1077-92-948   **Jeong-Mi Yoon*** (`yoonj@uhd.edu`), One Main Street, Houston, TX 77002, **Volodymyr Hrynkiv** (`hrynkivV@uhd.edu`), One Main Street, Houston, TX 77002, **Lisa Morano** (`moranoL@uhd.edu`), One Main Street, Houston, TX 77002, **Sara Wilder** (`sarawilder08@yahoo.com`), One Main Street, Houston, TX 77002, **Anh Tuan Nguyen** (`nguyena48@gator.uhd.edu`), One Main Street, Houston, TX 77002, and **Forrest Michell** (`FMitchel@ag.tamu.edu`), Texas Agricultural Experiment Station, 1229 North US Highway 281, Stephenville, TX 76401. *Parameter Optimization of Glassy-winged Sharpshooter Population Model.* Preliminary report.

Pierce's Disease (PD) is a bacterial disease of grapevines, which is transmitted by xylem feeding insects. To understand the role of insect ecology on PD epidemiology, we analyze Dr. Forrest Mitchell's (Texas A & M University) insect data. Among the insects monitored, Glassy-winged sharpshooter (GWSS) is the most abundant insect. The first goal of our research is modeling the temporal change of GWSS population in the central Texas. This research has been funded by a NSF grant: The Interdisciplinary Training for Undergraduates in Biology and Mathematical Sciences. We develop a time delayed logistic model with harvesting and immigration terms which could include the environmental factors such as insecticide use, information campaigns and weeds cleaning, etc. The experimental data shows periodically decaying behaviors. To obtain a local minimum error between the experimental and theoretical values we work on the optimazatin algorithm using software, MATLAB based on the least square method. In the recent model we use a linear harvesting and a constant immigration. In the next step, we will apply various types of harvesting and immigration terms to improve the fitting. I believe that this research will help to predict future PD risk and determine the optimal management protocols. (Received September 14, 2011)