



Trap cropping for pest management

January 2024

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Trap cropping



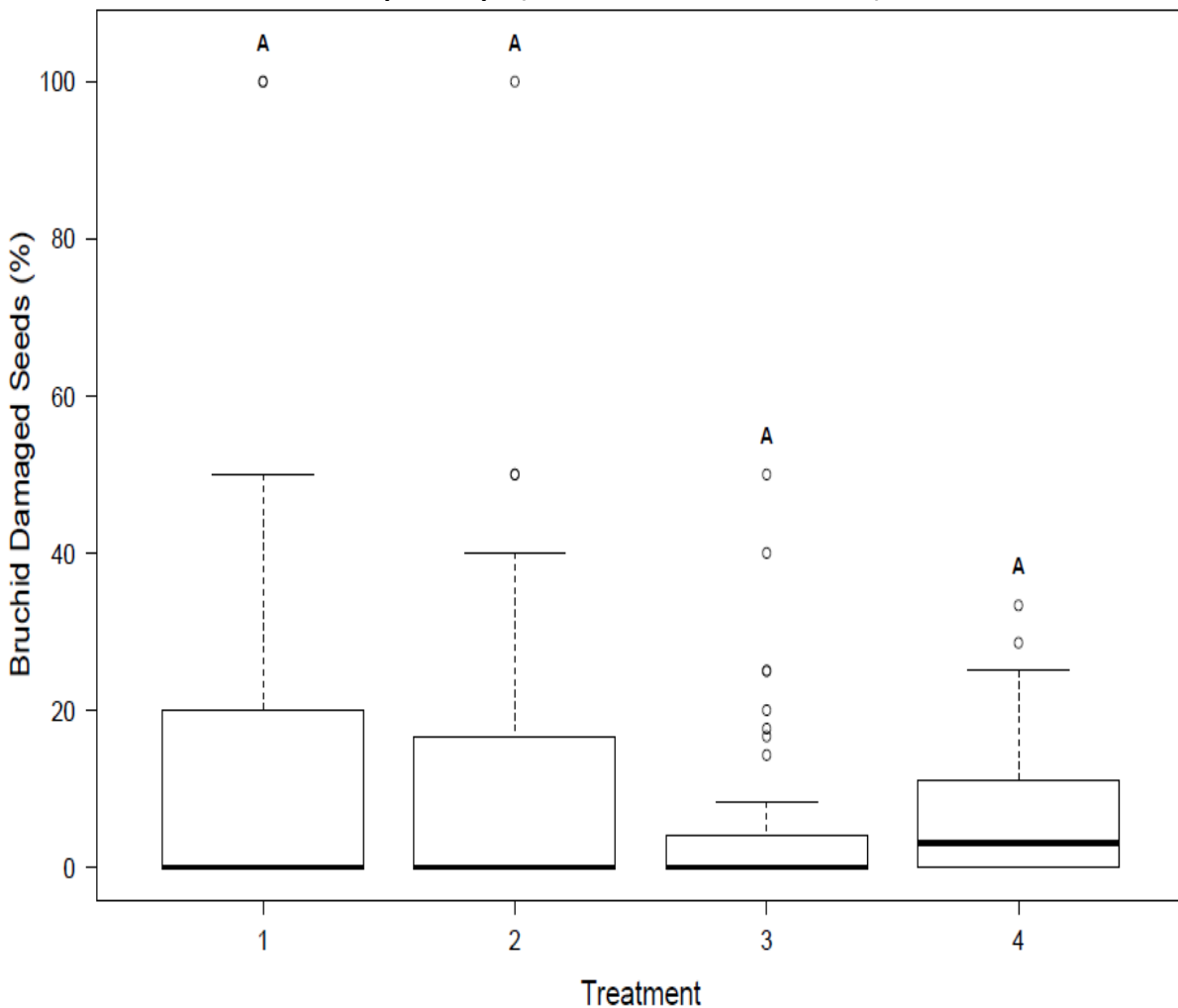
- Trap cropping is a traditional technique used to manipulate agricultural ecosystems, providing differential conditions for oviposition and feeding, and diverting and intercepting target species to reduce impact in the main crop (source: Shelton and Badenes-Perez, 2006).
- This may be use of different plant host species or difference in timing of crop species (e.g., drilling date, flowering date).



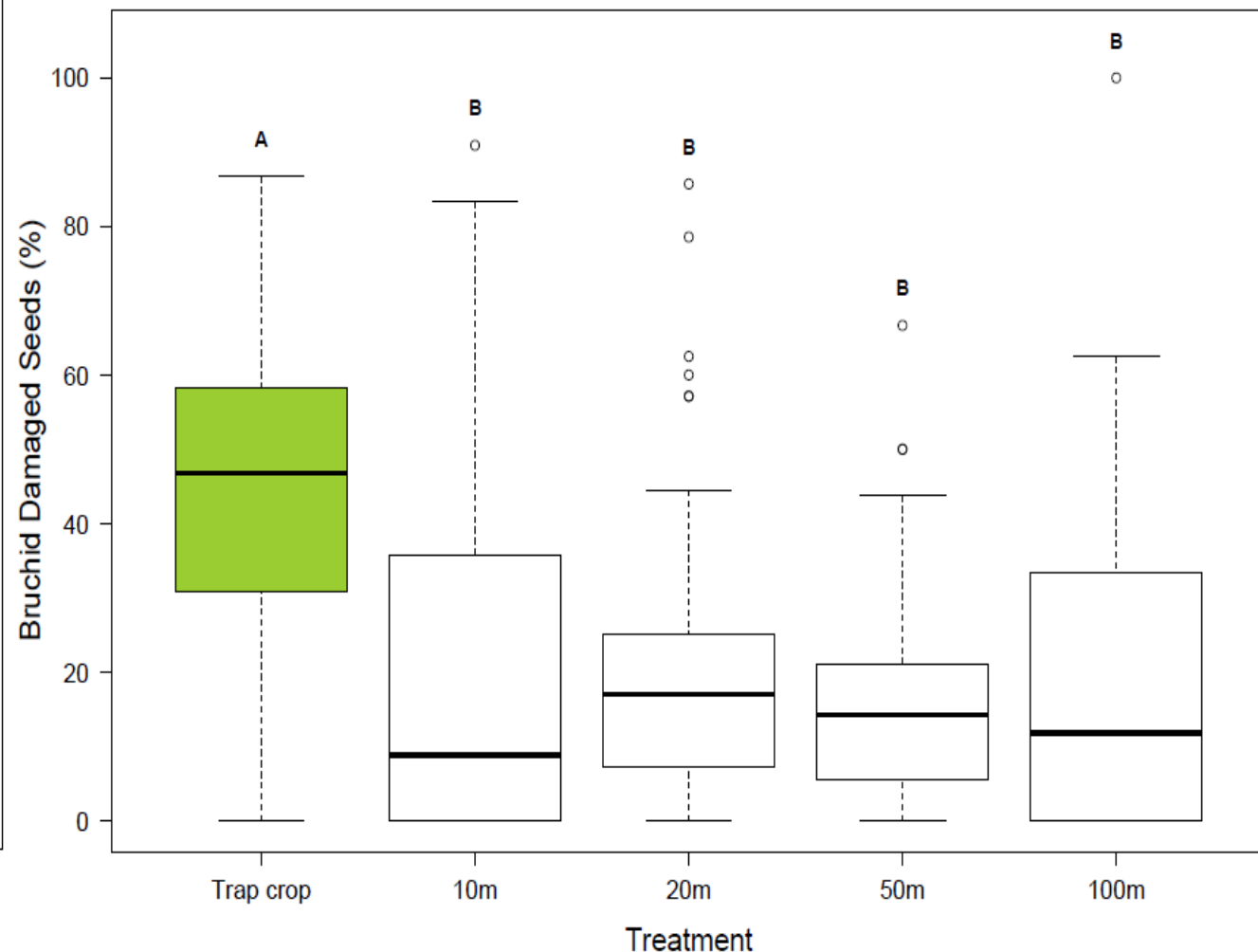
Bruchid



Bruchid damage 2022 mixed legume trap crop (no insecticide use)



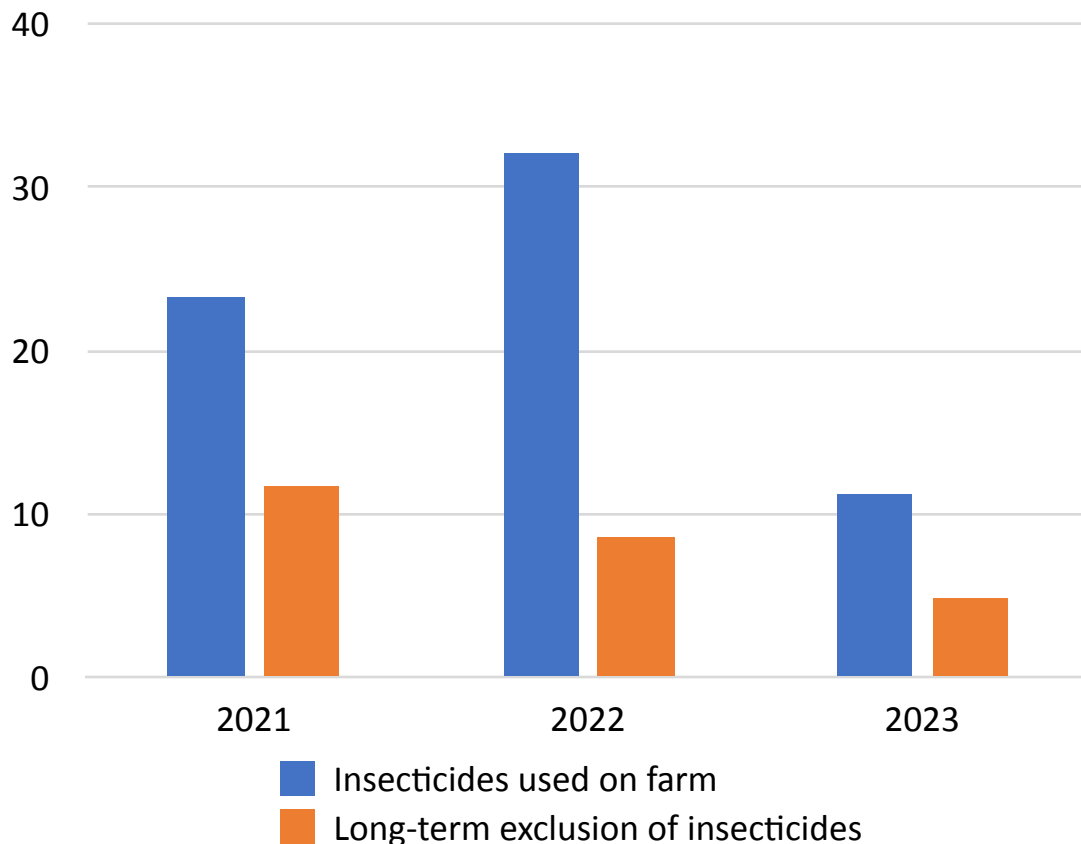
Bruchid damage 2022 bean trap crop (insecticides used)



Bruchid



Mean percentage bruchid damage in beans

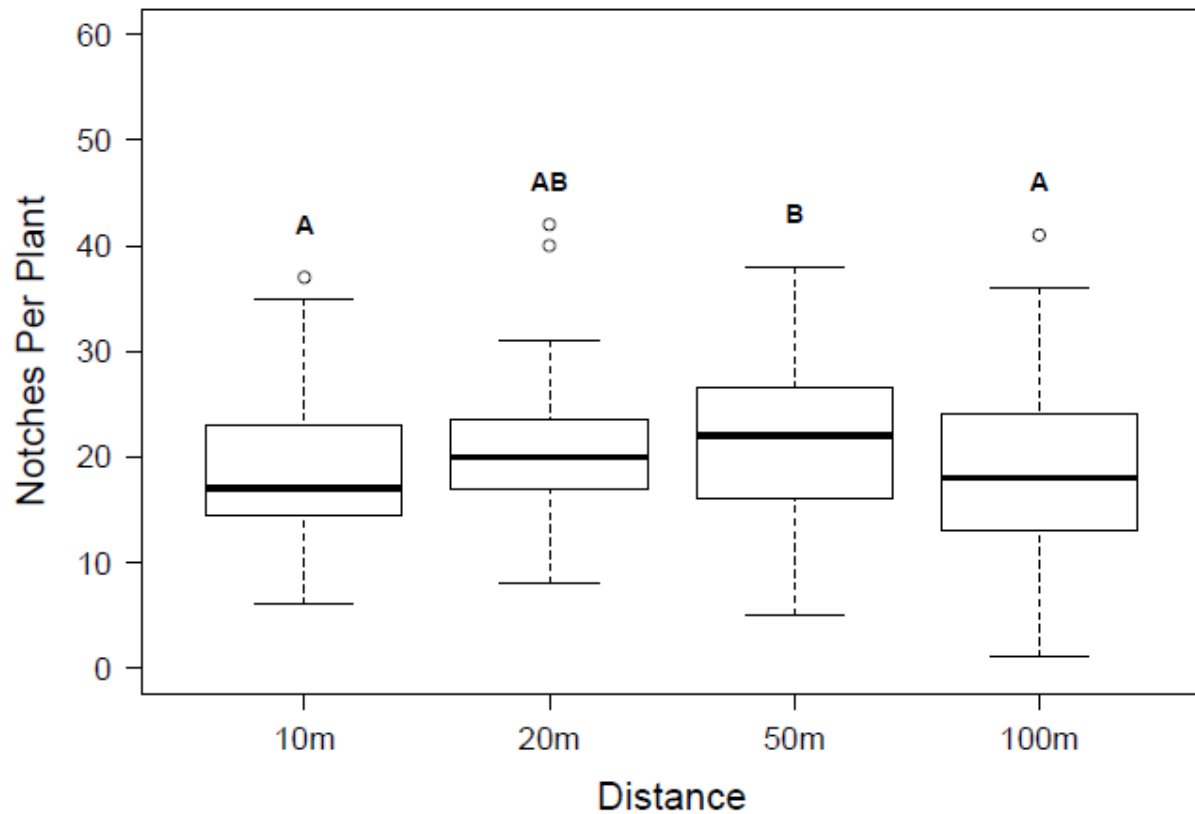


- This may indicate that a more balanced ecosystem leads to reduced pest pressure from bruchids.
- It may be related to levels of beneficial insects (parasitic wasps) and further analysis is required.
- This wasn't consistently true in every year for weevil populations although ground beetles are natural enemies of eggs and adults, as is *Beauveria bassiana*.
- Further analysis of ground beetles and other beneficials is required.

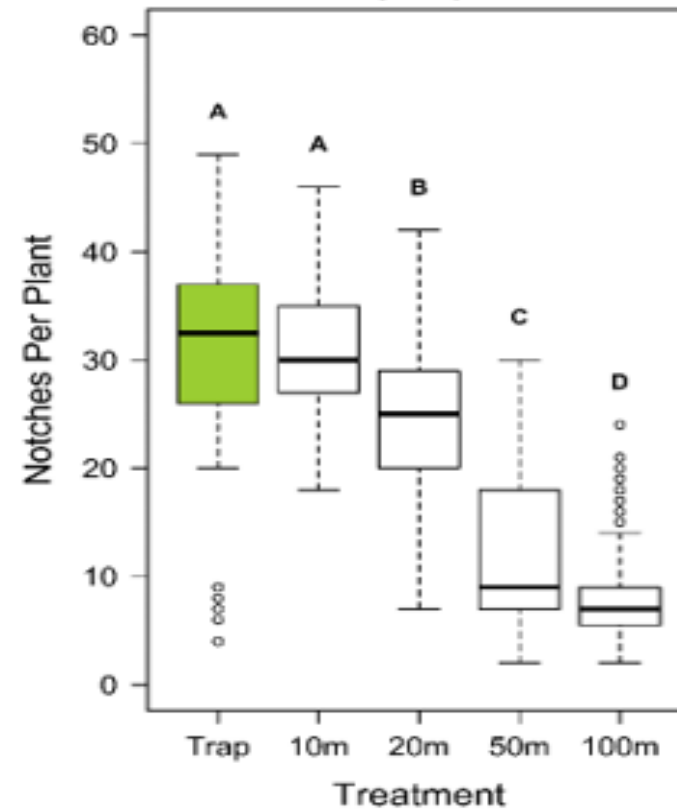
Weevil



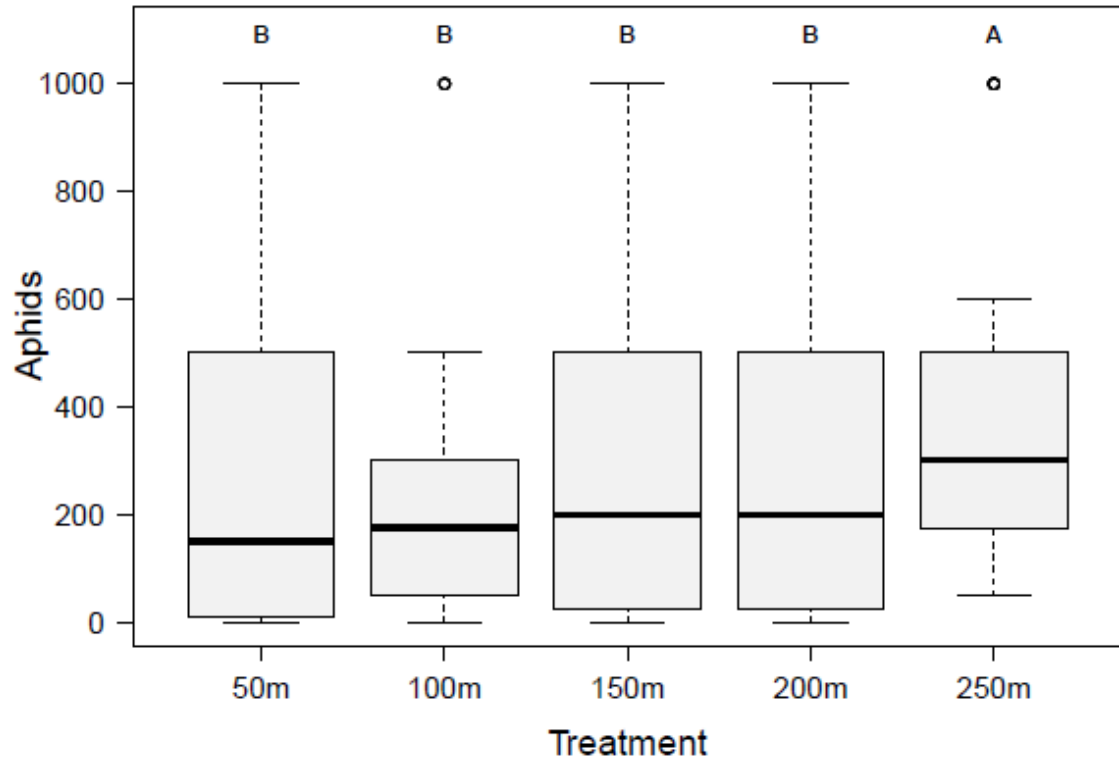
Weevil damage 2022 mixed legume trap crop (no insecticide use)



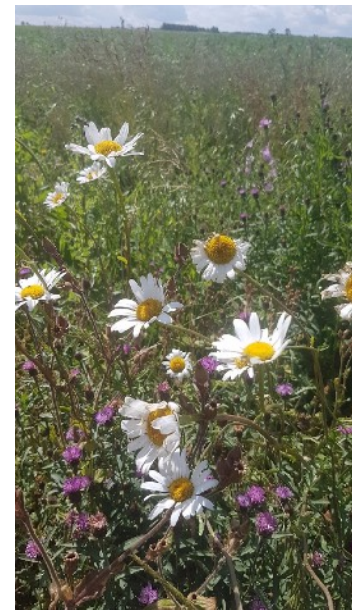
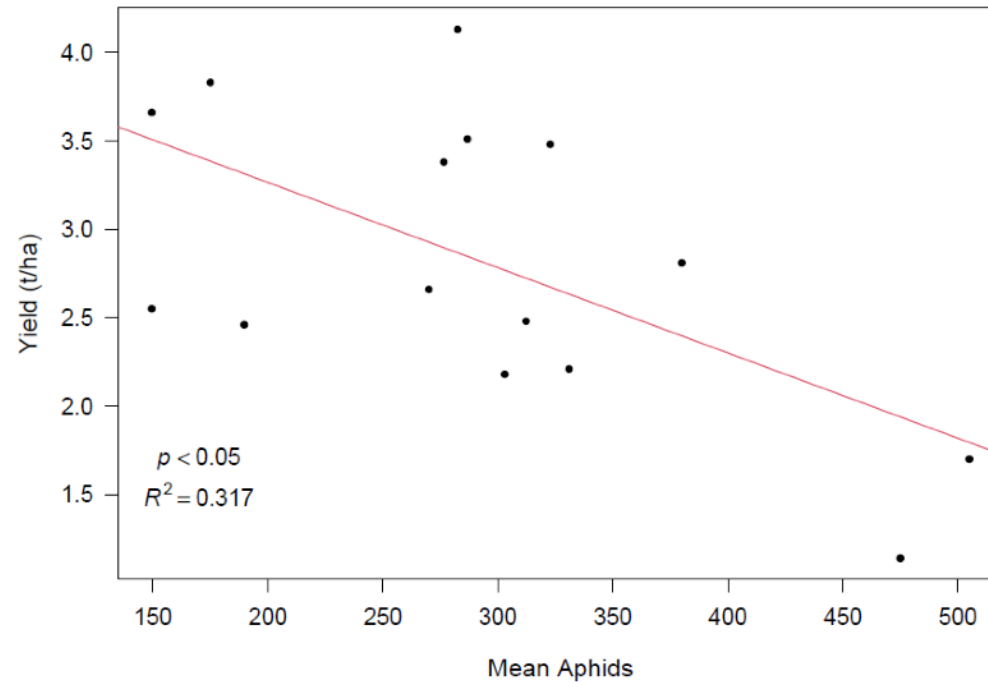
Weevil damage 2022 bean trap crop (insecticides used)



Aphids



- Aphid numbers increased slightly with distance away from the mixed trap crop area in 2023.
- Yield correlated with aphid numbers.



Conclusions



- Late sown winter beans (January) as a trap crop have provided clearer impact on in-field bruchid beetle pest populations than other legume mixture trap crops, but less consistent impact on aphids.
- This effect was present for weevil damage in two of three years of study.
- Bruchid damage was lower on the sites that employed long-term exclusion of insecticide applications (more than 10 years).
- There appeared to be an effect of the mixed flowering trap crop (including legume species) on aphid populations in 2023, and this needs further data analysis to compare against the levels of beneficials in the crop.
- The impact of plant volatiles and pheromone attractants was variable across the years and sites.

