

LAMBING PERFORMANCE AND LAMB GROWTH OF WARIDALE SHEEP
-A NEW FINE WOOLLED PRIME LAMB DAM BREED

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SUMMARY

A new sheep breed, the Waridale, has been developed as a fine-woolled prime lamb dam. Comparisons with the Border Leicester/Merino showed in some instances that Waridale twinning frequency, lamb growth and carcass weights were marginally lower. Both groups were similar in milk production and mothering ability. Purebred Waridale lambs and those with Waridale parentage were leaner at equivalent carcass weights. With the normal relative returns for wool and meat, the increased value of the finer Merino style wool from the Waridale ewe flock would however, give lamb production based on Waridales a distinct economic advantage.

INTRODUCTION

Generally, prime lamb production in South Eastern Australia is based on a 3 tier breeding system utilising first cross Border Leicester/Merino ewes mated to Poll Dorset rams. The Border Leicester/Merino ewe has high twinning frequency and good mothering and milking ability so it can produce large numbers of quality prime lambs. Disadvantages are the need to generate a continual supply of first cross ewes and the poor wool quality of these sheep.

The base gene pool of the Waridale was a crossbred mix containing 1/4 Border Leicester: 1/4 Poll Dorset: 1/2 medium woolled Peppin Merino. Subsequently, 15 years of selective breeding was applied to decrease fibre diameter and eliminate the Dorset influence on fleece weight. Weaning weight and birth status were also considered so as to maintain the good growth rates and lambing percentages of the base stock. Normal culling was used to remove horns and general sheep faults.

MATERIALS AND METHODS

The ewes in the three studies reported here comprised a matched age series of 86 Waridales and 86 Border Leicester/Merinos, randomly chosen and born from 1980 to 1983. In the third experiment these numbers were supplemented with additional sheep of similar age including both genotypes. The Waridales were from the main flock kept at the University's McMaster Research Station, Warialda. The Border Leicester/Merinos were out of fine woolled dams and were bred on the University of New England's Kirby property. For six months prior to and for the duration of the work all sheep were run together at Armidale. Throughout the study sheep numbers were limited by the small total Waridale population and by the resources available for the work.

Experiment 1

All ewes were mass mated in one flock to Poll Dorset rams in April 1986. Subsequently, fertility and number of lambs born were recorded for each ewe. At marking 13 Waridales and 13 Border Leicester/Merinos, each rearing twins were grazed on a red clover pasture with lamb weight gains recorded at monthly intervals. Drought conditions prevailed throughout mating and pregnancy and the ewes lambed in extremely poor condition.

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Experiment 2

After weaning, at the end of December 1986 31 Waridale and 44 Border Leicester/Merino ewes were synchronised with melatonin and progestagen treatment and mated to Poll Dorset rams. Following lambing, ewe milk production was measured (Holmes 1987). After weaning, growth rates and carcass characteristics of lambs were recorded.

Experiment 3

In April 1987 65 Waridale and 50 Border Leicester/Merino ewes were each randomly divided into two groups, mated respectively to Waridale and Poll Dorset rams. The four lamb genotypes were purebred Waridale, Waridale x Border Leicester/Merino, Poll Dorset x Waridale and Poll Dorset x Border Leicester/Merino. Data were obtained for ewe lambing performance, lamb growth and at slaughter, carcass weights and carcass fat content.

RESULTS AND DISCUSSION

The lambing data from the first experiment and the twin lamb weights and weight gains are shown in Tables 1 and 2.

Table 1 Lambing results from the experiment 1

Ewe	Twin births	Single births	Total ewes lambing	X^2_{1df}
Waridale	43	35	78	4.43*
Border Leicester/ Merino	55	22	77	

*0.05 > P > 0.01

Of the 86 ewes mated within each genotype, 1 Waridale and 2 Border Leicester/Merinos died and there were 7 dry ewes in each group. There were respectively 141 and 153 lambs born/100 ewes mated. Corresponding lamb marking percentages were 131 and 142.

Mean body weights at mating were 60.7 kg (Waridale; s.e. = 0.55) and 66.6 (Border Leicester/Merino; s.e. = 0.64). This difference suggests a substantial difference in ovulation rate which probably accounts for much of the difference in lambing percentage. After lambing the Waridale ewes were in poorer condition which could explain the lower growth of their lambs.

Table 2 Live weights and growth rates for twin reared lambs from experiment 1

Ewe	Initial lamb wt (kg)	Final lamb wt (kg)	Weight gain 31/10-21/11/86	Weight gain 21/11-17/12/86
Waridale	12.9	27.2	7.0	7.3
Border Leicester/Merino	14.4	31.1	8.7	8.0
Significance of difference	*	***	***	*

*, P < 0.05; ***, P < 0.001

In Experiment 2, milk production was similar for Waridales and Border Leicester/Merinos (2.00 and 1.95 litres a day averaged over litter size and measured for 4 weeks after lambing). The lamb weights and lamb carcass

characteristics at slaughter (5 1/2 months) are shown in Table 3.

Table 3 Live weights^a, carcass weights^a and carcass fat measurements^b for lambs from experiment 2

Ewe	Birth wt (kg)	Final wt (kg)	Hot carcass wt (kg)	GR tissue depth (mm)	Fat depth C(mm)
Waridale	4.48	37.48	17.40	11.33	3.42
Border Leicester/Merino	4.36	37.99	17.93	13.33	4.22
Significance of Difference	n.s.	n.s.	n.s.	*	n.s.

^aCorrected for age and sex; ^bCorrected for sex and hot carcass weight; n.s. = not significant

The only real difference was the higher GR measurement with the Border Leicester/Merino progeny.

Ewe lambing performance and lamb weights and carcass characteristics for Experiment 3 are shown in Tables 4 and 5.

Table 4 Lambing results from experiment 3

	Waridale x Waridale	Waridale x BL/M	Poll Dorset x Waridale	Poll Dorset x BL/M	X ² _{3df}
Ewes mated	31	26	34	24)	0.24 n.s.
Lambs born	45	38	46	30)	
Lambing Percentage	145	146	135	125	

Table 5 Lamb growth and carcass characteristics (\pm standard errors) from experiment 3

	Waridale x Waridale	Waridale x BL/M	Poll Dorset x Waridale	Poll Dorset x BL/M	P value	Corrections used
PSLW (kg)	36.8 \pm 0.66	40.2 \pm 0.67	39.7 \pm 0.69	42.0 \pm 0.86	***	age, sex
Growth	187 \pm 5.1	196 \pm 5.2	206 \pm 5.3	193 \pm 6.7	n.s.	" "
HCW (kg)	16.7 \pm 0.38	19.1 \pm 0.38	18.8 \pm 0.39	20.6 \pm 0.49	***	" "
GR (mm)	12.4 \pm 0.48	12.7 \pm 0.44	13.7 \pm 0.45	14.5 \pm 0.61	*	HCW, sex
Dressing %	45.8 \pm 0.34	47.2 \pm 0.32	47.1 \pm 0.32	48.4 \pm 0.43	***	sex, PSLW

PSLW, pre-slaughter live weight; Growth, growth rate, g/head/day for 9-week post-weaning period; HCW, hot carcass weight; GR, GR tissue depth.

There was a generally lower overall performance with the purebred Waridale lambs, probably owing to the lack of hybrid vigour. Carcasses of this genotype were however, assessed by lamb traders as good prime lambs, superior to first cross Border Leicester/Merinos.

To summarise, although sheep numbers were limited the results indicate that with Waridale ewes purebred progeny were at a slight disadvantage and there was evidence of slower growth of their Dorset cross lambs in sub-optimal conditions. Similarly, the Waridale ewes lambing performance was depressed relative to the crossbred in the drought year.

Reliable wool data were not obtained from these experiments, but the present mean fibre diameter of Waridale ewes is 22-24 microns depending on seasonal conditions. This is at least 5 microns finer than wool from Border Leicester/Merinos (Stephenson, Hill and Gates 1989). Thus the Waridale is superior in wool quality and fleece weights are similar to the Border Leicester/Merino. Continuing selection should further improve the breed.

Using these data, Gates (1988) calculated gross margin budgets for a Waridale sheep enterprise where 50% of ewes were mated to Waridale rams and 50% to Poll Dorset rams and he has made comparisons with the traditional lamb system using first cross ewes mated to Dorset rams. With medium term price relativities for wool and lamb the Waridale showed a \$2 to \$6 advantage in gross margin per dry sheep equivalent.

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REFERENCES

- GATES, A.R. 1988. In "The Waridale", p.6, editor R.R. Warden (University of New England Rural Properties: Armidale).
HOLMES, Merrill A. 1987. B. Rur. Sci. Thesis, University of New England.
STEPHENSON, S.K., HILL, M.K. and GATES, A.R. 1989. Australian Rural Science Annual. (in Press).