Palatability of carrot surface-coated with repellents, or dyed blue or green to a terrestrial macroinvertebrate

Dai K.J. Morgan[1], B. Kay Clapperton[2], Jenny A. Gillanders[1], Pricilla M. Wehi[3]
[1]Northtec, [2]56 Margaret Avenue, Havelock North, [3]Landcare Research

Birds are not only at risk of being poisoned during pest control operations through eating toxic baits, but potentially from preying on invertebrates that have, themselves, consumed the toxic baits. Blue baits coated with anthraquinone and/or pennyroyal oil repellents have been shown to be avoided by some species of bird compared with baits coated with green dye and cinnamon oil (which are commonly applied to baits in New Zealand to repel birds); however, data on invertebrate avoidance patterns have not been explored. We measured the consumption rates of carrot that were surface-coated with three repellent formulations: anthraquinone (0.8 g/kg); anthraquinone (0.8 g/kg) and pennyroyal oil (0.5 g/kg); or cinnamon oil (0.15 g/kg) by captive Auckland tree weta (Hemideina thoracica) compared with carrot surface-coated with water over four nights. We also tested whether Auckland tree weta preferred carrot dyed either blue or green over two nights in a second experiment. We found no difference in the consumption of carrot coated with any of the repellent formulations, which were all significantly lower than carrot coated with water from the third night of the experiment. In addition, consumption of blue-dyed carrot was lower than that of green-dyed carrot on the first night of the experiment but there was no difference on the second night. We suggest that wildlife managers consider surface-coating baits with anthraquinone or anthraquinone and pennyroyal oil, and dying them blue in pest control operations because of the positive impact it could have on reducing non-target avian and invertebrate by-catch while not increasing the risk of secondary poisoning to insectivorous species