A DISCRETE MODEL OF THREE SPECIES SYN-ECO-SYSTEM WITH UNLIMITED RESOURCES FOR THE SECOND AND THIRD SPECIES

B. HARI PRASAD

DEPARTMENT OF MATHEMATICS,
CHAITANYA DEGREE AND PG COLLEGE (AUTONOMOUS),
HANAMKONDA

ABSTRACT

The present paper deals with an investigation on a discrete model of three species syn eco-system. The system comprises of a commensal \(S_1\), two hosts \(S_2\) and \(S_3\) ie., \(S_2\) and \(S_3\) both benefit \(S_1\), without getting themselves effected either positively or adversely. Further \(S_2\) is a commensal of \(S_3\), \(S_3\) is a host of both \(S_1\), \(S_2\) and the second and third species have unlimited resources while the first has limited resources. The basic equations for this model constitute as three first order non-linear coupled ordinary difference equations. All possible equilibrium points are identified based on the model equations at two stages and criteria for their stability are discussed. Further the numerical solutions are computed for specific values of the various parameters and the initial conditions.

AMS Classification: 92D25, 92D40

KEYWORDS: Commensal, equilibrium state, host, stable, oscillatory.