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Use of serology results of nursery and finisher pigs to monitor effectiveness of site and transport biosecurity protocols

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Introduction

In growing pigs, porcine reproductive and respiratory syndrome virus (PRRSv) decreases average daily gain (ADG) and feed efficiency (F:G), therefore increasing time to market and susceptibility to secondary disease, as well as decreasing the number of full value market pigs and revenue.¹ In order to evaluate transport and site biosecurity and understand possible risk of lateral introduction of PRRSv into growing pigs a large swine production system developed a diagnostic monitoring strategy. The objective of this study was to evaluate the results of this monitoring strategy.

Material and Methods

All pigs in the study were PRRSv naive (as per ELISA and PCR testing) at weaning. Every week, groups of approximately five-thousand (n=5,000) pigs were weaned into a wean-to-finish facility (14 days of age). A total of 17 groups (n=17), with 5,000 pigs each, were included in the study. On day 50 on site, each group was divided in two: twenty-five hundred pigs were shipped to a finisher site and twenty-five hundred remained at the wean-to-finish facility. Fifteen pigs per group per site were randomly selected and bled on days 50, 80 and 126 on site. Serum samples were tested for the presence of PRRSv antibodies by ELISA Herd Check PRRS 2XR (IDEXX Laboratories Westbrook, ME). When sera from a group tested positive to PRRS ELISA the group was removed from the study and no further sampling was performed.

Results

PRRS ELISA results are summarized in Table 1.

Table 1. Percentage of eligible groups that PRRS seroconvert by days on site

Site/d	0	50	80	126
Nurs	0 n=17	17.6 n=17		-
WTF	-		14.3 n=7	66.7 n=6
Fin	-		14.3 n=7	66.7 n=6

Discussion

This study confirmed the system's expectations that most of the sites remained PRRSv negative up to the end of the nursery stage. In Table 1, most of the sampled groups remained PRRSv negative at the wean-to-finish sites and upon arrival to the grow-finish sites within 4 weeks of movement. However, PRRS ELISA results show that by the time of first-cut to market, 66.7% of the wean-to-finish (WTF) and finisher sites tested had been exposed to PRRSv that were previously negative. This is higher than another finisher pig cross-sectional sampling of 38 of the company's sites sampled during the same time period, in similar locations, in which 57.9% of sites seroconverted. Site and transport biosecurity protocols during the nursery stage and between nursery and WTF sites were effective 82.4% and 85.7% of the time, respectively. The results of this study indicate that risk factors such as finisher animal transport, finisher site biosecurity, proximity to other PRRS positive sites, and aerosol transmission need to be monitored and addressed in order to prevent PRRSv introduction into these sites.

References

¹ Neumann et al. 2005. *J. Am. Vet. Med. Ass.* 227: 385.