

## Question to EURCAW-Pigs: Link post-mortem findings and on farm welfare

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### Question

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EURCAW-Pigs received the following questions from a welfare policy worker in one of the Member States:

- *What scientific information is available to link the following post-mortem findings in the abattoir with on farm welfare of the pigs:*
  - *Bursitis*
  - *Skin lesions and bruises*

Experts from EURCAW-Pigs wrote the reply. The EURCAW secretariat did the final editing. For queries: [info.pigs@eurcaw.eu](mailto:info.pigs@eurcaw.eu).

### Answers

In short, the answers are:

- The occurrence of **bursitis** at post-mortem inspection seems to reflect the occurrence of bursitis on farm, unless pigs have spent the night in lairage. As occurrence of bursitis reflects non-optimal flooring conditions, post-mortem examinations carried out by trained and calibrated inspectors at the abattoir could be a way to point out herds with animal welfare problems related to the flooring.
- **Skin lesions** often arise during transport and in lairage and therefore the occurrence of skin lesions detected by macroscopic examination post-mortem is not useful for evaluating the occurrence of skin lesions on farm. If combined with tail lesions, skin lesions detected at the abattoir may have some justification as a predictor of animal welfare on farms.

### Background

Note that routine meat inspection is not done for the purpose of assessing animal welfare in farms but to prevent health risks for humans. In order to use data collected at meat inspection, training and standardization of carcass lesion recording by meat inspectors is imperative.

#### *Bursitis diagnosed post-mortem*

In live animals, bursitis is known to be related to lack of bedding in the lying area, slatted floors, wet floors and pigs slipping in the pens (Gillman et al., 2008; KilBride et al., 2008).

Maisano et al. (2020) compared findings at the slaughterhouse and in farms in 16 cases with production of heavy pigs in Italy. 2295 pigs were inspected at slaughter and 420 pigs were examined on the farms. Inspection at slaughter was carried out 15-20 days before the inspection in the farm, thus not on the same groups of pigs as the ones inspected on farms. Inspection in the farm was carried out inspired by the welfare Quality protocol (Blokhuis, 2009) and lasted approximately 3 hours per farm. It was carried out on the same age group that was inspected at the slaughterhouse. The study concluded that bursitis is easily detected at the slaughterhouse and that results obtained at slaughter were comparable with those that were

obtained at farm level. The study did not investigate a potential link to lameness at farm level. In this study, only one trained researcher did all the postmortem examinations. Another study found a higher prevalence of bursitis in overnight lairage batches, indicating that bursitis can occur during lairage and thus in these cases not only reflect the on-farm situation (Bottacini et al., 2018). In everyday situations, many different technicians will assess the carcasses for meat inspection purposes, and the interobserver reliability in both live and dead animals regarding assessment of bursitis have been shown to be poor (Eckhardt et al., 2009; Czycholl et al., 2016).

**Conclusion/recommendation:** The occurrence of bursitis at postmortem inspection seems to reflect the occurrence of bursitis on farm, unless pigs have spent the night in lairage. As occurrence of bursitis reflects non-optimal flooring conditions, postmortem examinations carried out by trained and calibrated inspectors at the abattoir could be a way to point out herds with animal welfare problems related to the flooring.

#### *Skin lesions and bruises diagnosed post-mortem*

Skin lesions and bruises occur both in farms, during transport and during lairage (Bottacini et al., 2018; Driessen et al., 2020). Major factors responsible for the incidence of skin damage on the carcass are fighting among mixed groups of pigs and poor handling during the preslaughter stages. Overnight stay in lairage increases skin lesion score (Faucitano, 2001) and to accurately differentiate between lesions that occurred during transport/in lairage and lesions originating on farm is a task for trained specialists in histopathology. A study by Carroll and co-workers (2016) suggested that minor skin lesions are less visible after scalding and dehairing, whereas the opposite counts for serious lesions. According to the same study, loin bruises are mainly visible after the scalding and dehairing process.

Van Staaveren et al. (2017) evaluated how statistical models based on postmortem findings of skin and tail lesions at the abattoir could be used as predictors of welfare outcomes (poor body condition, bursitis, huddling, severe tail lesions and coughing) in farms (van Staaveren et al., 2017). On farms, they used an adapted version of Welfare Quality protocol (Blokhuys, 2009) conducted by the same person with assistants. At the abattoir, all registrations were done by one person. It was not necessarily the same pigs that were evaluated in farms and at slaughter. The study concluded that the models were not valid for predicting welfare outcomes in the farms (coefficients of determination ( $R^2$ ) between 0.28 and 0.45). Prediction of farms identified as having a problem with poor body condition in the first weaner stage, bursitis in the second weaner stage and severe tail lesions in the finisher stage were moderately accurate.

**Conclusion/recommendation:** Skin lesions often arise during transport and in lairage and therefore the occurrence of skin lesions detected by macroscopic examination postmortem is not useful for evaluating the occurrence of skin lesions on farm. If combined with tail lesions, skin lesions detected at the abattoir may have some justification as a predictor of animal welfare on farms. However, more research is needed on this subject.

### Relevant references

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