Swine Health Monitoring Project (SHMP) Annual Summary

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Key Points:

- Monitoring pathogens
  - We have made no progress in decreasing PRRS incidence (26%) over the last 2 years.
  - PEDv incidence remained low (7%), decreasing 2% from last year.
  - Seneca Valley virus incidence may be decreasing although we have limited duration of testing.
- Analyzing PRRS virus sequences
  - Analyzed 1-7-4 sequence data from 5 systems to infer spread over time and space.
  - Submitted 6,230 sequences to Genbank in an ongoing effort to be able to detect when and where new isolates may be emerging.
- Capturing movement data and incorporating into data management capacity
  - Limited progress on data management – more on this later.
- Expanding enrollment
  - Added 2 production companies & Lyon Cy regional project
  - Currently 29 systems with 1,022 sow farms & 2.63 m sows.
  - 231 non participants receive weekly report.

You may know that our SHMP project is funded by the National Swine Health Information Center (SHIC), which is a 5-year project funded by the National Pork Board and led by Dr Paul Sundberg. Our project has 4 objectives:

Objective 1 – Monitoring incidence & prevalence. As of June 30, our pathogen-year came to a close.

PRRS - The good news is that our PRRS incidence was 26% for the 3rd year in a row with approximately 10% lower incidence than we had previous to 2014 (Chart 1). However, the challenge going forward is that our incidence has not decreased in the last 3 years (23%, 26%, 26%) – we are not making enough progress. My concern is that it won't decrease further until we get a better understanding of why herds break in the first place. After pigs and semen are ruled out, we are guessing most of the time. More on that in an upcoming weekly report.

PED – For the second year in a row, our incidence was low (7%). Still too high but down from 9% last year. The prevalence chart suggests that many herds are still using PEDv in gilt acclimation.

Seneca Valley virus (SVv) – Incidence appears to be decreasing, although it is early to know. I have thought about adding a control limit (the red line) to help us determine if incidence is seasonal.

Objective 2 – Prospective monitoring of PRRS viruses – Moh Alkhamis led a study analyzing sequences that belong to the 1-7-4 RFLP (*Applications of Bayesian Phylodynamic Methods in a Recent U.S. Porcine Reproductive and Respiratory Syndrome Virus Outbreak. Frontiers in Microbiology | February 2016 | Volume 7 | Article 67*). The process of sequence collection, analysis, interpretation and reporting to the participants was valuable. Moh is extending this work this year by developing methods to determine the rate of virus evolution within systems. This will have interesting ramifications.

Objective 3 - To develop capacity to capture and analyze movement data in real-time – We have two projects that we have started but we made limited progress for a variety of reasons. First, we want to be able to capture movement data to supplement outbreak investigations and also to understand the implications for spread within a region. More on this in an upcoming report.

Objective 4 - To expand participation of producers to allow all to be involved – We continue to expand in a controlled fashion. Strictly from a pathogen monitoring perspective, we probably don't need more herds- while it would be nice to increase our representativeness around the country, we think having approximately 1,000 herds gives us a reasonable picture. However, our overarching objective is to develop the capacity to give the industry the ability to respond to an emerging pathogen. With that in mind, we need to continue to increase participation to give all producers the ability to participate.

We added two production companies, one of which shares their logo announcing their participation. We also added the Lyon County regional PRRS project bringing our regional project participation to 4 regions (SE Iowa, Lyon in NW Iowa, Pennsylvania and N212 MN). This means that today, SHMP includes 2.66 million sows or approximately 46% of the sows in United States.

Going forward, we are continuing our 4 objectives as listed above. In addition, we are working on our data management system such that we maintain our data security while allowing for increased participation, more in depth analyses and ability for our participants to visualize and manipulate their data. Contact me with any questions or comments. Bob Morrison BobM@UMN.Edu; 612-850-0019