Slaughter related factors and season and their effect on boar taint in Belgian pigs

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Introduction

• 2018: ban on castration ➔ problem: boar taint
• Previous research (CASPRAK): variation between farms

1. Variation within farms?
2. Relation with risk factors?
# Method

<table>
<thead>
<tr>
<th>Level</th>
<th>Constraint</th>
<th>N</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm</td>
<td>-</td>
<td>34</td>
<td>-</td>
</tr>
<tr>
<td>Slaughter batch</td>
<td>Min. 2/farm</td>
<td>78</td>
<td>Time of transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Time in lairage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Season</td>
</tr>
<tr>
<td>Boar</td>
<td>Min. 50/slaughter batch</td>
<td>9167</td>
<td>Skin lesions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carcass weight</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lean meat %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boar taint score</td>
</tr>
</tbody>
</table>
Boar taint detection method

- Hot iron method
- 8-point scale:
  - 0 – 1 – 1.5 – 2 – 2.5 – 3 – 3.5 – 4
- Minimum of 2 expert scores per sample
- Median of expert scores as final score
- Cutoff 1.5 for final score ➔ positive for boar taint
Statistical analysis

- Univariate linear mixed binomial models for parameters
- 0/1 = negative/positive for boar taint
- Farm, slaughterhouse and slaughter batch as random factors

\[
\log \left( \frac{p}{1 - p} \right) = \alpha + \beta \cdot X + \epsilon \quad p = P(\text{boar taint})
\]

Odds ratio = \( P(\text{boar taint}) / P(\text{no taint}) \)
## Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin lesions</td>
<td>0.017</td>
</tr>
<tr>
<td>Lean meat %</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Season</td>
<td>n.s.</td>
</tr>
<tr>
<td>Carcass weight</td>
<td>n.s.</td>
</tr>
<tr>
<td>Time of transport</td>
<td>n.s</td>
</tr>
<tr>
<td>Time in lairage</td>
<td>0.051</td>
</tr>
</tbody>
</table>
$P(\text{Boar taint})$
$P(\text{Boar taint})$

The diagram shows a distribution of lean meat percentage (%) with a decreasing probability of boar taint as the lean meat percentage increases. The histogram indicates a higher frequency of lean meat percentages around 65%, while the smooth curve represents the probability $P(\text{Boar taint})$ as a function of lean meat percentage.
The graph shows the frequency distribution of time in lairage (min) with a linear trend line indicating the probability of boar taint ($P(\text{Boar taint})$) over time. The inset histogram illustrates the frequency distribution of time intervals.
Discussion

• Skin lesions linked with SKA and IND concentrations (gut function)$^1$
• Lean meat percentage has been linked with boar taint compounds$^2$
• Pre-unloading time and duration of transport have been linked with AND, SKA and IND$^1$

1 Wesoly et. al. 2015
2 Mörlein et. al. 2015
Conclusions

• Factors associated with slaughter moment at least partly related to boar taint prevalence
• (Undergoing) aggression *(more skin lesions)* during transport or in lairage is linked with *higher* chance of a tainted carcass
• **Leaner carcasses** have a *lower* chance of being tainted
• **Longer in lairage** linked with *higher* chance for boar taint
Questions?

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