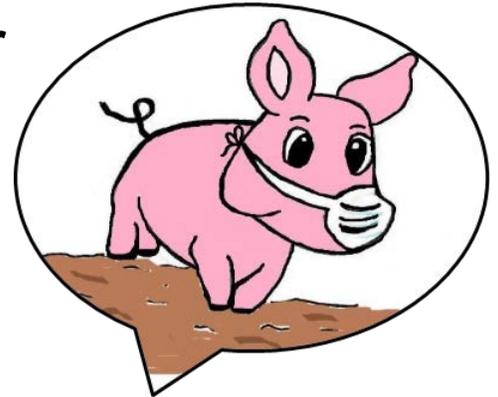


Recruiting Pig Producers for Air Quality Studies: A Challenge

Canadian pig herds are susceptible to outbreaks of infectious diseases including:

-  Porcine epidemic diarrhea (PED) virus
-  Porcine reproductive and respiratory syndrome virus (PRRSV)
-  Influenza virus
-  Post-weaning multisystemic wasting syndrome (PMWS)



Outbreaks of these diseases are associated with high rates of morbidity and mortality, reduced performance, and increased cost of medication and vaccination.

While vaccines for PRRSV and influenza viruses do provide some protection, they do not provide 100% protection against infection. One of the challenges in managing PRRSV is the genetic variation of the virus, which makes development of a universal vaccine difficult. To decrease the chance of infectious disease outbreaks biosecurity protocols are in place at many facilities to protect swine herds.

Current Research

Two of the current projects of the *Canadian AgriSafety Applied Research Program* are using biosecurity principles to address prevention of disease spread.

-  Reducing Pathogen Distribution from Animal Transport Project – focused on control of airborne contaminants, such as viruses and microorganisms, during swine transport. By designing a filtered air environment for transport trailers, the project aims to reduce the risk of infection and disease spread during transport of pigs.
-  Quality in Canadian Pig Buildings Project – identification of airborne contaminants and reducing their presence in production facilities. The research team is examining existing technologies for reducing airborne contaminants in production facilities and how to best combine them for the greatest effect. Work is also being done on characterizing the pathogens that workers in swine production facilities are exposed to.

Biosecurity: the set of measures taken to protect herds from the introduction of any new infectious disease

Changes in Biosecurity

Fifteen years ago, studies looking at Canadian pig buildings were completed with very little concern for the introduction of sampling equipment and visitors to swine production facilities. Fast forward to today and biosecurity measures are now the main topic of discussion during the recruitment of facilities for conducting research.

The establishment of biosecurity measures was accelerated by outbreaks of infectious diseases among Canadian pig herds and the industrialization of pig production – thousands of animals per building. As a result of increased biosecurity measures, access to pig buildings has been restricted. Despite research

remaining a priority in the industry it can be difficult to gain onsite access for sampling and other research activities at production facilities.

In Quebec, field studies conducted by the Institut de recherche et de développement en agroenvironnement (IRDA) and the Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec (CRIUCPQ), have developed strict biosecurity measures in addition to air sampling protocols to help facilitate study participation. The applied biosecurity measures were taken from "Biosecurity measures for suppliers: Products and services that ENTER in buildings" published by the Équipe québécoise de santé porcine, the Centre de développement du porc du Québec inc. (CDPQ) and Les Éleveurs de porcs du Québec. The Air Quality research team developed their own biosecurity and disinfection protocols for on-farm sampling and went one step further in having these protocols certified. The result of this process has been increased participation from facilities in the on-farm air sampling.

Biosecurity Measures for AgriSafety Projects

-  Period of 7 days between each visit to pig buildings
-  Any equipment used is disinfected with hydrogen peroxide
-  Vehicles used to travel to facilities are washed between site visits - outside, steering wheel and dash board with disinfecting wipes
-  Equipment transported is put on a disposable plastic sheet
-  On-site: disposable plastic cover boots are worn over shoes; cover boots thrown away before re-entering vehicle
-  Inside production facilities: visitors log is signed, shower is taken (if there is one), and coveralls (working suits) and rubber boots are put on, and a shower is taken before leaving the building – if available

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Air quality in Canadian pig buildings project and Reducing Pathogen Distribution from Animal Transport project, are two projects in the Animal Housing Environment priority area, under Agrivita Canada Inc.'s Canadian AgriSafety Applied Research Program, led by a national team of researchers from the Institut de recherche et de développement en agroenvironnement (IRDA), and Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec at the Université Laval (CRIUCPQ), Prairie Swine Centre (PSC), the University of Saskatchewan College of Engineering, the School of Population and Public Health at the University of British Columbia, the Canadian Centre for Health and Safety in Agriculture (CCHSA) and the Canadian Agricultural Safety Association (CASA).

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