

Evaluation of surveillance strategies for Classical Swine Fever in wild boar to demonstrate freedom from disease - analysis of sensitivity, timeliness, acceptability and cost-effectiveness

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INTRODUCTION

Efficient and reliable animal health surveillance is essential to protect animal and human health and to facilitate international trade. The limited budget for animal health surveillance makes it necessary to find the most efficient surveillance strategy. Risk based surveillance can constitute a way to enhance effectiveness of a surveillance system. The German surveillance system for Classical Swine Fever (CSF) in wild boar stipulates the serological investigation of 59 samples per district, originating from active surveillance (healthy shot wild boar). Using this surveillance strategy as an example, we investigated the evaluation attributes sensitivity, timeliness and acceptability of the current surveillance system. Evaluation was also done for newly developed, mainly risk-based surveillance strategies. Furthermore, we performed an economic evaluation by determining the cost-effectiveness of the strategies. The **aim** of the presented study was the comparison of the overall performance of surveillance strategies for CSF in wild boar and identification of possible improvements.

CONCLUSIONS

1. Risk-based surveillance strategies constitute a good opportunity to improve the performance of surveillance strategies for CSF.
2. By including risk-based sampling even a decrease of sample size can be considered.
3. Improvement of passive CSF surveillance is necessary.

The present work can serve as a template for further evaluation studies.

MATERIAL AND METHODS

Risk-based surveillance strategies were developed by a risk factor analysis.
⇒ Literature review
⇒ Statistical analyses

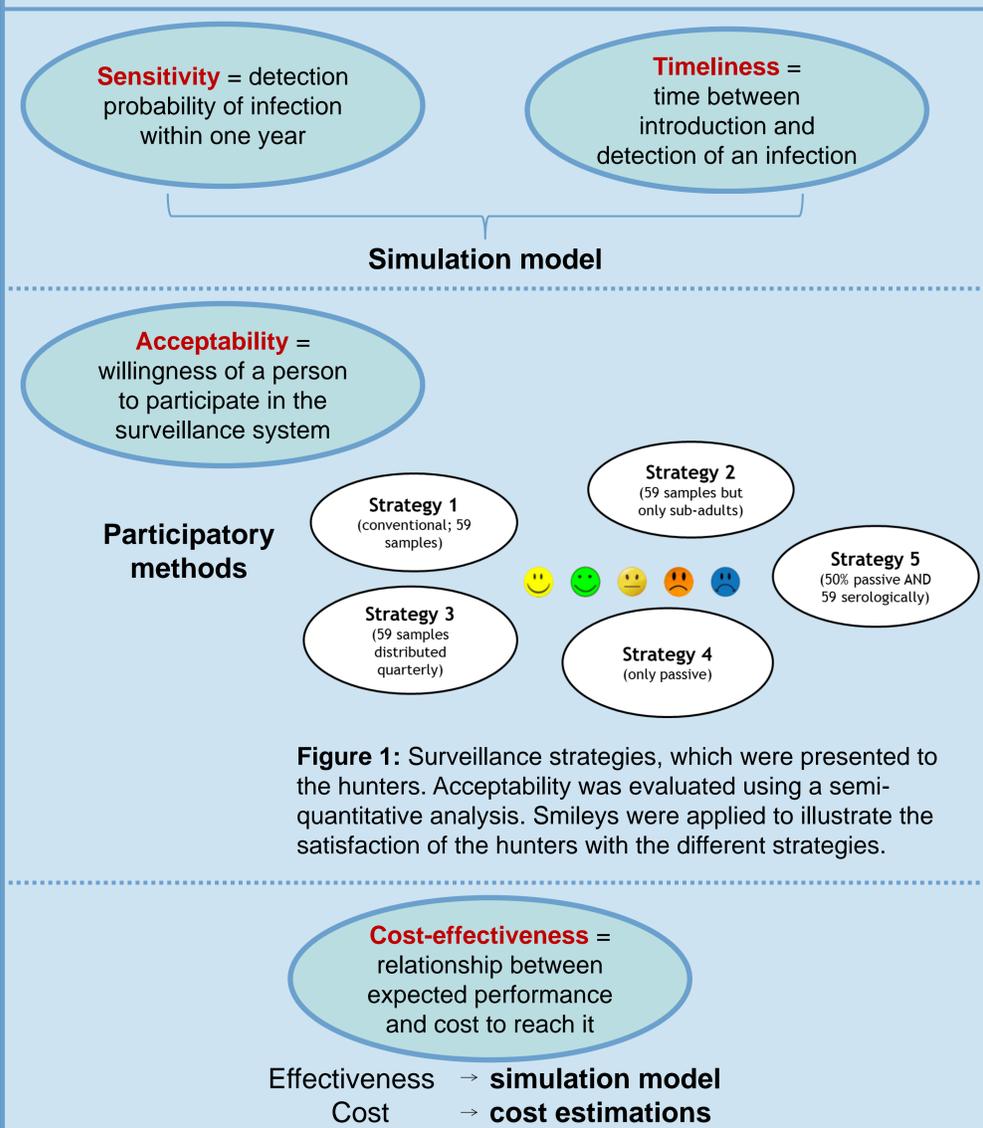


Figure 1: Surveillance strategies, which were presented to the hunters. Acceptability was evaluated using a semi-quantitative analysis. Smileys were applied to illustrate the satisfaction of the hunters with the different strategies.

Final analysis

Not every evaluation attribute was investigated for every surveillance strategy.

Final analysis was done in blocks (Table 1).

Strategies with the same analyzed evaluation attributes were evaluated in same blocks.

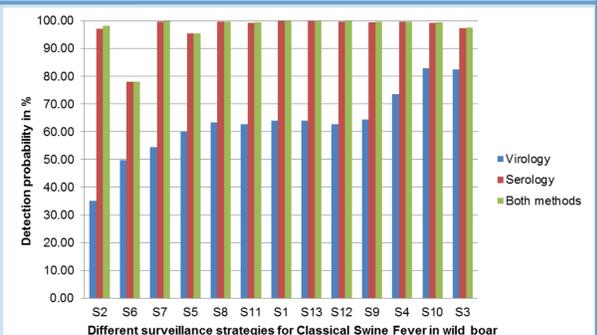
Results were ranked and the arithmetic mean was calculated.

RESULTS

Identified risk factors: age, population density, season and samples, obtained through passive surveillance. **69 surveillance strategies** were evaluated.

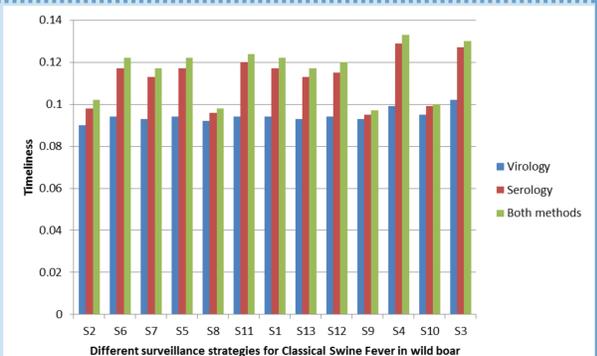
Sensitivity

Figure 2: Comparison of detection probability of surveillance strategies for CSF in wild boar, in which samples were examined only serologically, virologically or by using both methods.



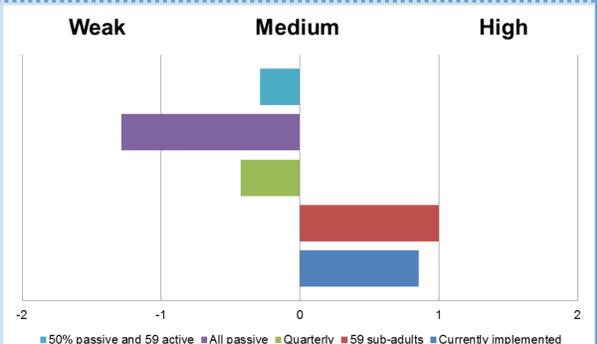
Timeliness

Figure 3: Comparison of timeliness of surveillance strategies for CSF in wild boar, in which samples were examined only serologically, virologically or by using both methods.



Acceptability

Figure 4: Level of acceptability of different surveillance strategies for CSF in wild boar by hunters.



Cost-effectiveness

Strategies, where sampling was done only in certain months (risk-factor season) resulted in the least cost. A strategy, where active and passive sampling was combined showed the highest cost.

Final analysis

Table 1: Final analyses of the evaluation of the different surveillance strategies for CSF in wild boar; N= Number of strategies which were analyzed within the individual blocks, RF= risk-factor.

Block 1 (N 11)	Block 2 (N 35)	Block 3 (N 12)	Block 4 (N 69)
sensitivity timeliness acceptability cost-effectiveness	sensitivity timeliness cost-effectiveness	sensitivity timeliness acceptability	sensitivity timeliness
Best result: sampling in the age class of sub-adults; RF: age (se+vis)	Best result: sampling quarterly (vis)	Best result: sampling in the age class of sub-adults; RF: age (se+vis)	Best result: sampling in the age class of sub-adults; RF: age (se+vis)

se: only serological analysis; vi: only virological analysis, vise: both methods were used

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