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Association between pig leg health and lean meat growth in commercial organic herds

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Different production environments - the same genetic material



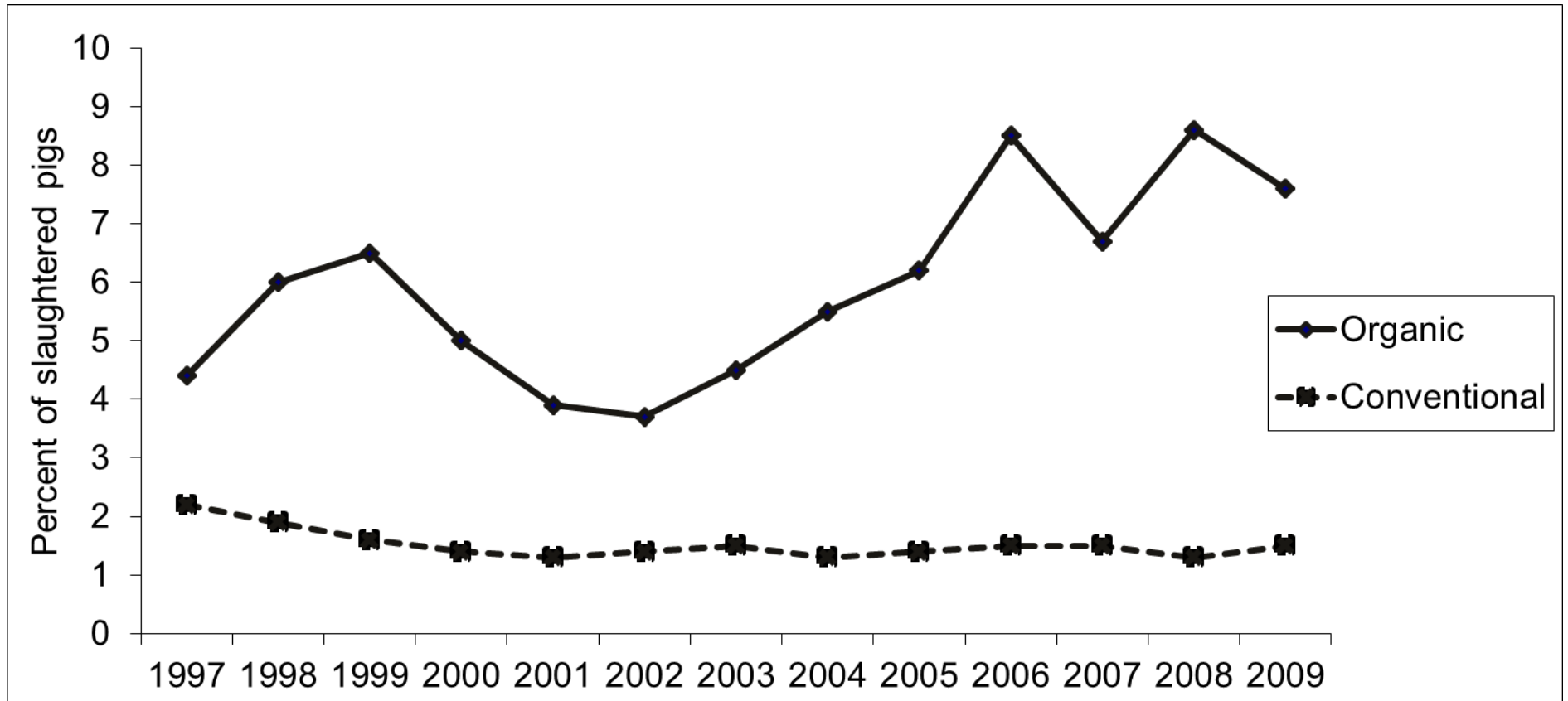
Conventional



Organic

How does 'conventional' breeds suit organic production environments?

The proportion of organic pigs with leg joint remarks (arthritis) at slaughter is high



Objectives

Assess associations between lean meat growth in pigs raised at commercial organic farms and

- Movement (live animals)
- Lameness (live animals)
- Swollen joints (live animals)
- Leg joint remarks at slaughter



Photo: Christina Eliasson

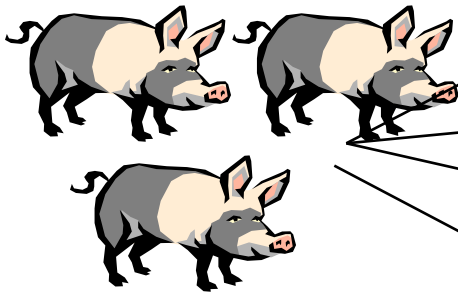


19/05/2012
Photo: Christina Eliasson

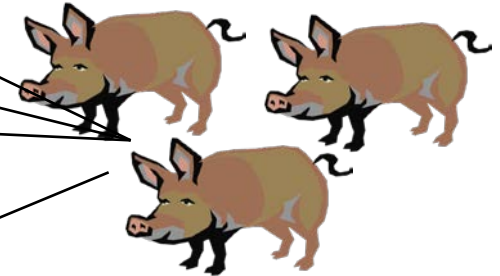
Field study

4 commercial organic herds

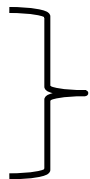
AI-Hampshire boars



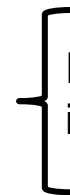
AI-Duroc boars



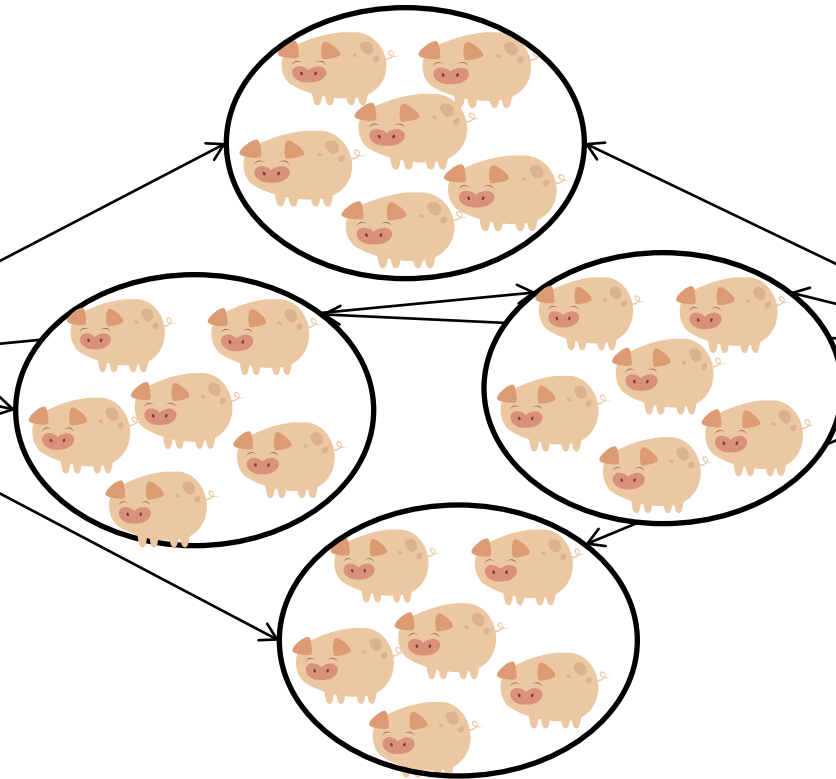
Every second sow
inseminated with H



Every second sow
inseminated with D



Aim: 1000 slaughtered pigs with
known sire (500 per breed)



Field study

Jan 2012 to March 2013

Insemination

Farrowing

Weaning

Slaughter



Electronic ear tags

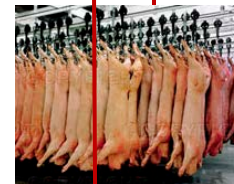


90 days

170 days

Locomotion and exterior examination

Slaughter weight and slaughter remarks

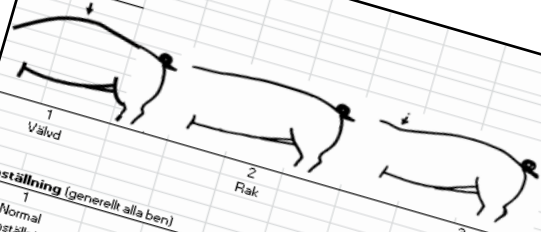


Locomotion and exterior examination

- Back
 - Leg conformation
 - **Movement**
 - **Lameness**
 - **Swollen leg joints**
- 909 pigs at examination 1 (90 (± 19.5) days of age)
 - 1012 pigs at examination 2 (170 (± 17.4) days of age)

Exterior/Rörelse-Bedömning

Rygglinje



1 Välvad 2 Rak 3 Kript

Benställning (generellt alla ben)

1 Normal benställning
Om benställningen bedöms avvikande, skriv kommentar

2 Något avvikande benställning

3 Extremt avvikande benställning

Svullnader

0 Nej

1 Ja, ange vilket ben/led

Rörelser/Gång

1 Mycket slingrande rörelser, långa steg

2 Normal, regelbunden gång, smidiga rörelser, ingen hälta

3

4

5 Mycket stela och trippande rörelser, korta steg

Hälta

0 Ej halt

1 Synlig hälta, dock relativt normal gång (använder alla 4 ben)

2 Tydlig hälta, nickar med huvud, avlastar det (de) påverkade benet (benen)

3 Blockhalt, stödjer ej på det (de) påverkade benet (benen)/kan ej gå

Om djuret är halt, fortsätt med bedömningen annars nästa djur.

Halt fram/bak

F Framben

B Bakben

X Vet ej/går ej att bedöma

Klövar

0 Normala

1 Ej normala (trasiga, ojämna, ...)

X Vet ej/går ej att bedöma

X kan vara att klövarna är fört...

Protocol modified from Quality Genetics protocol

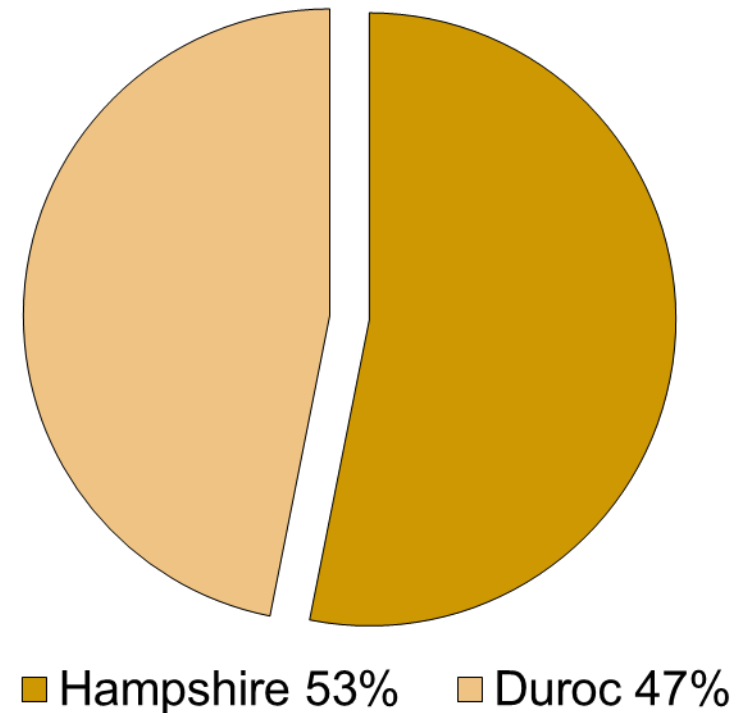
Statistical analyses

99 litters (and Yorkshire x Landrace sows),
1115 pigs at slaughter

SAS mixed (cont. scale)

$y = X + \text{sire breed} + \text{gender} + \text{herd} + \text{sow}^{\text{random}}$

X = leg health parameter

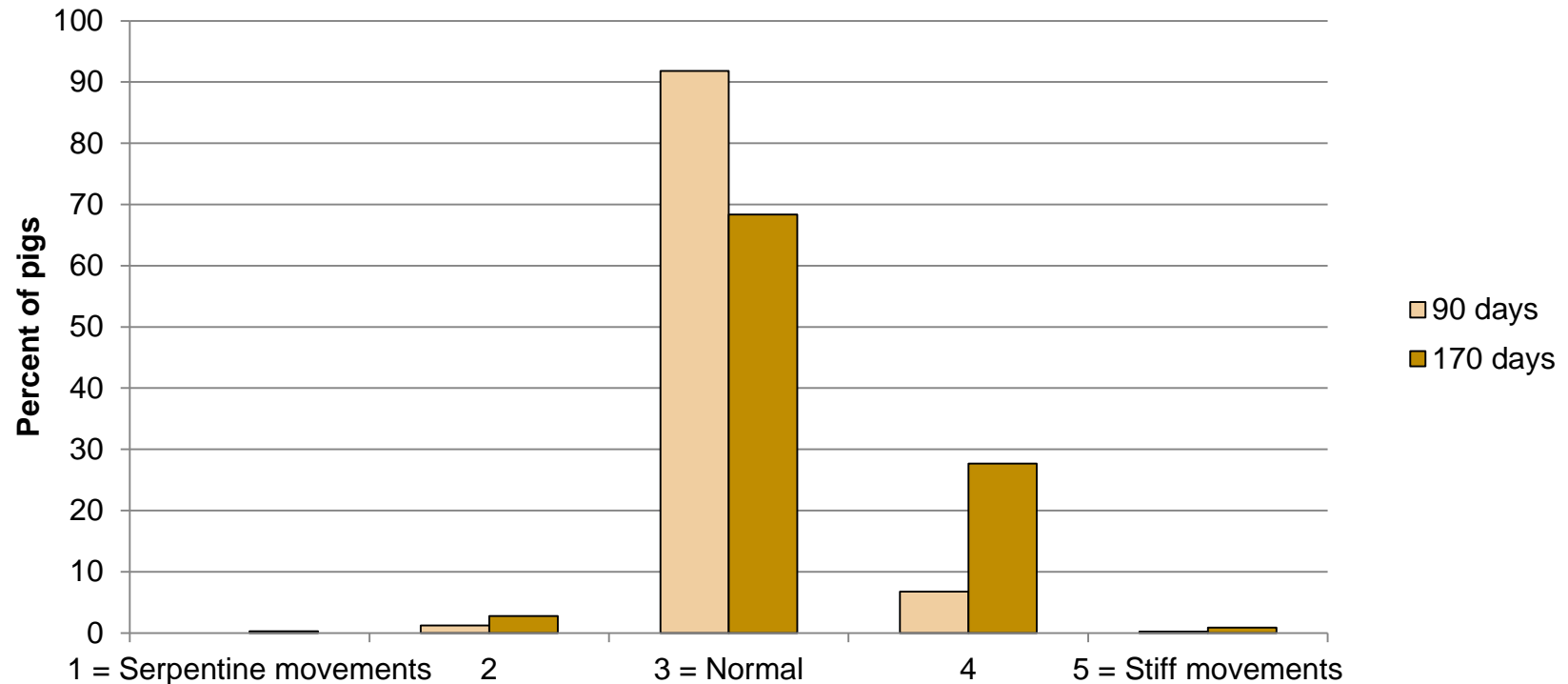


Results – Sire breed



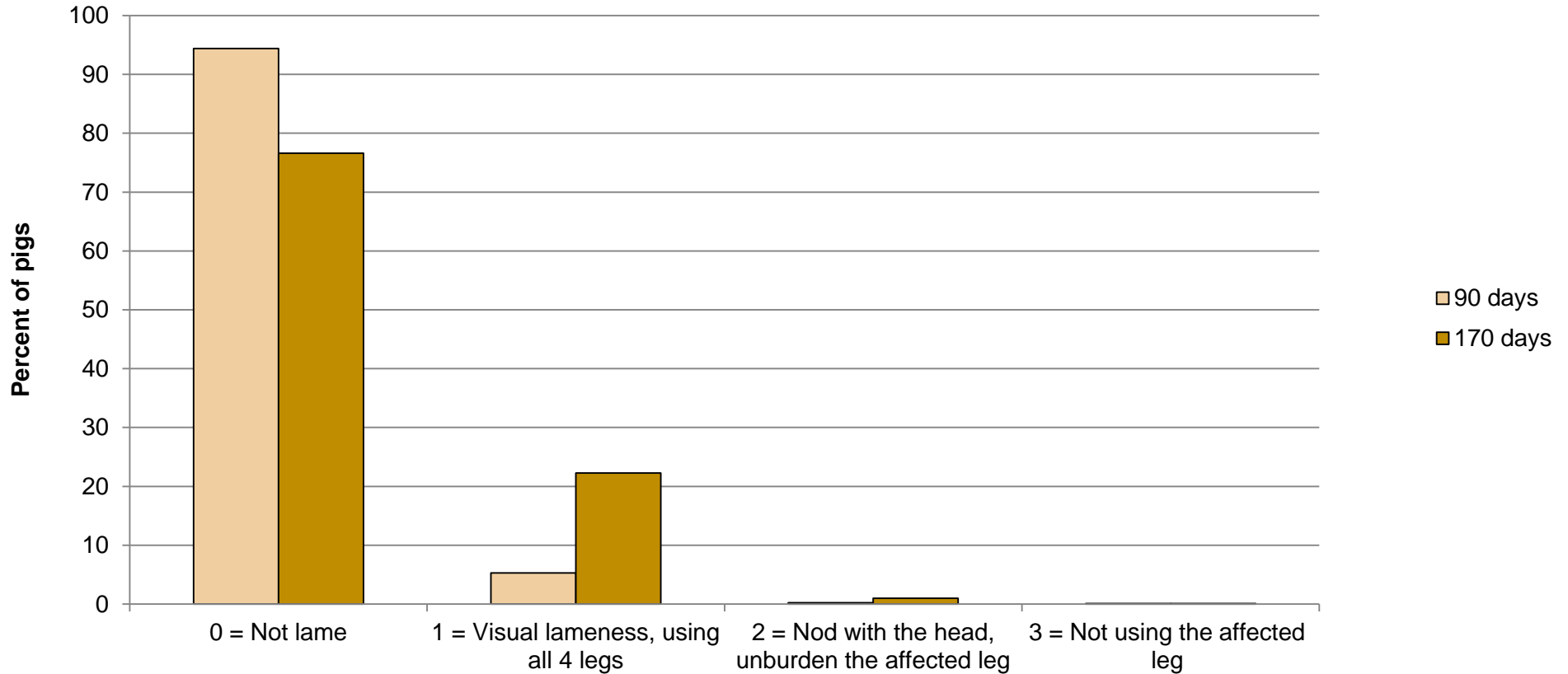
No significant differences between sire breeds in leg health or production parameters

Results - Movement



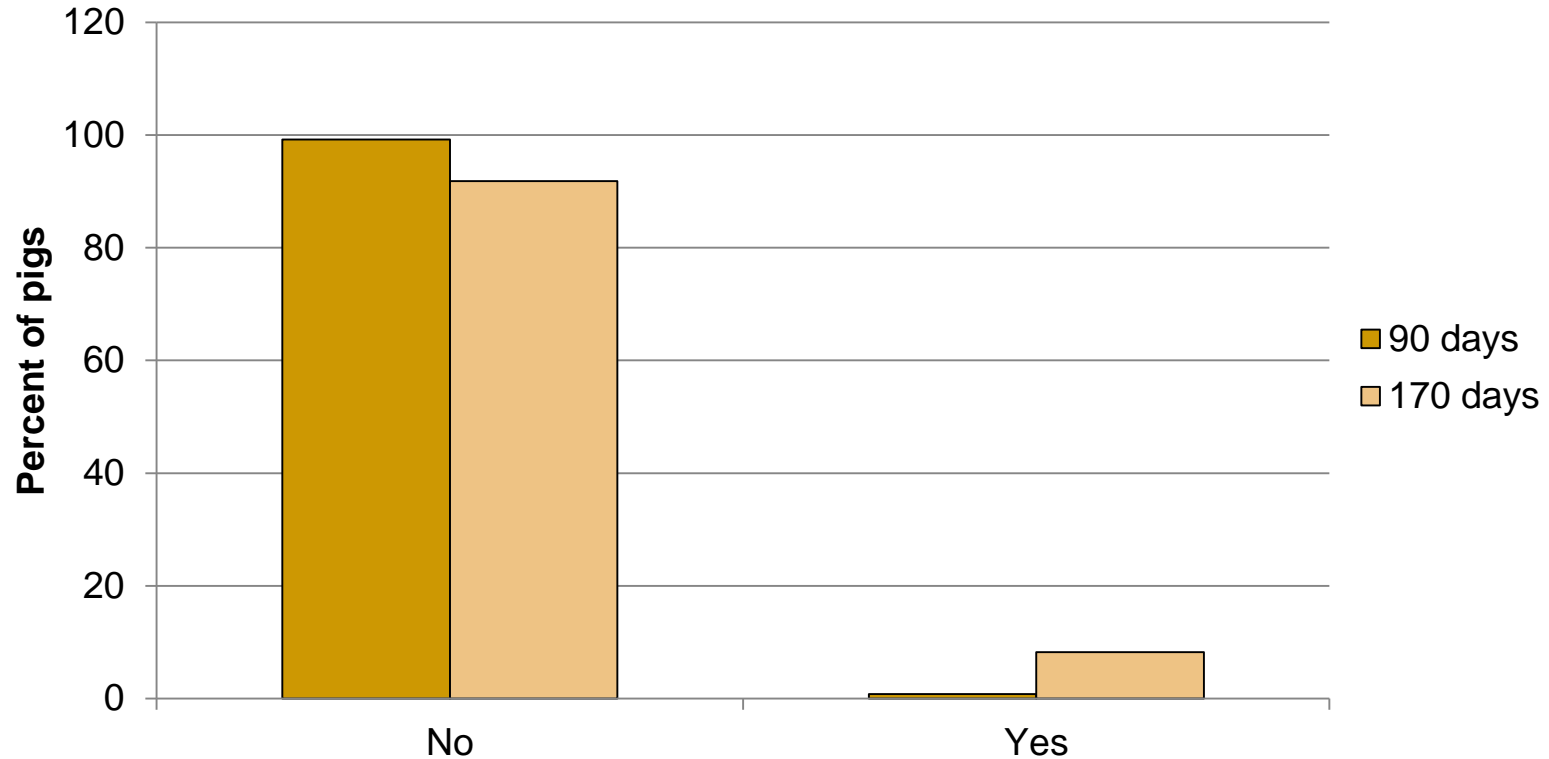
The proportion of pigs with mild movement disorders increases with age. The proportion of pigs with severe disorders was low.

Results - Lameness



The proportion of pigs with lameness increases with age.

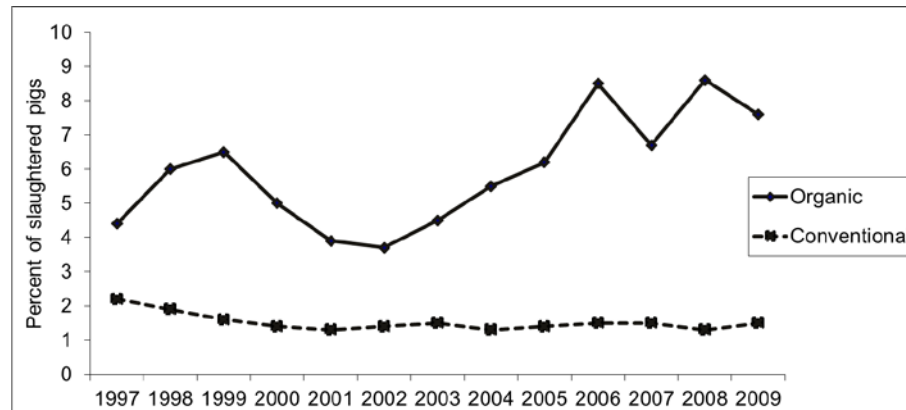
Results - Swollen leg joints



The proportion of pigs with swollen leg joints increases with age.

Leg joint remarks at slaughter

- Low prevalence!
- Just below 2 % of the pigs in the study had leg joint remarks at slaughter, in line with conventionally raised pigs.



Could indicate no/weak relationships between clinical leg health and leg joint remarks at slaughter

Results - Growth

LSM	Hampshire	Duroc
Age at slaughter (days)	207	207
Slaughtered weight (kg)	89.2	90.6
Carcass meat %	56	56
Growth (g/day, birth to slaughter)	436	446
Lean meat growth (g/day)	244	250

Results

associations leg health - growth

- Pigs with severe movement disorders at the second assessment (just before slaughter) had:
 - Lower slaughter weight ($p=0.038$)
 - Slower growth rate ($p=0.074$)
 - Slower lean meat growth rate ($p=0.061$)

**Overall weak associations between leg health and growth.
More severe leg disorders seem to be associated with poor
growth**

Conclusions

- No significant differences in leg health or lean meat growth in pigs from Swedish commercial organic herds with Hampshire or Duroc sire
- Low proportion of pigs with severe disorders
- Severe leg disorders could lead to reduced lean meat growth



Thank you for your attention!

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