

Key Words: Dairy cow, Model, Diet

231 Effect of grazing systems on chewing activity, ruminal pH fluctuations and pH of milk, blood and urine of dairy cows. C. Graf¹, M. Kreuzer², and F. Dohme*¹, ¹Swiss Federal Research Station for Animal Production, Posieux, Switzerland, ²Swiss Federal Institute of Technology, Zurich, Switzerland.

Grass in its young vegetative stage is rich in rapidly-fermentable carbohydrates and poor in physical structure and therefore could cause low ruminal pH and reduced chewing activity in dairy cows on pasture. The effects of full-time grazing (G) versus part-time grazing with nightly supply of 5.5 kg DM either as hay (H) or corn silage (C) on chewing activity and pH in various body fluids and excretion products were studied in six rumen-fistulated Brown Swiss cows. A replicated 3 x 3 Latin square design was applied. Each experimental period lasted 28 d with sampling taking place from d 21 to 28. Grass intake was quantified by the double samples of milk, venous blood and urine was measured 2, 4 and 7 times per cow and period, respectively. Rumen pH was recorded continuously over 24 h except during milking with a pH electrode placed in the rumen through the fistula. These data were summarized separately for daytime and night for each cow as mean, maximum and minimum pH and time period when pH was below 5.8. The chewing activity, separated into eating and ruminating, was recorded continuously for 22 h using a behavior recorder. Grazing systems had no effect on the time spent ruminating and rumination time per kg DM intake. Cows in treatment G spent more time for eating per kg DMI (+15 min) compared to C and more time for eating per day (+121 min) compared to H and C ($P < 0.05$ for each). In rumen fluid, the maximum and minimum pH, the average night pH and the time period with $\text{pH} < 5.8$ did not differ among treatments. By contrast, throughout the day cows in treatment H had a lower mean ruminal pH (-0.24) compared to G, and the time period when pH was below 5.8 was longer with H (+66 min) compared to C ($P < 0.05$ for each). Milk and blood pH were not affected by treatments while urine pH tended to be lower (-0.07) in group G ($P = 0.06$). In conclusion, full-time grazing had no adverse effect on ruminal pH and rumination time whereas part-time grazing with nightly supply of hay caused less favourable ruminal pH conditions during the day.

Key Words: Grazing, Ruminal pH, Chewing activity