

Diurnal variations in the biting rate of cattle at pasture. P D'hour, M Petit, G Michat (*INRA-Theix, Laboratoire Adaptation des Herbivores aux Milieux, 63122 Saint-Genès-Champagnelle, France*)

Biting rate (BR) is a component of ingestive behaviour. Estimation of BR requires intimate knowledge of its variation throughout the day, of which little is known, especially in cattle. Diurnal evolution of BR was therefore measured in August 1993 on 8 Limousin (LI) and 8 Salers (SA) heifers aged 30 months.

The heifers were grazed together in set stocked on grassy mountain pasture. The herbage mass was 3 200 kg DM/ha (55% green leaves, 45% dead material). The sward height was 9 cm. The measurements were made by the same observer during 4 d chosen over a 2-week period for their stable climatic conditions (no rain and mean temperature between 15 and 18°C). Each day, 2 heifers of each breed were observed from 6 am to 10 pm according to a predetermined order. Grazing activity was recorded every 5 min. The number of bites taken in a 2-min period was recorded every 20 min. BR was determined from the number of bites related to the corresponding grazing time. The mean number of measurements was 37 per heifer, *ie* 5.4 measurements/h of grazing. Variations of BR with time and between breeds were analysed.

Grazing time was similar for both breeds (SA: 403; LI: 424 min) and the SA heifers' BR was higher ($P < 0.01$) than the LI heifers' (53.3 vs 47.7 bites/min). BR varied ($P < 0.01$) throughout the day in a similar way between breeds. It decreased during the morning from 50.5 bites/min (6–9 am) to 45.8 bites/min (12 am–1 pm), then increased in the afternoon reaching 58.7 bites/min at around 8–9 pm. BR during the 3–4 main meals (grazing periods over 1 h) varied similarly ($P < 0.01$): 51.0, 46.6, 49.0 and 57.4 bites/min from the first to last meal. Each meal was then divided into 4 equal parts (15–45 min). During each meal, BR first increased, on average, by 8% between the first and third quarter ($P < 0.01$), then decreased slightly, by 4%, at the end of all meals ($P < 0.05$) except the morning one. These variations were similar between breeds.

These results reveal that, at least under certain grazing conditions, measurements must be taken throughout the day in order to reach a correct estimation of BR.

Intake and masticating behaviour of sheep and goats of local breeds kept on the natural grasslands of the Imbo plain (Maramvya, Burundi). D Dehareng, S Mwaminifu, A Ndimubandi, C Baudoux, A Nivyobizi, J Mbayahaga (*Department of Animal Production, Faculty of Agronomics (FACAGRO), University of Burundi, BP 2940, Bujumbura, Burundi*)

In order to complete the poorly documented data on the voluntary intake and behaviour of Burundese small ruminants on natural grasslands 10 sheep (average body weight (BW): 13.6 kg) and 10 goats (10.5 kg) were kept (20 consecutive days; 10 h/d: 06.30–16.30 h) on the natural grasslands of the Imbo plain (main species: *Sporobolus pyramidalis*, *Brachiaria ruziziensis* and *Hyparrhenia* sp; all grasses). Sheep and goats were kept separately in a bipartitioned movable pen (112.5 m² grazing area/species) fitted with graduated drinking water tanks. The pen was moved every 2 d. Voluntary intake of dry matter (VIDM) was estimated by the difference between 4-m² cuttings occurring just before and just after a 2-d grazing period. Hourly eating (HED) or ruminating (HRD) duration (visual records from 06.30 to 16.30 h) as well as amount of water drank (residual amounts – rain + evaporation) were recorded every day. A variance analysis was used. Whereas sheep and goats had similar ($P > 0.05$) VIDM (37 vs 31 g/kgBW) and eating rate (0.14 vs 0.13 g VIDM/kgBW/min), sheep had higher ($P < 0.001$) HED (27 vs 23 min) and HRD (17 vs 15 min) than goats. HED was reduced ($P < 0.001$) in sheep during the hottest hours of the day [15 min (10.30–12.30 h) vs 29 min (06.30–10.30 h and 12.30–16.30 h)] while it remained mostly constant in goats [23 min (06.30–16.30 h); $P > 0.05$]. By contrast, HRD began to increase ($P < 0.001$) during the morning in sheep [20 min (10.30–16.30 h) vs 13 min (06.30–10.30 h)] and during the mid-afternoon in goats [22 min (14.30–16.30 h) vs 14 min (06.30–14.30 h)]. Elsewhere, sheep drank more water than goats (11 vs 88 ml/kgBW; $P < 0.01$) but the amount of water drank per kg VIDM were similar in both species (3.0 vs 2.9 l; $P > 0.05$). To conclude, Burundese sheep and goats have similar VIDM/kgBW and amounts of water drank/kg VIDM but strongly differ in diurnal pattern of masticating behaviour. However, rumination data should be taken with caution (16.30–06.30 h: no record).