Feeding replacement gilts as finishers or less?

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Funded by Swedish Farmers’ Foundation for Agricultural Research
Some 50% of sows replaced yearly

- Need to improve longevity
- Feeding during rearing a useful tool?
Current recommendation Sweden

- Feed 10% less than finishers, use a sow diet
- Service at 2nd – 3rd oestrus
- Age 230 days, weight 140 kg, backfat 12-13 mm

Hypothesis

- Gilts fed according to recommendations will reach the goal (weight, backfat and age), and have better legs and early reproduction than gilts fed more energy and/or lysine
Material and methods

- 2 * 2 factorial = 4 treatments
- Factors
  - Energy allowance (High, finisher allowance or Low, 90% of High)
  - Feed lysine level (High, 0.83 or Low, 0.57 g sid lysine/MJ NE)
- In total 80 L*Y gilts from 30 kg (age 9-10 weeks) to service
- Housed 10 gilts/pen, split-litter and “individual” feeding
- 4 batches (2 born June 2012, 2 born Dec/Jan 2012/13)
- Gilts served on 2nd oestrus
Gilts housed in pens on deep straw bedding
Individual feeding stalls, management by bucket. Gilts had to be trained ...
Material and methods

- **Recordings (all)**
  - Feed consumption
  - Live weight
  - Ultrasonic backfat
  - Leg conformation scores
  - Age at 1st oestrus

- **In 40 gilts slaughtered >30 d pregnant:**
  - Numbers ova shed (corpora lutea)
  - Numbers foetuses
  - Osteochondrosis scores of elbow joints
## Diets

<table>
<thead>
<tr>
<th></th>
<th>High lysine (finisher diet)</th>
<th>Low lysine (sow diet)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calculated, per kg diet</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude protein, g</td>
<td>138 (analysed 143)</td>
<td>130 (analysed 134)</td>
</tr>
<tr>
<td>Crude fat, g</td>
<td>2.6</td>
<td>2.4</td>
</tr>
<tr>
<td>SID lysine, g</td>
<td>7.7 (analysed total lys 9.4)</td>
<td>5.4 (analysed total lys 6.6)</td>
</tr>
<tr>
<td>Ca, g</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Available P, g</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>NE, MJ</td>
<td>9.3</td>
<td>9.4</td>
</tr>
</tbody>
</table>
Energy and lysine allowances

Energy, MJ NE daily

Lysine, g sid daily

Low E    High E

Low lys low E   Low lys high E   High lys high E   High lys low E
Results: Live weights

Live weight, kg

Age, weeks

Low lys low E
Low lys high E
High lys high E
High lys low E
Results: Ultrasonic backfat

Ultrasonic backfat, mm

- Low lys low E
- Low lys high E
- High lys high E
- High lys low E

16 wks | 22 wks | at service
Results: Age at 1st oestrus

Accumulated number of gilts in oestrus

Age, days

Batch 1
Batch 2
Batch 3
Batch 4

Age, days

Low lys low E
Low lys high E
High lys high E
High lys low E
## Results: Reproduction

<table>
<thead>
<tr>
<th></th>
<th>Low lys low E</th>
<th>Low lys high E</th>
<th>High lys high E</th>
<th>High lys low E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 1st oestrus</td>
<td>177</td>
<td>176</td>
<td>178</td>
<td>175</td>
</tr>
<tr>
<td># not showing oestrus</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td># not served</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td># repeat</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Age 1st service</td>
<td>198</td>
<td>198</td>
<td>200</td>
<td>196</td>
</tr>
</tbody>
</table>
Results: Feed consumption, 30 kg - service

![Bar chart showing feed consumption for different lysine and energy levels.]

- Low lys low E: 307 kg
- Low lys high E: 320 kg
- High lys high E: 336 kg
- High lys low E: 293 kg
Gilts slaughtered > 30 d pregnant

- No difference in # corpora lutea, # foetuses
- Ostechondrosis scores higher in low lysine gilts
Fate of gilts after the experiment

<table>
<thead>
<tr>
<th></th>
<th>Low lys low E</th>
<th>Low lys high E</th>
<th>High lys high E</th>
<th>High lys low E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Still alive (March -14)</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Culled: Not pregnant</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Culled: Thin, shoulder sores</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Culled: Legs</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Summary

• Low lysine but not low energy decreased growth during rearing
• Low lysine tended to increase backfat
• Low lysine increased osteochondrosis scores
• Early reproduction in gilts fed high lysine and high energy?

• Goals (140 kg live weight, 12-13 mm backfat, age 230 days) were met for weight (~140 kg), but gilts were thinner (~10 mm) and younger (200 d) when served at 2nd oestrus

Thank you for your attention!
Scores for osteochondrosis

Score 0
All smooth

Score 1
Surface smooth, bone-cartilage slightly uneven

Score 2
Surface minor, bone-cartilage moderately uneven

Score 3
Surface moderate, bone-cartilage distinctly uneven

Score 4
Surface and bone-cartilage distinctly uneven. Surface torn, bone visible.

Score 5
Crack. Bone-cartilage very uneven (grave and wide).