



A case-study farm using two commercial ELISA tests for Johne's Disease

Mary Flook¹, Isabelle Truyers², Selene Huntley³, Billy Steele¹, Matt Denwood¹ and Dominic Mellor¹

1. Boyd Orr Centre for Population and Ecosystem Health, School of Veterinary Medicine, University of Glasgow, Bearsden Road, G61 1QH m.flook.1@research.gla.ac.uk

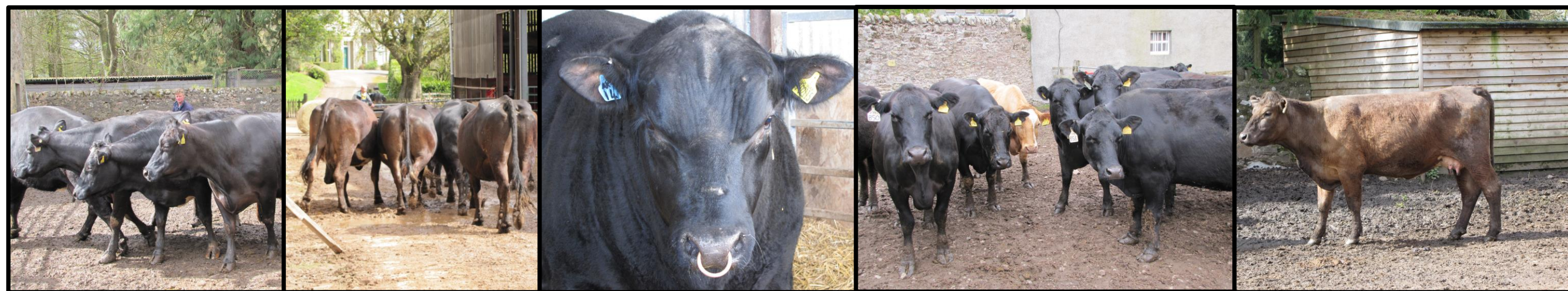
2. The Royal (Dick) School of Veterinary Studies, Farm Animal Practice, Easter Bush Campus, EH25 9RG

3. Epidemiology Research Unit, SRUC Drummondhill, Inverness, IV2 4JZ

Introduction

PARABAN is a multi-partner project focused on Knowledge Exchange about development and demonstration of 'best practice' for Johne's Disease control on 'Champion Farms'.

The serology for *Mycobacterium avium* ssp *paratuberculosis* (MAP) can be difficult to interpret and make use of in farm management decisions.



On one PARABAN farm, a whole-herd test was carried out simultaneously by two commercial laboratories. The results were then compared and considered with reference to historical data.

Methods



In April 2013 two blood samples were collected in serum tubes from each adult animal on the farm at the tail vein using a vacutainer.

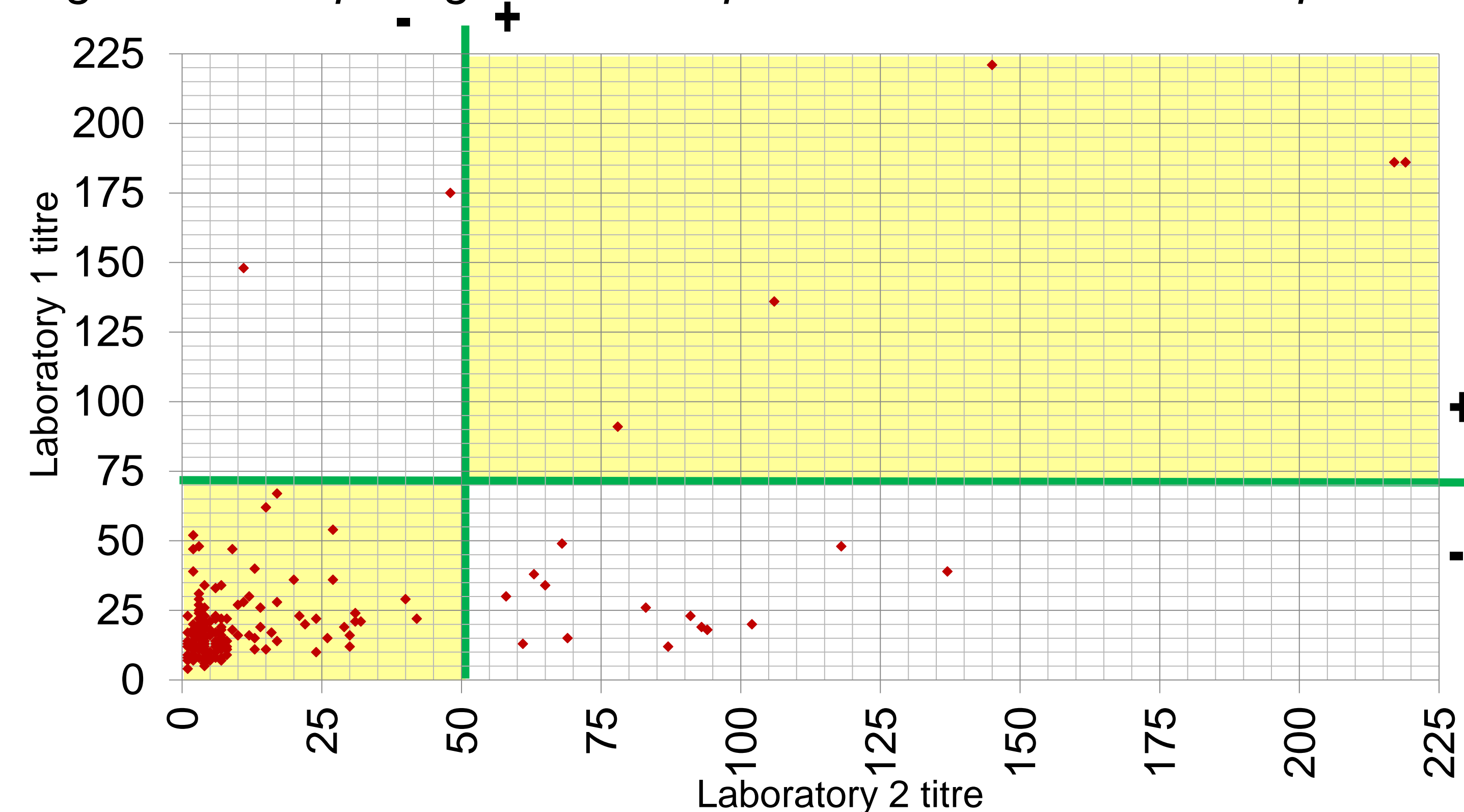
A sample from each animal was then submitted to both commercial laboratories for serum enzyme-linked immunosorbent assays (ELISAs).

Faecal samples were also collected and stored, then submitted for PCR testing if the ELISA produced a non-negative result.

The results were then compared and also added to a database containing historical test data from April 2009 onwards.

Results

Figure 1: Comparing the results provided for each cow in April 2013.



85% animals gave duplicate negative results.

3% animals gave duplicate positive results.

Of the remaining 12% animals one laboratory was more likely to classify an animal as positive than the other, McNemar's test $p=0.004$

Results

Figure 2: Historic test results from the twenty seven animals giving positive or suspicious results from either test in April 2013

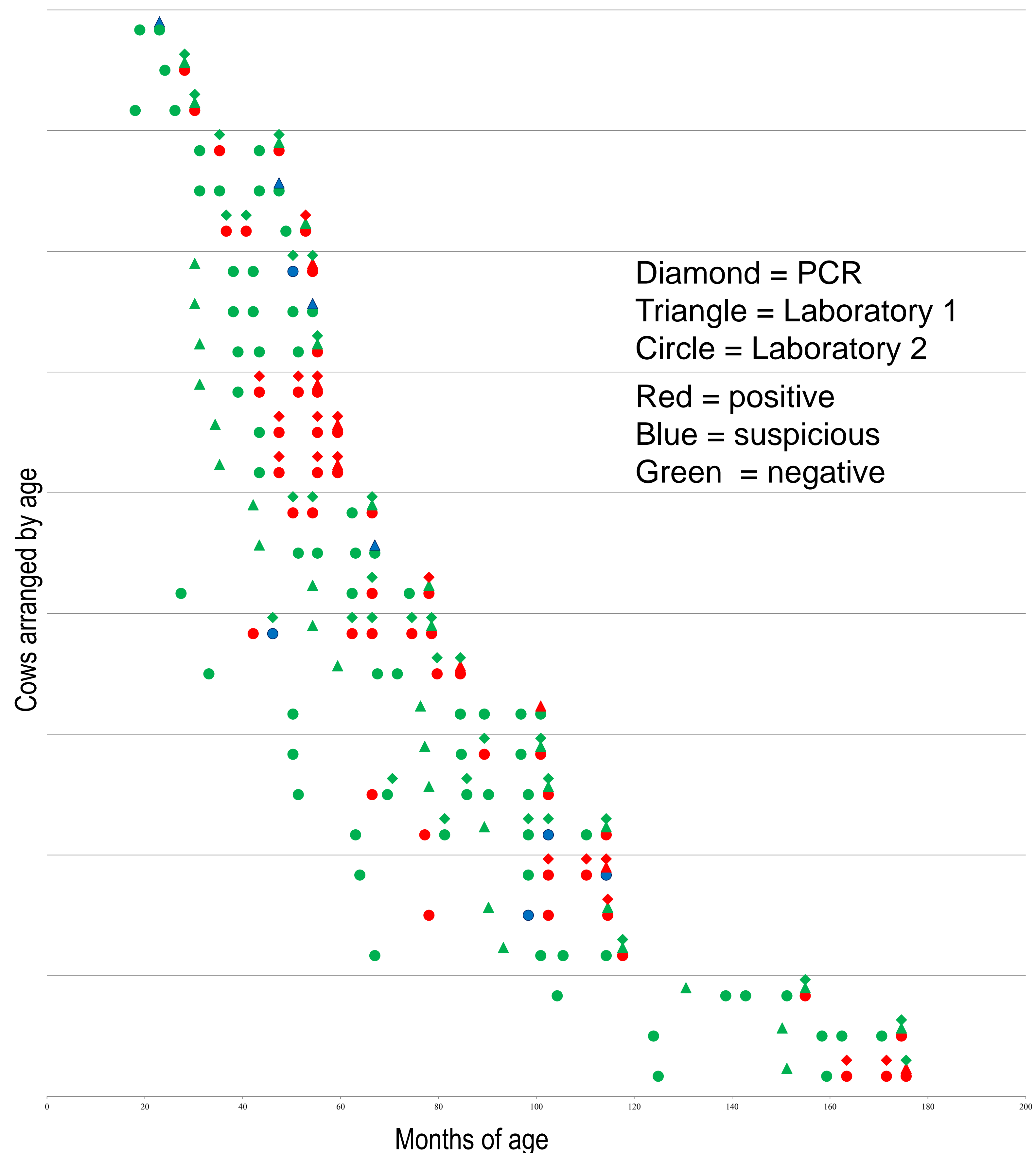


Figure 2 reveals that culling policy on this farm leads to retention of test positive animals for at least a year, even though slaughterhouse sampling has found histopathological evidence of disease in a test positive animal from this farm.

Whilst this may be considered suboptimal from a disease control point of view, it does provide the opportunity to study test status of individual animals on repeat testing.

There is considerable variability in the age at which animals first test positive, and in the consistency of their test status within, and to a greater extent between, tests thereafter.



Conclusion

Farms submitting samples to different laboratories for testing will increase the difficulty of interpreting the results due to the lack of consistency. A tailor-made plan, employing a consistent testing regimen, needs to be created for each herd to make best use of test results in a way that supports farm-specific disease control.

It is also important that larger-scale research investigations account for the variation between the results given by each test if multiple laboratories are used.

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