

## Olfactory responses of the multicolored Asian lady beetle, *Harmonia axyridis* to aphid and host plant volatile releases

Ammar Alhmedi, Frédéric Francis, Eric Haubruge

Functional and Evolutionary Entomology, Gembloux Agricultural University,  
Gembloux, Belgium

The multicoloured Asian ladybird, *Harmonia axyridis* (Pallas) was used in Belgium from 1997 in biological control. The first observations of *H. axyridis* in wild were reported in September 2001 and their occurrences increased exponentially for the last few years.

In our field studies, the frequency of adult *H. axyridis* was high, mainly in stinging nettle while much less Asian ladybirds was observed in wheat and green pea fields. To optimise the aphid biological control in fields, we aimed to attract *H. axyridis* from nettle and surroundings to crops.

In the present laboratory study, the olfactory responses of *H. axyridis* to aphid and host plant volatile releases were tested to identify the most efficient attractant molecule to be used in the future in fields. Two- and four-arm olfactometer experiments were held in the laboratory using several aphid and plant volatiles (terpenes and green leaf volatiles). Adults and larvae of *H. axyridis* were significantly attracted to limonene and  $\beta$ -caryophyllene. Although the E- $\beta$ -farnesene (EBF) was found to be an attractant for several aphidophagous predators such as *Adalia bipunctata* (L.) and *Episyrphus balteatus* (DeGeer), *H. axyridis* showed no positive response to EBF.

These olfactory results suggested us that our future field experiments will be hold using limonene and  $\beta$ -caryophyllene slow releasers to guide *H. axyridis* from stinging nettle sites toward field crops and promote the aphid control by aphidophagous predators.