



Australasian Pork Research Institute Ltd APRIL

PROJECT SUMMARY

Project Number and Title: 6A-104: *Use of thermographic technology to detect reproductive state in sows and improve piglet performance in a commercial farrowing house*

Project Leader: Dr Jessica Craig (Rivalea Australia Pty Ltd), JBS Australia Pork Division.

Project Participants: Dr Maria Jorquera-Chavez and Dr Rebecca Morrison (Rivalea); Dr Ellen Jongman, Monica Lewis and Buddhika Liyanage (The University of Melbourne); Associate Professor Roy Kirkwood and Dr Bryony Tucker (The University of Adelaide)

Sister Projects: Professor Eugeni Roura (The University of Queensland; Project 6A-101) and Dr Kate Plush (SunPork; Project 6A-102)

Aims and Objectives: The current project aimed to assess the use of infrared thermography (IRT) in a commercial farrowing house to predict sow performance in lactation as well as identify sows at risk of common health concerns in lactation such as mastitis, shoulder sore formation and other illnesses.

Key Findings:

1. The FLIR E8 Ex series was the easiest hand-held IRT camera technology to use in a commercial farrowing house compared to the FLIR ONE Pro iPhone attachment or the FLIR Duo Pro.
2. Skin temperature measured at the shoulder, ear base or posterior teats using the E8 camera were the most useful measurements which showed the most promise in terms of practicality and relationships with sow performance and health status in the farrowing house period.
3. Some skin temperatures measured by IRT may be related to litter size and piglet activity, which deserves to be further investigated. Unfortunately, skin temperature measured with the pointer function on the E8 camera was largely not predictive of sow performance in a way that could be useful to producers.
4. A number of environmental factors pose difficulties for the use of these technologies in a commercial setting, such as interference from piglets, bars of farrowing crates, water from cooling systems, contamination of skin from urine, faeces, dirt and feed dust, lighting, humidity, ambient temperature and air flow. All of these factors must be considered when using IRT within a commercial setting.

Applications to Industry:

As a result of the outcomes in this study the following recommendations have been made:

1. Thermal cameras such as the FLIR E8 be used as an alternative to (or used to complement) rectal temperature of sows in lactation as a non-invasive way to measure body temperature.
2. That skin temperatures be measured at the point of the shoulder, ear base and posterior teats when IRT technologies are used in a commercial farrowing house.
3. That IRT may be used to measure shoulder, udder and/or ear base temperature when assessing sows for impacts of JEV around farrowing.
4. That the cost of this thermal camera technology is made more affordable in the future for commercial producers.

The production of a SOP for determination of eye and ear temperatures using the FLIR E8 camera was compiled and is available as part of this project.