

Appendix 1. Blister questions from WeCAHN Ruminant Clinical Impressions Survey

1. On average, approximately how many contacts (conversations or farm visits) did you have monthly with beef premises over the past 3 months? Please enter the number.

2. Were 'blisters' (vesicles) seen or discussed? Please check all that apply.

No blisters were seen.

No blisters were seen but blister awareness was discussed.

No blisters were seen or discussed.

Yes, blisters were seen.

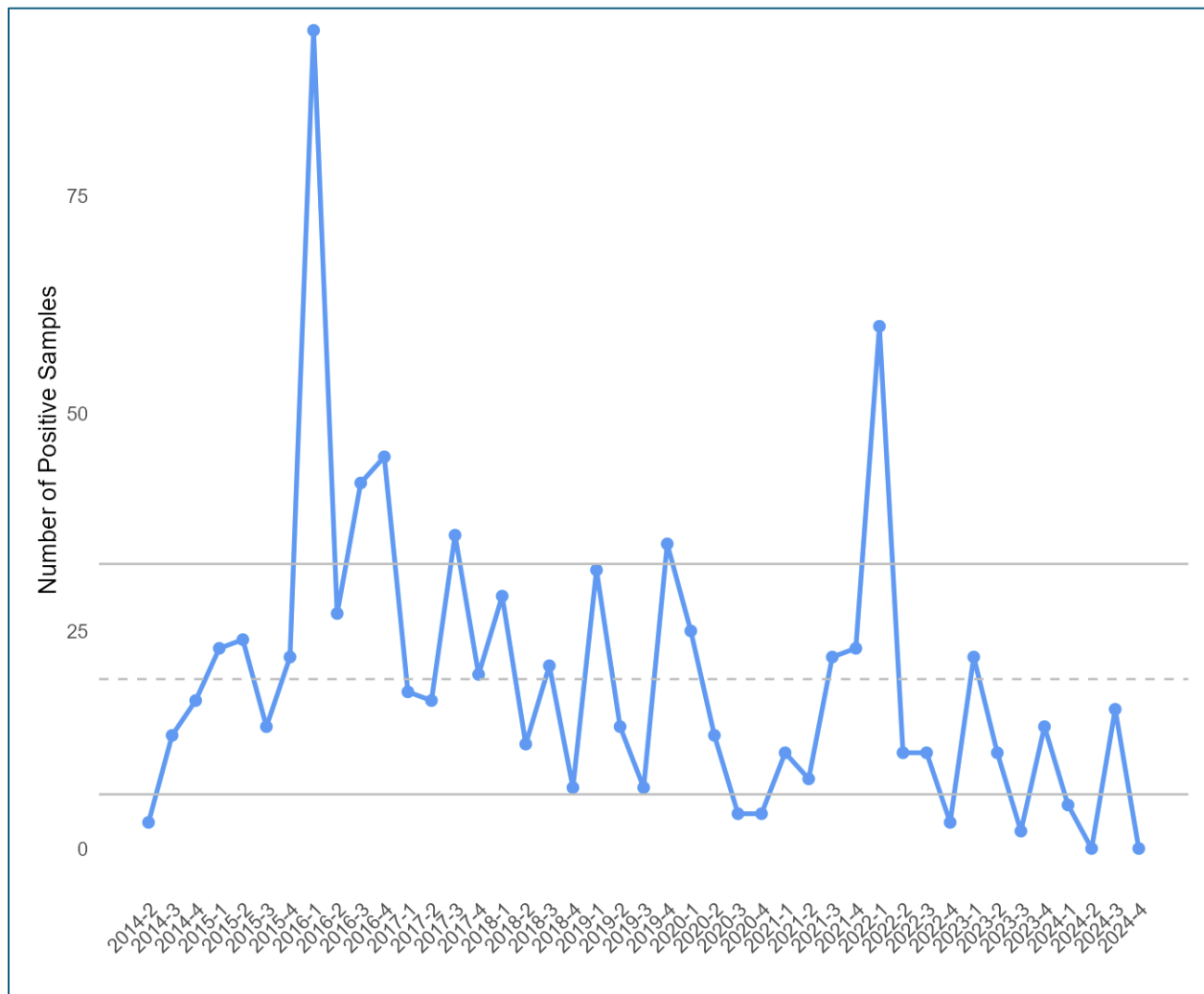
Other (Please specify) _____

Appendix 2. WeCAHN Use of SPC Control Charts and Decomposition in R

Neospora caninum is one of the targets routinely monitored by the WeCAHN beef network watching for temporal trends.

Below is a control chart of bovine *N. caninum* serology isolations from one of the western veterinary lab diagnostics. Each dot represents the detection of *N. caninum* sero-positive samples aggregated over a 3 month period. The center broken line represents the process mean or average, with the two solid horizontal lines being control limits, 3 standard deviations above and below the mean. Quarterly observations outside the control limits therefore lie more than 3 standard deviations from the average and their significance would be discussed at network meetings.

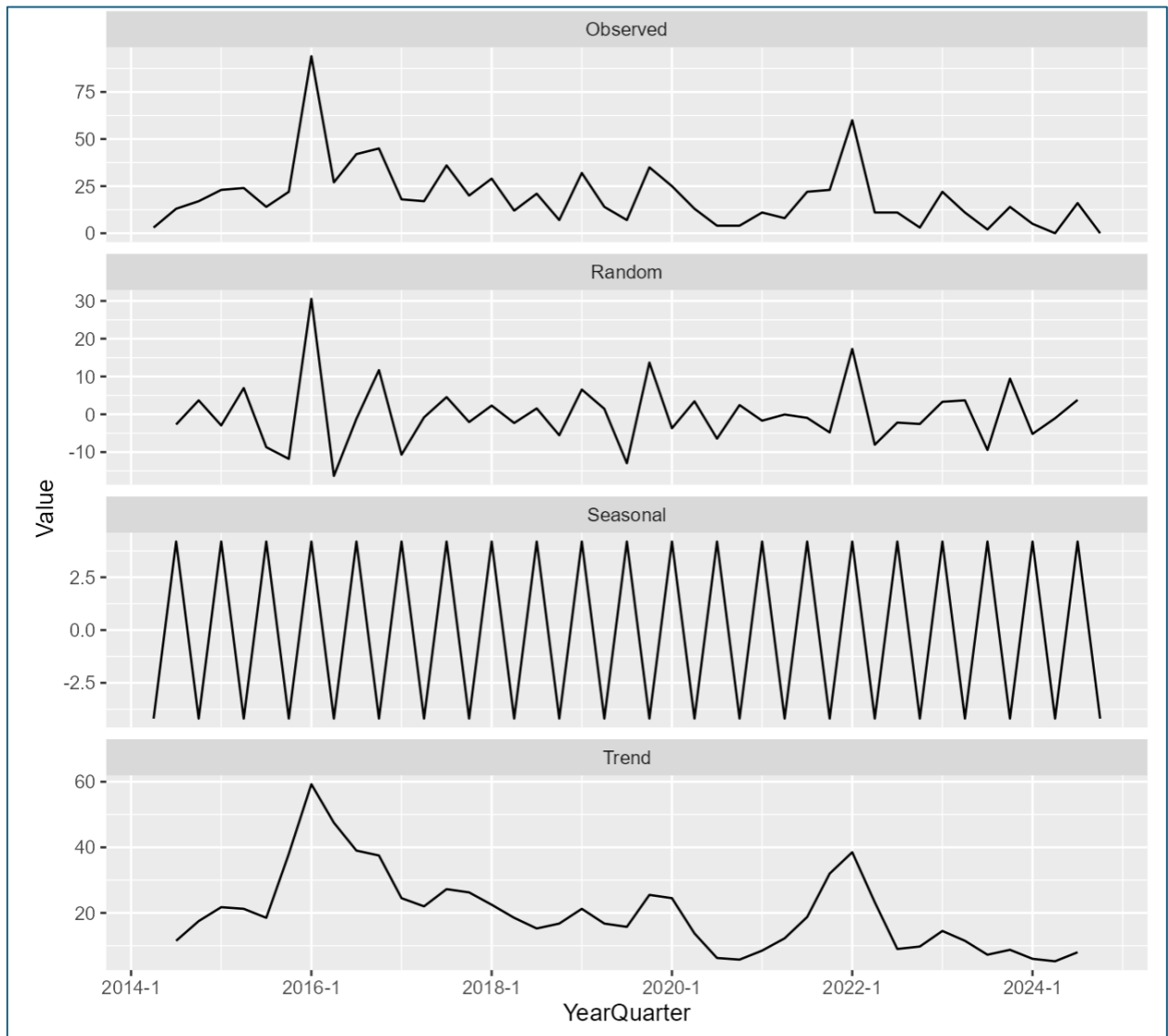
Neospora caninum seropositive samples April 2014 – December 2024



The graph of sero-positives above represents the sum of several different trends: underlying seasonal or longer term global trends, plus random variation.

The plot below presents the same plot of *N. caninum* sero-positives in the top row (observed), which is then decomposed into random variation, seasonal variation, and longer term global trend in the second, third and fourth rows respectively. It is important to note that the vertical scale varies across rows in this plot.

***Neospora caninum* seropositive samples April 2014 – December 2024, Decomposition in R**



Every calendar quarter, control charts and decomposition plots of prioritized outcomes are generated and included in data summaries which form the basis for network meeting discussions. These discussions include consideration of how the trend or outlier observation noted in the plots aligns with the experience of the laboratories, practitioners and producers, whether factors other than a true trend (such as change in incentives for testing) could influence the data, and whether a response is required.

Additional reading

National Health Service UK. A guide to creating and interpreting run and control charts: Turning Data into Information for Improvement. Retrieved from: <https://www.england.nhs.uk/improvement-hub/wp-content/uploads/sites/44/2017/11/A-guide-to-creating-and-interpreting-run-and-control-charts.pdf>

Mohammed MA, P Worthington P, Woodall WH. Plotting basic control charts: tutorial notes for healthcare practitioners. Qual Saf Health Care 2008;17:137–145. doi:10.1136/qshc.2004.012047

Coghlan A. Using R for Time Series Analysis. Retrieved from: <https://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/src/timeseries.html>

Appendix 3. WeCAHN blister data (2020-2024).

Year	Quarter	Network	No. practitioners reporting “No Blisters Seen”	No. practitioners reporting “No Blisters Seen or Discussed”	No. practitioners reporting “No blisters Seen but Blister Awareness Discussed”
2020	Q3	Beef	3	1	0
2020	Q4	Beef	1	3	0
2021	Q1	Beef	2	2	0
2021	Q1	Dairy	1	3	0
2021	Q2	Beef	2	2	0
2021	Q2	Dairy	1	3	0
2021	Q3	Beef	2	1	0
2021	Q3	Dairy	1	2	0
2021	Q3	Small ruminant	1	2	0
2021	Q4	Beef	1	3	0
2021	Q4	Dairy	1	2	0
2021	Q4	Small ruminant	0	2	1
2022	Q1	Beef	1	2	0
2022	Q1	Dairy	0	2*	0
2022	Q1	Small ruminant	1	3	0
2022	Q2	Beef	0	4	0
2022	Q2	Dairy	1	2	0
2022	Q2	Small ruminant	2	2	0
2022	Q3	Beef	0	4	0
2022	Q3	Dairy	2	2	0
2022	Q3	Small ruminants	1	2	0
2022	Q4	Beef	1	2	0
2022	Q4	Dairy	2	1	0
2022	Q4	Small ruminants	2	3	0
2023	Q1	Beef	0	4	0
2023	Q1	Dairy	1	2	0
2023	Q1	Small ruminants	0	4	0
2023	Q2	Beef	0	2	1

Year	Quarter	Network	No. practitioners reporting “No Blisters Seen”	No. practitioners reporting “No Blisters Seen or Discussed”	No. practitioners reporting “No blisters Seen but Blister Awareness Discussed”
2023	Q2	Dairy	1	1	1
2023	Q2	Small ruminants	2	1	0
2023	Q3	Beef	1	1	1
2023	Q3	Dairy	2	2	0
2023	Q3	Small ruminants	1	1	0
2023	Q4	Beef	0	4	0
2023	Q4	Dairy	2	2	0
2023	Q4	Small ruminants	2	2	0
2024	Q1	Beef	1	2	1
2024	Q1	Dairy	1	2	1
2024	Q1	Small ruminants	2	1	1
2024	Q2	Beef	0	4	1
2024	Q2	Dairy	1	1	1
2024	Q2	Small ruminants	3	1	0
2024	Q3	Beef	0	3	2
2024	Q3	Dairy	1	1	1
2024	Q3	Small ruminants	2	2	0
2024	Q4	Beef	1	4	0
2024	Q4	Dairy	0	3	0
2024	Q4	Small ruminants	2	2	0

*One practitioner reported blisters seen but this case was diagnosed as bacterial infection.