

B50: The Existence and Stability Analysis of the Equilibria in Lymphatic Filariasis Model

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Abstract

In this paper, a mathematical model describing the dynamics of Lymphatic Filariasis epidemics, which involves the interactions of two principal communities of Hosts (Humans) and vectors (mosquitoes) is presented. We found a threshold parameter \mathcal{R}_0 , known as the Basic Reproduction Number. This model has two equilibria, disease-free equilibrium and endemic equilibrium. By constructing suitable Lyapunov function, we show that the disease-free equilibrium is globally asymptotic stable whenever \mathcal{R}_0 is less than one and when it is greater than one, the endemic equilibrium is globally asymptotic stable.