

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.

In an investigation carried out 1968-1972 at the Leeds University Farm, Yorkshire, England of an intensive system of sheep production based on temporary grass, three types of ewe have been compared at equivalent stocking rates and rams of three different breeds have been used as the crossing sires. The ewes, in flocks of 100, were *Scottish Halfbred (SHB)* — a large ewe with high prolificacy, *Welsh Speckleface (WSF)* — a small ewe with low prolificacy, and *Finnish Landrace* × *Scottish Blackface (FLX)* — a medium sized ewe with very high prolificacy. The crossing sires were of the *Suffolk (S)*, *Thornber-Colborn Down (TCD)* and *Ile de France (IDF)* breeds. In the system, ewes were housed indoors in winter, being fed grass silage. At lambing, lambs in excess of two (*SHB*) and one (*WSF* and *FLX*) were removed from the ewe, reared artificially and subsequently fattened indoors. Ewes, with the remaining lambs, were kept at high rates of stocking on grass, under rotational management, the lambs being allowed to forward creep graze. Lambs were sold for slaughter, from the ewes, as they attained a live weight of 40 kg (approx) and suitable condition. A proportion of the half carcasses were fully dissected into the component tissues.

The mean litter sizes per ewe which lambed were, for *SHB* ewes 2.15; *WSF* 1.36; *FLX* 2.56. There were no differences due to ram breeds: *S* 2.09; *TCD* 2.03; *IDF* 2.09.

Relative daily lamb growth rates according to ewe parentage were for naturally reared single lambs, *SHB* : 100, *WSF* : 75, *FLX* : 84; according to ram parentage, *S* : 100, *TCD* : 96, *IDF* : 89. For artificially reared lambs, *i.e.* unaffected by dam milk yield, the relationships were *SHB* : 100, *WSF* : 81, *FLX* : 89 and *S* : 100, *TCD* : 97, *IDF* : 91.

The muscle : bone ratios for naturally reared lambs were *SHB* : 3.89, *WSF* : 5.24, *FLX* : 5.11 and *S* : 4.58, *TCD* : 4.69, *IDF* : 4.97. Fat percentages were *SHB* : 26.50, *WSF* : 33.01, *FLX* : 23.09, and *S* : 26.45, *TCD* : 23.32, *IDF* : 27.82.

The muscle : bone ratios for artificially reared lambs were *SHB* : 3.65, *WSF* : 5.06, *FLX* : 5.26 and *S* : 4.71, *TCD* : 4.42, *IDF* : 4.84. Fat percentages were *SHB* : 23.19, *WSF* : 30.51, *FLX* : 24.68 and *S* : 26.51, *TCD* : 25.82, *IDF* : 26.06.

It is concluded that under these intensive conditions of production the main differences between cross-bred progeny are influenced to a greater extent by the breed of ewe than the breed of sire in respect of inherent capacity for growth and the development of essential carcass characteristics. Improvement of the ewe breed in these characteristics would have the greater impact on the overall efficiency of meat production from sheep.

Comparaison entre les différentes lignées bovines

THE FAO PROJECT THE COMPARISON OF CATTLE STRAINS

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FAO is coordinating an international project for the comparison of various national strains of *Friesian* (Black Pied) cattle. Ten countries have donated semen for this project, namely Canada, Denmark, Germany (Federal Republic), Israel, Netherlands, New Zealand, Poland, Sweden, United Kingdom and U. S. A. It is being used on *Black-and-White Lowland* cows in Polish State Farms; crossbreds from the various strains will be compared in milk yield, growth rate and overall profitability. The semen comes from a random sample of young unproven bulls entering the AI studs during 1973/74. For the first 18 months of the project, which started in March 1974, semen from 20 bulls per country (225 doses per bull) will be used on 13 000 cows in 70 herds on 20 farms. It is planned to milk a minimum of 30 daughters per bull and 600 per country strain. Corresponding numbers of sons will be fattened for beef. During the second 18 months, semen from a second batch of 20 different bulls per country will be used.

The experiment is supervised by a technical committee representing all cooperating countries. It is run by Polish scientists with Polish money but receives the semen free and also has obtained a grant from U. S. A. PL 480 funds.

Similar projects are planned for other breeds (*e.g.* *Simmental* strains, red and red-and-white breeds of northern Europe) to be carried out in other countries in eastern Europe.