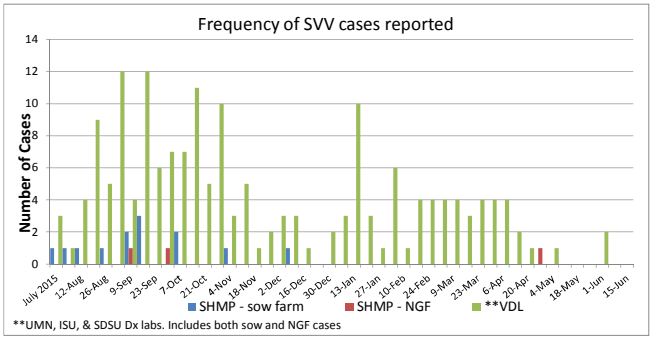
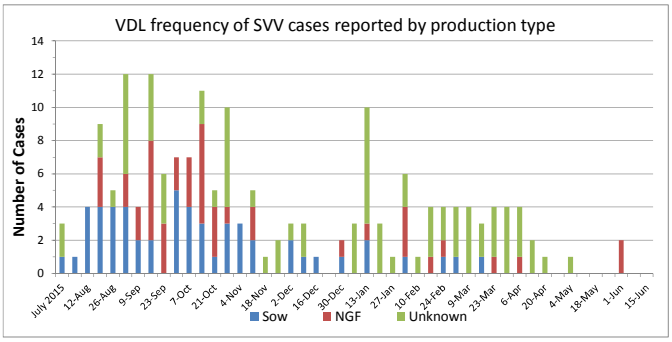
Seneca Valley Virus Update

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

- 1 additional VDL case reported in a NGF site for week of 06/01/16
- 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 SHMP PRRS Charts. Chart 2 - Prevalence.
Carles Vilalta DVM, PhD

Key Points:

- Chart 2 represents the prevalence, or proportion of farms having a certain PRRS status.
- Prevalence of status 1 farms may be changing over time.
- Since 2013, there has been an increase of farms that vaccinate (2vx) and fewer farms using field virus (2fvi).

Chart 2 depicts PRRS aggregate prevalence of sow herd status since the beginning of the SHMP project.

In epidemiology, **prevalence** is a proportion of the population at risk that are cases with a certain condition (typically a disease or other risk factor) represented at a point in time (Dohoo et al., 2010). For SHMP, the prevalence is expressed as the number of herds that meet the criteria of being in one of the different classification groups for PRRS (1,2fvi, 2vx, 2, 3 and 4) over a population that involves only the systems that are classifying the farms using the terminology and methodology described by Holtkamp et al. (2010) and sharing their PRRS status. That is a total of 446 herds of the 766 total herds currently sharing PRRS data.

There are two major changes that are apparent in the prevalence chart. First, we see a decrease of status 2 and 2fvi herds and increase in 2vx starting in 2013. This presumably reflects a management decision to use vaccine in GDUs (Gilt Development Units) rather than field virus or nothing. This change coincides with publication of the field study conducted by Linhares et al (2014) which described the time to stability and baseline production comparing MLV vaccine and field virus as exposure methods. The second change is that the repeated seasonal pattern evident from 2009 to 2013 seems to be less marked from 2014 to date. In 2014, the incidence decreased approximately 10% from previous years and has remained thus (Chart 3). This lower incidence is reflected in the lower prevalence of infected farms in 2014 and 2015. Possible reasons for this decrease include (1) a change in SHMP participants over time, (2) increased use of PRRS virus vaccine, or (3) change in seasonal incidence of PRRS with a higher proportion of herds being infected later in the PRRS season. Regarding increased use of vaccine, PRRSv vaccination reduces the transmission between pigs and also reduces the infectious period (Rose et al. 2015). This could lead to fewer pigs shedding virus for less time and thereby reduce the spread between farms during the winter season. Another factor that could be affecting the prevalence pattern could be the awareness regarding to biosecurity measures of farmers and companies after the break of PED. Potentially, better biosecurity measures to avoid the introduction of PED could have led to lower transmission of PRRSv between farms. And finally, the systems participating and number of herds that are included in the chart has been changing and growing through time (Figure 1). If we depict the subset of 14 original systems participating since the beginning of the SHMP, we can see the same peak reduction trend after the year 2013 probably affected by the same factors mentioned above. Therefore, a change in participation does not seem to explain the change in pattern suggesting that increased vaccine use and / or timing of the breaks may explain the change. We are looking into latter explanation.

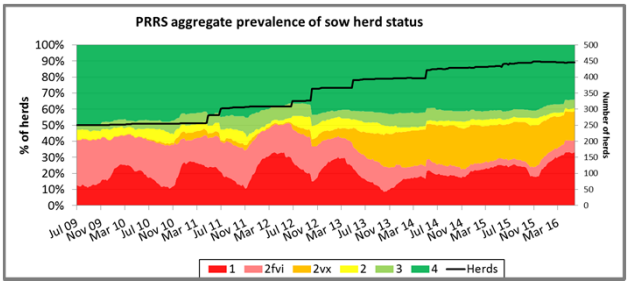


Figure1. Prevalence of herds by status and total number of herds participating

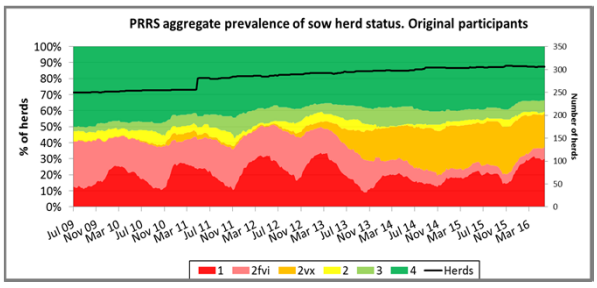


Figure 2. Prevalence of herds by status and participant herds from the original subset.

Dohoo, I., Martin, W., and Stryhn, H. (2010). Veterinary Epidemiologic Research, 2nd edition. VER Inc., Charlottetown, Prince Edward Island, Canada.

Holtkamp, D.J., Polson, D.D., Torremorell, M., et al. Terminology for classifying swine herds by porcine reproductive and respiratory syndrome virus status. J Swine Health Prod. 2011;19(1):44–56.

Rose, N., Renson, P., Andraud, M., Paboeuf, F., Le Potier, M.F. and Bourry O. Porcine reproductive and respiratory syndrome virus (PRRSv) modified-live vaccine reduces virus transmission in experimental conditions. Vaccine. 2015 May 15;33(21):2493-9.