

# Ante-mortem vs. post-mortem sampling procedure comparison for the detection of *Mycoplasma hyopneumoniae* by PCR and the influence of pooling on results.



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## INTRODUCTION

Ante-mortem detection of *Mycoplasma hyopneumoniae* (Mhp) can be difficult during the mid stages of an infection and in vaccinated populations.

Commonly used methods to determine herd status such as nasal swabs, oral fluids, and oropharyngeal swabs, have shown low sensitivity and antibody testing is inconclusive in vaccinated populations. A more sensitive ante-mortem procedure is needed.

The objective of this study was to compare ante-mortem tracheo-bronchial (TB) catheter and laryngeal swab sampling (LS) procedures to post-mortem bronchial swabbing (BS) (the reference standard) by individual and pooled samples for detection of Mhp by polymerase chain reaction (PCR).

## MATERIALS AND METHODS

Three groups of 35 non select gilts approximately 180 days of age were sampled from 3 separate gilt development units with known Mhp exposure beginning at 60 days of age.

Each gilt was tagged to be identified at marketing; TB, LS, and serum samples were collected from each gilt.

- TB samples were collected using a 60 cm catheter passed orally
- LS were taken with a smooth, long handled spoon and transposed onto a swab
- Post-mortem bronchial swabs were collected at the harvest facility
- All samples taken were frozen at -80 °C
- Samples were simultaneously submitted for Mhp PCR testing
- Blood samples were tested for Mhp antibodies by IDEXX ELISA
- Pools of 2, 3 and 5 samples were also tested for Mhp by PCR in submission order

A stochastic model was used to estimate the case detection rate with differing prevalence and sample size for LS.



## RESULTS

TB and LS had similar individual sensitivity (42.4% and 47.8%).

BS had a significantly lower Mhp PCR cycle quantity values (29.2) when compared to TB (32.1) and LS (33.2).

TB and LS had similar sensitivity results

- 2:1 (41.6% and 43.3%)
- 3:1 (64.1% and 53.8%)
- 5:1 (66.7% and 70.8%)

TB and LS were less sensitive than BS

- 2:1 (91.1%)
- 3:1 (93.5%)
- 5:1 (100%)

Serum samples were 95% percent ELISA positive.

**Table 1: Individual and pooling PCR results**

	Individual sensitivity	Avg Ct value	2:1 Pool sensitivity	3:1 Pool sensitivity	5:1 Pool sensitivity
Trach-Bron	42.4%	32.1	41.6%	64.1%	66.7%
Laryngeal	47.8%	33.2	43.3%	53.8%	70.8%
Bronchial	NA	29.2	91.1%	93.5%	100%

## CONCLUSION AND DISCUSSION

As expected, TB and LS were less sensitive compared to BS; however, these are currently the most sensitive ante-mortem sampling procedures available.

As ante-mortem samples, TB and LS allow for an increased sample size compared to post-mortem BS and an alternative to ELISAs for vaccinated animals.

Utilizing pooling and increasing sample size allows for a higher herd detection rate while pursuing the most economical approach.

LS were easier to perform and train in the field than TB and would be recommended by the authors for Mhp detection in the early and mid stages of an infection and in vaccinated populations.

