Within farm PRRS time-to-stability differences in sow farms in the Midwest

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Highlights

- There is significant within farm PRRS time-to-stability variation.
- Several factors contribute to PRRS time-to-stability variability; however, there is still a significant amount of unexplained variability.
- The role of within farm management practices and internal biosecurity measures should be further explored.

Introduction

Porcine reproductive and respiratory syndrome (PRRS) stability is reached when no evidence of infection is observed in wean-age piglets. Sample size to detect PRRS virus in wean-age piglets usually involves blood sampling of 30 piglets, at least four times, 30 days apart (Holtkamp et al., 2011). The cumulative time from the intervention (i.e. whole herd exposure, herd closure) to PRRS stability is usually referred to as time-to-stability (TTS). Factors such as exposure method (i.e. modified live virus vaccine or field virus inoculation), virus as classified by restriction fragment length polymorph (RFLP), previous exposure and system itself play a role in the TTS (Linhares et al., 2014; Linhares et al., 2017). Although there is usually a significant difference in TTS among systems, there is scarce information on the within-farm TTS variability. Here we summarize differences in TTS in MSHMP participating farms located in the Midwest that have had at least two PRRS outbreaks.

Methods

Six systems that are similar in the way they test to classify a herd as stable and are guided by Holtkamp et al. (2011) terminology were selected for inclusion in the study. PRRS outbreaks reported from 2011 to 2017 were used for analysis. TTS was defined as the time period from the date of outbreak reporting to the date when PRRS stability was reported (last consecutive negative PCR result). To assess the variability in TTS, only farms that had at least two PRRS outbreaks were selected. Standard deviation of TTS within the same farm was calculated and described using summary statistics. A generalized linear mixed model was built to estimate the variance between systems, between farms within systems, and residual variance (i.e. within farms).

Results

Overall, 133 PRRS outbreaks in 53 farms were recorded with two, three, four and five outbreaks in 35, 11, 5, 2 farms, respectively. The median TTS standard deviation of PRRS outbreaks within the same farm was 12 weeks

(minimum = 0 weeks, maximum=88 weeks) (Figure 1). After accounting for the effect of the intervention using MLV or FVI, the RFLP pattern of the virus associated with the outbreak and previous PRRS outbreaks in the farm, the PRRS time-to-stability correlation of outbreaks in the same farm and system was only 1.2%. In other words, TTS of two given outbreaks in the same farm were not correlated indicating that TTS within farm is highly variable.

Conclusion

There is a high TTS variability after a PRRS outbreak within the same farm that is not accounted for by the effect of the intervention used, the virus (i.e RFLP), previous PRRS outbreaks in the farm and system. Further studies should aim to assess the role of management practices and internal biosecurity protocols inside the farm on TTS.
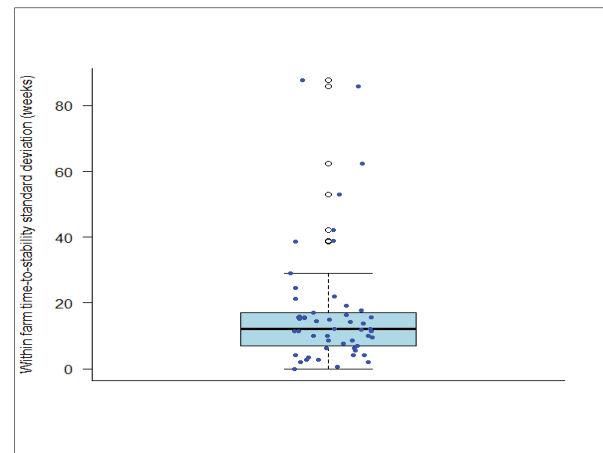
Figure 1 (Above): Distribution of 133 PRRS outbreaks time-to-stability (weeks) in 53 sow farms in the Midwest.
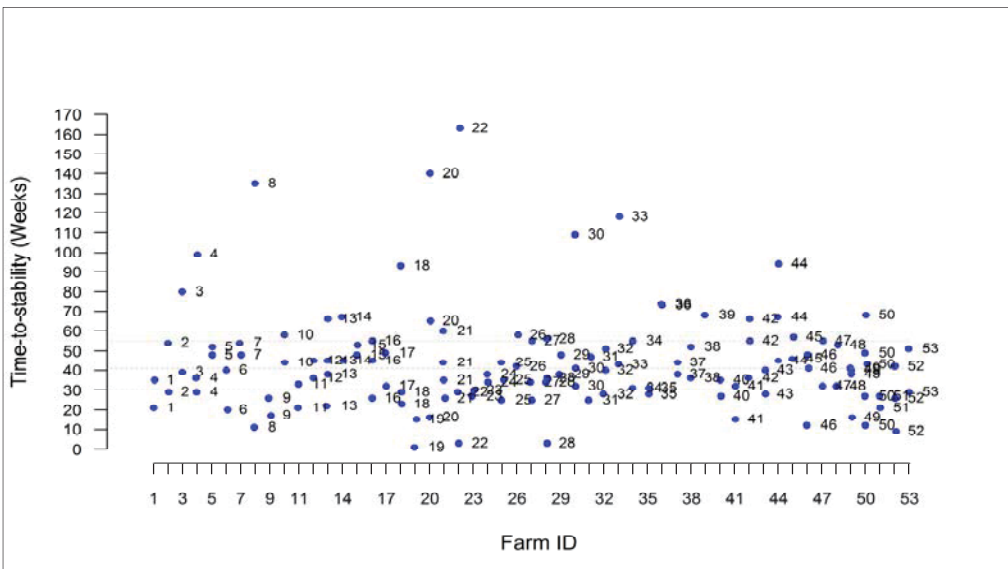
Figure 2 (Left): Distribution of 133 PRRS outbreaks time-to-stability (weeks) in 53 sow farms in the midwest. Dotted lines show median time-to-stability (41 weeks), 1st quartile (30 weeks) and 3rd quartile (55 weeks) limits.

References
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