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BOOK OF ABSTRACTS

In search of an attractive kairomone for biological control by mass trapping of *Eurytoma amygdali*

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Eurytoma amygdali End., the almond wasp, is an important pest in organic almond orchards potentially causing high crop failure in the southeast of France and in several countries in the Middle East. Currently there is no biological control method against *E. amygdali* and only one effective pesticide is authorized in France.

In order to develop a biocontrol strategy against wasp infestation, we have identified and quantified by GC-MS the volatile organic compounds (VOCs) of the almond tree (*Prunus dulcis*) in spring, when females are attracted by almond trees to lay eggs in almonds in development, under environmentally-controlled conditions. Emissions of VOCs from almond trees were low and mainly composed of sesquiterpenes. Other VOC classes have been identified as monoterpenes, aldehydes, alcohols, esters and anisole.

To find the volatiles most likely to attract *E. amygdali* during the day we have monitored VOC emissions according to temperature and light gradients by PTR-ToF-MS and GC-MS, with five varieties of *P. dulcis* during flowering and fruit and leaf ripening. Emissions increased significantly with temperature but not with light. Depending on the almond variety and the phenological stage, the composition and the quantities of volatiles emitted were different.

Thirty-eight compounds were then tested by electroantennography (EAG) to observe their detection by the female antennae and identify the most active VOCs. The compounds best detected by females are not those most emitted by the almond tree. Only five compounds did not elicit significant EAG responses when compared to control stimuli and no compounds from the panel were much more active than the rest of EAG-active compounds.

We are currently testing the attractiveness on wasps of mixtures of the VOCs most emitted by the almond tree and the most active in EAG in order to develop a kairomone trap, a means of biocontrol by massive trapping against the almond wasp.

Keywords: Almond; volatiles; *Eurytoma amygdali*; biocontrol