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Olfactory Responses of Adult *Cryptolaemus montrouzieri* (Coleoptera: Coccinellidae) to the Host, *Paracoccus marginatus* and Host-Associated Plant Odours: Evidence from Y-Tube Olfactometer TrialsGunawardana, D.U.M.^{1*}, Hemachandra, K.S.², Sirisena, U.G.A.I.³¹ Postgraduate Institute of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka² Department of Agricultural Biology, University of Peradeniya, Peradeniya, Sri Lanka³ Department of Plant Sciences, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka
[*udanaatmpub@gmail.com](mailto:udanaatmpub@gmail.com)**Abstract**

Insect predators have shown potential in suppressing populations of certain pest species when used in augmentative biological control programs, owing to their efficient host-location abilities. *Cryptolaemus montrouzieri*, a predator of papaya mealybug (PMB) *Paracoccus marginatus*, was examined with the objective of assessing the behavioural responses of the predator to a variety of odour cues associated with PMB and papaya plants. Papaya plant odour, unparasitized mealybugs, complex interactions between plants and mealybugs, the presence or absence of parasitized prey, and the impact of conspecific competitors were included in the spectrum. A dual-choice Y-tube olfactometer was employed as the experimental apparatus. *C. montrouzieri* adults were significantly attracted to clean airflow compared to no airflow. Both sexes exhibited significant attraction to PMB-infested papaya leaves compared to uninfested papaya leaves, and a similar observation was made when comparing PMB-infested papaya leaves and clean air (control) ($p < 0.05$). Adults did not exhibit a significant preference for newly infested and mature, previously infested papaya leaves. Adult males exhibited a significant preference for PMB-infested papaya leaves compared to parasitized mealybug-infested leaves ($\chi^2 = 7.73$, $p < 0.005$); however, this trend was not observed in adult females. *C. montrouzieri* did not exhibit a significant preference towards conspecific competitors containing odour sources. Additionally, adult females exhibited a stronger preference for PMB-infested papaya leaves compared to dried papaya leaves containing older PMB infestations ($\chi^2 = 4.09$, $p = 0.043$). A significantly higher proportion of males (78.6%) exhibited a preference for PMB-infested papaya leaves than females (66.6%) ($t = -2.65$, $p = 0.038$). However, a significantly lower proportion of males (31.7%) displayed a preference for parasitized PMB-infested papaya leaves than females (41.7%) ($t = 2.78$, $p = 0.032$). The results of this study expand the understanding of the responses of *Cryptolaemus montrouzieri* to the host, papaya mealybug, and related plant odours.

Keywords: Coccinellids, *Cryptolaemus montrouzieri*, Host odours, *Paracoccus marginatus*, Y-tube olfactometer.