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A systems approach to disinfection, drying, and monitoring of pig transport vehicles

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Introduction

Industry experience with pig transportation has shown trailers, trucks, wash facilities, load chutes, etc., are a biosecurity risk. Recent research has shown that these items can be a very effective way to spread PRRS virus. This research has helped greatly to quantify this risk and identify what steps must be taken to eliminate it. We believe that transportation is one of the biggest biosecurity risks to our system. Our goal in the biosecurity of transport is simple: prevent disease infection to a group of pigs while we are moving them from one farm to another. The greatest area of risk is a trailer pre-contaminated with disease agents - most likely from the last group of pigs it hauled. Recent work with PRRS contaminated trailers and virus transmission has shown this clearly. To reduce the likelihood of putting pigs on a contaminated trailer we have addressed this risk area at multiple levels.

Trailer use and sanitation

The first level of risk reduction is the segregation of assets between PRRS negative (high health) and PRRS positive (conventional health) flows or pyramids. Our production system has dedicated certain trucks, trailers, and drivers to hauling either PRRS negative or PRRS positive animals, and then cleans those trucks and trailers at truck washes that are dedicated as either PRRS positive or PRRS negative. Obviously, this requires a substantial commitment in both capital and management resources. The primary goal is to reduce the daily "disease burden" that the wash facility is required to eliminate. Obviously, this may not be possible for all farms or production systems.

The second level of risk reduction is the dedication of trailers to specific farms, flows, or production pyramids within both the high health and conventional health systems. For example, pigs from farms with a greater potential for disease introduction are not hauled on the same trailers that would be used for moving replacement stock into a multiplier. Again, this requires potentially increased capital and management expenses, which is not always possible in every production system.

The third level of risk reduction is the execution of the cleaning process on every individual trailer. This is really the key to transport biosecurity. All trailers dedicated to our system's high health wash/flows are subject to a very rigorous cleaning and sanitation process:

- Each trailer is meticulously washed and cleaned. The goal is to remove all visible organic matter. The process initially entails a low pressure/high volume flush of the trailer to remove the bulk of the organic debris, followed by an application of a soap/cleaner product with a foam tip applicator. The trailer is then washed using high pressure to remove the remaining contamination. A rinse is then performed, followed by a visual inspection by the wash crew.
- Once the trailer is cleaned, it is disinfected with a tested disinfectant product. Our system uses a quaternary ammonium/glutaraldehyde disinfectant that has been shown to be highly effective against PRRS virus. This disinfectant is applied using a foaming device, increasing disinfectant contact time on the trailer's surfaces.
- Disinfection is followed by complete drying. We utilize dedicated drying bays and large fans placed both inside and outside the trailer. Drying takes between 2 and 6 hours to complete.
- Once a trailer is dry it becomes eligible for inspection. All trailers at our high health wash are individually inspected to insure that they are both clean and dry. The inspection process is very detailed and takes from 30-45 minutes. Trailers that do not pass inspection are rewashed and then must pass inspection before hauling pigs. Trailer inspections are performed by "third party" inspectors that are not involved in the washing process or in transportation scheduling.
- The final step in the process is trailer authorization. After a trailer passes inspection the results of the inspection are logged into a software application that tracks both trailer availability (based on inspection status) and testing/health status of the site from which it will next haul pigs. If the site is current on its testing status and the trailer passes inspection, the trailer is authorized for its next movement event.

Truck wash sanitation

Truck wash facilities are the tool we use to control the risk of disease spread on transport vehicles. However, when this tool is not managed correctly it can become a significant risk to disease spread itself. Disease organisms removed from a trailer can persist in the environment for a period of time and potentially be tracked back into other trailers. Our system's washes employ strict sanitation guidelines. The wash bay is rinsed and disinfected after each trailer wash. Truck wash employees must wear clean clothing and boots when entering a cleaned trailer in the drying bay. We have also made upgrades in light fixtures to create a well lit environment where sanitation can be managed better.

Verification

We believe that we have created a sound program for the decontamination of pig transport vehicles and ensuring the biosecurity of transportation. However, our system will only be successful if we consistently execute the standard operating procedures (SOP's) of this program without fail. To accomplish this, unannounced audits are performed on a regular basis to measure compliance to SOP's and evaluate the trailer inspection process. In addition, transport schedules are reviewed weekly to ensure that trucks and trailers are being utilized properly. The audit process is viewed first as a tool to help those executing specific tasks catch mistakes that would jeopardize pig health. Its secondary role is to hold all involved in the process accountable to very clear standards of performance. We believe that consistent success will not be achieved without some form of auditing/verification process.

The keys to success

What has been presented here is a brief summary of our system's approach to trailer sanitation/biosecurity. There are many more details to our overall plan, but in the end, the number of details being managed does not create success. Rather, in our experience, success is determined by how well and how consistently the basic biosecurity priorities can be executed on a daily basis. Such a high level of compliance/execution requires both buy-in by those asked to execute the tasks, as well as accountability. The buy in is achieved through the presentation of a clear message about what needs to be done, in addition to why it needs to be done that way. Accountability is achieved by consistently measuring how well the tasks are being performed. For this reason, we have invested in training programs for all staff on our biosecurity SOP's, and in routine biosecurity audits of the truck wash, transportation schedules, trailer inspections, etc. Both serve to stress the importance of biosecurity, as well as hold everyone accountable for protecting the health of the Christensen Farms system. In the end, safeguarding health requires discipline, open communication, perfect execution of priorities, and accountability.