

Evaluation of impact on productivity data following PRRSV1 ('Horsens') infection in Danish sow herds

QVIST PAWLOWSKI, MIA¹; BLACH NIELSEN, GITTE¹; MUSSE, SUSANNE LETH¹
¹MSD Animal Health Nordics, Havneholmen 25, 1561 Copenhagen V, Denmark.

Background and Objectives

In July 2019, a recombinant PRRSV1 variant ('Horsens') was isolated in Denmark derived from 2 different MLV-PRRS1- vaccines. The herd of origin was located near a boar station (supplying semen to Danish sow herds) that subsequently became infected.¹ Consequently, PRRSV sperm transmission occurred, and several sow herds were infected. The aim of this case study was to evaluate the impact on productivity data following PRRSV1 ('Horsens') introduction via semen in Danish sow herds.

Material and Methods

Retrospectively, productivity data before and after infection with PRRSV1 ('Horsens') were compared for four sow herds (number of sows: average 1706; range: 1000-2500) with known time of infection and the virus strain confirmed by full-genome sequencing. All four herds were PRRSV-negative before the outbreak. Immediately after the outbreak, all herds implemented the same control strategy (e.g., sow and piglet vaccination using MLV-PRRS1 vaccine (Porcilis® PRRS) and strict McRebel procedures). Average productivity parameters concerning Farrowing rate % (FR%), Number of live born piglets (LB) and Pre-weaning mortality % (PM%) were extracted from herd databases for both 6- and 12-months periods both before (t=-6; t=-12) and after (t=6; t=12) PRRSV infection following the herds for a duration over 1 and 2 years, respectively. Change over time for each productivity parameter was evaluated by comparing the periods before and after time of infection. Unfortunately, only 2 herds had data concerning PM%. For each parameter, the corresponding economic consequence for the year in question was estimated based on calculations provided by Danish Agriculture & Food Council/ SEGES.

Table 1. Change in production parameters in periods of 6 and 12 months, respectively, before and after PRRS-infection with PRRSV1 variant ('Horsens') in 4 Danish sow herds.

	Change over time t=-6 to t=6*	Change over time t=-12 to t=12 *	Economic impact**
Farrowing Rate, %	-4.84 (-1.24;-6.35)	-3.35 (-0.41;-7.91)	-10.30 (-1.26;-24.26)
Liveborn/sow, number	-2.10 (-2.79;-0.53)	-0.50 (-0.92;1.53)	9.20 (-50.54;84.05)
Pre-weaning Mortality, %	9.26 (8.88;9.63)	4.29 (2.38;6.13)	-40.62 (-22.70;-58.50)
*average (min; max) **Economic impact of the change in productivity parameter for the 12-months change, EUR/sow/year			

Results

Average productivity for intervals of 12 and 6 months for FR% were 92.3 (t=-12) and 92.2 (t=-6) before and 88.9 (t=12) and 87.4(t=6) after diagnosed PRRSV infection; for LB 17.7 (t=-12) and 17.7 (t=-6) before and 17.2 (t=12) and 15.6 (t=6) after diagnosed PRRSV infection; and for PM% 14,7 (t=-12) and 15,7 (t=-6) before and 19,0 (t=12) and 24,9 (t=6) after diagnosed PRRSV infection, respectively. The average economic impact (EUR/sow/year) for the 12-month periods comparison was -10.30 for FR%; 9.20 for LB; and -40.62 for PM%. Average changes in productivity figures including range and economic impact are shown in Table 1. Fluctuations in the productivity parameters given by monthly registrations for periods of 12 months before and after time of diagnosed PRRSV infection are illustrated in Figure 1-3.

Figure 1. Farrowing rate in Herd 1-4 in months relative to time of diagnosed PRRSV infection, which equals time 0.

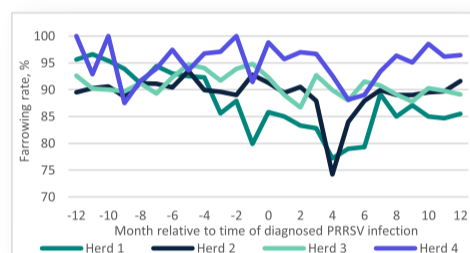


Figure 2. Liveborn piglets per litter in Herd 1-4 in months relative to time of diagnosed PRRSV infection, which equals time 0.

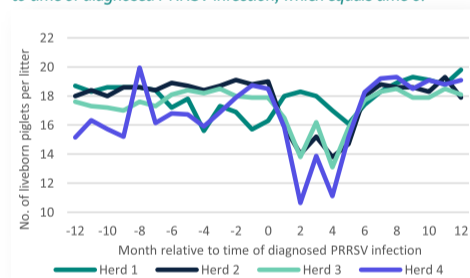
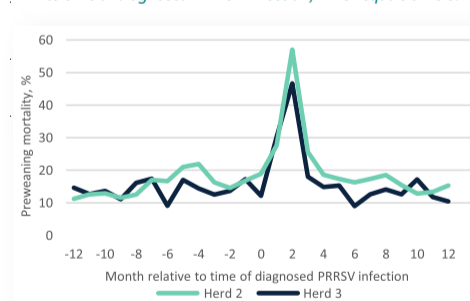


Figure 3. Pre-weaning mortality (%) in Herd 2-3 in months relative to time of diagnosed PRRSV infection, which equals time 0.



Discussion and conclusion

This study found acute and severe impact on the evaluated productivity parameters following PRRSV1 outbreak. With the chosen management strategy and implementation of vaccination, the parameters returned to the level before the outbreak after 6-12 months although having caused a clear financial loss. However, large variations existed between herds both in the impact and duration of infection.

¹ Kristensen CS, Christiansen MG, Pedersen K, Larsen LE, 2020 : Production losses five months after outbreak with a recombinant of two PRRSV vaccine strains in 13 Danish sow herds. *Porc Heal Manag* 6(1):4-10. doi:10.1186/s40813-020-00165-z