Effects of temperature on sow posture changes and piglet crushing

Daniella J. Moura (PQ), Jeremy M. Forde (PQ), Gabriela M. Morello, (PQ), Valter N. Santos (IC)

Abstract
The present study investigated the variation in sow posture change and piglet crushing, as explained by the variation in ambient temperature (T), measured at the sow level within 48 h post-partum. As the T increased to 26°C, frequency of sow posture change decreased, as well as the frequency of changing form standing to lying laterally (ST-LL), which contributed to a reduction in piglet crushing. This work demonstrated the importance of T control in farrowing rooms to reduce piglet crushing.

Key words: sow posture change, crushing, piglet mortality.

Introduction

Farrowing crates are commonly used in the Brazilian and U.S. swine industry. The crate system offers innumerable management advantages, such as individual nutrition control, enhanced sanitation and reduction in piglet crushing. However, crates have been reported to increase parturition length and stillbirths. Moreover, crates do not entirely prevent crushing, which is still the main cause of piglet mortality in any of the available birthing systems for pigs. Alternative farrowing systems have been investigated to replace crates. However, there is a general increase and wide variability in crushing rate in alternative farrowing settings which remains unexplained. Therefore, it was hypothesized that ambient temperature affects sow posture changes in farrowing crates, which have been associated with the incidence of crushing. The experiment was conducted in a commercial swine farm (May, 2013, to July, 2014), in northwestern Indiana, USA. Temperature data was recorded once every five minutes through Hobo data loggers (model U12-012) placed 40 cm above the sow’s back when standing up in the center of each crate. A total of 59 (Genetiporc 25) sows were used in this experiment for the behavior analysis and additional 596 sows were used for evaluating piglet crushing through a data mining decision tree technique. Sow posture change was recorded using Panasonic video cameras (model WV-CP280), for 48 h post-partum.

Results and Discussion

Overall, sows spent approximately 83 ± 10% of their post-partum time lying laterally. On average, sows took 8.7 ± 3.3 s to change from standing to lying laterally (ST-LL) and 9.9 ± 5.0 s to lie sternally (ST-LS). A data mining investigation performed with additional 596 sows revealed that 100% of the sows exposed to T between 24°C and 26°C for at least 65% of their post-partum time, rather than temperatures above 26°C, crushed only one or none of their piglets, whereas 32% of sows exposed to this T range for less than 65% of their post-partum time crushed at least four of their piglets. Moreover, as mode T approached 24°C and 26°C, frequency of posture changes as well as frequency of ST-LL significantly (P<0.05) decreased (Figure 1), which explains the reduced crushing rate within this T range.

Conclusions

Ambient temperature was demonstrated to directly impact piglet crushing. The present research indicated that ambient temperatures between 24°C and 26°C are a good target temperature for reducing crushing and reducing the frequency of sow posture changes.

Acknowledgement

Pibic/CNPq, Feagri-UNICAMP, Profa. Dra. Daniella J. Moura, Dra. Gabriela M. Morello, Dr. Jeremy Marchant-Forde, USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN, Purdue University.

3Meglone, J.J. & Hicks, T.A. Farrowing hut design and sow genotype (Camborough-15 vs 25% Meishan) effects on outdoor sow litter productivity. Journal Animal Science 2000, 78, pp.2832–2835

DOI: 10.19146/pibic-2015-37892