Prevalence of stomach ulcers in culled sows is representative of the herd level

J. Vinther and T.S. Bruun
Danish Pig Research Centre, Danish Agriculture & Food Council
Background

• Stomach ulcers may be a welfare issue in sows
  – Severe ulcers are shown to reduce productivity in finishers

• Stomach health is monitored by examination of stomachs
  – Are culled sows representative of the herd?

• Many herds closed in 2012-2013 due to EU legislation
  – A unique chance to examine large numbers of sows
Objective and hypotheses

Objective
• To investigate whether prevalence of stomach ulcers in culled sows is representative of the herd level

Hypothesis
• Sows culled because of herd closing (CC) have a lower frequency/severity of stomach ulcers than sows culled for a reason (OC)
• YOUNG (1st to 3rd parity) sows have fewer stomach ulcers than OLD sows
Materials and Methods

• **Experimental design**
  – 8 herds × 200 sows
  – Assumption that 20% of the sows are OC
  – 35-40 OC per herd were needed

• **Selection of herds**
  – Herds closing
  – All sows should be culled within 25-30 weeks
  – Different types of feed
Materials and Methods

1. Weaning date
2. Slaughter date
3. Cause of culling

1. Removal of stomachs
2. Unique ID tagging

1. Visual and physical inspection
2. Calculating index
Materials and Methods

• 4 evaluations are combined to an index
  – Index 0: No pathological changes in Pars Esophagea
  – Index 1-3: Degree of parakeratosis of PE
  – Index 4-5: Degree of erosion of PE
  – Index 6-8: Degree of ulcers and/or scars in PE
  – Index 9-10: Stenosis of the esophageal lumen

Index 0  Index 1-3  Index 4-5  Index 6-8  Index 9-10
Materials and Methods

• **Comparisons**
  – Index 0-5 versus 6-10
  – Index 0-7 versus 8-10

• **Logistic regression using PROC GLIMMIX**
  – The cause of culling (OC or CC) was included as a fixed effect
  – The effect of age (YOUNG or OLD) was included as a fixed effect
  – Herd was included as a random effect
Distribution of stomach health

2,302 stomachs examined

Percentage of culled sows (%)

Total index of stomach ulcers
Large variations between herds

Percentage of sows with index 6-10 (%)

- Herd 1: CC N=220, OC N=238
- Herd 2: CC N=211, OC N=207
- Herd 3: CC N=392, OC N=362
- Herd 4: CC N=184, OC N=194
- Herd 8: CC N=241, OC N=241
No effect of reason for culling

Percentage of culled sows (%)

Index 6-10

Index 8-10

CC

OC

77<sub>NS</sub>

81<sub>NS</sub>

25<sub>NS</sub>

29<sub>NS</sub>
Age is a risk factor

Percentage of culled sows (%)

Index 6-10

73\textsuperscript{a}

(\textit{P}<0.001)

84\textsuperscript{b}

Index 8-10

23\textsuperscript{c}

(\textit{P}<0.01)

31\textsuperscript{d}

\textbf{YOUNG}

\textbf{OLD}
Discussion

• Higher prevalence of stomach ulcers in 7 out of 8 herds than previously reported (Nielsen et al. 2013)

• All herds used documented ”stomach friendly” feed (Wondra et al. 2005, Madsen & Sørensen 2006, Sørensen 2009a, 2009b)

• Almost all sows were culled just after weaning
  – Is prevalence of stomach ulcers higher at weaning?!

• This study identifies age as a risk factor
Conclusion

• This study indicates that stomach health of culled sows (OC) is representative of the herd level

• YOUNG sows have a lower incidence of stomach ulcers than OLD sows

• Minimum 20 stomachs from sows to describe stomach health at herd level
  – Sensitivity and specificity around 0.90
Questions?

Contact: tch@lf.dk