

Different production environments - the same genetic material

Effect of sire on pig leg health in commercial organic herds

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Funded by SLU EkoForsk



Conventional





Organic

How does 'conventional' breeds suit organic production environments? Breeding strategy – how to use the available breeds in the best way.

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



Aims

Assess differences between available sire breeds (Hampshire and Duroc) and between individual sires within breed:

- Clinical locomotion, lameness and swollen joints among organically raised offspring
- Leg joint remarks at slaughter among organically raised offspring





Field study Field study 4 commercial organic herds Jan 2012 to March 2013 Farrowing Slaughter Insemination Weaning AI-Hampshire boars AI-Duroc boars Electronic ear tags The witt 90 days 170 day Every second sow Every second sow inseminated with H inseminated with D Locomotion and exterior examination

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



Slaughter remarks

inda Engblom and Christina Elias

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)



Statistical analyses

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

Breed differences : SAS GLM (cont. scale) y = breed + gender + herd + e

Variation among sires within breed: SAS GLIMMIXED (binomial scale)

 $y = sire^{random} + gender + herd + e$



Results - Movement



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

Results - Movement

- · No significant differences between sire breeds
- Sign effect of individual sire at first (p=0.036) and second (p=0.087) examination
 - Hampshire: Individual sire accounted for 12 to 15 % of the variation, corresponding to a moderate to high heritability
 - Duroc: Individual sire accounted for 0 to 0.2 % of the variation
 - · Insufficient data for genetic analyses





Results - Lameness

Results - Swollen leg joints



The proportion of pigs with swollen leg joints increases with age. No difference between sire breeds.

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

Conclusions

- No evidence that leg health can be improved in Swedish commercial organic herds by choice of sire breed (Hampshire/Duroc)
- Leg health may be improved by choosing the best individual sires, irrespective of breed

