

COMPARATIVE PERFORMANCE OF BARNs OF PIGs VACCINATED OR NOT VACCINATED WITH A ONE-SHOT PCV2 VACCINE

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Introduction

Porcine Circovirus type 2 (PCV2) is the necessary etiologic agent of Porcine Circovirus Associated Disease (PCVAD). When combined with other infections, such as PRRS virus (PRRSv) or Swine Influenza Virus (SIV), mortality may exceed 20%. Vaccines against PCV2 have been shown to reduce losses in PRRS and *Mycoplasma hyopneumoniae*-negative and positive herds. This paper describes the effects of vaccination against PCV2 on mortality rate, performance and carcass parameters.

Materials and Methods

A production system utilizing four off-site conventional finishing barns housing all barrows by barn (all-in/all-out) was used in this evaluation. PCVAD was first diagnosed late 2005. Average finishing mortality rate increased from 2-3% pre-PCVAD to over 8% after PCVAD became established. Twelve barns of approximately 830 pigs/group were vaccinated at weaning (approximately 3 weeks of age) with a one-shot PCV2 vaccine and were compared to 12 non-vaccinated barns of pigs. A total of almost 20,000 pigs were included in the evaluation.

The experimental unit was the barn; however, some variables were legitimately calculated back for the individual animal as the number of the individual animals were exactly known for each barn (number in – number out). Efficacy parameters included mortality rate, cull rate, average daily gain (ADG), feed conversion rate (FCR), average daily feed intake (ADFI), back fat depth, loin muscle depth and lean meat yield. In most of the groups (10/12 non-vaccinated, 8/12 vaccinated) pigs were fed ractopamine during the late finishing period. Data were analysed using analysis of (co)variance procedures (ANCOVA) with treatment (vaccine/control) as main effects and ractopamine treatment as covariate, where appropriate (SAS, Cary, North Carolina, version 8e). Results were considered significant if $p \leq 0.05$. A Statistical Process Control (SPC) Chart was prepared to evaluate the effect of vaccination on predictability of the production process, displaying the non-adjusted FCR means.

Economic benefit of vaccination was calculated based on sales of pigs produced (standard marketed and culls) minus costs involved (feed costs and piglet price). Assumptions made for both groups: 1.10 US\$/kg live weight, 0.78 US\$/kg cull live weight, 180 US\$/1,000 kg feed, 42 US\$ per 25 kg pig. Improvement in carcass parameters and vaccination costs were not included in the calculation.

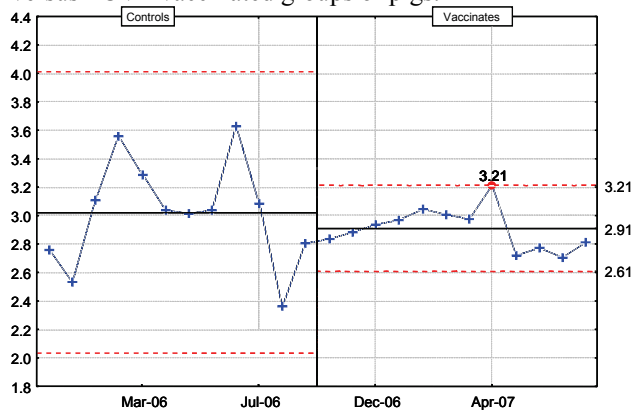
Results

Compared to non-vaccinates, vaccinated pigs had significantly decreased mortality rate and back fat depth while achieving increased ADG, percentage lean meat yield and increased percentage of pigs marketed (Table 1). Culls were decreased in vaccinated groups, though not statistically significant due to large variation among groups. FCR was not significantly different between the two groups. However, FCR was numerically lower in vaccinated groups and appeared to be less variable in the vaccinated groups (Fig. 1). The total benefit of vaccination was calculated to be approximately US\$10 per pig vaccinated.

Table 1. Performance differences of 12 barns of PCV2-vaccinated pigs versus 12 barns of non-vaccinated pigs.

LS Means	Vaccinates	Controls	p-value
Mortality (%)	2.28	9.08	<0.0001
Culls (%)	4.84	7.69	0.3046
ADG (g/day)	814	728	<0.0001
FCR	2.95	3.03	0.55
ADFI (kg)	2.4	2.2	0.07
Back fat (mm)	19.7	22.0	0.0003
Loin depth (mm)	54.4	54.1	0.8324
Lean meat (%)	53.77	52.65	0.0014

Figure 1. Feed conversion ratio of non-vaccinated versus PCV2-vaccinated groups of pigs.



Discussion

Vaccination at weaning with a one-shot PCV2 vaccine not only significantly reduced mortality rate, but improved performance and carcass parameters as well. Significant effects on ADG, back fat and lean meat were demonstrated. In this field setting, vaccination against PCV2 clearly had positive effects on health status and relevant economic parameters.