

There were no statistically significant differences between the means of actual and predicted values. The low proportion of fat in the carcass is interesting. It suggests either that the Malawi goat is a very late maturing genotype or that the level of nutrition available to the kids was insufficient to allow partition of dietary energy to fat.

#### 211. Intramuscular fat analysis of intensively and commercially reared British Angora goats

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It has been suggested that the United Kingdom (UK) producer should be aiming for 0.4 of financial output from meat and 0.6 from mohair, thus emphasizing the importance of the production of a quality carcass from the Angora herd. The amount and composition of intramuscular fat from British Angora wether goats was investigated. Forty castrated goats, typical of those kept for commercial Angora production in the UK were reared under a commercial or intensive-rearing system. Twenty goats were fed on a grass-based, commercial system, representing that favouring quality Angora fibre production. The remaining 20 were reared intensively on an *ad libitum* pelleted complete diet (8.9 MJ/kg dry matter, 114 g crude protein per kg). Five goats from each diet were slaughtered at 6, 12, 18 and 24 months of age. The carcasses were dissected into lean, fat and bone. The quantity and composition of the intramuscular fat in the *longissimus dorsi* was determined. Quantity of intramuscular fat significantly ( $P < 0.01$ , s.e.d. 2.51) increased with age, at 6 months 65 g fat per kg sample, 94 fat at 12 months, 115 at 18 months and 138 at 24 months. Diet showed no significant ( $P > 0.05$ ) effect. Levels of fatty acids were affected by age. Increased age resulted in significantly ( $P < 0.01$ ) lower levels of myristic, palmitoleic and stearic and significantly ( $P < 0.01$ ) higher levels of oleic and linoleic. Intensively reared goats had lower levels of stearic (162.2 g/kg fat) and linoleic (2.88 g/kg fat, s.e.d. 1.87) than commercially reared which contained 182.2 and 8.79 (s.e.d. 2.6) g respectively. The intramuscular fat of intensively reared goats contained significantly ( $P < 0.05$ ) higher levels of oleic (404.3 v. 376.8 (s.e.d. 22.3) g/kg fat). Type of diet had no significant effects on any other fatty acids. These results suggest that although the rearing system does not affect the total intramuscular fat content of the goat, it does affect the composition of that fat, which may be further modified by age at slaughter.

#### 212. Body chemical composition of Churra lambs at 20 kg live weight: effect of level of milk intake and protein content in the post-weaning diet

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Body chemical composition could change in animals undergoing compensatory growth. Sixteen lambs of Churra breed were used according to a 2 × 2 × 4 factorial design defined by two levels of milk intake (H: 1.5 and L: 0.9 MJ/kg<sup>0.75</sup> per day) during the milk-fed period (4 weeks), two post-weaning concentrate supplements (HP: barley plus 200 g fish meal per kg and LP: barley) and four lambs per treatment. All lambs were individually penned. During the post-weaning period low-quality hay and concentrate were independently offered *ad libitum*. Intake and live weight (LW) were recorded daily and three times a week respectively. At slaughter (20 kg LW), empty body weight (EBW) was estimated and carcass and non carcass chemical composition (water, ash, fat and protein) and energy content were determined. During the post-weaning period the live-weight gain (g/kg weaning weight) was higher ( $P < 0.01$ ), for the groups with a previous low level of milk intake (21.9 v. 18.6). The lambs which were given the high protein level in the post-weaning diet had a lower ( $P < 0.05$ ) water content (g/kg) in the carcass (637.0 v. 661.5) and EBW (628.7 v. 648.5) and a higher

( $P < 0.05$ ) gross energy content (MJ/kg) in the carcass (10.3 v. 9.4) and EBW (10.1 v. 9.5). The protein content (g/kg) in the carcass (105.4 v. 149.8) and EBW (150.6 v. 177.0) was affected by the pre-weaning level of milk intake with a higher ( $P < 0.05$ ) value for the lambs with a low level of milk intake. The proportion of fat in the carcass and EBW was not affected by milk intake or post-weaning supplements. The previous level of intake during the milk-fed period and the protein content in the post-weaning diet must be taken into account when the body composition is considered.

#### 213. The effect of rearing nutrition on the reproductive performance in red deer hinds

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Female deer have a long productive life but it is not known if their reproductive performance is adversely affected by high levels of nutrition between weaning and puberty. Sixty red deer hind calves weighing 44.6 (s.e. 0.34) kg on 3 October 1991 were subjected to one of two rearing strategies from 4 to 10 months of age. These were either a silage-based ration (11.4 MJ metabolizable energy (ME) per kg) designed to achieve moderate growth rates and a body weight of 75 to 80 kg by 16 months of age (M), or all-compound ration (13.3 MJ ME per kg) designed to achieve high growth rates (H). The hind calves were arranged in a randomized-block design with three pen replicates of 10 calves per treatment. After turn-out to pasture at 10 months of age both groups had identical management. The mean daily ME intake during the 6-month winter period was 11.6 and 16.0 MJ ME per calf for M and H groups respectively. Hind growth rates were significantly higher ( $P < 0.001$ ) in H hinds over this period (65 v. 114 (s.e.d. 5.1) g/day), and these were 9.6 kg heavier (57.2 v. 66.8 (s.e.d. 0.82) kg) at turn-out. Summer growth rates were inversely related to winter performance and significantly higher ( $P < 0.001$ ) for M hinds (162 v. 127 (s.e.d. 6.6) g/day), such that H hinds were only 4.0 kg heavier than M hinds at 16 months of age. Using n-alkane procedures, herbage intake estimates were greater for M hinds at 4 weeks after turn-out, but not thereafter, compared with H hinds. Twice-weekly blood progesterone analysis over a 12-week period from 8 September to 27 November 1992, together with calving data in 1993, indicated that there was no significant difference in oestrous (29 v. 31 October, (s.e.d. 2.3) for M and H respectively), conception rates (0.87 v. 0.93 (s.e.d. 8.4)), or calving date (15 v. 19 June (s.e.d. 2.6)), between the two treatments. Calf birth weights (8.0 v. 8.3 (s.e.d. 0.3) kg), weaning weights (42.3 v. 41.1 (s.e.d. 1.2) kg), and growth rates (375 v. 370 (s.e.d. 11.4) g/day), were also similar for both groups. It is concluded that high levels of nutrition during the rearing phase of red deer has no detrimental effect on reproductive performance up to 27 months of age.

#### 214. Effect of clover content in the diet on the performance of weaned lambs on grass/clover swards previously grazed by goats or sheep

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Manipulation of the competitive balance between grass and clover through different patterns of diet selected by sequences of animal species has considerable potential to produce biologically and economically more efficient grazing systems. Grass/white clover swards grazed by goats may contain more clover than swards grazed by sheep and this could lead to higher clover intakes and live-weight gains in lambs that subsequently graze these swards. Grass/clover swards were continuously grazed by either yearling goats or ewes with twin lambs from early May to late July (period 1) at sward surface heights of 4 to 8 cm. From mid August to early October (period 2) weaned lambs continuously grazed the swards, at 4 cm as in period 1 (treatment 4-4), 8 cm as in period 1 (treatment 8-8) or at 8 cm following an increase from 4 to 8 cm (treatment 4-8). The treatments were replicated twice with 10