Why PCV2 viremia matters from a swine practitioner’s point of view

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Introduction
Subclinical infections with PCV2 are common1,2 and can occur in the absence of co-factors or if vaccination does not prevent viral replication.3 PCV2 viremia produces immune system activation4 which causes the redirection of nutrients intended for growth to counteract disease challenge.5 The objective of this field trial was to compare the productivity of nursery and grower-finisher (G-F) pigs vaccinated with a labeled dose of one of two commercial circovirus vaccines or a placebo. Productivity was measured as average daily gain (ADG) and mortality.

Materials and methods
A total of 2,146 pigs were selected from a PRRS- and M hyopneumoniae-free herd. The pigs were assigned to one of three treatment groups: 1. (1-D) pigs vaccinated with full dose (1ml) of a one dose vaccine (n = 1026); 2. Two dose (2-D) pigs were vaccinated with full dose (2ml × 2) twice of a two dose vaccine (n = 1020); and 3. Controls injected with saline (n = 100). Pigs were individually weighed at approximately 3, 11 and 20 weeks of age as well as just prior to being shipped to the abattoir (at least 107 kg). The individual pig number, treatment group and reason for death were recorded by the producer when a pig died as a means to measure mortality. Blood samples were taken from a random sample of 122 pigs at approximately 3, 9, 15, 19, and 23 weeks of age and also during the final week of shipping. Viremia was measured using qPCR.

Results
Starting weights did not differ by group. In the nursery, 2-D pigs had a lower ADG (462 g ± 64) than 1-D (477 g ± 64) and control (473 g ± 63) pigs (P < 0.05). Throughout the entire G-F phase the ADG of the vaccinated pigs out-performed that of the unvaccinated controls (p<0.01). Also during this time, controls had a higher mortality (5.1%) than 1-D (1.7%) and 2-D (1.6%) pigs (P < 0.05). During the second half of the G-F phase when qPCR results indicated the highest PCV2 challenge, 2-D pigs had a higher ADG (897 g ± 173) than 1-D pigs (861 g ± 238) (P < 0.05). The 1-D group and control group also had a higher percentage of PCV2 positive pigs (47.2% and 85.4% positive respectively) than the 2-D group (8.3% positive).

Implications and conclusions
Overall vaccination reduced mortality and increased ADG. However, only the 2-D vaccine was able to reduce viremia and maximize ADG during the high PCV2 challenge in the finisher phase. Increase in viremia corresponded with a reduction in ADG.

References
Figure 1: Percentage of viremic pigs by treatment (grower-finisher)