

Ecological and Economic Benefits of Flowering Understoreys in an Agroforestry System

Agroforestry can be beneficial for biodiversity compared with monocultures, but the effects are highly variable. Management of the vegetation below the trees (the understorey) could be a key factor explaining this variation. The aim of this study was to investigate whether management of the tree understorey within an agroforestry system influences insect biodiversity and pest regulation, by comparing uncut flowering vs mown understoreys.

Research questions

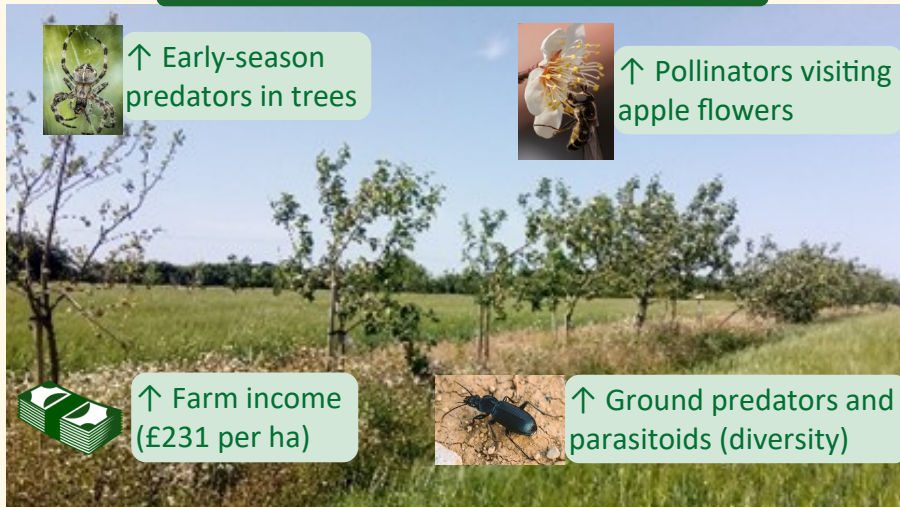
- How does understorey management affect:
 - Insect pests and their predators?
 - Pest damage to apples?
 - Pollinator visitation to apple flowers?
 - Farm income?

The study site

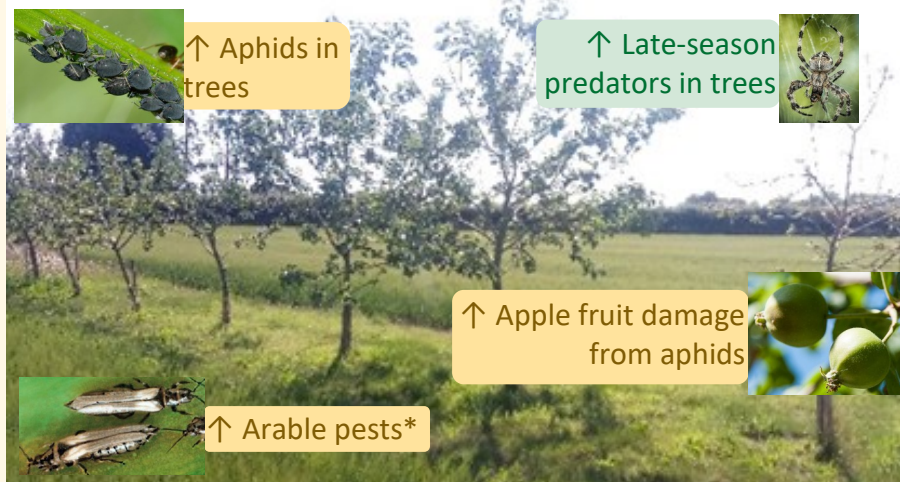
- ⇒ Apple-arable agroforestry system
- ⇒ Working farm in Nottinghamshire, UK
- ⇒ 24m wide crop alleys, 3m wide tree rows
- ⇒ Trees planted in early 2014
- ⇒ Understoreys sown with flower mix



Uncut flowering understoreys - results



Mown understoreys - results



↑ means increase relative to the alternative understorey management
* This result should be treated with caution because of possible sampling bias, see full article for further information

Implications for practitioners

The uncut flowering understoreys were a 'win-win' for biodiversity, aphid suppression, pollinator attraction, and farm income.

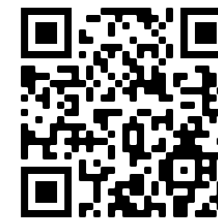
However, other factors such as weeds, rodents, and tree growth, which were not included in this study, should be considered.

Implications for research

This study suggests that understorey management and seasonal variation are important complicating factors in studies comparing biodiversity between agroforestry and monocultures.

Understorey management should be taken into account in future studies of biodiversity in agroforestry systems.

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Contact: Tom Staton, University of Reading:
t.staton@pgr.reading.ac.uk

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