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SDEC Partners Research Update

Project Update: *Investigating the role of the environment and the lactating sow in PRRSV infections during an outbreak* (Part 2)

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Background

- PRRSV can be detected in the environment of the farrowing house and the udder skin of lactating sows.
- However, the temporal detection of PRRSV in the environment and the sow's skin in relation to an outbreak is unknown.
- There is very limited information on the role that the environment or lactating sow may play at transmitting PRRSV to new-born piglets.

Objective

To assess the temporal distribution of PRRSV in the farrowing environment and the lactating sow at processing and weaning from a recently infected farm.

Material and methods

- Sampling started 2 weeks after a PRRSV outbreak was reported in a sow farm . Sampling was conducted from 10 litters every 3 weeks for a total of 24 weeks.
- Samples were collected at processing (~ 3 days of age) and at weaning (~20 days of age):
  - Surface wipe of farrowing crates (feeders, waterers) – 1 gauze/crate (n= 10/sampling age/visit).
  - Surface wipe of the udder skin of lactating sows – 1 gauze/sow (n=10/sampling age/visit
  - Surface wipe of a surface to assess airborne particle deposition—3 samples/room (max 10 samples per visit).
- Airborne particle deposition (AD) were collected by placing 1 m of aluminum foil paper on top of a crate away from direct access from piglets and wiped after 1 h.
- All samples were collected with a gauze previously impregnated with transport media (cell culture media with anti-biotics), stored at 4ºC and tested for PRRSV RT-PCR (Ct cut off = 37.5)

Results:

- PRRSV was detected at processing up to 14 weeks after the outbreak in surfaces and udder skin of lactating sows.
- At weaning, PRRSV was detected up to 17 weeks post-outbreak using udder skin wipes.
- The number of positive samples decreased over time and the Ct values of the positive samples increased over time.
- Detection of airborne particle deposition positive samples followed a similar pattern to those of the crate surfaces and udder wipes.
- Virus could be isolated and sequenced from all types of samples.

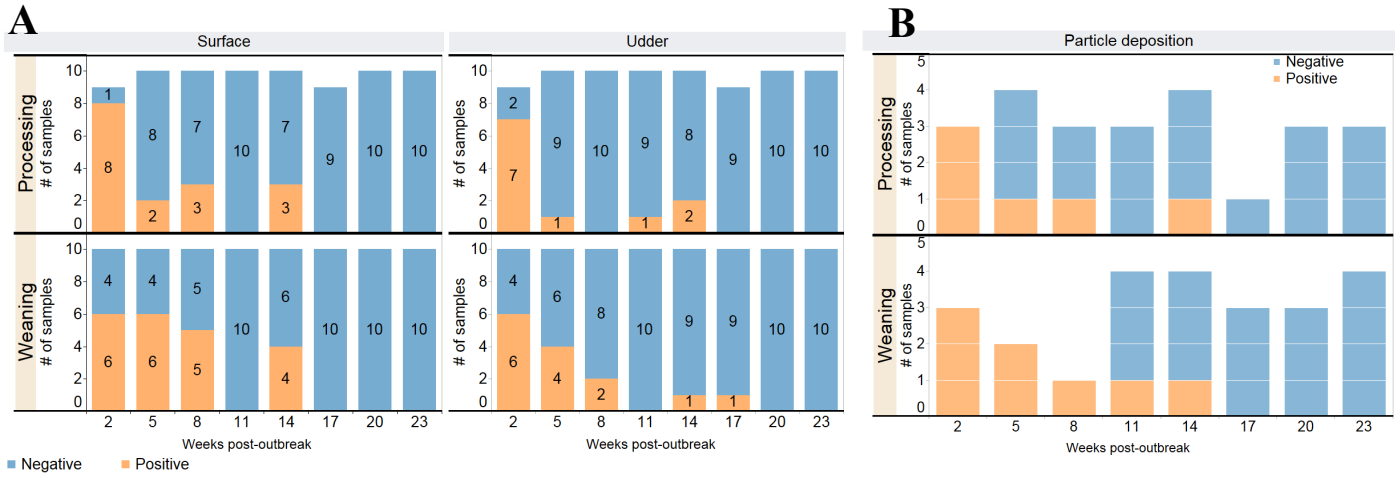

Figure 1. Number of positive and negative samples at processing and weaning in: A. Surface and udder wipes; B. Particle deposition wipes.

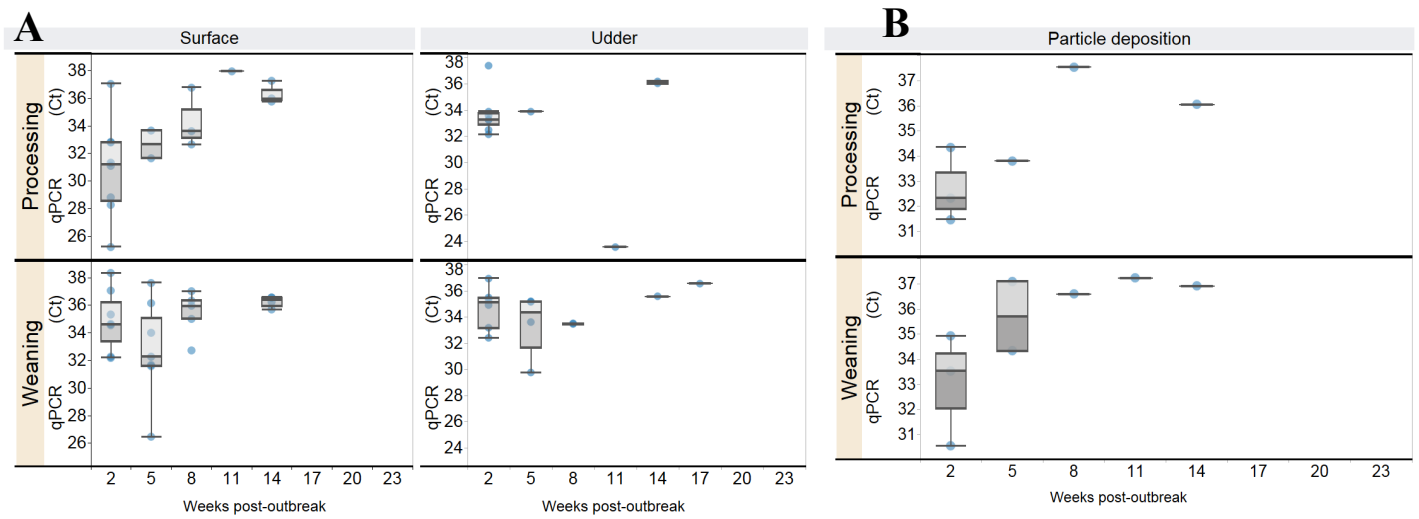

Figure 2. Comparison of Ct values over time at processing and weaning in: A. Surface and udder swabs, and B. Particle deposition wipes.

Conclusions and Implications:

- PRRSV was detected in the environment and the skin of lactating sows at processing and at weaning for up to ~ 4 months after the outbreak.
- Sampling the environment or the lactating sow could be alternative sampling methods to determine the PRRSV stability of the farm but further research is needed to compare these methods with processing fluids or oral fluids.
- PRRSV sequences were obtained from all types samples.
- Udder skin and environment could have a role in transmission and maintenance of PRRSV in piglets in breeding herds. However its significance still needs to be defined.