1077-92-2287   **Folashade B Agusto*** (`fbagusto@gmail.com`), Department of Mathematics and Statistics, Austin Peay State University, 601 College Street, Clarksville, TN 37044, **Sharon Bewick**, Nat'l Inst for Mathematical & Biological Syn., 1534 White Avenue, Knoxville, Knoxville,, TN 37996, and **Rana D Parshad**, Center for Turbulence Research, Stanford Univ, Stanford University, Stanford, CA 94309. *Mosquito Management in the face of Natural Selection.* Preliminary report.

The sterile insect technique (SIT) is an appealing method for managing mosquito populations while avoiding the environmental and social costs associated with more traditional control strategies like insecticide application. Success of SIT, however, hinges on sterile males being able to compete for females. As a result, heavy and/or continued use of SIT could potentially diminish its efficacy if prolonged treatments result in selection for female preference against sterile males. In this paper we extend a general differential equation model of mosquito dynamics to consider the role of female choosiness in determining the long-term usefulness of SIT as a management option. We then apply optimal control theory to our model and show how natural selection for female choosiness fundamentally alters management strategies. (Received September 22, 2011)