

Developing integrated pest management for durable eucalypt insect defoliators in dryland New Zealand

Huimin Lin *¹, Tara Murray ¹

¹ New Zealand School of Forestry, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand

Eligible for student prize

A durable eucalypt industry, which produces naturally durable wood products to replace chemical-treated pine wood products, is being developed in New Zealand. Eucalypt plantations in New Zealand are occupied by a number of exotic insect defoliators and have ongoing risks of new pest incursions. Integrated pest management (IPM) is vital to reduce risks of insect outbreaks and minimise pesticide use that has negative impacts on the environment. A three-year study on durable eucalypt insect defoliators in a dryland plantation has been conducted to, 1) investigate the population dynamics of key defoliators and model the phenology of the most important defoliator *Paropsis charybdis*, 2) assess the impact of insect defoliation on growth of *E. bosistoana*, and 3) detect the between and within eucalypt species variation in insect resistance and tolerance. Results show that 1) *P. charybdis* had one generation in the *E. bosistoana* plantation, and the degree-day model was capable to predict voltinism with appropriate assumptions, 2) moderate defoliation in spring did not significantly affect growth of *E. bosistoana*, and 3) there was significant variation in insect attack between and within durable eucalypt species. These findings can be integrated into an IPM strategy by facilitating effective pest monitoring and determining control thresholds to minimise pesticide use. Selecting insect resistant or tolerant species or families for future breeding will increase productivity by reducing insect outbreaks.

