

The behavior of logistic equation with allee effect in fuzzy environment: fuzzy differential equation approach

ABSTRACT

In this paper a fuzzy logistic equation with allee effect is introduced by considering some parameter as fuzzy numbers. Due to presence of the fuzzy number the corresponding differential equation in logistic equation model with allee effect becomes fuzzy differential equation. Considering generalized Hukuhara derivative approach the fuzzy logistic equation converted to system of two crisp differential equations. We obtain the conditions of stability criterion for different cases. Different numerical examples are given to support our work.

Keyword: Logistic equation; Allee effect; Fuzzy differential equation; Fuzzy stability analysis