

Year-end Summary of Swine Health Monitoring Project Bob Morrison, P.I.

Key Points:

- Continued progress towards short and long term goals
- Appreciate the support and data sharing of our SHMP participants
- Wouldn't be possible without financial support from SHIC and effort of our team

Let's review our objectives. We have a long term objective of developing the capacity to support an industry-led, voluntary response to emerging pathogens. To accomplish that goal, we believe we need to deliver value in the short term to recognize and encourage participation.

While maintaining data confidentiality, we try to be transparent in all we do. And at the same time, we use our participants' data to help the entire industry. This is a bit of a tightrope that we walk because there needs to be some advantage to participants for sharing data. And it's very likely that some producers and veterinarians don't take the time and trouble to share their data because they get to learn much of what participants learn. Regardless, our participants have allowed us to publish our findings, report the aggregate level data and share our weekly report including the science page with any interested person.

Our accomplishments this year include:

- Weekly report describing incidence and prevalence of important pathogens delivered every Friday.
- Every week's report includes a Science Page where we try to teach principles, share data analysis findings, describe current projects and summarize recent publications.
- Published 4 papers:
 - Pablo Valdez et al. Measuring Progress on the Control of Porcine Reproductive and Respiratory Syndrome (PRRS) at a Regional Level: The Minnesota N212 Regional Control Project (Rcp) as a Working Example. PLOS One. Feb 19, 2016 <http://dx.doi.org/10.1371/journal.pone.0149498>
 - Moh Alkamis et al. Applications of Bayesian Phylodynamic Methods in a Recent U.S. Porcine Reproductive and Respiratory Syndrome Virus Outbreak. Front. Microbiol., 02 February 2016 <http://dx.doi.org/10.3389/fmicb.2016.00067>
 - Dane Goede et al. Production Impact and Time to Stability in Sow Herds Infected with Porcine Epidemic Diarrhea Virus (PEDV). Prev Vet Med. Jan 1, 2016
 - Julio Alvarez et al. Spatial and Temporal Epidemiology of Porcine Epidemic Diarrhea (PED) in the Midwest and Southeast Regions of the United States. Prev Vet Med. Jan 1, 2016
- Submitted several papers including one addressing the question of whether a new GDU should be built at bottom or top of a hill, and whether tree coverage around a site any protection. A second paper describes analysis of risk factors for PRRS virus infection (Alkamis et al). A third paper looks into trends in incidence across regions and years (Arruda et al). And a fourth summarizes the analyses that have been conducted with SHMP data to-date (Vilalta et al).
- Added new participants to increase reach and representativeness of the data.
- Have developed capability such that participants have exclusive access to all SHMP data for visualization. Participants can slice and dice the data as well as supplement their outbreak investigations by having access to their virus sequences over time and space. Participants also have access to aggregate level, antimicrobial resistance data to help guide their treatment protocols. Finally, participants can benchmark their time to stability (TTS) for PRRS and PEDv.

We are fortunate to have a highly effective and engaged team of faculty, post-docs and grad students. These include the following. Thank you to all of you for your efforts in 2016 and looking forward into 2017.

Bob Morrison

Faculty

- R. Morrison
- A. Perez
- M. Torremorell
- M. Alkhamis
- K. VanderWaal
- J. Alvarez
- and
- D. Linhares (ISU)
- D. Holtkamp (ISU)
- A. Arruda (OSU)

Students & postdocs

- Carles Vilalta (data visualization)
- Juan Sanhueza (transport analysis)
- Emily Geary (data manager)
- Paulo Fioravante (db programmer)
- Kaushi Kanankege (spatial analysis)
- Gustavo Machado (risk scores)
- Pablo Valdes (N212 data analysis)
- GustavoDe-Sousa-E-Silva (biosecurity)