Assessment of area spread for sow herd outbreaks in US swine dense regions

Andreia Arruda, Juan Sanhueza, Carles Vilalta, Cesar Corzo

Keypoints:

- Strong evidence of area spread was not found after evaluating three farm clusters located in two swine dense regions.
- All barns of a nursery/finishing site should be sampled to define status.
- Sick pen might not be the best target when sampling for PRRSV in grower pig sites

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Background

Porcine Reproductive and Respiratory Syndrome virus (PRRSV) "airborne" transmission and "area spread" are terms commonly used interchangeably. It is anecdotally believed that airborne transmission, defined as transmission of the virus by small particles suspended in the air for long periods, is an important means for PRRSV spread, especially in swine dense regions. However, the term "area spread" can also include transmission of PRRSV deposited in fomites.

Objective

The objective of our assessment was to determine if the virus detected in a recently infected sow farm was similar to the one detected in neighboring farms (in other words: was local spread a likely source of infection?)

Methods

A total of 35 sow farms located in Iowa, Minnesota and North Carolina were followed up prospectively. As soon as the first three sow farms broke, veterinarians from respective systems sampled neighboring farms, independently of production type. All samples were submitted to the University of Minnesota Veterinary Diagnostic Laboratory, and attempted to be sequenced. All sequences obtained from neighborhood sites were compared and wind direction for days preceding the outbreak were described and examined using the Iowa Mesonet website. Whenever possible, the sick animal pen was also sampled within those barns.

Results

Results from one of our three clusters are presented in the figure below as an example. This representation agrees with the results obtained from the other clusters. The thickness of the circle represents the status of the sick pen. For two of the three area spread assessments performed, no similar sequence to the one obtained from the farm under investigation was found. Also it was not always possible to detect PRRSV in sick pens of the growing pig sites sampled in our study.

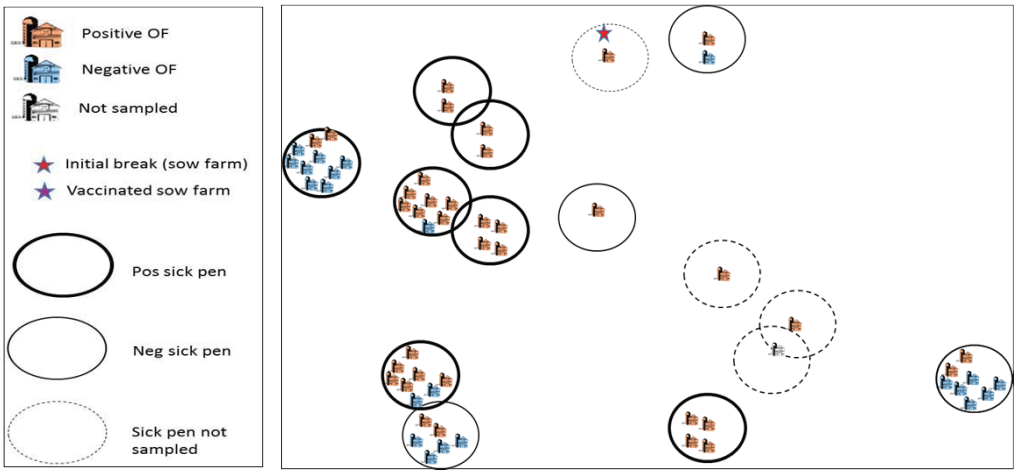

Figure 1. Graphical representation of the results of one specific region of the three studies . In the figure, each icon represents one swine barn, each circle represents a site, and icon colors represent PRRS status. The thickness of the circle represents the status of the sick pen

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Questions?
goncalvesarruda.1@osu.edu

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	Ref_European							Ref_Ingelvac ATP	Ref_Resp PRRS MLV	Ref_VR2332
Ref_European		59.061	59.547	60.267	59.223	60.356	60.032	60.194	60.356	59.385	59.709
	59.061		88.226	90.833	90.547	91.045	91.211	90.879	85.572	85.738	85.738
	59.547	88.226		95.556	92.04	93.035	92.537	92.537	85.572	86.733	86.733
	60.267	90.833	95.556		95.833	96.667	96.667	96.667	85	85	84.722
	59.223	90.547	92.04	95.833		97.512	97.678	97.678	86.567	87.065	87.065
	60.356	91.045	93.035	96.667	97.512		98.176	98.507	87.396	87.894	87.894
	60.032	91.211	92.537	96.667	97.678	98.176		98.673	86.899	87.396	87.396
	60.194	90.879	92.537	96.667	97.678	98.507	98.673		86.235	87.562	87.562
Ref_Ingelvac ATP	60.356	85.572	85.572	85	86.567	87.396	86.899	86.235		90.216	90.547
Ref_Resp PRRS MLV	59.385	85.738	86.733	85	87.065	87.894	87.396	87.562	90.216		99.337
Ref_VR2332	59.709	85.738	86.733	84.722	87.065	87.894	87.396	87.562	90.547	99.337	