

ECO-FRIENDLY ATTRACTANTS FOR TRAPPING *Bactrocera dorsalis* (DIPTERA: TEPHRITIDAE): EFFICIENCY OF CLOVE ESSENTIAL OIL

E.P.H. Wijerathne¹, N.D.A.D. Wijegunawardana², W.C.P. Egodawatta¹ and L.K.W. Wijayaratne¹

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Department of Bioprocess Technology, Faculty of Technology, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

The fruit fly (*Bactrocera dorsalis*) poses a significant challenge in horticultural crop cultivation causing substantial economic losses. The synthetic attractant methyl eugenol is widely used for fruit fly management; however, its high volatility and associated health risks necessitate safer, eco-friendly alternatives. Certain botanicals can attract insects, but such information on trapping fruit flies is limited. This study investigated the potential of clove (*Syzygium aromaticum*) essential oil as a natural attractant for *B. dorsalis*. The essential oil was extracted from clove leaves through hydrodistillation. Three treatments were tested: (i) extracted clove essential oil (EO), (ii) commercially-available clove oil (CO), and (iii) methyl eugenol (ME) as the control. From each treatment, 25 traps, each baited with 1 mL of attractant, were installed in a guava cultivation in *Galgamuwa* following a randomized complete block design. The traps were spaced 15 m apart at a height of 1.5 m, and fruit fly counts were recorded every 72 hours for one month. The data were analyzed using repeated Poisson regression. The results revealed that EO was more effective ($p < 0.05$) in attracting fruit flies than either CO or ME control. The EO treatment consistently achieved higher average fruit fly counts, suggesting that EO could serve as an eco-friendly alternative to ME without compromising trapping effectiveness. By contrast, CO did not show an improvement over the ME control, indicating limited effectiveness compared to EO. In conclusion, plant-derived essential clove oil demonstrated its potential as a natural attractant for fruit fly management in cultivated fruits, potentially outperforming both commercially-available clove oil and methyl eugenol. However, a cost-benefit analysis should be undertaken to find out the economic feasibility for using of clove essential oil as a repellent for fruit flies.

Keywords: Clove essential oil, Hydrodistillation, Methyl eugenol, Synthetic attractant