

1035-92-897

Azmy S Ackleh* (ackleh@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, **John Cleveland**, Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, and **Shuhua Hu**, Center for Research in Scientific Computation, North Carolina State University, Raleigh, NC 27695-8205. *A Selection-Mutation Model.*

A deterministic selection-mutation model is presented. For the pure selection case, the outcome is that of competitive exclusion, where the fittest subpopulation survives and the remaining subpopulations become extinct. For an irreducible selection-mutation matrix, it is shown that the deterministic model has a unique interior equilibrium which is globally stable. Thus, all subpopulations coexist. If the selection-mutation matrix is reducible, then competitive exclusion or coexistence are possible outcomes. A stochastic population model based on the deterministic one is then developed. Numerical results demonstrating the effect of stochasticity on the model behavior are discussed. (Received September 17, 2007)