

Review of Chart 3: PRRS incidence rate by status at break Juan Sanhueza, Emily Geary, Mariana Kikuti, and Cesar Corzo

Key Points:

- Incidence rate takes into account the time a farm is at risk for disease.
- Chart 3 incidence rate has replaced incidence risk by status which did not account for a farm's contributed time at risk.
- While incidence rate is less visually intuitive, it more accurately reflects PRRS outbreak rate by status.

MSHMP's original PRRS Chart 3, cumulative incidence by herd status at time of infection, was meant to estimate the percentage of herds in each one of the 6 MSHMP PRRSv statuses that break with PRRS throughout the year. In a static population, this percentage would be estimated by dividing the total number of outbreaks that occurred in a defined time frame by the total number of herds at risk in each specific status at the beginning of the follow-up period. However, because a farm can experience PRRSv status changes (e.g. from status 4 to status 1 or from status 2vx to status 2) during the year, several periods of time at risk are contributed for each farm-status. This problem resulted in more than a 100% incidence for status 2 and 2fvi during the MSHMP season 2018-19 (Figure 1A). This would mean that all farms that were in status 2 and 2fvi experienced at least one PRRS outbreak during this season. This inference is not correct.

To better reflect the status fluctuation and the amount of time each farm contributes to the risk period in a given status, we replaced the weekly incidence risk chart for an incidence rate chart (figure 1A-1B). Figure 1B shows the current chart 3 that displays PRRS weekly incidence rate by status. The chart is accompanied by a table that shows the current incidence rate and also the estimated annual incidence rate.

In summary, we are still estimating the number of outbreaks within each status, but now the time at risk farms contribute in each given status throughout the year is taken into account. For instance, if we take the status 2, the current weekly incidence rate is 0.0039 cases per farm-week at risk or 0.2023 cases per farm-year. Therefore, if 1,000 farms are in status 2 during a whole year at risk, then approximately 198 farms are expected to experience a PRRS outbreak (0.0039 cases x 1,000 farms x 52 weeks).

Although weekly incidence rate may be more challenging to interpret at first, it reflects more accurately the risk of PRRS in each status. If you have any comments/suggestions or need further explanations interpreting the new chart, do not hesitate to contact Cesar Corzo at corzo@umn.edu.

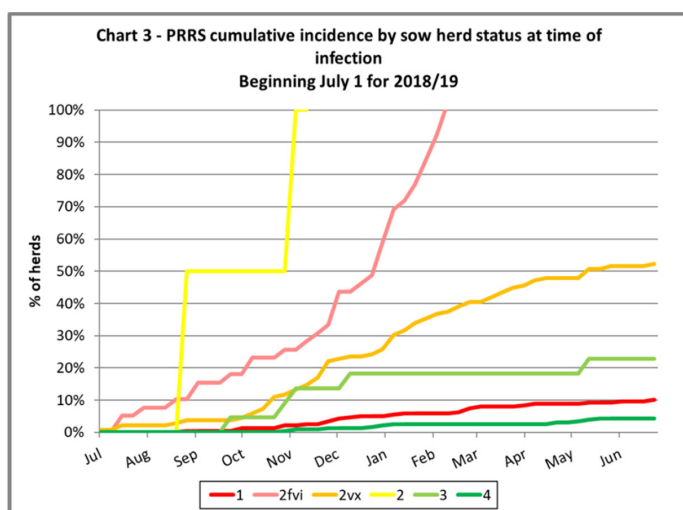


Figure 1A

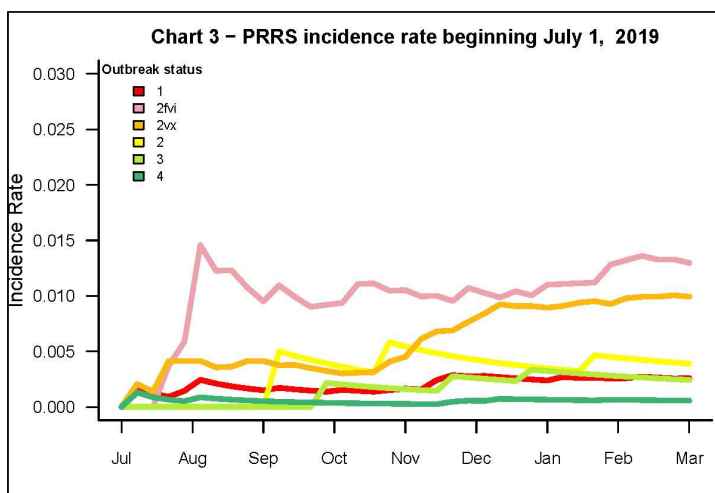


Figure 1B