

The main conclusions are :

1. Important differences exist between sire breeds in progeny survival with the *Southdown* being best and the *Romney* poorest.
2. Progeny of long-wool sires, and particularly the *Lincoln*, clip more wool at post-weaning shearing than of the *Down* breeds, which exhibit quite small variation.
3. Sire breeds vary in average liveweight growth of their progeny, the *Suffolk*, *Hampshire* and *Dorset* breeds producing the heaviest and the *Merino* and *Romney* the lightest lambs.
4. Within any breed wide differences exist between progeny growth rates of the best and poorest sires, emphasizing the great importance of sound selection of rams and of adequate genetic sampling in breed comparisons.
5. In terms of lamb liveweight production per *Romney* ewe mated, *Romney*, *Merino*, *Lincoln Ryeland*, *Cheviot* and *English Leicester* sires are inferior to the *Southdown* while *Poll Dorset* or *Dorset Horn*, *Suffolk*, *South Suffolk* and *Dorset Down* are slightly superior.

THE CHOICE OF SIRE BREED AND SLAUGHTER WEIGHT FOR LAMB PRODUCTION

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A $3 \times 3 \times 2$ factorial experiment is being carried out and involving 3 breeds of sire; *Southdown*, *Suffolk* and *Cotswold* to a common dam line, the *Finnish Landrace* \times *Dorset Horn*.

Two planes of nutrition are used, *ad libitum* and restricted *i. e.* restricted to grow at $2/3$ the average growth rate shown by those comparable lambs on *ad lib.* intake. Entire males and females are compared. All progeny were individually penned after weaning at 18 p. 100 mid — parent weight (*i. e.* approx. 5 weeks old) and fed on 87 p. 100 rolled barley diet containing 15 p. 100 crude protein in the dry matter. Lambs were slaughtered at 40, 50, 60 and 70 p. 100 midparent weight. The left side of each lamb was physically dissected into lean, bone, submuscular and intramuscular fat and waste. Scatter diagrams were drawn and within trial and group relationships between weight of carcass tissue and carcass weight were judged to arithmetically linear. However marked differences in slopes and some differences in intercepts were noted. Multiple regression was used to quantify the interaction found by use of a linear model. The resulting coefficients gave a quantitative partition of the treatment and interaction effects on slope and intercepts. Significant differences in intercept were attributable only to breed of sire, in particular the *Cotswold* sired lambs within lower levels of fat and higher levels of lean tissue. The effects in slope were more diverse and more important with significant effects for breed, sex and interaction between breed and sex, sex and nutrition and between breed, sex and nutrition.

In practical terms, *Southdown* crosses appear to be unsuitable for this intensive production system. The *Cotswold* is well suited to sire lambs to be slaughtered at weight between 30 and 40 kg live weight. A greater sex differential within the *Suffolk* crosses suggested that female lambs are unsuitable, whereas male lambs for which growth is restricted may be taken to comparatively heavy weights to produce carcasses of about 25 kg.

THE SIGNIFICANCE OF RAM BREED AND EWE BREED IN CROSSBREEDING FOR MEAT PRODUCTION FROM SHEEP IN AN INTENSIVE SYSTEM

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It is necessary to measure the merit of crossbreeding for meat production from sheep in terms of yield of meat per hectare and the acceptability of the carcass to the consumer. The efficiency of meat production is governed by the reproductive rate of the flock and the rate of growth of the lambs, both in relation to the size of ewe which in turn governs stocking rate. Acceptability of the carcass depends on its weight and basically on its component muscle : bone ratio and fat percentage.