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Leanness of lamb carcasses following restricted feeding and shearing

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ABSTRACT

Effects of shearing and restricted feeding on the weight and leanness of lamb carcasses were measured in 3 experiments. Changes in fat measurements were parallel to and consistent with changes in carcass weight except where shearing and restricted feeding were combined. The 2 treatments together resulted in carcasses about 1 mm GR leaner than expected for their weight.

Shearing followed by mild underfeeding was more effective than either procedure alone in reducing fat cover and may increase the market value of overfat lambs.

Keywords Lambs; carcass weight; leanness; shearing; nutrition.

INTRODUCTION

The leanness of lambs is influenced by environmental as well as genetic factors. Where environmental factors can be manipulated potential exists for production of lean lambs by adoption of appropriate management practices.

Two practices that have a marked effect on energy balance and hence may influence leanness by altering fat deposition or mobilisation are shearing and restricted feeding. These were investigated in 3 experiments described below.

MATERIALS AND METHODS

Experiment 1

Coopworth ram lambs with an initial mean carcass weight of 9.3 kg and GR measurement (tissue depth 11 cm from centre of backbone along 12th rib) of 2.0 mm ($n=18$) were allocated to 4 shearing treatments (unshorn, shorn day 0, shorn day 21, shorn day 0 and 21) then offered 1 of 3 allowances (1.5, 3 or 8 kg DM/hd/d) of irrigated grass/clover pasture. Cold carcass weights and GR measurements were recorded for groups of 6 lambs from each treatment slaughtered on days 20 and 42.

Experiment 2

Coopworth ram lambs and Southdown x Coopworth wether and ewe lambs with initial mean carcass weights of 16.4 ($n=9$) and 14.6 ($n=6$) kg, and GR measurements of 6.8 and 10.9 mm respectively, were either shorn or not shorn then offered 1 of 5 allowances (0.7, 0.8, 1.0, 1.75, 3 kg DM/hd/d) of irrigated grass/clover pasture for 6 weeks. Cold carcass weights and GR measurements were recorded

for groups of 5 lambs slaughtered on days 15, 29 and 43.

Experiment 3

Equal numbers of Coopworth ram, wether and ewe lambs with an initial carcass weight of 16.6 kg and GR measurement of 12.2 mm were allocated to 3 treatments, each replicated 3 times. Treatment 1 consisted of a low allowance (0.4 kg DM/hd/d) of ryegrass straw for 1 week followed by a high allowance (10 kg DM/hd/d) of irrigated grass/clover pasture for the next week. Treatments 2 and 3 consisted of pasture allowances of 0.7 and 1.0 kg DM/hd/d for both weeks. Cold carcass weights and GR measurements were recorded after slaughter on days 8 and 15 ($n=6$ lambs/replicate).

Analysis

Results were subjected to analysis of variance. Analysis of covariance, using cold carcass weight as the covariate, was employed to compare the leanness of carcasses of the same weight.

RESULTS

In Experiment 1 allowance affected lamb weight gains ($P<0.01$) but shearing and the interaction between the 2 treatments did not. Differences between treatments were reflected in carcass weights and GR measurements (Fig. 1).

When GR measurements were adjusted for effects of carcass weight, there were no differences between treatments 3 and 6 weeks after shearing indicating that shearing and level of feeding had no major effect on leanness other than through carcass weight.

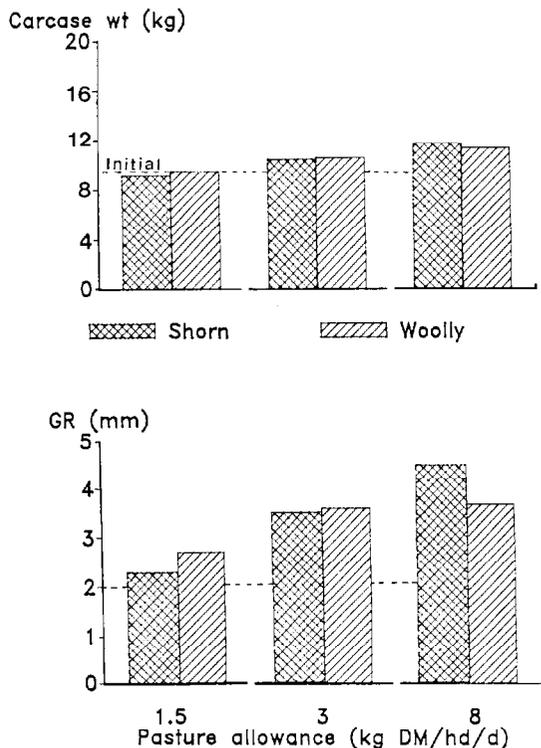


FIG. 1 Carcase characteristics of shorn and woolly lambs differentially fed for 6 weeks (Experiment 1). Initial carcase weight = 9.3 kg, GR = 2.0 mm.

In Experiment 2 shorn lambs were lighter and leaner than woolly lambs at all allowances (Fig. 2). After adjustment for differences in carcase weight, effects of shearing on leanness remained ($P < 0.05$) but the effect of allowance did not. Shearing reduced GR by 1.4 mm in Coopworth ram lambs and 0.6 mm in Southdown x Coopworth wether and ewe lambs, these values being averages for animals slaughtered 15, 29 and 43 days after shearing.

In Experiment 3, after 7 days of underfeeding, lambs on all treatments had lost carcase weight and fat. This was largely regained in the group that was fed a high pasture allowance during the following week while those on low pasture allowances continued to lose weight and fat (Fig. 3). Adjustment for differences in carcase weight rendered differences in GR measurements non-significant.

DISCUSSION

When lambs gained weight (Experiment 1) leanness was not influenced by shearing or level of feeding, after adjustment for carcase weight effects. This result is consistent with the findings of Pownall *et al.*, (1984) and Sumner (1984) who reported no

differences due to shearing and with numerous accounts of the lack of effect of level of feeding (Black, 1983; Kirton *et al.*, 1981; Theriez *et al.*, 1982).

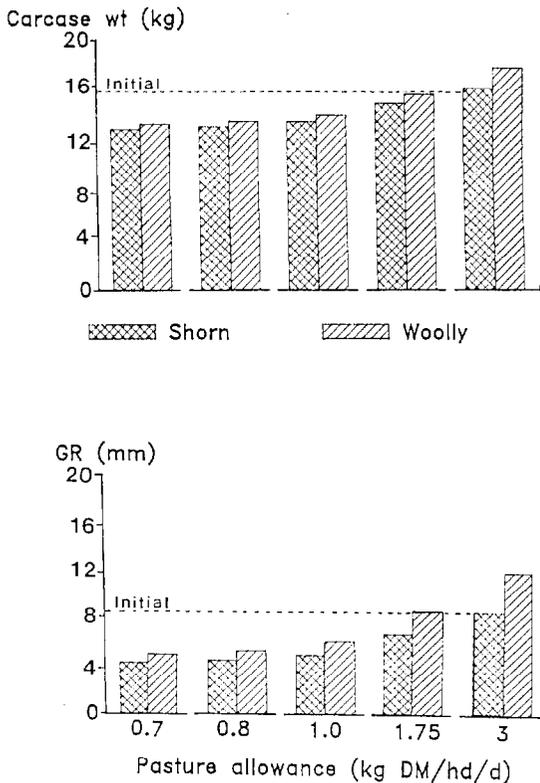


FIG. 2 Carcase characteristics of shorn and woolly lambs differentially fed for 6 weeks (Experiment 2). Initial carcase weight = 15.7 kg, GR = 8.5 mm.

Even those lambs in Experiment 1 that were shorn twice or maintained weight for 6 weeks were no fatter or leaner than expected for their weight. Shearing and feeding treatments that produced faster growth produced lambs that were fatter only because they were heavier. Slower grown lambs were just as fat at the same weight.

Level of feeding was also without effect on the leanness of lambs that lost weight (Experiments 2 and 3). Mild underfeeding was at least as effective as more severe restrictions at reducing GR measurements, though slower. The leanness of the resultant carcasses was not significantly different to those that maintained or gained weight, after adjustment for differences in carcase weight. This together with the results of other experiments with growing lambs (Bray unpublished) indicated that a period of weight reduction would not result in leaner

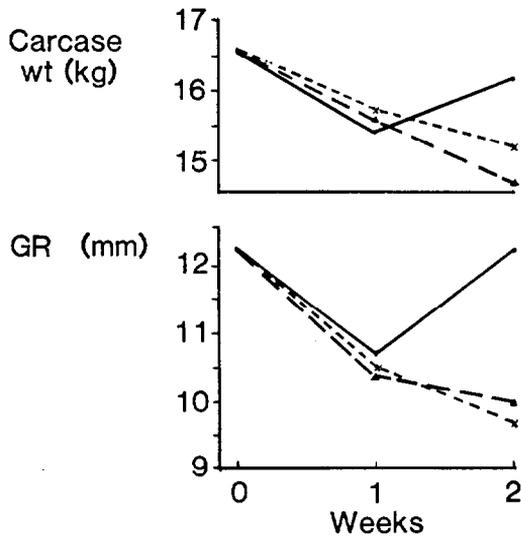


FIG. 3 Carcass characteristics after short-term underfeeding (Experiment 3). Initial carcass weight = 16.6 kg, GR = 12.2 mm. See text for details of treatments.

Treatment 1 ———
 Treatment 2 - - - - -
 Treatment 3 - - - - -

carcasses than would continuous growth to the same weight.

It was only when shearing was followed by restricted feeding that carcasses were leaner than

expected for their weight. Lambs shorn then restricted to 1 kg/d of pasture DM in Experiment 2 lost approximately 2 mm GR and 1 kg in carcass weight in 3 weeks and 3 mm GR and 2 kg carcass weight in 6 weeks. Shearing removed 1 mm GR with a further 1 mm removed for each 1 kg carcass weight loss. These values will probably vary with different genotypes in different environments but responses of this order could make it worthwhile to shear overfat lambs and then mildly underfeed them where it is desired to reduce fat cover to increase carcass value.

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