

Why are we not making more progress to decrease PRRS incidence?

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Keypoints:

1. Enhancing biosecurity increases the chances to prevent PRRS.
2. We have learnt to deal better with the disease and that is reflected by the reduction of the economic impact of PRRS
3. Choose the level of biosecurity that economically better fits to your risk.

While Dr. Bob Morrison's Legacy could never be condensed into one project, the Dr. Morrison Swine Health Monitoring Project (MSHMP) reflects his collaborative nature combining epidemiology and problem solving efforts to provide producers with actionable feedback. Through the years we've taken conjecture and opinion out of epidemic disease incidence and prevalence, replacing expert opinion with better evidence. This evidence has opened our eyes to the variability in PRRS impacts and outcomes while highlighting the common and consistent seasonal outbreak patterns.

With our data collection efforts covering nearly a decade of PRRS seasons we now find ourselves comparing cumulative prevalence from one year to the historic baseline. With systems added over time, it is difficult to draw interpretations across years. That being said, we don't see obvious trends toward PRRS incidence decreasing...which leads to the obvious question...Why? We have awareness that we have a problem in the form of a ~30% annual cumulative incidence. We have quantification of the PRRS problem from Holtkamp et al's "Cost of PRRS estimates". We have air filtration technologies that demonstrate efficacy at decreasing PRRS incidence. Why with all this information are we not making more progress to decrease PRRS incidence?!

There are 3 potential causes:

We can't Prevent PRRS Infections
PRRS Cost is Decreasing - Tools and Technologies for PRRS Infection Management are Improving
PRRS Prevention Strategies aren't Cost Effective

We Can't Prevent PRRS Infections

We can instantly debunk this theory – we CAN prevent PRRS infection. We can use the tried and true principles of biosecurity including Exclusion, Segregation and Hygiene/Sanititation to mitigate risk associated with each potential PRRS carrying fomite. People entry risks are completely mitigated with a shower. Supply entry risks are completely mitigated with chemical disinfection, thermal disinfection and/or downtime. Animal entry risks can be mitigated with pre-shipment testing and isolation as well as appropriate transportation biosecurity. Mortality removal risks can be mitigated with on-site composting and a healthy dose of respect for the "Line of Separation". Feed ingredient and surface water risks can be mitigated with chemical disinfectants. Air entry risks can be mitigated with Filtration. We CAN prevent PRRS infection, it is simply very costly to implement biosecurity programs in which execution of each of these mitigation steps is applied consistently. I often go back to Dr. Jim Lowe's definition of Biosecurity, "A system of barriers that enhance economic output by reducing risk of novel pathogen introduction." Think of biosecurity like an insurance premium, you pay the premium regularly to avoid a catastrophic loss. However, when the insurance premium is very expensive, retrofitting an older sow farm to be biosecure is very expensive, one must be careful that the catastrophic loss prevention justifies the expensive premium.

PRRS Cost is Decreasing

This theory has merit. In the 2016 PRRS Cost update by Holtkamp et al PRRS annual productivity losses declined by \$83,000,000 when adjusted for price changes and national herd size. That's making progress even without reducing incidence. Since the inception of MSHMP producers have learned about the value of PRRS Vaccination and Acclimation. We've shifted strategies to ensure high risk herds are antibody positive and therefore have a greatly diminished impact when infected. We've learned that immediate herd closure may not be justified, the cost of missing gilt breeds has a dramatic negative impact on financial performance which cannot always be overcome by a decreased Time to Stability. We've just recently adopted new sampling strategies in the form of Processing Fluids which allow for precise implementation of MCREBEL principles. Similar to delaying herd closure, delaying MCREBEL allows us to maximize wean pig production until the farm tells us it's ready for elimination. Numerous technologies are coming to market in the form of PRRSV Resistant Genotypes, DNA Vaccines and Nanoparticle Technologies – all of which signal to us that the trend toward decreasing PRRS cost will continue. Simply put, we're becoming much more effective and precise at applying our existing tools while at the same time looking forward to some exciting new tools in the toolbox for 2018 and beyond.

PRRS Prevention Strategies are Cost Effective

PRRS prevention strategies are effective...but expensive. Particularly for older farms, decreasing your PRRS incidence requires a significant investment in numerous risk factors. Producers understand that haphazard investment (fix one link in the chain at a time) doesn't have positive outcomes – PRRS doesn't care how it enters the herd and if you leave any risk factors unmitigated you risk having a significant investment not result in reduced outbreak incidence. Farms with high outbreak frequencies can justify the cost of PRRS biosecurity improvements, but farms with moderate to low outbreak frequencies may be better off financially to save their biosecurity investment to cash flow their operation through a future PRRS outbreak. Even if PRRS biosecurity investments are forecasted to have a positive return, producers have tremendous capital options. Herd expansion and packer ownership opportunities are readily available and competing for producer capital. Producers may be focused on diversifying their asset portfolio and as such hesitant to sink more money into their pork assets. Needless to say, decreasing PRRS incidence through biosecurity investments is possible but not always in the best economic interest of the producer.

Take Homes:

- 1) System Biosecurity Improvements will Decrease PRRS Incidence
 - Partial improvement may not impact Outbreak Rate
 - Compliance remains critical – training and auditing should continue to be emphasized
- 2) PRRS Management Tools are Improving
 - We have new technology and tools
 - We better understand how to apply old technology and tools
 - Better diagnostics allow precision implementation of herd closure and MCREBEL
- 3) Biosecurity is Not Always Cost Effective for Producers
 - Cost of biosecurity improvements must be weighed against the new Outbreak Rate
 - Even if cost effective, Producers may have capital opportunities with great returns