

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: CA15134-44550

STSM title: On line evaluation of tail damage and on farm strategies to prevent tail biting

STSM start and end date: 02/06/2019 to 07/06/2109

Grantee name: Emma Fàbrega Romans

PURPOSE OF THE STSM:

Tail docking has been adopted for a long time as a common practice in pig farms to prevent the risk of tail biting, although it does not always work and outbreaks may still appear in docked pigs [1]. Indeed, tail biting has been suggested as a redirected behaviour with a background in an unfulfilled exploratory behavioural need, but of multifactorial nature, with other risk factors ranging from genetics, to environment, nutrition, farm management, sex...being able to trigger the problem [2]. This complexity explains why tail docking does not resolve the underlying causes and the uncertainty of outbreaks escalating is still an issue for farmers raising docked pigs. The EU current Directive for the protection of pigs [3] stipulates that enrichment materials such as straw or other suitable materials should be provided to satisfy the behavioural needs of pigs, to all categories of pigs, not only to prevent tail biting, but also to provide nesting or rooting materials for sows. Furthermore, EU Directive specifies that tail docking could not be done routinely and stipulates the measures that farmers should undertake before they can resort to docking (i.e. they should address all the risk factors that may lead to tail biting). Although the legal, and also social, demands to avoid tail docking are increasing, recent studies show that still a 90-95% of pigs in EU are tail docked to avoid the risk and consequences of tail biting [4,5]. In Spain a vast majority of pigs are still tail docked. In contrast, in Finland tail docking has been totally banned for a long time, therefore, nowadays it can be considered one of the EU countries having a more exhaustive knowledge on how to raise pigs with entire tails [6, 7]. The arguments that farmers put forward to explain why they are reluctant to stop tail docking are mainly: (1) the complexity of understanding why and how an outbreak develops in docked pigs, and, therefore, the lack of straightforward solutions they have to solve outbreaks; (2) the fear and frustration to fail if they move to raise intact tail pigs; (2) the economical consequences of both the outbreaks and of implementing prevention measures that may not work.

One of the important issues with regards to the success of raising pigs with intact tails is to have a proper system to evaluate potential tail biting that may occur. Slaughterline records on tail damage have been considered a proper indicator to assess the

effectiveness of the on farm strategies that farmers implement to avoid tail biting. At present, in Spain there is not an harmonised system to evaluate tail damage at the slaughter line and to report the output back to farmers. In Finland, the host institution visited has been working for a long time both in supporting farmers on how to raise pigs with intact tails and also on the assessment of tail damage at different levels. During the visit, a large sample of pigs were evaluated at the abattoir, to work on a recording system based on different parameters (tail length and tail lesions).

Therefore, the purposes of this short term scientific mission were:

- To collect information on how to record tail damage at the slaughterline level
- To collect information on the strategies that Finish farmers have been implementing to prevent tail biting in intact tail pigs
- To share knowledge about scientific and practical approaches on how to avoid tail docking and how to assess tail damage in intact tail pigs

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DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

This STSM consisted of two main activities: (a) Experimental work at the slaughterhouse HKSCan and (b) Visit to a pig farm

Experimental work at the slaughterhouse.

The recording protocol for tail lesions at the slaughterhouse had already been designed by the host institution and tested in a preliminary trial to check the feasibility of its application at the speed level of the abattoir. The supervisor of the trial, professor Valros, had already provided clear guidelines on how to conduct the field work, which were further discussed and clarified after arrival of the applicant.

The applicant participated in a team of 4-6 people required to appropriately collect the field information. Around 10.000 pig tails were assessed for tail damage over a three day interval. The pigs were slaughtered from 5:30 am to 15:00h and two teams of people were evaluating tail damage at two slaughterline points: (1) just after bleeding and (2) after scalding. The two scoring systems were slightly different, while still corresponding, to account for the difference in the tails before (dirty, hairy) and after (clean, no hairs) scalding. At least two persons were needed at each scoring point during the entire day: one doing the scoring and another one taking notes. Additionally, when available, an extra person was placing the carcass in an adequate position for scoring. Each tail was hold by the tip, and straightened out for measuring, setting the measure just at the base of the tail at the end of the back of the pigs. Measurements were taken with a precision of 2cm. At the time of measuring the tail, other aspects were also inspected: first the tail end was checked to evaluate whether it was intact; then, the rest of the tail was also checked for lesions. If the tail showed signs of a healed tail damage, it was always checked and scored for acute damage.

Basically, the two scoring systems included the following parameters:

- 1) Tail Score:
 - E: Intact tail
 - P: healed tail
 - A: Open tail lesion

- 2) Lesion score:
 - 1: Scab (only after bleeding)
 - 2: Bite marks or bruises (only after scalding)
 - 3: Minor open wound
 - 4: Major open Wound

- 3) Swollen:
 - (-): No swelling
 - (+): swelling

On day 3, 120 tails were collected for pathological examination. The previous day of tail collection the team who had been scoring the tails, discussed on how to select the tails for pathological examination, so that they represented the major typologies of tails that had been found ("standard" lesion examples and also tails with ambiguous signs from each category). A decision was made on where to mark the tails to be examined (after bleeding or after scalding), according to the easyness of scoring each type of objective tail. Approximately half of the tails were marked after bleeding and the rest after scalding. The person collecting the tails was standing at the point where the carcasses are selected into the side-line (for meat inspection); whenever a marked pig appeared, it was followed, the tail was detached by the slaughterhouse personnel and the tail placed inside a plastic bag marked with the carcass running number.

The collection of information continued for two days more after the applicant of this STSM left to undertake the other objectives of the STSM. Therefore, a total of approximately 15.000 tails were evaluated during the entire week of experimental procedure.

Visit to pig farms

The second purpose of this visit was to be able to learn from the practical experiences of farmers and also from the scientific opinions of experts on strategies to prevent tail biting

and, therefore, obtain information to support farmers in Spain towards moving to the proper fulfillment of EU legislation.

The host institution organised a visit to three pig farms (one of sows and two of fattening pigs) belonging to the same company. Before entering into the pig farm, a discussion was held with the two farmers on the main challenges they had to face when they moved towards leaving pigs with intact tails. Important remarks such as the following appeared as key factors in the discussion: (1) possibility for pigs to feed at the same time (i.e. long feed troughs); (2) high health standards; (3) provision of sufficient amount of enrichment material; (4) many of the tail biting incidences were related, according to the farmers' opinion, to disadjustments with the feeding regime, which if early detected could be stopped and did not escalate towards a tail biting outbreak.

The sow farm was visited first, observing interesting strategies such as:

- All sows were offered straw before parturition to perform nesting behaviour. Although the farrowing crate was on fully slatted floor, the farmers did not report any problem with the slurry system.
- Piglets were offered after weaning straw in a rack, sawdust and an additional enrichment object (log attached to a chain)
- Piglets were offered for the first days after weaning the same creep feed received with the sow, together with liquid feeding in a long trough allowing for all pigs to eat together.
- The housing system with a roof covering the part of pen in which the floor was concrete was described as very appropriate for farmers. Heated floor for the first days after weaning was also reported to be important.
- Another key issue was a close monitoring, specially 3-4 weeks after weaning, in which tail biting seems to be more critical, to provide enrichments the pigs have not experienced before if an incidence appears, and to check all risk factors, specially food.

Two pig fattening farms, including different pen designs, were visited. The opinion that the farmers wanted to remark was that, regardless of the farm being newer or older, an appropriate management could avoid tail biting. Both fattening farms used liquid feeding allowing all pigs to feed at the same time, partly slatted floors, a shower system to avoid high temperature in the summer. A straw rack had been recently provided to each pen, as compared to only having saw dust as they had before and were still providing now. The straw rack was considered to have reduced more the tail biting risk, specially if other factors such as temperature, ventilation suffered any undesired impairment.

Overall, the visit was very fruitful in providing practical information and discussion on aspects which could be implementable in Spanish pig farms. Although the climatic conditions in both countries are different, and some management practices differ, the farm visited presented productivity records and aims very similar from those in the Spanish farms. Therefore, very useful ideas were obtained to encourage Spanish farmers to face the challenge of stopping tail docking.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

At the time this report is written, the results of this trial are not available. An important set of data will have to be typed into computer files to proceed for analysis. Furthermore, other slaughterhouse records on carcass condemnation, carcass yield, origin of carcasses...will also be used for the analysis. It is not envisaged that before next Autumn 2019 all these data is ready for analysis and to start discussing on results. However, the applicant already obtained some important preliminary results:

- A clear idea on how to evaluate tail damage was obtained.
- Preliminary impressions of the work carried out seem to indicate that the scoring system used provides a useful tool to differentiate amongst pig batches (i.e. the pigs with different farm origin seemed to present differences in tail condition which could be clearly identified with this scoring system).

Further knowledge gained.

During the STSM, the applicant had the opportunity to participate in the Researcher Forum of the Faculty of Veterinary Medicine of the University of Helsinki. The theme selected in this meeting was “Resilience” and the host supervisor Professor Anna Valros presented the topic “why do some pigs bite and some other pigs don’t?”. The program of the whole meeting is attached in the annex. This was again a great opportunity of networking with colleagues from other research areas, and consider the topic of resilience in a broader perspective.

The faculty of Veterinary medicine was also visited and further discussions on the data collected and other relevant issues of Animal Welfare were discussed with Professor Laura Hänninen.

FUTURE COLLABORATIONS (if applicable)

Overall, this STSM allowed the applicant to network with relevant scientific experts in the field of raising pigs with intact tails. After returning from the STSM, all the knowledge gained will be first used for technological transfer targeting specially farmers, but also veterinarians and other stakeholders involved in the pig industry. The applicant is involved in two workshops in June and one in November funded by IRTA and the Catalan Government on raising entire tail pigs, and has also been asked to provide training in Portugal in November. The Catalan Government has also asked the applicant to participate in some “Knowledge Pills”, which consist of a 1h online training tool for farmers in this topic.

Moreover, the applicant has applied for funds to run an Operational Group (using Rural Development Funds) involving 4 important Spanish Pig companies. One of the objectives of the Operational Group if funded is to be able to correlate on farm records of tail damage and slaughterhouse evaluation, therefore the knowledge gained will be very valuable. The collaboration with the host institution will be first sharing the experience of our own research and asking for expert opinion on the results.

On the other hand, when all data collected has been prepared for statistical analysis, the applicant has offered all her support to prepare scientific papers and publish the results. Acknowledgements to the GroupHouseNet Cost Action 15134 will be included in any publication resulting from this STSM. Future possibilities of collaboration will be explored.

Acknowledgements

I would like to express my special thanks of gratitude to the GroupHouseNet COST Action 15134 organization committee for all support. Special thanks for all the effort made and altruistic help, shared ideas, laughs and tail observations (10000!) to Professor Anna Valros.

ANNEX 1

PROGRAM OF THE RESEARCHER FORUM OF THE FACULTY OF VETERINARY MEDICINE

<https://blogs.helsinki.fi/researchers-forum/2019-2/>

1) 2019

The 7th Researcher Forum of the Faculty of Veterinary Medicine will take place on the 6th of June 2019 at [Poliisien kesäkoti/Police cabin](#) in Lauttasaari* and is aimed at all researchers of the Faculty.

[Registration to the event on Lyyti](#) by 29th of May 15:00 o'clock.

Resilience

Program (open for changes):

8:30 Breakfast

9:00 Morning session: How do sociality and personality affect resilience?

- Welcome by the Chair Tomi Taira
- Current issues in research by Antti Sukura and Olli Peltoniemi
- Assistant professor [Rose Thorogood](#):
“Social resilience in the wild? How social environments facilitate adaptation to environmental change”
- Visiting researcher, PhD [Katriina Tiira](#): “Resilience in dogs”

11:30 Lunch break

12:30 First afternoon session: Physiology of resilience

- Professor [Iiris Hovatta](#):
“Molecular mechanisms underlying resilience and susceptibility to psychosocial stress”

13:30 Coffee break

14:00 Second afternoon session: Resilience and behavior

- Professor [Anna Valros](#):
“Why do some pigs bite and others do not? Resilience and tail biting in pigs”
- Post-doctoral researcher, PhD [Tuomas Aivelo](#):
“Urban rats in Helsinki: thriving because of and despite humans”
- Closing words by the Chair Tomi Taira

16:00 Evening

Wine and snacks

*Venue: [Poliisien kesäkoti](#) (Police cabin),

Address: Kyyluodontie1 (after which follow the signs), Lauttasaari, Helsinki

See the location on the [map](#).

How to reach Poliisien kesäkoti – [instructions](#) (only in Finnish).

Organizing team: [Olli Peltoniemi](#), [Outi Vainio](#), [Miia Lindström](#), [Tomi Taira](#), [Miiamaaria Kujala](#) and [Tiina Avomaa](#).

ANNEX 2. Visit to the pig farm and work at the slaughterhouse

