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Dynamics of the chemostat and classical predator-prey models with time delay

The dynamics of the classical predator-prey model and the predator-prey model based in the chemostat are studied and compared to see whether a discrete time delay in the conversion process can lead to sustained oscillatory behaviour, when no such behaviour is possible when delay is ignored. A surprising similarity between the possible attractors of the classical predator-prey model and the attractors of the Mackey-Glass equation are demonstrated. The analogous integro-differential equations models are also considered.