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Components of grazing behaviour of 3 breeds of heifers

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Differences in weight gain at pasture between heifers of different breeds could be explained by variations in components of ingestive behaviour (Erlinger *et al*, 1990, J Anim Sci, 68, 3578-3587). The aim of this study was to compare the grazing behaviour of heifers belonging to Holstein dairy, Limousine beef and Salers hardy breeds, grazing under 2 sward conditions.

Eight Holstein (HO), 8 Salers (SA) and 8 Limousine (LI) heifers, aged between 14 and 16 months and weighing 413, 380 and 346 kg respectively, grazed together and successively 2 paddocks (8 days/pad) of mountainous natural grassland (altitude 1100 m) composed mainly of graminae (*Agrostis tenuis, Lolium perenne, Dactylis glomerata*). The first paddock was at a vegetative (VEG) stage, the second at a reproductive (REP) stage. Measurements were taken throughout the 1st, 4th and 8th days of the total time spent in paddocks. Grazing time was estimated, from dawn (5 h) to dusk (23 h), by observing the activity of each heifer (head down to ground) at 5 minute intervals. Individual bite rates were measured each day, 10 to 15 times for each heifer : the number of bites taken in 2 minutes was counted and related to the corresponding grazing time. Sward height varied between the beginning and end of time spent in paddocks, from 34 to 11.5 cm for the VEG and from 39 to 8 cm for REP stage. Herbage quantity varied from 4.5 to 2.4 t of DM/ha and from 6.6 to 2.5 t of DM/ha respectively.

During time spent in paddocks, bite rate decreased ($P<0.001$) from 56.4 to 48.5 bites/min (VEG) and from 31.4 to 27.4 bites/min (REP). Grazing time increased ($P<0.001$) in the first case (290 to 438 min) and decreased ($P<0.001$) in the second (533 to 396 min). From the VEG to the REP stage grazing time increased ($P<0.001$) from 354 to 485 min, whereas bite rate decreased ($P<0.001$) from 52.7 to 29.5 bites/min. For both stages, SA heifers grazed 20 to 30 min less ($P<0.001$) than LI and HO which showed the same grazing time. Bite rate was, regardless to grass stage, higher ($P<0.01$) for HO and SA than for LI ; for REP grass it was slightly higher ($P<0.001$) for SA than for HO. The number of bites taken throughout the day on VEG grass was higher($P<0.001$) for HO than for SA heifers, which in turn was higher ($P<0.001$) than for LI. On REP grass, HO and SA heifers showed a similar number of bites, far greater ($P<0.001$) than that taken by LI. From VEG to REP grass, the number of bites tended to decrease less ($P<0.1$) for SA than for LI or HO.

Finally, on VEG grass, heifers of the 3 breeds HO, SA and LI were classified, for number of bites, in the same order as for their indoor intake capacity (Agabriel *et al*, 1987, Reprod Nutr Dev, 27, 1B, 211-212). For both grasses, SA took a greater number of bites than LI showing a shorter grazing time and a higher bite rate ; these differences could be linked to weight (Funston *et al*, 1991, J Anim Sci, 69, 1435-1442) and/or to a greater selectivity of LI. Determination of bite weight would allow confirmation or invalidation of these behavioural differences in terms of herbage intake.

Grass stage	VEG				REP			
Breed	SA	LI	HO	sed*	SA	LI	HO	sed*
Grazing time (min/day)	335	362	369	6.0	469	496	490	5.3
Biting rate (bites/min)	55.4	48.2	54.7	0.86	32.3	25.9	30.2	0.60
Daily bites number (x 10^3)	18.4	17.3	19.9	0.46	15.2	12.9	14.9	0.33

* sed : standard error of difference