

**Effects of environmental conditions and feed delivery frequency on time budget of lactating dairy cows in two free-stall housing**

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Short title: **THI and feed delivery effects on cow time budget**

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## **Summary**

This study aimed to examine the influence of environmental conditions and feed delivery frequency on daily time budget of lactating dairy cows. The study was carried out in two commercial dairy farms with Holstein herds. Fifty lactating dairy cows milked in an automatic milking system (AMS) and 96 primiparous lactating dairy cows milked in a conventional milking parlour were exposed to different frequencies of feed delivery replicated in different periods (warm and mild) of the year that were characterized by different temperature-humidity indices (THI). On each farm, feeding treatments consisted of two different feed delivery frequencies (1× and 2× on the AMS farm; 2× and 3× on the conventional farm). All behaviours of the cows were monitored for the last 8 d of each treatment period using continuous video recording. The two data sets from different farm systems were considered separately for analysis. On both farms, environmental conditions affected time budgets and the pattern of the behavioural indices throughout the day. The variation in the frequency of feed delivery seems to affect the cow's time budget only in a limited way and modify only slightly the daily time spent in different activities. The most significant effect on cow behaviour is related to THI, especially when daily values were in the range where heat stress should not occur. Although it seems to have limited effect, the influence of the feed delivery frequency on time budget should be carefully considered. Further investigations are required to evaluate the effect of THI and feed delivery frequency on other aspects of behavioural activity.