Effects of a separate offer of hay besides TMR on feeding and rumination behaviour in dairy cows

Anet Spengler Neff, Johanna K Probst, Florian Leiber
[1]*Research Institute of Organic Agriculture (FiBL), Ackerstr. 113, CH-5070 Frick, Switzerland*
anet.spengler@fibl.org

In a dairy herd (Swiss Fleckvieh) with moderate performance (7000 kg milk/cow/year) 23 cows were investigated for their behavioural response to a change in roughage offer. They were kept in a stanchion barn with separated feeding places. During the first measurement week, cows received forages as a total mixed ration (TMR), based mainly on grass silage (32%), maize silage (30%) and hay (21%), ad libitum 24h/d. This was the diet they had been used to prior to the experiment. In the second measurement week, TMR contained a lower proportion of hay (6%); hay (2nd cut) was separately offered ad libitum to each individual cow in the morning between 6.00 a.m. and 8.00 a.m. Animals had been adapted to this feeding system 14 days before measurement week 2 started. During both measurement weeks, cows were equipped with chewing sensors (noseband collars with pressure tubes) to record jaw movements and identify eating and rumination parameters. Roughage intake was weighed individually for each cow during the measurement weeks. Data were processed with SPSS in a mixed linear model with measurement week as fixed and cow as random factor. The comparison of the two measurements showed that separate offer of hay in the morning led to significantly longer intake time (min/h) between 6.00 a.m. and 8.00 a.m. ($P<0.01$), but also between 4.00 p.m. and 6.00 p.m. ($P<0.05$). However, intake amounts were not affected. Rumination time (min/h) was increased between 9.00 a.m. and 3.00 p.m. ($P<0.01$). Further, when hay was offered separately in the morning, the number of activity changes per hour was decreased. These data show a clear effect of sequential roughage feeding on intake and rumination. Separately fed hay might have caused a necessity to increase intake and rumination time to maintain intake amounts and digestion. However, the decreased activity changes per hour indicate a calmer behaviour, which might be a health and welfare issue.

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