

145 Methane emission of dairy cows grazing versus indoor feeding with silage

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Recent studies show that methane emission may be lower during grazing compared to feeding a ration or silage indoors. Yet, reasons for this difference remain unclear. This study aimed to quantify enteric methane emission of Danish Holstein dairy cows grazing perennial ryegrass and white clover pasture compared to dairy cows fed grass-clover silage indoors, while exploring the underlying mechanisms (not presented) for the potential methane reduction. Methane emission was measured with the GreenFeed system (C-Lock Inc., USA) indoors (2 units) and on pasture (2 units). In a continuous design, 45 intact lactating dairy cows were allocated to one of 3 treatments (15 cows/treatment): 1) indoor feeding (day and night) with a spring growth (first cut) grass-clover silage, 2) fulltime grazing (day and night), and 3) parttime grazing (day, ca. 8 h) with indoor feeding of silage (night). All cows were allowed up to 3.0 kg/d of fresh concentrate in GreenFeed and received 2.7 kg/d of fresh concentrate in the milking parlor. The experiment started with spring growth and included 2 weeks of adaptation and 9 experimental weeks (May 6th to July 7th). Cows grazed pasture in a rotational system over paddocks and using strip grazing within paddock. Pasture measurements were taken with Grasshopper (True North Technologies, Ireland) pre- and post-grazing a paddock. The pre-grazing herbage mass was ca. 1240 kg DM/ha, and the pre- and post-grazing sward heights were ca. 98 and 66 mm. The number of weekly visits per cow to the GreenFeed units were on average 26, 15, and 23 visits/week for the indoor, fulltime grazing and parttime grazing treatments, respectively. The preliminary results indicate that energy-corrected milk (ECM) yield, milk fat content, and methane emission (g/d and g/kg ECM), were lower for fulltime grazing cows compared to the indoor treatment. Parttime grazing cows, had the highest ECM yield, and a milk fat content and methane emission (g/d and g/kg ECM) intermediate to the indoor and fulltime grazing treatments. This work is ongoing, therefore more detailed results on methane emission, milk yield and composition, and calculated dry matter intake will be provided at a later stage. The preliminary conclusion is that cows grazing, especially fulltime, have a lower methane emission compared to cows fed with spring growth grass-clover silage indoors.

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