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Numerical solutions of some Reaction-Diffusion equations arising in population dynamics

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In this paper some mathematical models arising in population dynamics are considered and their numerical solutions are discussed. The mathematical models, considered are special type of ordinary differential equations (called reaction equations) or special type of partial differential equations (called reaction-diffusion equations). How to construct a finite difference scheme for the general form of reaction-diffusion systems is explained.

The main focus of this paper is simulation of single species model which is called Logistic equation and a two species model which is called Lotka Volterra equation with and without the property of special diffusion. Implicit finite difference schemes, C-programming language and the mathematical package MATHEMATICA are used to find numerical solutions for these models. Also no-flux boundary conditions and hypothetical initial data are used. As the result, different types of growth behaviors are observed for different parameter values of these models.

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