# ABSTRACT

The aim of this research was to isolate, characterise, identify and field test the sex pheromones of the strawberry pests, the European tarnished plant bug, *Lygus rugulipennis* (Heteroptera: Miridae), and the strawberry blossom weevil, *Anthonomus rubi* (Coleoptera: Curculionidae). Live baiting trials showed that male *A. rubi* produced an aggregation pheromone. Male-specific compounds were identified as 2-(1-methylethenyl)-5-methyl-4-hexen-1-ol (lavandulol), (±)-(*cis*)-1-methyl-2-(1-methylethenyl)cyclobutaneethanol (Grandlure I), (*Z*)-2-(3,3-dimethyl-cyclohexylidene)ethanol (Grandlure II), (*Z*)-(3,3- dimethylcyclohexylidene)-acetaldehyde (Grandlure III) and (*E*)-(3,3-dimethylcyclohexylidene)acetaldehyde (Grandlure IV). In field trials using various combinations of synthetic Grandlures I, II, III and IV and lavandulol, significantly more weevils were caught in traps baited with blends containing Grandlure I and II and lavandulol than in those baited with blends without lavandulol or unbaited controls. Addition of Grandlure III and IV had no significant effect on attractiveness. (*E*,*E*)-1-(1-Methylethyl)-4-methylene-8-methyl-2,7-cyclodecadiene (germacrene-D) acted synergistically with the attractive blends. *A. rubi* were sexed using a male-specific character, a single thorn present on each of the coxa of the intermediary legs. During early to mid-season females predominated in the catches, but later more males than females were trapped. Female *L. rugulipennis* are known to produce a sex pheromone. Three female-specific chemicals, hexyl butyrate, (*E*)-2-hexenyl butyrate and (*E*)-4-oxo-2-hexenal, were found to be electrophysiologically active on the male antennae using gas chromatography-electroantennography (GC-EAG). Field trials using various mixture combinations of the candidate pheromone components did not highlight a significantly attractive blend. Electroantennographic studies on male and female *L. rugulipennis* using the three candidate pheromone components produced standard dose-response curves. Males were more responsive than females to high doses of (*E*)-4-oxo-2-hexenal. Antennal response to mixtures and single components of the candidate pheromone components suggested (*E*)-4-oxo-2-hexenal reacted at a different molecular receptor site to hexyl butyrate and (*E*)-2-hexenyl butyrate. The nature of the electroantennogram was also studied through antennal segment responses.