

LIFETIME WOOL: COMPARISONS ON COMMERCIAL FARMS DEMONSTRATE SIGNIFICANT PRODUCTION POTENTIAL FOR TWIN BEARING MERINO EWES AND THEIR PROGENY

R. BEHRENDT^A, P. BARBER^A, C.M. OLDHAM^B, J.E. HOCKING EDWARDS^C, S. HATCHER^D, and A. THOMPSON^A.

^APrimary Industries Research Victoria, Hamilton VIC 3300; ^BDepartment of Agriculture Western Australia, South Perth, WA 6011; ^CSouth Australian Research and Development Institute, Naracoorte, SA 5271; ^DNSW Department of Primary Industries, Orange, NSW 2800.

Lifetime Wool is a national project developing ewe management guidelines for woolgrowers. The project comprised plot-scale research that determined the response in wool production of ewes and the lifetime performance of their progeny to graded levels of ewe nutrition at different stages of pregnancy (Thompson and Oldham 2004). The project also established 18 paddock-scale research sites in cooperation with wool producers across Southern Australia to confirm the plot-scale results in commercial situations.

Oldham *et al.* (2004) has described the protocol for each paddock-scale site. In brief, cooperators joined 1000 mixed aged adult Merino ewes in a single flock at day 0. Ultrasound scanning of the ewes at day 50 identified those ewes that had conceived during the first 21 days of joining. These ewes were then randomly split into two treatments receiving either high or low nutrition. The liveweight (LW) and condition score (CS) targets for the high and low nutrition treatments were based on the LW and CS profiles of the CS3 and 3000 feed on offer, and the CS2 and 1100/1500 feed on offer treatments of the plot-scale experiments (Ferguson *et al.* 2004). The quantity and quality of wool produced by the ewes was measured on a random sample of 50 single and 50 twin bearing ewes from each treatment. The carryover reproductive performance of the ewes was measured using ultrasound scanning at their following joining. Wool production and quality was measured on all progeny for each flock up to 2.5 years of age. Table 1 presents the results on single and twin ewes and their progeny for the paddock-scale data to date.

Twin bearing ewes produced fleeces of lower weight and lower tensile strength, while their progeny suffered higher mortality, reduced weaning weight and produced less wool of higher diameter. Ewes that bore twins were more likely to have twins in subsequent years, and there was a tendency for their daughters to have higher reproductive rates as well ($p=0.087$). If twin bearing ewes are managed for low nutrition the impact is additive and the results become worse, while better nutrition can improve twin performance (data not shown). These results are consistent with Lifetime Wool plot-scale observations that showed a strong relationship between ewe parity and ewe wool production and the effects on lifetime performance of their progeny. The lack of significant interactions between nutritional treatments and parity type indicates potential to manage twin bearing ewes and their progeny for improved performance through better nutrition.

Table 1 The average performance of single and twin bearing ewes and their progeny across Lifetime Wool paddock scale sites, in Southern Australia

Production Parameter	Ewe and Progeny Performance*				
	Number of sites	Single	Twin	Difference	LSD (5%)
Average Condition Score (Day 0 to 140)	15	2.6	2.6	0	0.07
Average Liveweight (Day 0 to 140; kg)	15	49.0	50.6	- 1.6	0.6
Ewe Clean Fleece Weight (kg)	15	3.2	3.0	+ 0.2	0.07
Ewe Mean Fibre Diameter (μm)	15	20.0	19.9	+ 0.10	0.2
Ewe Staple Length (mm)	15	91.1	89.5	+ 1.6	1.3
Ewe Staple Strength (N/Ktex)	15	34.1	31.8	+ 2.3	2.0
Ewe Carryover Reproduction (Scanning %)	15	120	134	- 14	5
Progeny Survival to Marking (%)	15	86	62	+ 24	5
Progeny Liveweight at Weaning (kg)	15	24.3	21.7	+ 2.6	0.8
Progeny Liveweight at 12months (kg)	14	32.6	31.5	+ 1.1	0.5
Progeny 2 nd Clean Fleece Weight (kg)	10	2.96	2.79	+ 0.17	0.05
Progeny 2 nd Mean Fibre Diameter (μm)	10	18.44	18.72	- 0.28	0.10
Progeny Reproductive Rate (Scanning %)	8	96.9	100.8	- 3.9	4.5

* Main effect means include high and low nutritional treatments of ewes or progeny.

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Email: Ralph.Behrendt@dpi.vic.gov.au