

# PRRS AND SWINE INFLUENZA VIRUSES DETECTION IN AEROSOL AND DUST IN COMMERCIAL FARMS



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IDEA

Assessment of the exposure of animals in a pen, room or building to Porcine Reproductive and Respiratory Syndrome virus (PRRSv) or Swine Influenza Virus (SIV) is an essential information to monitor herd health status and to implement adequate control measures. Testing the presence of viruses in aerosol (dust) is a novel approach that has been tested on an experimental farm but not yet tested on commercial farms.

METHODOLOGY

The operational performance of different dust sampling procedures was tested on commercial production sites (sows, nursery, and grow-finish units) with different combinations of PRRSv and SIV status. Reference status for the two viruses was based on laboratory testing done on two or three spot samples obtained from the same site over time. If one method was positive or suspect, the units were considered to be positive.

WHAT WE LEARNED

Swine Influenza Virus <sup>1</sup>	Reference (OF) <sup>2</sup>	Dust (aerosol) collection			Udder skin wipes <sup>6</sup>
		Aluminium (> 10 days) <sup>3</sup>	Surface (> 10 days) <sup>4</sup>	Aluminium (2 hours) <sup>5</sup>	
Sow units (n=10)	1/1	10/10	9/10	10/19	6/9
Nursery units (n=11)	5/11	11/11	10/11	10/17	n/a
Grow-finish units (n=17)	7/17	26/44	9/13	8/35	n/a
Summary %	45%	72%	82%	39%	67%

PRRS Virus <sup>1</sup>	Reference (OF + TF) <sup>2</sup>	Dust (aerosol) collection			Udder skin wipes <sup>6</sup>	Tongue piece <sup>7</sup>
		Aluminium (> 10 days) <sup>3</sup>	Surface (> 10 days) <sup>4</sup>	Aluminium (2 hours) <sup>5</sup>		
Sow units (n=10)	6/10	5/10	6/10	2/20	2/7	3/6
Nursery units (n=12)	9/12	10/12	6/11	3/21	n/a	3/3
Grow-finish units (n=23)	23/23	13/61	3/19	11/47	n/a	1/1
Summary %	84%	34%	38%	18%	29%	70%



3 aluminium foils (0.25m<sup>2</sup> each)  
 Grow-Finish  
 Day 14-56  
 Day 14-100  
 Day 56-100

<sup>1</sup> Animals in all these premises are considered exposed to the virus because we have at least one positive or suspect test (PRRS: CT<35; Influenza: CT<40)  
<sup>2</sup> Spot evaluation with Oral fluid (OF) or testicular fluid (TF) collections.  
<sup>3</sup> Long-term evaluation with collection of dust that falls naturally onto aluminium foil.  
<sup>4</sup> Long-term evaluation with collection of dusts on surface areas.  
<sup>5</sup> Spot evaluation with collection of dust that falls naturally on an aluminium foil during the visit (2 hours).  
<sup>6</sup> Spot evaluation with collection of biological material from udder with wipes.  
<sup>7</sup> Long-term evaluation with collection and freezing of a piece of tongue from dead pigs.

TAKE-HOME MESSAGE

- Virus detection in dust collected from falling aerosols is an innovative working process;
- Simple methodology to the toolbox to monitor herd health status for the aforementioned viruses;
- Swine Influenza virus remains detectable in dust for a long period;
- Most Swine Influenza and PRRS viruses particules in dust samples were in low concentrations (CT value >30).