The Economical Value of Mycobacterium avium subsp paratuberculosis Fecal Shedding and Culling Due to Clinical Johne's Disease on Minnesota Dairy Farms

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Introduction

Johne's disease (JD) is increasingly recognized as an important disease in dairy cattle in USA and throughout the world. The National Animal Health Monitoring System (NAHMS, 1996) has estimated that the annual cost to infected U.S. dairy operations is over $100 per cow in inventory, with higher costs of more than $200 per cow in inventory per year in herds with high infection levels. It is not only that these estimations were performed more than 10 years ago, they were based on serum ELISA test results, which is known to have less sensitivity than bacterial fecal culture and therefore can bias any prevalence estimation. The scientific literature provides limited information about the economical impact of Mycobacterium paratuberculosis (Map) fecal shedding in dairy cattle on lactation performance. Quantification of the monetary impact of Map fecal shedding or clinical JD on lactation performance is critical to participation by dairy cattle producers in JD control programs, because it enhances the relationship between stage of disease and economic loss. This information will allow dairy producers to make appropriate management decisions within their operations regarding implementation of control measures to decrease herd JD prevalence. The objective of this study was to evaluate the economical cost of Mycobacterium paratuberculosis (Map) fecal shedding prior to calving and of cows that were culled due to clinical Johne's disease (CCJD) during the subsequent lactation.

Materials and Methods

1,050 cows from 2 Minnesota dairies were enrolled where fecal samples were obtained during the close-up period. Milk production, clinical diseases (other than CCJD), and reproductive performance data were recorded for each cow. The model was built in an Excel ® spreadsheet where we took into consideration the following parameters: Loss of value across lifetime of a cow: average loss in value per lactation ($105), average slaughter value ($450), etc; Income over feed cost during the lactation (IOFC): milk price per pound ($0.14 milk price/lb), dry matter intake feed cost feed ($0.08/lb), cost to support maintenance in a milking cow/d ($1.76) and cost of feed/lb of milk/d above maintenance ($0.03); Reproduction managements costs: cost of an extra day open above a baseline of 85 days ($2.5), and cost of an insemination ($12). For diseases costs we considered only treatment, labor, and milk discard costs.

Results

Preliminary results: Among culled cows, mean culling loss of fecal negative and positive cows was $779 and $727 ($p>0.05$). The cost per cow in the herd, however, was $265 and $545 for fecal negative and positive cows, respectively. Among culled cows mean IOFC for negative and positive cows was $1200 and $840 ($p<0.01$) and among non-culled cow IOFC for fecal negative and positive cows was $1960 and $1680, respectively ($p<0.05$). Mean IOFC for CCJD was $1075. Cost of disease for culture negative and positive cows was not significantly different. Mean reproduction cost for fecal negative cows was significantly higher than for fecal positive cows ($145 vs. $43; $p<0.001$), probably because of early culling of culture positive cows.

Significance

The losses due to lower lactation performance and early culling from the herd should alarm dairy producers and motivate them to implement the appropriate control measures for the disease. Results of this study should be incorporated into educational programs that emphasize the importance of JD control and prevention