Field experiences with PCV2 and M. hyo vaccines in Belgium

Porcine Circovirus type 2 (PCV2) and Mycoplasma hyopneumoniae (M. hyo) are two swine pathogens with a worldwide distribution. Both pathogens are implicated in the porcine respiratory disease complex (PRDC), a term which refers to the complex interaction of pathogens, environmental, housing and management conditions and the host immune system resulting in pneumonia in pigs.

M. hyo is a respiratory pathogen and the primary agent of enzootic pneumonia. M. hyo contributes to PRDC by colonisation of the cilia in the airways of a pig. Ciliastasis and loss of cilia result in an impaired clearance of debris and invading pathogens via the mucociliary defence system.

In this way, M. hyo facilitates secondary infection of the lungs by pathogens such as Pasteurella multocida, Haemophilus parasuis, Streptococcus suis and Actinobacillus pleuropneumoniae. It has also been shown that M. hyo modulates the cellular immune response in a negative way and, for example, potentiates the severity of PCV2 viraemia. Dual infections of PCV2 and M. hyo are commonly diagnosed in field cases of respiratory disease in Belgium.

Minimise the economic impact

To minimise the economic impact of these infections, PCV2 and M. hyo vaccines are applied. In Belgium, vaccination rates against PCV2 and M. hyo in pigs are approximately 60% and 80% respectively. Recently, a new ready-to-use, single dose combination vaccine against PCV2 and M. hyo, Porcilis PCV M Hyo, has become available. Single-injection and ready-to-use vaccination because the mortality recorded during the study period was frequently associated with disease caused by other pathogens. The benefit of Porcilis PCV M Hyo vaccination was thus calculated based on

Fig. 1. The formula for calculating ROI.

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\text{ROI} \% = \frac{\text{benefit - cost of Porcilis PCV M Hyo vaccination}}{\text{Cost of Porcilis PCV M Hyo vaccination}} \times 100\%
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Fig. 2. Average daily weight gain ADWG (g/pig/day) between 10 weeks of age and slaughter after Porcilis PCV M Hyo vaccination at 3 weeks of age versus M. hyo vaccination only. Piglets were traditionally vaccinated against M. hyo between 3-7 days of age, at 10 days or at 3 weeks of age.

Fig. 3. Average feed conversion rate between 10 weeks of age and slaughter after Porcilis PCV M Hyo vaccination at 3 weeks of age versus M. hyo vaccination. Piglets were traditionally vaccinated against M. hyo between 3-7 days of age, at 10 days or at 3 weeks of age.
Based on ADWG and FCR, the average return-on-investment (ROI) (%) of Porcilis PCV M Hyo was: 

\[(2.73-1)/1 \times 100\% = 173\%\]. The ROI (%) per farm is illustrated in Fig. 4.

Several herd factors were inventoried to investigate a possible correlation with ROI. Table 1 summarises the main herd factors in relation to a positive or negative ROI in the field study.

The interpretation of these data needs to be done with caution because of the small number of farms. For now, we can only make prudent assumptions. Herd size and the type of batch production system did not seem to be related with the ROI of Porcilis PCV M Hyo vaccination.

Genetic background was diverse and no tendency towards a positive or negative ROI could be observed. Interestingly, herds with clinical signs of heterogeneity or wasting in the traditional vaccination group appeared to have a positive ROI of vaccination more often than herds without those signs.

On one hand this may seem obvious; on the other it emphasises the usefulness of the clinical picture in the decision on piglet vaccination against PCV2.

### Conclusion

The results of this field study consistently demonstrate that a ready-to-use PCV2 and M. hyo combination vaccine improves production performance and lung health of fattening pigs in the face of PCV2 and M. hyo infections, pathogens that impact farm profitability.

This was supported by a positive ROI of Porcilis PCV M Hyo vaccination compared to vaccination against M. hyo only. Higher profit margins were recorded in herds with clinical signs in the traditional vaccination group.