

# Biological control in complex agro-ecosystems: how parasitoids cope with a multi-species infestation in cassava

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Recent epidemic outbreaks of the cassava mealybug, *Phenacoccus herreni* cause root yield losses of up to 80%. This requires the release of natural antagonists (Parasitoids). Classical approaches to biological control focus on the target herbivore only. In the field however, plants are usually infested by various herbivore species. **Parasitoids** have to search for hosts in these complex agro-ecosystems. This might alter their efficiency and reliability. In the cassava ecosystem, mealybugs, spider mites and whiteflies infest the crop plant simultaneously.

## Question?

- What is the effect of a mixed species infestation on *P. herreni*?
- How do the **SPECIALIST** parasitoid *Aenasius vexans* and the **GENERALIST** parasitoid *Acerophagus coccois* cope with a mixed species infestation?

*Aenasius vexans*



The Specialist



*Acerophagus coccois*

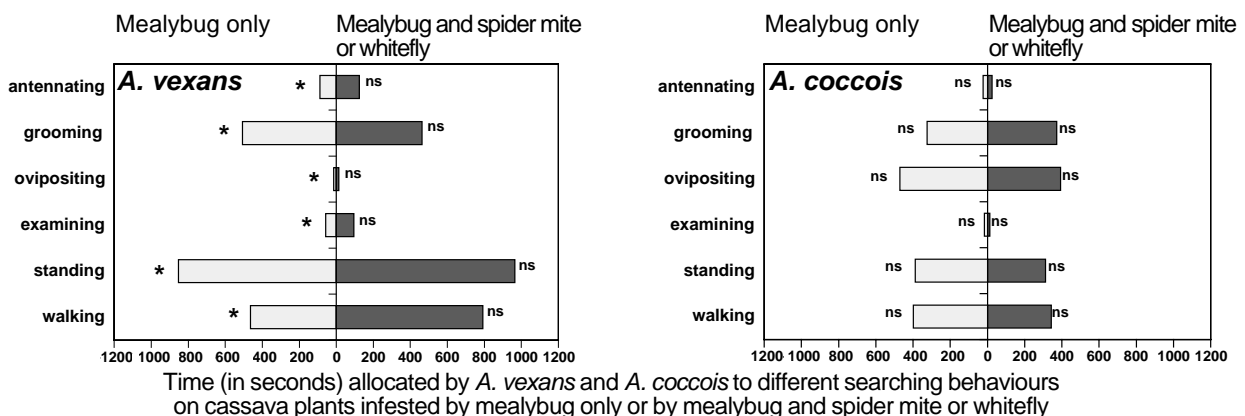
The Generalist

## Methods

Continuous observation of time allocated by the two mealybug parasitoids to different behaviours on cassava plants infested by mealybug only or by mealybug and spider mite or whitefly

## Results and conclusion

- ◆ The developmental time of the cassava mealybug, *P. herreni*, is accelerated in a mixed species infestation
- ◆ The host searching behaviour of the **SPECIALIST** *A. vexans* was **different** in a mixed species infestation as compared to an infestation by mealybug alone. **Parasitoid females lost their preferences to search particular plant structures**
- ◆ The host searching behaviour of the **GENERALIST** *A. coccois* was similar in a mixed species infestation as compared to an infestation by mealybug alone



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