

# Quantitative assessment of the effect of vaccination on the transmission of *Mycoplasma hyopneumoniae* in nursery piglets

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## INTRODUCTION AND AIMS

- Transmission of *Mycoplasma hyopneumoniae* (Mh) throughout a herd has not yet been fully clarified. Therefore,  $R_n$ -values were calculated for nursery piglets during an earlier experiment.  $R_n$  is defined as the mean number of new infections caused by one typical infectious animal during the nursery period (Meyns et al., 2004).
- AIMS:
  - To design an experimental setting useful for comparison of different interventions in Mh transmission experiments
  - To assess the effect of vaccination on the spread of a highly virulent strain of Mh.

## MATERIALS AND METHODS

- 60 Mh- and PRRSV-free piglets of 4 weeks old
- 30 vaccinated and 30 non-vaccinated animals:
- In each pen:
  - 10 animals per pen
  - 3 inoculated = seeder pigs
  - 7 susceptible animals
- 42 Days Post Infection (DPI) lung lesion scoring (0-35) and determination of infection status by nPCR (Stärck et al., 1998) on bronchial alveolar lavage fluid.
- Based on the final size of the experiment, an adjusted reproduction ratio ( $R_n$ ) was calculated using the maximum likelihood method, 95% CI were calculated as described by Kroese and de Jong (2001).
- Probability distribution of the final size represented by  $F(X_i | R_n, N, S_0, I_0)$ .



## RESULTS

- Mean lung lesion scores for vaccinated and experimentally inoculated pigs were 0.30, and 4.42 for non-vaccinated and experimentally infected animals ( $p=0.028$ ).
- The number of contact infected animals per pen is presented in Fig. 1.
- $R_n$ -value (95% CI) was 2.38 (1.07 – 7.53) for the vaccinated pens, and 3.51 (1.51 – 9.34) for the non-vaccinated pens.
- $R_n$ -values were not significantly different ( $p=0.77$ ).

## DISCUSSION

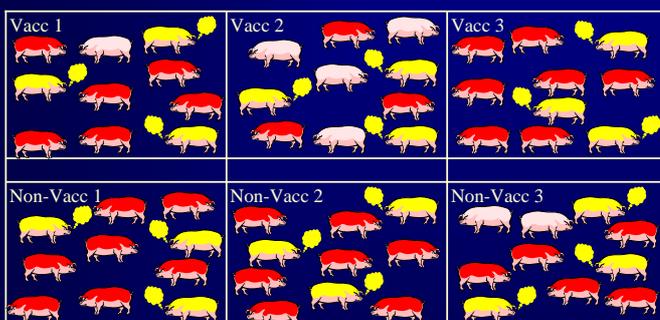
- The results of the lung lesion scoring showed a significant difference, which indicates a good clinical response on vaccination.
- No significant difference is shown in spread of Mh in vaccinated and non-vaccinated nursery piglets.
- A possible difference in excretion is currently under investigation by using a Real Time PCR for Mh.
- To obtain a significant difference (95% C.I.) with this experimental setting, power calculation showed that a difference of at least 11 contact infected animals between the vaccinated and non-vaccinated groups was necessary.

## CONCLUSION

- No significant difference in  $R_n$  was observed between vaccinated and non-vaccinated groups.

## REFERENCES

Cited references can be obtained from the first author (tom.meyns@UGent.be).



- Susceptible pigs (Not contact infected)
- Inoculated pig (Seeder)
- Contact-infected pig (42 DPI)

Fig. 1: Distribution of infected animals at 42 DPI.