

Assessing The Impact of Climate on *Leptocoris Tagalicus* Life Cycles: Toward Effective Pest Management in Macadamia Cultivation

Syed Rizvi and Bishwo Mainali
Applied BioSciences, Macquarie University

➤ Native to Australia

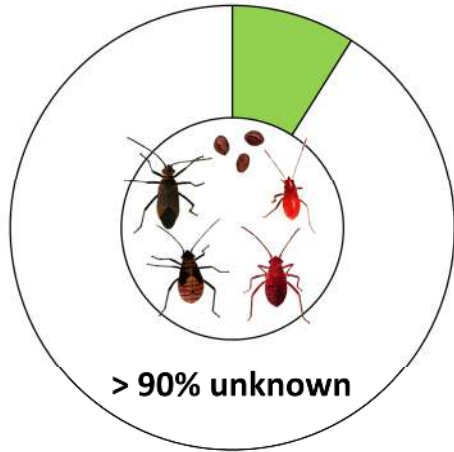
➤ One of the largest producers and exporters

➤ A booming industry and known for its premium quality

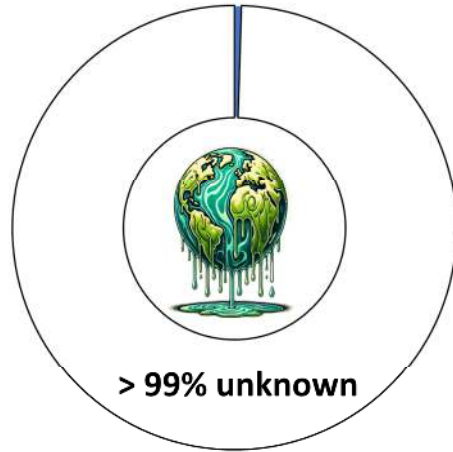


Macadamia growing regions

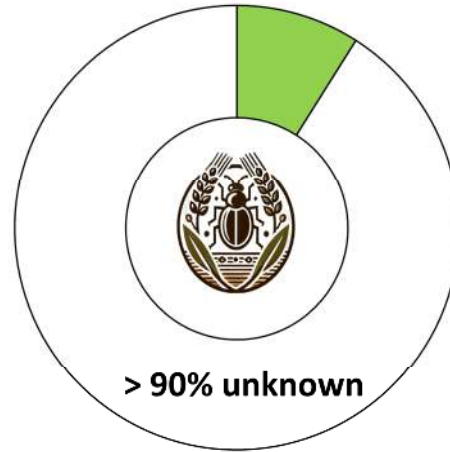
Pests of Macadamia



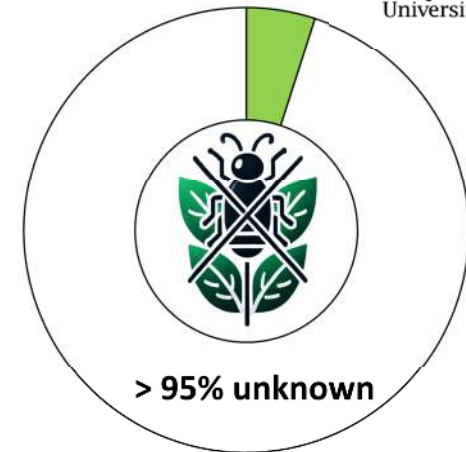
Population dynamic



Environmental effect on
population dynamics



Other key pests of Macadamia



Pest management



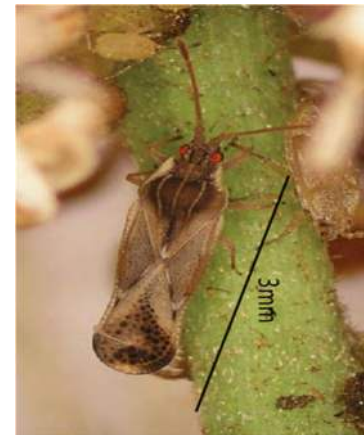
Fruit spotting bug
Amblypelta nitida



Banana spotting bug
Amblypelta lutescens



Macadamia seed weevil
Kuschelorhynchus macadamiae



Macadamia lace bug
Ulonemia decoris

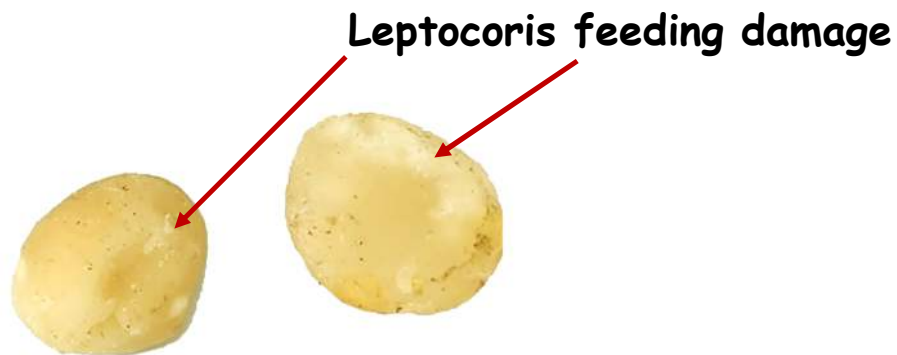


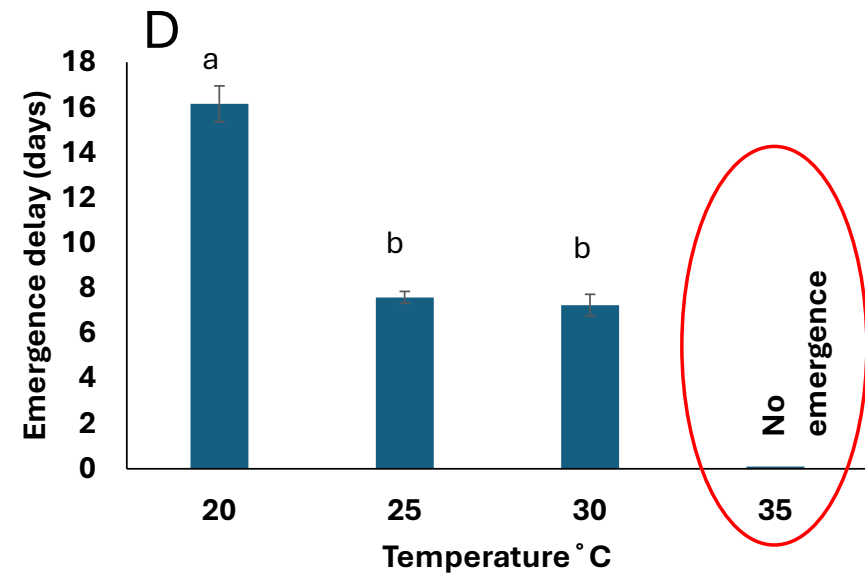
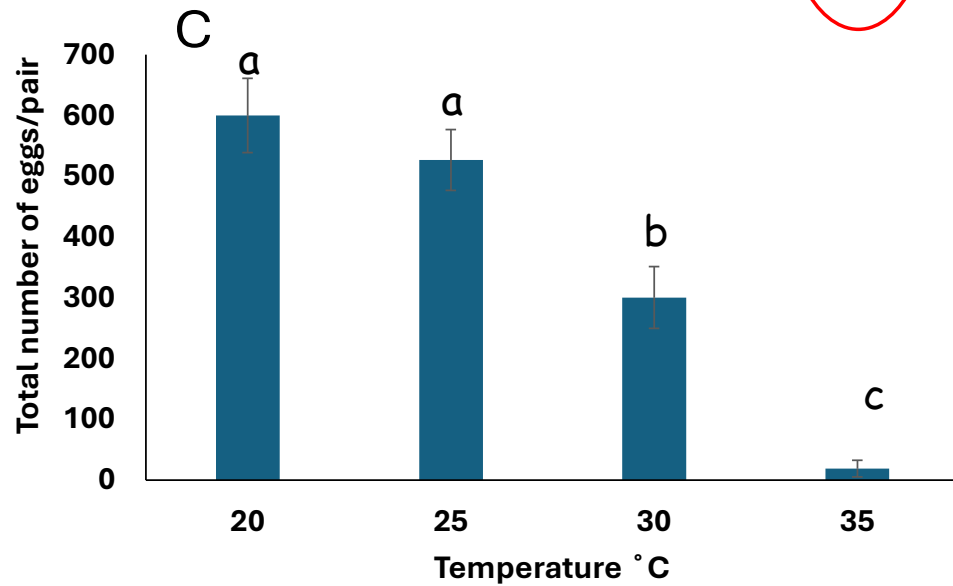
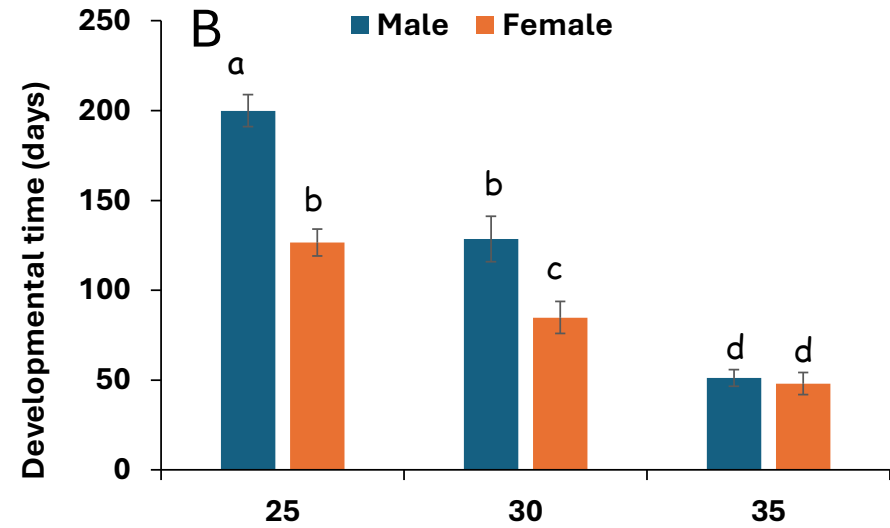
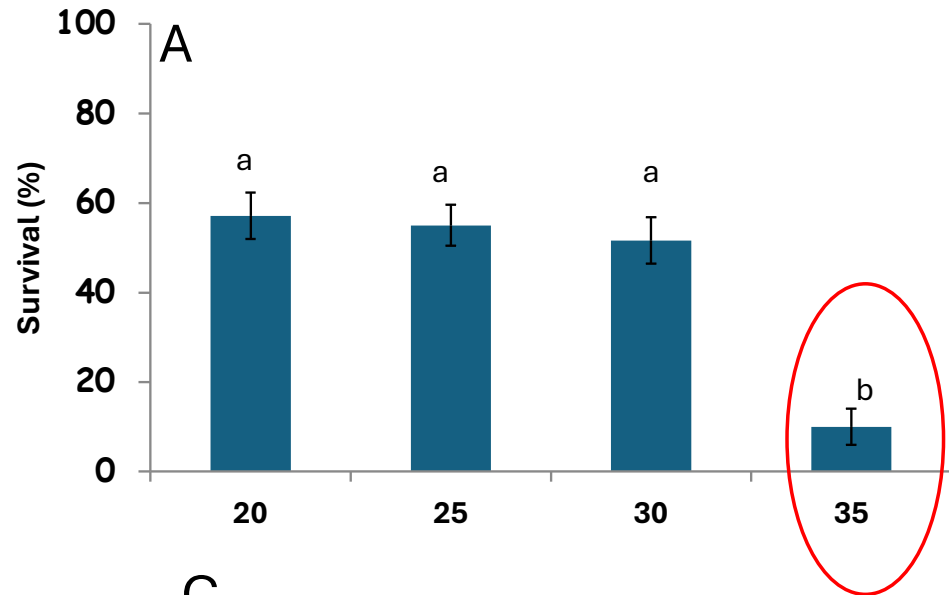
Red-eye bug
Leptocoris tagalicus



Temperature dependent development and survival rates of *Leptocoris tagalicus*

- *Leptocoris* was reared on 10, 15, 20, 25, 30 and 35 °C
- Population models, simulate pest growth under different climate conditions
- Predict when pest populations are likely to peak
- Inform outbreaks and time management practices accordingly





(A) Mortality, (B) Mean longevity, (C) number of laid eggs, and (D) emergence delay, all measured across different temperatures. Error bars denote standard error. Different letters indicate significant differences among temperatures ($P < 0.05$)

Conclusions

- **Temperature Threshold:** $> 20\text{ }^{\circ}\text{C}$ to $< 30\text{ }^{\circ}\text{C}$
- **Reproductive Response to Temperature:** Optimal egg viability at 25°C
- **Regional Temperature Relevance:** The optimal temperature range for *L. tagalicus* coincides with the typical climate conditions in major macadamia growing areas in Australia, making these findings particularly relevant for local pest management strategies.

**Hort
Innovation**



**THANK
YOU**

