Impact of hygiene of housing conditions on performance and health of two pig genetic lines divergent for residual feed intake

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Genotype by environment interaction in growing pig

**Material and methods**

Environmental assessment

During Period 1, carbon dioxide (CO2, ppm), ambient temperature (°C) and relative humidity (RH %) were recorded in both experimental rooms for the two replicates with a probe (General Alert, Saffron Walden, UK) placed at two meters above the floor. Measurements of ammonia (NH4, ppm) were carried out at 30 cm above floor in two replicates with a manual pump (Drager, Draeger Accuro Manual Tube Pump) at W0, W2 and W5. These measurements were done between 0800 and 0900 h in three locations of the two rooms (central and at the two extremities).

For the second experimental replicate, total airborne dust (µg/m3) was continuously sampled during 24h at W2 and W4. These measures were performed at 30 cm above the floor using a photometric method (Thermo Scientific™ DataRAM™ pDR-1500). Within room, total dust values, gas concentrations, temperature and RH recorded during Period 1 were pooled and presented as median values.

**Results**

Environmental assessment

During Period 1, the median values for temperature, RH, CO2, ammonia, and total dust in the poor and good conditions were, respectively: 20.7°C (range: 10.8°C - 26.4°C; n=1954) and 21°C (range: 12.3°C - 26°C; n=1954); 74.5 % (range: 39.9 % - 92.7 %, n=1954) and 54.5 % (range: 29.7 % - 84.4 %; n=1954); 1060 ppm (range: 224 ppm - 2277 ppm, n=1906) and 1186 ppm (range: 354 ppm - 2313 ppm, n=1954); 7.25 ppm (n=22) with 6 measures below the detectable limit and 3.5 ppm (n=14) with 22 measures below the detectable limit (5 ppm) and; 20.5 µg/m3 (range: 18.9 µg/m3 - 22.6 µg/m3, n=9555) and 47.1 µg/m3 (range: 7.2 µg/m3 – 174.0 µg/m3, n=9555).