Comparison of production impact in breeding herds following PRRS clinical outbreaks adopting killed or attenuated PRRS virus vaccination protocols

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Abstract
Porcine reproductive and respiratory syndrome virus (PRRSV) has been endemic for more than 30 years in most pig producing countries across the globe, and is still one of the most economically important pathogen affecting swine. The use of modified live vaccines (MLV) on breeding herds has been reported by several investigators and is a common practice in the industry for the control of PRRSV. There is limited published information on efficacy of killed vaccines (KV) as part of PRRS control programs in breeding herds.

Disciplines
Large or Food Animal and Equine Medicine | Veterinary Infectious Diseases | Veterinary Preventive Medicine, Epidemiology, and Public Health

Comments
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Comparison of production impact in breeding herds following PRRS clinical outbreaks adopting killed or attenuated PRRS virus vaccination protocols

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Introduction
Porcine reproductive and respiratory syndrome virus (PRRSV) has been endemic for more than 30 years in most pig producing countries across the globe, and is still one of the most economically important pathogens affecting swine. The use of modified live vaccines (MLV) on breeding herds has been reported by several investigators and is a common practice in the industry for the control of PRRSV. There is limited published information on efficacy of killed vaccines (KV) as part of PRRS control programs in breeding herds.

Objective
The objective of this study was to describe productivity losses from breeding herds using KV (MJPRRS®) protocol compared to MLV protocol for herds following an outbreak with PRRSV.

Materials and methods
A retrospective observational study was conducted, following 78 PRRSV eligible outbreaks in swine breeding herds. More specifically we followed 27 outbreaks from 19 breeding herds using the KV protocol,1 and 51 outbreaks from 50 breeding herds using the MLV protocol.

A survey was used to record key demographic information including herd size (number of breeding sows in the inventory), location of gilt acclimation site (offsite or onsite), type of gilt development units (dedicated or shared), duration of herd closure (in weeks), prior PRRS status before an outbreak (stable or unstable), frequency of weaning events per week (1 and 2 or 3+), and PRRS vaccination protocol of breeding sows and/or gilts (KV, or MLV).

Moreover, weekly productivity data was gathered. Outbreaks were defined by American Association of Swine Veterinarians (AASV)2 when there was evidence of PRRS-associated changes in productivity such as significant decrease in weaned pigs, or spike in the number of weekly aborts.

Time to baseline production (TTBP), and total loss per thousand sows (TL/1000 sows) were reported for outbreaks, as previously established.3 Eligible outbreaks were censored if dropped from study between enrollment and reaching TTBP, or at 52 weeks if not having reached TTBP. ‘Time to baseline production’ (TTBP), and ‘total loss per thousand sows’ (TL/1000 sows) attributed to PRRS was compared between treatment groups (eligible outbreaks reporting to use KV, compared to those using MLV). Statistical analyses were performed with SAS version 9.4.

Results
The univariate analysis demonstrated that there was a shorter median TTBP of 6.2 weeks and significantly lower 1,614 pigs per 1000 sows in outbreaks adopting the KV protocol, as compared to those adopting the MLV protocol. In the final model (multivariate analysis), there was no significant difference between groups for TTBP after adjusting for weaning frequency, but outbreaks reporting use of KV still had significant lower (P = 0.0130) TL/1000 sows compared to outbreaks reporting use of MLV.

Conclusion
This study provided information about changes in productivity of commercial breeding herds using KV protocol as part of PRRS management strategy when compared to those using MLV protocol. After adjusting for significant covariates, there was no difference on TTBP between treatment groups. However, outbreaks using KV vaccine had significantly lower TL/1000 sows compared to those using MLV.

References