



# discoveries

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- **Pigs in a study that received two doses of Fosterera<sup>®</sup> Gold PCV MH had numerically fewer reactions, less morbidity and mortality, and a \$4.12 per pig advantage compared to two doses of a competitor's vaccine.**
- **In a one-dose trial, pigs that received Fosterera Gold PCV MH performed as well as pigs that received the competitor's vaccine.**
- **The inclusion of two PCV2 genotypes in Fosterera Gold PCV MH is expected to provide broader coverage against circulating and evolving field strains of the virus compared to vaccines with only one genotype.**

## Two-dose Fosterera<sup>®</sup> Gold PCV MH regimen yields performance advantages

**P**igs in a study that received two doses of Fosterera<sup>®</sup> Gold PCV MH, the new Zoetis vaccine for porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumoniae* (*M. hyo*), had numerically fewer reactions, less morbidity, less mortality and a \$4.12 per pig advantage at marketing compared to a competitor's vaccine.<sup>1</sup>

In a separate trial comparing one dose of the same two vaccines, Fosterera Gold PCV MH performed as well as the competitor's.<sup>2</sup>

Fosterera Gold PCV MH is the only vaccine for PCV2 in the US to contain two genotypes — PCV2a and PCV2b — and in a challenge study, it protected against 2d,<sup>3</sup> the leading PCV2 genotype in the US.<sup>4</sup>

### Southeast field trial

The two-dose field trial was conducted on a farm in the Southeast, said Gene Nemechek, DVM, technical services, Zoetis. The overall health of the herd was good but PCV2d and *M. hyo* were in the environment, providing a natural challenge.

One group of 618 pigs received 1 ml of Fosterera Gold PCV MH at 3 and 6 weeks of age. Another 623 pigs received the same protocol with Circumvent<sup>®</sup> PCV-M G2.

Throughout the trial, oral-fluid and serology samples were tested for PCV and *M. hyo* by polymerase chain reaction (PCR), he said.

Before the trial, oral-fluid sampling indicated no pigs were positive for PCV2. By mid-finisher stage, seven of nine oral-fluid samples were PCV2-positive, but random serum sampling of

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GENE NEMECHK, DVM  
ZOETIS

Fosterera Gold PCV MH has a duration of immunity of at least 23 weeks for both PCV2 and *M. hyo*, so pigs are protected throughout the finishing stage.

individual pigs turned up zero of 16 as positive. Not surprisingly, sequencing of positive samples revealed the PCV2d strain. There were no positive *M. hyo* results based on oral-fluid sampling throughout the trial, Nemechek said.

In the Fosterera Gold PCV MH group, there were numerically fewer vaccine reactions, less morbidity and less mortality, and there were fewer culls at closeout — 0.49% in the Fosterera Gold PCV MH group compared to 0.96% in the other group. In addition, 93.53% — 2.84% more — of pigs in the Fosterera Gold PCV MH group went to the primary hog market compared to 90.69% in the Circumvent PCV-M G2 group, he said.

Growth and average daily gain were similar in both groups. However, net revenue provided by the producer demonstrated a \$4.12-per-pig advantage for those in the Fosterera Gold PCV MH group (Table 1), Nemechek reported.

#### One-dose trial

The one-dose comparative trial was conducted on a farm in the Midwest and involved more than 2,600 pigs.<sup>5</sup> It focused on morbidity, mortality and growth, said Noel Garbes, DVM, technical services, Zoetis.

At 3 weeks of age, pigs received one, 2 ml dose of either Fosterera Gold PCV MH or Circumvent PCV-M G2.

Table 1. Results for the Southeast trial

	Vaccine reactions		Morbidity (lame, sick, poor doers)	Total mortality	End finisher weight (lbs)	Cost per pig placed**
Fosterera® Gold PCV MH	1 <sup>st</sup> injection 0.32% 2/618	2 <sup>nd</sup> injection 0.65% 4/618	3.3% (20/599)	5.02% 31/618	229.16 ± 24.13 (157-312)*	\$64,927.66/ \$105.06 per pig placed
Circumvent® PCV-M G2	0.96% 6/623	1.44% 9/623	5.9% (35/597)	7.22% 45/623	229.09 ± 25.10 (136-293)*	\$62,886.55/ \$100.94 per pig placed

\* Mean ± standard deviation (weight range)

\*\* Net revenue = (final weight/100 x [full value: \$50/cwt; cull value: \$35/cwt]) – mortality loss [\$35/pig + lost feed costs]. Feed costs do not include feed medications. Costs of vaccines and injectable medication were not included in the analysis. These values (cost per animal and amount per feed) are specific to the producer and the net revenue calculation could be different across producers.

Conducting a trial with this herd was challenging because there were multiple health issues, but the problems encountered were not unlike those often seen in the field, Garbes said. There was influenza on the sow farm and, at the nursery, there were influenza and *Streptococcus suis*. Finishers developed *Actobacillus suis* 12 weeks after they were placed, causing eight pigs to die in 1 day, he said, and noted that treatment was administered as indicated.

Oral-fluid and serology sampling was performed throughout the trial. The samples were tested for PCV2 with PCR, but to test for *M. hyo*, either PCR or ELISA was used.

There were a few samples positive for PCV2 and *M. hyo* at different points throughout the study, but by the end of the trial at 19 weeks of age, no samples were positive for PCV2. In the Foster Gold PCV MH group, two of 15 samples were positive for *M. hyo* by 19 weeks of age, and in the Circumvent PCV-M G2 group, one of 14 was positive and one of 14 was suspect, he said.

There were no significant differences ( $p \geq 0.05$ ) in morbidity or mortality between the two vaccine groups nor in average daily gain (Table 2), Garbes said.

“In this study, one dose of Foster Gold PCV MH performed similarly to Circumvent PCV-M G2 when administered at weaning,” he said.

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NOEL GARBES, DVM  
ZOETIS

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Table 2. Results for the Midwest trial			
	Morbidity	Mortality	Average daily gain
Foster Gold PCV MH	0.38% 5/1322	2.95% 39/1322	1.66 ± 0.01
Circumvent PCV-M G2	0.68% 9/1324	2.57% 34/1324	1.67 ± 0.01



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### Advantages

Fosterera Gold PCV MH has a duration of immunity (DOI) of at least 23 weeks for both PCV2 and *M. hyo*, so pigs are protected throughout the finishing stage. The DOI for Circumvent PCV-M G2 is at least 20 weeks (5 months) for only the PCV2 fraction of the vaccine.<sup>6</sup>

Other attributes of Fosterera Gold PCV MH are safety and broader antigenic coverage, Garbes said.

“The safety of Fosterera Gold PCV MH was demonstrated in the Southeast comparative trial and in a three-state safety study,”<sup>7</sup> he said. Garbes attributes the vaccine’s safety to the adjuvant MetaStim®, which is “smooth.”

Research has demonstrated that because the vaccine has two PCV2 genotypes, it should provide the broadest antigenic coverage available against commonly circulating PCV2 genotypes as well as evolving PCV2 field strains compared to a vaccine with only one genotype.<sup>8</sup>

The single, 2 ml dose of Fosterera Gold PCV MH is indicated for pigs 3 weeks of age or older. The flexible protocol given as two, 1 ml doses can be started as early as 3 days of age; however, Garbes and Nemechek prefer the two-dose regimen initiated at 3 weeks of age.

“With two doses,” Garbes explained, “all pigs are more likely to be vaccinated, whereas with one dose, some might be missed. Based on our work in the field, we also think the immune response will be better if you wait until 3 weeks of age to start the vaccine protocol.”

For more information, contact Dr. Nemechek ([eugene.nemechek@zoetis.com](mailto:eugene.nemechek@zoetis.com)), Dr. Garbes ([noel.garbes@zoetis.com](mailto:noel.garbes@zoetis.com)) or your Zoetis representative.

<sup>1</sup> Data on file, Study Report No. 17 PPTBIO-01-01, Zoetis LLC.

<sup>2</sup> Data on file, Study Report No. 17 PPTBIO-01-02, Zoetis LLC.

<sup>3</sup> Data on file, Study Report No. 16 PRGBIO-01-01, Zoetis LLC.

<sup>4</sup> Opriessnig T, et al. A commercial porcine circovirus (PCV) type 2a-based vaccine reduces PCV2d viremia and shedding and prevents PCV2d transmission to naive pigs under experimental conditions. *Vaccine*. 2017 Jan 5; 35(2):248-254.

<sup>5</sup> Data on file, Study Report No. 17 PPTBIO-01-02, Zoetis LLC.

<sup>6</sup> Circumvent PCV-M G2 label, Merck Animal Health.

<sup>7</sup> Data on file, Study Report No. 16 PRGBIO-01-01, Zoetis LLC.

<sup>8</sup> Data on file, Study Report Zoetis W01, EpiCC PCV2 Analysis, Zoetis LLC.

## discoveries

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