

Potential earwig control in orchards

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Presentation Outline

- **Introduction**
- **Earwig life cycle**
- **Earwig monitoring**
- **Chemical management**
- **Pheromone isolation**
- **PhD aims**

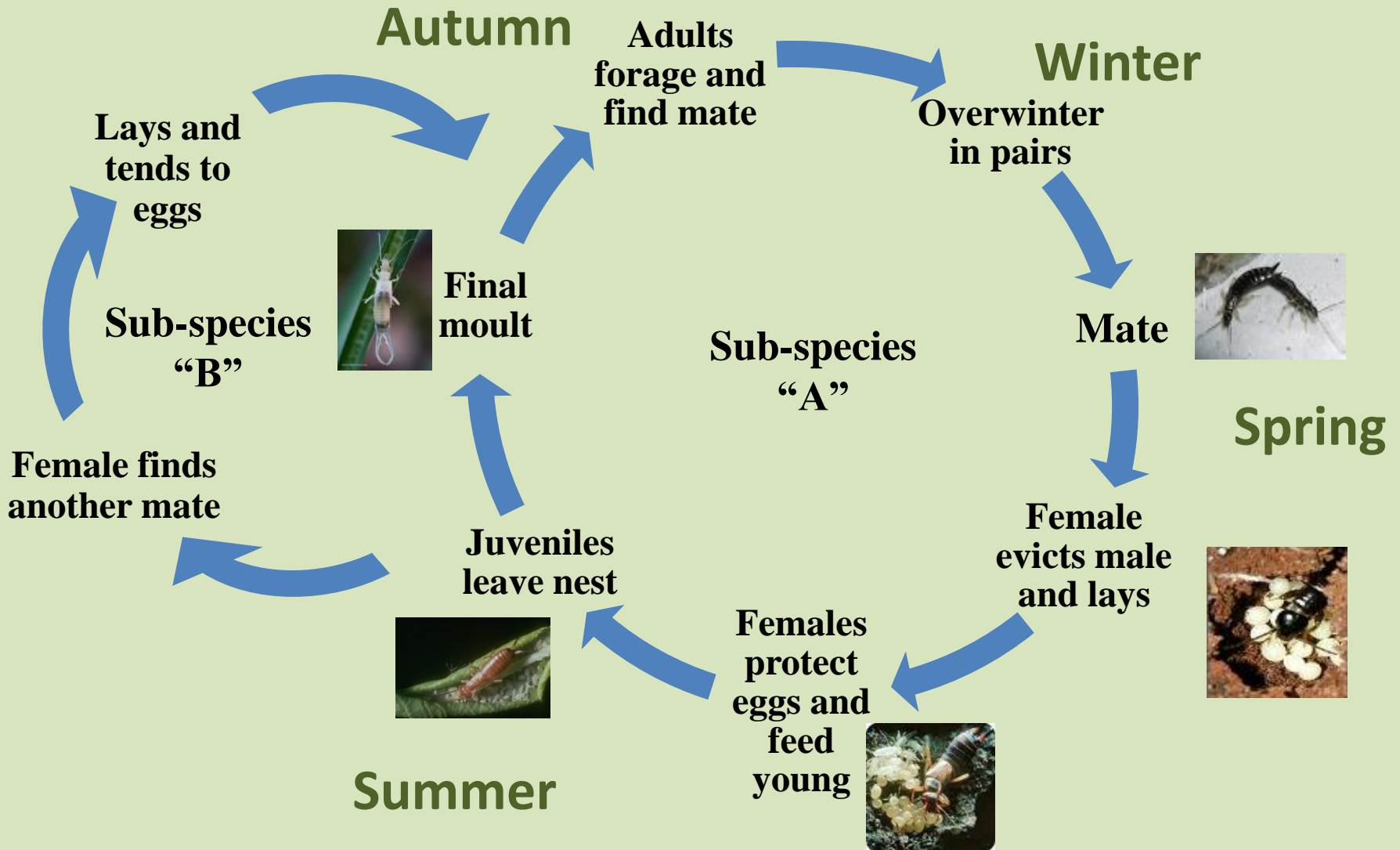
Introduction

- **European earwigs are introduced insect species from North Africa and Europe**
- **Pest in stonefruits and broad-acre crops**
- **Beneficial in apple orchards**
- **Further research**
 - **monitoring methods**
 - **numbers required for aphid control**
 - **aggregation pheromone**

Honours - Research Aims

- **Compare earwig and woolly apple aphid (WAA) populations in orchards with differing management practices over 10 weeks**
- **Determine the best position of earwig monitoring traps in orchards**
- **Determine the effect trap age has on monitoring**
- **Begin isolation of the earwig aggregation pheromone**

Lifecycle

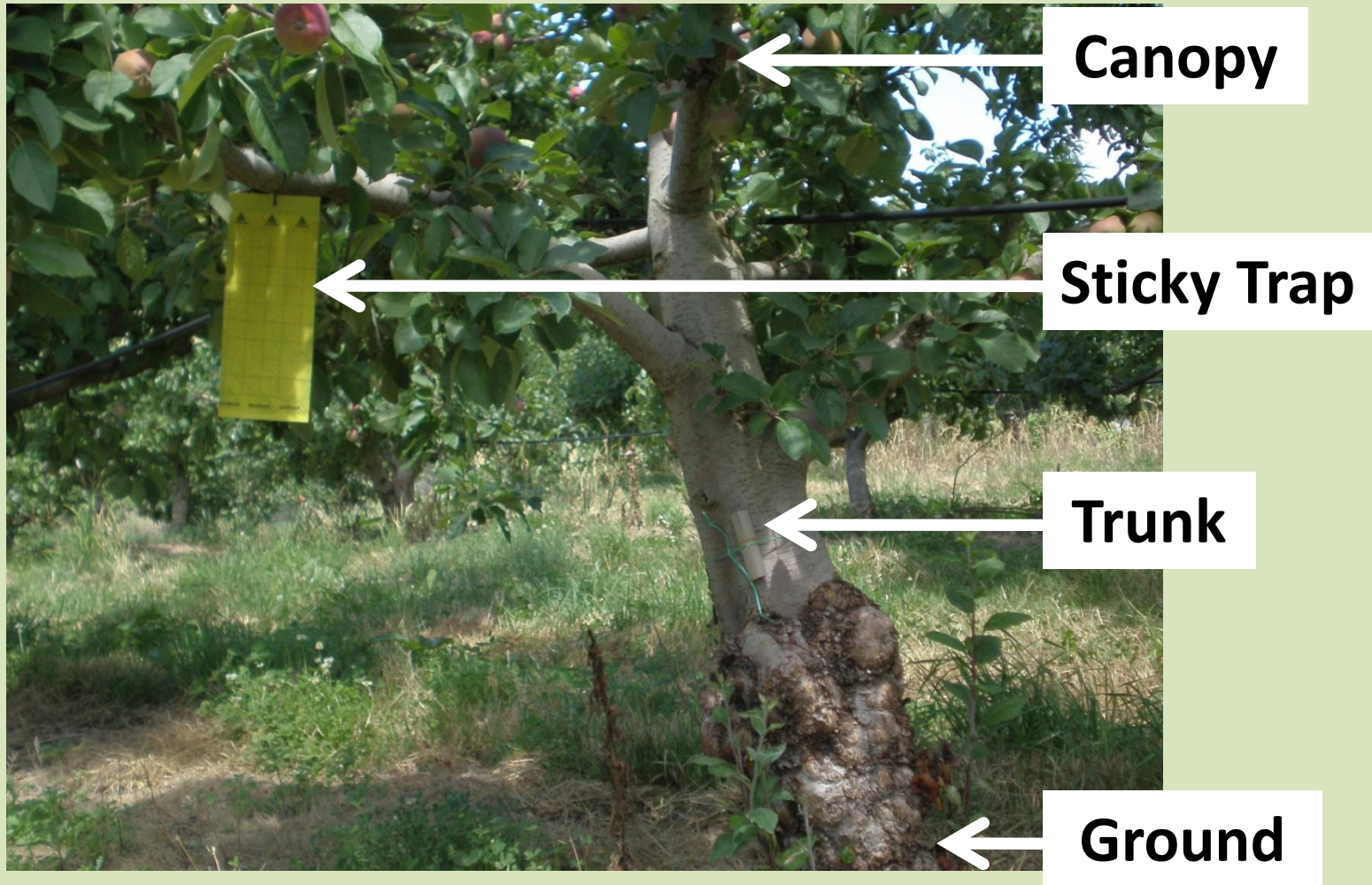


Earwig Field Ecology

- Seven commercial orchards in the Huon valley (2 organic, 3 IPM and 2 conventional)
- Insect populations were monitored for 10 weeks using
 - flying insects with yellow sticky cards
 - woolly aphid graded (0-5)
 - earwigs with corrugated cardboard rolls

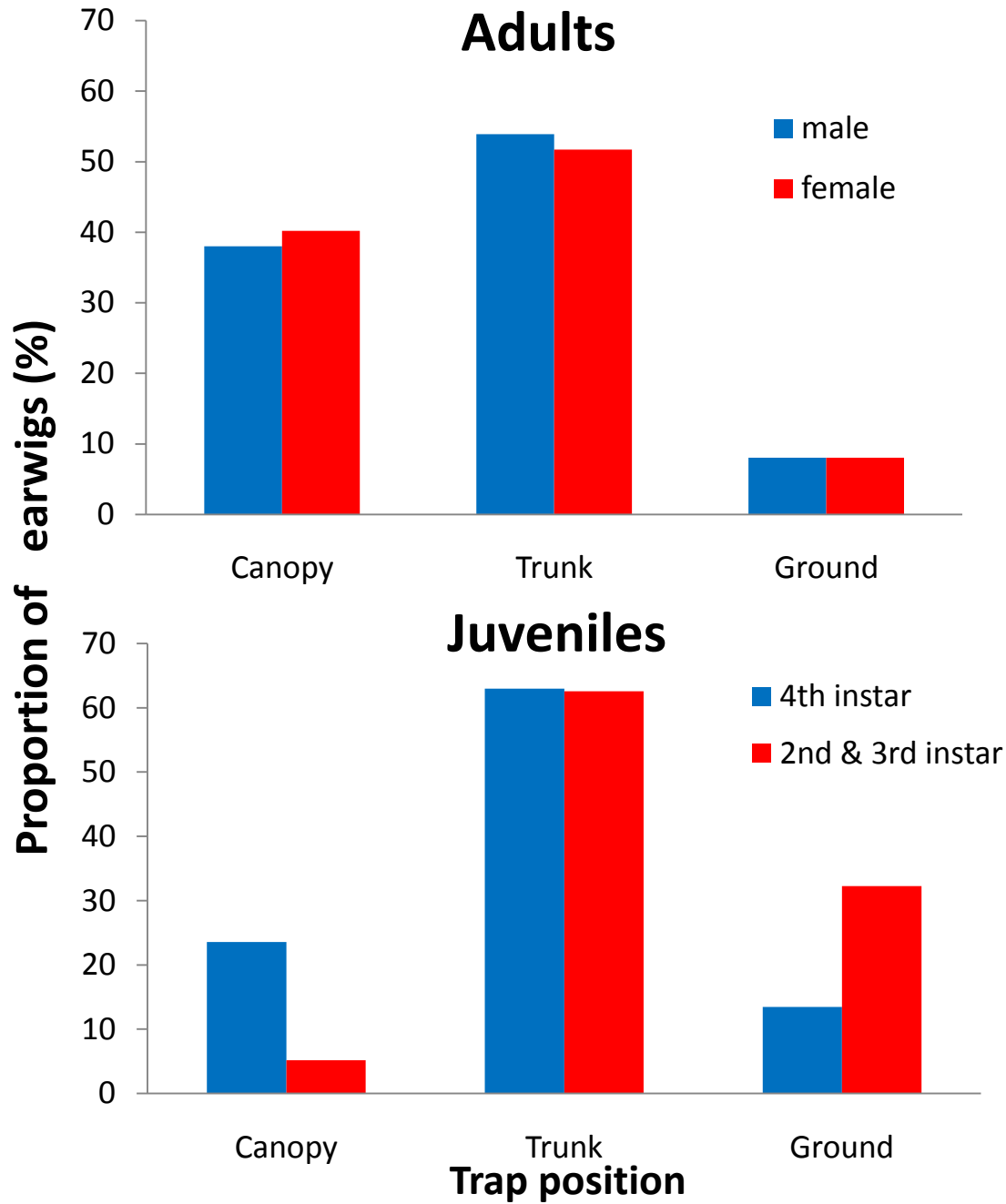


Better Earwig Monitoring

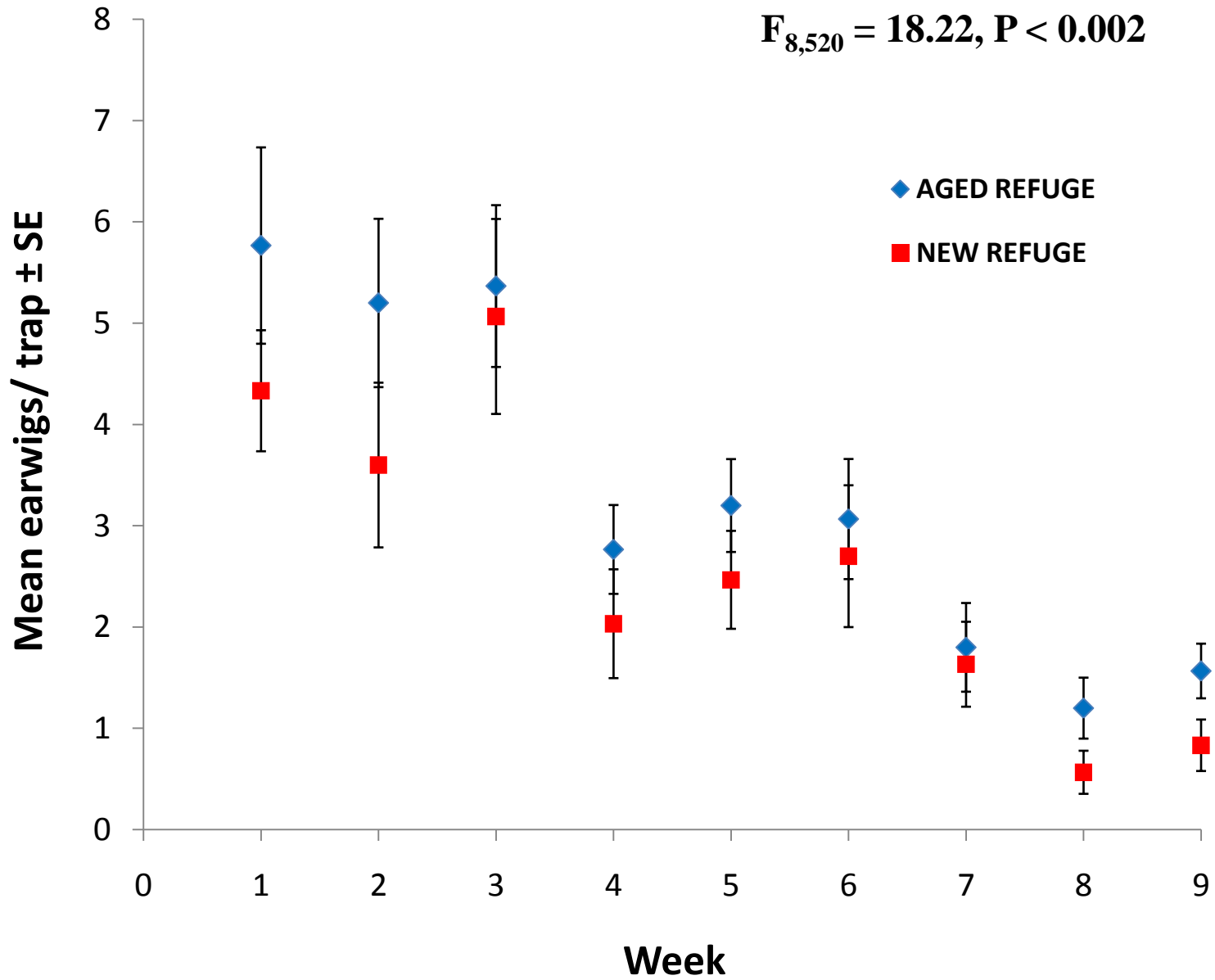


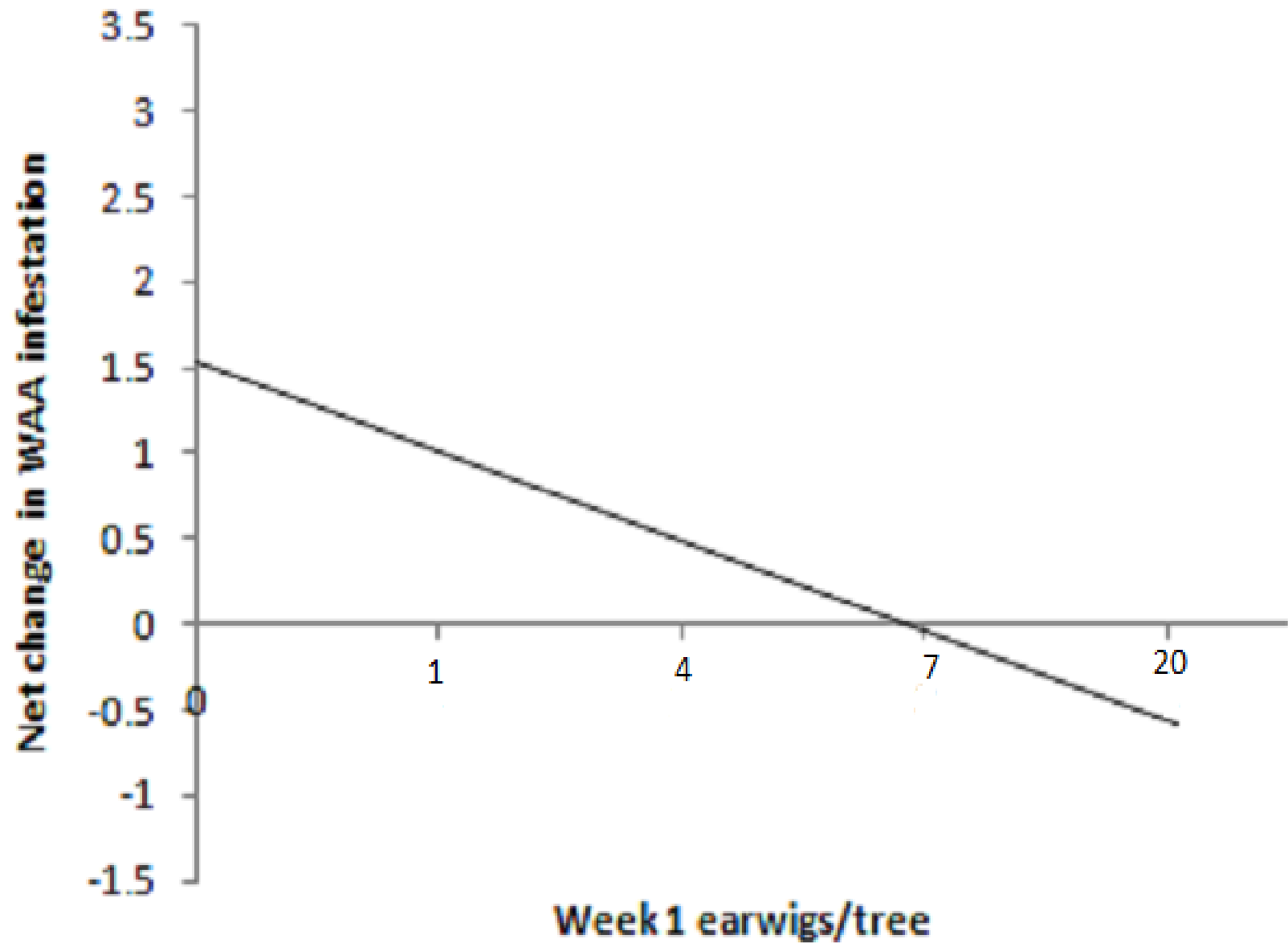
Trap Age and Attractancy



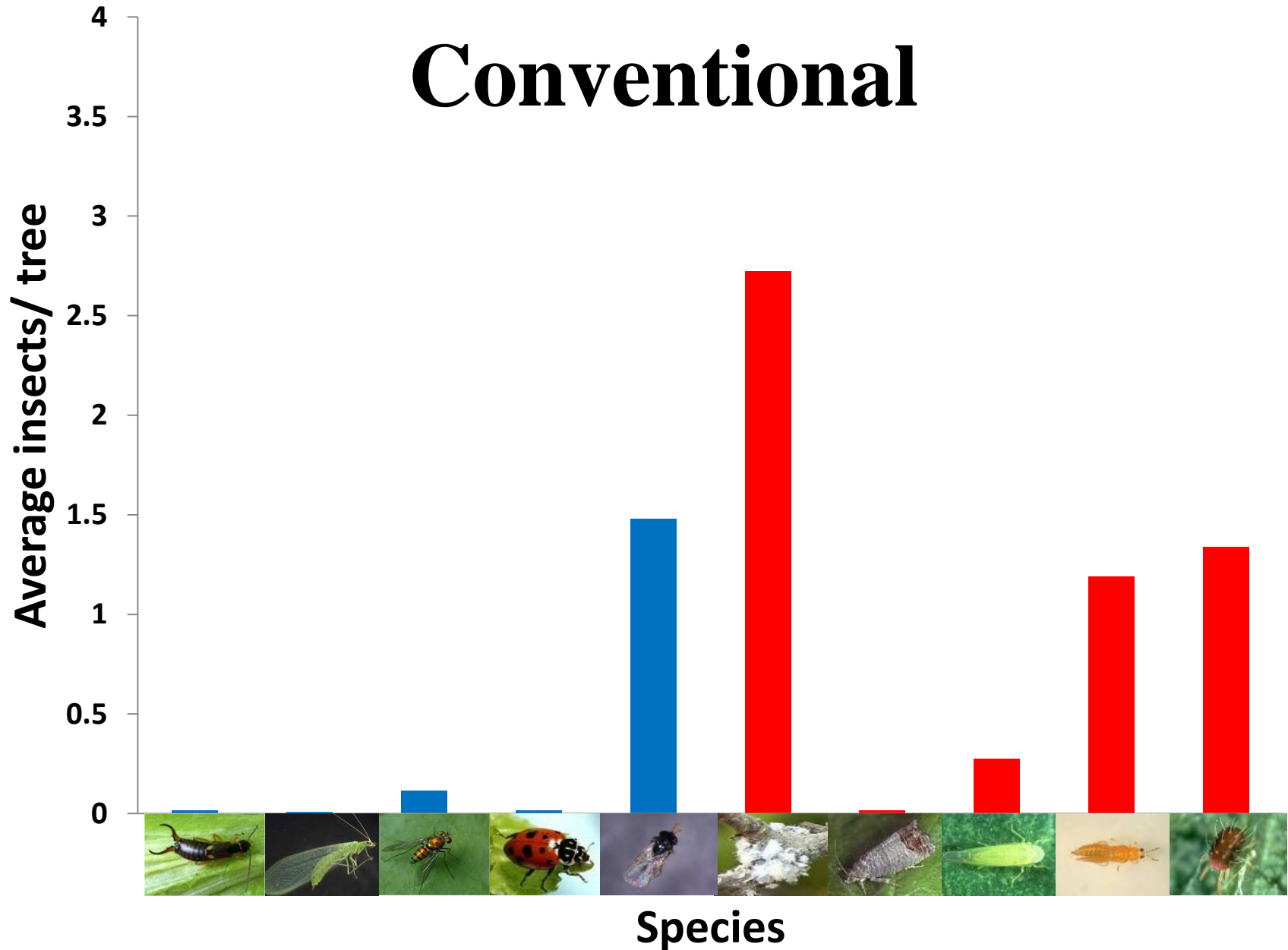


$F_{8,520} = 18.22, P < 0.002$

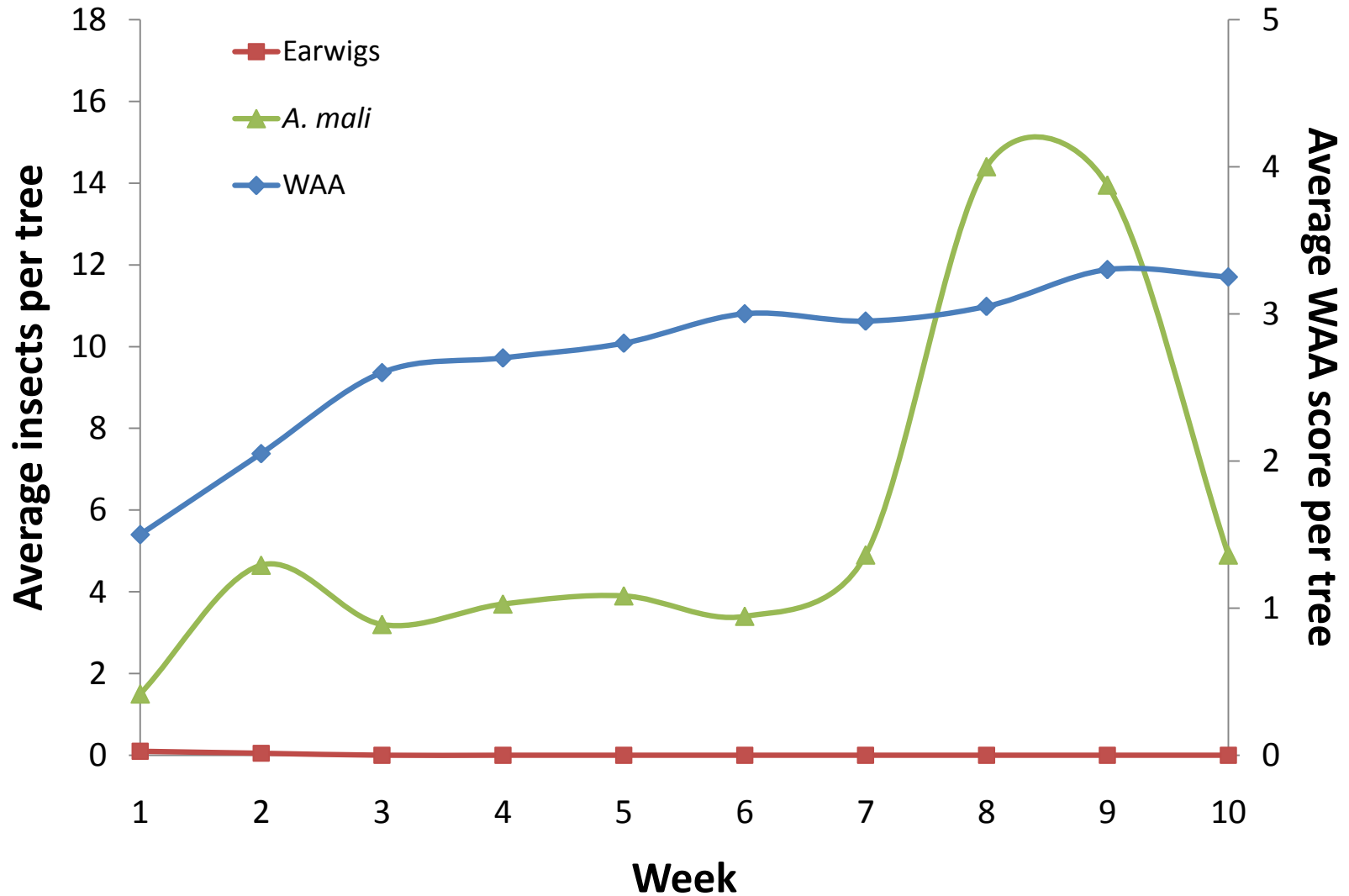




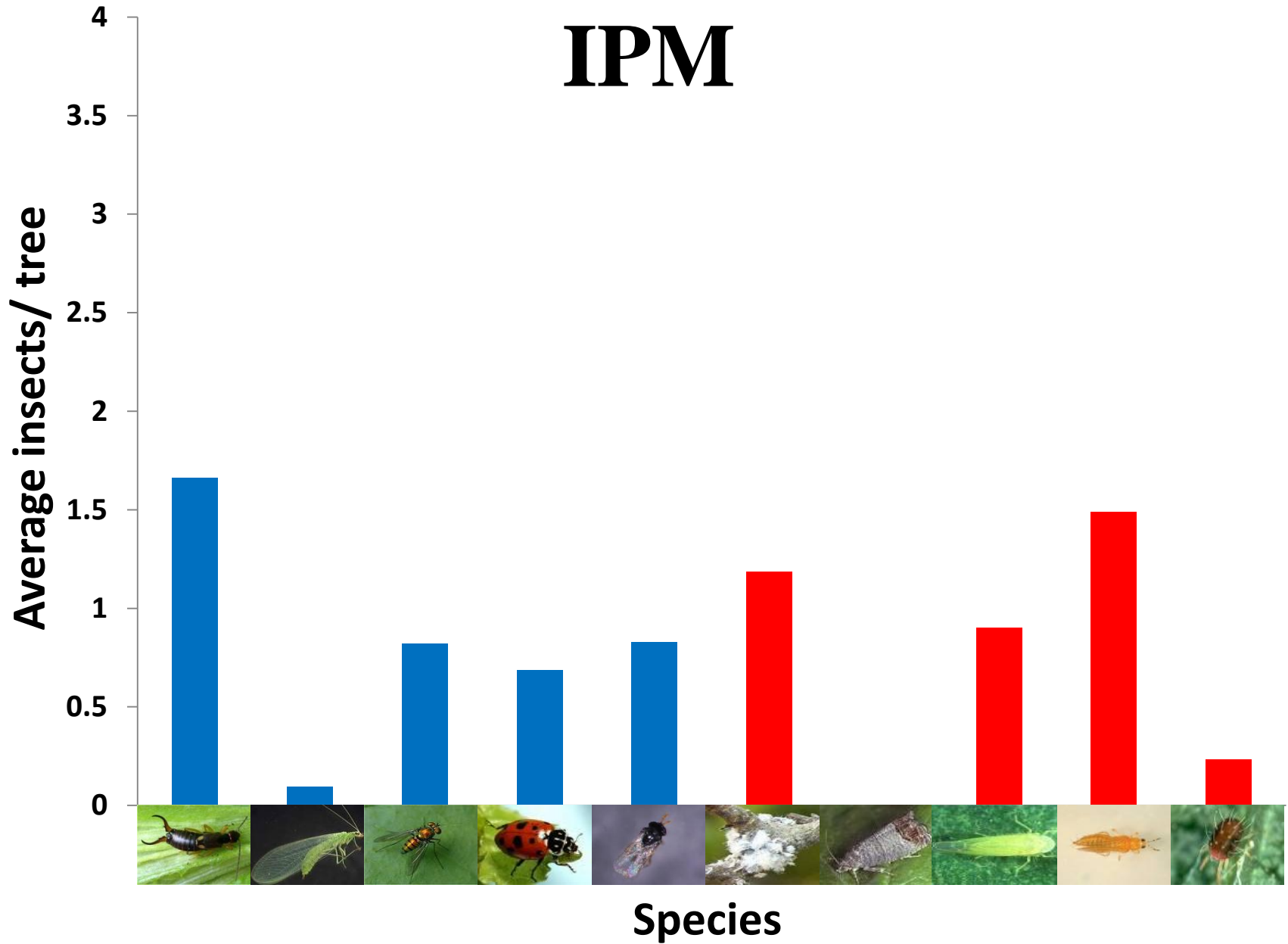
Conventional



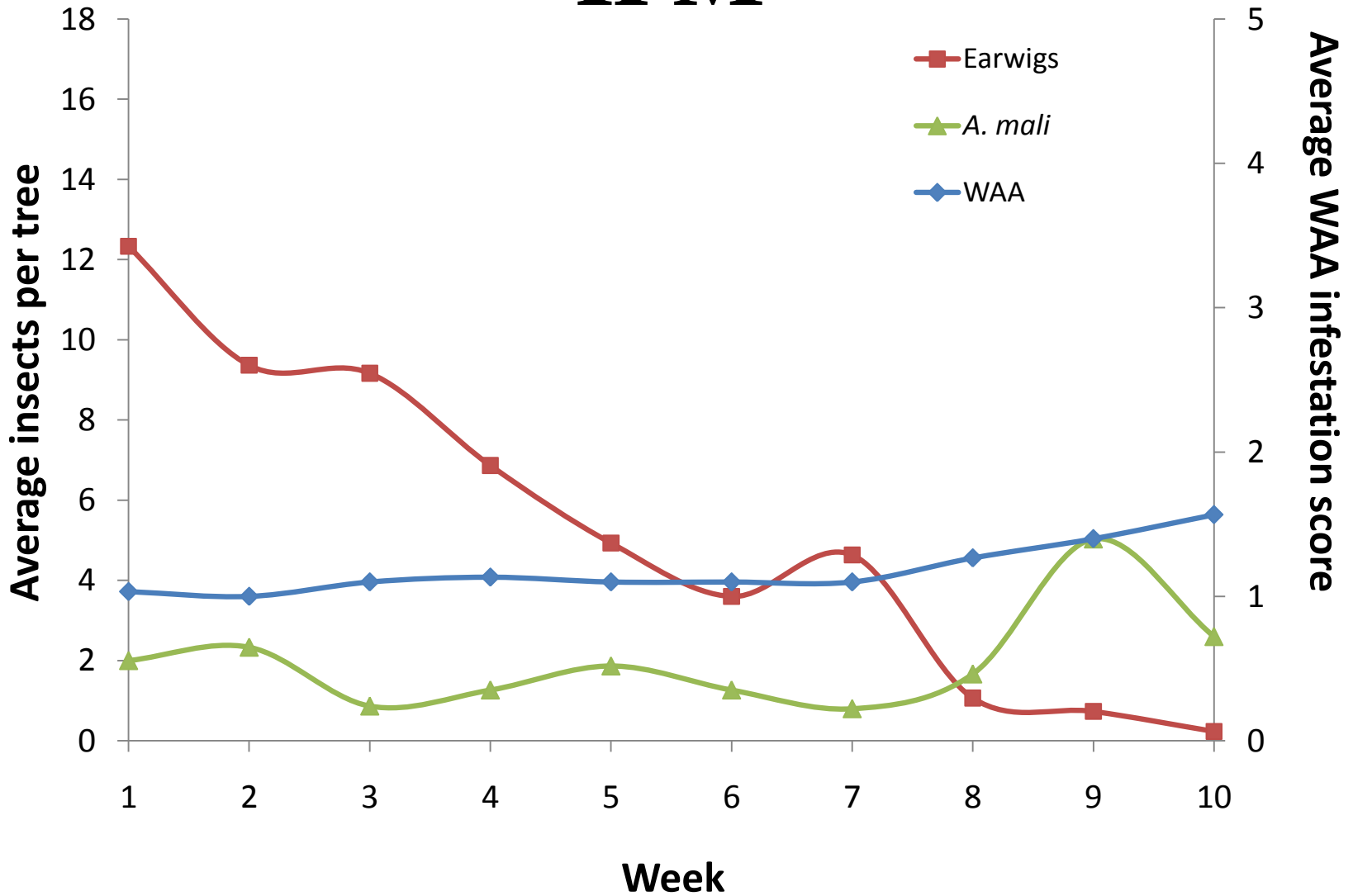
Conventional



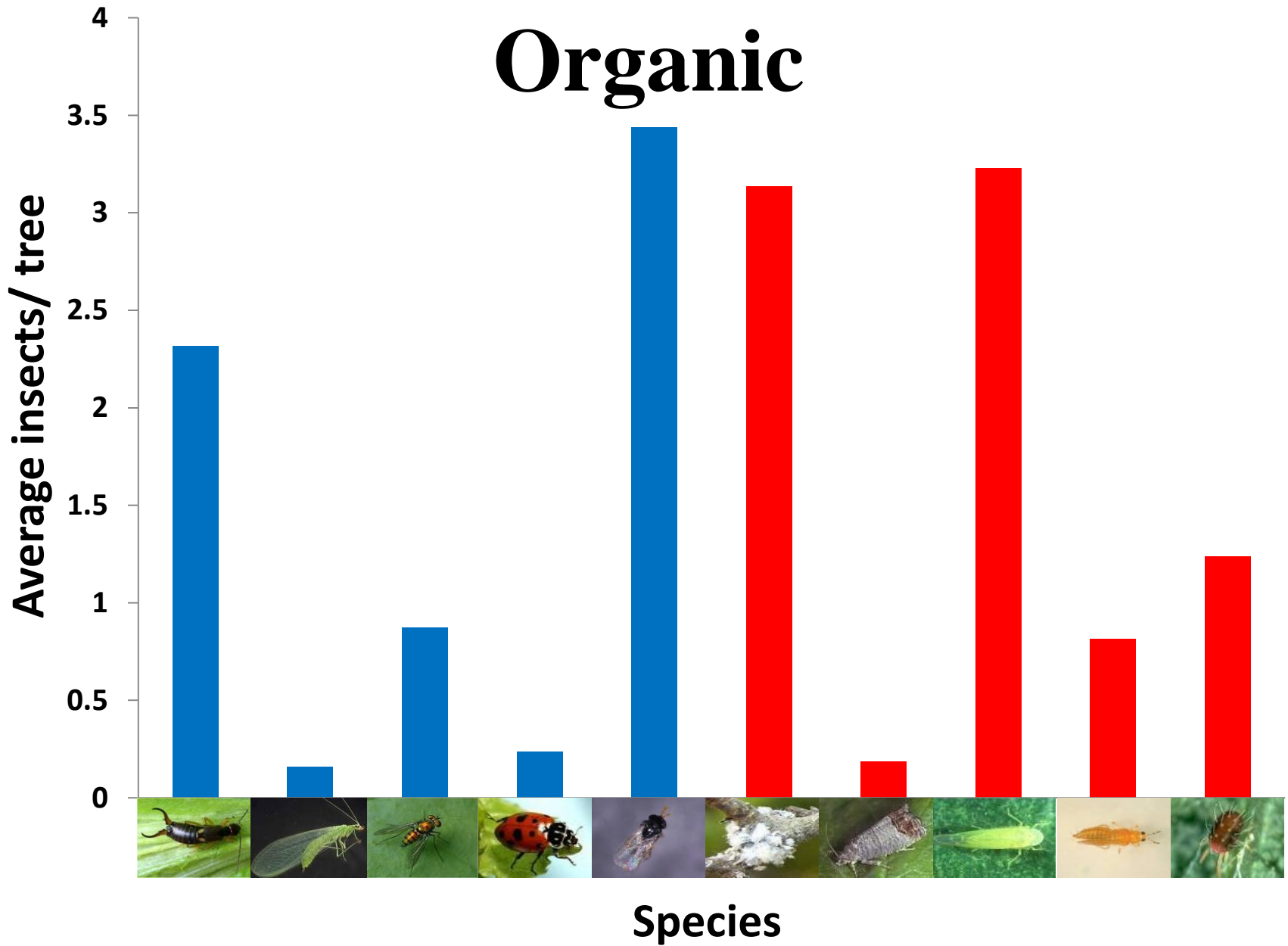
IPM



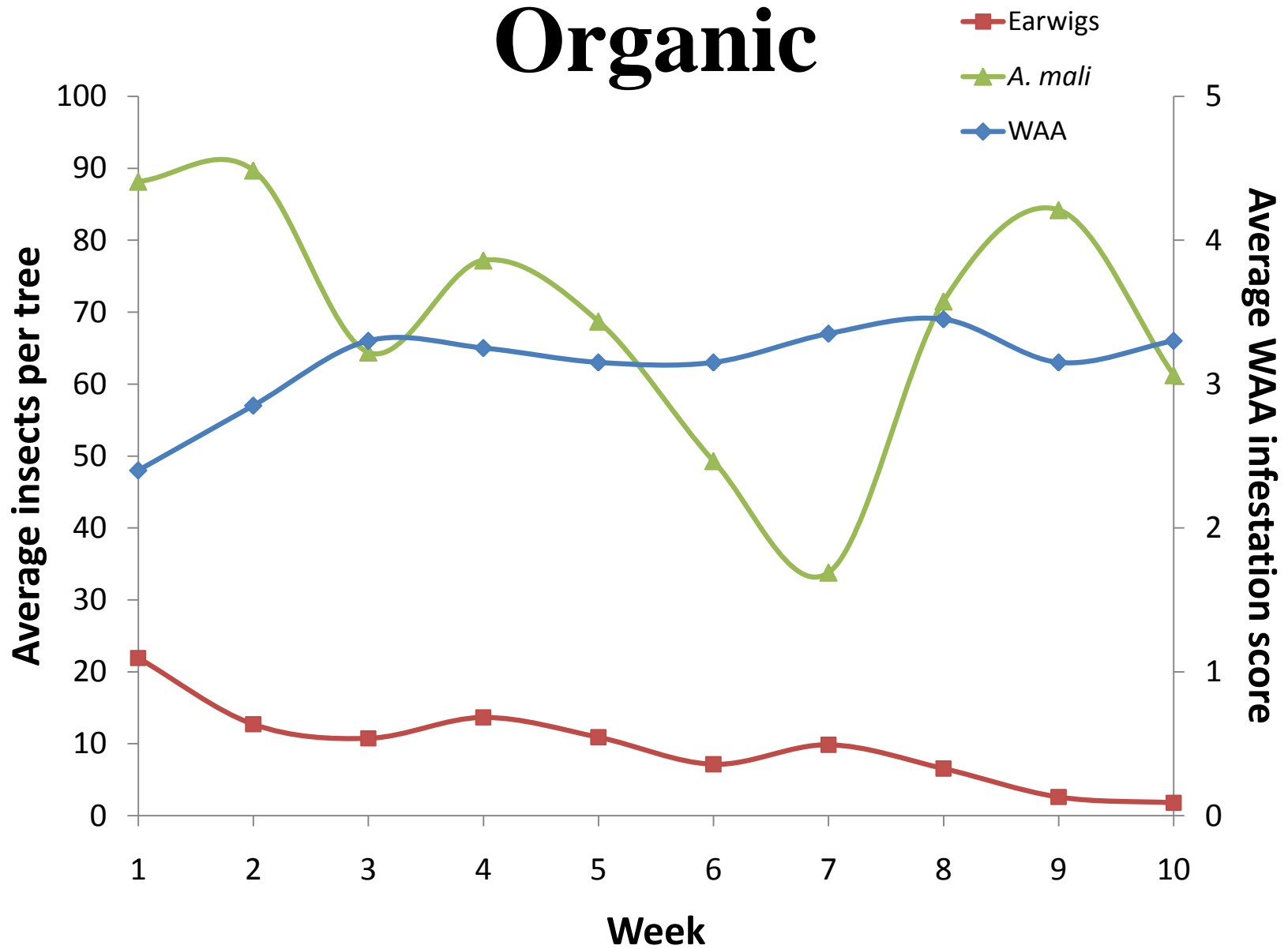
IPM



Organic

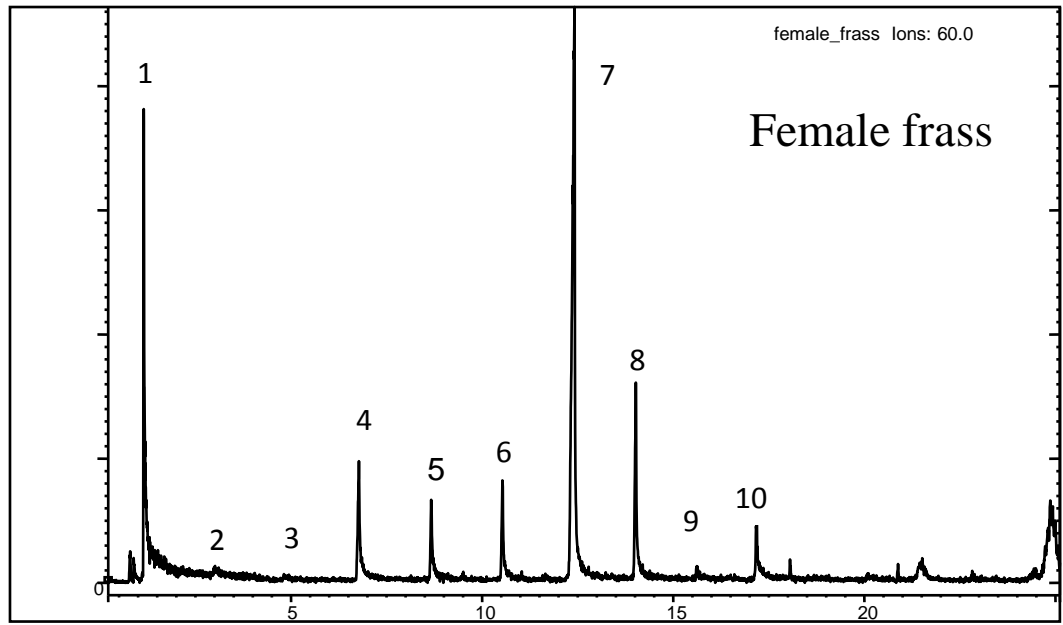
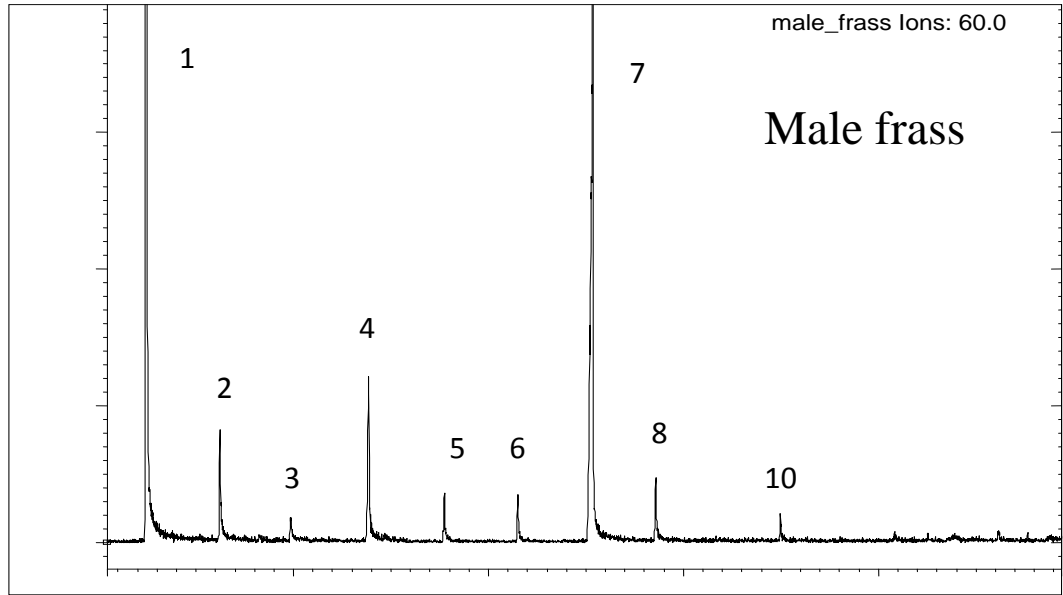


Organic

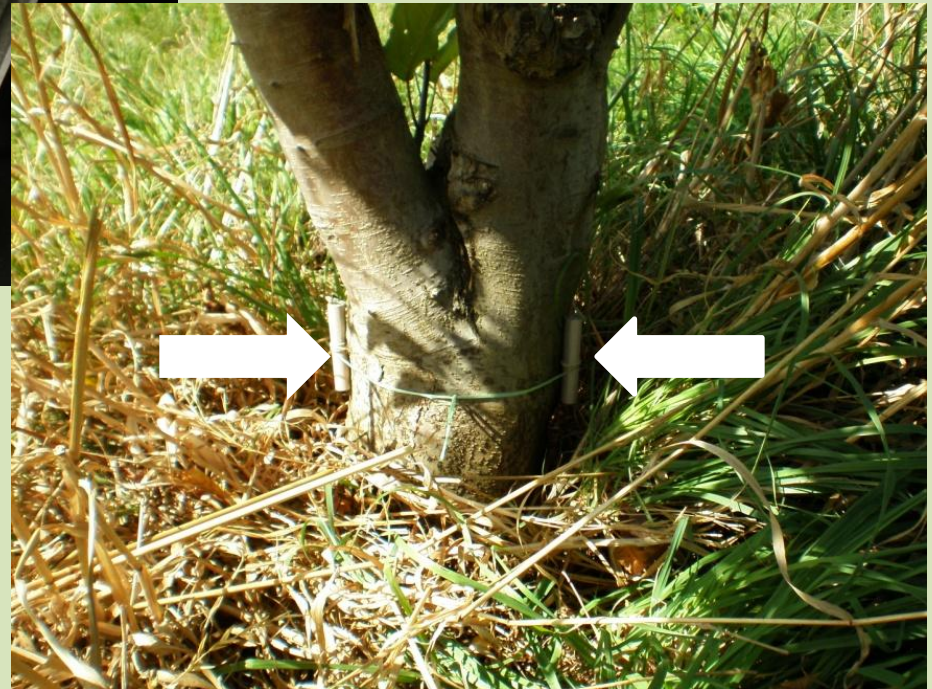


Earwig pheromone





Volatile field testing



Conclusion

- Insecticide use can have a dramatic effect on pest incidence (more pesticides → more pest species)
- IPM appears to be a more holistic method of controlling/manipulating insect populations
- Monitor on trunks
- 7 earwigs per tree appear to control WAA
- Trap age increases trap effectiveness
- Identified new compounds which could be part of the aggregation pheromone

PhD - Research Aims

- **Continue assessing earwigs in apple orchards with respect to pest control including WAA**
- **Determine the impact earwigs have in cherry orchards including fruit damage and pest control**
- **Identify and map earwig sub-species distribution across Australia**
- **Continue investigation into the aggregation pheromone**

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- **The orchardists/ orchard managers for their assistance in establishing field trials**
- **My supervisors Drs Geoff Allen, Paul Walker and Assoc. Prof Noel Davies**

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