Towards the use of Precision Farming as a decision making tool in Animal Health: A French case.

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INTRODUCTION

Precision Farming[1] is based on the collection and analysis of farm data with the aim to optimize the farm management operations and thus to improve the returns. Mostly applied to crop science, it can be used on other fields in agriculture such as in Animal Health.

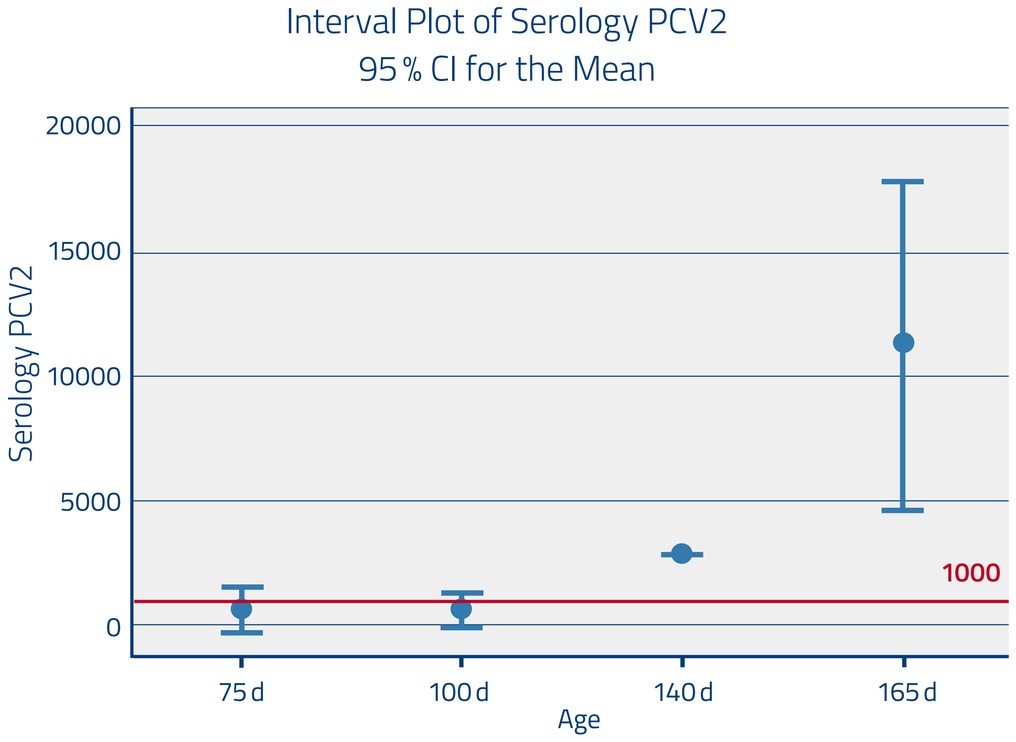
In swine production, usually the diagnosis and the control of diseases are based on clinical observations associated with laboratory investigations. However, in the case of a subclinical form, some diseases can be difficult to diagnose and the impact of a control measure is difficult to measure. Nevertheless these infections can negatively impact the pig's performance[2]. In such cases, the knowledge of economic farm data can be helpful.

In the present study Precision Farming was applied to measure the impact of an intervention for the control of a subclinical PCV2 infection in a French farm.

MATERIALS AND METHODS

The study was conducted in a 210 sows farrow to finish farm, positive for M. hyo and *Lawsonia intracellularis*, both controlled by vaccination. The farm appeared to be clinically healthy as no clinical symptoms were observed but the economical performances assessed by Growth, Feed Conversion Rate and Mortality were not fully satisfactory. The farmer and the veterinarian suspected PCV2 to be involved. To objectify this, the veterinarian sampled 9 animals, 3 per age class: 75, 100 and 140 days of age. All samples were tested negative by PCR. At a later time point serum samples were taken at 75, 100, 140 and 165 day of age and tested with an ELISA of anti-PCV2 antibodies (see results on Figure 1 below).

Figure 1: ELISA PCV2



Individual standard deviations were used to calculate the intervals.

The red line indicates the positivity threshold

Based on these results, it was decided to start to vaccinate against PCV2 (Ingelvac CircoFLEX®, 1 ml I.M.) at 28 days of age and to monitor the economical performances using the batch data available. In total 2,105 piglets from 6 batches were followed up.

Differences in losses were statistically analyzed by ChiSquare. Growth and feed conversion rate were assessed with a t-test.

RESULTS

The performances were assessed from weaning to slaughter and are shown in in table 1. Statistical significant differences were observed with regard to growth, feed conversion rate and losses.

The margin per pig was improved by € 4.09 considering a feed cost of € 255 / ton of feed and € 1.33 per kg of carcass weight.

Table 1: Performance before and after vaccination with Ingelvac CircoFLEX®

	Before	After	Differences
No. animals	1040	1065	n.a.
No. batches	3	3	n.a.
Growth (g/day)	709	732	< 0.01
FCR (kg/kg)	2.70	2.61	< 0.01
Losses %	6.54	3.88	0.006
Margin / pig (€)	39.57	43.66	+4.09

n.a. not analyzed

DISCUSSION AND CONCLUSION

This study demonstrates that a subclinical PCV2 infection can have a negative impact on performance parameters as already shown by other trials[3]. In case of a subclinical PCV2 infection, the veterinarians together with the swine farmers can use different tools available to assess the economic performance of the farm for diagnostic purposes but also to monitor the efficacy of the control measures they implement.

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