

PRODUCTIVITY OF SELECTED BREEDS AND CROSSES OF SHEEP

I. Experimental Ewes

Merle R. Light, C. L. Johnson, Timothy Faller

The use of genetically superior ewes for production could materially increase income for sheep producers. The North Dakota Agricultural Experiment Station has been conducting research at the Hettinger Experiment Station to determine the potential of various white faced breeds and their crosses for intensified sheep production.

This report characterizes the several types of crossbred ewes and their foundation dam breeds, and presents body weights and fleece production. Further progress reports concerning their lamb production and carcass characteristics will follow.

These breeds were selected for utilization in the formation of crossbreds for this project.

1. **Border Leicester** — This breed is world renowned for its ability to sire productive commercial ewes. Crossbred ewes sired by Border Leicesters have been utilized in Great Britain and New Zealand with marked success to increase flock fertility and productivity. They have not, however, been used to any great extent in the United States. Border Leicesters are medium in size, clean-faced,

clean legged, docile, prolific, heavy milkers and produce long coarse wool.

2. **North Country Cheviot** — This breed is large to medium in size, bare white faced, and noted for its vigor and mothering ability. North Country ewes are fertile and lamb easily. Their lambs are especially strong and require little assistance and attention when born. The North Country Cheviot might be criticized for producing fleeces lacking density and weight (little wool on necks, legs and underlines) and because of its nervous and active disposition.

3. **Columbia** — The most popular purebred breed in North Dakota. This breed is neither especially fertile nor is it a persistent heavy milking breed. Columbias excel all breeds as producers of medium wool with excellent quality and length. It was felt that because of its wide use, the Columbia could logically serve as a breed to furnish dams for crossbred ewes. Excellent dispositions, together with large, roomy frames, make this breed sought after as a commercial ewe.

4. **Rambouillet** — This breed has been widely used in the foundation of new breeds in the United States. The Rambouillet is unexcelled as a range sheep and probably performs better under a wider

Light is associate professor, Department of Animal Science; Johnson, former superintendent, Hettinger Experiment Station, is now with the Animal Science Department, South Dakota State University, Brookings; and Faller is superintendent, Hettinger Experiment Station.

Table 1. Body Weights of Experimental Ewes.

Sires	Columbia Dams				Rambouillet Dams			
	Border Leicester	North Country Cheviot	Columbia	Rambouillet	Columbia	Rambouillet	Border Leicester	North Country Cheviot
Weaning Weight — 1967	64.3	64.3	63.9	57.5	67.4	65.1	71.9	69.6
1968	65.8	64.6	63.1	62.3	69.0	65.4	68.9	70.9
Yearling Weight — 1967	99.1	110.1	105.9	107.4	109.9	113.8	119.8	117.4
1968	111.8	109.6	110.3	115.6	135.4	132.8	140.9	120.0
Average Weight at Breeding (Lbs.)	134.0	141.	137.	133.	147.	144.	158.	152.
Average Weight Pre-Lambing (Lbs.)	160.	169.	165.	162.	175.	172.	198.	181.
Average Weight Pre-Weaning (Lbs.)	134.	141.	135.	135.	146.	141.	150.	152.

Table 2. Fleece Production of Experimental Ewes.

Sires	Columbia Dams				Rambouillet Dams			
	Border Leicester	North Country Cheviot	Columbia	Rambouillet	Columbia	Rambouillet	Border Leicester	North Country Cheviot
Average Pounds Sheared ¹	11.4	9.9	12.1	11.5	13.2	13.0	13.0	11.0
Staple Length (Inches)	6.1	4.4	4.2	3.5	3.6	3.2	4.9	3.9
Fleece Grade ²	51.0	55.7	56.9	60.3	59.7	63.1	54.4	57.8
Fleece Grade ³	¼	⅜	⅜	½	½	Fine	¼	⅜

¹ Two years' shearing data

² Fleece grade according to Bradford spinning count

³ Fleece grade according to blood system

variety of climate conditions than any other single breed in the United States. Rambouillets are noted for hardiness, longevity and for shearing high quality fine wool. The Rambouillet breed has an added advantage in its rather extended breeding season; many will lamb at any time during the year.

Methods

Test groups of commercial white faced ewe lambs were produced under contract by South Dakota ranchers who had range flocks of Columbia or Rambouillet ewes. The Hettinger Experiment Station provided different half-brother rams for use in each of two years to sire the test ewes. The rams used originated as follows:

- (1) Columbias — Bred at Hettinger Experiment Station
- (2) Border Leicesters — Produced in Canadian flocks
- (3) North Country Cheviots — Produced in two North Dakota farm flocks
- (4) Rambouillet — Produced in a South Dakota flock

These rams were what we would term typical farm flock or range rams for their breeds. No special effort was made to select other than what would be called "good commercial bucks".

Four groups of 40 randomly selected ewes were mated to either Columbia, Rambouillet, Border Leicester, or North Country Cheviot rams in the fall of 1965 and 1966. Approximately 16 ewe lambs of each mating were delivered to the Hettinger Experiment Station following weaning in 1966 and in 1967. All ewe lambs were run together as one group after delivery. They were overwintered during their first year under typical western

North Dakota farm flock management. Growing winter rations consisted of alfalfa hay plus ¾ pound oats per day.

Discussion

Data collected on body weights and fleece production are shown in Tables 1 and 2.

Weaning weights were those obtained following weaning and delivery to the Hettinger Experiment Station. Yearling weights shown were those weights following shearing and closely approximate yearling weights, although those weights are not corrected for age. Breeding, pre-lambing and weaning ewe weights represent an average of two years data. Approximately equal numbers of yearling and two year old ewe weights were represented. It is likely that these body weights will increase as the ewes reach maturity.

Lamb and ewe weights from Rambouillet dams have been heavier at each stage than those from Columbia dams. The authors do not know whether these weights reflect an inherent size difference in parental flocks or the difference in range conditions where the various crosses were born and raised. However, Columbia based ewes came from an area where range conditions were poorer than those of the Rambouillet based ewes.

Border Leicester and North Country Cheviot crossbred ewes were somewhat heavier than straight Rambouillet, Columbia or reciprocal crosses of these breeds. The pre-lambing weight of the various ewe groups reflects the differences in twin production.

In general, all ewe groups would be said to have adequate size and scale for ewes of their ages found in commercial sheep flocks in North Dakota.

Fleece production, shown in Table 2, represents an average of the ewe's first and second shearing. The ewes from Rambouillet dams have shorn approximately 10 per cent more pounds of grease wool than those from Columbia dams. Staple length, on the other hand, was approximately 14 per cent greater for ewes from Columbia dams. Although clean fleece weight was not determined, it is expected that little difference existed in clean fleece weight since longer staple fleeces are also higher yielding fleeces.

Border Leicester sired ewes produced longer staple fleeces. This trait is particularly noted in the offspring of Columbia dams. The staple on these ewes was extremely long and fleeces tended to be open. Some ewes from this cross produced braid wool.

North Country Cheviot sired ewes sheared the lightest fleeces. The use of North Country Cheviot rams decreased wool production by approximately two pounds per head in this study. Staple length, however, was actually somewhat longer than that of Columbia and Rambouillet sired ewes.

Summary

Data have been presented characterizing the foundation ewes under study at Hettinger Experiment Station.

Ewes from Rambouillet dams have been heavier and have produced approximately 10 per cent more grease wool than those from Columbia dams.

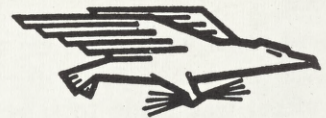
Staple length was 14 per cent longer on ewes from Columbia dams.

Agricultural Experiment Station
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