Influence of diet and manure management on ammonia and greenhouse gas emissions from dairy barns

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**Supplementary Material**

**Materials and Methods**

**Figure S1.** Layout (not proper proportions) of the experimental rooms housing three dairy cows each: room A (managed as LMtied - liquid manure, N balance measurements - or LMfree - liquid manure, free-stall barn with cubicles) and room B (managed as SM – solid manure, straw-based deep litter) seen from above or from the side (lower right).

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*Measurements, samples and analyses*

*Temperature and humidity.* Indoor air temperature and relative humidity were recorded continuously at 15-minute intervals in each room using temperature and relative humidity probes (HMP 45C, Campbell Sci., Courtaboeuf, France) placed at a height of 1.5 m in a central position between the cows and connected to a data acquisition system (CR 1000, Campbell Sci., Courtaboeuf, France).

**Table S1** *Indoor environmental conditions as a function of the dietary N supply offered to dairy cows (LowN, 120 g CP/kg DM; HighN, 180 g CP/kg DM), the manure management system (LMtied: liquid manure, N balance measurements; LMfree: liquid manure, free-stall barn with cubicles; SM: solid manure, straw-based deep litter) and the week of measurement (W1-W4)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Manure management | LowN | HighN |  |
| Variable1 |  | W1 |  W2 | W3 | W4 | W1 | W2 | W3 | W4 | SEM |
| Indoor | LMtied |  |  |  |  |  |  |  |  |  |
|  Temp. °C |  | 16.5 | 16.2 |  |  | 17.6 | 16.8 |  |  | 0.2 |
|  Hum. % |  | 72.1 | 72.0 |  |  | 63.5 | 68.0 |  |  | 1.4 |
| Indoor | LMfree |  |  |  |  |  |  |  |  |  |
|  Temp. °C |  |  |  | 16.1 | 16.0 |  |  | 16.3 | 16.4 | 0.1 |
|  Hum. % |  |  |  | 61.9 | 58.2 |  |  | 69.3 | 74.5 | 1.5 |
| Indoor | SM |  |  |  |  |  |  |  |  |  |
|  Temp. °C |  | 16.7 | 16.7 | 16.4 | 16.4 | 17.6 | 17.0 | 16.7 | 16.8 | 1.1 |
|  Hum. % |  | 74.8 | 78.8 | 72.7 | 69.1 | 66.9 | 74.4 | 77.8 | 79.7 | 0.7 |

1 Mean daily temperature and humidity: 7 days x 2 sub-periods per dietary treatment and manure management