LIFETIME WOOL. 6. PROGENY BIRTH WEIGHTS AND SURVIVAL

M. FERGUSON[A], *D. GORDON*[A], *B. PAGANONI*[B], *T. PLAISTED*[C] *and G. KEARNEY*[A]

[A] Primary Industries Research Victoria, Department of Primary Industries, Hamilton, Vic 3300
[B] School of Animal Biology, University of Western Australia, Crawley, WA 6009
[C] Sheep Industries and Pasture, Department of Agriculture Western Australia, Albany, WA 6330

Lamb survival is largely a function of birth weight (BWT) although factors such as type of birth, ewe milk production and ewe mothering ability may also have an effect (Holst *et al*. 1992). Restricting the level of nutrition to the pregnant ewe can reduce lamb BWT depending on the ewe age and body condition at joining, the timing and severity of the restriction, and nutrition following the restriction (Holst *et al*. 1986). This paper reports preliminary data from the Lifetime Wool project (Thompson and Oldham 2004) on the impact of differential feeding during pregnancy and lactation on the BWT and survival of single-born lambs. Adult Merino ewes (n=1600 (Victoria) and 1400 (Western Australia), liveweight 46 and 47 kg, condition score 2.8 and 2.7) were artificially inseminated using semen from 4 genetic sources. After insemination, the ewes were fed to achieve a range in liveweight through pregnancy and lactation. Lambs were tagged at birth, and their sex, BWT and dam number recorded. The BWT and mortality (total deaths to 48 h) data from 2 years (2001 and 2002) from the Victorian and Western Australian sites were analysed separately.

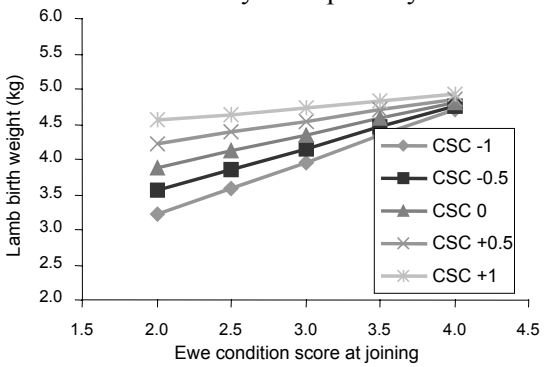

Figure 1. Effect of ewe condition score at joining and change in condition score (CSC) from joining to lambing on lamb birth weight for the Victorian site in 2002.

The average BWTs of single born lambs at both sites and both years were between 4.5-5.5 kg, and mortality varied from <5-30%. The BWTs of single born lambs were not influenced by ewe nutrition between joining and day 90 of pregnancy, but the lowest Feed on Offer (FOO) treatments at both sites in 2001, and in Victoria in 2002, decreased BWT by about 0.5 kg. When the data were pooled across all nutritional treatments within a site, there was a significant positive relationship between change in ewe condition score during pregnancy and lamb BWT in 2001; BWT increased by 0.2 kg per 1 unit increase in condition score ($P<0.01$). At the Victorian site in 2002, this effect was also significant and further complicated by an interaction with the condition of the ewe at joining (Figure 1). It is clear that the BWT of single lambs is remarkably resilient to all but the most severe nutritional treatments. However, changes in other progeny traits, such as wool production and quality (Ferguson *et al.* 2004), may be induced at levels of maternal nutrition that may not necessarily reduce lamb BWT. There were no consistent effects of ewe condition score at day 90, or FOO during late pregnancy and lactation, on the mortality of single born lambs, with the exception of the lowest FOO treatment at the Victorian site. The mortality of twin born lambs at the Victorian site also increased dramatically at FOO <1400 kg DM/ha (data not shown). Progeny deaths related to FOO during pregnancy and lactation continued after weaning. Progeny deaths had a significant impact on the profitability of different ewe feeding strategies (Young *et al*. 2004).

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Email: Mark.Ferguson@dpi.vic.gov.au