

MATING DISRUPTION OF *EPHESTIA CAUTELLA* IN THE PRESENCE OF SYNTHETIC SEX PHEROMONE Z, E (9, 12) TETRADECADIENYL ACETATE

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In Sri Lanka, insects cause 80% of storage losses of grains. Tropical warehouse moth *Ephesia cautella*, a major granivorous pest, is difficult to control using currently available insecticides. Population management using its sex pheromone (Z, E) 9, 12 tetradecadienyl acetate (ZETA) emitted by the female moth is possible but lacks certain information. Objectives of this study were to determine the effect of pheromone concentration, population size and air flow on mating disruption. The experiment was conducted following a three-factor factorial, completely randomized design. A wind tunnel cubicle (2.5 m × 2.5 m × 2.5 m) was constructed and covered by polythene. The pheromone diluted in hexane was placed at the middle of the cubicle. The pheromone concentration (0.05, 0.1, 1.0 or 4.5 mg), population size (10, 20 or 30 individuals) and air flow (presence/absence) were changed. The control experiments used hexane instead of the pheromone. *Ephesia cautella* pupae were placed individually in separate vials. The male and female adult moths emerged were introduced into the wind tunnel, allowed 24 hrs for mating, recaptured and the female adults were dissected to determine the presence of spermatophore indicative of mating. Binary logistic regression analysis was performed and the differences in the pheromone concentrations, insect population sizes and presence/absence of air flow were determined using contrast option. The mating was significantly disrupted ($p < 0.05$) at all the pheromone concentrations tested compared to the hexane control. The highest mating disruption (75%) was at 4.5 mg with the presence of air flow. Combination of 10 males and 10 females (population of 20) achieved the highest mating disruption. Presence of air flow significantly increased ($p < 0.05$) the mating disruption at 1 and 4.5 mg of the synthetic pheromone indicating that the air flow helped to disperse the pheromone. This study reveals that the mating disruption using ZETA is an effective method for managing *E. cautella* population size.

Keywords: *Ephesia cautella*, Mating disruption, Spermatophore, Wind tunnel, ZETA