Association between antimicrobial prescriptions, production and biosecurity in sows using Additive Bayesian Networks

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1-Motivation

With the threat of bacteria resistance to antimicrobials (AM), there is a need to cut down antimicrobial usage. However, farmers need reasonable alternatives

2-Objectives

To assess possible associations between biosecurity, AM use and productivity to identify best practices for low AM use and high productivity

3-Materials and Methods

Data came from 157 Danish sows herds. To better understand interdependencies between investigated factors, Additive Bayesian Network (ABN) modelling was used: a technique that produces a directed acyclic graph, allowing easy analysis of the network of interdependencies

4-Discussion and Conclusion

Contrary to results by Postma *et al.* 2016, our model showed no association between AM consumption and productivity, nor with biosecurity. This is probably due to a very low AM consumption in Danish sow herds and high biosecurity, because of a fine tuned system and strict regulations in place

Results :

LEGEND:

Variable name
Median (95% confidence interval)

= Association

Herd size variable

Production variable

Binary variable (SPF)

Biosecurity score

Piglets per litter
15,7 (14,6 – 16,9)

Mortality until weaning
13,2% (8,8 – 17,1)

Weaned pigs/litter
13,6 (12,5 – 14,7)

Farrowing percentage
88% (78,3 – 92,0)

Mortality in sows
9,5% (1 - 16)

Non-successful insemin.
5% (2 - 12)

Litters/sow/year
2,28 (2,13 – 2,38)

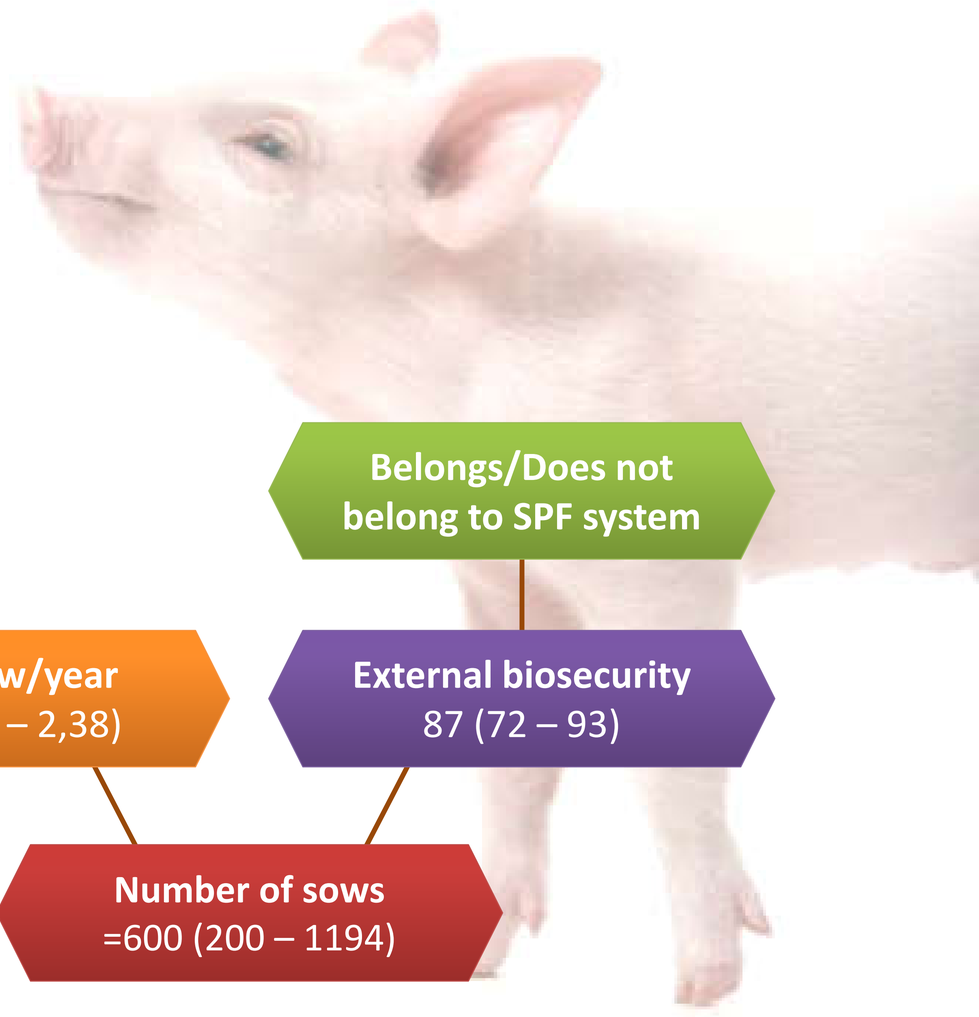
Belongs/Does not belong to SPF system

External biosecurity
87 (72 – 93)

Number of sows
=600 (200 – 1194)

Variables with no association:

- AM prescription for sows
- AM prescription for weaners
- Internal Biosecurity score
- Stillborn piglets per litter
- Feed use for sows
- SPF class Red/Blue



The results were confirmed by a Random Forest Analysis and a Discriminant Analysis

Reference: Postma et al. Porc. Health Man. (2016) 2:9

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