

Protocol for on-farm health assessment of growing-finishing pigs

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Description

This document contains the protocol used in the 'Enlighted pigs' project to perform health observations in growing-finishing pigs. This protocol was created based on the Welfare Quality[®] protocol (Welfare Quality[®], 2009), the smartphone application FitForPigs (FitForPigs, 2020), the protocol developed by Bus et al. (2023) and was supplemented with literature if necessary. This protocol includes six multilevel and eight binary health scores to be performed at the individual level. Each health score includes a description of the health issue, the scale of scores to be attributed, a brief explanation of the differences between each score and pictures to illustrate them. In our studies, the health scores were given live by a single observer standing in the pen. A complete pen containing 7 pigs was assessed in 20 to 30 minutes and pigs were touched or moved for better visibility during the assessment. Each animal was identified using its ear tag. Pigs within a pen were assessed in a random order.

Multilevel health scores

Tear staining		
<p>Description: Brown to black stains originating from the inner corner of the eye. Each eye is scored separately.</p> <p>Source: adapted description from Telkänranta et al. (2016), adapted scores from DeBoer et al. (2015) and pictures from Bus et al. (2023) (smaller tear stains indicated with orange arrow).</p>		
Classification: 0, 1, 2		
<p>0</p> <p>Absence of tear stain <u>or</u> tear stain smaller than the eye area <u>without</u> extending below the eyelid</p>  <p>Picture by J.D. Bus</p>	<p>1</p> <p>Presence of tear stain smaller than the eye area <u>and</u> extends below the eyelid</p>  <p>Picture by J.D. Bus</p>  <p>Picture by J.D. Bus</p>	<p>2</p> <p>Presence of tear stains larger than the eye area <u>or</u> extended below the mouth line</p>  <p>Picture by J.D. Bus</p>  <p>Picture by J.D. Bus</p>



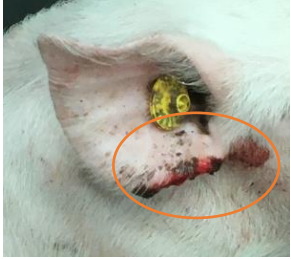
Conjunctivitis		
<p>Description: Inflammation of the conjunctiva resulting in a red cornea (visible white part of the eye) or swollen eyelids. The most affected eye is scored.</p> <p>Source: description adapted from FitForPigs (2020) and Bus et al. (2023), pictures from FitForPigs, 2020.</p>		
Classification: 0, 1, 2		
<p>0</p> <p>Absence of conjunctival redness or swollen eyelids</p>  <p>Picture from FitForPigs (2020)</p>	<p>1</p> <p>Presence of conjunctival redness only in one corner of the eye</p>  <p>Picture from FitForPigs (2020)</p>	<p>2</p> <p>Presence of redness in <u>both</u> inner and outer corner of the eye <u>or</u> swollen eyelids</p>  <p>Picture from FitForPigs (2020)</p>

Ear biting lesions

Description: Lesions resulting from ear-directed manipulative behaviour. Scored lesions are fresh reddish wounds on the front and back ears' sides and do not include scratches or necrosis. The most damaged ear is scored.

Source: scores adapted from Telkänranta et al. (2016), pictures from A.J. Scailierez (lesions circled in orange).

Classification: 0, 1, 2




0 Absence of wounds	1 Presence of bite marks (pinhead size) <u>or</u> 1 or 2 small wounds (less than 2cm)	2 Presence of 3 or more small wounds <u>or</u> at least 1 wound larger than 2cm
 <p style="font-size: small; margin-top: 5px;">Picture by A.J. Scailierez</p>	 <p style="font-size: small; margin-top: 5px;">Picture by A.J. Scailierez</p>	 <p style="font-size: small; margin-top: 5px;">Picture by A.J. Scailierez</p>




Body lesions

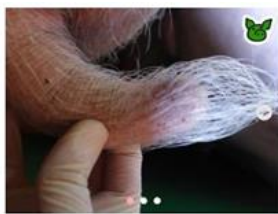



Description: The body is divided in 3 sections; A) Front: neck and shoulder and front legs (ears excluded), B) Middle: ventral, side and dorsal parts of the thoracic cavity, C) Hind quarters: hips and pelvic area and hind legs (tail excluded). For each body part, one score accounts for both left and right side of the pig. Lesions recorded are recent, fresh and reddish scratches. Two parallel scratches are counted as one lesion.

Source: scores from Welfare Quality® (2009), pictures from Bus et al. (2023) and A.J. Scailierez.


Classification: 0, 1, 2



0 No lesion up to 4 lesions	1 From 5 to 10 lesions	2 More than 10 lesions
 <p style="font-size: small; margin-top: 5px;">Picture by A.J. Scailierez</p>	 <p style="font-size: small; margin-top: 5px;">Picture by J.D. Bus</p>	 <p style="font-size: small; margin-top: 5px;">Picture by J.D. Bus</p>

Bursitis		
<p>Description: A bursa is a sac filled with fluid on the leg caused by a pressure injury. Bursitis is scored depending on the bursa size: small = grape size, medium = walnut size, large = tangerine size. One total score is given for the four legs.</p> <p>Source: definition and scores adapted from Welfare Quality® (2009), pictures from Bus et al. (2023) (bursa indicated with an orange arrow).</p>		
Classification: 0, 1, 2		
<p>0</p> <p>Absence of bursae</p>	<p>1</p> <p>1 or more small bursae (grape size) or only 1 medium bursa (walnut size)</p>	<p>2</p> <p>More than 1 medium bursa (walnut size) or 1 large bursa (tangerine size) or eroded bursa</p>
 <p>Picture by J.D. Bus</p>	 <p>Picture by J.D. Bus</p>	 <p>Picture by J.D. Bus</p>



Tail biting lesions		
<p>Description: Lesions caused by tail-directed manipulative behaviour. Scored lesions are fresh red bite marks and open wounds along the tail length. Scratches, older brown crusts or necrosis are not included.</p> <p>Source: adapted scores from Zonderland et al. (2008) and Welfare Quality® (2009), pictures from FitForPigs (2020).</p>		
Classification: 0, 1, 2		
<p>0</p> <p>Absence of damage</p>	<p>1</p> <p>Presence of bite-marks (pinhead size) or small wounds (<1 cm)</p>	<p>2</p> <p>Presence of wounds (> 1cm) or missing tail parts</p>
 <p>Picture from FitForPigs (2020)</p>	 <p>Picture from FitForPigs (2020)</p>	 <p>Picture from FitForPigs (2020)</p>  <p>Picture from FitForPigs (2020)</p>



Binary health scores



Grey eye stains (ocular melanocytosis)	
<p>Description: The presence of a grey stain in the cornea (white part of the eye) could be a sign of ocular melanocytosis; corneal pigmentation from congenital origin in humans and also observed in dogs.</p> <p>Source: description adapted from Cronemberger et al. (2011) and Dees et al. (2013), pictures from A.J. Scaillierez.</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of grey stains.</p>	<p>1</p> <p>Presence of grey stain in at least one eye.</p>  <p><small>Picture by A.J. Scaillierez</small></p>

Atrophic rhinitis	
<p>Description: Atrophic rhinitis is characterized by nasal discharge, nasal swelling, snout shortening and twisting.</p> <p>Source: description adapted from Magyar and Lax (2002), score adapted from Welfare Quality® (2009) picture from FitForPigs (2020).</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of atrophic rhinitis</p>  <p><small>Picture from FitForPigs (2020)</small></p>	<p>1</p> <p>Presence of atrophic rhinitis</p>  <p><small>Quelle: SGD Fellbach Picture from FitForPigs (2020)</small></p>



Pumping	
<p>Description: Pumping is defined as a laboured breathing with easily visible rising and falling chest at each breath with a possible laboured breathing sound. Does not include panting (breathing rapidly in short gasps carried out with the mouth).</p> <p>Source: description and score adapted from Welfare Quality®, 2009.</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of pumping</p>	<p>1</p> <p>Presence of pumping</p>

Body biting marks (or flank damage)	
<p>Description: Round-shaped wounds on the body (does not include scratches) resulting from manipulative biting behaviour. One score is given for each body section (front, middle and hind, see body parts in Body lesions).</p> <p>Source: description and scores adapted from Bus et al. (2023) and FitForPigs (2020), pictures from FitForPigs (2020).</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of round-shaped wound on the body</p>  <p><small>Picture from FitForPigs (2020)</small></p>	<p>1</p> <p>Presence of round-shaped wound on the body</p>  <p><small>Picture from FitForPigs (2020)</small></p>

Hernia	
<p>Description: Hernia occurs when there is a protrusion of a body structure or organ through the membrane that normally contains it, resulting in a lump under the skin in the umbilical or inguinal area.</p> <p>Source: description and scores adapted from Welfare Quality® (2009), pictures from FitForPigs (2020).</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of hernia</p>  <p><small>Picture from FitForPigs (2020)</small></p>	<p>1</p> <p>Presence of hernia</p>  <p><small>Picture from FitForPigs (2020)</small></p>

Rectal prolapse	
<p>Description: Internal tissue extruding from the rectum, often accompanied by blood in faeces.</p> <p>Source: description adapted from Bus et al. (2023) and scores adapted from Welfare Quality® (2009), pictures from FitForPigs (2020).</p>	
Classification: 0, 1	
<p>0</p> <p>Absence of rectal prolapse</p>  <p><small>Picture from FitForPigs (2020)</small></p>	<p>1</p> <p>Presence of rectal prolapse</p>  <p><small>Picture from FitForPigs (2020)</small></p>

Lameness	
<p>Description: The pig is unable to walk or exerts minimal weight-bearing on the affected limb. Lameness is scored after observing the pig walking a few steps. Source: description and scores adapted from Welfare Quality® (2009).</p>	
Classification: 0, 1	
0 Absence of lameness	1 Presence of lameness

Body condition	
<p>Description: Ability to visibly distinguish the pigs' skeleton (spine, hip and pin bones) that is protruding. Source: description and scores adapted from Welfare Quality® (2009), pictures from Welfare Quality® (2009).</p>	
Classification: 0, 1	
0 Good body condition (invisible pig's skeleton)	1 Poor body condition (visible pig's skeleton)
	
<small>Picture from ©2007, KU Leuven and Newcastle University in Welfare Quality® (2009)</small>	<small>Picture from ©2007, KU Leuven and Newcastle University in Welfare Quality® (2009)</small>

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