

# IMPACT OF PCV2 VACCINATION FOR CONTROLLING PORCINE CIRCOVIRUS ASSOCIATED DISEASE IN A WEAN TO FINISH PRODUCTION SYSTEM

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## Introduction

The objective of this study was to confirm the effectiveness of Ingelvac CircoFLEX<sup>®</sup> (Boehringer Ingelheim Vetmedica, Inc., St Joseph, Missouri USA), a 1 dose porcine circovirus type 2 (PCV2) vaccine, at improving performance when complete barns of wean-to-finish pigs were vaccinated and compared to non-vaccinated control barns in a production system with naturally occurring porcine circovirus associated disease (PCVAD).

## Materials and Methods

A Midwestern production system was selected with a history of clinical PCVAD wean-to-finish mortality rates >10%. Infectious agents identified included PRRS virus (both North American and European types), Swine Influenza virus (both H1N1 and H3N2), *Mycoplasma hyopneumoniae*, *Salmonella typhimurium* and PCV2 (group 2b). Source farm sows were vaccinated against PRRS with a modified live PRRS vaccine. Pigs received a two dose *Mycoplasma* vaccine at approximately three and six weeks of age. Growing pigs were not vaccinated against PRRS, SIV or *Salmonella* prior to or during the comparison period. Forty four (44) barns of pigs were vaccinated at approximately three weeks of age, when pigs received the first dose of *Mycoplasma* vaccine. Pigs were vaccinated with each product individually. Thirty eight (38) non-vaccinated control barns of pigs received only *Mycoplasma* vaccination. Wean-to-finish growth rate, livability and feed efficiency were compared using Student's t-test. As the data were not normally distributed, livability was analyzed using Pearson's chi-square, Statistix 8.0 (Tallahassee, FL; statistix.com). Performance results were placed into a spreadsheet to estimate the net profit provided by vaccination. Baseline economic benefit was calculated assuming feed cost of \$0.16/kg and \$1.00/kg live weight market price.

## Results

There were no post-vaccination anaphylactic or injection site reactions observed. Onset of viremia had typically occurred between 12 and 14 weeks of age and non-vaccinated control pigs experienced clinical disease consistent with their historical performance, including wean-to-finish mortality in excess of 10% and overt clinical signs consistent with PCVAD. Vaccinated pigs had significantly reduced PCVAD. Livability, defined as the number of pigs placed minus cull and mortality pigs, (92.63% vs. 85.82% for controls,  $P<0.0001$ ), feed efficiency (2.428 vs. 2.579 for controls,  $P<0.0005$ )

and average daily gain (675g vs. 650g,  $P<0.0001$ ) were significantly improved in vaccinated barns (Table 1).

Table 1. Performance and economic results of vaccinated vs. non-vaccinated wean-to-finish barns

Barn Group	ADG g/d	Feed per gain	Livability
Ingelvac CircoFLEX	675 <sup>b</sup>	2.428 <sup>d</sup>	92.63% <sup>b</sup>
Non-vaccinated	650 <sup>a</sup>	2.579 <sup>c</sup>	85.82% <sup>a</sup>
Difference	+25 g/d	-0.151	+6.81%

Values within a column with different superscripts differ significantly; a,b: $P<0.0001$ ; c,d: $P<0.0005$

Results of the baseline economic analysis indicated an increased net profit of \$7.08 per pig vaccinated (Table 2, center cell). The price sensitivity analysis factors in vaccine costs of the vaccinated barns and treatment costs of the non-vaccinated barns, with a difference of \$0.75 between the two. As costs varied over the range of the sensitivity analysis, vaccination remained profitable regardless of combinations such as high feed cost (\$0.20 per kg) and low finished pig market prices (\$0.55 per kg).

Table 2. Price sensitivity analysis, net US\$ benefit per pig vaccinated

Feed cost/kg	Market price per kg live weight				
	\$0.55	\$0.77	\$1.00	\$1.21	\$1.43
\$0.20	\$2.74	\$4.67	\$6.60	\$8.53	\$10.46
\$0.18	\$2.98	\$4.91	\$6.84	\$8.77	\$10.70
\$0.16	\$3.22	\$5.15	\$7.08	\$9.01	\$10.94
\$0.14	\$3.46	\$5.39	\$7.32	\$9.25	\$11.18
\$0.12	\$3.70	\$5.63	\$7.56	\$9.49	\$11.42

## Discussion

Results demonstrate that Ingelvac CircoFLEX<sup>®</sup> is effective at significantly reducing the biologic and economic of PCVAD. Even in the presence of low market prices combined with high feed costs, an economic benefit from vaccinating pigs for PCV2 is expected.