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STUDY ON THE RELATIONSHIP BETWEEN SEROPREVALENCE OF *ASCARIS SUUM* IN FATTENERS, FARM MANAGEMENT FACTORS AND PRODUCTION PARAMETERS

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Introduction

Infections with the intestinal parasitic nematode *Ascaris suum* are still a big problem in pig production systems all over the world. Although the majority of infections with *A. suum* are subclinical, the impact of ascariasis on pig growth and productivity can be substantial. Nevertheless, due to the subclinical nature of the disease, farmers are most often unaware of the magnitude of worm infections on their farm.

Aim of the study

The general objective of this research project was to use a recently developed serological test to assess *Ascaris* infection levels in fatteners in several European countries and subsequently correlate infection levels with farm management factors and production parameters.

Materials & Methods

- 10 blood samples were collected on 808 different farms in Europe from fattening pigs at the end of their fattening period (>100kg).
- The blood samples were centrifuged and the sera individually analyzed on the SERASCA®-test (www.serasca.com) which is based on the recognition of a hemoglobine molecule of the parasite by antibodies of an infected animal. The average test result of the 10 animals was calculated to determine infection intensity for each farm. An average test result lower than 0,5 indicates none/low infection intensity, whereas a result higher than 0,5 is an indication of an *Ascaris* infection (Vlaminck et al., 2012).
- The samples collected in France and Belgium came with a questionnaire form containing data such as feed conversion, average daily weight gain, deworming strategy and housing (type of floor) of the farms investigated. Associations between the serology and the data from the questionnaires were analysed using the Spearman's rank correlation test and the two-tailed Mann-Whitney test (nonparametric). Probability (P) values <0,05 were considered to indicate significance.

Results

Country	Nr. of farms	*Ascaris* Infection	
		Negative/low	Positive
Belgium	122	58 (47,5 %)	64 (52,5 %)
The Netherlands	68	34 (50 %)	34 (50 %)
France	373	151 (40,6 %)	222 (59,4 %)
Poland	8	5 (62,5 %)	3 (37,5 %)
Denmark	193	120 (62 %)	73 (38 %)
Germany	20	8 (40 %)	12 (60 %)
Italy	24	7 (29 %)	17 (71 %)
Total:	**808**	**383 (47,4 %)**	**425 (52,6 %)**

Table 1: Serological data for *A. suum* infections in fatteners in 7 European countries.

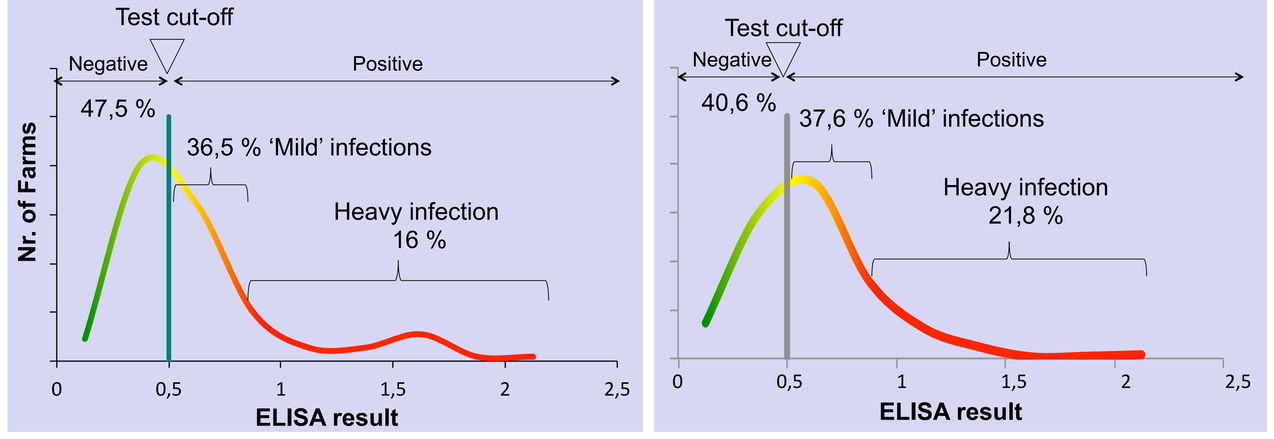
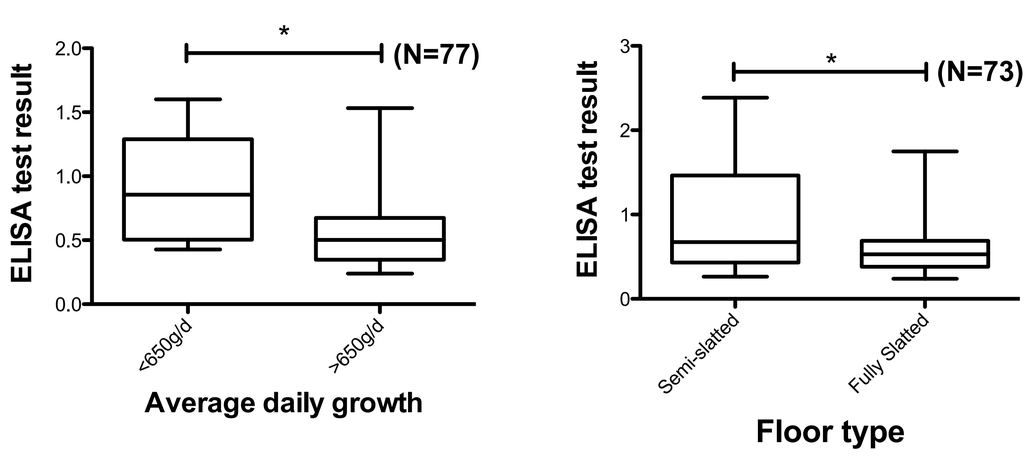


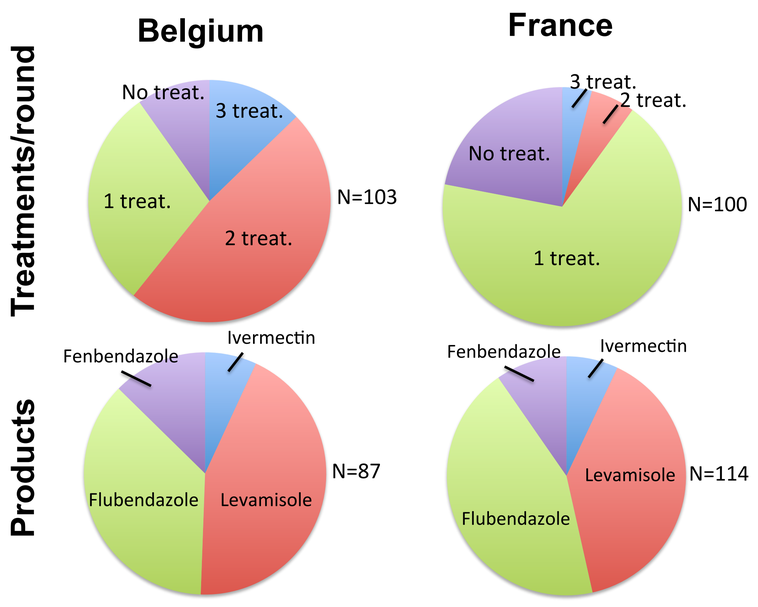
Figure 2: Distribution of the serological data for *A. suum* in Belgium and France.

- **Associations Serology-Management & Production factors**

Analysis on the associations between serology and the data provided in the questionnaires revealed a significant correlation between the serology and the average daily growth for the samples collected in Belgium, with higher antibody titers found in farms with a lower daily growth (< 650 g/day). A significant association was also found in the Belgian dataset between the ELISA results and the type floor present in the stables (i.e. semi- or fully slatted), with higher antibody titers detected in semi-slatted stables. These correlations were so far not seen in the French dataset.



- **Data Analysis of questionnaires: deworming programmes**



Analysis of the information provided in the questionaires concerning the deworming strategies showed that the majority of the farms investigated in France treated the animals only once during the fattening period, whereas in Belgium the animals were mostly treated twice. The products most frequently used in both countries were levamisole and flubendazole. (Data shown are from the years 2013-2014)

Conclusions

- The outcome of the serological analysis indicates that *A. suum* is still highly prevalent in fattening farms across Europe, with more than 50 % of the farms analyzed testing positive.
- A significant association was found in the Belgian dataset between *A. suum* serology and the presence of semi-slatted floors, suggesting that this could form a risk factor for *Ascaris* infections. An association was also found between serology and average daily growth. Whether *A. suum* is directly responsible for this reducted growth requires further research.

References & Acknowledgements

- Vlaminck J., Nejsum P., Vangroenweghe F., Thamsborg S.M., Vercruysse J., Geldhof P. (2012) Evaluation of a serodiagnostic test using Ascaris suum haemoglobin for the detection of roundworm infections in pig populations. Veterinary Parasitology, 189:267-273.
- www.serasca.com
- This study was supported by MSD.