A COMPARISON OF DORSET HORN AND CHEVIOT SIRES OF BOTH GOOD AND POOR CONFORMATION, FOR PRIME LAMB PRODUCTION

B. A. HAMILTON*, W. A. PATTIE* and A. C. GODLEE†

Summary

Eight Dorset Horn and eight Cheviot rams were compared as prime lamb sires when mated to Border Leicester x Merino ewes at Glen Innes and Tamworth, New South Wales. Lambs sired by Dorset Horn rams had significantly heavier carcases. There was no significant difference in the numbers of perinatal deaths, although Dorset Horn lambs had significantly more assisted births. There were no significant differences in carcase weight or grade between lambs sired by rams of good and poor conformation within each breed.

I. INTRODUCTION

In recent years, Cheviot rams have been used as prime lamb sires in New South Wales but little is known of their performance. This experiment was designed to compare sires of this breed with Dorset Horns, a breed of known value as a prime lamb sire (Pattie and Donnelly 1962). Within each breed, rams of good and poor conformation were also compared.

II. MATERIALS AND METHODS

The Dorset Horn rams were selected from the Department of Agriculture's stud at Wagga and the Cheviots from a different stud each, year. Rams of good conformation were selected on present stud standards of excellence, being low set and blocky, with straight level backs. Other characters such as shape of head and horns conformed to breed society requirements. Rams of poor conformation had long legs, depression of shoulders, were "slab-sided" and had poorly shaped heads. Rams were selected in pairs each year, one of good and one of poor conformation from the same stud. Although an attempt was made to select rams of similar body weights, the rams of good conformation averaged 8% heavier than rams of poor conformation.

These rams were joined to a flock of 190 Border Leicester x Merino ewes at Glen Innes in June 1961, 1962, and 1963 and to a similar flock of 275 ewes at Tamworth in March 1963 and 1964. Four rams were used each year, one of good and one of poor conformation from each breed. In 1963 the same rams were joined at Glen Innes and Tamworth.

The ewes were randomized into four groups before joining each year and one ram was joined to each group. The ewes were run as one flock except for

* Department of Agriculture, Agricultural Research Station, Trangie, N.S.W.
† Department of Agriculture, Tamworth, N.S.W.

joining and lambing. At lambing, birth weights were recorded together with details of any assisted births and lamb deaths. All lambs at the one location were slaughtered when the average liveweight was approximately 70 lb. At slaughter, carcase weights and grades were recorded.

III. STATISTICAL ANALYSIS

Birth weights and age corrected carcase weights were analysed by three separate analyses of variance. Results from the 1961 joining were analysed by the method of' unweighted means (Snedecor 1956), in a two-factor classification of breed and conformation. Only single ewe lambs were used in this analysis because there were few twins and a number of castration treatments were applied to the male lambs.

In 1963 the same rams were used at each location so the results from that year were examined separately. A five-factor analysis of variance of sub-class means was used, the factors being breed, location, sex, conformation and litter size. Main effects and first order interactions were tested against the pooled non-significant second and higher order interactions.

It is not possible to separate year, location and ram effects in the results of the 1962 and 1964 joinings. For ease of description these have been termed "location" effects and the results examined by a similar five-factor analysis to the one used for the 1963 data.

Because of the small numbers involved, the numbers of assisted births and lamb mortalities were pooled over all years. The data were analysed by Chi-square test and have been given as percentages for ease of interpretation.

As all lambs from each location were slaughtered on the same day, many of the twin lambs were very light and would not normally be slaughtered in practice. These have been omitted from the carcase grade results and only the numbers of down-graded single lambs were analysed by Chi-square test.

TABLE 1

Average age corrected carcase weights (kg) of progeny of Dorset Horn and Cheviot sires

	DORSET HORN		CHEVIOT	
	Good	Poor	Good	Poor
Glen Innes				
1961*	14.9	13.8	12.2	12.0
1962	15.2	14.2	13.0	12.8
1963	15.5	15.5	14.5	13.4
Tamworth				
1963	15.7	16.4	14.6	15.2
1964	16.7	16.8	16.0	16.6
Mean	15.6	15.3	14.1	14.0

*Single ewe lambs only.

IV. RESULTS

In each analysis, lambs sired by Dorset Horn rams had the heavier carcases ($P < 0.01$) and there were no significant differences between the carcase weights of lambs from sires of good and poor confirmation ($P > 0.20$) (Table 1).

In the analysis of the 1963 carcase weights, the following main effects were also significant; location ($P < 0.05$), sex ($P < 0.01$) and litter size ($P < 0.01$). The interactions, location x conformation and location x litter size, were both significant ($P < 0.05$).

In the analysis of the 1962 and 1964 carcase weights, the following main effects as well as the breed effects were significant; location ($P < 0.01$), sex ($P < 0.05$), litter size ($P < 0.01$), litter size ($P < 0.01$) and the interactions, breed x location ($P < 0.01$).

Over all years, two Dorset Horn single lambs were down-graded, one from each of the sires of good and poor conformation. Five Cheviot single lambs were down-graded, three from the sires of good conformation and two from the sires of poor conformation. None of these differences were significant.

Birth weights, numbers of assisted births, deaths and lambs slaughtered are given in Table 2. Significantly more assisted births were recorded for lambs sired by Dorset Horn rams but there were no significant differences in perinatal mortalities or birthweights. Four ewes mated to Dorset Horn rams died as a result of dystokia.

V. DISCUSSION

The breed x location interaction encountered in the 1962-1964 analysis has little meaning as it may have been caused by individual ram differences. In 1963 when the same rams were joined at both locations the interaction was not signifi-

TABLE 2

Slaughter** numbers, **lamb** deaths, **numbers** of **assisted births and birth weights for** all **joinings except Glen** Innes **1961

	DORSET HORN		CHEVIOT	
	Good	Poor	Good	Poor
Birth weights (kg)				
Twins	4.8	4.7	4.7	4.7
Singles	5.4	5.3	5.4	5.2
Assisted births (%)*	5.2	6.8	3.0	1.2
Perinatal mortality (%)†	5.2	5.1	3.4	4.8
Other deaths (%)‡	17.0	12.0	14.6	15.2
Lambs slaughtered	188	202	195	205

* Numbers of ewes assisted expressed as a percentage of ewes lambing.

† Deaths before, during, or within 12 hours after birth expressed as a percentage of total births.

‡ As a percentage of total births.

cant. The location x litter size interaction found in 1963 was due to a greater carcase weight advantage of singles over twins at Tamworth where average growth rates were 30% higher than at Glen Innes. This did not affect the comparisons between breeds and conformation types as the proportions of twin lambs in each sub-class were similar in each environment.

The Dorset Horn rams proved superior to Cheviots as prime lamb sires. Although the Cheviots were selected from a range of studs, in no joining did they sire lambs with heavier carcase weights than the Dorset Horns. These results probably reflect the true breed situation as most New South Wales studs of these breeds are closely related.

The location x conformation interaction found in 1963 was due to lambs from rams of good conformation having a carcase weight advantage at Glen Innes while lambs from rams of poor conformation had an advantage at Tamworth. This serves to support the overall results which show no large differences in carcase weight between lambs from sires of good and poor conformation. As there were no significant differences in carcase grade between these two groups of lambs, the absence of any significant differences in carcase weight indicates equivalent economic returns. McLean (1948) obtained similar results from mating Southdown rams of good and poor conformation in New Zealand.

As a breed, Dorset Horns are much heavier than Cheviots and this is the likely reason for the faster growth of their lambs. Similarly, the small weight difference between sires of good and poor conformation would account for the small differences in carcase weight between their lambs. Thus body weight would be a logical criterion for choosing sires for prime lamb production.

The greater number of assisted births among lambs sired by Dorset Horn rams would have been due to differences in shape rather than size, as the average birth weights of each breed were nearly the same. This is a problem which requires the attention of Dorset Horn breeders if full use is to be made of the fast growth of Dorset Horn lambs.

VI. ACKNOWLEDGMENTS

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VII. REFERENCES

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