

Why PRRS elimination doesn't work in some herds

By Amber Stricker, DVM, *Suidae Health and Production, Algona, Iowa*
"Reprinted with permission from PigHealthToday.com"

Over the years, there's been considerable progress in the development of strategies aimed at eliminating porcine respiratory and reproductive syndrome virus (PRRSV). I define successful PRRSV elimination as the absence of clinical disease in the breeding herd and, more importantly, the absence of the vertical transmission of virus to weaned pigs. Unfortunately, successful PRRS elimination isn't always achieved in some herds, and I have several experiences that may help answer why.

No break in disease cycle or insufficient herd closure

To survive, a virus has to have a susceptible host to infect. If a population of animals remains closed to new introductions, the virus will eventually infect its last susceptible host, herd immunity will develop, and the virus will cease to survive. This is referred to as a break in the disease cycle through the implementation of herd closure.

In contrast, introducing a new subpopulation of susceptible animals into the herd when the virus is still active enables the virus to continue replicating. Herd closures should last at least 240 to 250 days before new animals are introduced¹. In one recent study involving 60 breed-to-wean farms, the median time-to-negative-pigs (TTNP) was 27 weeks, but the range was anywhere between 12 and 43 weeks.²

Incomplete exposure

In a perfect world, virus exposure would occur naturally over a short period of time. The way we manage animals, however, interferes with and prolongs natural exposure. The size of the farm and the layout affects virus transmission.

Some veterinarians may deliberately expose the breeding herd to the live field strain of PRRSV, Modified Live Vaccines, or autogenous vaccines. In my experience, intranasal exposure has resulted in incomplete exposure. In other words, subpopulations of animals that weren't exposed properly on the day of intentional exposure are later exposed via contact with infected animals; their recovery lags behind the rest of the animals and they impair the ability of the herd to fully recover within the expected time period.

Compliance problems

Once it's been verified by diagnostic sampling that most piglets are born negative for PRRSV, it's good to establish a protocol that minimizes the spread of virus within the farrowing house. In practice, these protocols, often loosely referred to as McREBEL protocols,³ vary somewhat but are all aimed at minimizing the spread of PRRSV from one litter to the next within and between farrowing rooms. These protocols can work but require discipline to maintain. If you find that due-to-wean piglets are continuing to test positive on polymerase chain reaction (PCR) for an extended period of time, the cause may simply be poor adherence to the protocol. Caretakers often find it difficult to follow strict protocols for an extended period of time. To help ensure compliance, it's important for producers to make sure caretakers understand what's at stake and how they can help ensure success. It would recommend checking if a farm isn't getting some PCR-negative results after 12 to 16 weeks post-exposure. At this point, the farm should be weaning some PCR-negative pigs.

Holding back pigs

It is extremely important that due-to-wean piglets not be held back for any length of time. A group of pigs that's due to wean but doesn't meet the criteria needs to be euthanized that day rather than allowed to stay on the farm. Research has shown that holding back pigs is associated with an inability to reach provisional PRRSV negative status as defined by the American Association of Swine Practitioners (AASV).⁴

New virus introduction

While executing a PRRSV control or elimination project, it's important to prevent a new PRRSV infection from occurring. One way to help prevent this mishap is by initiating herd closure from January to March. If you start a herd closure in, say, October to December — the start of the PRRS season — your risk for exposure to a new PRRSV strain is heightened. Efforts may be wasted and the process of obtaining herd stability is greatly compromised.

If a farm is unfortunate enough to experience a re-introduction of the virus during the herd-closure period, goals need to be re-evaluated. If a producer still wants to eliminate PRRSV, a new herd closure and exposure plan needs to be initiated since the current plan will no longer suffice.

Often in these situations, it might make more sense to aim for PRRSV control until there's a better time to re-attempt herd closure.

Insufficient diagnostics

A PRRSV classification system for breeding herds has been published and describes a reliable sampling technique to classify a farm's PRRS status.⁵ The published classification system calls for sampling 30 animals at least four times over 90 days before a farm is classified as provisionally negative. Samples should be taken from no more than one pig per litter and should focus on the worst or smallest pig in order to increase the probability of finding virus. If only the best pigs are chosen, this could falsely lead to the conclusion that the farm has achieved stability when in fact it has not.

Conclusion

Successful PRRSV elimination calls for a lot of careful considerations. Not all of them are outlined here, but hopefully they'll help prevent some of the common causes of PRRSV elimination failures. PRRSV elimination is well worth the effort for many producers and is often possible, but it requires strict adherence to the plan from beginning to end.

¹ Linhares D, Torremorell M, Morrison R. 2012. How long does it take for a breeding herd to produce PRRSV-negative piglets? Allen D. Leman Conference Proceedings 95-96.

² Straw et. al. *Disease of Swine 9th Edition*. Viral Diseases, Section II, Chapter 24, Page 390. Porcine Reproductive and Respiratory Syndrome Virus (Porcine Arterivirus). 2006. Blackwell Publishing, Ames, IA.

³ McCaw MB. Effect of reducing cross-fostering at birth on piglet mortality and performance during an acute outbreak of porcine reproductive and respiratory syndrome. *J Swine Health Prod* 2000;8(1):15-21.

⁴ Linhares D, Torremorell M, Morrison R. 2013. What have we learned using load close expose to produce PRRSV-negative pigs from positive breeding herds? Allen D. Leman Conference Proceedings 57-58.

⁵ Holtkamp DJ, Polson DD, Torremorell M. 2011. Terminology for classifying swine herds by porcine reproductive and respiratory status. *J Swine Health and Prod*.19(1):44-56.