

1037-92-37

Jemal Said Mohammed-Awel* (jmohammedawel@valdosta.edu), P.O.Box 5743, Valdosta, GA 31603, and **Kbenesh W Blayneh**. *Vector-Borne Diseases and Emergence of Pesticide Resistance*. Preliminary report.

The dynamics of a vector-borne disease is studied using a system of nonlinear difference equations. It is assumed that under some conditions, the disease transmitting agents develop resistance to pesticides which are applied as means of vector control. We studied the conditions under which it is possible to have a disease-free and resistance-free environment and also other circumstances which allow the disease to be eradicated while pesticide resistance emerges. By employing analytical and numerical techniques, we also study other possibilities such as the persistence of pesticide resistance along with endemic fixed point. The study is done taking two cases for the recruitment functions: geometric and Ricker type exponential nonlinearities. The model is tested with known vector-borne diseases and the development of resistance to commonly used pesticides. (Received January 09, 2008)