New Chart 3 description: PRRS incidence rate by status at break

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Key points
- Current PRRS Chart 3 incidence risk by status does not take into account the time at risk farms contribute to each status.
- Incidence rate takes into account the time a farm is at risk of disease.
- Chart 3 will be replaced by a incidence rate chart that reflects more accurately the PRRS outbreak rate by status.

Chart 3, PRRS cumulative incidence by herd status at time of infection is 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 1) during the year, several periods of time at risk are contributed for each farm-status. This problem resulted in more than 100% incidence for status 2 and 2fvi during this MSHMP season (Figure 1A), which would mean that all farms that were in status 2 and 2fvi experienced a 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 at risk period in a given status, we proposed to change the current weekly incidence risk chart for an incidence rate chart (See below Figure 1A-1B). Figure 1B shows the new 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 contributed 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 0.008 cases per farm-week at risk or 0.4145 cases per farm-year. Therefore, if 1,000 farms are in status 2 during a week, 8 are expected to experience a PRRS outbreak (0.008 x 1,000). Or annually, if 1,000 farms are in status 2 during a whole year at risk, then approximately 416 farms are expected to experience a PRRS outbreak (0.008 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.
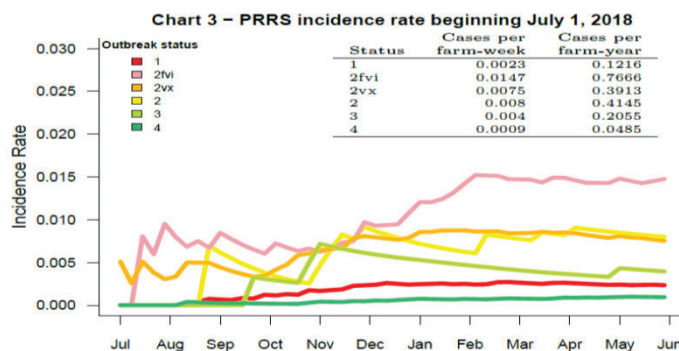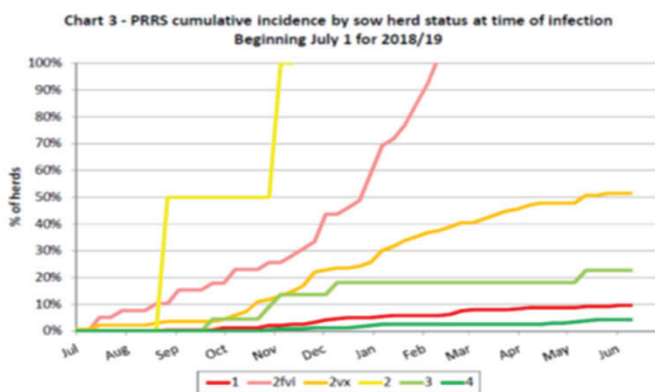

Figure 1: Current incidence risk chart 3 (Figure 1A) and incidence rate chart 3 (Figure 1B).

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