2014 LICH STUDENT POSTER ABSTRACTS

(1) Trunk injection of systemic insecticides to control stem and leaf gall wasps, *Josephiella* species (Agaonidae, Hymenoptera) on *Ficus microcarpa* in Hawai’i. Bishnu Bhandari* and Zhiqiang Cheng. Department of Plant and Environmental Protection Sciences, University of Hawai’i at Mānoa

Chinese Banyan, *Ficus microcarpa* (Moraceae) is a widespread landscape tree in tropical regions of the world, including Hawai’i. These trees are infested severely with two host-specific insect pests, Chinese banyan leaf gall wasp, *Josephiella microcarpae* and the stem gall wasp, *Josephiella* sp. (currently being described) (Hymenoptera: Chalcidoidea: Agaonidae). They cause gall formation on young leaves and shoots, premature leaf drop, new shoot death, poor tree health and eventually tree death. This research evaluated the efficacy and longevity of the systemic insecticides, imidacloprid and emamectin benzoate, with or without phosphorous acid (H₃PO₄) for controlling these two fig wasps. Forty-five trees at the University of Hawai’i at Mānoa Campus were included, with nine trees allocated for each pesticide treatment and the control. Pesticide treatments were delivered through tree trunk injection. Starting from three months after treatment application, new shoots and leaves from each tree were collected and evaluated monthly. Results from the first year showed that, although both of the systemic insecticides, imidacloprid and emamectin benzoate, had some effect against leaf and stem gall wasps, emamectin benzoate was more effective. Findings did not show additional benefit of phosphorous acid amendment against both wasp species. Continued monitoring will be done for another year.

(2) Polyploid initiation in Hawai’i tree species. David Lingenfelser* and Ken Leonhardt. Department of Tropical Plant and Soil Sciences, University of Hawai’i at Mānoa

In Hawai’i, many plant species commonly used by landscapers yield abundant large fruits that can injure people/property, attract rats and other pests, create an unsightly appearance and potentially become invasive. Sterile forms of these landscaping plants would eliminate their high-maintenance and invasive characteristics. Polyploid forms of plants, particularly triploids, are often sterile. Autotetraploids also frequently display some degree of sterility. In addition, polyploids typically exhibit unique physical
characteristics such as thicker leaves, larger organs, and higher levels of chemical compounds. A project was initiated to create tetraploid forms of six commonly utilized species of trees: *Thespesia populnea, Schefflera actinophylla, Heritiera littoralis, Jatropha curcas, Plumeria stenopetala*, and *Erythrina sandwicensis*. Various concentrations of the dinitroaniline herbicide, oryzalin (ranging from 0.01% to 0.5%) were applied to seedling meristems *in vivo*. Following a period of vegetative growth, the seedlings were tested for higher ploidy levels. Multiple autotetraploids and mixoploids have been identified in all species using guard cell measurements and flow cytometry.