Seneca Valley virus update

- Thirteen (13) of our 26 participating systems reported this week. Of these 13, 1 participant in the Midwest reported a case in a wean-to-market site.
- UMN VDL reported 1 new case in a sow farm. None in growing pig sites.

Temporal spatial patterns and risk factors of PRRSv and PEDv infections

Steve Tousignant, Pablo Valdes-Donoso, Andres Perez, Bob Morrison

Key Points

- Spatial distribution of PRRSv and PEDv co-infected herds is similar to patterns in previous years
- There were 4.65 times more cases of PRRSv and PEDv in SW Minnesota and NW Iowa compared to a randomly generated distribution.
- After adjusting for being within a high-risk disease cluster, odds of reporting an infection increased with county level swine density and decreased with high bio-security (filtration)
- Contracted trucking was 30 times more common among infected farms within a high-risk cluster than infected farms outside a high-risk cluster.
- All farms should strive for strict biosecurity measures, especially in swine dense regions of SW Minnesota and NW Iowa when contracted trucking is involved.

In this week's science page, Steve Tousignant, our recent PhD graduate continues his discussion revolving around temporal spatial analysis of PRRSv and PEDv infections. His key points are as follows:

- A subset of 109 breeding herds from the SHMP (clients of Swine Vet Center) were selected for this study

- Herds were surveyed for various farm management characteristics including: production type, high biosecurity (aerosol filtration status), PRRSv infection history, PRRSv vaccine use, feed mill type, carcass disposal method, trucking and manure hauling practices, in addition to county density, herd size.

- Using a temporal spatial, multinomial scan statistic, 5 clusters were identified – most interesting was a PRRSv and PEDv co-infected cluster in SW Minnesota/NW Iowa (p < 0.001) (figure 1, cluster labeled 1) (See also, Table 1).

- After adjusting for being within a high risk space-time cluster, the odds of reporting an infection with PRRSv and/or PEDv were 1.03 (95% CI = 1.01 – 1.04, p = 0.008) for each additional swine premise in the county and 0.11 (95% CI = 0.03 – 0.47, p = 0.003) for high biosecurity (aerosol filtration).

- Additionally, contracted trucking increased the odds of being infected within a disease cluster versus outside a disease cluster (OR = 29.99, 95% CI = 3.14 – 286.86, p = 0.003).

- These data suggest the need for ongoing implementation of high levels of biosecurity in high-risk, swine dense regions, especially if contracted trucking is utilized.
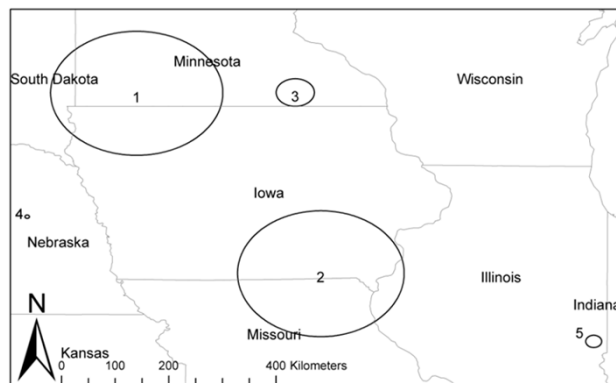

Figure 1: locations of PRRSv and/or PEDv clusters in the upper Midwest. A co-infected cluster (labeled 1) is located in SW Minnesota/NW Iowa.

Table 1: Details of each of the 5 clusters detected in this study

Category	Cluster ID	No of herds	Radius (km)	Obs/Exp	P value
PRRSV+/PEDV+	1*	34	116	4.65	0.001
PRRSV+/PEDV-	3	2	25.73	20.88	0.001
PRRSV-/PEDV+	2	7	117.76	8.29	0.001
	4	3	3.14	9.67	0.001
PRRSV-/PEDV-	5	10	11.45	1.22	0.001

 * indicates most likely cluster