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The XX International Grassland Congress took place in Ireland and the UK in June-July 2005.

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Does the feeding behaviour of dairy cows differ when fed ryegrass indoors vs. grazing?

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Introduction Dairy cows eating ryegrass ingest smaller boli when grazing than when fed indoors (93 vs. 142 g; Boudon *et al.*, 2004). To investigate whether this difference in bolus affects feeding behaviour of the cows, an automated system (chewing halters) was used to monitor feeding behaviour of cows given ad libitum access to perennial ryegrass in individual feed troughs (indoor feeding, IF) or at pasture (grazing, GR).

Material and methods In a study comprising four 14-d periods (d 1-7 for adaptation to halters; d 8-14 for measurements), eight lactating, ruminally fistulated Holstein cows were provided ryegrass by access to pasture (GR) or as forage cut and fed indoors (IF) in a 4 × 2 crossover. For GR, pastures with 21 d of re-growth were allotted to provide each cow with 45 kg/d of herbage DM when grazed to ground level. Dry matter intake (DMI) was estimated from total faecal output and organic matter digestibility (OMD) determined using intraruminally dosed dye (for faecal pat identification) and ytterbium oxide. For IF, herbage cut twice per day with a forage harvester, to the same height as GR pastures after grazing, was offered in seven meals (Figure 1). Refusals were collected at 1800 and 0830 h. Dry matter intake was calculated as DM offered minus DM refused, and by YbO as for GR. Chewing and ruminating activities of each cow were monitored for 24-h periods using halter-mounted devices linked to a data logger (Bechet *et al.*, 1989). Intake rates were calculated daily as DMI/eating time.

Results Ryegrass nutritive value (17% DM, 20% CP, 45% NDF, 0.81 OMD) was similar between IF and GR. Milk yield was higher ($p < 0.02$) with IF than with GR (25.6 vs. 23.6 kg/d, respectively). Average DMI was 16.7 kg/d with IF, but estimates from the YbO marker were 18.6 and 16.5 kg/d for IF and GR, respectively ($p < 0.01$). Times spent eating (604 ± 94.5 min/d) or ruminating (456 ± 27.7 min/d) were similar ($p \geq 0.14$) between IF and GR, but feeding behaviours (min/h eating or ruminating) differed with treatment (Figure 1). The IF cows spent more time at night (2200 to 0600) eating than did GR cows ($p < 0.02$), who spent more time ruminating. Meal duration was longer with GR than with IF (average 79 min vs. 44 min; $p < 0.0001$), and rate of DM intake by GF cows was lower (27.1 g/min vs. 31.0 g/min with IF).

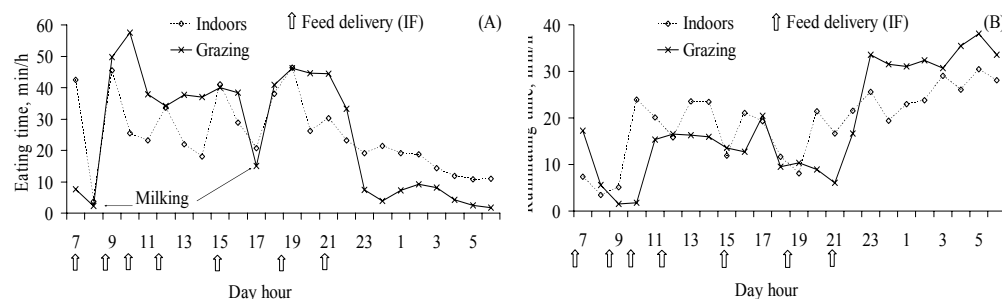


Figure 1 Proportions of time (min/h) cows spent eating (A) and ruminating (B) when grazing or fed indoors.

Conclusions Differences in feeding behaviour of cows with ad libitum access to good quality ryegrass either as cut forage (provided in 7 meals/d) or as pasture (grazing) were reflected in different DMI and rates of intake. Grazing cattle consumed 13% less DM, which appeared to be related to relatively less time spent eating at night. For grazing cows, intake per bite seemed to decline as ryegrass pasture availability decreased during the day, but increased time spent eating (during daylight) was insufficient to maintain intake compared to indoors feeding cows.

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