Project Number & Title
CRC 1A109: Innovative refinements of existing lactation pen systems to better suit Australian environmental and management systems.

Project Leader
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Project Participants
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Aims and Objectives
To investigate sow welfare, piglet and sow lying behaviour, piglet growth and survival in the PigSAFE and SWAP loose farrowing system which included cooling innovations for summer.

Key Findings
-The project consisted of two separate experiments investigating cooling innovations in the PigSAFE and SWAP loose farrowing systems. The pen cooling innovations in the PigSAFE experiment included cooled tiles in the creep area and an additional fan over the nest area. The SWAP experiment included cooling tiles in the creep area, a slatted nest area and an additional fan over the nest area.
-The experiments were conducted in different time periods (different seasonal effects etc.), therefore caution is required when comparing the two farrowing systems.
-In the PigSAFE Experiment, more piglets were observed in the creep in the Cooled treatment when temperatures were between 24 and 35°C. There was a trend for higher feed intake of sows in the Cooled treatment, however, this did not translate into improved survival or growth performance of the piglets. Furthermore, there were significant benefits of the Cooled treatment for improving pen hygiene in the nest and creep area. Further research is warranted to assess the impact of the Cooled treatment on sow feed intake and piglet survival and growth performance in the PigSAFE system.

SWAP:
-There appears to be no benefit of providing additional cooling modifications to the SWAP system.
-Piglets in the Cooled treatment spent a greater proportion of their time lying on the cooled tiles in the creep areas compared to the Control treatments when the shed temperature was greater than 36°C. However, this change in behaviour did not significantly impact on piglet survival, piglet rate of gain or weaning weight.
-There was a trend for a negative impact on growth performance and weaning weight in the Cooled treatments.
-The inclusion of a slatted nest area with the SWAP pen design remains controversial. The slatted nest area pens were cleaner and there was a trend for higher number of pigs weaned.

Application to Industry
-These experiments were conducted over Australian summer in buildings where environment was managed by natural ventilation, dripper systems and overhead fans.
-There may be benefits of providing additional cooling (cooled tiles in creep and fan in nest area) in the PigSAFE design. This requires further investigation.
-There were no benefits of providing additional cooling (i.e. cooled tiles in creep area and fan in nest area) in the SWAP design.
-There may be benefits of including a slatted nest area in SWAP design (hygiene and number of pigs weaned) however the use of a slatted floor remains controversial.
-Further research is warranted to assess further cooling strategies in the PigSAFE and SWAP systems over the Australian summer. This could include micro-control within pens or assessment of systems that allow greater control of shed environment over the summer conditions (e.g. climate control sheds).