LAMB FINISHING SYSTEMS

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GROWTH AND CARCASS CHARACTERISTICS OF SCOTTISH BLACKFACE STORE LAMBS

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A store stock survey carried out in 1981, revealed that Scottish Blackface store lambs achieved significantly lower prices than crossbreds of a similar weight. Hill lambs were criticised by finishers and traders for low growth rates, unpredictable finishing, poor carcass yields, saleable meat yields and conformation. The results of a series of controlled environment and field experiments involving 476 College-reared Blackface (BF) lambs of the Lanark type and 318 Suffolk × Greyface (SGF) lambs are presented.

Actual growth relative to potential

BF lambs on grass and forage grew at 0.32 of the rate of contemporaries fed unrestricted concentrate indoors; in SGF lambs at a similar stage of maturity, the value was 0.47. Growth rates of BF lambs on grass and forage were significantly lower than those of SGF lambs ($P < 0.001$). The difference was not associated with season, crop type, day-length, initial live weight or preceding treatment. Responses to increased protein content in the crop or to increasing the protein content of supplements on forage or when housed were neither significant nor appreciable at live weights in excess of 0.40 of mature weight. The growth performance of SGF lambs grazing high dry matter swedes was one-third higher than those fed conventional varieties in 1984. A similar trial on BF lambs is to be carried out in the coming season.

Predictability and rate of finishing

For store lambs weighing 25 to 35 kg in the autumn, the time taken to achieve a live weight of 38 kg on grass and forage was strongly and negatively correlated with initial live weight ($r^2 = 0.74$, $P < 0.001$). The time taken to finish decreased by 9 days (s.e. 1.62) for each extra kilogram of live weight. Treatment × start weight interactions were not significant. The minimum slaughter weight necessary for commercial classification was 36.5 kg. Of all lambs below this weight, 0.43 were rejected for lack of finish and poor conformation; less than 0.01 of those above this weight were rejected. Lambs achieved MLC Fat Class 3L at a minimum weight of 40.5 kg (s.e. 0.59) and maintained this level of finish at live weights of up to 46 kg, confirming the relationship between rate of growth and rate of fat deposition. The optimum slaughter weight of BF lambs fed on grass and forage over the winter is between 0.55 and 0.60 of their weight at maturity.

The effect of severe restriction in early life

Lambs at an initial weight of 24 kg or less, fed on grass and forage, gained significantly more weight over the first 50 days of feeding ($P < 0.01$) but achieved significantly lower growth rates thereafter than heavier lambs of the same age ($P < 0.001$). After 150 days, gradeable lambs weighed 34.7 kg (s.e. 0.81). Carcass weights were only 0.88 of the total derived from unrestricted contemporaries of the same live weight at slaughter. Overall growth rates were similar to those of heavier lambs. Only 0.44 of the lambs were finished on forage within 200 days.

On *ad libitum*, high quality concentrate feeds, the growth performance and feed conversion efficiencies of lambs previously restricted or unrestricted were very similar. The growth potential of lambs severely restricted in early life was not permanently impaired. However, serial slaughter revealed that the nature of the gains was significantly different between 25 and 35 kg live weight. At 40 kg or more, the carcass composition of the two groups was similar.

Carcass quality

Carcass yields of lambs were a function of degree of maturity. Live weight and dressing percentage were highly correlated across treatments ($r^2 = 0.82$, $P < 0.001$). Degree of finish accounted for only 0.11 of total variation. At 0.55 of mature live weight, the muscle to bone and fat ratio of forage-fed BF lambs was between 1.24 and 1.29. The same value for SGF lambs was around 1.12. SGF lambs grew faster and thus achieved the same level of finish at 0.45-0.5 of mature live weight. Muscle to bone ratio increased with degree of maturity.

Conclusions

BF lambs derived from a single source and of known potential mature body size are predictable in terms of

growth and rate of finishing. Live weight in the autumn is a good predictor of subsequent performance and suitability to alternative finishing systems. The variation reported in commercial practice is likely to be associated with variation in mature body size within breed. Results of a trial comparing different types of BF lambs are presented in a paper elsewhere in this publication.

Poor carcass yields, saleable meat yields and conformation are mainly due to premature slaughter.

To increase management flexibility, further studies into the factors affecting voluntary feed intake at grass and on forage are necessary.

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