

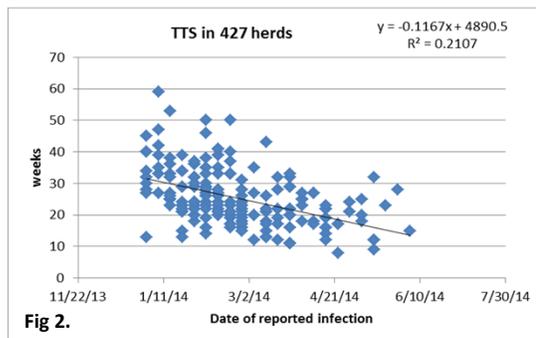
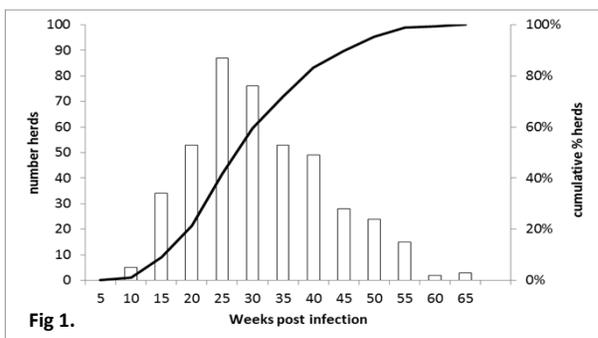
Time to Stability for PED virus in SHMP sow herds

April 7, 2015

We summarized the diagnostic testing information for our PEDv herds and are seeing some interesting, albeit preliminary observations. We have 910 herds enrolled today in SHMP. Of these, 863 are sharing PEDv diagnostic results and 454 of these have had at least one break with PEDv. We have 427 herds that had an outbreak between May 29, 2013 and June 4, 2014 and that have reported achieving stability.

First, a comment on the nature of our TTS data is that several systems only report 2 stages for PEDv; I – positive, unstable and IV – negative. Some of those herds may have been stable (Stage II) before being reported as negative to us. That makes some of our TTS estimate longer than actual. And secondly, for those systems that report status II to us, we record the last of 4 consecutive PCR negative tests as being the start of stability. One could argue that the herd apparently was stable at the first of the 4 tests, but we can't plan on that in the field and the confidence that the herd is stable based on only one sample will only be 95% confident of detecting a prevalence of at least 10% ($n > 29$).

- The TTS data (weeks) are relatively normally distributed (Fig 1). The median (50th percentile) for all these data was 28 weeks and ranged from 7 – 64 weeks). That's a long time! In Dane Goede's intensive study of 25 herds (reported at AASV), TTS was only 16 weeks (95% CI 13, 18). I mention again the caution described above that status as reported to us may be longer than actual.
- TTS as reported to us has decreased since we started collecting the diagnostic data (Fig 2). First, look at the variability in TTS that we have seen since our first herds became infected - huge. Some herds apparently eliminate virus quickly and others struggle. Then notice that the variability has decreased – more predictable process as we have learned more. And, best of all, there has been a profound decrease over time – (thank you MT for suggesting we look). Assuming a linear decrease, herds infected back in May 2013 took on average 30 weeks whereas herds infected in June 2014 took just less than approximately 20 weeks.



- TTS appears to be seasonal. We broke date of infection into quarter of year and compared TTS among quarters. There was a significant difference with herds infected in Q 1 and 2 having median TTS of 24 and 22 weeks whereas herds infected in quarters 3 and 4 had 36 and 33 weeks, respectively. One caveat is that TTS also varied significantly among participants. And we know that different participants had much of their infection at different times of year. So, both these variables were put into the statistical model and both remained significant. That suggests that quarter of year retains its influence, irrespective of the particular participant. These differences suggest that after approximately 8 weeks when production has mostly recovered, herds infected in quarters 3 and 4 will be trying to eliminate virus through the winter and virus survival may add another level of challenge to the cleaning and disinfection process.

One of our participants commented that our data are inaccurate. I think that assessment is quite correct. Diagnostic reports are frequently not up to date, a few are changed every week and perhaps most importantly, our participants are not representative of the US industry. Given these limitations, we have to ask ourselves if the data are good enough to use in making management recommendations. I'd like to think so. And in the meantime, we work to make the project better – with your participation and help.

Bob Morrison