Does housing influence maternal behaviour in sows?

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66\textsuperscript{th} Annual EAAP Meeting Warsaw, Poland, August 31\textsuperscript{st} to September 4\textsuperscript{th}, 2015
Session 40, Abstract number 20412
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Introduction

Maternal behaviour has not changed in the progress of domestication (Damm et al. 2002; Spinka et al. 2000; Stolba and Wood-Gush 1989)

Behavioural patterns of sows are still the same (Jensen 1986)

Maternal behaviour
• Care
• Responsiveness to signals
• Protection
• Low piglet mortality

Does housing influence maternal behaviour in sows?

Group-housing vs. Single-housing
Material & Methods

- 47 multiparous sows (4 batches)
- Mixed breeds (PIC / Porkuss)
- 13 piglets per sow
Reproductive traits

Statistical analysis

- Reproductive traits
  - Birth and weaning weight of piglets
  - Piglets born alive
  - Stillborn piglets
  - Weaned piglets
  - Piglet losses

- MIXED procedure in SAS®

- Fixed effects
  - Housing (group-housing, single-housing)
  - Batch (1 - 4)
  - Parity class (1 - 3)

- Random effect birth and weaning weight: Sow (group and batch)

- Covariable weaning weight: Birth weight / Lactation length
## Reproductive traits
### Results & Discussion

<table>
<thead>
<tr>
<th>Trait</th>
<th>Group-housing (GH) (n = 23)</th>
<th>Single-housing (SH) (n = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piglets born alive / sow</td>
<td>16.6</td>
<td>15.7</td>
</tr>
<tr>
<td>Stillborn piglets / sow</td>
<td>1.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Birth weight (kg) / piglet</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Total piglet losses / sow</td>
<td>1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Piglets weaned / sow</td>
<td>12.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Weaning weight (kg) / piglet</td>
<td>7.6</td>
<td>7.8</td>
</tr>
</tbody>
</table>

**Total piglet losses:** 10.7 % GH < 18.3 % SH (p < 0.05)

**Crushed piglets:** 34.1 % GH < 49.3 % SH (p < 0.05)

### Discussion

- Previous research found no significant differences (Bohnenkamp et al. 2013)
- Stockpersons became more familiar with **GH system** (Li et al. 2010)
- **GH sows** had the opportunity to leave their home pens
- **GH conditions** met better natural behavioural patterns (Jensen 1986)
- Week 2 and 4 post partum

- Behavioural tests
  1) Piglets scream test in home pen
  2) Reunion test in home pen
  3) Piglet scream test in test arena
  4) Separation test in test arena
Behavioural testing
Statistical analysis

- **Behavioural variables**
  - Active / inactive
  - Exploring nest / floor / walls
  - Contact
  - Nursing
  - Vocalisation

- **GLIMMIX procedure in SAS®** (Poisson distribution)

- **Fixed effects**
  - Housing (group-housing, single-housing)
  - Batch (1 - 4)
  - Parity class (1 - 3)
  - Test week (2, 4)

- **Random effect**: Sow (group and batch)
Piglet scream test in home pen

- **GH sows** showed more medium to strong reactions \( (p < 0.05) \)
- **GH sows** finished the test in a standing posture more frequently \( (p < 0.05) \)

Reunion test in home pen

- **GH sows** tended to vocalize more frequently \( (p < 0.10) \)
Discussion - Results in home pen

• **GH sows** reacted stronger and stood up more frequently
  (Arey and Sancha 1996)

• Responsiveness of sows is important for piglet survival
  (Hutson et al. 1991; Weary et al. 1996)

• Constant and strong communication between **GH sows** and piglets
  (Pitts et al 2002; Arey and Sancha 1996)

➢ **GH sows were high responsive and had fewer piglet losses!**
Piglet scream test in test arena

- **SH sows** were more frequently near her piglet (*p* < 0.05)
- **SH sows** vocalised more (*p* < 0.05)

Separation test in test arena

- **SH sows** walked more (*p* < 0.05)
- **GH sows** explored the test arena more (*p* < 0.05)
Discussion – Results in test arena

- **SH sows** were more strained in test arena
  - Not used to leave the home pens and move freely
- **SH sows** were more stressed by separation
  - Always surrounded by their piglets
Conclusion

- Housing has an effect on maternal behaviour
- GH sows had fewer total piglet losses
- Good maternal behaviour is needed in home pen

Relevant for farm practice!

Thank you for your attention!