

The Lambing Performance Of Ewes of Different Breeding

*Joe V. Whiteman
Richard Pittman and Kenneth Urban*

Oklahoma sheepmen who produce milk fat lambs to be sold during the spring usually obtain ewes from southwestern areas for replacements. Such ewes are generally called white faced "westerns" and may be grade Rambouillets or various mixtures of Rambouillet with Merino, Columbia, Panama, or Corriedale. Merinos are a small finewool breed of the same general ancestry as the Rambouillet, but are generally thought to be less prolific and gain slower and exhibit a generally less desirable mutton conformation than Rambouillets. Columbias, Panamas, and Corriedales are similar in that they are all based on a cross of Lincoln with finewool breeds. The Lincoln breed is characterized by large size, open face, and long coarse wool. They are also a seasonal (breed most dependably during the fall) breeding breed of sheep.

Some sheepmen raise some of their own replacements, or would prefer to do so. Rams of Dorset, Hampshire, and Suffolk breeding are most generally used in milk lamb production in Oklahoma. Of these breeds only the Dorset ewes will breed readily during the spring, and consequently one-half Dorset replacements would be expected to be the most dependable for fall lambing.

It has generally been supposed that the economics of obtaining replacements forbade raising them since generally one can buy a yearling southwestern ewe for about the same amount that a ewe lamb would bring for slaughter. The yearling is more nearly breeding age than the ewe lamb. This argument makes no allowance for differences in productivity of the two kinds of ewes at maturity.

This report is a preliminary one indicating the results that have been obtained thus far in answering the following two questions:

1. If buying replacement ewes from the southwestern area, what kinds should one buy?
2. Is it economically feasible to raise rather than buy replacements?

Experimental Procedure

The ewes included in this study are located at the Ft. Reno Experiment Station, El Reno, Oklahoma¹. The ewe flock was obtained as follows:

Number	Kind of Ewes	Source	When Obtained
100	¼ Panama X ¾ Rambouillet (RPR)	Texas	Spring 1955
100	Grade Rambouillet	Texas	Spring 1955
20	Dorset X RPR	Raised	Winter 1956-57
20	Dorset X Rambouillet	Raised	Winter 1956-57
20	Panama	Texas	Spring 1957
20	Rambouillet-Merino ¹	New Mexico	Spring 1957
20	Dorset X RPR	Raised	Winter 1957-58
20	Dorset X Rambouillet	Raised	Winter 1957-58
20	Rambouillet	Texas	Spring 1958
20	Market White Face ²	Okla. City Mkt.	Spring 1958
20	Dorset X RPR	Raised	Winter 1958-59
20	Dorset X Rambouillet	Raised	Winter 1958-59
20	Columbia Rambouillet	New Mexico	Spring 1959
20	Rambouillet	New Mexico	Spring 1959

¹ Probably about 80 percent Rambouillet and 20 percent Delaine Merino.

² Fine wool ewes. Probably mostly Rambouillet but may contain some Panama, Columbia, or Corriedale breeding.

The ewes that were raised were selected from the first ewe lambs to reach 90 pounds during the respective years. Twenty ewe lambs were selected from each of the two kinds of original ewes each year. When these lambs were about six months old they were placed with the forty yearling ewes purchased during the respective year and the entire group was managed the same thereafter.

The two hundred original ewes have been mated to Dorset rams exclusively. The three replacement groups have been mated to Hampshire rams the first year and to Suffolk, Hampshire, or Dorset rams at older ages. The breeding season has always been during the period between May 20th and July 12th. During 1955 and 1956 a 48-day breeding season was used. In 1957 breeding was limited to 32 days. Since 1958 the breeding season has been of 40 days duration.

During the breeding season the ewes were divided into several small (usually 45 to 70 ewes) groups. In making up the breeding groups a like number of each kind of ewes to be compared was placed into each group

¹ Operated in cooperation with the A.R.S., U.S.D.A.

so that such a study as is reported here could be logically made. The rams were placed with the ewes each afternoon about 5:00 o'clock and removed the following morning about 8:00 o'clock. The rams were fitted with marking harnesses so that the night of breeding and the ram concerned could be recorded.

By 1957 it became obvious that only 75 to 85 percent of the ewes would lamb as a result of the restricted breeding season imposed. It was decided that a short summer or early fall breeding season would be necessary to get some of the ewes settled that were not conceiving during the regular season. During 1957 a summer (August 1-20) breeding season was used to try to get some of the dry ewes to conceive. Only about one ewe out of each eight that did not lamb in Oct.-Nov. of that year conceived during this period. Only about one-half of these open ewes mated. In 1958, the breeding period was from August 10th until August 30th and only about three ewes out of each eight that were probably open at this time conceived and lambed.

The lambs that resulted from these summer matings were born in late December and January and gained fast enough to be marketed by early May. This indicated that later born lambs could usually be marketed before the weather was too hot and that breeding could be delayed until sometime in September. Consequently, during 1959 the late breeding extended from August 20th until September 21st.

Results and Discussion

The results obtained from such a study could be evaluated in several ways. The mating behavior of the ewes, the percent of ewes lambing, the percent of lambs born or the number of lambs raised per 100 ewes in the breeding herd are all possible measures of reproductive performance. Any or all of the measures could be used to evaluate the performance of the different kinds of ewes included in this study. The use of marking harnesses to record matings was not perfect. Rams marked ewes without actually mating with them, and ewes were mated without being marked. A study of the records indicated that with the exception of the ewe lambs and yearlings, about 90 to 100 percent of the ewes in the various groups and years mated. The failure to have all ewes mated may well have been due to the lack of aggressiveness on the part of the rams.

It is felt that the two most enlightening measures of reproductive performance are percent of ewes lambing and number of lambs raised per 100 ewes in the breeding flock. The latter measure is different from the percent of lambs born of all ewes in the breeding flock only by the

lambs born dead and those dying as a result of the ewe's failure to produce vigorous lambs or to raise them. The failure to produce live lambs and raise them occurred among all kinds of ewes.

Table 1 presents the summarized results that have been obtained from the 200 original ewes during the five years that they have produced.

Table 1.—The Reproductive Performance of $\frac{1}{4}$ Panama X $\frac{3}{4}$ Rambouillet Vs. Grade Rambouillet Ewes From 1955 to 1960.

	$\frac{1}{4}$ Pan. X $\frac{3}{4}$ Ramb.	Grade Ramb.
Oct.-Nov. lambing results		
Percent ewes lambing ¹	79	85
Number of lambs raised ¹	89	107
Winter lambing (1957-59)		
Percent ewes lambing ²	38	34
Number of lambs raised per 100 ewes ²	51	43
Total number of lambs raised ³	442	522

¹ Based on the number of ewes in the breeding flock less those dying or aborting before lambing.

² Based on number of ewes not lambing in fall.

³ Total ewes was 476 for each breed.

It is apparent from Table 1 that the grade Rambouillet ewes have been considerably more productive than the one-fourth Panama ewes. The Rambouillet ewes have raised 18 percent more lambs as a result of more ewes lambing and a higher twinning rate. When considering fall lambing only the Rambouillet ewes have raised 20 percent more lambs than the one-fourth Panamas. Actually the Rambouillet ewes have been better performers in every year of the study. Their superiority was, however, more marked during the first two years of production when the ewes were approaching two and three years of age.

The one-fourth Panama ewes have been more productive when bred during the summer for winter lambing as indicated by a higher percent of ewes conceiving and more lambs raised. It should be kept in mind that there have been only 35 lambs raised by both groups of ewes from summer breeding, whereas there have been 929 lambs raised from May to June breeding.

As indicated before, the breeding performance of neither group of ewes has been satisfactory when exposed to the rams in August. During 1959 the summer breeding extended from August 20th until September 21st. There were 12 one-fourth Panama and 11 Rambouillet ewes that did not lamb in October and November and are presumed to have been open during late summer. Of these ewes, all of the one-fourth Panamas

mated but only eight lambed and eight Rambouillet ewes mated and six lambed. This is not as good performance as is usual with October breeding but is considerably better than when the breeding season was restricted to 20 days in August. These results with summer breeding are in complete agreement with results found by other workers relative to the effectiveness of summer vs. fall breeding. The closer the breeding season is to the fall, the better the breeding performance.

The best comparison that can presently be made of the results obtained with the replacements is to compare the lambing performance of the purchased yearlings with that of the raised ewe lambs. This comparison is presented in Table 2 and presents the results by the age of the ewes; that is, the productivity of the ewes in their first breeding year, their second breeding year, and their third breeding year.

The results shown in Table 2 suggest what might be expected. The one-half Dorset raised replacements that were only seven to eight months old during the late spring breeding season did not produce as many lambs as the purchased replacements that were 14 to 15 months old when bred for the first time. The ewes that were raised were more productive during their second year than were the purchased ewes and had raised almost as many total lambs at that age. During their third year of production the raised ewes were again more productive than those that were purchased and appear to be potentially better ewes.

It can be argued that some of the purchased ewes were similar in breeding to the one-fourth Panamas shown previously to be less productive than the Rambouillet ewes. This is true but if the results are re-evaluated, and the raised replacements compared within age groups to the Rambouilllets, the advantage shown in Table 2 is less striking but still exists. No group of ewes that have ever been in the Ft. Reno flock have performed as well as the one-half Dorset ewes have in their second and third years of production.

The wool production is greater for the purchased replacements. Using only the three year old ewes since only they have comparable fleeces, the purchased ewes sheared 28 percent heavier fleeces than the raised replacements. The fleeces were put through a "squeeze" machine to get an estimate of the clean wool content. On the basis of clean (actual) wool, the purchased ewes sheared only four percent more wool than the raised replacements. If wool were sold on the basis of yield, the difference in value per fleece appears to be of little consequence.

These results indicate that the raising of replacements out of Dorset rams is economically sound, if the production of the two groups is sim-

Table 2.—The Reproductive Performance of Purchased Yearling Replacements Vs. Raised One-Half Dorset Replacement Ewe Lambs.

	½ Dorset Raised Replacements	Purchased Replacements
First year's performance ¹		
Oct.-Nov. lambing		
Ewes in breeding flock (No.)	120	120
Ewes lambing (No.)	35	60
Lambs raised (No.)	34	60
Winter lambing		
Lambs raised (No.)	30	22
Total lambs raised (No.)	64	82
Second year's performance ²		
Oct.-Nov. lambing		
Ewes in breeding flock (No.)	79	79
Ewes lambing (No.)	72	63
Lambs raised (No.)	90	71
Winter lambing		
Lambs raised (No.)	8	12
Total lambs raised (No.)	98	83
Third year's performance ³		
Oct.-Nov. lambing		
Ewes in breeding flock (No.)	38	39
Ewes lambing (No.)	38	30
Lambs raised (No.)	58	37
Winter lambing		
Lambs raised (No.)	0	8
Total lambs raised (No.)	58	45
Summary		
Total ewes in all years (No.)	237	238
Lambs raised (No.)	220	210

¹ Combined results from ewes started on test in 1957, 1958, and 1959. The best estimate of ewes' first year performance.

² Combined results from ewes started on test in 1957 and 1958. The best estimate of ewes' second year performance.

³ Only the ewes started on test in 1957 have reached their third year's performance.

ilar for the rest of their lives and if their productive lives are similar in length. These studies have not included any information on disease or parasite control. Disease prevention would favor raising replacements whereas parasite control might favor the use of purchased replacements.

Further, these studies have not considered the long time advantage to be gained by saving replacement ewes out of high producing dams and sires. The latter practice has long been considered to be a sound basis for animal improvement. For instance, the replacements raised in this study have been in equal numbers from the one-fourth Panama ewes and the Rambouillet ewes. The Rambouillet ewes (as per Table 1) have raised 20 percent more fall born lambs than the one-fourth Panama ewes. The daughters of the Rambouillet ewes have raised 23 percent more fall born lambs than the daughters of the one-fourth Panama ewes.

The advantage for the Rambouillet ewes in total lambs was 18 percent and for their daughters a like 18 percent as compared to the one-fourth Panama ewes and their daughters, respectively.

Summary

The productive performance of 200 ewes of one-fourth Panama X three-fourths Rambouillet and high grade Rambouillet breeding has been studied over a five year period. Also included in the study were the records of 240 ewes that were added to the flock in equal numbers over a three year period. The latter group was composed of equal numbers of ewes that were raised (out of Dorset rams and the 200 original ewes) and purchased to represent the kinds of Western ewes available to Oklahoma sheepmen. The principal breeding season was in the period between May 20 and July 12, but during the last three years attempts were made to breed some of the open ewes during August or September.

The high grade Rambouillets have been more dependable for fall lambing and have produced and raised more twins, resulting in 20 percent more fall born lambs or 18 percent more total lambs than the one-fourth Panama ewes. Purchased yearling ewes produced more lambs as yearlings than one-half Dorset raised replacements produced as lambs. In their second productive year the raised one-half Dorset ewes out-produced the purchased ewes enough to almost catch up. The only group of raised one-half Dorset ewes that produced for the third time raised considerably more lambs than any other group of ewes of any age had during the trial. Thirty-eight ewes lambed at three years of age; all lambed during a 40-day period between October 15 and November 26; they produced 63 lambs and raised 58 lambs.

The replacements that have been raised and tested were the first ewe lambs in their respective years to reach a market weight of 90 pounds. Slower gaining lambs would generally be expected to be poorer producers.

Studies on the Effect of Microbial Enzyme Preparations Upon Gains and Ration Digestibility by Sheep and Cattle

Allen D. Tillman

The interests of livestock feeders in the effect of added enzymes upon gains and feed utilization were stimulated when the Iowa researchers reported that a crude microbial preparation containing a high level of proteolytic enzymes increased gains of fattening cattle receiving