



## Cooling Systems for Pigs a Hot Topic

By Geoff Geddes, for Swine Innovation Porc

Like opposable thumbs, working sweat glands are something pigs can only dream about. But for pigs during transportation, the lack of functional sweat glands can be a nightmare and is often fatal in the absence of proper ventilation. That was the impetus for research evaluating the impact of ventilation in warm conditions on the behaviour, physiology, and carcass and meat quality of pigs waiting to be unloaded at the slaughterhouse.

“In Canada, most pig transport vehicles are only passively ventilated, so while air flows in the trailer during movement, there is no cooling system in place to relieve pigs from the heat when stationary,” said Dr. Luigi Faucitano, Researcher at Agriculture and Agri-Food Canada.

### Feeling the heat

Because the temperature inside the trailer increases rapidly with no motion, pigs can suffer

discomfort, damage and even death. The process to address the problem has been long and winding, but is starting to show results.

“In 2011 we did a study where we equipped pig transport trailers with a water sprinkling system,” said Dr. Faucitano.

Although the application of these systems for 5 minutes after loading at the farm and 5 minutes before unloading at the slaughter plant was effective in reducing body temperature of the animals, the additional moisture increased humidity, something that affects pigs even more than high temperatures.

### What goes up, must come down

“Those results prompted us to submit a proposal looking at the benefits of combining water misting systems to reduce the body temperature of pigs with mechanical ventilation to remove humidity and increase evaporative losses in pigs.”

Using two identical pot-belly trailers, twelve loads of 191 pigs each (six loads per trailer) were transported over a two-hour period to the slaughter plant during the summer. On arrival at the plant, the trailers remained stationary for 30 minutes before unloading. During this period, one trailer was exposed to external forced ventilation for 20 minutes and forced ventilation and misting for 10 minutes using external fan-mister banks located near the unloading dock. The other trailer (the control) was not exposed to any cooling procedure at all over that 30-minute wait.

“The novel part of this study was adding water misting to the existing fan bank system. We then assessed pig comfort based on body tem-



Combined water sprinkling and ventilation system.

Source: Sherbrooke Research and Development Centre, AAFC

perature monitors, internal truck climate conditions and behavior during the wait before unloading, at unloading and in lairage.”

### Cool customers

Overall, the findings were promising. Compared to the control truck, there was a drop in temperature and humidity in the trailer receiving ventilation and misting, less need to re-lease excessive body heat and reduced dehydration conditions in the animals at slaughter.

At the same time, researchers noted that the effects were not consistent throughout the trailer, as compartments that were poorly designed or divided by solid gates sometimes received less air flow. As well, the punch-type pattern of the side openings may have prevented a smooth air flow through the vehicle.

The positive impact of the mister/ventilation approach could allow producers to cool their animals without burning up their bank account, enhancing animal welfare while reducing pig losses.

### Bad vibrations?

This project also looked at vibration rates in trailers. Researchers wanted to know if those rates varied between compartments and what effect they had on pig behavior and condition; however, results are not yet available. Given that Dr. Faucitano’s group is the first in North America to study the issue, they need time to analyze and interpret the data with help from their European colleagues.

In 2018, Dr. Faucitano and his partners will release more details about the impact of cooling systems and vibration on pigs. Their results will aid in knowledge-building around vehicle design features to limit animal losses during transport and improve pork quality.

So maybe they can’t give pigs working sweat glands or opposable thumbs. But if their findings save money and improve profits, they should get two thumbs up from producers and industry.



*Ventilation system.  
Source: Sherbrooke Research  
and Development Centre, AAFC*

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