

LIFETIME WOOL: COMPARISONS ON COMMERCIAL FARMS SHOW THE BENEFIT OF GOOD NUTRITION IN PREGNANCY ON PRODUCTION AND LAMB PERFORMANCE OF MERINO EWES

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, W.A. 6051; ^CSouth Australian Research and Development Institute, Naracoorte, SA 5271; ^DNSW Department of Primary Industries, Orange, N.S.W. 2800.

Lifetime Wool is a national project developing guidelines for woolgrowers across Australia in the management of ewes. The project began with small-scale research that determined the response in wool production of ewes and the lifetime performance of their progeny to graded levels of nutrition of ewes at different stages of pregnancy (Thompson and Oldham 2004). This was extended to 18 paddock-scale research sites in cooperation with wool producers across Victoria, Western Australia, New South Wales, South Australia, and Tasmania to validate the results in commercial situations.

Co-operators joined 1000 mixed aged adult Merino ewes in a single flock at day 0. Ewes were scanned by ultrasound at day 50 to identify those ewes that conceived during the first 21 days of joining. These ewes were then randomly split into two treatments receiving either high or low nutrition. The live weight (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 kg DM/ha feed-on-offer, and the CS2 and 1100/1500 feed-on-offer treatments of the plot-scale experiments (Ferguson *et al.* 2004). All single- and twin-bearing ewes and their progeny were identified. 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. Not all progeny flocks have reached their 2.5 year old shearing and Table 1 presents the results for the paddock-scale data to date.

Improving ewe nutrition during pregnancy to achieve condition score or live weight targets increased the fleece weight and fibre diameter of wool produced by commercial flocks of Merino ewes. Higher ewe live weight and condition score during pregnancy also increased survival of progeny and their wool production. These results are consistent with the small-scale observations that showed a strong relationship between live weight profiles and wool production of ewes with subsequent lifetime performance of their progeny.

Table 1. The average performance of ewes and their progeny managed for low and high nutrition during pregnancy across Lifetime Wool Paddock-Scale Sites in southern Australia

Production Variables and Parameters	Ewe and Progeny Performance*				
	Number of sites	High nutrition	Low nutrition	Difference	LSD (5%)
Average condition score (Day 0 to 140)	15	2.7	2.4	+ 0.3	0.07
Average live weight (Day 0 to 140, kg)	15	51.2	48.4	+ 2.8	0.6
Ewe clean fleece weight (kg)	15	3.3	2.9	+ 0.4	0.07
Ewe mean fibre diameter (µm)	15	20.3	19.5	+ 0.8	0.2
Ewe staple length (mm)	15	92.4	88.2	+ 4.2	1.3
Ewe staple strength (N/Ktex)	15	35.1	30.8	+ 4.3	2.0
Ewe carryover reproduction (scanning %)	15	129	125	+ 4	5
Progeny survival to marking (%)	15	78	70	+ 8	5
Progeny live weight at weaning (kg)	15	24.1	22.0	+ 2.1	0.8
Progeny live weight at 12 months (kg)	14	32.4	31.7	+ 0.7	0.5
Progeny 2 nd clean fleece weight (kg)	10	2.91	2.84	+ 0.07	0.05
Progeny 2 nd mean fibre diameter (µm)	10	18.52	18.64	- 0.12	0.10

* Main effect means include single- and twin-bearing ewes or single and twin progeny. There were no significant interactions between parity type and nutrition.

FERGUSON, M., PAGANONI, B. and KEARNEY, G. (2004). *Anim. Prod. Aust.* **25**: 242.

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