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Travel Award – Annual Meeting of the International Society of Applied Ethology - Austria

Final Report
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Award & Undergraduate Scholarship Final Reports

1. Project Summary

This project initially started with the opportunity to present the results from a research project conducted in Australia which investigated the effects of human contact to young pigs on their stress response in later life. We recently conducted that project investigating the effects of brief human contacts to 1 day old piglets on their stress response to subsequent routine husbandry procedures that involve some pain or distress, namely tail docking and weaning. The preliminary results were promising and were delivered as an oral presentation at the Annual Meeting of the International Society of Applied Ethology, in Vienna, Austria thanks to this travel award.

As the supported scientist, I, Jean-Loup Rault, engaged with international colleagues with the aim to both assess the situation and progress made in other countries, particularly in Europe in regards to the recent legislation on pig welfare. I also discussed with other pig researchers about research effort currently underway in other countries to tackle some of the most common welfare issues, such as group-housing of gestating sows, alternatives to farrowing crates, and castration of male piglets.

During that trip, I also visited the pig welfare research unit of the French National Institute for Agricultural Research (INRA). During that visit, we identified opportunities for research collaborations and for the exchange of research students and scientists between France and Australia. A day was also dedicated to the development of a research project focusing on human-animal interactions aspects in group-housed sows with Dr. Celine Tallet.

Overall, this trip led to numerous discussions with international researchers on pig welfare. The effort towards alternative housing systems is clearly an international effort, and this meeting allowed me to initiate and cultivate exchanges with other researchers worldwide. Numerous opportunities for collaborations were identified and hopefully will flourish in the near future, particularly with Danish and American researchers on areas of common interests in pig welfare. Finally, the possible phase out by the EU of piglet surgical castration may be a steep learning curve for Europeans, in which they may benefit from the Australian expertise in raising intact males or using immunocastration.

2. Background

Animal welfare, along with food safety and environmental issues, is at the forefront of consumer concerns and strongly influences today's demand for pork and other meat products. This requires the pig industry to rethink or refine its way of housing and managing pigs in a relatively short timeframe.

Australian producers are not alone. Most large pork producing countries in North America and Europe are faced with similar challenges. Hence, there are opportunities to both learn from the experience of other countries and join efforts with them in order to effectively tackle and solve those challenges.

The Animal Welfare Science Centre is the leading group of welfare researchers in Australia. We recently conducted a project investigating the effects of brief human contacts to 1 day old piglets on their stress response to subsequent routine husbandry procedures that involve some pain or

distress, namely tail docking and weaning. The preliminary results were promising and were delivered as an oral presentation at the Annual Meeting of the International Society of Applied Ethology, in Vienna, Austria thanks to this travel award.

3. Objectives

- Travel to Vienna, Austria to attend the 46th International Congress of the International Society of Applied Ethology (ISAE).
 - Deliver an oral presentation on a research project performed in Australia and tackling pig welfare.
 - Discuss with international researchers on pig welfare.
- Meet with French researchers of the INRA to increase research collaborations and exchanges of scientists and research students.

4. Activities Undertaken

- Met with INRA researchers specialized in pig welfare in order to develop research collaborations and an exchange of students between Australia and France.
- Delivered oral presentation on a method to reduce stress and enhance pig welfare
- Chaired a session of the ISAE conference on human-animal interactions and animal welfare.
- Discussed with European researchers about current situations in Europe regarding welfare regulation and industry status in reforming their production systems. Also discussed with American researchers on research projects on sow aggression.

5. Results

- Delivered oral presentation on a method to reduce stress and enhance pig welfare

Animal welfare is at the forefront of consumer concerns, and strongly influences today's demand for pork and other meat products. Reducing stress in captive animals is at the core of improving animal welfare. Reducing stress in captive animals can be achieved by modifying the animal's environment through the identification and elimination of stressors, environmental enrichment or genetic selection that enhance stress resilience. Surprisingly there have been few attempts to examine strategies using positive classical conditioning to reduce stress, possibly through influencing emotional states. A small project was initiated by Professor Paul Hemsworth and performed by a visiting PhD student, Ramon Muns Villa, at the Animal Welfare Science Centre, in collaboration with Rivalea. This project aimed at investigating the potential to positively interact with piglets shortly after birth, by a quick human intervention (human talking and caressing day-old piglets during 6 suckling bouts on the first day of life) in order to reduce stress later in life and therefore enhance pig welfare. The results from that study, which were delivered as an oral presentation, showed that this intervention had a significant effect in later life. Piglets showed a response to tail docking and capture that was less intense and of shorter duration than control piglets. These piglets also showed less avoidance to a human. This small project provides evidence that a brief positive intervention in the young age has possible applications to enhance the ability to cope with stress in piglets.

The presentation of these results triggered significant interests from the audience, considering its implications to improve welfare on-farm by the use of brief interventions on the animals in the young age. Further work is planned with various international collaborators to investigate in more details the effects of this treatment on welfare in pigs and other species.

- Discussed with international researchers on pig welfare.

Three main topics emerged from the presentations, posters and discussions held during that meeting: the group-housing of gestating sows and the conversion of their systems by producers in the European Union, sow farrowing pen design and performance, and alternatives to surgical castration of male piglets.

Conversion to Group Housing Systems of Gestating Sows in the European Union (EU) and Type of Systems Adopted

As most people know, the EU has phased out the use of gestating stalls for sows after four weeks of pregnancy, starting in January 2013. Although we are only a few months away, the current state of conversion completed by the industry in the various EU countries appears relatively unknown. Welfare researchers from France and Spain estimate that between 30 and 40% of their industries have already converted their facilities. It is also unclear which system is favoured by producers. It seems that we won't have exact statistics until after the ban has taken effect. A significant portion of the producers, particularly small producers, are likely to not meet the deadline. However, following the example of the ban of conventional cages for laying hens this year, the feel is that EU authorities can be serious about following the rules, and may apply sanctions in case the conversion to group-housing systems for gestating sows is not fulfilled.

Regarding the type of systems used, again exact statistics don't seem available to date. In Denmark, the choice of producers seems split with half of the producers moving to ESF and the other half to free access stalls. Danish researchers discussed interesting work on the benefits of pre-exposing gilts to group of older sows before their first parity. It seems to enhance the ability for gilts to cope with their first parity when subsequently introduced in a mixed-parity group.

Paul Hemsworth (University of Melbourne) presented the results from a recently completed APL-funded research involving more than 3,000 sows housed at a floor space from 1.4 m² to 3 m² per sow and in groups of 10 to 80 sows. Results showed that increasing floor space resulted in reduced aggression at feeding, lower stress-related cortisol concentrations and higher farrowing rates. Group size per se had relatively little effects.

Sow Farrowing Pen Design and Performance

Although farrowing crates are still allowed in most countries, research efforts seem to intensify in elucidating the key factors affecting the welfare of sows and their litters in these alternative systems to farrowing crates. Some researchers interestingly focus on potential causes of piglet mortality other than the sow by looking at environmental factors such as temperature, ventilation etc. The design of these farrowing pens appears primordial, more than the space per se, so that sows and piglets can perform their adequate behaviour.

Marije Oostindjer gave an interesting plenary talk on strategies to improve weaning in piglets. Her line of work while at Wageningen University focused on the fact that stimulating early food intake appears very important to facilitate the weaning transition, and particularly to reduce diarrhoea post-weaning. She showed that enrichment by providing straw-bedding before or after weaning reduced diarrhoea and improved growth after weaning. Housing sows and their litters in farrowing pens with the opportunity for the sows and the litters to eat from the same feeder also stimulated early feed intake by the piglets, with those piglets performing better after weaning as compared to piglets from sows in farrowing crates and fed from separate feeders. In these experiments, note that

the sows in the farrowing pen treatment were still confined in a farrowing crate for the first four days. Danish researchers actually work on such a type of hybrid system (the 'SWAP' system) which consists of a farrowing pen equipped with a crate to confine the sow in the first few days after farrowing to avoid piglet crushing. This system may be able to provide the best of both worlds by reducing piglet mortality due to crushing in the first days post-farrowing while still allowing the sow to move freely later on.

The results of an experiment from Sandra Edwards (Newcastle University) using the PigSAFE farrowing pen suggested that providing either 2 or 4 kg of straw for nest-building led to similar results. Another experiment from Anna Valros (University of Helsinki) showed that newspaper may not be recommended as a substrate for nest-building, as it resulted in higher liveborn piglet mortality than saw dust or chopped straw substrates.

Alternative to Surgical Castration of Male Piglets

Rumour has it that the EU might phase out surgical castration of male piglets without analgesics by 2018, or that several European stakeholders have agreed to a voluntary end to that practice. Therefore, some researchers presented work either on the welfare and performance of intact males or on the use of various analgesics. Therefore, Australia may soon lead the pack in terms of knowledge and experience in its management of intact males or the use of immunocastration that has been common practices here. My discussion with researchers from various European countries on that topic led to some interesting conversations. A common belief is that surgical castration as we know it would be banned, requiring either to raise intact males or alternative methods such as immunocastration. An exception might be the practice of surgical castration allowed under the condition that analgesics are administered. Some countries already use analgesics during that procedure, but with some variants. Swiss are allowed to anaesthetise the piglets with isoflurane (a potent anaesthetic gas used in human surgery, hence highly regulated and controlled in most countries, an important pitfall to its use). Dutch use carbon dioxide, a cheaper and more accessible option, but a controversial agent as 'humane' anaesthetic considering its aversiveness. Spain, and France to some extent, already raise a small proportion of their herds as intact males and may come at an advantage compare to some of their European neighbours. Finally, the opinion of Danish researchers was that they will follow what the EU goes for, maybe once time has come. Hence, the views are very mixed in the future of surgical castration and its alternatives, keeping in mind the aspects of practicality, economics, welfare and social acceptability. European abattoirs also seem to be working toward the development of better tools to detect boar taint carcasses.

Other Topics: Assessment of Welfare

A presentation from Inonge Reimert (Wageningen University) investigated behavioural indicators of positive and negative emotions. Her results suggested that tail wagging and barking vocalisations in pigs may reflect positive emotional states. Conversely, a pig with the ears back or turn sideways and with its tail low may be experiencing negative emotional states. It is possible that experienced farmers recognize intuitively these signs. These signs could also be used in animal welfare assessment scheme on farm.

- Met with INRA researchers specialized in pig welfare in order to develop research collaborations and exchange of students between Australia and France

During that trip, I also visited the pig adaptation and physiology research unit of the French National Institute for Agricultural Research (INRA). During that visit, we identified opportunities for research collaboration and for the exchange of research students and scientists between France and Australia. A day was also dedicated to the development of a research project focusing on human-animal

interactions aspects in group-housed pigs with Dr. Celine Tallet. We hope that this knowledge could be applied to keeping sows in groups by studying how this housing system might impact their interactions with the stockperson.

6. Implications & Recommendations

Overall, this trip led to numerous discussions with international researchers on pig welfare during the conference. The effort towards alternative housing systems is clearly an international effort, and this meeting allowed me to initiate and cultivate exchanges with other researchers worldwide. Numerous opportunities for collaborations were identified and hopefully will flourish in the near future, particularly with Danish and American researchers on areas of common interests. Denmark especially appears to have accumulated an astonishing amount of applied research knowledge and experience in the area of pig welfare from which Australia could truly benefit.

The presentation that I gave on possibility to reduce stress in piglets by early life brief contacts attracted significant interest, and should lead to further development of that work with international collaborators across Australia and Europe. Some European researchers also expressed interest in the progress of the Australian pork industry toward the research on the induction of oestrus during lactation. This shows that the work conducted by APL and the Pork CRC has also close followers outside of Australia, and highlights the relevance of the research conducted in Australia to our general knowledge on the management and welfare of sows.

7. Acknowledgements

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