

Behavior, intake and milk production of Holstein cows grazing perennial pasture under different intensities.

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Introduction

Animal intake and behavior under grazing conditions are affected by sward characteristics. In dairy cows, Gibb *et al.*, (1997), found a direct effect of pasture height on bite mass. When sward height decreases, animal response is to increase grazing time and bite rate, but this compensation may not be enough in short swards, affecting milk production. Penning *et al.*, (1991), working with sheep, concluded that height can be used as an intake and production control, due to sward structure developed by grazing management. The aim of this study was to evaluate the effect of grazing intensity on grazing behavior, intake and milk production of Holstein cows grazing perennial pasture, with *Festuca arundinacea* as the main component.

Materials and Methods

The experiment took place between 18/10 and 16/11, 2008, at Estación Experimental M. A. Cassinoni, Facultad de Agronomía, Paysandu, Uruguay (32 ° 22'S - 58 ° 03'W). Treatments were three grazing intensities 4, 7 and 10 cm (Short, Medium and Tall) height of Fescue, with two replications. It was used a second-year pasture of *Festuca arundinacea*, *Trifolium repens* and *Lotus corniculatus*, divided into six plots of 2 ha. Each plot was grazed by three multiparous Holstein cows, with autumn calves (average weight 594 ± 43 kg), from 8:00 to 14:00 and 17:00 to 4:00 pm. They were offered 1.9 kg of dry matter (DM) concentrate per day, and consumption was measured by supply and rejection. Treatments were achieved by measuring height weekly, and using additional animals. DM intake (DMI) was measured using n-alkanes (Mayes *et al.*, 2000). Grazing and ruminating times were measured with behavior recorders (Rutter, 1997). Daily milk production (MP) was recorded, and chemical composition (fat and protein %) was determined.

Results and Discussion

Treatment affected sward height, with 11,59 ± 0,12, 7,82 ± 0,12, y 5,99 ± 0,12 cm for Tall, Medium and Short, showing that expected differences were achieved. Animals grazing at Medium and Short showed higher proportion of grazing time (0,59 y 0,57) than animals in Tall treatment (0,51) (p<0,05). The opposite was found for ruminating time, with higher values for Tall treatment than Medium and Short (p<0,05). On these variables, measured during all the experiment, period of measurement had a big effect. Environmental conditions of high temperatures and water deficit affected pasture and animals, with decrease of pasture height and grazing time, increasing ruminating time.

There were no differences in forage DMI, with 19,6 ± 2,9, 19,3 ± 2,9 y 18,3 ± 2,9 kg DM, or total DMI 21,5 ± 2,8, 21,2 ± 2,8 y 20,2 ± 2,8, kg DM for Medium, Tall and Short, respectively. Therefore, compensation may be occurred under low pastures, with an increase of grazing time as a mechanism to achieve the same intake (Gibb *et al.*, 1997). As a result, there were no differences in MP with 21,0 ± 0,6, 20,5 ± 0,6, 20,0 ± 0,6 L for Tall, Medium and Short, or protein and fat contents. Absence of differences on intake and production may be due to physiological state of the animals (late lactation) and to big environmental restrictions on pasture and animals. This must have required great energy losses to achieve observed intakes.

Conclusions

Sward height has effects on animal behavior, in the range of this study. Grazing time was found as an intake compensation mechanism. Absence of response as far as intake and milk production is concerned may be related to the low production potential imposed by environment.

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