

Selection of sires with good lambing and lamb vigour characteristics within three Suffolk strains

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Introduction Two of the causes of lamb mortality are (1) dystocia and (2) low vigour lambs. Both of these problems require high levels of human intervention to ensure survival of the lambs. Therefore, selection for traits requiring lower levels of input is desirable. The New Zealand strain of Suffolks has purportedly been selected for low input ‘easy care’ traits and represents the possibility of introducing genes for improved lambing ease and lamb vigour into the British Suffolk strains. The aim of this study was to compare birth, neonatal behaviour traits and dag scores of lambs sired by one of three main Suffolk strains.

Materials and methods Welsh Mule ewes were synchronised in oestrus and mated with sires from 3 different Suffolk strains: New Zealand sires (NZ, n 4) – selected upon ‘survivability’, ease of lambing and performance data, UK High Index-selected sires (UKH, n 3) – selected on performance data, or UK Traditional sires (UKL, n 3) – unselected. In total, 333 ewes give birth to 655 lambs (255 NZ, 205 UKH, & 205 UKL). Each lamb was scored on: Birth assistance (BA), Lamb vigour (LV, at 10 minutes of age), and, Sucking assistance (SA, Table 1). In addition, birth weights and weight and dag score at 8 weeks of age were recorded. All recording was done blind to the knowledge of lamb sire. Score data were ranked then analysed using the Linear Mixed Model procedure in SAS, all analyses had sire type, ewe age, ewe condition score, lamb sex and litter size as fixed effects and sire ID, fitted as a random factor nested within sire type, and ewe ID as random factors. In addition, analysis of BA score had birth weight as a covariate.

Table 1 Description of scores for the three neonatal behaviour traits

BA	LV	SA
0 -	extremely active lamb, been standing on all feet	lamb sucking well <1 hour, no help
1 unassisted or easy uncomplicated delivery	very active lamb, on back legs	lamb sucking well <2 hours, no help
2 minor assistance required, presentation corrected with little effort needed for delivery	active lamb, lying on chest and holding head up	lamb given help <3 times in first 24 hours after birth
3 major assistance required, difficult delivery	weak lamb, flat, holding head up	lamb given help >1 day <3 days
4 veterinary assistance required	very weak lamb, unable to lift head	lamb still needing help > 3 days

Results Table 2 shows the least square means and s.e. for the three neonatal scores and weights. There was no effect of sire type on BA rank ($P>0.1$), however, there was a tendency for NZ lambs to have fewer difficult births than UKH lambs ($P=0.089$) but no difference was found between NZ & UKL nor between UKL and UKH. Lamb birth weight affected the BA score with lambs requiring minor birth assistance being heaviest (mean weights±s.e. (kg); score 1=4.52±0.051; score 2=5.46±0.091; score 3=4.94±0.277; score 4=4.30±0.300; $P<0.001$), however, there was no interaction of sire type and birth weight. There were no effects of sire type on LV rank and SA rank, with no differences found between any of the groups. No effects of sire type were found within dag rank, however, there was a trend for NZ lambs to have less faecal soiling than UKH ($P=0.053$). No differences in dag rank were found between NZ & UKL or UKH & UKL. There were no overall effects of sire type on birth weight, however, NZ lambs tended to weigh less than UKH ($P=0.070$) and UKL ($P=0.071$). There was no effect of sire type on the 8 week weight and no differences were found between any of the groups.

Table 2 Least square means and standard errors for BA, LV and SA, birth weight, 8 week weight and dag rank (s.e. as subscript)

	BA rank	LV rank	SA rank	Dag rank	Birth weight	8 week weight
NZ	305.7 _{21.2}	269.8 _{23.3}	292.8 _{19.0}	237.3 _{29.8}	4.43 _{0.13}	20.9 _{0.53}
UKH	338.3 _{22.3}	273.5 _{25.0}	271.0 _{20.6}	294.4 _{31.6}	4.65 _{0.14}	21.6 _{0.55}
UKL	315.4 _{22.4}	245.1 _{25.2}	273.2 _{18.4}	263.4 _{31.4}	4.64 _{0.14}	21.4 _{0.56}

Conclusions This study shows that Traditional British and New Zealand lambs were similar in performance for birth assistance and lamb vigour traits (LV and SA). High Index-Selected lambs required more assistance at birth than NZ lambs but have similar levels of vigour when compared with Traditional and NZ strains. This infers that British Suffolks could have the rates of dystocia slightly improved by introduction of NZ genes with no change in lamb vigour traits. However, greater differences between the strains may be found if the study was repeated with pure-breds lambs. The high numbers of tendencies suggests that the number of lambs was low. Also, the number of individual sires used in this study was low, which may not be representative of the variation within the broader strain populations. A repeat experiment with a greater number of sires from each strain may provide more information.

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