

Prevalence & risk factors of *Brachyspira* spp. in European pig herds with a history of diarrhea



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Objectives

Brachyspira (*B.*) *hyodysenteriae* and *B. pilosicoli* are pathogens known to be related with diarrhea in growing and fattening pigs worldwide. Thus, a disease outbreak can lead to economic losses and reduced animal welfare, which is why the pathogens are of worldwide importance and interest [1]. To provide an overview of the current European situation, this study determined the prevalence of both pathogens in six European countries and identified associated risk factors.

Material & Methods

- Fecal samples of 6355 nursery to finishing pigs were sampled in 2017/2018 in six European countries, namely:
 - Denmark, France, Germany, the Netherlands, Spain & United Kingdom
- Samples were taken from 24 herds per country.
- Herd inclusion criteria:
 - Clinical signs of diarrhea within twelve months prior to sampling
 - Closed production system like farrow-to-finish herd, or nursery-/fattening- herd, receiving all their animals from one single origin
 - No antimicrobial treatment up to four weeks prior to sampling
- A questionnaire on herd data and last occurrence of diarrhea was filled in each herd.
- Fecal samples were analyzed using a polymerase chain reaction. Questionnaires were evaluated and risk factors identified using a multivariable model.

Conclusions

- Significant difference in *B. hyodysenteriae* & *B. pilosicoli* prevalence between European countries.
- Comparatively high prevalence for both pathogens were found in United Kingdom and Denmark.
- Such differences should be considered in animal trade between European countries and the probability of disease.
- Known risk factors could be confirmed and supplemented by new ones.

Results

Prevalence of *B. hyodysenteriae*:

- Overall, 21.5 % of all herds and 13.0 % of animals in these herds were *B. hyodysenteriae* positive.
- With a herd- and within-herd prevalence of 45.8 % and 15.4 % respectively, significantly more herds ($p < 0.02$) and more samples ($p < 0.01$) were *B. hyodysenteriae* positive in United Kingdom than in France (herd prevalence of 4.2 %, within-herd prevalence of 2.2 %) (Figure 1).
- Overall, 58.7 % of *B. hyodysenteriae* positive samples, were simultaneously positive for *B. pilosicoli*. In Denmark, this was the case for 95.9 % of *B. hyodysenteriae* positive samples.

Prevalence of *B. pilosicoli*:

- Overall, 28.5 % of all herds and 37.2 % of animals in these herds were *B. pilosicoli* positive.
- *B. pilosicoli* was significantly more often detected in Danish herds compared to all other countries excluding United Kingdom ($p < 0.001$). It was also significantly more often detected in Danish samples compared to all other countries ($p < 0.001$).
- Overall, nursery pigs were significantly less often positive for one of the pathogens than growing or finishing pigs ($p < 0.001$).

Risk- and protective factors associated with *Brachyspira* spp.

- More than 30 nursery pigs per pen was a risk factors for both pathogens associated with a higher number of animals positive/ herd ($p < 0.03$).
- Weaning age of more than 26 days was associated with more *B. pilosicoli* positive nursery-, growing-, finishing- pigs and overall positive pigs ($p < 0.04$).
- Deworming of growing or finishing pigs on the other hand was associated with less positive animals per age category or overall, likewise for both pathogens ($p < 0.05$).
- Slatted floor of more than 78.0 % in nursery units was associated with less *B. pilosicoli* positive nursery-, finishing pigs and overall positive pigs.

Figure 1: Prevalence of *B. hyodysenteriae*

Figure 2: Prevalence of *B. pilosicoli*

- Color of a country: Indicates the respective herd prevalence for each pathogen per country.
- Proportion of pigs in red within a country: Indicates the respective within-herd prevalence for each pathogen per country. One pig completely red = 10 %.

Figure 1:

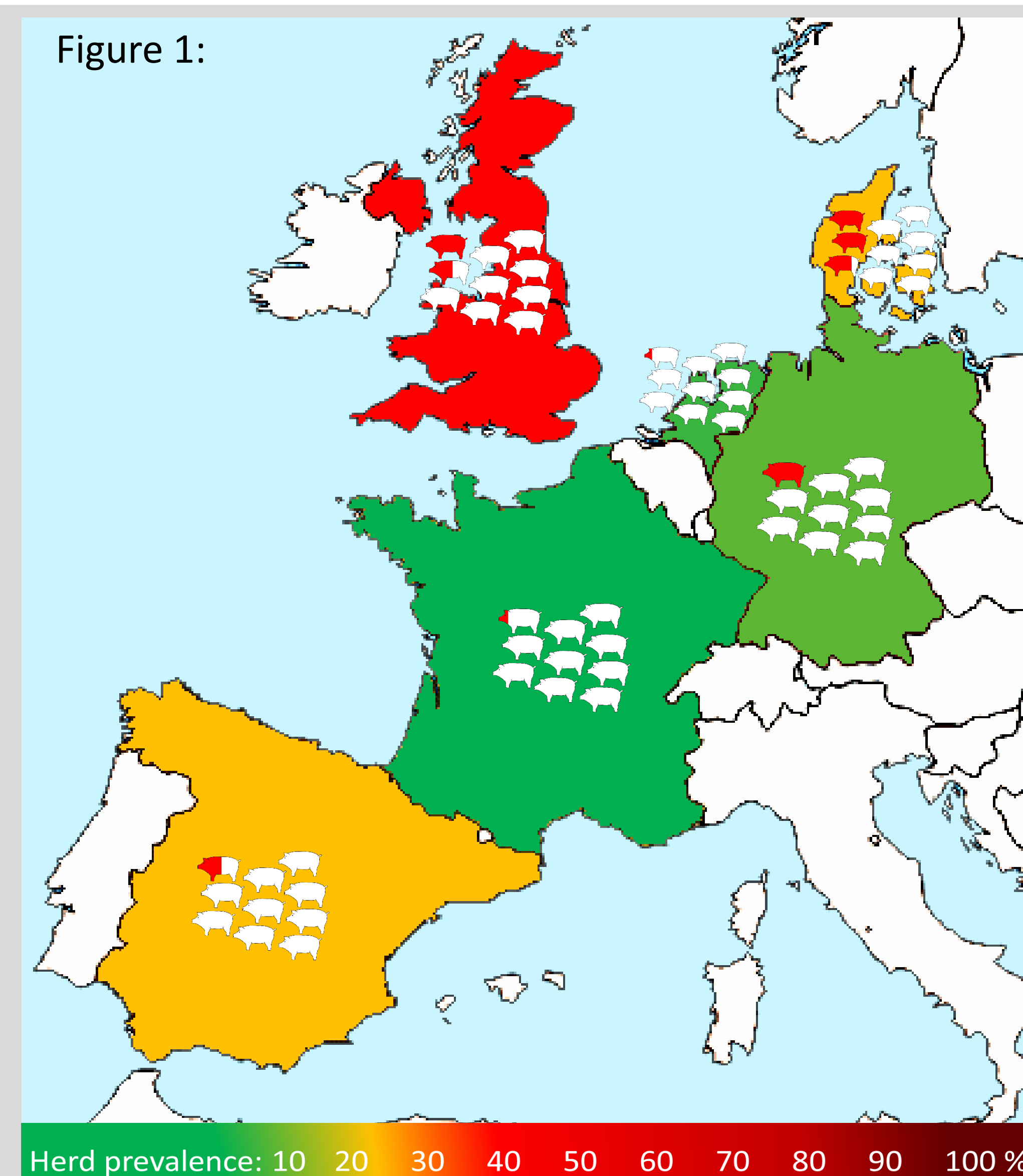
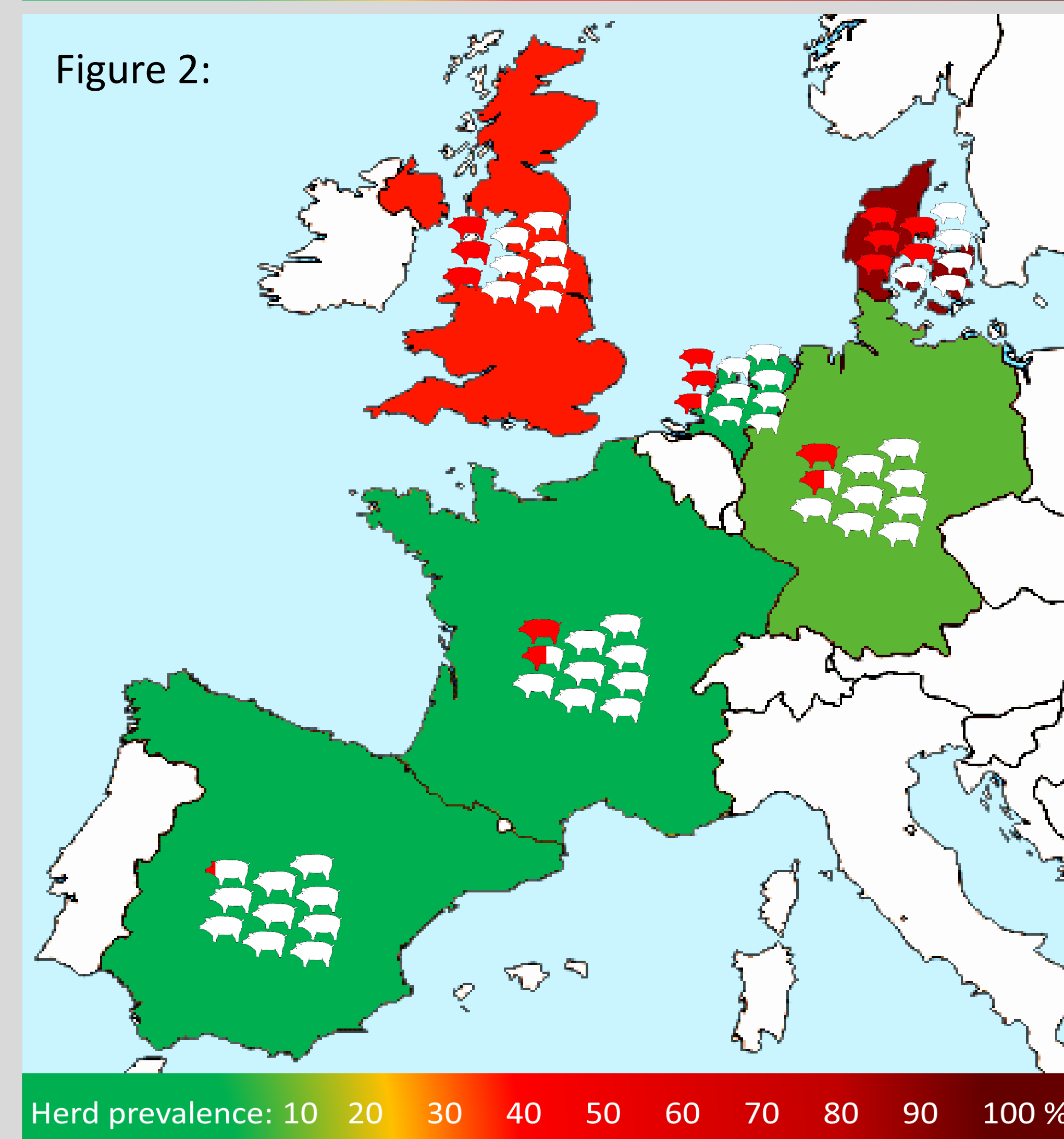


Figure 2:



References

[1] Hampson, D.J., Burrough, E.R., Zimmermann, J., Karkker, L., Ramirez, A., Schwartz, K., Stevenson, G., Zhang, J., 2019. Swine Dysentery and Brachyspiral Colitis, in: Diseases of Swine 11th Edition. pp. 951–970.

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