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An animal-based screening method for sufficient amount of straw to fulfil the need for exploration and manipulation

This document describes a screening method to assess if pigs are supplied with a sufficient amount of straw to fulfil their need for exploration and manipulation through collection of data on the availability of straw, pigs' exploratory behaviour and lesion scoring.

The screening method

Observations and scoring include eight randomly selected pens in one section

The screening prototype will on pen-level include 1) scoring of the amount of unsoiled straw, 2) behavioural recordings and 3) tail lesion scoring 4) ear lesion scoring and 5) flank lesion scoring. These measures have been chosen based on a study showing changes in the measures with increasing straw amount (Pedersen et al (2014) and Jensen et al (2015)).

0) Base-recordings

Base-recordings includes

Farm level

- date
- farm identification
- quality of straw (variety and degree of processing)
- quantity of straw (volume or weight)
- type of feed and feeding method

Pen level

- pen identification
- measures of size of pen (including measures of solid floor)
- number of pigs per pen
- quantity of straw allotted daily
- description of any manipulative material available apart from straw
- time of straw allocation and time of feeding on the day of recording.
- start and end time of recording

Recordings are conducted such that 1h after feeding, as well as 1 h before and after straw allocation is avoided.

First, the amount of unsoiled straw is scored, along with the number of pigs in each pen. At the same time activity in the pens is standardised. This is done by alerting all pigs before the behavioural observations by walking along the pens in a standardised manner ensuring an equal disturbance in all pens.

1) The amount of unsoiled straw

Firstly, unsoiled straw (defined as straw, which is visually dry and clean (without saliva, urine or faeces) and which primarily (> 2/3) has the original colour of the straw (as compared to a sample of straw from the bale)) is scored according to a 5 point scale by a visual assessment of its volume.

Score (according to Pedersen et al. 2014):

- 0: less than 1 dl
- 1: between 1 dl and 1 litre
- 2: between 1 and 10 litre
- 3: more than 10 litre

The five scores are accompanied by illustrations of 1 dl, 1 litre, and 10 litres of straw from the bale. The scores will be calibrated by scoring and subsequently collecting the scores unsoiled straw and measuring the volume of it. See illustration below from Pedersen et al. (2014) AABS 160: 46-55



2) Behavioural recordings

Secondly, the behaviour is recorded during 60 minutes.

Variables to be recorded (#=number):

pigs in pen

pigs standing (body supported by legs, standing or walking)

pigs standing with their mouth or snout in contact with straw

pigs standing with their mouth or snout in contact with other manipulative material than straw

pigs standing with their mouth or snout in contact with pen fitting, floor or faeces

pigs standing with their mouth or snout in contact with any part of another pig's body (irrespective of if this is another pig in the same pen or a neighbouring pen)

pigs standing either apparently inactive or performing other activity

Procedure:

The number of pigs in the pen is already recorded for each pen (see above)

At 4-minute intervals record the number of pigs in each pen that

- stand

Among standing pigs record the number of pigs with mouth/snout in contact with

- straw
- other material
- pen fittings, pen floor or faeces
- another pig's body
- nothing, or no activity, or other activity than above

After the 60 minutes of scanning (15 scans for each of 8 pens) the recordings are terminated.

Indices of oral behaviour to be calculated subsequently:

1) # pigs with their mouth or snout contacting material*

2) # pigs with their mouth or snout contacting material/# standing pigs

3) # pigs standing with their mouth or snout contacting material/# pigs standing with their mouth or snout contacting pen/floor/faeces (Mullan et al. (2009 AABS 121 25-31)

4) # pigs standing with their mouth or snout contacting material/# pigs standing with their mouth or snout contacting pen/floor/faeces, or other pigs

5) # pigs standing with their mouth or snout contacting material/pigs standing with their mouth or snout contacting pen/floor/faeces, or other pigs, or material (i.e. divided by all exploratory behaviour).

6) $[1(\% \text{pigs explore pen}) + 2(\% \text{pigs explore material})]/2$ (From WelfareQuality)

*material being straw plus other manipulative material provided

3) Tail lesions

The pens are entered and the tails of all pigs are scored by visual inspection. If necessary the tail lesion is inspected by palpation. The below descriptions are supported by photo material below. If in any category the tail shows signs belonging to more than one score, it is always scored according to the highest score.

Length (if possible measure the actual length related to scores 1 and 2)

0. *No cannibalism*. The tail is intact

1. *Partly shortened tail*. The tail is shortened to a length of 1 cm or longer (weaners), or 2 cm or longer (fatteners)

2. *Less than 1 cm (2 cm)*. The tail is shortened to a length of less than 1 cm for weaners (less than 2 cm for fatteners)

Damage

0. *Intact*. No damage. The skin of the tail has no marks or injuries

1. *Swollen tail*. The tail is swollen with a red colouring, a warmer temperature or an irregular and softer contour, of the skin compared to unaffected tail base indicating an inflammatory reaction

2. *Bite marks*. The tail has small injuries from bites which are visible as spots/dots on the tail

3. *Open wound*. The tail has one or more open wounds with puncture(s) of the skin and removal of tissue

4. *Swollen and open wound*. The tail has one or more open wounds with puncture(s) of the skin and removal of tissue and this is accompanied by the tail being swollen with a red colouring, a warmer temperature, or an irregular and softer contour of the skin, compared to unaffected tail base indicating an inflammatory reaction

Freshness

0. *No blood*. No blood visible on the tail

1. *Wound crust*. Dried blood, which is dark brown or black, is visible on the tail. The skin is normal colour.

2. *Wound crust with redness*. Dried blood, which is dark brown or black, is visible on the tail. In addition there is redness of the skin below or besides the crust, but skin is dry.

3. *Dark red/brown*. Somewhat dried blood is visible on the tail. It looks red to brown and feels somewhat sticky, or wet. The tail may, or may not, have a wound crust.

4. *Red fresh blood*. The tail shows fresh red blood. It feels wet due to bleeding, or exudate. The tail may or may not have a wound crust

4) Ear lesions

0. *Intact*. The skin of the ears has no marks or injuries

1. *Red or swollen ear*. The skin of the ears is not broken, but swollen and / or has a red colouring

2. *Superficial scratches/bite marks*. The ear has bite marks seen as small dots (no missing tissue), superficial scratches, or injuries that may be partly healed










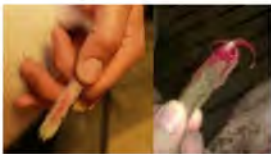



3. *Open wound*. The ear has one or more open wounds with puncture(s) of the skin

4. *Part of an ear missing*. Removal of tissue from bites; the injury may be with fresh red blood or partly healed.

5) Flank lesions

0. *No circular wound on flank* (scratches from fighting does not count)

1. *Presence of circular wound on flank* ((originating from other pigs massaging and possibly biting the wound)

Tail length (0-2)	Tail damage (0-4)	Blood freshness (0-4)
<p>0. No cannibalism/no shortening</p> 	<p>0. Intact. No damage</p> 	<p>0. No blood</p> 
<p>1. Partly shortened and > 2 cm*</p> 	<p>1. Swollen tail</p> 	<p>1. Wound crust</p> 
<p>2 - Shortened and < 2 cm*</p> 	<p>2. Bite marks</p> 	<p>2. Wound crust with redness</p> 
<p>* 1 cm for weaners</p>	<p>3. Open wound</p> 	<p>3. Dark red/brown blood</p> 
	<p>4. Swollen and open wound</p> 	<p>4. Fresh blood</p> 

The developed tail scoring method is modified from Zonderland et al (2003).

Acknowledgements

The authors are grateful for funding from [Danish Ministry of Justice, the Danish Ministry of Food, Agriculture and Fisheries and Aarhus University in support of the ANIWHa Era-Net initiative (FareWellDock project). Célinne Tallet, Marie-Christine Meunier-Salaün (INRA, France), Sandra Edwards (Newcastle University) Stefan Gunnarsson (Swedish University of Agricultural Sciences) and Anna Valros (University of Helsinki) provided valuable input to the screening method.

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