



Update on Invasive Pests and New Ant Baits for Rosy Apple Aphid Control

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New, emerging and re-emerging pests and diseases that may pose a threat to UK apple and pear

Objective

- Updated future risk register- previous update in 2023

Methods

- Internet searches on pests and diseases (P&D) reviewed and summarised
- Pests from earlier (AHDB and BAPL funded) work

Outcome

- Risk register P&D emerging, different regions
- Recommended monitoring/control strategies



Bacterial and Phytoplasma Threats

Pathogen (Disease)	Risk Level
<i>Xylella fastidiosa</i> (Bacterial leaf scorch)	High
<i>Erwinia amylovora</i> (Fire blight disease)	Moderate
<i>Candidatus Phytoplasma mali</i> (Apple proliferation)	Moderate



Grape leaf showing signs of *X. fastidiosa* infection

Credit: University of California:

<https://edis.ifas.ufl.edu/publication/IN174>

Notable update

Xylella fastidiosa- Natural products - essential oils, and potassium soap to manage insect vectors



Fungal Threats

Pathogen (Disease)	Risk Level
<i>Diplodia bulgarica</i> (Black canker of apple and pear)	High
<i>Neonectria ditissima</i> (European canker)	High

Notable update

- ***Diplodia bulgarica***: *Trichoderma* strains can effectively suppress the fungus, reducing disease severity
- ***Neonectria ditissima***: volatile organic compounds (VOCs) identified as potential early indicators of infection



***Diplodia bulgarica* (Black canker of apple and pear)**

Image courtesy of

<https://bsppjournals.onlinelibrary.wiley.com/doi/full/10.1002/ndr2.12004>



***Neonectria ditissima* (European canker)**

Image courtesy: Department of Agriculture, Australia

Scientific name (Common name)	Risk Level
<i>Chrysobothris mali</i> (Pacific flatheaded borer)/ <i>Chrysobothris femorata</i> (Flatheaded apple tree borer)	Moderate
<i>Rhynchaenus pallicornis</i> / <i>Orchestes pallicornis</i> (Apple Flea Weevil/ Apple leaf-mining weevil)	Moderate
<i>Pammene rhediella</i> (Fruitlet mining tortrix)	Moderate
<i>Cornu aspersum</i> / <i>Cryptomphalus aspersus</i> (Garden snail)	Moderate



Chrysobothris mali (Pacific flatheaded borer)/ *Chrysobothris femorata* (Flatheaded apple tree borer) Image courtesy: <https://ipm.ucanr.edu/agriculture/plum/pacific-flatheaded-borer/#gsc.tab=0>

Image courtesy- Ken Gray



Notable updates for Coleoptera, lepidoptera and Mollusca

- ***Pacific flathead borer***: Predatory beetles and four species of parasitic wasps
- **Apple flea weevil/ Apple leaf-mining weevil**: Parasitoids used effectively in control
- **Garden snail**: Ferric phosphate pellets used in UK (including for organic systems)



Pammene rhediella (Fruit mining tortrix)

Image courtesy: Peter Tallantire



Photo courtesy- CABI Compendium

Recommendations for Growers



Magdalis armigera (Magdalis beetle)

Image Courtesy: Naturespot

- Growers and their agronomists should be vigilant to new P&D
- Imported plant material isolated and checked before planting, especially to mitigate against viruses
- Non-native species reported to plant health authorities
- Control options checked with a BASIS-qualified adviser





Testing Ant Baits To Control Rosy Apple Aphid

Background

- **The pest:** RAA is a significant pest causing substantial leaf and fruit damage
- **Challenge:** The common black ant (*Lasius niger*) shields aphid colonies from generalist predators
- **Objective:** **Disrupt ant tending of RAA using sugar-based bait pellets**
- **Actions:** (i) Test different sugar pellets from RIPM for suitability in field experiments, and (ii) field trial to disrupt ant tending of RAA

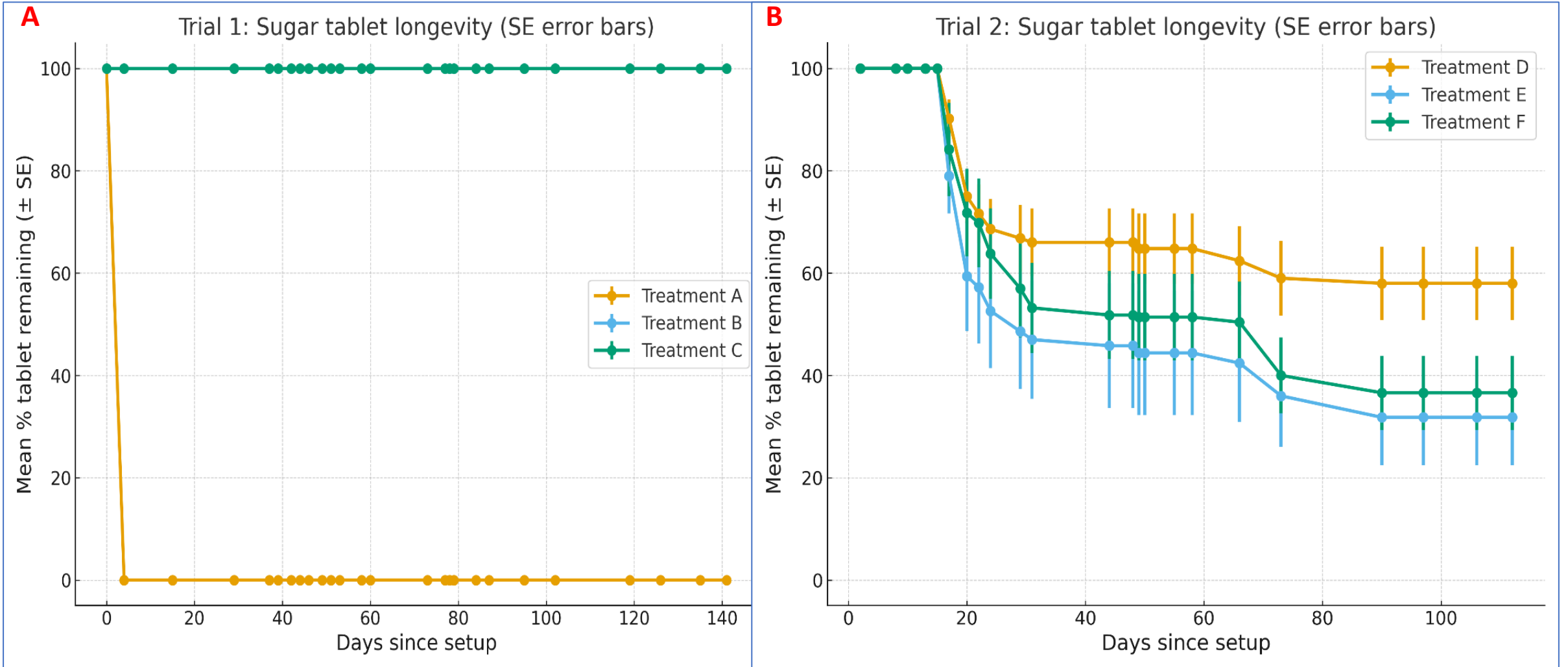


Apple leaf damage caused by RAA infestation

Background: Spreading of Pellets evenly under apple trees



Results- Bait Pellet Longevity Tests



Pellets from treatments B and C retained 100% original mass at each assessment.

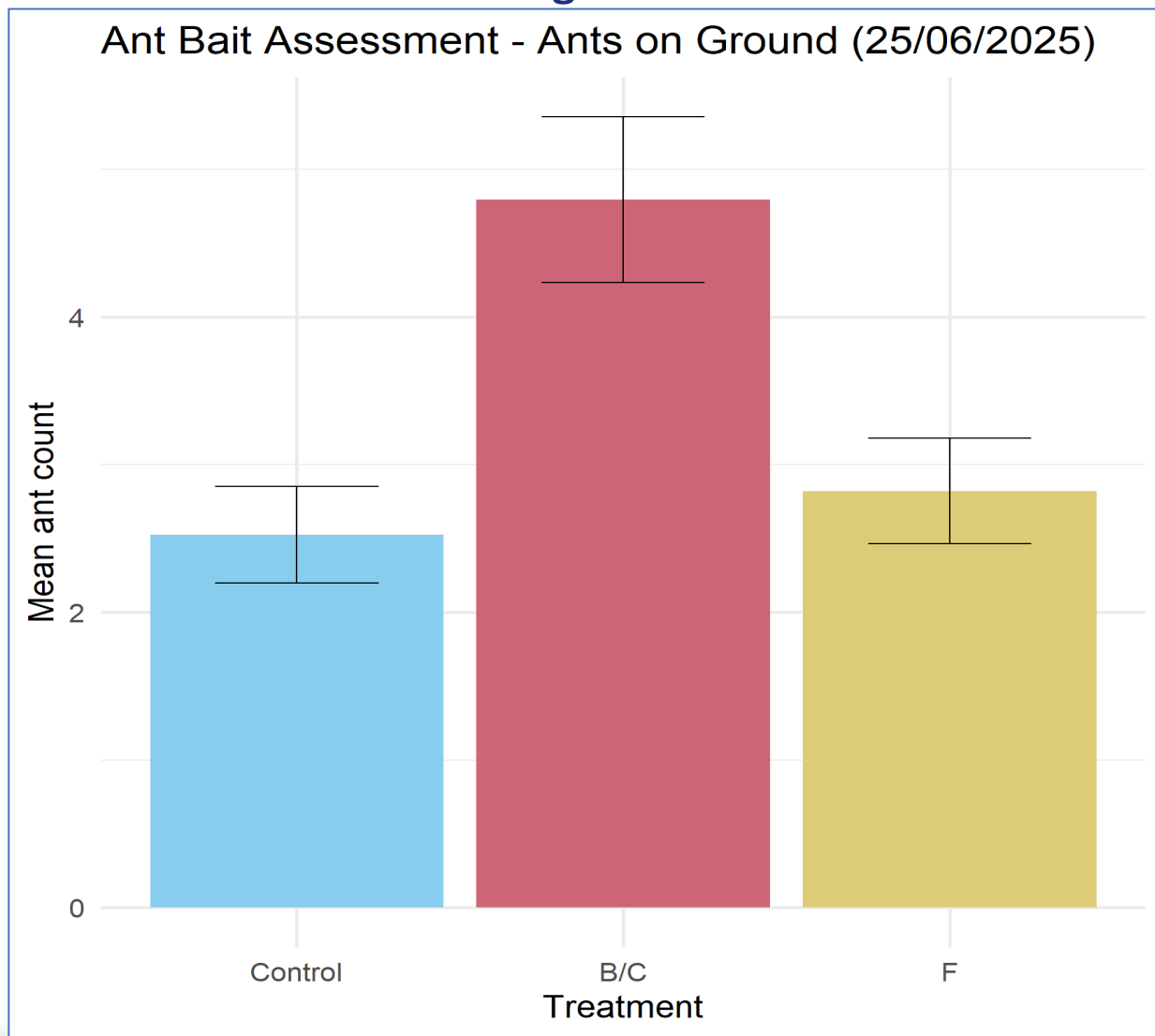
Trial 2, formulations (D–F) maintained **100%** mass for 15 days.

Pellets B/C and F selected for field experiments

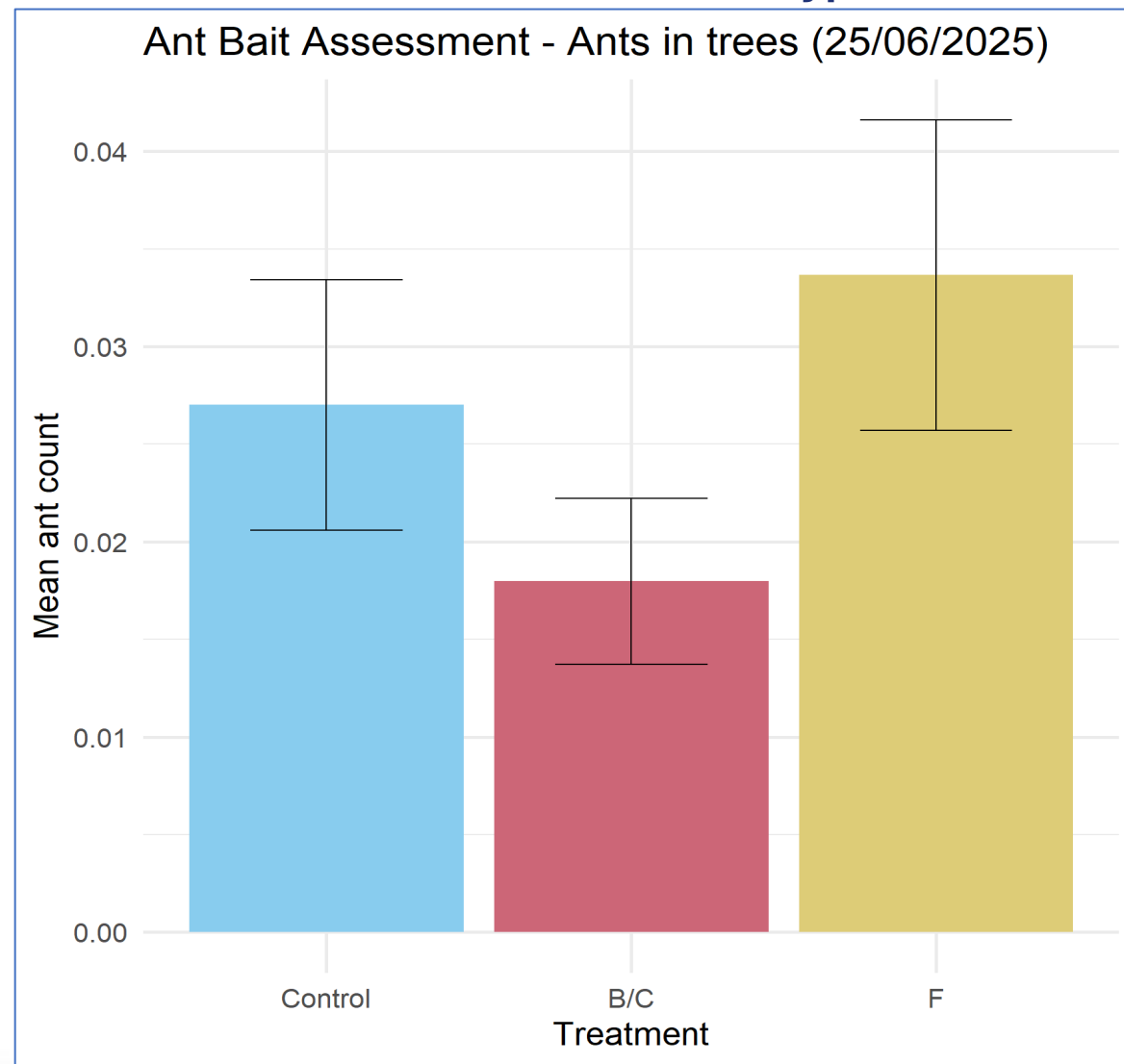


Results- Field trials with pellets B/C and F

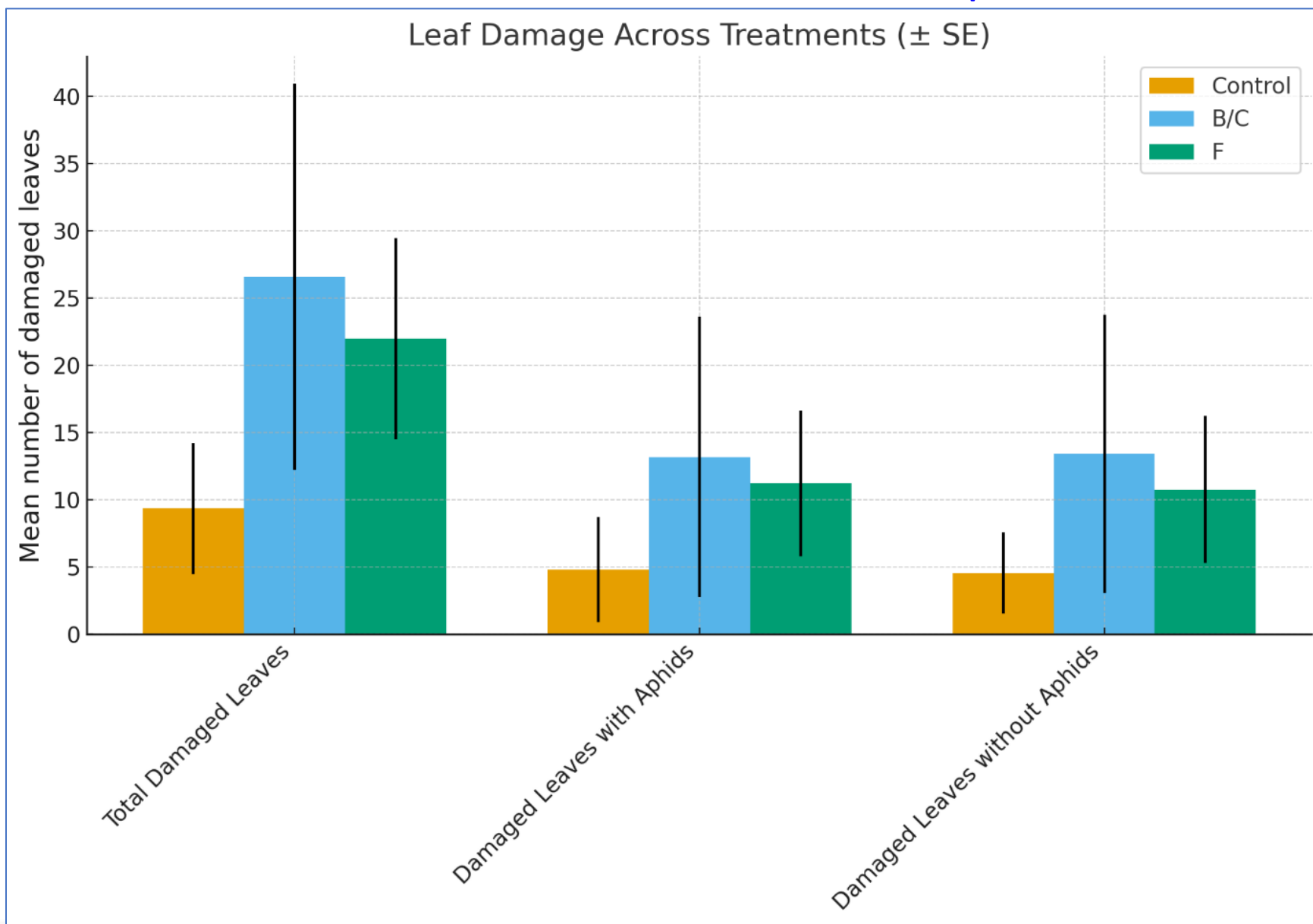
Bait B/C was significantly more attractive to ants on the ground



There was no significant effect of the number of ants in trees for both bait types



Results- Field trials with pellets B/C and F



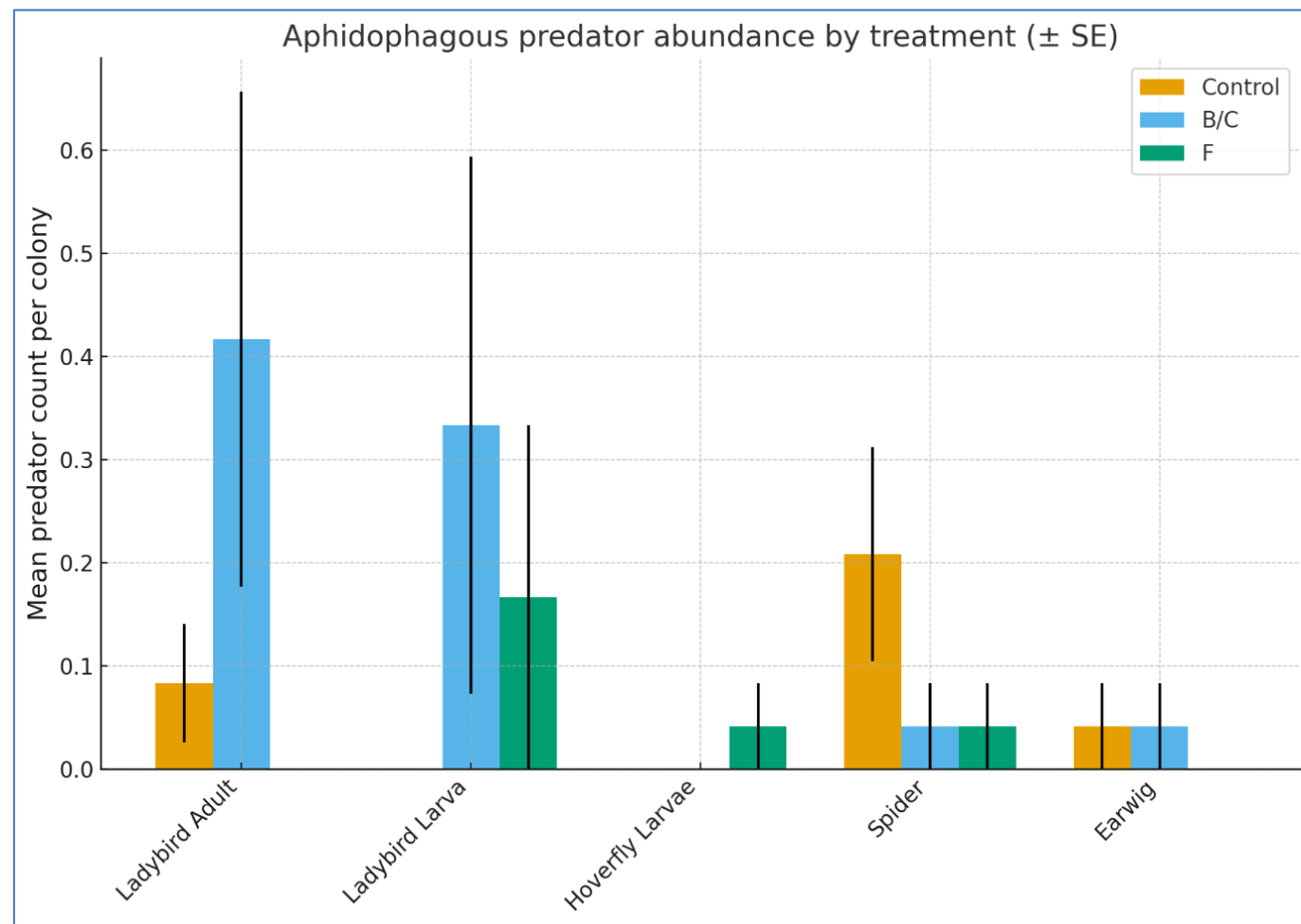
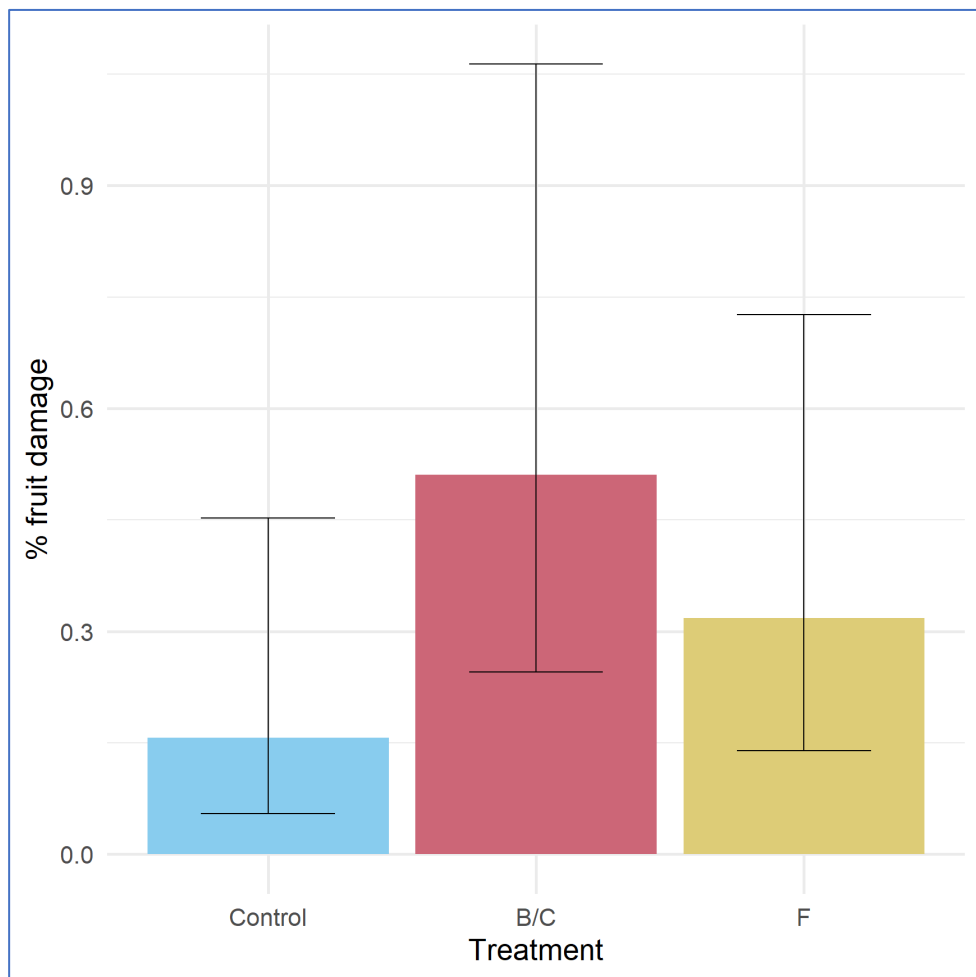
Leaf damage assessment as a proxy for RAA infestation revealed more serious damage where pellets were deployed



Results- Field trials with pellets B/C and F

RAA Damage Harvest Assessment: Significantly higher RAA damage in B/C relative to the Control

Aphidophagous predator insects: B/C trees supported highest abundance, but predator distribution was patchy – more near large aphid colonies



Conclusions

- 2025 trial - formulation B/C attractive to ants on orchard floor
- Attraction did not translate into less tending of RAA or lower damage at harvest
- Potentially bait placed close to trunks did not result in a trade-off with canopy access.
- More work is planned to deter mammal feeding on baits - **foraging by foxes on sugar pellets**



Proposed Future Work

We recommend that

1. Follow-on trials with modified ant-attractive bait with **mammal deterrent**
2. Deployment of bait away from tree. We propose two approaches;
 - **Alleyway-only deployment** (away from trunks) to pull ants away from tree
 - **Whole orchard floor** to outcompete RAA honeydew



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