

Alpha and Delta Coronavirus Clinical and Diagnostic Observations of a Commercial Sow System



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INTRODUCTION

Intervention to a PED break includes initiating a multi-facet program focusing on a planned whole herd exposure, biosecurity and sanitation protocol with the goal of PED elimination. There is no literature following a group of individual sows and gilts over a years' time to measure fecal shedding, antibody levels and impact on performance.

OBJECTIVE

The objectives of this project were to evaluate: 1) Duration of shedding in individual sows 2) Individual sow antibody responses to exposure, and to 3) compare sample techniques.

MATERIALS AND METHODS

A Three 5,000 head, naive breed-to-wean sow farms in Eastern Colorado were followed over 365 days. All three sow farms broke with PED and Delta Coronavirus (SDCv) in March 2014. Once PED was confirmed each farm identified 30 random sows for serial sampling. These sows were stratified by location in gestation or lactation and parity (P0–P4+), resulting in 5 P0 from lactation and 5 P0 from gestation, similar stratification for P2 – P3 and P4+. At each sampling, each individual sow had a rectal swab, oral fluid (OF) sample by individual rope and serum sample collected. This sampling protocol was repeated for six consecutive weeks, then every-other-week for six weeks, then another sampling 13 weeks later. The rectal swab and OF samples were tested for PEDv and SDCv PCR (BIVI HMC, Ames, IA). The serum was tested for PEDv Whole-Virus ELISA (ISU-VDL, Ames, IA.).

RESULTS

All farms tested positive on PEDv ELISA and PEDv/SDCv PCR testing. SDCv positive animals were diagnosed soon after the PED planned exposure feedback. The percent positivity of both PEDv and SDCv, in both fecal swabs and OF showed a decreasing stair-step trend over time at each farm. The PEDv prevalence was over 75% positive the first two weeks with a steady decline thereafter. The antibody response at all farms was consistently high for 60+ days post-feedback. At approximately 80+ days post-feedback, there was a decrease (5–55%) in percent positivity at all farms which then increased to nearly 100% positive in subsequent weeks.

CONCLUSION

- Oral fluid sampling of sows by individual ropes appeared to be the less valuable sample type for two reasons: 1) OF tests the individual pig and can include environmental contamination; 2) not all sows will chew the rope leading to inconsistent sampling.
- Fecal shedding of both PEDv and SDCv showed no consistent difference by age/parity.
- In general, the percent PEDv and SDCv PCR positivity of OF was higher and detected longer than rectal swabs.
- The overall duration of shedding of both PEDv and SDCv showed differences at each farm.

- The rise in PED ELISA percent positivity at day 80+ may be indicator of a recrudescence that occurred after the overall herd immunity waned.

Figure 1: PEDv Whole Cell Elisa results

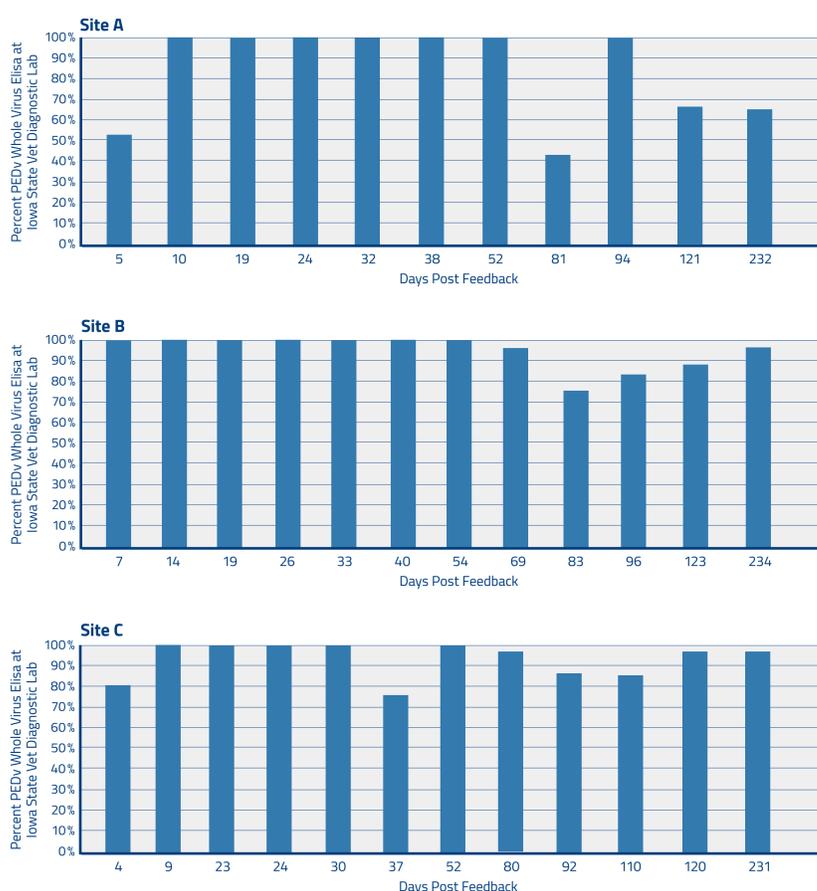


Figure 2: PEDv PCR on Oral Fluids and Fecals

