



RESEARCH UPDATE

SOWWEANWEL

Effects of chronic stress during pregnancy on sow welfare, reproductive performance, & on the resilience of offspring to stress

This project is a collaboration between Teagasc & the Institute of Genetics & Animal Biotechnology, Poland. It investigates the risk factors for chronic stress in gestating sows, providing knowledge to aid the development of management strategies for pregnant sows to minimise stress effects on welfare & reproductive performance, & on the resilience of the offspring to stress & disease.

Background

Stress for sows is limited to mixing, sows also experience chronic stress related to competition for limited resources, housing, & management factors. Acute stress has serious negative implications for sow reproductive performance & welfare. Less is understood of the effects of chronic stress during pregnancy which has additional implications as piglets are exposed to stress hormones in utero. This can have life-long consequences for their ability to cope with stress & disease challenges.

Objectives

- Identify risk factors for chronic stress in gestating sows associated with aspects of housing systems & individual sow characteristics
- Evaluate effects of chronic stress on sow reproductive performance & welfare
- Evaluate prenatal effects of chronic stress on offspring resilience & performance

Study 1 – Effects of gilt age at first service & gestation housing floor type on intensity of mixing aggression & subsequent sow reproductive performance

This study took place on a commercial integrated farm, with 160 gilts housed on concrete (n=80) or rubber mat covered (n=80) fully-slatted floors, in groups of 8 with full-length free-access feeding stalls, & followed through 2 parities. Skin lesion scores were recorded 24hr post-mixing, along with reproductive performance measures. Skin lesion scores decreased with every one day decrease in age at first service. Thus, serving gilts younger, while adhering to guidelines for optimal body condition & weight, seems to reduce mixing aggression. Piglet mortality & cycle length increased with higher skin lesion scores in parity 2. The number of non-productive days in parity 2 was higher with increasing skin lesion scores in parity 1. This shows that negative effects of stress caused by mixing aggression can persist into the 2nd parity. This study also demonstrated beneficial effects of rubber floors. Sows on rubber had lower skin lesion scores, fewer stillbirths, & crushed fewer piglets. Rubber floors are linked with less lameness, thus conferring better manoeuvrability.

For more information visit www.teagasc.ie/pigs



Study 2 – Effects of sow aggressive strategies on reproductive performance & offspring performance

This study took place on a commercial sow unit, where 264 sows were housed in stable groups of 24 with free-access feeding stalls. Skin lesion counts on the front, middle & rear of the body were recorded 24hr & 3 weeks post-mixing. Sow reproductive performance & piglet viability scores were also recorded. Preliminary results show differences between groups in the amount of aggression experienced by sows. Understanding the reasons for this could help us to develop management strategies for pregnant sows to reduce the detrimental impact of stress caused by aggression on sow reproductive performance & welfare, & offspring viability.

Study 3 – Effects of gilt characteristics on the behaviour, health, & performance of their piglets

This study took place at the Teagasc Pig Research Facility. A range of measures were recorded for all replacement gilts entering a dynamic group with an ESF from April 2019 - January 2020. At farrowing, behavioural tests were conducted on offspring. Preliminary results show that gilts with the lowest skin lesion counts during pregnancy had the highest frequency of abnormal stereotypical behaviours. Thus, despite avoiding aggression, they still suffered high chronic stress levels. They also produced more behaviourally reactive piglets, indicating poor offspring ability to cope with stress, which could make them more susceptible to disease at weaning. These findings will help us to refine management strategies for pregnant gilts, to improve their welfare & the resilience of their offspring to stress & disease.

Take home message

- Younger gilt service age and rubber flooring reduce mixing aggression intensity, and improve sow welfare and reproductive performance
- Understanding sow aggressive strategies can help to optimise gestational management to minimise negative impacts of stress
- Chronic stress is detrimental to piglet productivity, potentially reducing their ability to cope with weaning stress

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Martyna Lagoda is the PhD student working on the SOWWEANWEL project. She is supervised by Dr. Laura Boyle & Dr. Keelin O'Driscoll from Teagasc, & Dr. Joanna Marchewka from IGAB. Prior to joining the project Martyna obtained a Master's degree in Animal Behaviour & Welfare from Queen's University, Belfast. Martyna gained experience in the area of laboratory & companion animal welfare through completion of several internships. Martyna's research interests span the area of animal welfare, currently focusing on farm animals.

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