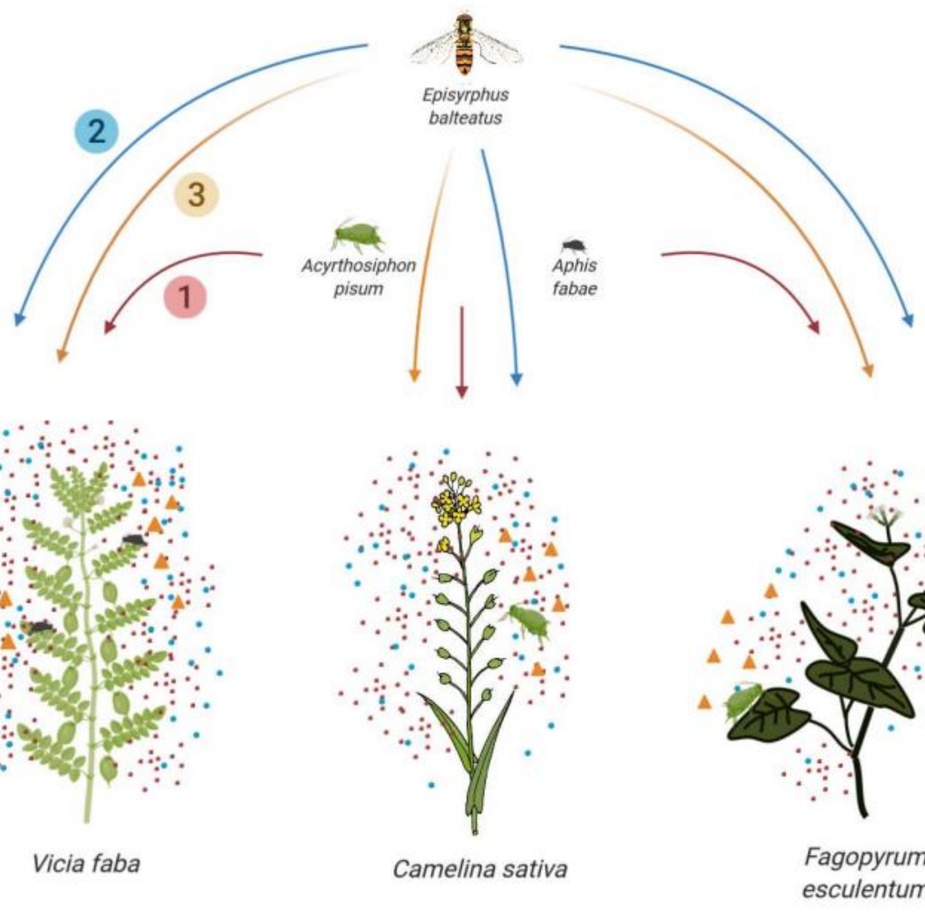
Investigating hoverfly responses to chemical cues and honeydew in agro-ecosystems

Grégoire Noël*[1] , Lallie Glacet [1], Laura Hulot [1], Frédéric Francis [1]

[1]Functional and Evolutionary Entomology–Gembloux Agro-Bio Tech (University of Liège), Gembloux, Belgique, Belgium.

Tritrophic interactions



1. Emitted Volatile Organic Compounds (VOCs) by plant which attract phytophagous insect pest such as aphid
2. Emitted VOCs by plant attracting insect predators
3. Emitted VOCs by microorganisms from aphid honeydew attracting also insect predator

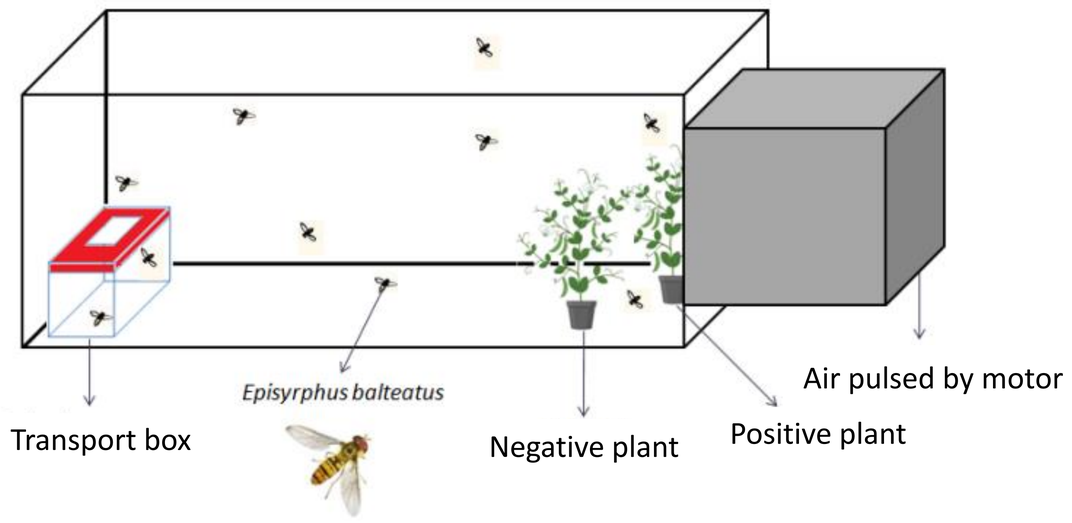
Objectives of the study

1) Oviposition behavior of the aphid pest predator, *Episyrphus balteatus* (De Geer, 1776), in laboratory and in the fields

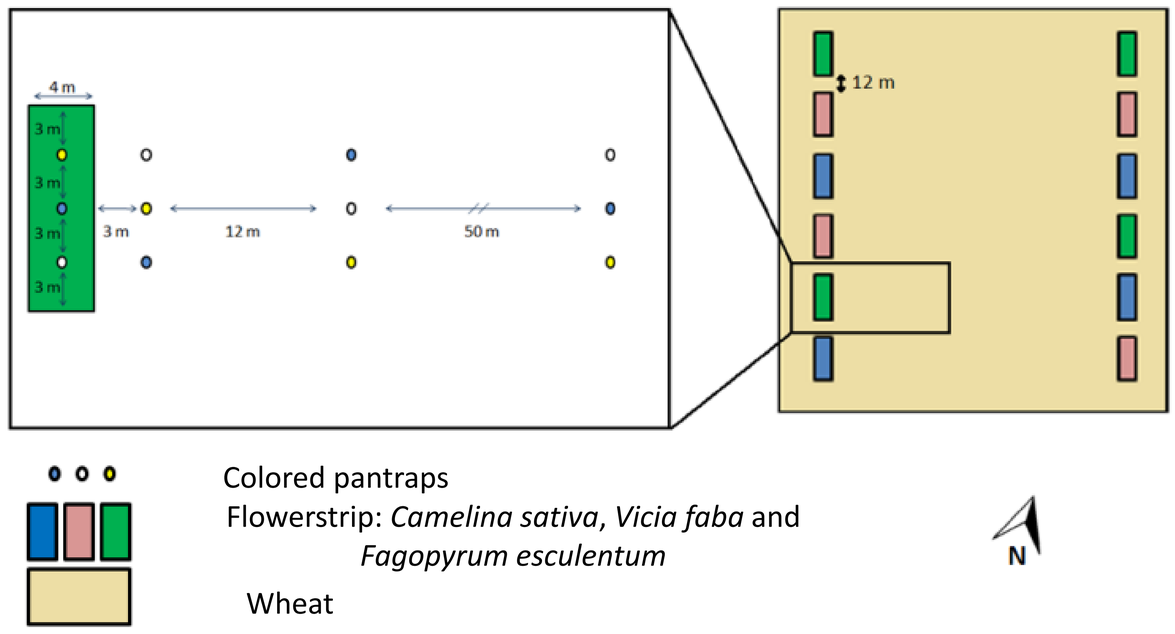
2) Tested on three plant species :
- Honeydew of *Aphis fabae* Scopoli, 1763
- Honeydew of *Acyrthosiphon pisum* (Harris, 1776)
- Bacteria *Staphylococcus sciuri*
- Chemical products from bacteria

Experimental design and methodology

Experiences to the lab

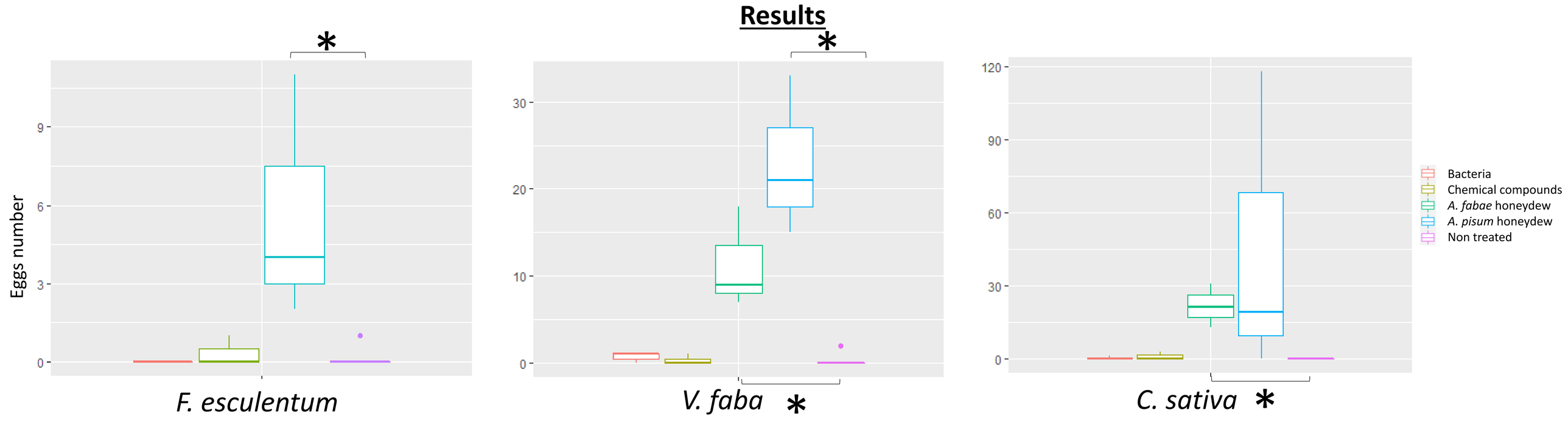


Experiences to the field



Colored pantraps
Flowerstrip: *Camelina sativa*, *Vicia faba* and *Fagopyrum esculentum*
Wheat

Results



- Oviposition behavior of *E. balteatus* showed no significant difference from negative controls in laboratory and field settings regarding to the filtered bacterial solution and the specified chemical compounds
- But the oviposition behavior of *E. balteatus* hoverflies was observed to be stimulated by both types of honeydew tested in laboratory
- Consequently, exploring alternative methods for pest control through natural predators may diminish the reliance on widespread pesticide application in cultivated fields, potentially aiding in the conservation of biodiversity increasingly impacted by human activities

***Contact**: gregoire.noel@uliege.be**