

SWINE HEALTH

revised

Title: Use of a production region model to evaluate biosecurity protocol efficacy for reducing the risk of PRRSV and *Mycoplasma hyopneumoniae* spread between farms – Year 1 – NPB #07-110

Investigator: Scott Dee

Institution: University of Minnesota

Date Submitted: February 12, 2009

Abstract

Airborne spread of swine pathogens presents a significant risk for the maintenance of herd health programs. Due to their economic impact, the airborne spread of two such pathogens, PRRSV and *Mycoplasma hyopneumoniae* (M hyo) must be prevented. Therefore, the purpose of this 2-year project was to investigate the transmission of PRRSV and *Mycoplasma hyopneumoniae* (M hyo) by aerosols, the meteorological conditions associated with this route of spread and biosecurity strategies to reduce this risk. The study used a model of a swine production region, involving 3 swine facilities, including a population of 300 grow-finish pigs which were experimentally inoculated with both agents to serve as a source of infectious bioaerosols and 2 other facilities, one with a MERV 16-based air filtration system and the other serving a non-filtered control. At this time, year 1 of the project has been completed. Airborne spread of PRRSV and M hyo has been documented in 6/13 and 7/13 replicates in animals housed in the non-filtered facility, respectively. In contrast, no evidence of transport or transmission of either agent has been observed in the filtered facility. Collection of weather data is ongoing; however, directionality of predominant winds appears to be an important factor associated with the risk of airborne spread of both agents. Additional information generated during concurrent studies conducted in year 1 included documentation of PRRSV transport by air during nighttime in summer and proof of the ability of both agents to be transported by aerosols over distances out to 4.7 km. Year 2 of the project will again focus on airborne spread of both agents but will incorporate 2 different air filtration methods (MERV 14 mechanical filters and antimicrobial filters) in order to enhance lower cost-alternatives to MERV 16 systems. The ability to complete year 2 will also allow for sufficient replicates to be conducted for proper statistical analysis

These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed

For more information contact:

National Pork Board, P.O. Box 9114, Des Moines, Iowa USA

800-456-7675, **Fax:** 515-223-2646, **E-Mail:** porkboard@porkboard.org, **Web:** <http://www.porkboard.org/>