

DETERMINATION OF THE RELEASE RATE OF THE RED PALM WEEVIL (RPW) PHEROMONE FROM LURES AS A MODEL FOR QUANTITATIVE GC ANALYSIS OF SECONDARY ALCOHOLS

A. ZADA¹, E. DUNKELBLUM¹, M. HAREL¹, S. RENEH¹, J. NAKACHE² and V. SOROKER¹

¹Institute of Plant Protection, The Volcani Center, Bet-Dagan, 50250, Israel.

²Eden Experiment Station, Bet Shean, Israel.

The *Rhynchophorus ferrugineus*, (Coleoptera, Curculionidae) (RPW) is a major pest of various palm species, including dates. RPW are usually cryptic and develop within the tree trunk. Infested trees eventually die and collapse causing total loss of the crops. One of the main methods practiced to control adult weevils in date and coconut plantations is monitoring and mass trapping with lures baited with the aggregation pheromone. The pheromone secreted by the males is 4-methyl-5-nonanol (90%) and 4-methyl-5-nonanone (10%). Evaluation of the lure lifespan requires to determine the release rate of these compounds from the commercial lures. We encountered severe difficulties in the direct GC quantitative analysis of the major component. Therefore, we developed a simple GC analysis of secondary alcohols converting them to trifluoroacetyl derivatives and using secondary alcohol acetates as internal standards. This method was applied also for the quantitative analysis of several secondary alcohols, including the aggregation pheromone components of the almond bark, 4-methyl-3-heptanol. The method presented in this study facilitated the evaluation of these pheromone lures and enabled the determination of their longevity and their release rate profiles.