RESEARCH ABSTRACT

SWINE HEALTH

Title: Preweaning surveillance: Finger on the pulse of PRRSV epidemiology, transmission and spread.
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Scientific Abstract: Achieving control of PRRSV will require the industry to develop the capacity to easily, efficiently, and continuously surveil herds for PRRSV. The objective of the research was to explore one possible surveillance option.

In four PRRSV vaccinated commercial swine herds, oral fluid samples were collected from 600 litters (150 samples from each of the 4 herds) 24 hours prior to weaning and serum samples from their dams two days post weaning. All sows had received at least 4 doses of commercial PRRSV modified live virus vaccines.

Once collected, samples were completely randomized and tested for PRRSV (RT-qPCR and sequencing) and PRRSV antibodies. In addition, PRRSV ORF5 sequencing was attempted on RT-qPCR-positive samples. Virus and antibody assay results were analyzed for associations with farm, sow parity, litter size, time, and infection status.

Testing of pre-weaning oral fluid samples (n = 600) and sow serum samples (n = 600) by PRRSV RT-qPCR resulted in 9 positive oral fluid samples. No PRRSV RT-qPCR-positive serum samples were observed. The positive results were confirmed by blind re-testing at a second laboratory.

Among the 9 PRRSV RT-qPCR-positive samples, 3 oral fluid samples had been used up. The remaining 6 oral fluid samples were submitted for PRRSV ORF5 sequencing and sequences were obtained on 2 of the 6. Pairwise comparisons based on ORF5 nucleotide percent identity showed that, although detected from litters not showing clinical signs, the viruses identified in the study (Farm 2 07/2011 and Farm 3 08/2011) matched viruses detected in serum samples collected from sows in association with abortions. (See Table 1)

A statistical analysis based on PRRSV RT-qPCR quantitative results (Ct values) detected no statistically significant associations with farm, sow parity, or their interactions. However, an analysis of oral fluid antibody responses showed significantly higher mean antibody isotype S/P ratios in RT-qPCR-positive versus negative oral fluid samples ($p < 0.05$; IgM = 0.03 vs. 0.00, IgA = 0.16 vs. 0.04, and IgG = 3.46 vs. 2.36), but no difference in commercial kit S/P responses. Sow serum samples from RT-qPCR-positive litters showed significantly higher ($p < 0.05$) mean serum IgG (1.73 vs. 0.98) and commercial kit (1.97 vs. 0.98) S/P ratios, but no difference in IgM or IgA responses.