Calculation of parameters on the transmission of *Mycobacterium avium* subspecies *paratuberculosis* in a dairy herd going through a control program

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Abstract

A Johne's Disease control program, including stringent management practice and a test-and-cull program (whole herd fecal sampling sessions twice a year), was implemented on a medium sized Pennsylvania dairy farm that was suffering losses from clinical Johne's Disease. The data that emerged from the sampling control program, combined with birth and culling dates, lactation information and pedigrees, yielded an extensive 20 year period longitudinal dataset. The dataset was processed through SAS 9.1 for statistical analysis; herd level disease dynamics and dam daughter transmission parameters were calculated. After the implementation of the program in 1984, prevalence dropped dramatically from 60% to less than 20% in 1989. After a prevalence peak (25%) in 1991 due to improved test qualities, prevalence reached a plateau level of 10% in 1996-2000. After the implementation of the program 9,13% of the offspring from not infected dams and 21,88% of the offspring from infected dams became infected with *Map* (Chi-square=8,15; P<0,005). Also calves born close in time to a calving of an infected dam, and calves growing up with a future shedder were more likely to be infected compared to calves without this risk profile. It was concluded that after the implementation of a control program infections of susceptible calves by their own dams or infected dams calving close in time, became the most important cause of infection.