



## Preventing airborne transmission of diseases in swine: development of an air filtration system for animal transport vehicles

Large swine producers in the Canadian provinces base much of their financial bottom line on marginal profits per pig produced by a sow. It is expected that one sow will have large multiple births a couple of times per year to make their business a profitable venture. Improving genetics is one way to introduce top production into their line. Transportation of this valuable breeding stock from the usually quite isolated nucleus farms of the Pig Genetics Companies to the more densely swine populated commercial farms can be quite risky as airborne transmissible diseases such as Porcine Reproductive and Respiratory Syndrome (PPRS) can be a serious threat. This particular disease can be airborne for up to three kms and once in a herd it tends to remain and cause problems indefinitely.

Common methods by which the virus spreads include:

- Transportation of pigs carrying the virus
- Airborne transmission up to 3 kms
- Mechanical means such as feces, dust, droplets, and contaminated equipment
- Contaminated boots and clothing
- Vehicles
- Artificial insemination
- The mallard duck and possibly other species of birds

A project to develop an air filtration system for the trucks that transport these high value pigs is underway by a team with varying expertise and experience in the swine industry. This air filtration system has a goal to develop the final design of a system that is practical and can be installed in the transportation trailer, effective in preventing infection of the transported animals and be economically feasible to the producer.

A prototype was developed, evaluated and tested. Due to some challenges encountered that include incompatibility of system components, weather conditions, biosecurity issues, etc., the assessment of the performance of the system with pigs inside the trailer was difficult to obtain. Further work has been recommended to test and evaluate the effectiveness of the air filtration system with pigs during transit.

However, no project is without challenges and this project will proceed to the next stage. Various stakeholders have given their input regarding the design of animal transport trailers. Pig producers have been recruited to participate in project testing. Instruments, materials and equipment are being identified and accessed to test trailer components to be incorporated into final design. The next milestone will be the successful assessment of the system.

The *Reducing Pathogen Distribution from Animal Transport* project, is one of two projects in the Animal Housing Environment priority area, under Agrivita Canada Inc.'s Canadian AgriSafety Applied Research Program, lead by a national team of researchers from Prairie Swine Centre (PSC), the Canadian Centre for Health and Safety in Agriculture (CCHSA), the University of Saskatchewan College of Engineering, the School of Population and Public Health at the University of British Columbia and the Canadian Agricultural Safety Association (CASA).

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