**Effects of a neonicotinoid insecticide on native and invasive ants**

Rafael Barbieri [*1], Alexander Miller [1], Ken Ryan [1], Philip Lester [1]

[1] School of Biological Sciences, Victoria University of Wellington, PO Box 600, Wellington

Eligible for student prize

Sublethal doses of neonicotinoid insecticides have been reported to negatively affect insect populations. The native Southern ant *Monomorium antarcticum* co-occurs with and displays agonistic reactions towards the invasive Argentine ant *Linepithema humile*. Thus, neonicotinoids may diminish biotic resistance by native species towards invaders. We tested the hypothesis that sublethal doses of neonicotinoids facilitate the invasion of Argentine ants by impairing cognition, agonistic behaviour and fitness of the native Southern ant. Ant walking speed and the probability to find food sources were reduced as consequence of exposure to neonicotinoids in both species. Having sublethal contamination with neonicotinoids did not reduce survival probability of the native Southern ant, but increased survival probability of Argentine ants during aggressive interactions. There was no significant effect of neonicotinoids on final colony population density of both species or egg production of the Southern ant. However, contaminated colonies of Argentine ants had significantly diminished egg production to similar amounts to those observed by the Southern ant. The effects of sublethal doses of neonicotinoids on the native Southern ant have the potential to facilitate the invasion of Argentine ants. The reckless use of neonicotinoids in urban and agricultural areas could potentially alter the agonistic responses displayed by insects and act as a human mediated driver of invasion.