Review of MSHMP PRRS Chart 2 - Prevalence.
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Key Points:
• Chart 2 depicts the prevalence (e.g. the proportion of breeding herd in each of the PRRS status categories over time).
• Since 2013, the proportion of farms that vaccinate (2vx) and that use field virus (2fvi) has not changed dramatically.
• The cyclical pattern of farms in status 1 observed early in the program is slowly disappearing after 2019.

Chart 2 depicts the PRRS aggregate prevalence of sow herd status since the beginning of the MSHMP project. Prevalence is the proportion of individuals in the population with a certain characteristic (e.g. a disease or other risk factor) at a certain point in time. For this MSHMP report, the prevalence is the proportion of participating herds being classified in each of the different PRRS status (e.g. 1,2fvi, 2vx, 2, 3 and 4) (Holtkamp et al., 2010). These proportions are represented on the y-axis. On the x-axis we plotted the time in weeks, beginning on July 2009 until the current calendar week (04/09/21).

As we have highlighted in previous science pages, since 2013 a decrease in status 2 and 2fvi herds has been observed. However, there has been an increase in 2vx herds, presumably reflecting a management decision to use MLV vaccines. The change in the seasonality pattern of farms in status 1 was first observed in 2014, when a much smaller peak was observed during the usual higher transmission period of PRRS (winter season). After that, within the following years (2014-2017) we returned to observe the expected seasonal increase in status 1 herds. However, since 2018, this seasonality of status 1 farms has not been as clear as in previous years and herds classified in status 1 seem to remain longer periods of time in such category. This clearly highlights that the 2019-2020 and the 2020-2021 PRRS seasons have started with more herds in the status 1 category.

Prevalence, or the proportion of the population with PRRS in this case, is a product of both incidence (number of new cases occurring) and the time that herds need to reach stability (e.g. consistently weaning negative piglets). Given that the PRRS incidence has been lower in the past couple of years, a reasonable conclusion for the 2021 increase in prevalence of status 1 farms is that farms that break with PRRS are remaining in status 1 for longer periods than in previous year. This can be explained in part by the recent adoption of more sensitive monitoring tools by the industry, such as the use of processing fluids. Processing fluids are serum and serosanguineous fluids obtained as part of castration and tail docking practices, used as a convenient and reliable specimen to monitor PRRSV in breeding herds (Vilalta et al, 2018). Because of the ease of collection and increased representability in comparison with the previous standard of blood collection of 30-60 due-to-ween piglets, this sample type for PRRSV monitoring has been widely adopted and is potentially more sensitive in detecting PRRS at lower within-farm prevalence. This change in disease monitoring could have resulted in herds with low within-farm prevalence that were previously classified as stable using less sensitive sampling methods now being classified as PRRS positive, appearing in Chart 2 as a plateau of status 1 farms. Adding to the plateau are already infected herds that break with a new strain and continue to stay in category 1. Another possible explanation is that specific virus strains may have developed the capacity to persist for longer periods of time within a herd making the time-to-negative-pigs longer than expected. On the other hand, there are approximately 40% of the breeding herds in category 3-4 which is certainly a good indicator of practitioners and producers continuing to work towards maintaining naive herds and working towards a naïve status.

In summary, Chart 2 shows the proportion of herds classified in a specific category in a specific point in time. Herds change from one category to another as outbreaks occur or as control and elimination programs are successful. Since incidence rate has remained at 20-30% of the herds breaking in a given year, the change in PRRS status 1 prevalence shown since 2018 may be explained by several factors including new monitoring methods, herd reinfections, and length of time to stability.

References