BVD Prevalence in Scottish Beef Suckler Herds

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Introduction

- Bovine viral diarrhoea (BVD) is a common and costly disease in beef suckler and dairy herds worldwide. BVD leads to fertility problems in cows, death in persistently infected (PI) animals and predisposes animals of all ages to infection with other agents such as respiratory and enteric pathogens. PI animals play an important role in the transmission of the infection.
- Valid diagnostics and effective disease control measures such as vaccination are available. Various European countries aim to eradicate BVD in their livestock. In Scotland, Shetland has successfully eradicated the disease.
- The aim of this Scottish Government funded study was to provide BVD prevalence estimates for the Scottish beef sector.

Methods

- Sample size calculation and establishment of stratified sampling frame by BioSS
- Collection of field data and sample processing by SAC Veterinary Services
- Data management and analysis by SAC Epidemiology Research Unit

Stratified random sample of 300 beef suckler herds drawn from Scottish Government census data

Stratification based on
- Geographical location (Northern Isles, Highlands, Northeast, Central, Southeast and Southwest Scotland)
- Farm size

Farm visits
- Blood samples taken from sentinel group of 7-10 youngstock (6-16 months of age) of each management group
- Questionnaire on farm management / animal health

- Serology using Svanovir™ BVDV antibody ELISA
- Assessment of farm level BVD history using an adapted interpretation protocol (table 1)

Analysis of lab results and questionnaire data

BVD serology result	Herd level interpretation
All samples negative	No evidence of recent exposure to BVD virus (BVDV)
1 to 5 samples positive	Evidence of recent exposure to BVDV with increasing likelihood of presence of a PI animal
6 or more samples positive	Evidence of recent exposure to BVDV with high likelihood of presence of a PI animal

Table 1: *Adapted interpretation protocol to assess BVD history on farm level*

Results

Selected farm characteristics of 300 beef study farms

Farm Enterprises	74% of farms ran additional sheep enterprise
Herd Size	The median herd size was 70 suckler cows, with an interquartile range of 41-117

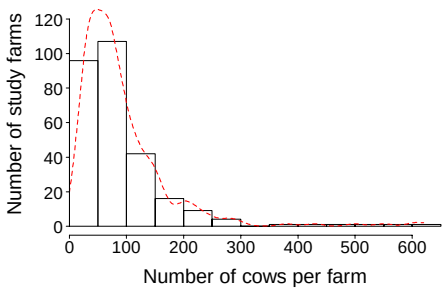

Figure 1: *Number of beef suckler cows per farm on 300 study farms (with density distribution)*

Selected farm characteristics of 300 beef study farms (continued)

Biosecurity	• On 37% of farms nose to nose contact with neighbouring cattle was prevented (double fencing) • 76% of farms quarantined purchased cattle
BVD specific measures	• 25% of farms sourced replacement stock from BVD free farms • 26% of farms implemented routine BVD vaccination
BVD awareness	• On 18% of farms, herd managers thought their cattle were affected by BVD • On 60% of farms, herd managers thought their cattle were not affected by BVD • On 22% of farms, herd managers were not aware of BVD or its adverse health effects

- On 185 farms (62%) the sentinel group was BVD seronegative, on the remaining 115 farms (38%) at least one animal was BVD seropositive (see figures 2 and 3 for more details)

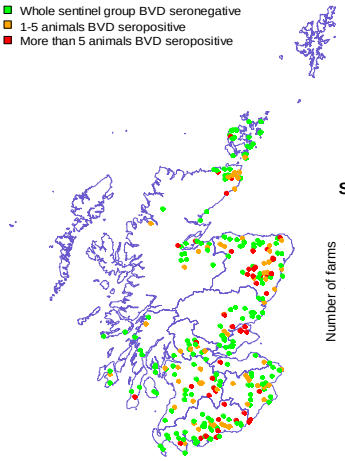

Figure 2: *BVD seroprevalence of 300 beef suckler herds in Scotland*
(to protect confidentiality the points shown cover a greater spatial area than study farm boundaries)

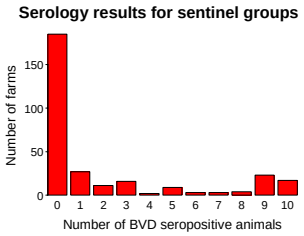

Figure 3: *Number of BVD seropositive animals in sentinel groups of 7-10 youngstock of 300 Scottish beef suckler herds*

Conclusions

- More than **half of the study herds** showed **no recent history of exposure to BVDV** but at the same time there was evidence that **PI animals were present on up to 17% of study farms.** Extrapolation of these findings for the whole of Scotland suggests that 62% (95%CI 55.5, 66.5%) of Scottish beef suckler herds have not been exposed to BVDV in the year prior to sampling.
- Almost a fifth of study farm managers explicitly identified BVD as a health threat to their livestock. Similarly, about a fifth of study farms is likely to host a PI animal. Further commitment is needed to **increase disease awareness** and facilitate the implementation of **BVD control measures**.

Acknowledgements

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