On-farm Pig Welfare Monitoring: State of the art

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COST Action 846
"Measuring and monitoring farm animal welfare"

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Pig Welfare Monitoring

Aim: Literature review, discussion and selection of parameters to be included in a welfare monitoring scheme for pigs

Starting point:
• Parameters from the questionnaire (SWG1)

Goal:
• Practical tool
• Assess welfare when the farm is visited, over periods of time and between farms

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Behavioural based parameters:

1. Lying behaviour (location, posture and duration)
2. Lying down and standing up behaviour
3. Fear of humans
4. Belly nosing
5. Stereotypies
6. Apathy
7. Agonistic behaviour
8. Tail biting, ear biting and cannibalism
9. Vulva biting

Animal based parameters:

10. Surgical interventions
11. Bursitis
12. Skin lesions
13. Lameness
14. Mortality
15. Illness status
16. Reproduction problems
17. Body condition score
18. Cleanliness

Environmental based parameters:

19. Stocking density, floor type and bedding
20. Recreational devices (e.g. toys)
21. Temperature
22. Other climatic parameters
23. Quality of stockpersonship

General discussion
(include discussion of the extent to which (welfare) needs are covered by the reviewed parameters and whether environment-based parameters can fill in remaining gaps)

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Guidelines

1. **Introduction:**
   1.1. Definition of the parameter
   1.2. Relevance/validity

2. **Methodology:**
   2.1. Description
   2.2. Validity
   2.3. Reliability
   2.4. Feasibility

3. **Conclusion:**
   3.1. Include?
   3.2. Further research?

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Meetings:

- 2002 Barcelona, Spain
- 2003 Barcelona, Spain
- 2004 Paris, France
- 2004 Merelbeke, Belgium
- 2005 Vienna, Austria

Parameter	Animal type	Param. validity	Method.	Method validity	Reliab.	Feasib.	Include?	High priority research
BEHAVIOURAL BASED PARAMETERS								
1. Lying behaviour	All	high	Scoring of location	medium	High	Medium	Yes	Standardisation
			Prevalence of lying posture	medium	High	Medium	Yes	Standardisation
			Timing of duration	medium	High	Medium	Yes	
2. Lying down and standing up behaviour	Sows mainly	High	Behaviour obs. on voluntary getting up & lying down	Medium	?	Low	Not at the moment	Can a feasible methodology be developed?
3. Fear of humans (avoidance or approach behaviour)	All	Medium, but high in extreme cases	Response to handling	Medium?	Medium	Low	No	
	All		Hand in stalls	Medium?	Medium?	High	Maybe, if validity can be demonstrated	Demonstrate validity of parameter on welfare
	All		Standard approach test	Medium?		Low (too time consuming, lack of facilities)	No	
4. Belly nosing	Weaner	Medium?	Recording behaviour	high	High?	Low	No?	
5. Stereotypies	Sows	High	Number of animals, or proportion of time	Medium	Medium?	Low/medium	Yes, but only if we have a good method	Can a method be found which is valid, reliable and feasible?

Parameter	Animal type	Param. validity	Method.	Method validity	Reliab.	Feasib.	Include?	High priority research
BEHAVIOURAL BASED PARAMETERS								
6. Apathy	All	High	Quant. Assessm.	Low	High?	High	No	
	All		Qualit. Assess.	High	High	Medium	No	
	All		Combined qual. And quant. approach	High	High	High	Yes	Methodology has to be developed and verified
7. Agonistic behaviour	All	High	Behaviour observations	High, but do not confound with play	High?	Low?	No, use skin lesions	
8. Tail biting and ear biting	Weaner and finishing pigs	High	Scoring tail in mouth behaviour and pain reaction	Medium-High	Medium?	Low (time consuming)	No, because there is a better alternative (tail lesions)	
	Weaner and finishing pigs		Prevalence of lesions	High	High (for severe lesions)	High	Yes	Standardisation
9. Vulva lesions	Sows	High	Scoring the behaviour	High	High?	Poor? (time consuming)	No, because there is a better alternative (vulva lesions)	
	Sows	High	Prevalence on lesions (farm)	High	High	High	Yes	Standardisation

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Parameter	Animal type	Param. validity	Method.	Method validity	Reliab.	Feasib.	Include?	High priority research
ANIMAL BASED PARAMETERS								
11. Surgical interventions	In par. < 7 days of age	High	Assess if mutilations have taken place	High	Very high (yes or no)	High	Yes	
		High	Check records.	Medium	High	Low	No	
12. Bursitis	All	Medium?	Class.	High	Medium	High	No	How painful is bursitis?
13. Skin lesions	All	High	Record location, number and severity of wounds	High	Medium?	Medium	Yes	Standardisation, improve reliability
	Finishers	High	Record old wounds in the abattoir	High	Medium?	Medium (because of speed of line)	Yes	Verify correlation between skin lesions on farm and at the abattoir
14. Lameness	Mainly sows	High	Observ. of walking animal, gait score	High?	High	Medium	Yes	Standardisation
15. Mortality	Piglets and finishers	High	Farmer records	Medium, depending on quality of records	High	High	Yes	Investigate if records are sufficiently accurate

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Parameter	Animal type	Param. validity	Method	Method validity	Reliab.	Feasib.	Include?	High priority research
ANIMAL BASED PARAMETERS								
17. Body condition score	Sows, at weaning and before farrowing	High, for extreme scores	Measure back fat thickness ultrasonically	High	High	Poor, particularly in dynamic groups	No	
	Sows, at weaning and before farrowing		Subjective classification	High	High, for extremes	High, but in groups depending on fear of humans	Yes	Standard.
18. Pig soiling with dung	All	Medium	Subjective classification	High	Medium	High	Yes	How relevant is it for welfare?

Parameter	Animal type	Parameter validity (of parameter on welfare)	Methodology (used by trained staff)	Method validity (of method to measure parameter)	Reliability	Feasibility	Include?	High priority resea
ENVIRONMENT BASED PARAMATERS								
20a. Quality and type of flooring	All	High	Assessment	High	High	High	Yes	Standardisation
20b. Quality and type of bedding	All	High	Assessment	High	High	High	Yes	Standardisation
20c. Space allowance	All	High	Measurement	High	High	High	Yes	
21 Presence and use of recreational devices (e.g. toys)								
22. Temperature	All	Low, except in extreme cases	Measurements during one day	High	High	High	Yes, background	
23a. Ventilation capacity	All	Low, except in extreme cases	Calculation	High	High	High	Yes, background	
23b. Humidity	All	Low, except in extreme cases	Measurements during one day	High	High	High	Yes, background	
23c. Noise	All	Low, except in extreme cases	Measurements during one day	High	High	Depending on method	Yes, depending on method	
23d. Ammonia concentration	All	Low, except in extreme cases	Measurements during one day	Depending on method	Depending on method	Depending on method	Yes, depending on method	
23e. Light	All	Low, except in extreme cases	Measurements during one day	High	High	High	Yes, background	
23f. Air speed	All	Low, except in extreme cases	Measurements during one day	Depending on method	Depending on method	Depending on method	Yes, depending on method	
23g. Dust	All	Low, except in extreme cases	Measurements during one day	Depending on method	Depending on method	Depending on method	Yes, depending on method	
24. Pen soiling with dung	All	Medium	Subjective classification	High	Poor (due to conditions of floor type and dryness)	High	No, look at the pigs	

Parameter	Animal type	Param. validity	Method	Method validity	Reliab.	Feasib.	Include?	High priority research
MANAGEMENT BASED PARAMATERS								
23. Quality of stockmanship	All	High	Questionnaire	Medium?	High?	Medium	Maybe not, if consequences can be measured on animals	Is it possible to develop a valid method
			Behaviour observations	Medium	Medium ?	Low, many interactions	Maybe not, if consequences can be measured on animals	Is it possible to develop a valid method

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Deliverables

- Review paper of animal based parameter in an special issues of AABS

- Book: 'Pig welfare Monitoring'