SERO Survey of Four 'Emerging' Cattle Diseases (Q-Fever, Neosporosis, Leptospirosis and Salmonellosis) in Northern-Belgian Dairy Herds Using Bulk-Milk Samples

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A survey was conducted to estimate the seroprevalence of 4 potentially 'emerging' infectious cattle diseases in Northern-Belgian dairy herds. Diseases included were Q-fever, Leptospirosis, Salmonellosis and finally Neosporosis. All infections primarily have a negative repercussion on fertility in cattle (e.g. through abortions), although other clinical appearances (e.g. mastitis, general illness and mortality etc.) are also possible. 

Coxiella, Leptospira and Salmonella moreover have a zoonotic importance. Therefore, accurate knowledge on the distribution of these infections is necessary.

The sampling frame consisted of all producing dairy cattle herds registered in the regional dairy control system database of Northern-Belgium. A total of 6,287 dairy herds represented the study population. A sample of 363 herds was calculated to be necessary to estimate a seroprevalence of 50% (assuming no prior knowledge) with a desired precision of 5% and a 95% confidence level. Herds were randomly chosen and the sample was stratified by province. For each selected herd, bulk-milk samples were collected on-farm (August 2008). Samples were investigated for antibodies against the different infections using four commercial indirect ELISAs. Provincial herd seroprevalence and some basic demographic data was analyzed with a Chi² test. Serostatus was plotted using ArcMAP 9.2.

The estimated between-herd seroprevalence was 74.3% (95%CI: 69.93-78.67) for Q-fever, 9.7% (95%CI: 6.74-12.66) for Leptospirosis, 25.4% (95%CI: 21.05-29.75) for Neosporosis and 3.3% (95%CI: 1.51-5.09) for Salmonellosis. No clear regional difference in distribution could be attributed.

This study provided some necessary data about the distribution of four 'emerging' cattle diseases in Northern-Belgian dairy herds through bulk-milk analysis. Compared with individual serum samples, the collection of bulk-milk samples, is a noninvasive, convenient and economical way of sampling. Therefore, bulk-milk sampling is becoming a routinely used tool and has several perspectives to offer in certification programs, provided it is used at regular testing intervals. Before this is possible, further analysis of the test characteristics and the relation of infection at the individual level is necessary.