TailCam – a method for measuring tail length and tail bites on pig carcasses

Helle Daugaard Larsen, Glenn Brink Nielsen, Margit Dall Aaslyng, Dorte Lene Schrøder-Petersen, Per Black.

Danish Technological Institute, Gregersensvej 9, DK-2630 Taastrup

INTRODUCTION

Tail biting is an animal welfare problem in all types of modern pig farming. Many contributing factors have been documented, and results of preventive and corrective actions are diverse. Docking reduces tail biting, but the docking procedure is painful in itself. A systematic and comprehensive registration of tail length and tail lesions could facilitate the assessment of different preventive measures on a large scale.

At present, it is not possible to get a comprehensive overview of the tail length and frequency of tail lesions. The meat inspection is currently only registering tail bites if they are infected or if there is a risk of spreading of bacteria to other parts of the carcass. Therefore, a system for the automated measurement of tail length and tail lesions was developed.

MATERIAL AND METHODS

The system can be seen in Fig. 1. Reference material was selected, and programming of algorithms was done by Convolutional Neural Network (CNN).

Figure 1: TailCam system.

PigWatch Report

BASIC INFORMATION	
Number of Pigs	359
Start of Period	2017-12-14 08:57:53
End of Period	2017-12-14 10:04:13
Mean Tail Lenght	26 cm
Std. Tail Length	3 cm
Fraction of Small Lesion	23.4 %
Fraction of Lesion	1.39 %
Fraction of Too Short Tails (<10cm)	0.0 %
Fraction of Very Short Tails (<5cm)	0.28 %

Figure 2a: Example of a herd delivering pig with undocked tails.

RESULTS AND DISCUSSION

The TailCam system is currently able to take high quality pictures of tails. These pictures can be linked to the individual carcasses, and thereby to the herd, to meat inspection remarks, and to other relevant data in the slaughter database.

Potential usages are: Auto-generated reports for herd (Fig. 2), for the delivery (per month or year), type of production, etc. Furthermore, the system has been used for the creation of a one-page overview of tail length distribution (Fig. 3).

CONCLUSION

TailCam can potentially provide accurate and detailed "Big tail-data" on all carcasses, and can be used as an objective, comparable, easily accessible, and comprehensive output in future tail bite research and for a range of documentation purposes.

Distribution of Tail Lengths:

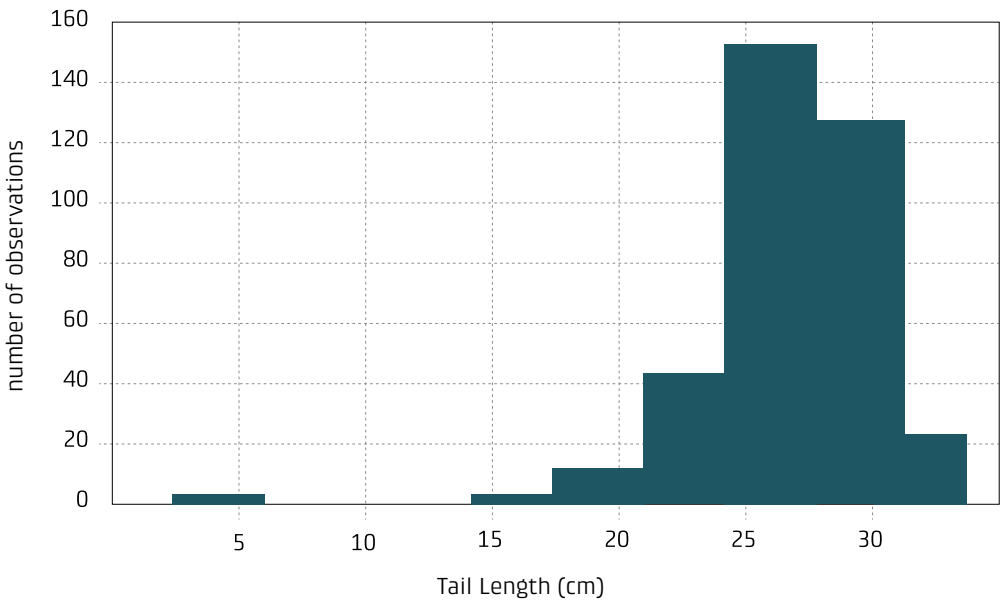

Figure 2b: Example of a herd delivering pig with undocked tails.

Number of pigs

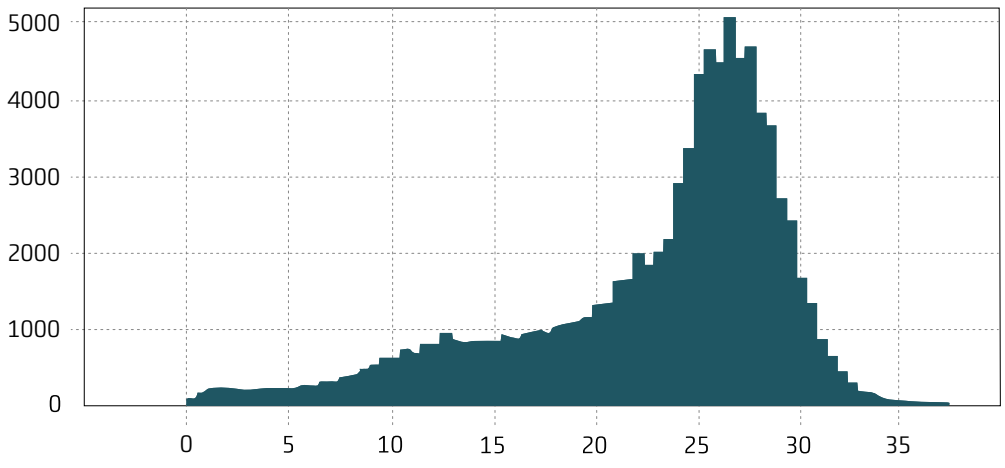

Figure 3: Tail length (X-axis) versus number of measured tails (Y-axis) of a subset of the total number of measured tails within a given period of time.

PROJECT GROUP

Wageningen UR Livestock Research (WLR)
Danish Technological Institute
L'Institut National de la Recherche Agronomique (INRA)
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