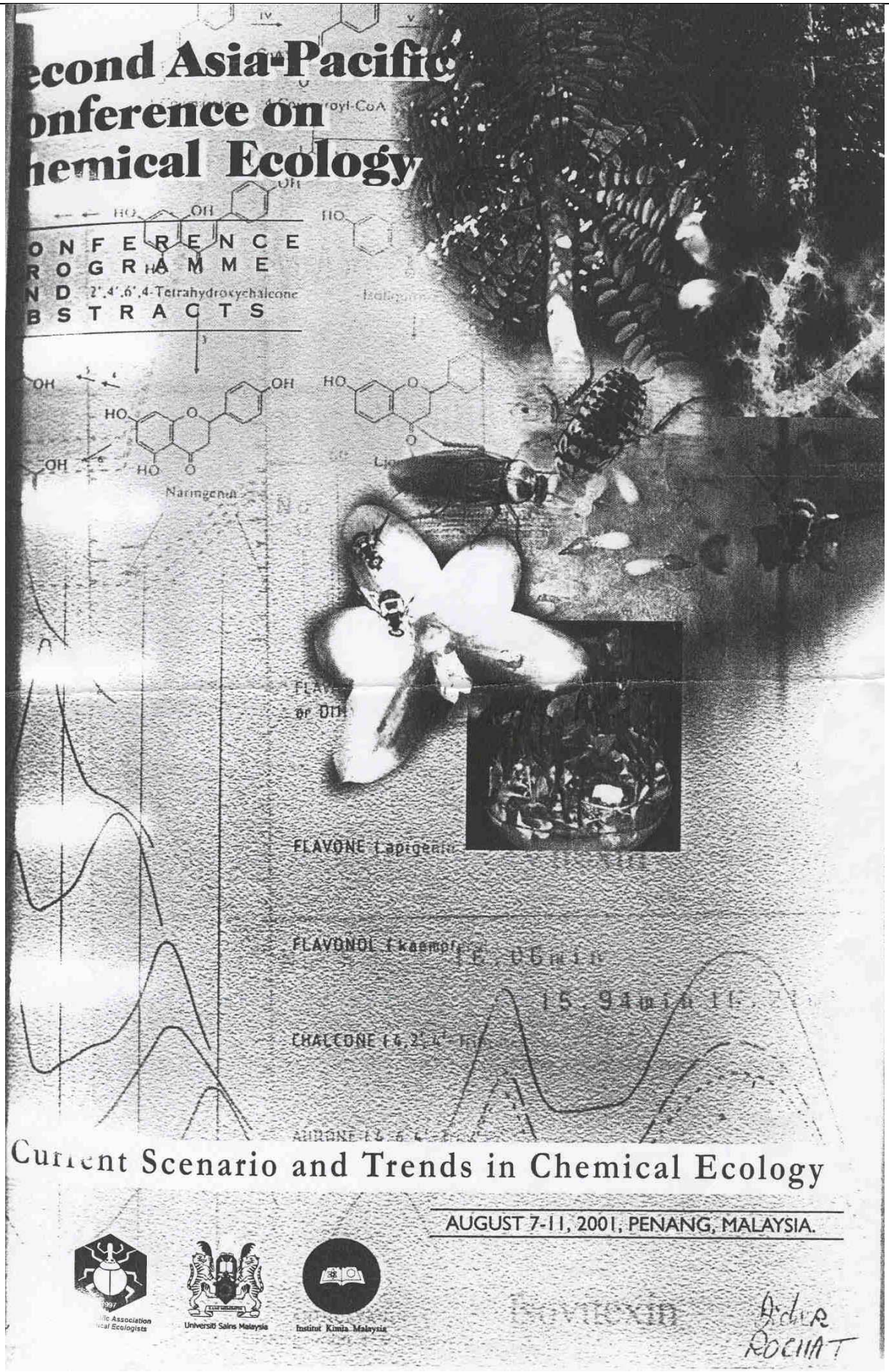
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CAN PHEROMONE TRAPS HELP IN BIOLOGICAL CONTROL OF INSECTS AND WEEDS ?

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Pheromone traps have been used for monitoring pests for many years, but their use in biological control is more recent. Pheromones have been identified and used for monitoring two Lepidopterous biological control agents introduced into New Zealand for biological control of gorse, a major weed species. In the case of *Cydia succedana* (Tortricidae) and *Agonopterix ulicetella* (Oecophoridae), traps baited with a sex attractant were developed as a new tool for monitoring the establishment, phenology, and efficacy of the agents. The prospects for using sex attractants in traps as an aid for monitoring populations of weed biological control agents are excellent. The traps have also been used to determine the optimal size of founding populations to ensure establishment of the control agents. Pheromone traps have also been used to monitor the phenology, abundance and distribution of an insect biological control agent (*Ascogaster quadridentata* (Braconidae), an egg parasitoid of codling moth, *Cydia pomonella*). The emergence of the parasitoid was shown by outdoor emergence cages and pheromone trapping to be slightly ahead of the male moth flight period, but essentially synchronous with the female moth emergence. A survey of orchards in four regions of New Zealand indicated considerable regional variation in the presence and abundance of the parasitoid on orchards with little or no pesticide use. Pheromone trapping of the parasitoid appears to be less directly useful in management of the insect pest, compared with the cases involving biological control of weeds. The possible reasons for this will be discussed.

EFFECT OF RED PALM WEEVIL MASS TRAPPING WITH SYNTHETIC PHEROMONE IN TRADITIONAL IRANIAN DATE PALM GROVES

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The Red Palm Weevil (RPW), *Rhynchophorus ferrugineus* is one of the most serious palm pests in Asia. It has been reported from Iran for 10 years. Quarantine and insecticides have been applied to control it. As the actual impact of synthetic pheromone in RPW control has

been poorly documented, an experimental mass trapping was realised to evaluate the method. The compared effects of the trapping on the catches of, and the damage by, RPW were studied in 224-ha of traditional date palm groves at 4 trap densities: 0 (control), 0.5, 1 and 2 pherotraps/ha in Apr.-Dec. 1998. A precise mapping of the plots was initially realised to study the correlation between the plot structure and RPW infestation. Plastic buckets were used as traps with synthetic pheromone (5 mg/day) and date palm pieces as attractant. Palms were checked every 2 months for infestation (4 times) and sanitised when necessary. Five- to 20-year old palms were 20 times more infested than the other ones. Mazafati was 10 times more infested than the other varieties. Infested palms were clustered and accounted for 1.4 % of the 47,027 palms examined. 4298 RPWs (3 F:1 M) were caught in the traps (0.6 RPW/trap/week). The higher the trap density, the higher the total catches per plot but also the lesser catches per trap. More date palms were newly infested in the plots with 4 traps than in the controls (2.7 *vs.* 1.7), but the percent newly infested palms and the relative variation of infestation (during *vs.* before trapping) did not differ from the controls. As much new infestation was recorded in the controls as in the plots with 1 or 2 traps. The new damage was clustered and highly correlated to the trap location, following a negative loglinear relationship with the distance to the nearest trap. If one season pherotrapping could eliminate many RPWs, it was insufficient to trigger a reduction of the damage and increased the local risk of infestation when applied to highly susceptible plots. Maximising the number of RPW catches appeared not adapted to the treated area. We then recommend to perform a trapping with low trap densities and precisely taking into account of the plot susceptibility. A better compromise between the capture level and the risk of indirect damage has to be determined for a rational application of a pherotrapping that contributes to an efficient long term RPW control.

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FIELD TRAPPING OF *CHRYSOPA COGNATA* (NEUROPTERA: CHRYSOPIDAE) WITH SOME SYNTHETIC CHEMICALS IN KOREA

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Chrysopa cognata is known as an important source in aphid biological control. *C. cognata* adults have been reported to be attracted, mainly through laboratory experiments, to (-)-(1*R*,4a*S*,7*S*,7a*R*)-nepetalactol and (+)-(4a*S*,7*S*,7a*R*)-nepetalactone, sex pheromone components of aphids. Here we summarize field trapping data of the chrysopid to the two chemicals and their synthetic analogues.

Nepetalactol was found to be much more attractive to the insect in field tests than nepetalactone, although nepetalactone was also attractive in Y-tube olfactometer tests and elicited high response in EAG tests, as in the case of nepetalactol. The neomatatabiol isomers synthesized, which are similar to nepetalactol in structure, also attracted male *C. cognata* in the field. *C. cognanta* were caught in traps mainly during nights, especially from 7.30PM to 1.00AM in July and August in Suwon (a little south of 30 degree north latitude), Korea. Female chrysopids