

ABSTRACT

The effect of birth weight on lamb survival, and the role of stage of pregnant ewe supplementation and weight gain during pregnancy, were investigated for 285 Menz ewes that lambed from 334 mated when averaging 22.8 ± 4.6 (SD) kg body weight and 2.3 ± 0.75 condition score. Ewes either only grazed (C) or, in addition, received 400 g per head day⁻¹ of a concentrate feed providing 175 g CP per kg DM and 10.5 MJ ME_r per kg DM only during the first (S1), second (S2) or third (S3) trimester of pregnancy. The twinning rate increased from zero in ewes weighing 15 kg or less at mating to 31% at 30 kg or more. Six percent of ewes lost weight during pregnancy, 31% gained less than 3.5 kg (the mean birth and placenta weight) but 63% gained more. Perinatal mortality (the percentage of lambs dead during the first 4 days relative to those born alive) was 19.3%. View the MathML source; the rate of survival rising sharply from 37% below 1 kg birth weight, to 69% between 1 and 2 kg and 98% at 2–3 kg with no losses above 3 kg. Single lambs were born heavier than twins ($2.0 - 0.6$ and 1.7 ± 0.5 kg) but litter size had no effect on survival above that on birth weight. Birth weight was related to lamb rectal temperature and viability at birth ($r=0.42$ and 0.68 , respectively) and increased with dam gestational live weight gain, placental weight and number of cotyledons ($r=0.39-0.55$, respectively, $P<0.001$). There was no advantage in supplementing ewes in the first trimester but extra feed in the second and third trimester increased dam weight gain $P<0.001$). In particular, S3 dams produced heavier lambs with better survival and were themselves heavier postpartum. The overall relationship between probability of survival (P) and birth weight (BWt) was given as: $\text{logit}(P)=3.292 \times \text{BWt} - 4.057$. We concluded that grazing Menz sheep need to be managed to mate at 25 kg or greater for increased twinning, and require extra feed in the third trimester to produce lambs of at least 2 kg birth weight with a perinatal death risk of less than 10%. The reduced reproductive wastage will help to improve current flock production efficiency.