

Practical use of thoracic ultrasonography at feedlot arrival to identify high-risk BRD batches in suckler calves.

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INTRODUCTION

Assessment of lung health of suckler calves' batches at arrival is key for decision making. However, identification of high-risk BRD batches (30% prevalence) continues to be a major challenge as clinical signs are inaccurate (61.8% sensitivity and 62.8% specificity); being thoracic ultrasound (US) a possible solution (79,4% and 93,9%, respectively; Buczinski, 2015).

OBJECTIVE

The main objective of this study was to evaluate if the selection of a representative sample of animals for thoracic US scanning provides a reasonable accuracy to identify high-risk BRD batches.

MATERIALS AND METHODS

The number of calves to be sampled per batch was calculated using free epidemiological software (<https://epitools.ausvet.com.au>). An estimated prevalence of 30% (high-risk BRD) using a confidence level of 95% and an accepted error of 10% for calves with lung lesions equal or higher than 3, using Adams and Buczinski (2016) scoring system, was used. To check the practical use of the sampling table created, a simulation of this sampling procedure was done in 12 batches where thoracic US was assessed in 100% of the animals.

A randomization procedure (Excel, Microsoft Office) was used to select the different sampling groups, performing 10 random samples of each batch in order to measure the degree of success to predict whether the batch was a high-BRD risk one.

Thoracic Ultrasound of a sample of calves at arrival may be a useful tool to identify high-risk BRD batches where metaphylactic treatment is justified, for a more rational use of antibiotics in the veal industry.



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RESULTS

A database of 12 batches where thoracic US was performed in a 100% of calves at arrival identify 12 to 51% of calves with moderate to severe lung lesions (Figure 1 and 2).

At arrival (Table 1), most of the batches were high (>30% of calves with lung lesions = 42%) or medium risk (20-30% of calves with lung lesions = 50%) and only one (8%) was a low-risk batch (<20% of lung lesions).

The average results of the 10 randomizations were very similar to the real ones, and the estimated sensitivity was 96% for batches with at least a 30% of prevalence of disease.

The percentage of calves that need to be sampled ranged from 21% to 62% for a 300 or 50 suckler calves' batch, respectively (Table 2).

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FIGURE 1. Lung US scoring in the 100% of calves of the 12 batches at arrival.

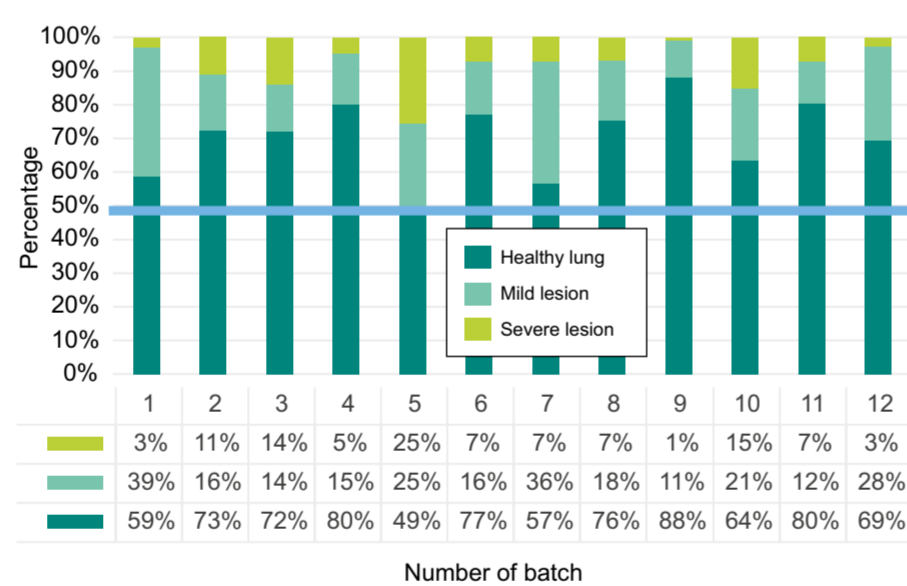


FIGURE 2. Lung US scoring system (Adams and Buczinski, 2016).

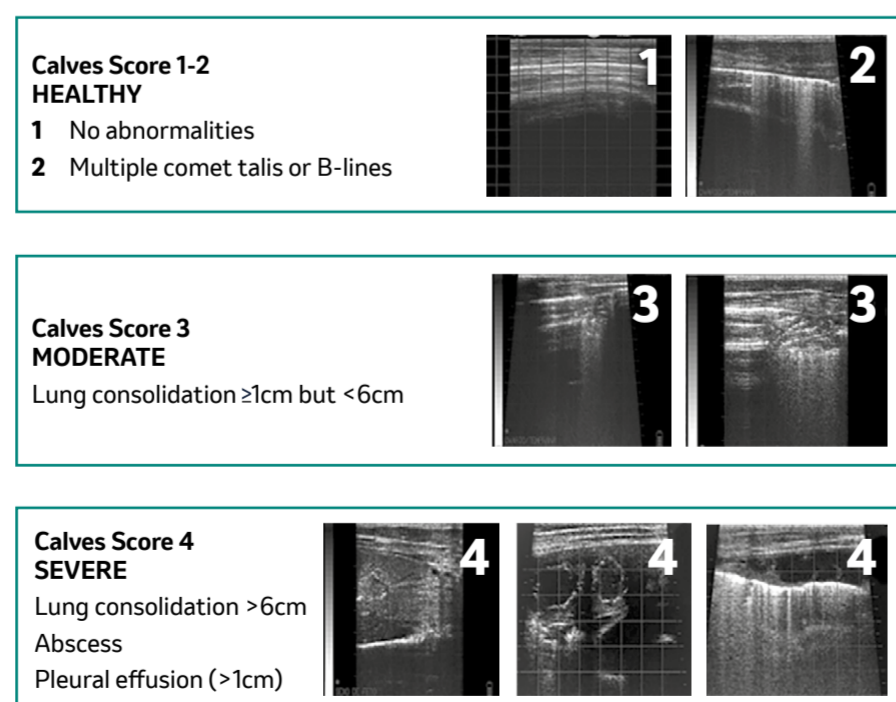


TABLE 1. BRD risk in the 12 batches at arrival.

Classification of Risk of BRD at Arrival	# of calves checked	# of Batches	% of Batches
High Risk (> 30% Lung Lesion)	548	5	42%
Medium Risk (20-30% Lung Lesion)	474	6	50%
Low Risk (< 20% Lung Lesion)	120	1	8%

TABLE 2. Percentage of calves sampled to predict batches with high BRD risk.

N° of calves at arrival	Random number of calves to do TUS at arrival	Arrival sampling %
50	31	62
75	39	52
100	45	45
125	50	40
150	53	35,3
175	56	32
200	58	29
225	60	26,7
250	61	24,4
275	63	23,9
300	64	21,3

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