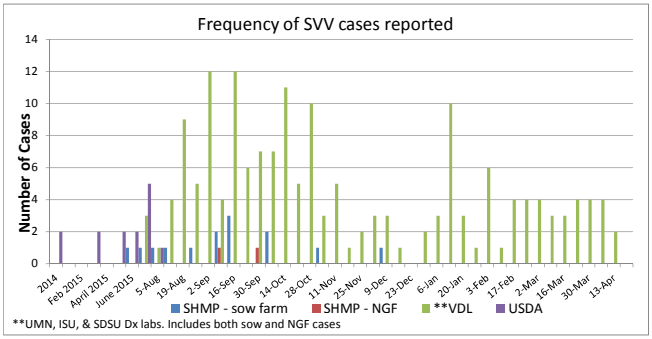
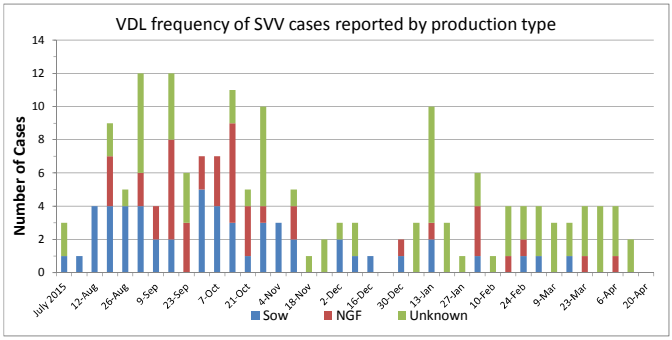
Seneca Valley Virus Update

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

- 2 new SVV cases reported for week of 4/13/16
- Note that the reported cases between data sources may overlap.





Eliminating PEDv from the Environment

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KeyPoint

- PEDv PCR positive manure holding tank at a farm was heated to 180F for 30 minutes and then tested PCR negative.

Purpose:

The purpose of this report is to illustrate one way of eliminating PEDv from the environment effectively so that subsequent re-breaks can be avoided.

History:

In October 2014, I had a client with 200 sows on a batch farrowing system on a research farm that had inadvertently brought PEDv into the onsite gilt isolation facility with a load of replacement gilts. The gilts showed clinical signs post arrival, tested PEDv positive and were removed from the facility. Unfortunately, in this process, the gilts contaminated the pit which drains into a sediment tank and on into the main lagoon.

The downstream lagoon tested PEDv PCR negative over the summer. However the sediment tank near the building and the manure pump-out holding tank continued to test PCR positive. The isolation pit was filling up to the point where the sediment tanks were about to spill over into the lagoon potentially causing the lagoon to revert to PEDv positive.

In the area of the country where this farm is located, they are allowed to spray apply manure out of the lagoon onto the field. However, my client does not want to infect the sow farm which had stayed PEDv naive until this point.

Methods:

We discussed different options of eliminating PEDv from the pit including:

- Removing all manure from the pit.
- Disinfecting the pit.
- Heating up the pit to 160°F for 10 minutes.

In February 2016, the pits were pumped down with material being knifed into a nearby pasture because they were testing PEDv PCR positive. The tanks were disinfected with a small amount of material in the bottom of each tank. The largest holding tank then tested negative, but the 2 smaller sediment tanks remained positive. The first sediment tank from the building was refilling because there were animals being housed in the facility.

As we talked through the remaining options, it was apparent it was going to be very difficult to get the manure pit completely emptied, washed and disinfected at a high enough concentration to denature the virus, so as not to test PCR positive. The engineers on the team were intrigued by the concept of heating up the pit and felt they could do that with high pressure steam.

CONTINUED ON NEXT PAGE

On Wednesday, March 15, 2016 a high pressure steam unit was brought onto the farm and steaming was begun on the first holding tank (it was approximate 8'x8'x8', with approximately 12" of material in the tank). Within one and a half hours the holding tank had achieved 180°F for 30 minutes, well in excess of the target of 160°F for 10 minutes.

The next day the crew heated the next tank (dimensions 8X8X8 with approximately 5' of material in the tank), it took four hours to get the tank up to 160°F and hold it there for 20 minutes.

We also added about 2 pounds of Pool SHOCK in to each tank. Not sure if it helped, but at that point knew it wouldn't hurt. The immediate reaction was noticeable, not sure if it had any overall impact on the outcome.

Results:

On Monday, March 23, 2016 the subsequent testing of the two holding tanks came back PEDv negative on PCR.

The piglets in the farrowing house were now all above 15 days of age (batch farrowing), so spray application of the manure from the lagoon was implemented.

As of now, one-month post application, no animals in the facilities have shown any clinical signs of PEDv (the ultimate bio-assay). In all fairness, the holding tanks gravity feed into the lagoon, so it won't be until next field application that we can say for sure that the processed worked.

Nonetheless, this is a proof of concept that manure can be heated up with steam to denature the PED virus.

Words of Caution:

- No animals were above the holding pits when the manure was heated to 160°F.
- Be cautious when dealing with pit gases, especially when heated in an enclosed area.