Nutritional characteristics of the diets in organic pig production

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Background

Performance of pig production is relatively low in organic compared to conventional systems (INRA report)

- Growth rate (Sundrum et al 2000, Hansen et al 2006)
- Feed conversion (Maupertuis et al 2007, 2010)
- Littersize at weaning (review: Prunier et al 2013)

Negative impact on:
- Economic return
- Environmental balance
Background

Low performance due to:

- Nutritional imbalance especially for essential amino acids (Sundrum et al 2000)

Aims

- Improve knowledge of the feeding strategies on commercial organic pig farms across Europe, especially the diets composition
- Improve the situation in organic farms when not satisfactory
Material and methods

- Data collection in 75 commercial farms in 2012 within the Propig project
- Interview with farm managers on feed practices: number and composition of the diets, quantity of feed… (72 farms)
- Calculation of the nutrient content from the feed composition of each diet using Evapig® (48-53 diets according to the age of pigs)
# Characteristics of the farm sample for feed evaluation

<table>
<thead>
<tr>
<th></th>
<th>Birth to Finish</th>
<th>Finishing</th>
<th>Birth + Weaning</th>
<th>Birth</th>
<th>Weaning + Finishing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n farms</strong></td>
<td>52</td>
<td>12</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td><strong>% farms</strong></td>
<td>72.2</td>
<td>16.7</td>
<td>8.3</td>
<td>1.4</td>
<td>1.4</td>
<td>100</td>
</tr>
</tbody>
</table>

Last 3 categories grouped in one: “Other”
Number of farms per category & country

<table>
<thead>
<tr>
<th>Type of farms</th>
<th>BtF</th>
<th>F</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Germany</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Denmark</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Italy</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>UK</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>France</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Essentially northern/central Europe

Prunier et al, EAAP 2014
Main results

Number of diets in Birth-to-Finish farms (52 farms)

Few farms have a unique diet for all stages (8%)
A majority of farms have > 3 diets and nearly half 5 or 6 diets
Main results

Number of diets for sows (59 farms)

A majority of farms have 2 diets for Lactating and Gestating sows (59%)

Prunier et al, EAAP 2014
Main results

Number of diets for fatteners (65 farms)

F farms differentiate better diets for fatteners
Overall, 49% of farms have 2 or 3 diets for fatteners
Main results (preliminary)

**Crude fiber, %**

- Fat1: 4.0
- Fat2: 4.0
- G: 5.0
- L: 4.0
- W1: 3.0
- W2: 3.0

**DE, MJ/kg**

- Fat1: 12.0
- Fat2: 12.0
- G: 11.0
- L: 11.0
- W1: 10.0
- W2: 10.0

**Crude proteins, %**

- Fat1: 15.0
- Fat2: 15.0
- G: 14.0
- L: 14.0
- W1: 13.0
- W2: 13.0

**Digestible lysine, %**

- Fat1: 0.6
- Fat2: 0.6
- G: 0.7
- L: 0.7
- W1: 0.8
- W2: 0.8

*W = Weaners*

Prunier et al, EAAP 2014
Main results (preliminary)

Diet classification according to recommendations for conventional growing pigs (IFIP, 2013). For each nutrient, the diet was considered correct if it contained 90 to 110% of the recommended value, otherwise deficit (<) or excess (>

- Crude Proteins: “excess” probably to “secure” intake in essential AAs
- Digestible Energy: OK
- Digestible lysine: a third of farms with deficit

Prunier et al, EAAP 2014
Main results (preliminary)

Diet classification with recommendations for Fat 2

- Similar conclusion as for fat 1
The work will continue

- Classify all diets with more characteristics
- Relate results to animal’s performance, animal based indicators (e.g. Body Condition Score) and environmental balance
- Relate results to feed analysis when available
Main conclusions

Situation should be improved, main solutions are:

- Specific diets for the various stages
- Formulate better the diets according to the animals’ needs
- Use the experience of existing organic farms that show that fulfilling animals needs is possible under organic constraints

BUT problems exist:

- Place and equipment for storing several types of diets are often lacking
- Low availability and high prices of organic ingredients rich in essential amino acids (lysine, tryptophan…)
Thanks for your attention!