

Report of the study trip “Knowledge exchange with the Animal welfare & Laboratory Animal Sciences in the University of Utrecht” for Grouphousenet (CA15134)

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This study visit under Prof Bas Rodenburg at the University of Utrecht mainly took place in the Department of Animals in Science and Society. The department has an interdisciplinary focus on animal welfare, animal behaviour, 3R and human-animal relationship. They work with farm animals as well as laboratory animals. There are specialised facilities for different animal species in a more experimental setting, but also housing closer to conventional farming practices for different purposes. This facilitates different needs in terms of behaviour and welfare research which sometimes requires a closer monitoring of individual animals. The department is part of the Faculty of Veterinary Medicine and therefore also interlinked with clinical veterinary practices, mainly small animals and horses.

One of the techniques discussed was precision livestock farming (PLF). There have been a vast body of work on PLF in animal farming in the past years. The respected figure in PLF in KU Leuven, Prof Daniel Berkman, spoke about how to well used PLF to monitor farm animals for welfare outcomes. It's not just about BIG data but about SMART data, selecting the parameters that can correspond to the welfare outcome instead of collecting an excessive amount of data without having a clear aim. Collaboration between industry, researchers, farmers and stakeholders is the key to implementing PLF, in order for farmers to care for individual animal's needs, health and welfare. Real-time stress monitors for pigs are currently in development and there are also real-time video recordings combining thermography cameras to enable detection of aggressive encounters, which can potentially be used to monitor other damaging behaviours such as tail biting and ear biting. In terms of a wider application, cotton ropes supplied to groups of pigs are used for group-level disease screening in veterinary research, and this could also be used to test group-level salivary cortisol and compare between group stress/activity level in regards to tail biting.

I also presented a poster on the effect of dietary fibre and enrichment on tail biting in undocked pigs on fully-slatted floors, which is part of my PhD project. We found that pigs fed the higher fibre diet were observed to perform more tail directed behaviours, contrary to the hypothesis that higher fibre in their diet should increase the feeling of satiety and decrease activity level and therefore damaging behaviours. We did not uncover an effect of enrichment or diet on tail lesion scores. However, in total a high level of tail biting was reported, and 26 severe tail biting outbreaks were recorded. Almost 70% of the pigs had some degree of tail amputation at the end of the experiment. This study showed that simply increasing dietary fibre level with minimal enrichment provision is not enough to control tail biting among undocked pigs on fully slatted floors. As a multifactorial behaviour, tail biting needs more consideration of different aspects of management practices, but it shouldn't be considered a mission impossible. As EU DG SANTE senior administrator Desmond Maguire said in another meeting, there will always be some level of tail biting, and although there is no silver bullet, there are many examples to raise pigs with intact tails currently in Europe. Many vets and farmers alike are not used to the practice of rearing intact-tailed pigs, and it requires more training and learning to progressively change the attitude.

Discussions were made about the connections between other current hot topics in pig production and tail biting. The threat of African swine fever can divert the attention from the tail docking ban

and enrichment provision, and the talk on biosecurity also generates debate about the use of substrate and bedding for pigs and whether it will be a risk of spreading diseases. This does reiterate the importance of tracing and sourcing materials used on farm for biosecurity reason. Many action plans related to the reduction of antimicrobial use are also in line with improving welfare standard to lower the risk of tail biting: strengthening animals' immune system by reducing stress, genetics, going back to the basics to improve housing and practices that promote disease prevention (e.g. stocking density), and paying attention to individual animal's treatment. Reducing antimicrobial use is not just about being properly treated when an animal is sick. Reducing stress is important and going back to the 5 freedoms: free from hunger, thirst/discomfort/pain, injury, disease/fear, distress, & free to express normal behaviours. These are all relevant to tackle antimicrobial resistance and also damaging behaviours.

Some discussions on the reflection of the Action were also made. COST action as a collaborative platform between institutes really facilitates the research outputs and disseminations on specific subject. The training schools also enable many early career PhD students and researchers to network and learn about the topic. It requires researchers to invest time voluntarily to organise events, and sometimes difficulties will emerge when running out of people to execute. It is crucial to involve more early career researchers and PhD students in the organisation who have more motivation and time to carry out the tasks, as we do in the GroupHouset.