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Dirichlet problem for a diffusive logistic population model with two delays

We investigate a diffusive logistic equation with non-zero boundary Dirichlet condition and two delays. We first exclude the existence of positive heterogeneous steady states, which implies the uniqueness of constant positive steady states. Then, we analyze the local stability and local Hopf bifurcation at the unique constant positive steady state. We show that multiple delays can induce multiple stability switches. Furthermore, we prove global stability of the positive steady state under certain conditions and obtain global Hopf bifurcation results. Numerical simulations have been carried out to illustrated the obtained theoretical results. This is a joint work with Xuejun Pan and Hongying Shu.