Noise from Livestock Husbandry

Introducing a new Basis for Assessment

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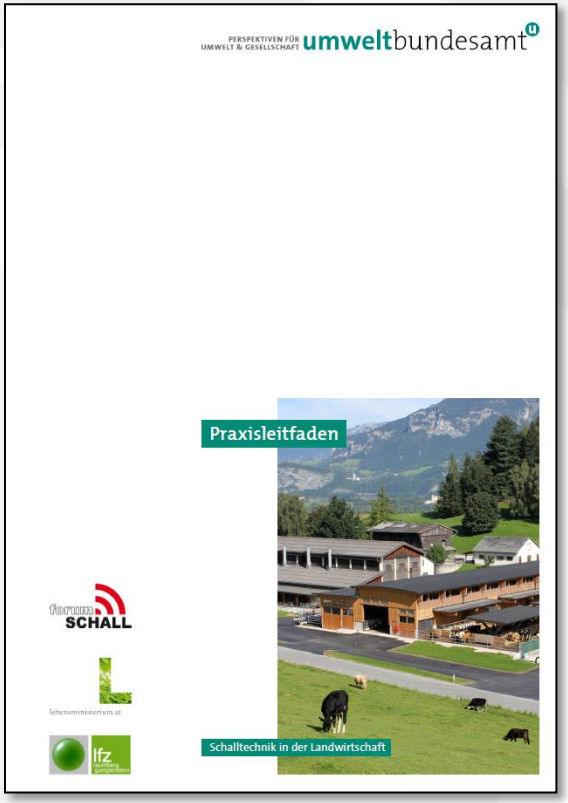
Farming & Noise

- Rise in mechanization
- Tendency to larger farms
- prescribed by national law
- Conflicts in land use designation
- Rise in sensitization within the population



Situation up to now …

- inadequate basis documentation
- potentially wrong calculations
- Characteristics of livestock farming not considered
- inconsistent farm noise assessments

Main goals

- Data capturing from farming noise sources
- including ethology of farm animals
- Assessment approaches with weighted emissions

- Immission-prognosis of livestock farming
- Assessment standardization and reproducibility
- Basis for noise experts

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- **S**ources of emission:
  - **A**gricultural traffic
  - **R**ural technical equipment
  - **A**nimal Husbandry
- **R**oom acoustics
- **A**ssessment of sound pressure levels in stables
- **N**oise emissions of outer components and openings
- **V**entilation systems
- **A**nimal vocalisation under ethological viewpoints

Noise Assessment in Pig Farming

	Species of Livestock	Sepcific Usage	Subarea
1	Cattles	Dairy Cattle Farming	
2		Suckler Cow Husbandry	
3		Cattle Fattening	
4	Pigs	Fattening	
5		Breeding	
6	Chicken	Laying Hens	
7		Fattening Chicks	
8	Turkeys	Fattenning	
9	Geese	Fattening	
10	Horses	Sport and Recreational Horses	
11		Breeding	Stud Station
12			Breeding Establishment
13			Young Horse Rearing
14	Sheeps	Milk Sheeps	
15		Meat Sheeps	
16	Goats	Milk Goats	
17		Meat Goats	

33 farms with pig stables – 100 SPL measurements

normal phases

emotional phases

+

total surface of stables

+

Sound absorption coefficient

+

Amount of animals

SWL / pig
normal phase

SWL / pig
emotional phase

SWL max / pig

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$L_{WA,norm,1\ pig}$ = **55,7dB**

$L_{WA,emo,1\ pig}$ = **69,7 dB**

+

Ethology

Ratio ***emo*** to ***norm***
(depending on specific usage)

weighted emission assessments
(Day & Evening / Night)

Hz	63	125	250	500	1000	2000	4000	8000	Z	A
$L_{W,1\ pig\text{-}Fa,DE}$ [dB]	54,4	53,3	57,1	57,8	57,1	52,8	50,1	44,7	63,9	**61,0**
$L_{W,1\ pig\text{-}Fa,DE,norm}$ [dB]	-6,7	-7,7	-3,9	-3,2	-3,9	-8,2	-10,9	-16,3		
$L_{W,1\ pig\text{-}Fa,N}$ [dB]	52,0	50,7	53,7	53,9	53,8	50,5	48,3	43,1	60,8	**58,0**
$L_{W,1\ pig\text{-}Fa,N,norm}$ [dB]	-6,0	-7,4	-4,4	-4,1	-4,3	-7,5	-9,8	-14,9		

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Appendix - Ethology

- from ethologists and veterinaries
- detailed ethology information of farm animals
- Emissions in context to function circuits
- attuned to specific usage sectors

- Experts who are not familiar with farming
- integrated part of noise expert assessment

Summary

- Basis for assessment of farm noise
- includes all important emission sources
- 1st time, that noise data from livestock is available
- detailed prognosis of livestock farming
- Guideline for noise experts

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