



On the Road Again: Health Research Targets Transport

By Geoff Geddes, for Swine Innovation Porc

Though their short stature prevents them from driving, pigs spend a lot of time as passengers in transport trucks. When they're not on the move, they're in the barn, which explains the interest of pig health researchers in trucks and barns. Whether travelling by air or clinging to the side of a trailer, pathogens get around, so science is working overtime to stop the intruders in their tracks.

Truck washing system

If there was a positive that emerged from the PED crisis (other than temporarily sky high pork prices), it was a greater awareness of, and commitment to, biosecurity. One of the lessons learned was the leading role played by trucks in transporting disease between farms or from the farm to the plant. Compounding the problem is the reality of truck washing: it's expensive, time consuming and not always thorough enough to eradicate all traces of disease.

Rather than re-inventing the wheel, or the hose, researchers took a high pressure, hydrovac system from the oil industry and tested it for elements like velocity and hose size to find the perfect fit. Since washing is only part of the equation, they also examined dry heating, with some eye-opening results. While the current practice is to dry trucks at 45°C, their testing found that 70°C for 15 minutes – or 75°C for PED - would kill all pathogens. It should be noted, though, that it's critical to apply this high heat approach to every area of the trailer, as it only takes a few drops of water or a lump of dirt to preserve PED and all its perils.

Of course, some innovations are easier to implement than others. The higher heat



*Truck washing equipment.
Source: PAMI*



method has already been adopted by some truck washes, whereas the vacuum system requires more testing before a major investment by industry is warranted. Still, if the hydrovac innovation can deliver on its potential to alter animal transport while enhancing welfare and efficiency, it will be well worth the wait.

For more information, contact Dr. Terry Fonstad, University of Saskatchewan at: terry.fonstad@usask.ca.

Filtration systems

For pork producers, there's only one thing scarier than a pathogen that clings to a trailer: one that can fly. While filtration systems have long been the weapon of choice for battling airborne pathogens in barns, how do you know if they're working, how well they're working or which one works best? As there's no "Consumer Reports: The Pig Edition" (at least not yet), a void exists when it comes to testing filtration systems, and no one is more adept than researchers at spotting gaps and filling them.

In this case, "filling the gap" meant designing and building a new testing platform to evaluate the effectiveness of different filtration devices against viruses and bacteria. Specifically, researchers targeted the capture efficiency of different pre-filter and filter combinations for influenza, PRRSV and virulent *Streptococcus suis* serotype 2 models.

Testing of this nature offers a number of benefits to producers. Apart from assessing a range of devices, it may show that your current filtration system is more expensive than what is needed to capture infectious disease agents in your

barn. This platform might also be used to design affordable filtration systems and evaluate used filters for their ability to still capture airborne intruders. Sure, filtration companies say to change filters when their ventilation system pressure drops, but again, how do you know for sure without testing?

Though all applicable research is notable for its potential impact, this project is even more so because of the groundbreaking nature. At present, Canada is the only country working on such a test, and it's producers who will reap the rewards.

For more information, contact Dr. Caroline Duchaine, Université Laval at Caroline.Duchaine@bcm.ulaval.ca

Whether in the truck, in the air or on a boot, science is gaining a better understanding of infectious agents, how they act and how to guard against them. At one time, disease may have held the upper hand on producers and their animals, but as with many things targeted by research, the times are changing. 



Far left: Verification of standards. Left: Sampling probes. Above: Testing platform. Source: CDPO

The work presented in this article was part of Swine Innovation Porc's Swine Cluster 2: Driving Results Through Innovation research program. Funding was provided by Agriculture and Agri-Food Canada's AgriInnovation Program, provincial producer organizations and industry partners.