Improved Time to Stability with the use of

AUTOGENOUS PRRSV VACCINE

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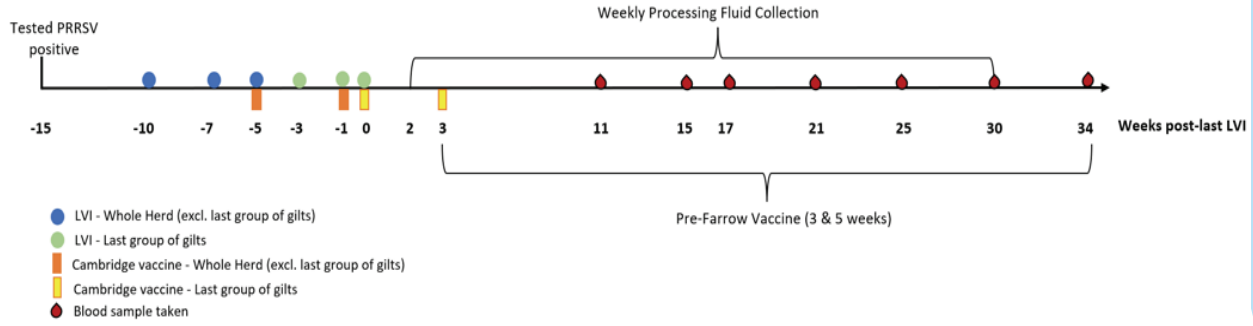
In the face of a break, when implementing PRRS eradication strategies, the industry continues to see Time To Stability (TTS) taking longer than it did 10 years ago. These extended weeks to open herds back up delay the time back to production baselines pre-break leading to devastating extended gaps in production. These prolonged TTS numbers have focused discussions for what strategies can be placed in a herd closure to help diminish those losses.

Leading swine veterinarians have partnered with Cambridge Technologies to research how autogenous vaccines can be used to lessen the effects of PRRSV on herds. In this particular study, doctors from the Swine Vet Center of St. Peter, MN, worked with Cambridge researchers to investigate the effect of a quadrivalent heterologous inactivated PRRSV vaccine on TTS for an infected breeding herd that is undergoing an elimination program.

MATERIALS AND METHODS

A commercial, 2700-head Category 1A was selected. The herd was negative for *Mycoplasma hyopneumoniae* and PEDV. The farm was confirmed PRRSV positive, infected with wild type 1-2-4 L1C.5, which typically includes high sow mortality and abortions. The farm began an elimination program consisting of closure, live-resident virus inoculation, and a quadrivalent heterologous inactivated PRRSV vaccine from Cambridge.

Figure 1. Timeline of vaccination and sample collection events post-last LVI (in weeks)



The farm underwent a herd closure combined with whole-herd exposure via live-resident virus inoculation. The LVI was administered at three time points. The whole herd received LVI at 5 weeks, 8 weeks, and 10 weeks post-break, while the last group of gilts received LVI at 12 weeks, 14 weeks, and 15 weeks post-break. Herd closure commenced upon completion of the last LVI to the gilts.

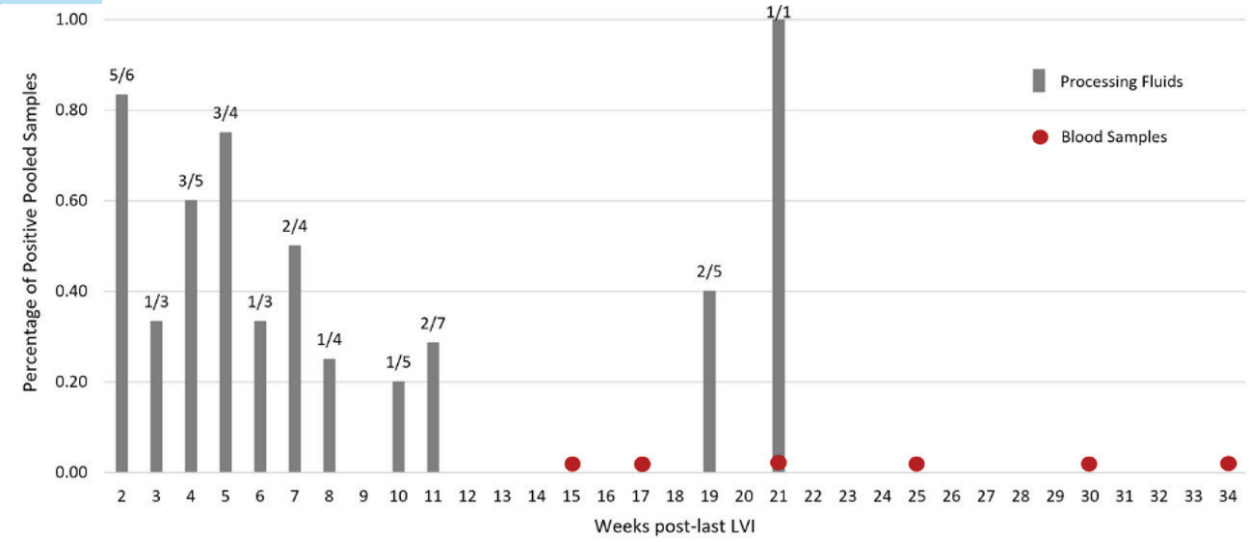
Cambridge Technologies manufactured a quadrivalent PRRSV inactivated vaccine containing at least one strain with >95% similarity to the field variant. This vaccine was administered twice to the entire herd, followed by pre-farrow. Timing of vaccination was strategically chosen to maximize immunity against PRRSV following LVI-induced immune response:

1. Initial dose given at recipient's last LVI (see Figure 1)
2. Approximately four weeks later
3. 3- and 5-weeks pre-farrow, starting three weeks post-last LVI until end of closure

Beginning two weeks post-final LVI (17 weeks post-break), processing fluids were collected weekly until the end of herd closure. Additionally, thirty blood samples were collected monthly from due-to-wean pigs and pooled 5:1. All samples were tested by Cambridge Technologies Diagnostic Laboratory for detection of PRRSV genetic material using qRT-PCR.

RESULTS

Figure 2. Percentage of PRRS PCR positive samples based on weeks post-last LVI and sample type



By 22 weeks post-last LVI, all processing fluids tested PRRSV PCR negative. During closure, all pooled serum samples were PRRS PCR negative on due-to-wean pigs.

Time-to-stability was determined to be 34 weeks based on these results. This was numerically shorter by 12 weeks compared to other PRRSV L1C.5 breaks that had occurred within the production system between 2018-2023.

Table 1. Comparison of time-to-stability for the enrolled herd with respect to remaining herds within the same production system that broke with PRRSV from 2018-2023

Time-to-Stability (weeks)

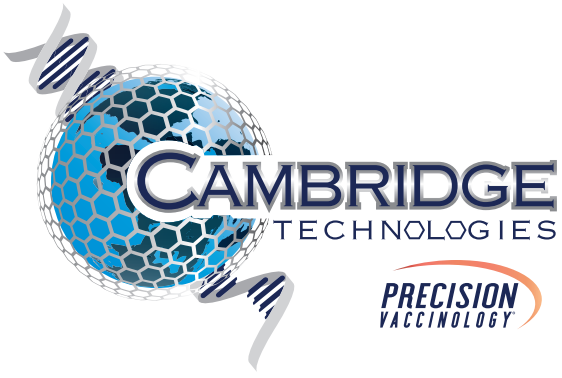
	Enrolled Herd	*Production System*	
	1-2-4 L1C.5 Variant (n=1)	All Variants (n=21)	Other L1C.5 Variants[1] (n=12)
Minimum	---	28	28
25th Percentile	---	36	38
Median	34	45	46
75th Percentile	---	70	53
Maximum	---	92	87

[1]PRRS classification based on Paploski et al. (2021) and Yim-im et al. (2023) guidelines.

KEY TAKEAWAYS

1. When using Cambridge quadrivalent killed PRRSV vaccine to booster herd immunity, the time-to-stability was numerically shorter by 12 weeks compared to other PRRSV L1C.5 breaks that occurred within the production system during 2018-2023.

2. Cambridge PRRSV autogenous vaccine can be used as a key component in herd stability for PRRSV management.



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