

## IMPROVING HERD HEALTH THROUGH USEFUL INFORMATION

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### Introduction

To improve herd health in a structured way the principal of a Deming circle can be used. In keywords a Deming circle can be described as What? How? Who? When? Where? evaluate, react, and adjust the process.

This system of continuous improvement is used in a joined Dutch – German research and development project of GIQS in which the Dutch Animal Health Service (AHS) and the University of Bonn are project partners. For this reason the Dutch-German initiative GIQS (trans-border quality assurance) develops a tool box consisting of six modules to support chain oriented quality- and health management in the pig production chain (1). One out of six tools is the **Module Herd Health Management**. The aim of this part of the entire project is to make a computer based, web enabled support system for swine farmers, their consultants and veterinarians and the pork production chain manager to gather information on herd health and give structured advice and background information to improve herd health. The work being done for one of three pilot-chains will be used as an example.

### Materials and Methods

The principle of the Deming cycle will be assigned to the development of an information system supporting auditing and herd health management.

To develop the **Module Herd Health Management**, teams of experts were built:

- pig health experts (veterinarians, advisors, agricultural scientists)
- system designer (software provider and developer)

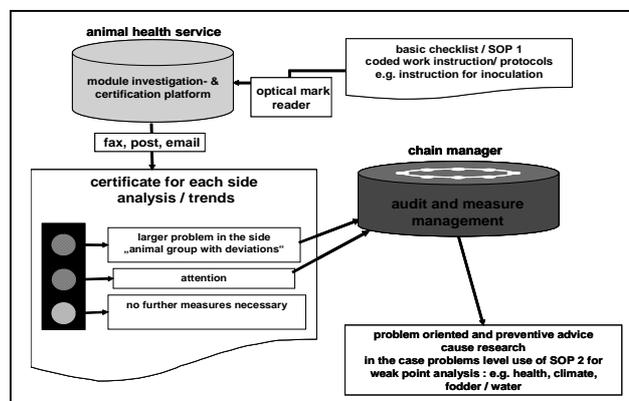
These teams of experts defined, implemented and validated the procedure of auditing farms in an integrated pilot chain, in which the value-added process is controlled by one hand. The technical tools supporting the procedure are:

- an audit management system and
- an investigation and certification platform

### Results and Discussion

In the module animal health management an integrated audit management system is combined with an investigation and certification platform.

In the first step checklists for internal audits, herd management, visits of veterinarians and farm advisors supporting herd health management were developed. The second step deals with the construction of a “traffic light system” which is automatically able to assess the checklist data. In case of problems additional checks and measures can be induced (figure 1).



The developed checklists are divided into two levels:

- level 1 standard operating procedure (SOP 1) to gather basic data on a regular basis.
- level 2 standard operating procedure (SOP 2) to support analysis of identified herd problems.

SOP 1 is the basic checklist for regular farm checks for weak point analysis in the production chain which is applied twice a year. It collects data on general descriptive data of the herd and the inoculation program: vaccines and vaccination scheme, endo- ectoparasite treatments and herd health certificates e.g. pseudorabies free status. Each item is evaluated as positive or negative or as “good”, “reasonable” or “bad”. Sow herd production data are entered and compared to the results of the last six months and to the chain average. The health situation in the farrowing house, boar house, gestation compartments, gilt introduction, piglet rearing and growing / finishing stages are evaluated on specific items where a percentage can be given as a measure for the size of the herd problem and can be evaluated by the person that fills out the checklist as “good”, “reasonable” or “bad”. All possible choices for the items like the vaccines, vaccination schemes, materials submitted for diagnostic purposes and the diagnostic tests applied are combined with codes in a reference lists that only a number has to be filled in..

The lay-out of the checklist and the codes which are filled in is adjusted so that it can be read by an optical mark reading system. The ASCII data file from the reader is then transferred to an Oracle database for storage and where the data are available for analysis. The image of the checklist is also stored as a PDF-file to retain the written text in the advice and therapy section of the form and the signatures of the farmer and the veterinarian for future reference. Afterwards defined standard reports based on predetermined criteria are sent to the herd owner

and the chain manager, respectively. Depending on the number or seriousness of the identified problems herds can be categorised as “no intervention necessary”, “attention needed” or “major problems in the herd”. Based on the identified weaknesses, level 2 SOP’s are used to analyse these specific problems. They contain specific relevant questions with regard to management, housing, climate, feed, feeding, and animal health etc. to help in the careful analysis of a herd problem. Subject for SOP2’s are for example ‘small litter size’, ‘return breeders’, ‘abortion/early farrowing’, ‘cannibalism’, ‘introduction of new gilts’, ‘diarrhoea’, ‘(chronic) pneumonia’, ‘lameness’, ‘dead loss of suckling piglets’, and specifically on Salmonella, but also general checklists on climate, feed and feeding, management and hygiene. To further help in the analysis, technical criteria are supplied on subjects of feed requirements, water, mycotoxins, climate, housing, and semen. Finally, summaries are made available on the major swine diseases and health problems as background information. All this information, with the exception of the basic checklist on paper, is stored and transferred electronically. For this purpose a website is made where farmers, veterinarians, consultants and the chain manager have access by ‘single sign on’ identification. Once logged on to the website information becomes available on an “allowed to see” basis. Farmers have access to their stored checklists and the general information and announcements from the chain manager. Veterinarians and consultants have access to data from their herds and the chain manager has access to all data. An on-line analysis tool can be used by the chain manager to further analyse the available data beyond the standard reports.

This tool for integrated production chains allows a structured and chain wide storage of information on production status and health management and enables further analysis. It allows for a flexible system where changes can be made rapidly if necessary but it also prevents the build up of stacks of paper files that are very difficult to manage. Data analysis allows for better management information which allows for better funded decisions and support where necessary. The results are better herd health and production results leading to higher financial return on investment.

In the next phase of the project the herd health management and advice module will be integrated with other information sources in the GIQS Backbone (2) like

information from identification and registration systems for pigs, abattoir information on production parameters (carcass weight, lean meat etc.) but also inspection results (e.g. lung-, liver-, pleuritis-scores), diagnostic laboratory results and the resulting herd health statuses (e.g. Salmonella, Pseudorabies, Scabies, Atrophic Rhinitis).

### Conclusion

Effective health management in the pork production chain depends on knowledge- and information exchange between the various partners of the chain. The implementation and use of two software tools has benefits for all partners involved. Farmers will find that their problems are recognised sooner, taken serious and approached in a structured way, leading to a better herd health and with that an improved financial result. Veterinarians and consultants are handed tools to document the herd health situation and tools to analyse specific problems. Background information is provided in an easily accessible format. Finally, chain managers gain more insight in the herd health situation in their chain and can directly stimulate further analysis and intervention in specific herds but also get a long term overview in the development of the herd health and can initiate special health programs that focus on common problems or stimulate research in areas where the available knowledge is not sufficient. Overall this tool will improve the insight in the herd health situation and improve the herd health management leading to better financial results for all partners.

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### References

- (1) SCHULZE ALTHOFF G., ZANDBERGEN J., SCHMITZ T. and B. PETERSEN 2003. Cross Borders - Integrated Quality Assurance Systems in Pork Production Chains along the Dutch German Border. In: SCHIEFER G., RICKERT U.: Quality Assurance, Risk Management and Environmental Control in Agriculture and Food Supply Networks (volume A). Proceedings of the 82nd EAAE Seminar, Bonn, 14.-16. Mai 2003. Bonn, ILB-Press
- (2) Schulze Althoff, G. and B. Petersen. 2004. Chain quality information system. In: Dynamics in Chains and networks. H.J. Bremmers, et. al. (editors). Wageningen Academic Publishers. 166-174