1065-92-240 **John E. Franke*** (franke@math.ncsu.edu), Department of Mathematics, Box 8205, North Carolina State University, Raleigh, NC 27695-8205, and **Abdul-Aziz Yakubu** (ayakubu@howard.edu), Department of Mathematics, Howard University, Washington, DC 20059.

Periodically Forced Discrete-Time SIS Epidemic Model With Disease Induced Mortality.

We use a periodically forced SIS epidemic model with disease induced mortality to study the combined effects of seasonal trends and death on the extinction and persistence of discretely reproducing populations. We introduce the epidemic threshold parameter, R0, for predicting disease dynamics in periodic environments. Typically, $R0 < 1$ implies disease extinction. However, in the presence of disease induced mortality, we extend the results of Franke and Yakubu to periodic environments and show that a small number of infectives can drive an otherwise persistence population with $R0 > 1$ to extinction. Furthermore, we obtain conditions for the persistence of the total population. In addition, we use the Beverton-Holt recruitment function to show that the infective population exhibits period-doubling bifurcations route to chaos where the disease-free susceptible population lives on a 2-cycle (non-chaotic) attractor. (Received September 14, 2010)