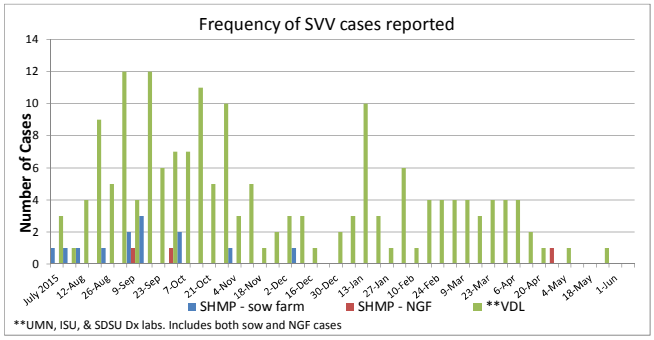
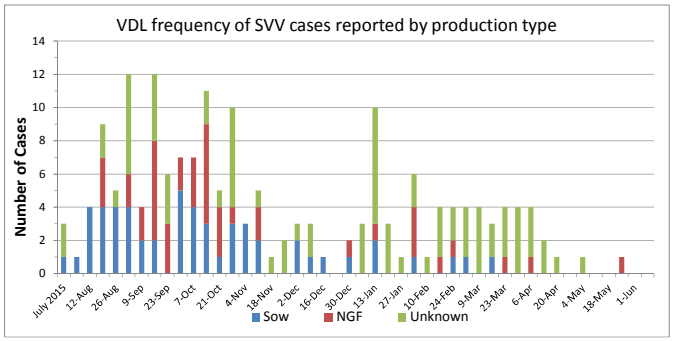
Seneca Valley Virus Update

We requested SHMP participants and UMN, ISU, and SDSU diagnostic labs to report frequency of Seneca Valley virus cases each week.

- 0 new cases to report
- Note that the reported cases between data sources may overlap





Dr. Carles Vilalta is a DVM, PhD from Spain who started as a post-doctoral researcher with our SHMP project in April. Carles has been reviewing our calculations and charting process for our SHMP data and this poses a great opportunity to summarize them again for you. Bob Morrison (BobM@UMN.Edu)

Review of the charts of SHMP. Chart 1.
Carles Vilalta DVM, PhD

Key Points:
- Incidence is calculated as the proportion of herds at risk that become infected during a period of time.
- As our number of SHMP participants continues to increase, incidence as a proportion of herds at risk accurately reflects any change in rate of new herd infection.
- The significant decrease in incidence that we observed in 2013/2014 has continued through to date.

Chart 1 depicts: 1) the cumulative incidence plotted for all years since the beginning of the SHMP and 2) the current year weekly incidence.
Incidence refers to new cases within a specific population over a period of time (Dohoo et al., 2010). As we see with PRRSv, multiple cases can come from the same individual herd (ie. herds can break more than once per year). **Incidence risk**, also referred to as **cumulative incidence**, is the probability that an individual (in the SHMP case herds) will contract the disease in the period of study.

Coming back to the incidence parameters in chart 1 of the SHMP report:

1) The yearly cumulative incidence is expressed as the cumulative percentage of herds reporting new cases over the total herds that participate in the SHMP in the same week.
2) The current year weekly incidence (the black line at bottom of chart 1 of the SHMP report) is not cumulative and refers to the proportion of new outbreaks (number of new cases over the participating herds in the SHMP during the same period of time [week]).

The number of reported outbreaks per year (from July 1 through June 30) has doubled from 93 to 185 herds over the duration of the Swine Health Monitoring Project. However, the incidence has not increased because incidence is a proportion and denominator, the total number of participating herds, also increased from 311 to 766 (Figure 1). Notice that our incidence line (red) in Figures 1 and 2 starts at 0 in July because we consider that date to be the beginning of the new pathogen year.

The decrease in incidence described by Tousignant et al. (2015) for the initial cohort of 14 participants of the SHMP during the 2009/2014 monitoring period is still evident in the expanded SHMP set of 27 participants (Figure 2). This decrease might be consequence of different factors that Tousignant et al. (2015) described in their paper including:

- Review and reinforce biosecurity measures focused to avoid the introduction of PED.
- Increase of vaccine use. That can be observed in a greater number of farms using vaccine (chart 2 of the SHMP report)
- Increase of filtrated farms.
- Other unknown factors that could be affecting the spread of PRRS virus: cycles, changes in case definition, diagnostics more or less accurate, etc…

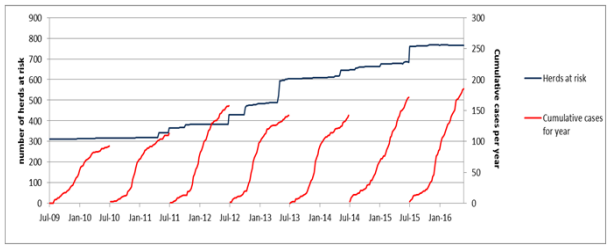


Figure1. Number of herds at risk and number of cumulative cases per season 2009/2015 (Jul-Jul) and 2015/2016 (Jul-Jun).

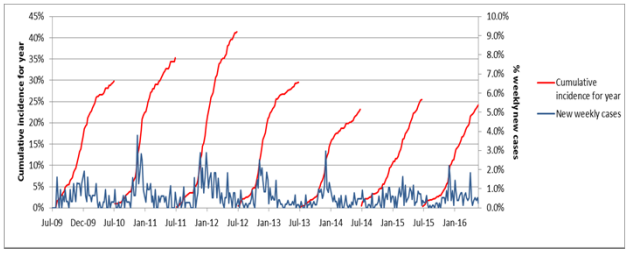


Figure2. Cumulative incidence and % of weekly new cases.

Dohoo, I., Martin, W., and Stryhn, H. (2010). Veterinary Epidemiologic Research, 2nd edition. VER Inc., Charlottetown, Prince Edward Island, Canada.
Steven J.P. Tousignant, Andres Perez, Robert Morrison (2015). Comparison between the 2013–2014 and 2009–2012 annual porcine reproductive and respiratory syndrome virus epidemics in a cohort of sow herds in the United States. Can Vet J 2015;56:1087–1089.