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## SDEC Partners Research Update

### Project Update: Economic study of air filtration systems for preventing PRRSV infections in large sow herds

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#### Background

- The most important economic impact of a PRRSV outbreak is in the growing-finisher phase of the swine production- up to 55% of the total losses (Holtkamp et al. 2011)
- Air filtration in large sow herds has been demonstrated to decrease the probability of having a PRRSV outbreak
- The implementation of a biosecurity intervention such as air filtration represents a considerable capital investment that needs to be closely evaluated

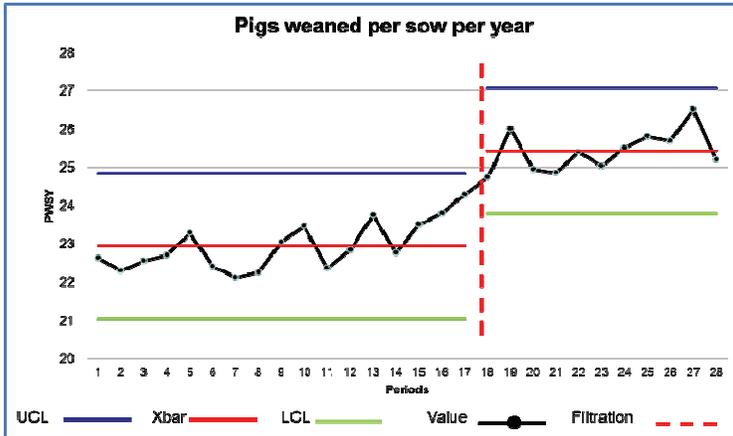
#### Objective

**The aim of this study was to assess actual production data in filtered and non-filtered farms to determine potential productivity differences, and utilized observed differences to model the economic impact of two options for filtration (attic filtration and a combination of attic and tunnel ventilation) using a partial budget analysis**

#### Results

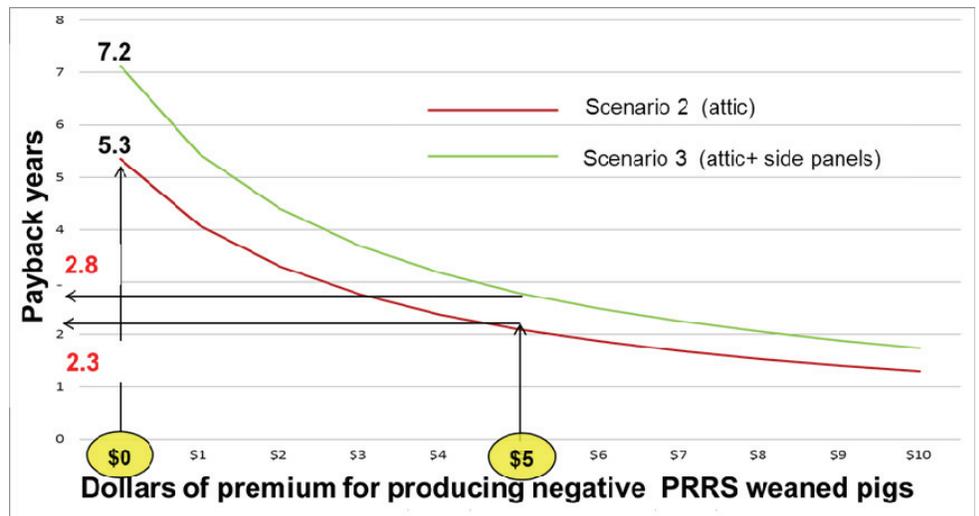
- All farms had significant improvements after filtration for most of the variables studied
- Modeled filtered farms (3,000 sow hypothetical farm) produced 5,927 pigs weaned per year more than the hypothetical non-filtered farms (Graph 1)
- Not only did our profitability model include the production data at a sow farm level but it also included pig quality at weaning as estimated by the percentage of time that filtered and non-filtered farms were weaning negative PRRSV pigs (Graph 2)
- Estimates of payback period should not be extrapolated to farms with low exposure risk or modest or poor biosecurity

## Results



**Graph 1.** Production data of pigs weaned per sow per year average per study period for all filtered farms. Filtered farms produced after adjusting for all variables in the study 2.04 piglets more per sow per year

**Graph 2.** Filtration payback period in years for sensitivity analysis in scenarios 2 (attic filtration system) and 3 (combination of attic and tunnel ventilation air system), considering equal selling price independent of PRRSV status of the weaned pigs and considering a \$5 difference in price between both types of farms (filtered and control).



## Conclusions

- Farms had an improved productivity after the implementation of air filtration and that was reflected in the partial budget analysis
- The implementation of air filtration increased the net return by \$38 per sow per year when compared with non-filtered farms
- The payback period calculated based on the partial analysis was calculated considering:
  - Only the actual production data of filtered and non-filtered farms → 5.3 years and 7.2 years for scenario 2 and 3 respectively
  - Quality of the pigs weaned and the downstream flow → 2.1 years and 2.8 years for scenario 2 and 3 respectively

## Implications

- This study represents the first attempt to assess return on a biosecurity investment in air filtration technologies derived from actual production data recorded from filtered and unfiltered farms
- Economic evaluations of air filtrations systems for preventing PRRSV entry only limited to the breeding herd performance are highly conservative given that much of the economic impact of the disease is attributed to growing pigs