

Improving biosecurity in swine transport

By Sarah Ethier, Prairie Swine Centre, SK



I was one of the many industry stakeholders who watched with bated breath as PEDv spread across the United States and Canada in the spring of 2014. Within months it be-

came increasingly apparent that even when producers were implementing excellent on-farm biosecurity practices, there were still serious gaps allowing the disease to spread quickly across the country. It has been repeatedly shown that transportation is a major vector for disease transmission in swine, and improved sanitation is a key factor in reducing transmission. The need for better cleaning and sanitizing procedures, and development of easier to clean trailers for the swine industry became clear, both to reduce the spread of PEDv, and to control other potential disease risks.

A number of problems have been identified which hinder the efficient and thorough cleaning of trailers. These include the low number of transport units available, downtime required between loads, and limited trailer wash capacity. In addition, current trailer designs are difficult to clean, requiring the use of manual labor at a high cost, and potentially leading to problems with cleaning consistency. This article describes an ongoing research project, led by Terry Fonstad at the University of Saskatchewan's College of Engineering, in partnership with the Prairie Swine Centre, the Vaccine and Infectious Disease Organization (VIDO), and Prairie Agricultural Machinery Institute (PAMI), to address these problems.

The Prairie Swine Centre is involved in the initial stages of the project, with the goal of producing an inventory of the current trailer designs being used in Canada. The main trailer



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types in use will be ranked based on their ease of cleaning as well as on their animal handling characteristics (e.g. ramps and ease of loading). Some potential modifications to aid in cleaning, or to improve the handling of animals during loading and unloading will then be identified.

Once the trailer inventory is complete, the University of Saskatchewan and PAMI will proceed with developing automated tools to improve the efficiency and effectiveness of cleaning. The goal of these tools will be to reduce the time and labor needed to clean trailers, while improving the effectiveness and consistency of cleaning. In the final stages of the project, new procedures for sanitizing trailers and assuring biosecurity will be developed.

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Previous research has shown that double flat deck style trailers are better for hog transport in terms of animal handling and ease of cleaning. However the comparatively low number of pigs in western Canada and the need for versatility in transporting both pigs and cattle makes it difficult for transport companies to justify the purchase of dedicated hog trailers. Most companies exclusively use pot belly trailers, as these can be used for both pigs and cattle. When it comes to the types of pot belly trailers available, there are three main manufacturers – Wilson Trailer Company (Iowa), Eby Trailers (Pennsylvania) and Merritt Equipment Company (Colorado), and each trailer design has different strengths and weaknesses related to maintaining biosecurity and pig handling.

If hydraulics can stand up to the climate, these designs may prove to be the future of livestock transport as they combine improved animal wellbeing and handling efficiency with the versatility of being able to haul a range of livestock species.

Wilson trailers are probably the most common in western Canada, as they have worked with producers to manufacture trailers that meet Canadian specific requirements for load weights and ramp angles. Eby trailers are increasing in popularity because they are designed with pigs in mind, but are still versatile enough to meet the needs of cattle. Merritt has also proven to be a popular choice, but these trailers are declining in popularity in western Canada as they are less willing to work on adapting trailer designs to meet the needs of the Canadian transport industry.

The average trailer takes approximately 5.5 man-hours to clean, and usually consists of two employees working together to complete a full trailer wash and disinfection. The more material in a trailer the longer it takes to wash, which means a quad deck trailer can take up to 6.5 hours to complete, especially since the floor requires being removed completely in order to be adequately washed. A few companies have noted that the change in shape of crossbars implemented by Eby manufacturing group has also helped with cleaning, as fewer passes of a pressure washer are required to clean them (Figures 1 and 2). Tight spaces like in-between hinges and behind lights can cause issues while washing, as wet straw or manure can easily build up and get compacted. Simple design changes like capped end-plates (see Figure 3) can help to prevent this buildup.

Animal welfare is greatly influenced by the handler. Therefore it is of importance that all handlers have appropriate training. However, having a good trailer design can make moving pigs on and off trailers significantly easier. Long ramps with low slopes and avoiding any type of step up or down can help facilitate animal handling. It falls onto personal preference as to the length of the ramp used to move pigs up to the top deck. Some handlers prefer a long shallow slope, with the ramp reaching all the way to the back of the trailer, where others may prefer a steeper slope, with the ramp starting a few feet from the back of the trailer, which makes it easier to get behind the animals and move them up the ramp.

You can't talk livestock trailer design in 2016 without mentioning hydraulics. Between Luckhart Transport in Ontario supplying their own hydraulic deck designs and Pezzaioli trailers imported from Italy and Steve's Livestock Transport of Manitoba winning Banff Pork's F.X. Aherne award for their hydraulic lift deck livestock trailer, these trailers are making a name for themselves in the North American mar-



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ket. Hydraulic trailers have multiple straight decks, and no internal ramps. Once a deck is loaded, the entire deck is lifted into position, making loading and unloading easier for pigs and handlers. The result is improved animal handling at loading and during transport, with shorter loading times and reduced stress and injury for livestock. Many producers and transport companies especially in western Canada are concerned with how the trailers will hold up in the harsh Canadian winters, however only time will tell. If hydraulics can stand up to the climate, these designs may prove

to be the future of livestock transport as they combine improved animal wellbeing and handling efficiency with the versatility of being able to haul a range of livestock species.

The trailer inventory is still in the data collection phase, we hope to have a complete list of trailers in the coming months, at which time we will look at current trailer designs and identify any promising retrofit opportunities with PAMI and the University of Saskatchewan. Combining improved trailer de-



Figure 1. Merrit back gate, showing standard square cross bars.



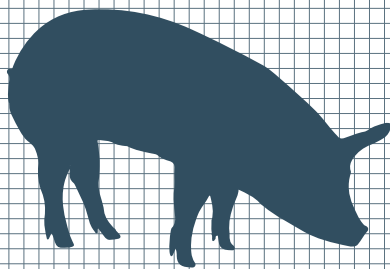
Figure 2. Eby back gate, showing slanted cross bars for greater ease of cleaning.



Figure 3. Many trailers put caps on exposed beams or rails to prevent buildup of bedding.

signs with automated cleaning will help to prevent the devastating spread of diseases such as PEDv, as well as helping to reduce the costs associated with transportation.

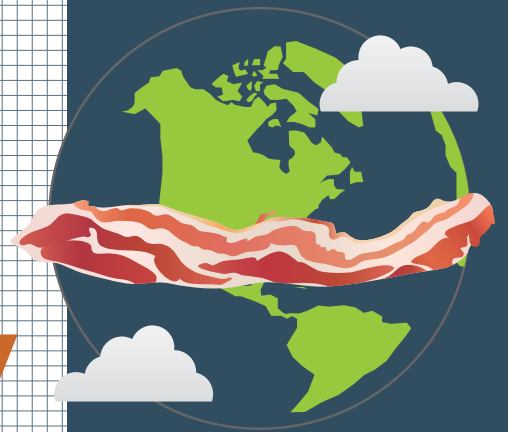
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