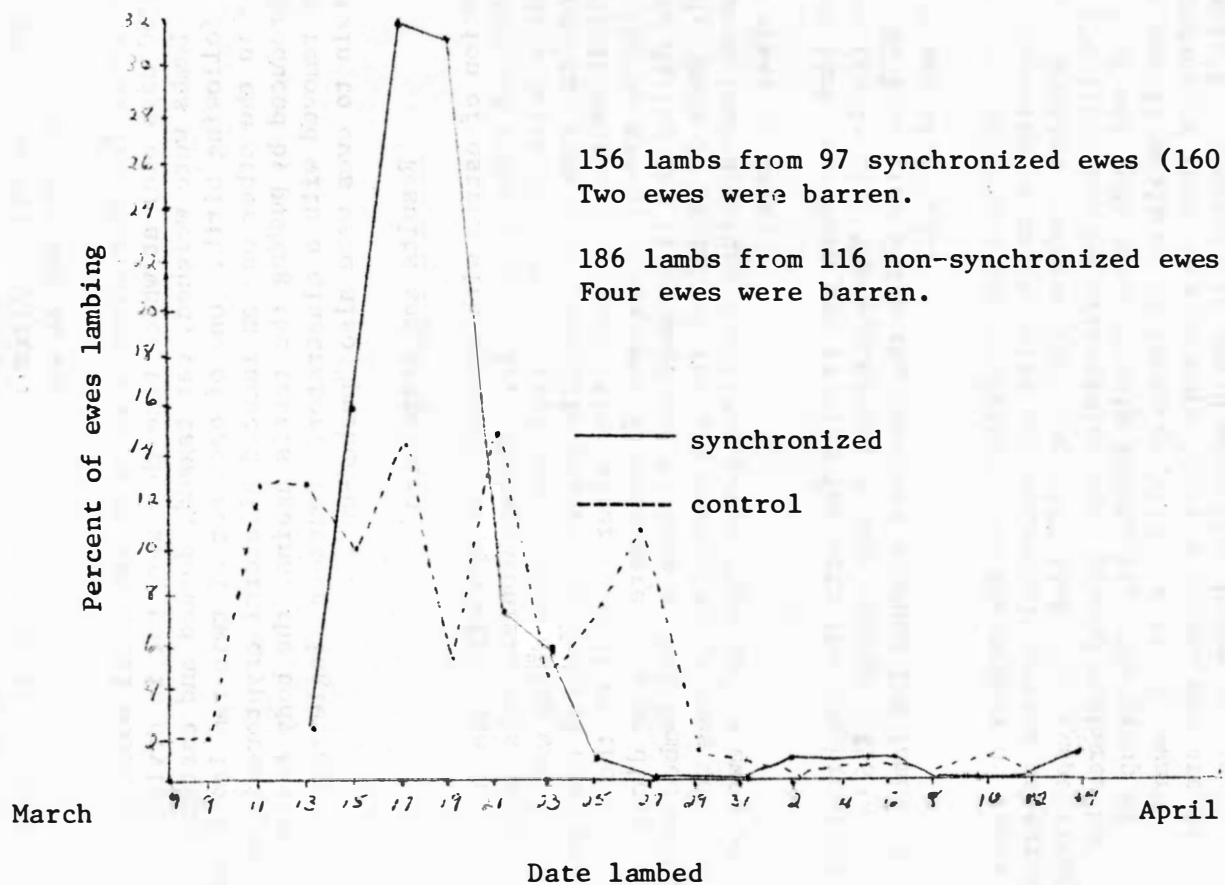
Procedure

Two hundred nineteen white-faced ewes of mixed breeding (Rambouillet, Columbia and Corriedale) were used in this experiment. Two hundred of these ewes were summered at the Antelope Range Station, Buffalo, S.D. and nineteen ewes were kept at the Newell Field Station. The ewes at Antelope were maintained on four different pasture systems which included light, moderate, heavy and moderate rotational grazing. Twenty-five ewes were randomly selected from each of the four pasture treatments and treated with progestinated pessaries (Synchro-Mate) on September 20. The remaining ewes plus those at Newell served as controls (119 ewes). Following treatment the ewes were returned to their respective pasture groups. Pessaries were removed from treated ewes twelve days after insertion. Eight days after removal of pessaries all ewes were trucked to the Newell Field Station. The 219 ewes were randomly divided into two breeding groups according to body weight, age and previous treatment. Ten days after removal of pessaries, all ewes were placed in breeding groups with three Columbia rams in one group and two Hampshire and one Suffolk ram in the other group. Two breeding groups were maintained for 17 days, then ewes and rams were combined as a flock for the remaining 20 days of the breeding period.

No flushing treatment was given prior to nor during the breeding period other than that provided by relatively good pasture.

The ewes were kept on pasture as a single group throughout the winter. When pasture became limited supplemental feed was provided. About one pound of alfalfa hay and four pounds of corn silage were fed per head daily. These roughages were fed throughout the winter.

Figure 1. Lambing rate for the synchronized and control ewes - Spring 1968.



About 10 days before lambing the ewes were sheared and kept in drylot until lambs were weaned. One week after shearing ewes were divided into two groups on the basis of previous treatment. One group was fed 60 mg. of aureomycin per ewe daily in  $\frac{1}{2}$  pound steam rolled barley for a period of 60 days. The other group was fed the same amount of barley without the antibiotic. After the 60 day treatment period, ewes and lambs were run together as one group.

Lambs were creep fed from about 5 weeks of age until weaning (approximately 80 days old) at which time they were put in drylot for finishing. Lambs were weighed, ear tagged, docked and castrated about 24 hours following birth. One of each set of twin ram lambs was castrated while in the other one an induced bilateral cryptorchid or "push-up" was produced by pushing the testis against the body cavity. The scrotum was removed with an elastrator. Fourteen single ram lambs or rams twin to ewes were also "pushed-up".

### Results and Discussion

Synchronization of estrus with wynchro-mate was effective in grouping the birth of lambs (figure 1). The synchronized ewes began lambing seven days later than the control ewes. This delay was anticipated since the rams were turned in before the treated ewes were expected to exhibit estrus the second time after removal of the pessaries. Of the 97 synchronized ewes (3 ewes were sold or died) 78 or 80% lambled during the first week and 91 ewes or 94% lambled within a 12 day period. Only 26 or 21% of the 116 untreated (3 ewes were sold or died) ewes lambled during the first seven days and 66 ewes or 57% had lambled after 12 days.

The percent lamb crop born was similar for both the synchronized and control ewes (table 1). The synchronized ewes produced 156 lambs for a 160.8% lamb crop while the controls produce 186 lambs or a lambing percentage of 160.3%.

Previous summer treatment had an effect upon the number of lambs born. The ewes summered on the heavily and moderately grazed pastures at Antelope Range Station produced 169% and 167% lamb crop respectively while those on the light and moderate-rotational grazed pastures had a lamb crop of 153% and 149% respectively (table 1). The group of 19 ewes kept at Newell produced 33 lambs or 174%. A trend toward greater lamb production from ewes on more heavily grazed pasture is indicated in table 1. However, it would seem that heavy grazing could have a detrimental effect on the number of lambs produced. A six year summary of ewes managed on three grazing systems - light, moderate, and heavy grazing - at the Antelope Range Station showed a lower lamb crop on the more heavily grazed pastures. However, when  $\frac{2}{3}$  pound of a 20% protein supplement was fed per ewe from breeding to lambing, the lambing percentage for ewes on the heavy grazed pasture was about equal to the lamb crop of ewes on the light grazed pastures. The increased number of lambs in both experiments

Table 1. Percent lamb crop from synchronized and control ewes pastured on different grazing systems.

Grazing system	Synchronized			Non-synchronized			Totals		
	No. ewes	No. lambs	% lamb crop	No. ewes	No. lambs	% lamb crop	No. ewes	No. lambs	% lamb crop
Heavy	24	41	170.8	24	40	166.7	48	81	168.8
Moderate	24	42	175.0	22	35	159.1	46	77	167.4
Light	24	38	158.3	27	40	148.1	51	78	152.9
Moderate-rotation	25	35	140.0	24	38	158.3	49	73	149.0
Ewes kept at Newell				19	33	173.7	19	33	173.7
Totals <sup>a</sup>	97	156	160.8	116	186	160.3	213	342	160.6

<sup>a</sup>Included are two synchronized ewes and 4 control ewes which were barren.

is probably due to the flushing effect of a higher plane of nutrition during breeding and early gestation to poor conditioned ewes from the heavily grazed pasture.

Lamb performance from birth to weaning is shown in table 2. The crossbred lambs (sired by black-faced rams) weighed about 0.5 pound more at birth and appeared to be somewhat more vigorous than Columbia sired lambs. The death rate from birth to weaning was lower for the crossbred lambs. Four of the 147 crossbred lambs (2.7%) died during this period compared to 14 deaths (7.6%) for the 184 Columbia sired lambs.

Crossbred lambs and lambs from ewes fed antibiotics made the most rapid gains from birth to weaning. The crossbred lambs from ewes fed and not fed antibiotics gained 45.0 and 38.2 pounds respectively compared to 39.9 and 36.7 pounds respectively, for Columbia sired lambs. A weighted average shows a gain of 41.6 pounds for all crossbred lambs while Columbia sired lambs had a gain of 38.3 pounds. However, Columbia sired single lambs gained somewhat faster from birth to weaning than did crossbred single lambs.

Male lambs gained faster than ewe lambs and singles gained faster than twins from birth to weaning. While the twins gained about 9.0 pounds less per lamb than did singles, total pounds of lamb produced per ewe was 29 pounds greater for twins than from ewes with a single lamb.



Aureomycin feeding which started when ewes began lambing did not reduce death loss appreciably. Number of lamb deaths were quite low in both groups. Eight of 159 lambs (5.0%) from the ewe group fed aureomycin died before weaning compared to 10 of 172 lambs (5.8%) for the control ewes. In a previous experiment conducted at the Newell Field Station lamb mortality was reduced from 16.5% for the controls to 4.5% when ewes were fed 60 mg. aureomycin for 80 days starting six weeks prior to lambing.

There were 29 sets of "push-ups" and castrated twin male lambs alive at weaning. The "push-up" lambs gained somewhat faster up to weaning with 41.1 pounds gain compared to 39.0 pounds for the wether twin.

#### Summary

Two hundred nineteen white-faced ewes were used to study the influence of estrus synchronization, crossbreeding and antibiotic feeding on ewe and lamb performance. Estrus synchronization with a progestinaged pessary (Synchro-Mate) was successful in grouping lamb crop with about 94% of the treated ewes lambing in a 12 day period while only 57% of the control ewes lambing in a 12 day period. Lambs sired by black-face rams either Hampshire or Suffolk appeared to be more vigorous at birth and had a lower death rate from birth to weaning than Columbia sired lambs (2.7% vs. 7.6%). The crossbred lambs were about 0.5 pound heavier at birth and weighed 3.0 pounds more at weaning than those sired by Columbia rams.

Including 60 mg. of aureomycin in a ewe's daily ration starting at time of lambing did not appreciably reduce death loss. Death loss for all lambs was quite low (5.5%) from birth to weaning.

Induced cryptorcid (push-ups) gained slightly faster than their twin wether lambs (41.0 vs. 39.0 lb. respectively).