Danish Pig Production

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Pig Research Centre, Danish Agriculture & Food Council
Agenda

Pig Research Centre
• Background
• Animal welfare

Quality systems
• Danish Product Standard
• Global Red Meat Standard

Food Safety programmes
• Antibiotics and residues
• Salmonella Surveillance Programme

Summary
Benefits of the co-operative system

- Commercial interest of producers “beyond the farm gate”
- Trust/stable relationship between producer and abattoir
- Joint Research Programmes
- Excellent communication, information flow
- Easy assimilation of quality initiatives

INTEGRATED PRODUCTION SYSTEM
# Levy fee

**Pig slaughter levy:**

<table>
<thead>
<tr>
<th>Weight Range</th>
<th>Levy Fee (DKK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs ≤ 110 kg carcase weight</td>
<td>5.60</td>
</tr>
<tr>
<td>Pigs &gt; 110 kg carcase weight</td>
<td>11.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Export of pigs:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Piglets ≤ 15 kg</td>
<td>0.70</td>
</tr>
<tr>
<td>Piglets &gt; 15 kg ≤ 50 kg</td>
<td>1.50</td>
</tr>
</tbody>
</table>
Danish Pig Research Centre

• Financed by Danish pig farmers

• Responsible for research and development programmes and knowledge transfer to the Danish pig industry

• Supporting the development of a responsible and economically sustainable pig industry with highest possible level of welfare, traceability and a minimum impact on the environment

• Budget: approx. 20 Mill. US$
Danish Pig Research Centre

Trials – 200 commercial farms

Advisory service

Knowledge transfer
## Efficiency - sows

<table>
<thead>
<tr>
<th></th>
<th>Top 25%</th>
<th>Av. 2012</th>
<th>Av. 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaned pigs per year per sow*</td>
<td>32.3</td>
<td>29.6</td>
<td>28.8</td>
</tr>
<tr>
<td>Live-born pigs per litter</td>
<td>15.8</td>
<td>15.1</td>
<td>14.8</td>
</tr>
<tr>
<td>Weaned pigs per litter</td>
<td>14.0</td>
<td>13.1</td>
<td>12.7</td>
</tr>
<tr>
<td>Weight at weaning (kg)</td>
<td>6.8</td>
<td>7.0</td>
<td>7.1</td>
</tr>
<tr>
<td>Mortality during lactating period (%)</td>
<td>11.6</td>
<td>13.6</td>
<td>13.9</td>
</tr>
<tr>
<td>Farrowing rate (%)</td>
<td>90.1</td>
<td>87.0</td>
<td>86.7</td>
</tr>
</tbody>
</table>
# Efficiency - weaner (7 - 30 kg)

<table>
<thead>
<tr>
<th></th>
<th>Av.</th>
<th>Top 25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed conversion ratio, kg per kg gain</td>
<td>1.82</td>
<td>1.67</td>
</tr>
<tr>
<td>Post-weaning mortality, %</td>
<td>2.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Average daily gain 7- 30 kg, g per day</td>
<td>443</td>
<td>477</td>
</tr>
</tbody>
</table>
# Efficiency
- finisher (30 – 106 kg)

<table>
<thead>
<tr>
<th></th>
<th>Avg</th>
<th>TOP 25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily gain, g</td>
<td>906</td>
<td>973</td>
</tr>
<tr>
<td>Feed conversion ratio, kg per kg weight gained</td>
<td>2.67</td>
<td>2.50</td>
</tr>
<tr>
<td>Average slaughter weight hot, kg</td>
<td>82.2</td>
<td>81.8</td>
</tr>
<tr>
<td>Average live weight, kg</td>
<td>106.8</td>
<td>107.8</td>
</tr>
<tr>
<td>Average lean meat, %</td>
<td>60.4</td>
<td>60.4</td>
</tr>
<tr>
<td>Dead and culled, %</td>
<td>3.4</td>
<td>2.6</td>
</tr>
</tbody>
</table>
System which complies with EU 2013 legislation

4 – 5 weeks in farrowing unit

4 week service period

Pregnancy period

4 -5 weeks in traditional farrowing crates

4 weeks in sow stalls

Loose-housed sows during pregnancy period
Gestation unit – Group housed Pregnant sows
Farrowing pen - traditional
Loose-housed lactating sows

• Better welfare for sows
• Increased milk uptake for piglets
• More uniform piglets at weaning
• Motivation for the producer
• Improved image
Challenges

- Piglet mortality
- Size of unit
- Hygiene
- Safety of the stockman
- Training of the stockman
- Economics
- Environment
- Large herds
Longer term goals for loose housing of sows

• Danish objectives
  • 10 per cent loose-housed lactating sows by 2020

• Loose-housed sows in all units in new systems built after 2021
Piglet and finisher units
Rooting and manipulable materials
Hospital Pens

Special rules for design

- Cover & heating
  - piglets & finishers
- Cooling
- Straw or rubber mat
Danish Quality System
The Concept

- EU Legislation
- National Legislation
- Voluntary Industry agreements
- Special Contract Production

Pig Research Centre
DANISH Product Standard

Scope
• Production of Danish pigs
• Since 2007
• Approx. 3,000 audits per year

Aim
• Assurance and documentation of that all Danish pig farms comply with Danish legislation and industry agreements

Accreditation
• The scheme is accredited to EN45011
• Audit – minimum every third year
• Third part
• In addition, 5% of producers receive ‘unannounced’ visits from Danish authorities (DVFA) to audit compliance with welfare legislation.
Self-audit
Key areas

• 160 requirements in the area of
  • Traceability
  • Feed
  • Herd health and use of medicine
  • Animal welfare
  • Housing and equipment
  • Management
  • Delivery of pigs

Violations of requirements in Danish Product Standard may result in an exclusion from the programme
Food Safety Programmes

- Surveillance of residues in animal products / use of antibiotics in livestock production
- The Salmonella Surveillance Programme
- Key: Cooperation and control throughout the production chain
Use of antibiotics
Danish livestock

G/pig

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AGP</td>
<td>7,0</td>
<td>7,6</td>
<td>5,7</td>
<td>3,5</td>
<td>2,7</td>
<td>3,1</td>
<td>3,0</td>
<td>3,3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigs estimated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

kg active material

Therapeutic
AGP
Total
Pigs
Pigs estimated

25
Use of antibiotics per kg meat
International comparison

Source:
Sales of veterinary antimicrobial agents in 19 EU/EEA countries in 2010
Second ESVAC report, 15 October 2012
Total production
International comparison

Source:
Sales of veterinary antimicrobial agents in 19 EU/EEA countries in 2010
Second ESVAC report, 15 October 2012
Salmonella Surveillance Programme

• Mandatory Salmonella control programme since 1993
• Control at all levels of the production chain
• Monthly surveillance for Salmonella antibodies in pig herds
• Based on results from meat juice samples, herds are assigned to three different levels every month:

  Level 1  97.2%  No or few seropositive samples
  Level 2  2.1%  Moderate proportion of seropositive samples
  Level 3  0.7%  High proportion of seropositive samples
Penalties paid by farmers according to below Salmonella levels:

<table>
<thead>
<tr>
<th>Salmonella Level</th>
<th>% of carcase value Reduced payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3 (more than 6 months)</td>
<td>6</td>
</tr>
<tr>
<td>3 (more than 12 months)</td>
<td>8</td>
</tr>
</tbody>
</table>
## Salmonella in Danish pigmeat

Approx. 16,000 samples per year

<table>
<thead>
<tr>
<th>Year</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>% pos.</td>
<td>1.2</td>
<td>0.9</td>
<td>0.7</td>
<td>1.3</td>
<td>1.4</td>
<td>1.4</td>
<td>1.3</td>
<td>1.2</td>
<td>1.0</td>
<td>1.4</td>
<td>1.5</td>
<td>1.2</td>
<td>1.2</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Reduced environmental impact

Must take place through:

• Increased feed efficiency through feeding, breeding, etc.

• Changed housing systems (partly slatted floor, new slurry systems, ventilation, etc.)

• Injection during spreading manure

• Biogas and open burning of fibre fraction

• Air cleaning systems

• Acidification (slurry)
“Today we can produce two pigs with same environmental impact as we produced a single pig in 1985.”
Summary

- ‘Farm to fork’ control
- Efficient production
- Efficient Quality System
- High level of food safety
- Very low level of Salmonella
- Environmental improvement