

# ADVANCES IN SEMIOCHEMICAL MEDIATED TECHNOLOGIES AGAINST RED PALM WEEVIL

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## **Abstract**

The Red Palm Weevil (RPW) *Rhynchophorus ferrugineus* male produced aggregation pheromone 'ferrugineol' (4-methyl-5-nonanol) was synthesized during the early 1990s and since then has been widely used in the RPW management strategy in both surveillance (monitoring) and mass trapping programs. A 65% increase in capture occurs when a related ketone (4-methyl-5-nonanone) is included in the lure. Synergism between pheromone and fermenting food bait is essential to enhance weevil captures. Trapping protocols with respect to trap design, trap density in the field, periodic trap servicing (change of food bait and water), pheromone lure etc. impacts the efficiency of the trapping program. Furthermore, RPW pheromone traps capture only part of the weevil population in the field. However, trapping when used in conjunction with other IPM tactics is often sufficient to achieve significant levels of RPW control.

Recently dome shaped black colored traps have been found to record higher weevil captures, as compared to the traditional bucket trap. Synthetic kairomone (ethyl acetate, ethyl alcohol, ethyl propionate) when added as a component to the RPW food baited pheromone trap enhances weevil captures. In area-wide RPW-IPM programs, systematic collection and processing of weevil capture data is essential and could be realized by geo-referencing the traps and use of the Radio Frequency Identification (RFID). Weevil captures in RPW pheromone traps provide a valuable data to decision makers to assess and validate the RPW control program.

In severely infested plantations a higher trap density of more than one per hectare could substantially reduce weevil population during peak adult activity. However, periodic replacement of the food bait and water is a major constraint in increasing the number of pheromone traps in the field. Service-less trapping options based on 'attract and kill' and use of a dry trap based on 'electro-magnetic radiation' have been found promising in Saudi Arabia and India as an additional component of the RPW-IPM mass trapping program. Incorporating RPW repellents (methyl salicylate,  $\alpha$ -pinene, 1-octen-3-ol & geraniol) in a 'push-pull' strategy with pheromone trapping for palm protection needs to be explored.

This presentation gives an overview of advances in semiochemical mediated technologies against RPW.