

DESIGN, DEVELOPMENT AND EVALUATION OF TRAPS FOR FRUIT FLIES (DIPTERA: TEPHRITIDAE) IN THE DRY ZONE OF SRI LANKA

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Damage by fruit flies (*Bactrocera dorsalis*) poses a formidable threat to fruit cultivation in Sri Lanka particularly in the dry zone. Synthetic pheromone traps containing methyl eugenol have been used to manage fruit flies. However, the rapid evaporation of pheromones under high temperatures in the dry zone and the increased cost of traps are significant drawbacks. This study aimed to design traps using locally-available materials to facilitate the slow release of pheromone and evaluate their efficiency for trapping fruit flies. The traps were constructed by using readily available materials: a transparent plastic bottle (500 mL), PVC pipe (diameter 2.5 cm), plastic lid (diameter 5.5 cm) and a plastic straw (diameter 5 mm). Four treatments were tested based on the material inside the straw for absorbance and retention of pheromone methyl eugenol: (1) plastic straw infused with tea residue, (2) plastic straw infused with elephant dung, (3) paper straw filled with cotton wool and (4) the standard synthetic pheromone trap as the control. Following a completely randomized design, 60 traps were employed with 15 traps per treatment. The traps were installed in a guava cultivation in *Galgamuwa*. The number of insects trapped in each trap was counted at 72-hour intervals for 45 days. Trapped insect counts were analyzed using a repeated Poisson regression model. The results indicated that the tea-residue-filled straw traps were the most effective for trapping fruit flies and had the longest period of efficacy ($p < 0.05$). The least effective traps were those using paper straws filled with cotton wool. This study provided innovative methods of trapping fruit flies more efficiently and for an extended time period using materials abundantly available in the local environment. These methods offer a viable alternative for monitoring and managing these pests in fruit cultivation in the dry zone of Sri Lanka.

Keywords: Disposable plastic bottle, Infused tea residue, Low-cost trap, Methyl eugenol, Rapid evaporation