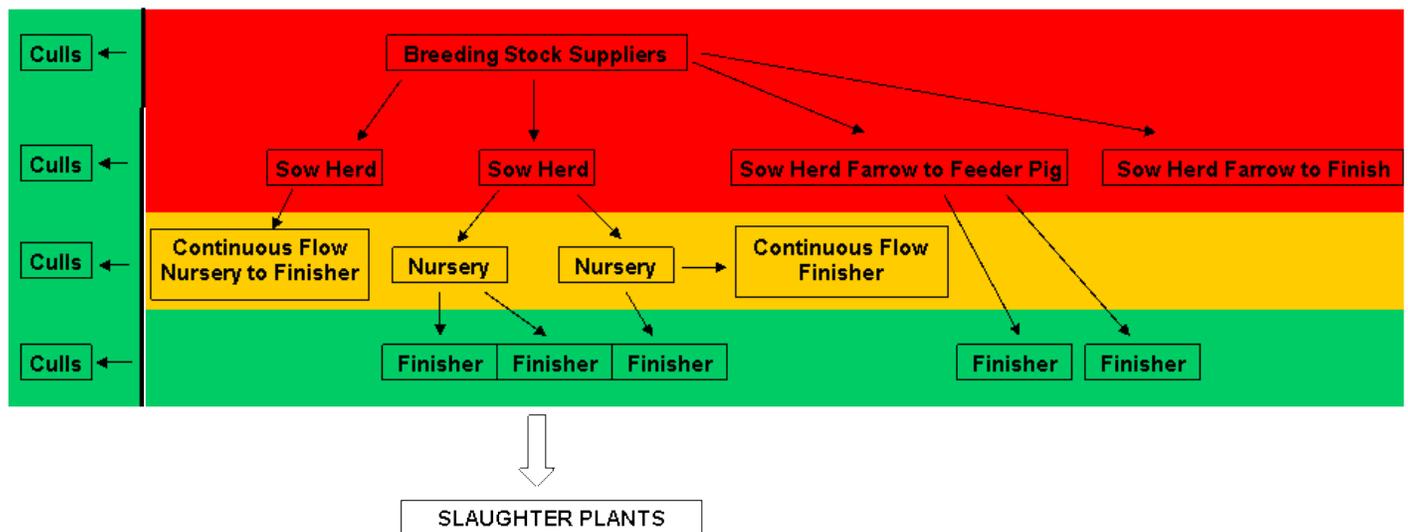




Rationale for tiered recommendations to reduce the disease transmission risks associated with the transport of pigs.

Within the Ontario pork production industry, there are gaps in the capacity to wash pig transport vehicles. As well, there are costs associated with trailer washing, disinfecting and drying. In order to make the best decision when selecting transport options, it is important to understand the disease transmission risks at each stage of pork production and the benefits of minimizing those risks. The figure below depicts the pork production pyramid. The higher up the pyramid the barn is positioned, the larger the number of pigs that are affected by a change in health status at that barn. This is because the barns at the top of the pyramid (in the red and yellow zones) supply multiple other barns.

As well, all of the barns in the red zone and some of those in the yellow zone operate on a continuous flow basis. If a continuous flow operation becomes infected with disease, the effort to rid those barns of disease is substantially higher than for the barns that operate with an all in/all out flow.



Making Decisions Based on Risk

The only way to eliminate the risk of PRRSV transmission during the transportation of pigs is to start with a properly cleaned, disinfected and dried truck and trailer. The trailer must also not become contaminated during the loading and unloading processes so the people involved and all equipment must be controlled for. It should be noted that these procedures do not control for aerosol transmission or for pig to pig transmission.



Best practice information and training materials have been developed during this project. These materials act as a resource to address the risk of PRRSV transmission associated with the transport of pigs. The question is can risk be reduced with something less than best practices?

It is very important that the reader understands that reduced risk is only that. If the recommendations that reduce risk are followed, transmission of PRRSV during the transport of pigs is not eliminated and will with some kind of frequency occur.

There are two risks associated with the transport of pigs:

1. The pigs that are loaded on a dirty truck (or improperly washed truck) become infected with the diseases on the truck.
2. The diseases left on a dirty truck end up contaminating the barn during loading of the pigs.

PRRSV Transmission Control for the Pigs on the Truck

If we are trying to prevent the pigs on the truck from the possibility of contracting PRRSV, then the truck and trailer must be properly washed, disinfected and dried. There is no secondary option. The focus of transport operations within the red and yellow zones would be to prevent transmission of disease to pigs on the truck.

PRRSV Transmission Control for the Pigs in the Barn

If a trailer backs up to the barn and it is still dirty with manure and bedding, that may be positive for PRRSV, the material and therefore the virus still have to get into the barn and come in contact with susceptible pigs. It can get into the barn by three primary ways:

1. It gets kicked off the trailer by pigs being loaded on the trailer.
2. It gets tracked into the barn on pig and or people feet and or other fomites.
3. It gets blown or sucked into the barn.

If we are trying to reduce risk for the pigs in the barn then we have some options. It may be possible for transport events out of the green zone to control these risks as noted below.



A. The Trailer

Risk reduction is proportional to the amount of infective material on the trailer. The following are recommendations to reduce this risk. For example, if the trailer has been scraped out and a high volume wash has removed all the loose manure and bedding then risks are significantly reduced. Pig and people feet as well as other fomites still pose a risk, but overall risk is reduced. If one adds dry disinfectants and or staged load out protocols then risk is further reduced.

Recommendations:

1. A scraped high volume washed trailer is less risk than a dirty trailer.
2. Create a buffer zone between the contaminated trailer and the load out facility. Generously apply a dry disinfectant prior to loading in the back 10 feet or so of the trailer. eg. Stalosan F^{®1} or a similar product to reduce risk of PRRSV transmission into the barn.
3. A dry disinfectant applied generously to the loading chute would take the concept of risk reduction further. An example would be a product like Stalosan F[®].
4. High pressure wash and disinfect of the trailer goes one step farther in risk reduction. The only difference here is the trailer is not dried. When certain products such as Synergise[®] were used as the disinfectant in one experiment conducted by Dee et al, PRRSV could not be isolated even if the trailer was wet.² This research should be repeated. It should be noted this is not the case for all swine pathogens. In the event drying is not an option having a clean, disinfected trailer is far less risk than a dirty trailer and significantly less risk than a high volume wash alone.

B. The Barn

Controlling for a contaminated truck at the level of the farm is another potential approach to risk reduction for barns from the green zone of the production pyramid. If shipping areas are designed with strict one way pig flow and a “clean / dirty” area is clearly separated, ideally with the addition of positive pressure, the risk of a dirty truck can be eliminated.

Recommendations:

1. Develop workable plans for barn load out design. Analysis of the cost benefit of these plans for producers would benefit the industry. This option is particularly important for situations where trucks back up to the load out site with pigs on the truck. Some farms comingle piglets from multiple sow farms and by implementing these controls they would significantly reduce their risk of PRRSV transmission. Large continuous flow finishing barns could also reduce their long term cost of transport if these recommendations were adopted.



2. Known Health Status - The most significant opportunity to reduce the risk of disease spread is to know if the pigs about to be loaded on the truck have that disease. If known PRRSV negative pigs are loaded on a clean truck then the main risk left is the unload procedure. If we combine known health status with excellent unload biosecurity protocols, using dry disinfectant where appropriate, we can significantly reduce the risk of PRRSV transmission i.e. loading negative pigs on a negative truck means the status of the truck is negative for the next load, assuming appropriate load/unload procedure have been followed. Multi-site systems use known health status to reduce transport cost all the time. For example, weaned pigs are transported to the nursery site and the same truck moves feeder pigs to the finishing barns. Defining health status in real time is challenging because populations of pigs can be exposed to diseases in multiple ways and at different times, however monitoring options are continuing to improve and are becoming more cost effective. We strongly recommend that support dollars are focused on defining health status in real time.

Wash/Disinfect/Dry Recommendations Summary

Loads From	Recommendation
Sow Barns/ Isolation Units	Never allow a dirty truck to back up to the sow barn Options – WDD or transfer truck
Nursery	Never move feeder pigs from the nursery to finishing barns with a dirty truck. Options – WDD or transfer truck, drop off weaned pigs/load feeder pigs
Finisher	Continuous flow – WDD, minimum scrape, high volume wash/dry/Stalosan F® All In/All Out flow - scrape, high volume wash/dry/Stalosan F®

References

1. Original Study from AASV 2012 proceedings. An evaluation of Stalosan F® powder for deactivation of PRRSV Casey Rabbe¹; Deb Murray, DVM²; Amanda Sponheim³, DVM ¹University of Minnesota, St. Paul, Minnesota; ²New Fashion Pork, Jackson, Minnesota; ³Boehringer Ingelheim Vetmedica Inc., St. Joseph, Missouri.
2. Dee, S., J. Deen, D. Burns, G. Douthit and C. Pijoan. 2004. An assessment of sanitation protocols for commercial transport vehicles contaminated with porcine reproductive and respiratory syndrome virus. Can. J. Vet. Res. 68:208-214.



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