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Oscarsborg fortress
Photo: Oscarsborg Hotel

Time budget and lying synchronisation of cows in conventional and automatic milking system departments

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We compared the time budget and synchronised lying behaviour of cows in a conventional (CMS) and in an automatic milking systems (AMS), both situating inside the same barn. The CMS housed 30 cows, and a time budget of 17 cows was followed. Facilities in this system comprised 33 cubicles (227 x 121 cm), 33 roughage feeding places and two concentrate feeders. The cows in the CMS were milked twice daily in a 2 x 5 herringbone parlour. The AMS housed 27 cows, and a time budget of 17 cows was followed. AMS facilities consisted of 27 cubicles (173 x 120 cm), 10 roughage feeding places and two concentrate feeders. Cow traffic in the AMS was guided; animals could go from the resting area to the feeding area by passing through either the milking unit or an automatic selection gate. Behaviour of the cows in the two systems was observed over three weeks in 12 six-hour periods using interval sampling every five minutes. The six-hour observation periods were at 24:00–06:00, 06:00–12:00, 12:00–18:00 and 18:00–24:00 and every time period was observed three times.

AMS cows stood more (26% vs. 15% of observations, $P<0.001$) and lied down less than CMS cows during the time periods 06:00–12:00 (53% vs. 61% of observations, $P<0.01$) and 18:00–24:00 (40% vs. 61% of observations, $P<0.001$). AMS cows ate more often concentrate than CMS cows (4.9% vs. 4.0% of observations, $P<0.05$) but less often roughage during the time period 06:00–12:00 (17% vs. 21% of observations, $P<0.05$). CMS cows had to wait longer to be milked and the milking itself took longer (6.2% vs. 2.6% of observations, $P<0.001$) than for AMS cows. The synchronised lying behaviour of cows did not differ between the systems.

Reasons for AMS cows standing more and lying down less than CMS cows likely arise from different milking systems and also from differences in the structures of the systems and management, including the length of the cubicles, the width of the walking alleys, the amount and location of feeding places and cow traffic arrangements. The time budget of cows appears flexible and changes when husbandry practices change. Concern should, however, be taken in the AMS to avoid idle standing and to ensure cows meet their resting need. Synchronised lying behaviour seems to be a constant phenomenon in both groups.