Boar carcass skin lesions reflect their behaviour on farm

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PIGWELFIND

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PIGWELFIND

- Acronym for ‘Pig Welfare Indicators’ (or ‘Finding Pigs Well’!)
- DAFM Research Stimulus Fund
- Collaborative team of researchers
- Duration: Mar. 2013 - Feb. 2016
- Overall objective:

To develop ante and post mortem meat inspection as a pig welfare diagnostic tool

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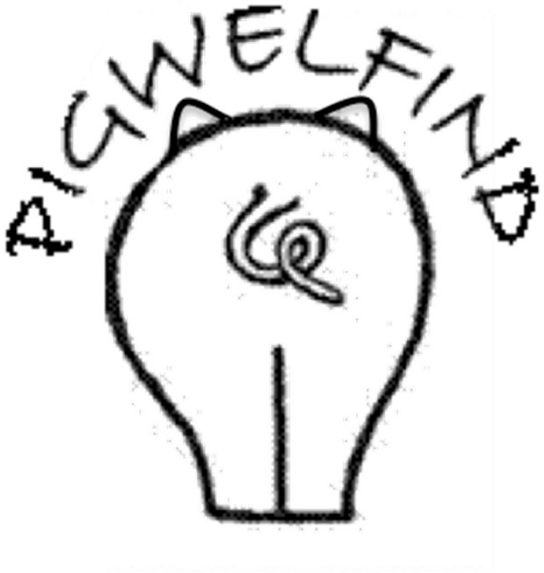


Introduction

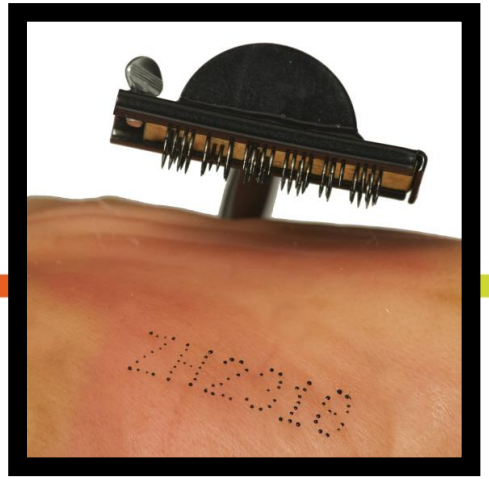
- Presence of boar taint in pork → Castration
- Pain, discomfort → raises ethical and welfare concerns
- Voluntary EU level ban on castration (2018)
- Rearing of boars poses challenges
- Growing pigs → performance of undesirable behaviour
- Boars perform high levels of aggressive and mounting behaviours
- The ability to measure lesions on the carcass arising from these undesirable behaviours performed on farm would yield a valuable welfare diagnostic tool

Objective

To investigate whether there is a relationship between the aggressive and sexual behaviours performed by boars on farm and skin lesion scores recorded on farm and on the carcass in comparison to gilts

Materials and Methods

- 70 boars (100.70 ± 0.604 kg) and 71 gilts (99.03 ± 0.582 kg)
  (from Large White x Landrace sows)
- 5 single-sex groups per gender (14 pigs/group)
- All pigs were ear tagged and tattooed with an individual code to enable identification in the factory
- Mixed, transported and slaughtered as per commercial practice



Materials and Methods

Data collection: two weeks prior to slaughter

- Day -14 and -1: all pigs individually weighed
- Days -13, -9, -7 and -2: (8-10h, 11-13h, 14-16h):

Behaviour observation

Scan sampling (every 3 min)

- Posture (lying, sitting and standing)

All-occurrence sampling

- Aggression (head knock and fight)
- Harmful (tail, ear and flank bite)
- Mounting behaviours

Materials and Methods

On farm

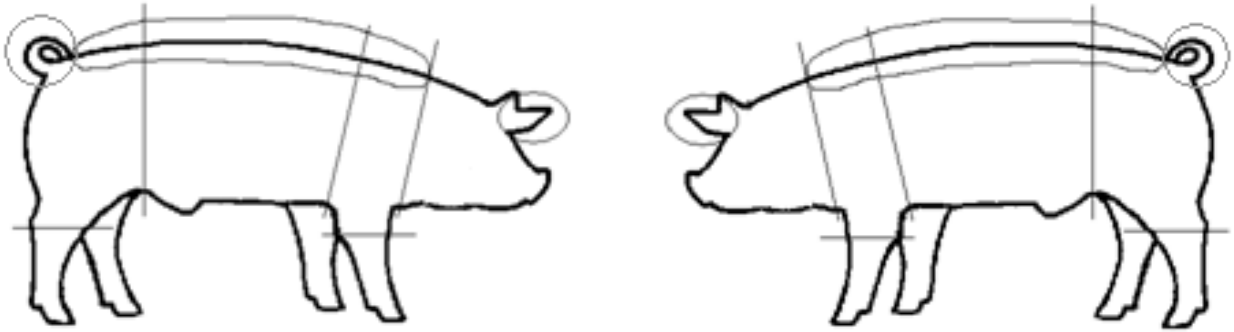
- Days -14 and -1: skin lesion score

  Sum of severity of each lesion:

  (1)superficial or pale red lesion

  (2)red lesion

  (3)deep red or extensive lesion



- Scores from all areas → total skin lesion score
- Front of body / Rear of body

Materials and Methods

At slaughterhouse

- Slaughter line: tail lesions (0-4)

Figure 1. *(0) No evidence of tail biting; (1) Healed or mild lesions; (2) Evidence of chewing or puncture wounds, but no evidence of swelling; (3) Evidence of chewing or puncture wounds with swelling and signs of possible infection; (4) Partial or total loss of the tail.*

- Loin bruises (0-2)

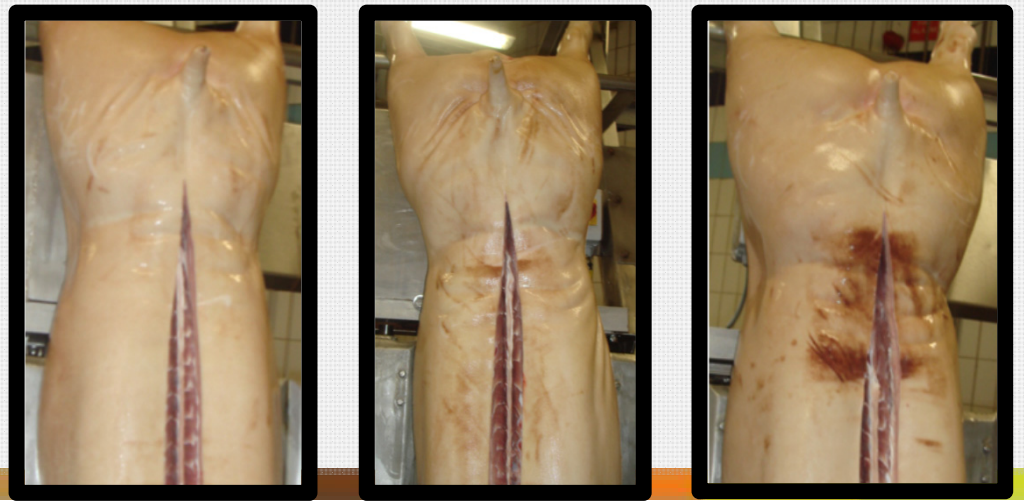


Figure 2. *(0) No evidence of loin bruising;*
(1) Moderate loin bruising;
(2) Severe or extensive loin bruising.

Materials and Methods

At slaughterhouse

- Cold carcass weight
- Skin lesions: as per Welfare Quality® protocol (0-3)

(0) no visible skin damage, only one lesion greater than 2 cm or lesions smaller than 1 cm

(1) between two and 10 lesions greater than 2 cm

(2) any wound which penetrated the muscle tissue, or more than 10 lesions greater than 2 cm.

The scoring was combined in one score:

(0) all body parts with a score of zero

(1) at least one body part with a score of one

(2) a part with a score of two or more

(3) more than one part with a score of two

Materials and Methods

At slaughterhouse

- Extent of bruises (ITP, 1996):
  - Fighting-type

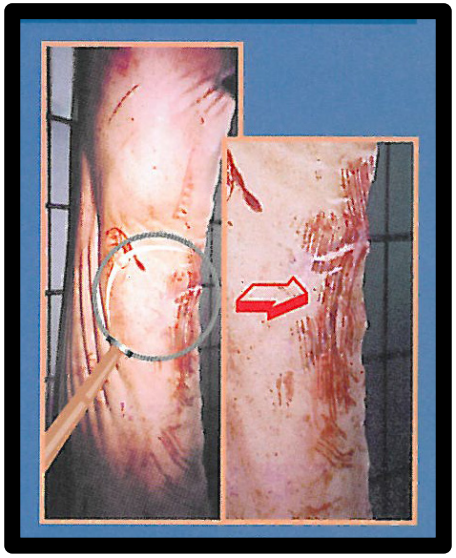
    ≤10 cm length, linear and tramline and concentrated in high number in the front and hindquarter

  - Mounting-type

    ≥10 cm length, linear and concentrated in the back

  - Handling-type

    all sizes of circular, mottled and irregular distributed along the body



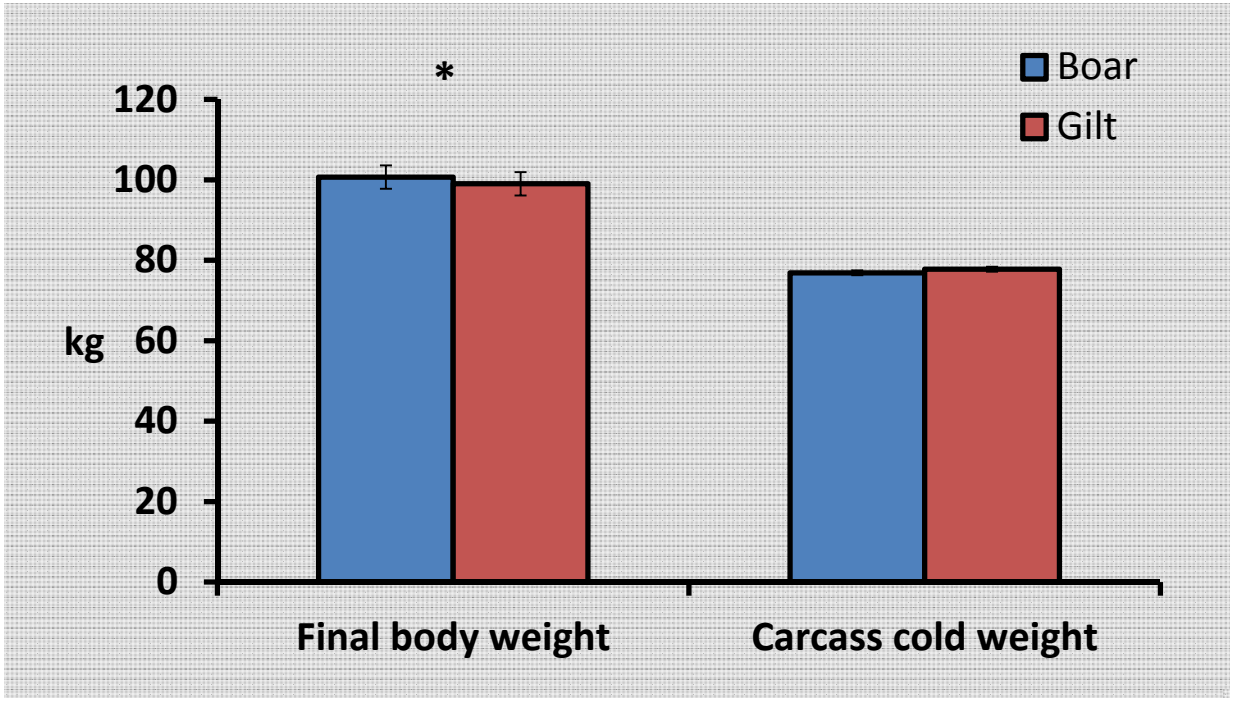
Statistical anaysis

Performance and behaviour: PROC MIXED statement
Scores: Kruskal-Wallis test (Proc NPar1Way)
Associations: PROC CORR statement

Results and discussion

Performance

- Average daily gain was higher in boars (0.91 ± 0.04 kg) than gilts (0.73 ± 0.03 kg; P<0.001)

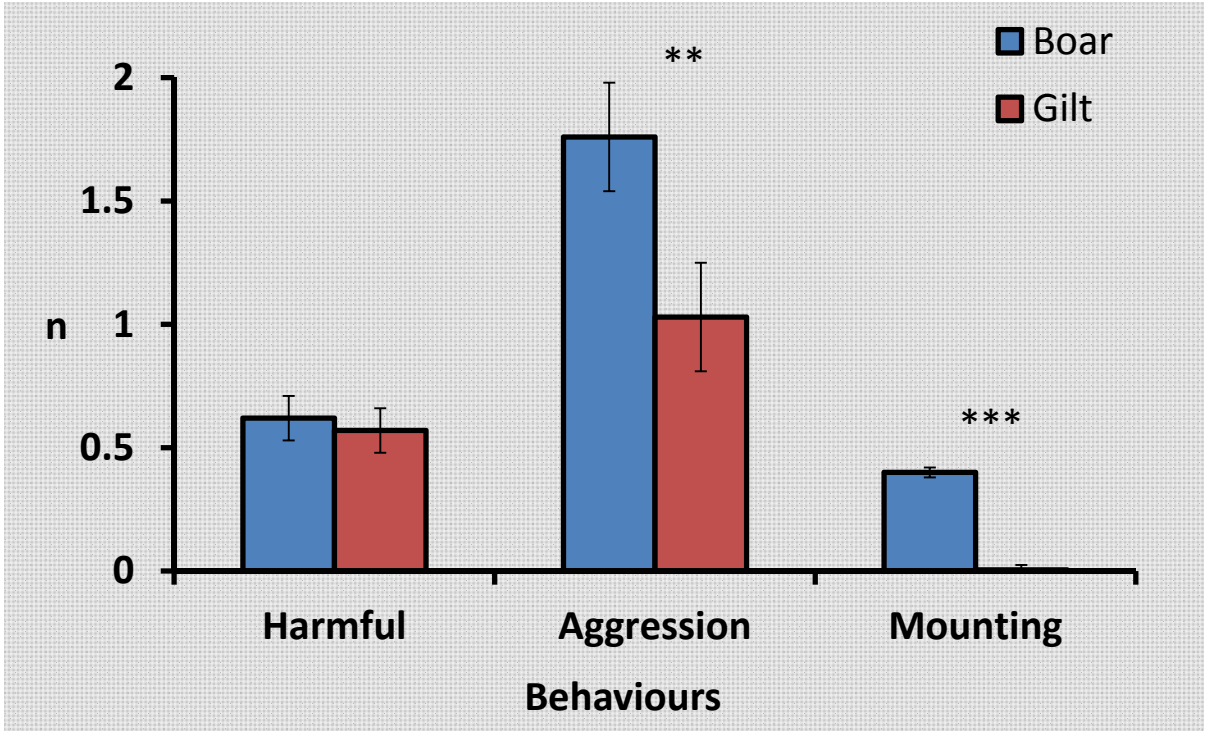


** P<0.05*

Results and discussion

Behaviour

- Boars performed more aggressive and mounting behaviours than gilts

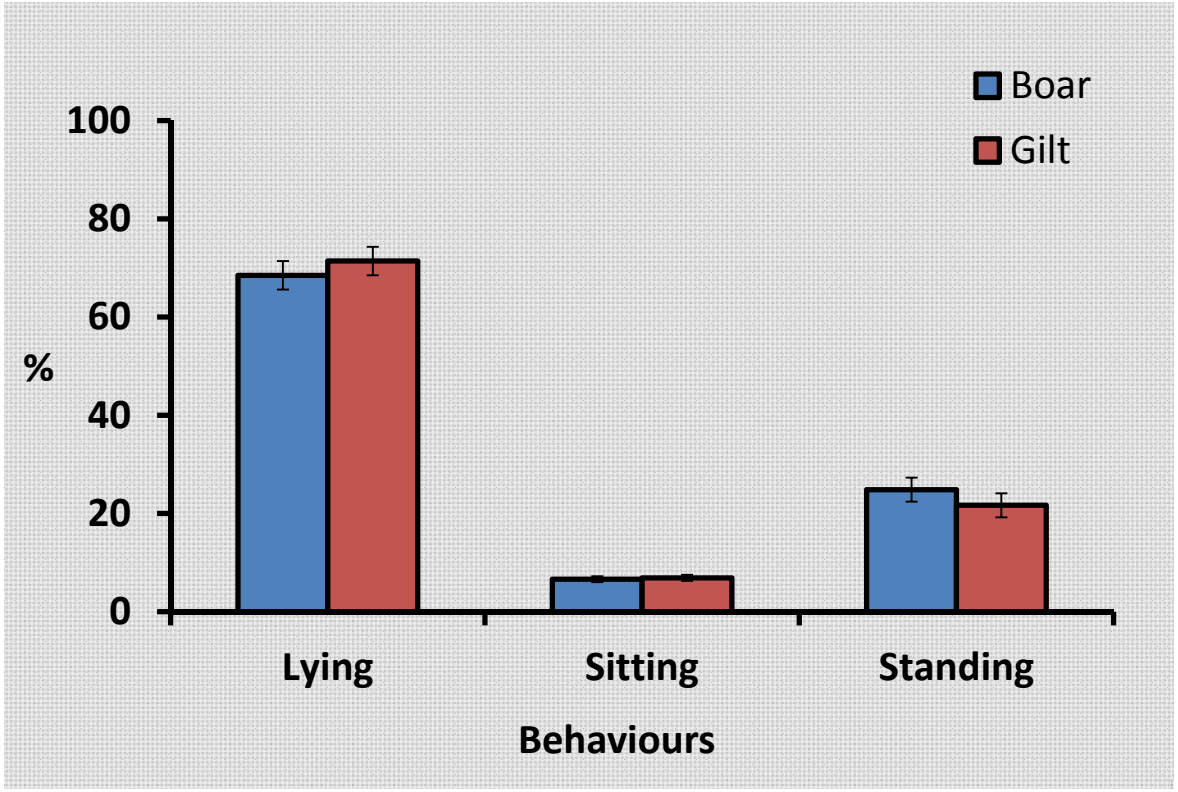


*** P<0.001; **** P<0.0001*

Results and discussion

Postural behaviour

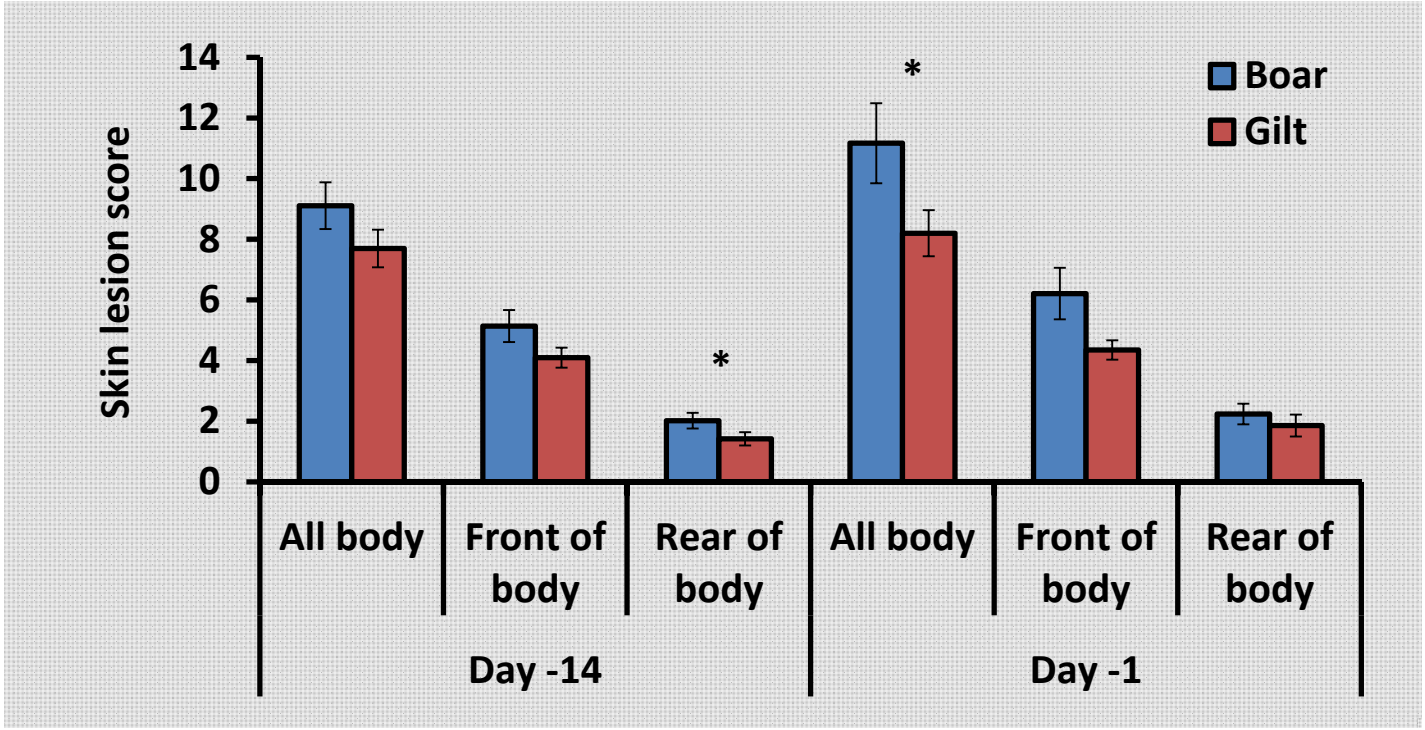
- Lying, sitting and standing behaviours were similar in both genders



Results and discussion

Skin lesion scored on farm

- On Days -14 and -1, rear of body and total skin lesion scores were significantly higher in boars than gilts, respectively

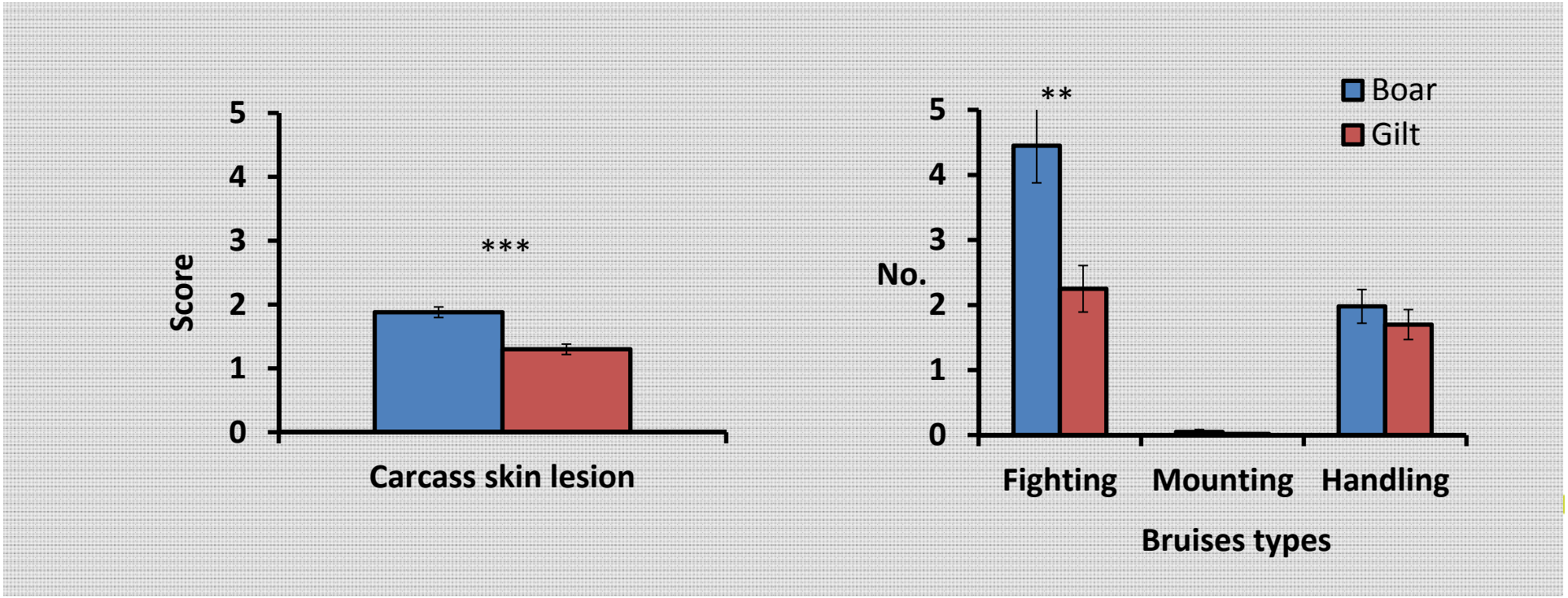


** P<0.05*

Results and discussion

Carcass measurements

- There was no effect of gender on carcass tail lesion (0.47±0.06) and loin bruising (0.62±0.06; P>0.05) scores
- Boar carcasses had higher skin lesion scores and more fighting-type bruises than gilts



*** P<0.001; **** P<0.0001*

Results and discussion

Correlations (*P≤0.05*)

- **Actor and recipient of aggressive and of mounting behaviours *(P≤0.05)***
- **Actor and recipient of aggressive behaviour → carcass skin lesion scores and fighting-type bruises *(P≤0.05)***
- **Recipient of mounting behaviour → carcass skin lesion score *(P≤0.05)***
- **No association between being mounted and carcass loin bruises or mounting-type bruises *(P>0.05)***
- **No association between tail lesion scores and being the recipient of tail biting behaviour *(P>0.05)***

Results and discussion

Correlations (*P≤0.05*)

- No association between actor and recipient of aggressive and mounting behaviours and skin lesion scores recorded on the farm *(P>0.05)*
- No association between skin lesions scored on the farm and at the slaughterhouse *(P>0.05)*

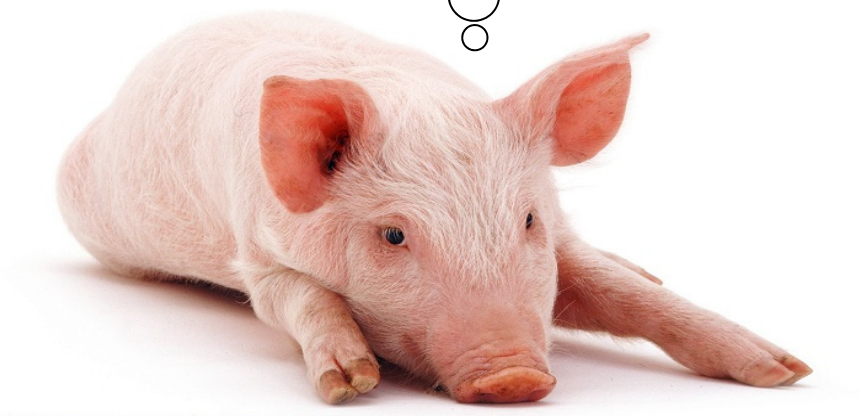
Conclusions

Boars in single-sex groups perform more aggressive and mounting behaviour than gilts, and these behaviours are reflected in carcass skin lesion scores in both genders

Skin lesions scored on the carcass were a more sensitive indicator of the individual animal's behaviour than those recorded on the live animal

The results reinforce the importance of on-line monitoring of carcass skin lesions in the routine inspection procedures as a diagnostic tool for animal welfare on farm

Thanks for your attention!!!



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