1125-92-451 **Suzanne Lenhart*** (lenhart@math.utk.edu), National Institute for Math and Bio Synthesis, Knoxville, TN 37996-3410, and **Kokum DeSilva** and **Shigetoshi Eda**. *Modeling environmental transmission of MAP infection.*

Johne's disease is a progressive bacterial disease in dairy cows, that reduces milk production in infected cows. We develop a system of ordinary differential equations to describe the dynamics of this disease in a dairy farm. This model includes the progression of the disease and the age structure of the cows. To investigate the effect of persistence of this bacteria on the farm on transmission, we include an environmental compartment and representing the pathogen input in an explicit way. The effect on the environmental transmission and the culling of high-shedding adults can be seen in the basic reproduction number and in the numerical simulations. Since culling usually only happens once a year, we included a novel feature in the simulations with a discrete action of removing high-shedding adults once a year. (Received September 02, 2016)