Pen hygiene, pig behaviour and ammonia emission in Swedish fattening pig pens during warm thermal conditions

PRELIMINARY CONCLUSIONS AND FURTHER RESEARCH

- Water sprinkling change the lying and excretory behaviour, decrease fouling of the pens and decrease ammonia emission
- Slit nozzles give a better distribution of soaking pattern on the slatted area than sprinklers
- Further research on optimal sprinkling times and intervals at different pig ages, is needed
- Further research on increased air velocity will be performed
- Further research on steering of sprinkling by ventilation system and image analysis is on-going

Background

Pens for fattening pigs in Sweden have large solid and limited slatted area. This enables usage of straw as rooting material and ensures an optimal lying area for the pigs.

However, under warm thermal conditions problems with fouled pens and high ammonia emission often occurs.

Objective

Test technical solutions (sprinkling on the slatted floor and/or increased air velocity on the lying area) to improve pen hygiene and decrease ammonia emission

Material and methods

Commercial pig farm:
10 identical rooms with 16 pens à 10 pigs (160 pigs), 1.0 m² per pig, 30% slatted area
Studies between two rooms in parallel (control versus treatment)

Measurements:

Every week
- Pen hygiene by ocular scoring (0=clean; 3=fouled)
During 3-5 measurement periods (M1-M5) per batch
- Video recordings of pig behaviour processed by image analysis
- NH₃- and CO₂-concentration with photo-acoustic multi-gas analyser
- Ventilation rate with indirect tracer gas method
Per batch
- Performance of the pigs

Preliminary results

<table>
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<th>Sprinkling</th>
<th>Control</th>
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<td>Pen hygiene</td>
<td>Behavior</td>
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<tr>
<td>M1</td>
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L1=Lying area 1, L2=Lying area 2, L3=Lying area 3, S=Slatted area