Immune status at exposure affects time to stability (TTS) for PRRS

Key points:

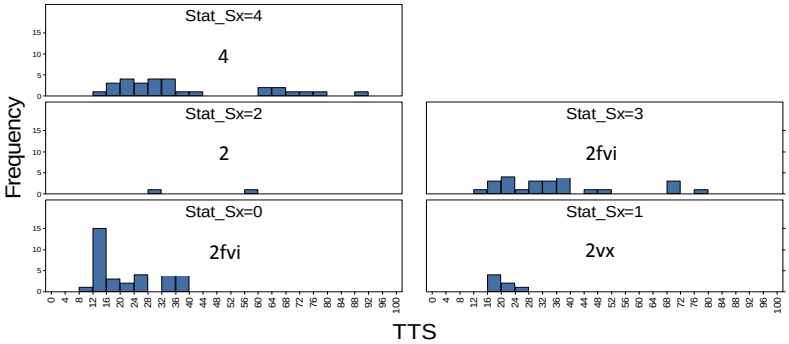
- Median TTS was 26 weeks which is similar to our previous report.
- Status 2fvi and 2vx had similar TTS (21.3 and 20.8 weeks, respectively).
- Status 2fvi and 2vx were significantly shorter than status 2, 3 or 4.
- It may be revealing to sample status 2fvi earlier than 12 weeks after last exposure.

In our earlier study, we reported that time to stability (TTS) for PRRSv ranged from 12 to 42 weeks with a median of 26.6 weeks (Linhares et al. 2014). We also noted that herds with a history of PRRS virus exposure, whether from vaccination or field virus in the previous 3 years, had significantly shorter TTS compared to herds that did not. Unfortunately, we didn't have the data at that time to determine whether that previous exposure was with vaccination and/or field virus. You will recall that we recently asked all participants for that data and we can now evaluate that question.

Of all 684 SHMP herds that share PRRS status, 367 had data back to 2011. From these 367, we selected all herds that had at least one outbreak of PRRS and no history of PEDv infection. There were 97 herds with one PRRS outbreak and 60 herds reported two. Stability was defined as having had 4 consecutive tests of at least 30 weaned pigs over a period of 90 days. Day 1 of TTS was the day of intervention (whole herd exposure with either live PRRSv or live virus vaccination) and TTS was defined as the date of the 1st negative test followed by the 3 consecutive negative tests.

For the 97 herds, the distribution of TTS was positively skewed and mean and median TTS were 30.6 and 26 weeks, respectively. This median is virtually identical to that reported in our earlier study of 61 herds from 2010 / 2011 (Linhares et al 2014) (Figure 1). Sample size on several of the statuses is low so caution is indicated in over-interpretation.

Figure 1: TTS by status



Comparing TTS by PRRS status at exposure, we saw the same relationship as recorded in our earlier study. That is, herds with immunity due to vaccination (2vx) or field virus (2fvi) had significantly shorter TTS than herds that did not (Table 1). Moreover, there was no significant difference between 2vx herds (20.8 weeks) and 2fvi herds (21.3 weeks). An implication of this observation is that we may want to start sampling 2fvi herds earlier since we may be over-estimating TTS in some of these herds (Figure 1). A limitation of this study is that these 2fvi and 2vx status data were collected retrospectively and are subject to recall bias.

Table 1: TTS by PRRS status at exposure

Status	No.	Mean	Median	25th	75th	Range
2fvi	34	21.3 [a]	17.5	12	33.3	11-39
2vx	7	20.8 [ac]	19	19	23	17-26
2	2	44.0 [ab]	44	M	M	31-57
3	25	35.8 [bc]	33	22	43	12-78
4	29	38.7 [b]	31	22	60	12-90
Total	97	30.6	26	19	36.5	11-90

[ab] values with different superscripts differ at $p \leq 0.5$
[bc] values with different superscripts differ at $p \leq 0.10$

In coming weeks, we will report the findings in the 60 herds that had 2 PRRS breaks, the correlation of TTS between consecutive breaks and also report TTS by system (to participants only).

Thank you for your participation and ongoing support.
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