swine health

Circovirus Vaccines Explore the Integral Role That Vaccines Continue to Play.

By Joe Vansickle
Senior Editor

Three short years ago, the pork industry saw porcine circovirus-associated disease (PCVAD) burst on the scene, causing dramatic losses. Since that time, Carthage Veterinary Service (CVS), Ltd., Carthage, IL, has conducted numerous research trials on the disease syndrome and vaccines to control it.

CVS veterinarian Joe Connor says that all of the commercially available vaccines continue to provide excellent results and those products have proven effective around the world.

"A high percentage of our pigs are vaccinated and we've got good, efficacious vaccines and good vaccine availability," he reported at a Fort Dodge Animal Health seminar at World Pork Expo. Problems that do occur relate to improper vaccine timing or pigs missed during vaccination.

When missed during vaccination, clinical signs can occur in individual pigs, characterized by pneumonia or brown-red-black diarrhea associated with porcine circovirus type 2 (PCV2) that is often seen as a precursor to PCV2-associated postweaning multisystemic wasting syndrome (PMWS). Lymph nodes become enlarged. Jaundice and wasting are characteristics of PMWS; 6-10% of recent PCV2 infections studied have presented a parvovirus co-infection, Connor says.

Questions Remain

While vaccination affords solid protection against circovirus, Connor says several key questions remain:

The first question involves the role of PCV2 in reproduction. "We have been tracking a low number of cases of reproductive failure primarily seen as increased abortions, increased mummies and an increase in low-viability pigs in several herds," he explains. To date, the only infectious agent identified has been PCV2, and he's confident that PCV2 is the primary component.

In cases of reproductive failure and an increase in preweaning mortality, those sow herds have been subsequently vaccinated for circovirus.

A second question relates to the role of viremia (infection in the bloodstream) in the context of a circovirus infection. In seven CVS studies to date that looked at PCV2 viremia, 2.5% of pigs were shown to be viremic on placement at 18 to 21 days of age. Control group pigs (unvaccinated) in the studies consistently became infected from one of three sources: the sow, other pigs or from the environment. Because circovirus is quite stable in the environment, rigorous washing, disinfecting and drying during the trials did not eliminate the virus from hog facilities nor from hog transportation systems, he notes.

Control group pigs reached the height of being viremic at 8 to 12 weeks of age, while vaccine counterparts typically peaked for viremia at 12 weeks of age, but at virus levels several times lower than control pigs. Pigs vaccinated with Fort Dodge's Suvaxyn's circovirus vaccines recorded very low levels of viremia.

Connor says viremia may be important when pig flows in pig-dense areas have co-infections with porcine reproductive and respiratory syndrome (PRRS), Mycoplasmal pneumonia or...
Circovirus Vaccine Boosts Growth in ‘Healthy’ Herd

Significant improvement in growth performance in a recent field trial in a Nebraska herd validates use of a single-dose circovirus vaccine in a herd that hasn’t experienced clinical disease, says John Waddell, DVM.

Waddell, owner of the Sutton (NE) Veterinary Clinic, explained at a World Pork Expo seminar last month that Ingelvac CircoFLEX from Boehringer Ingelheim Vetmedica, Inc. increased growth rate in a population of high-health pigs that had not exhibited clinical signs of porcine circovirus-associated disease (PCVAD). Culling rate was significantly reduced by vaccination.

The trial herd was diagnosed with subclinical PCVAD. However, vaccination did not greatly alter mortality rate, nor was that an expected result of the producer, Waddell says.

Moreover, performance results indicate "narrowing of the weight range distribution for the vaccinated group of pigs illustrates the biologic and implied economic benefit of immunization (vaccine) for circovirus," Waddell points out.

Differences in growth performance between the vaccines and control groups are spelled out in Table 1.

Test Parameters
The field trial was conducted on a farm that was naïve for porcine reproductive and respiratory syndrome (PRRS). During the study, 93 pigs were randomly selected to determine if there were co-infections that might affect health status. Pigs were regularly vaccinated for Mycoplasmal pneumonia, but there were no reported problems of salmonella or ileitis.

Six-hundred, 21-day-old weaned pigs were tagged, weighed and divided into two equal groups. Half of the pigs were vaccinated and the other half served as controls. The two groups were com Mingled and housed 30 head/pen. Individual weights were recorded at the start of the trial and at Day 35 and 119.

Any pigs that did not reach 180 lb. by Day 119 were culled from the trial, Waddell notes.

Test Results
Vaccination had no major affect on mortality rate, with 3.01% mortality for vaccines and 3.86% for the control group. Culling rate was 1.34% for vaccinated and 6.69% for the control group.

Polymerase chain reaction (PCR) tests were performed on pigs bled at 3, 6, 8, 12, 18 and 22 weeks, post-vaccination, to check for viremia (presence of infection in the bloodstream). The level of viremia was several times higher in the non-vaccinated pigs entering the finishing phase, Waddell says.

During the 119-day trial, the weight spread or level of variation was much more pronounced in the non-vaccinated group.

<table>
<thead>
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<th>Table 1. Circovirus Vaccination Results</th>
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<tr>
<td>Variable</td>
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<tr>
<td>Day 0 weight, lb.</td>
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<td>Day 35 weight, lb.</td>
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<td>Day 119 weight, lb.</td>
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<td>Day 0-35, ADG, lb</td>
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<td>Day 36-119, ADG, lb</td>
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<td>Day 0-119, ADG, lb</td>
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<td>Day 0-119 weight gain</td>
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1ADG refers to average daily gain.