



Welfare Assessment of Fattening Pigs Using a Multi-Factorial Approach (MuTiViS)

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Welfare Monitoring

- ▶ At the moment,
 - ▶ no mandatory welfare monitoring of fattening pigs in Germany
 - ▶ a lack of information to assess pig welfare comprehensively on farm level taking into account various issues at any one time
 - ▶ a tool to monitor the development of animal health on national level is missing
- ▶ Validity of on farm gathered information on animal health and welfare?

MuTiViS Project

„Multivariate Assessment of Animal Welfare through Integrative Data Collection and Validation of Welfare Indicators in Pigs on Farm Level“

- ▶ Start: 2017 End: 2020
- ▶ Farms on investigation:
205 fattening farms located in northeast of Lower Saxony, Germany

Project Partner

- ▶ University of Veterinary Medicine Hannover, Foundation



- ▶ VzF GmbH Erfolg mit Schwein, Uelzen, Farmers' Association, service provider

- ▶ Swine Health Service, Chamber of Agriculture Lower Saxony, Oldenburg



- ▶ Marketing Service Gerhardy, Garbsen



MuTiViS: Variety of INFORMATION and DATA sources

- ▶ **characteristics of fattening farms**
- ▶ **biological and economic data of pigs**
- ▶ **assessments on pig behaviour**
- ▶ **clinical assessments of pigs on farm level**
- ▶ **antibiotic usage**
- ▶ **assessments of organs at slaughterhouse**

MuTiViS: Publications

- ▶ **assessments on pig behaviour**

B. Wegner et al.:

STATUS QUO ANALYSES OF NOISE LEVEL IN PIG FATTENING UNITS IN GERMANY

11th European Symposium of Porcine Health Management, Utrecht, 22nd - 24th May 2019

- ▶ **clinical assessments of pigs on farm level**

I. Spiekermeier et al.:

ANIMAL WELFARE ASSESSMENT IN GERMAN FATTENING PIG UNITS – CLINICAL EVALUATIONS (PART OF THE MUITIVIS-PROJECT)

11th European Symposium of Porcine Health Management, Utrecht, 22nd - 24th May 2019

- ▶ **multivariate assessment approach**

J. Große-Kleimann et al.:

WELFARE ASSESSMENT OF FATTENING PIGS USING ROUTINELY COLLECTED AND EDITED PRODUCTION DATA

11th European Symposium of Porcine Health Management, Utrecht, 22nd - 24th May 2019

- ▶ **assessment of animal health and animal environment**

I. Spiekermeier et al.:

MuTiViS-Erhebungen der Tierumgebung und Tiergesundheit

26. Internationale SGD-Tagung, Cloppenburg, 29. Mai 2019

Diversity of production – differentiation of data sources

▶ **characteristics of sample (205 fattening farms)**

- ▶ MANAGEMENT issues
- ▶ HOUSING issues
- ▶ FEEDING issues
- ▶ ORIGIN of piglets and GENETICS

▶ **biological and economic issues**

- ▶ Feed intake
- ▶ Mortality rate
- ▶ Daily gains
- ▶ Carcass weight
- ▶ Hygiene costs
- ▶ Production costs
- ▶ Gross margin

Differentiation of farm characteristics - MANAGEMENT

▶ MANAGEMENT issues

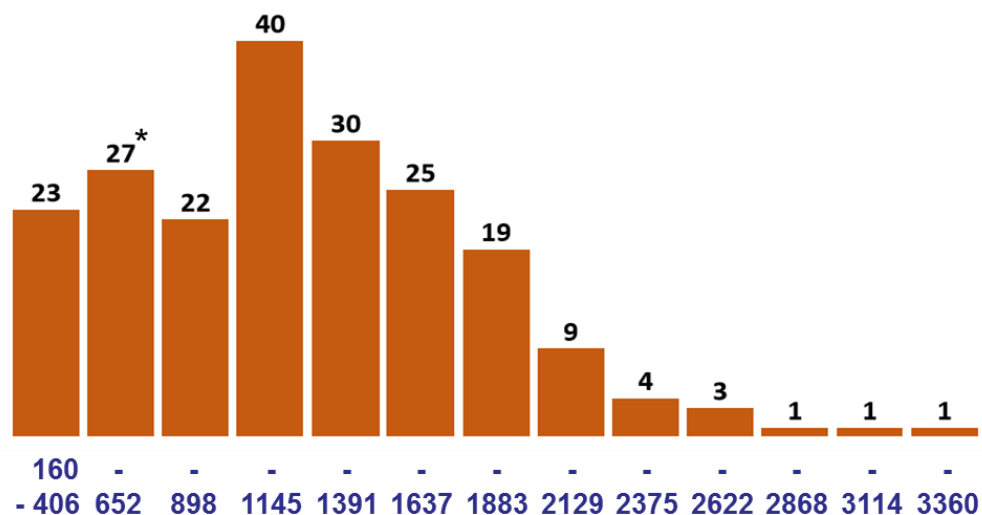
- ▶ Number of breeding farms from which fattening farmers buy piglets (1, 2, 3, ... breeding farms)
- ▶ Housing of fatteners (all in/all out; continuously selling and buying)
- ▶ Gender segregation (yes/no)
- ▶ Boar fattening (yes/no)
- ▶ Source of water (own well, public water)
- ▶ Space per fattening place (according to law, voluntarily more space)

Differentiation of farm characteristics - HOUSING

▶ HOUSING issues

- ▶ Number of fattening places

Min	MEAN	Max	Std ±	Median
160	1124	3360	578	1100



- ▶ Surface of floor
(fully slatted concrete floor, partly slatted concrete floor, straw bedding)
- ▶ Group size (10-20, 21-30 ... > 100)
- ▶ Watering equipment (technic of water providing: nipple, shell, open water ...)
- ▶ Ventilation system (aisle, perforated air channel, high velocity, slot,)
- ▶ Keeping - indoor / outdoor

Differentiation of farm characteristics - FEEDING

▶ FEEDING issues

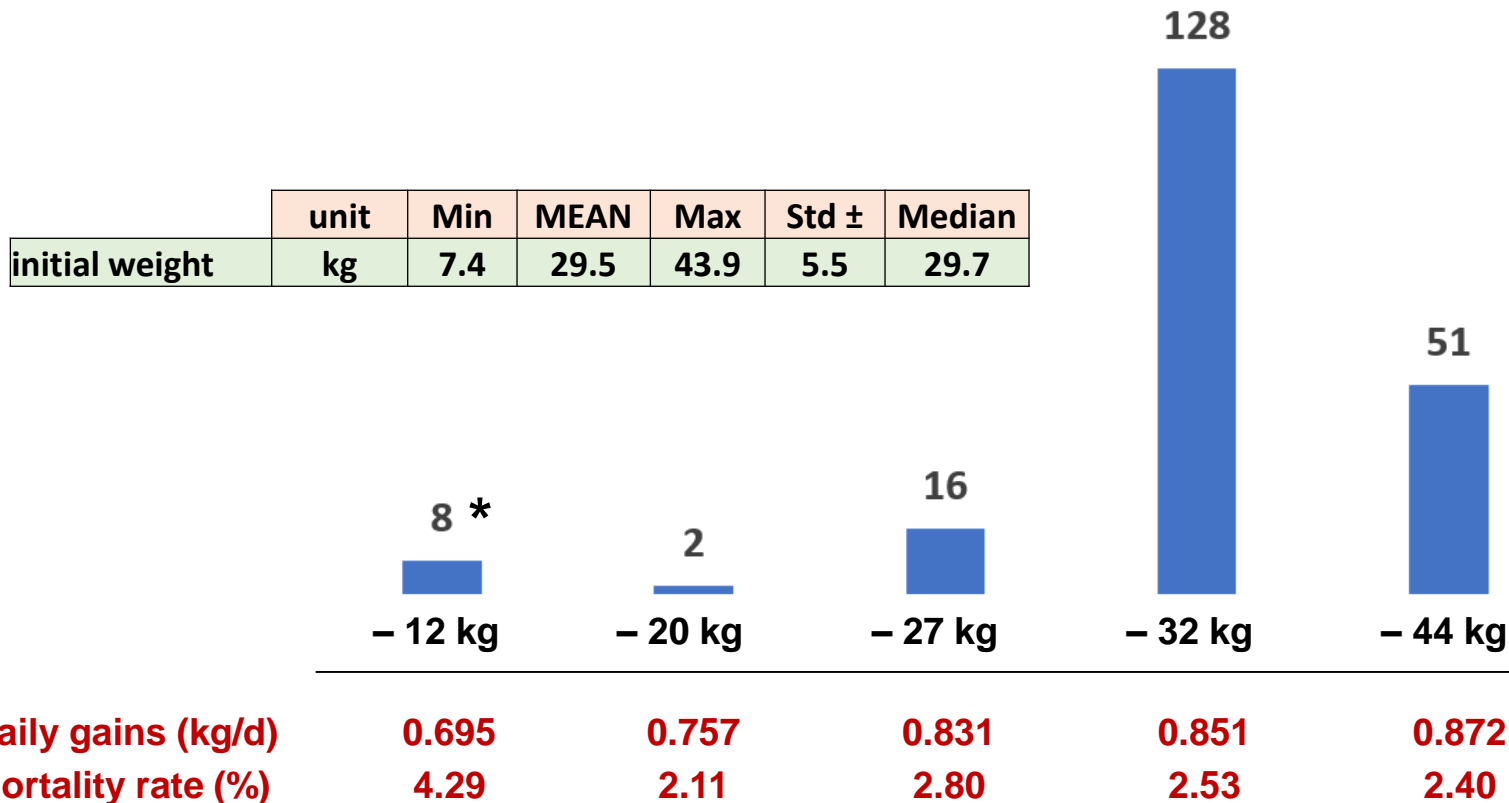
- ▶ single component feed / mixed ration on farm
- ▶ by-products (by-product of food chain)
- ▶ feeding of whey / vegetable oil
- ▶ feed sort (cereals, soya, maize)
- ▶ phase feeding (changing energy/protein content per kg dry matter during fattening period – none, once, twice ...)
- ▶ feed preparation (dry, wet, fluid)
- ▶ feed distribution (ad libitum, rationed)
- ▶ adding acids (acetic acid)

▶ ORIGIN of piglets and GENETICS

- ▶ breed of sow
- ▶ breed of sire
- ▶ country of birth of piglet

Initial fattening weight: Diversity of Production Methods

Impact of initial fattening weight on performance



Outcome of Diversity of Production

Descriptive statistics of biological and economic data

	unit	Min	MEAN	Max	Std ±	Median
feed intake /pig	kg/d	1.56	2.37	2.89	0.21	2.38
mortality rate	%	0.32	2.59	10.22	1.56	2.23
daily gains	kg/d	0.618	0.847	1.009	0.075	0.855
carcass weight	kg	89.2	96.9	104.8	2.3	96.8
costs of						
disinfection	€/pig	0.00	0.27	1.47	0.21	0.23
veterinary	€/pig	0.02	0.73	4.28	0.69	0.47
production	€/kg	0.56	0.68	0.82	0.05	0.68
gross margin	€/100kg	-13.27	18.39	43.93	9.17	18.53

Preliminary results and outlook

- ▶ Gathering of data should be more harmonised
- ▶ On farm level, service provider and vets may develop towards key partners to increase quality of data on health and welfare
- ▶ Farm data provide valuable information on pig health and welfare
- ▶ Various variables are impacting on welfare and some are interrelated with each other. Therefore more comprehensive data analysis is necessary to assess welfare
- ▶ Modelling welfare indicators using various multifactorial approaches (uni- and multivariate Analysis of Variance - ANOVA/MANOVA)
- ▶ Validation of welfare indicators
- ▶ Selection of final welfare indicators for monitoring

Thanks for your ATTENTION



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