



UNIVERSITY OF MINNESOTA

Swine Disease Eradication Center

August 13, 2012
Volume 1, Issue 4
www.cvm.umn.edu/sdec

SDEC Partners Research Update

Project Update: Epidemiological study of air filtration systems for preventing PRRSV infection in large sow herds

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Funded in part by the National Research Initiative of the USDA Cooperative State Research

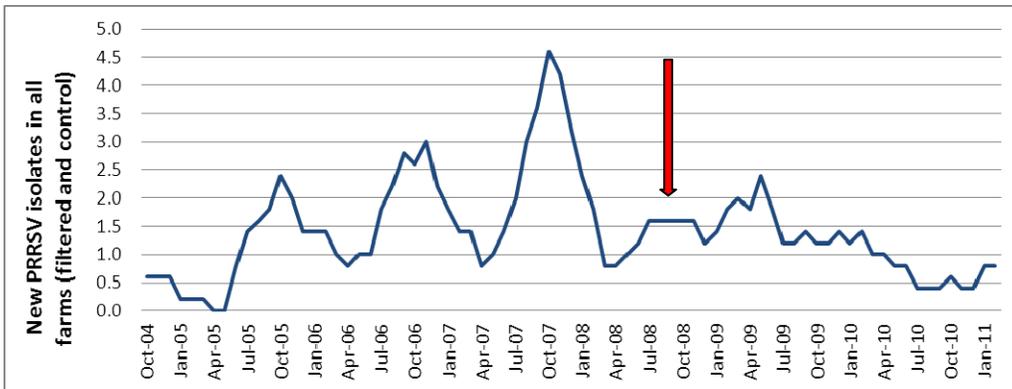
Background

- Bioaerosol transmission plays an important role in the spread of PRRSV among farms
- PRRSV is one of the most genetically labile viruses. Traditionally, ORF5 sequence analysis has been used to differentiate between newly introduced (i.e. exogenous) isolates and new genetic variants (i.e. endogenous) when compared with previously identified virus/es of the farm
- Air filtration systems have the potential to protect susceptible herds by reducing the risk of PRRSV introduction
- Numerous large sow farms have implemented the system with promising results
- The need exists to better define new introductions of PRRSV (case definition) during the surveillance process of these farms in order to better quantify the effectiveness of the system

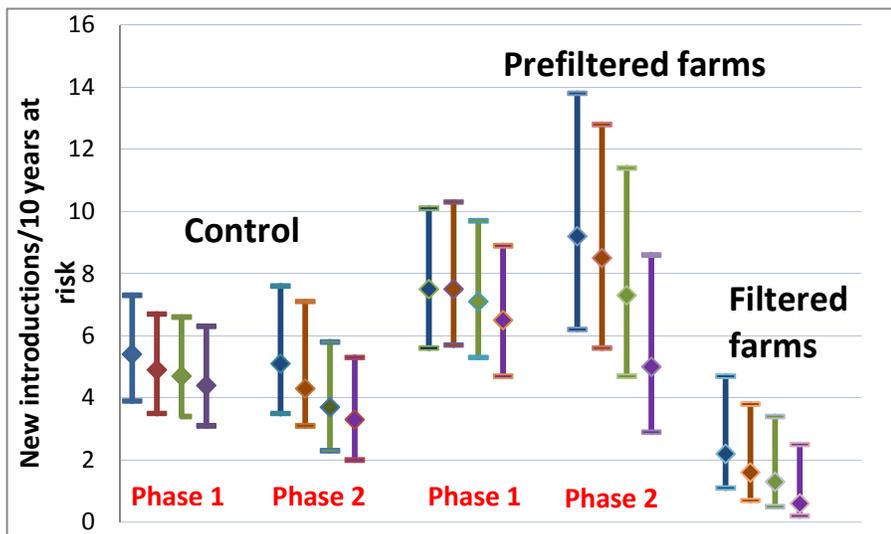
Objective

The objective of this observational study was to reassess the impact of air filtration in commercial sow farms on the incidence of PRRSV introductions, based on a range of case definitions from the farm dendograms

Results



Graph 1: Monthly rate of PRRSV introductions in the dendrograms of all farms (5% cut off in ORF5 sequence) smoothed by a 5 month moving average. Red arrow represents when the first filtered farm in the study started filtrating (August 2008).



Graph 2: Incidence Rate per cut-offs (95% CI). Control and prefiltered farms divided in phase 1 (Oct 04-August 08) and phase 2 (August 08- Sept 11).

2% cut off (blue diamond) 3% cut off (orange diamond) 5% cut off (green diamond) 10% cut (purple diamond)

Conclusions

- The estimated magnitude of risk reduction in filtered farms was influenced by the selected phylogenetic cut off level
- The risk of a novel PRRSV introduction was reduced by 5 fold (using a 5% cut off)
- Approximately 80% of new introductions in these farms were attributable to the aerosol route of transmission

Implications

- Air filtration significantly reduced the risk of PRRSV introduction into breeding herds when compared with non-filtered farms
- PRRSV incidence remained constant across both phases of the study for both types of farms (control and prefiltered)
- Control (nonfiltered) farms had a 30-40% lower incidence of PRRSV introductions when compared with the prefiltration period of filtered farms
- The prefiltered period of each farm was considered the best comparison for the filtered period of the same farm