

Odour signals for detection and control of indoor pyralid moths

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Abstract: Three pyralid moths, the Mediterranean flour moth (*Ephestia kuehniella*), the almond moth (*Ephestia cautella*) and the Indian meal moth (*Plodia interpunctella*), infest food products all over the world and cause severe problems in factories, shops and households. For health and environmental reasons chemical control becomes more and more restricted. We here present some promising results offering efficient detection and control of these species based on semiochemicals. The pheromone-mediated mating disruption technique (MD) was employed in three mills, a chocolate factory, a pet shop and in a pet food warehouse during 7-26 months, including localities with infestations of all three species and situated in three countries. The three moths' common major pheromone component (Z9,E12)-tetradecenyl acetate was released at an approximate rate of 2 mg/100m³/day. A decrease in attraction to pheromone-baited monitoring traps occurred instantaneously and EAG-measured air concentrations of the main pheromone component increased immediately. The decrease of catches in the monitoring traps continued further during the second season of treatment indicating that the population suppression effect increased over time. Fewer moths were observed in the localities and the number of complaints from customers of mill products decreased. In the chocolate factory, water traps were used to obtain an independent measurement of the *E. cautella* population level. Catches in these traps showed a decrease in population density. From the MD-experiments we can conclude that this technique has a large potential for controlling all three moth species. For more efficient monitoring and evaluation of control measures, we have done a series of studies to improve pheromone traps and to make trapping of *E. kuehniella* and *P. interpunctella* females possible (*E. cautella* females are readily caught by water traps). A three-component, chocolate-based, blend attracted up to 80% of females in the flight tunnel, but only weakly so under more realistic conditions. A possibility to catch females would facilitate evaluation and comparison of different population suppression methods for these insects.

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