

RELATIONSHIP BETWEEN RATE OF INTAKE AND DAILY INTAKE OF DRY, MATURE SUBTERRANEAN CLOVERS BY SHEEP

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In penned sheep fed dried grasses, rate of intake in a 30-minute test was positively correlated with daily intake (Forbes *et al.* 1972). In sheep fed dry, mature subterranean clover (*Trifolium subterraneum*), analyses of the data by multiple regression showed that rate of intake was inversely related to the number of chews/g DM during eating. In turn this was related to the proportion of leaf and to the energy required to compress the clover (Wang *et al.* 1995), and since daily intake appears to be related to the proportion of leaf in the clover on offer (Taylor *et al.* 1989), these results suggest that the rate of intake and daily intake of clovers may be correlated.

Four cultivars of mature, dry subterranean clover, Trikkala, Dinninup, Daliak and Dalkeith, were harvested from field plots, separated into leaf-enriched ('leaf') and stem-enriched ('stem') fractions by sieving and used to determine rate of intake (Wang *et al.* 1995). Briefly, rate of intake was tested with 6 mature, merino wethers using a 12 x 12 Latin square design, in which each sheep was offered twice each of the 3 fractions ('leaf', 'stem' and unfractionated) of each of the 4 cultivars. Each fraction (150g) was offered to the sheep for 3 minutes and the residue was weighed to calculate the rate of intake. Daily intake was determined over 14 days after a 7-day acclimatisation period using 48 mature, merino wethers. The same 4 cultivars harvested from the same field plots were used in this experiment (4 cultivars/3 fractions x 4 sheep), and they were offered at 10% in excess of the previous day's intake.

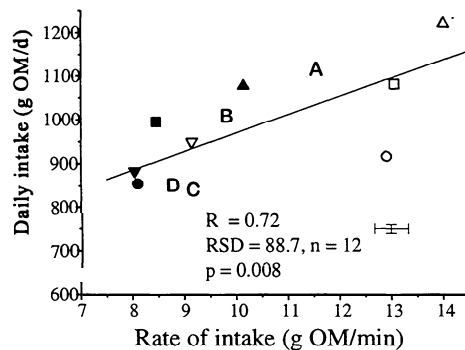


Figure. Rate of intake (g OM/min) and daily intake (g OM/d) of 'leaf' (open), 'stem' (solid) and unfractionated (letter) Trikkala (s A), Dinninup (O B), Daliak (M C) and Dalkeith (t D). Error bars represent the respective standard deviations

The rate of intake (g organic matter (OM)/min) of 'leaf' of each cultivar was significantly higher than that of 'stem' ($P < 0.01$). The rate of intake of unfractionated clovers was intermediate between 'leaf' and 'stem' and it differed among cultivars ($P < 0.01$). Trikkala was eaten faster than any other cultivars. Dalkeith was eaten more slowly than Daliak and Dinninup. There was no difference between Daliak and Dinninup. Daily intake (g OM/day) followed a similar pattern to rate of intake. Since the hypothesis was supported that daily intake and rate of intake are correlated ($r = 0.72$) (Figure), then the resistance of forage to compression may be a factor involved in controlling daily intake.

FORBES, J.M., WRIGHT, J.A. and BANNISTER, A. (1972). *Anim. Prod.* 15: 211-4.

TAYLOR, G.B., ROSSITER, R.C., PURSER, D.B. and COLLINS, W.J. (1989). *Proc. XVI Internat. Grass. Congr.*, Nice France, pp. 809-10.

WANG, XR., BAKER, S.K. and PURSER, D.B. (1995). *Ann. Zootech.* 44 Suppl. 256.