Use of Host Volatile, Pentanol as the Pheromone Synergist for Management of Red Palm Weevil

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Red palm weevil (RPW) *Rhynchophorus ferrugineus* Olivier (Coleoptera: Curculionidae) is a devastating pest of coconut and other palms species in Sri Lanka and other countries. Being the conceal habitat of the pest inside the palm trunk, management of the pest is difficult and prevention of the pest damage is more important. Pheromone trap is one strategy popularizing among farmers as green pest management method. Increasing the efficiency of aggregation pheromone is a challenge. Use of responsive host volatiles for pest management is a recent trend in the field of pest management. Both electrophysiological and behavioral studies were carried out to select and formulate synergistic semiochemical formulation from six host volatiles and RPW aggregation pheromone. Electroantennogramme (EAG) test results indicated, the highest EAG response (-7.476 ± 0.713, -8.310 ± 0.332 mV) to pentanol from both female and male respectively. It is always higher than RPW aggregation pheromone (-5.402 ± 0.562, -4.310 ± 0.599 mV) and other tested five host volatiles. Behavioral studies indicated that, pentanol is an attractive volatile and 82 ± 3.74% attracts towards the pentanol applied coconut fronds than hexane applied fronds. Further, dose response of EAG, EAG and behavior studies indicated that, pentanol: pheromone at 1:1 mixture gave the highest response and attraction for both female and male (-6.49 ± 2.134, -10.376 ± 5.35 mV) among the tested mixtures of 1:1, 1:2, 1:3, 1:4, 1:5, pheromone alone and pentanol alone. Therefore, pentanol: pheromone at 1:1 formulation can be recommended for use as a semiochemical lure for RPW mass trapping after conducting mass trapping experiments in the field.

Keywords: Electroantennogramme, Host plant volatiles, Mass trapping, Pheromone synergist, Red palm weevil