Piglet nutrition optimized for life-time health and performance: *post-weaning*

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feeding the future
Goal: homogeneous batches of 30 kg pigs at 10 weeks

Objective: a robust healthy piglet with a high feed intake and growth potential

DM intake

Lactation  Weaning  Recovery  Grow-out  10 weeks

1. Period around weaning
2. Recovery phase
3. Grow-out

Milk/Yoghurt Creepfeed  Weaner diets  Link diets / Concentrates

Nutreco
Low intakes result in severe health problems or death

- Low feed intakes make the piglets very sensitive for infections, such as post weaning diarrhoea (PWD) by E. coli
- Intakes above maintenance protect the animal

![Graph showing feed intake vs. survivors and E. coli infected non-survivors.](Nutreco R&D, 2012)

**E. Coli infection model (COMO) at SRC**
Early intake profiles after weaning show large variation
The earlier we wean in the day, the more chance the piglets have to eat.
If the first meal takes a long time, the time interval until the next meal is even longer.
Creep feed helps to overcome weaner dip

% of animals that show no feed intake at a certain moment after weaning

Day 0–34 post-weaning: 56 g/day extra growth

After Bruininx et al., 2002
Level and variation in creep feed intake and deviation depend on the type of creep feed.

Creep feed disappearance 5 days before weaning

$g$/piglet

Creep B  Creep C  Standard control

$p < 0.08$

Creep feed tests at SRC
Early feeding depends on creep / weaner feed

% of animals that show no feed intake at a certain moment after weaning

- Creep B Weaner B
- Creep C Weaner C
- Standard Creep and Weaner

"Dark Period"

Day 0–14 post-weaning:
30 g/d extra feed intake
30 g/day extra growth
6.5% less diarrhoea

Nutreco R&D, 2013
Weaner diet is important factor for development of PWD

Average diarrhoea score

Day post weaning

Average score

E. Coli infection tests at SRC

Simple standard diet

Complex Milkiwean diet

Nutreco R&D, 2012
Sensitivity of animal to E. coli binding appears to be extremely important

Average diarrhoea score

Day post weaning

Average score

Sensitivity to E. coli binding
Less sensitive
Resistant

Nutreco R&D, 2012
Conclusions weaner part

• Type of creep and weaner diet essential for:
  • Feed intake behaviour
  • Performance
  • Faeces consistency and diarrhoea
  • Performance and survival after E. coli infection

• Response depends on sensitivity of animals to E. coli binding
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1. Period around weaning
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3. Grow-out
This second dip is related with diarrhoea.
Relation feed intake behaviour, gut health and second dip

Feeding
Ad libitum

8:00-9:30 h. feed
Peak feed intake

Small portions
Restricted

Nutreco R&D, 2011
Overgrowth of Microbiota at day 7 post-weaning

**E. coli**

- Ad libitum
- Peak feed intake
- Restricted

**Lactobacilli**

- Ad libitum
- Peak feed intake
- Restricted

**Yeast**

- Ad libitum
- Peak feed intake
- Restricted

Lumps of feed in the stomach

Nutreco R&D, 2011
E. coli challenge induces a dip in feed intake
Spray Dried Porcine Plasma (SDPP) helps to overcome the second dip.
Conclusions recovery phase

• Second dip in feed intake:
  • Due to “overeating”
  • Overgrowth of microflora in the foregut
  • E. coli plays an important role
  • SDPP can overcome this dip

• Amino acids play a role under E. coli disease pressure
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Differences in growth mainly due to feed intake

**Daily feed intake**

- Genotype 1: 520 g/day
- Genotype 2: 460 g/day
- Genotype 3: 480 g/day
- Genotype 4: 500 g/day
- Genotype 5: 540 g/day

**Feed conversion rate (FCR)**

- Genotype 1: 1.7
- Genotype 2: 1.6
- Genotype 3: 1.5
- Genotype 4: 1.4
- Genotype 5: 1.3

**Growth g/day**

- Genotype 1: 65 g/day
- Genotype 2: 42 g/day
- Genotype 3: 44 g/day
- Genotype 4: 46 g/day
- Genotype 5: 48 g/day

**Growth g/day**

- Genotype 1: 70 g/day
- Genotype 2: 42 g/day
- Genotype 3: 44 g/day
- Genotype 4: 46 g/day
- Genotype 5: 48 g/day

**Nutreco R&D, 2013**
Higher NE and Presan improve performance in grow-out.

Growth (day 7-40)

Body weight day 40

Nutreco R&D, 2011
Electrolyte balance (dEB) induced a change in bodyweight of 2 kg

\[ \text{dEB} = \text{Na}^+ + \text{K}^+ - \text{Cl}^- \]

Body weight at day 35 post weaning

![Bar chart showing body weight at day 35 post weaning for different dEB values: 200 kg, 250 kg, and 300 kg, with significance indicated by asterisks (*)](chart.png)
Field tests confirm positive results

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Boosting Grow Out</th>
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<tbody>
<tr>
<td>Start weight (d28)</td>
<td>7.9</td>
<td>8</td>
</tr>
<tr>
<td>Final weight (d60)</td>
<td>20.5</td>
<td>21.5</td>
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<td>Feed intake (g/piglet/day)</td>
<td>548</td>
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<tr>
<td>Growth (g/piglet/day)</td>
<td>403</td>
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<tr>
<td>Feed conversion ratio</td>
<td>1.36</td>
<td>1.37</td>
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</tbody>
</table>

At day 69, body weight was 2.3 kg higher in the Boosting Grow Out group.
Take home messages

• Optimizing feed intake behaviour after weaning and 2nd dip has a big impact on gut health and performance

• Nutritional solutions to boost the grow out

• New SRC piglet facilities offer great opportunities

• R&D input in Milkiwean ABC

Thank you for your attention!