

## SWINE HEALTH

**TITLE:** Development of on-farm PRRSV surveillance guidelines for the modern pork industry – (NPB #13-157)

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### Scientific abstract:

Oral fluids (OF) are a convenient surveillance sample because they (1) are easily collected by a single person; (2) can be collected frequently without stress to pigs or people; and (3) provide a higher probability of analyte detection with fewer samples than serum (Olsen et al., 2013). The goal of this research was to develop guidelines for PRRSV surveillance.

In 3 commercial wean-to-finish barns on one finishing site, OFs were collected weekly from every occupied pen (108 pens; ~25 pigs per pen) for 8 weeks (total of 972 OF samples). These samples were completely randomized and then tested for PRRSV by RT-PCR.

The probability of PRRSV detection by RT-PCR was derived as a function of sample size (Table 1) and sample allocation (random vs spatial). Notably, systematic spatial sampling was shown to be as good, or better, than random sampling for the detection of PRRSV infection. That is, regardless of the number of samples collected, spacing of samples equidistantly over the length of the barn provided for the highest likelihood of detection.

Analysis also showed that PRRSV exhibited spatial autocorrelation at the barn level (Moran's *I* analysis). This result provided further support to the conclusion that systematic spatial sampling was a valid approach, i.e., Aune-Lundberg and Strand (2014) state, "*systematic sampling is more precise than simple random sampling when spatial autocorrelation is present and the sampling effort is equal.*"

Producers and swine veterinarians should design a sampling plan that will meet their goals for surveillance. For PRRSV detection, the following should be taken into account: (1) all buildings should be sampled because the pattern of infection differs among buildings; (2) sample size should be selected based on the budget allocated for surveillance and the detection target. For example, as shown in Table 1, 6 samples collected using a systematic spatial plan have an 85% probability of detecting PRRSV if 25% of the pens are positive.

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