ASYMPTOTIC BEHAVIOUR OF AN AGE AND INFECTION AGE STRUCTURED MODEL

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ABSTRACT

A mathematical model describing the propagation of fungal diseases in plants is proposed. The model takes into account both chronological age and age since infection. We investigate and fully characterize the large time behaviour of the solutions. Existence of a unique endemic stationary state is ensured by a threshold condition: $\mathcal{R}_0 > 1$. Then using Lyapounov arguments, we prove that if $\mathcal{R}_0 \leq 1$ the disease free stationary state is globally stable while when $\mathcal{R}_0 > 1$, the unique endemic stationary state is globally stable with respect to a suitable set of initial data.