The effect of pollen provisioning on plant feeding and non-plant feeding phytoseiids in different planting systems

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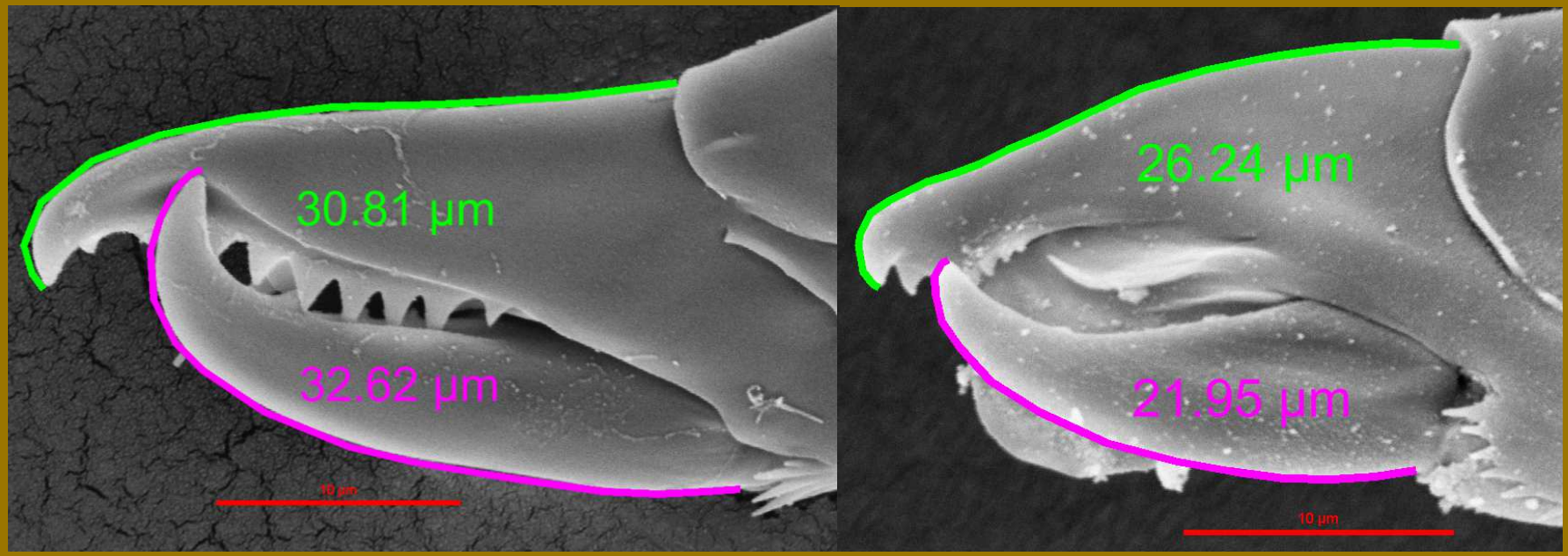
Lecture Outline

- non-plant feeding generalist *A. swirskii* vs. the plant feeding *E. scutalis*.
- Predator establishment on young pepper plants before flowering
- Predator establishment and whitefly control on cucumber plants
- Plant feeding *E. scutalis* establishment and persea mite control on avocado
- Cultivar effect on predator species establishment and subsequent biological control
- Summary, future research

Characterization of cheliceral form of plant feeding and non-plant feeding phytoseiids

Non Plant Feeding

Plant Feeding

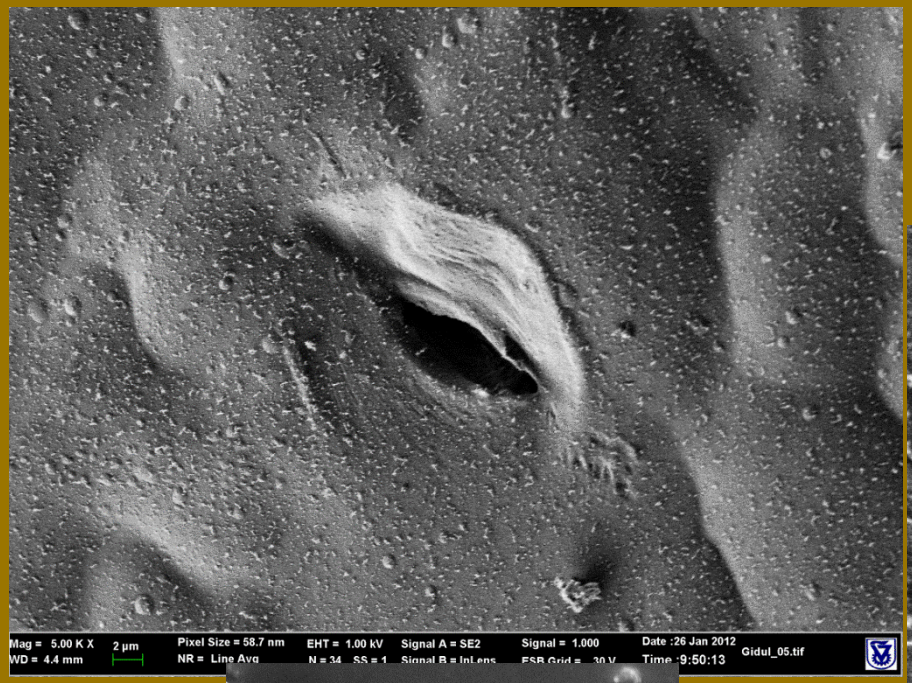


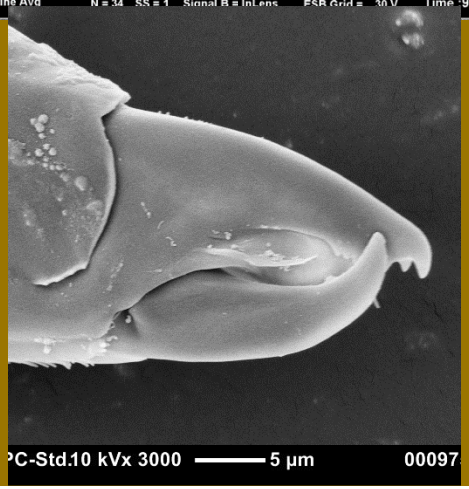
Amblyseius swirskii

Euseius scutalis

Adar et al. 2012

Puncture whole of movable digit with imprint of fixed digit on leaf surface





Adar et al. 2015

Do phytoseiid predators feed on plant tissue (Nomikou *et al.* 2003)

- To test this hypothesis, a systemic insecticide was applied to the soil of cucumber plants.
- Survival of predatory mites on leaves from insecticide-treated plants and untreated plants, both in presence and absence of pollen was assessed.
- Survival of *E. scutalis* on leaves from insecticide-treated plants was 10 times lower than on leaves from untreated plants. Whereas survival of A. swirskii was not affected.
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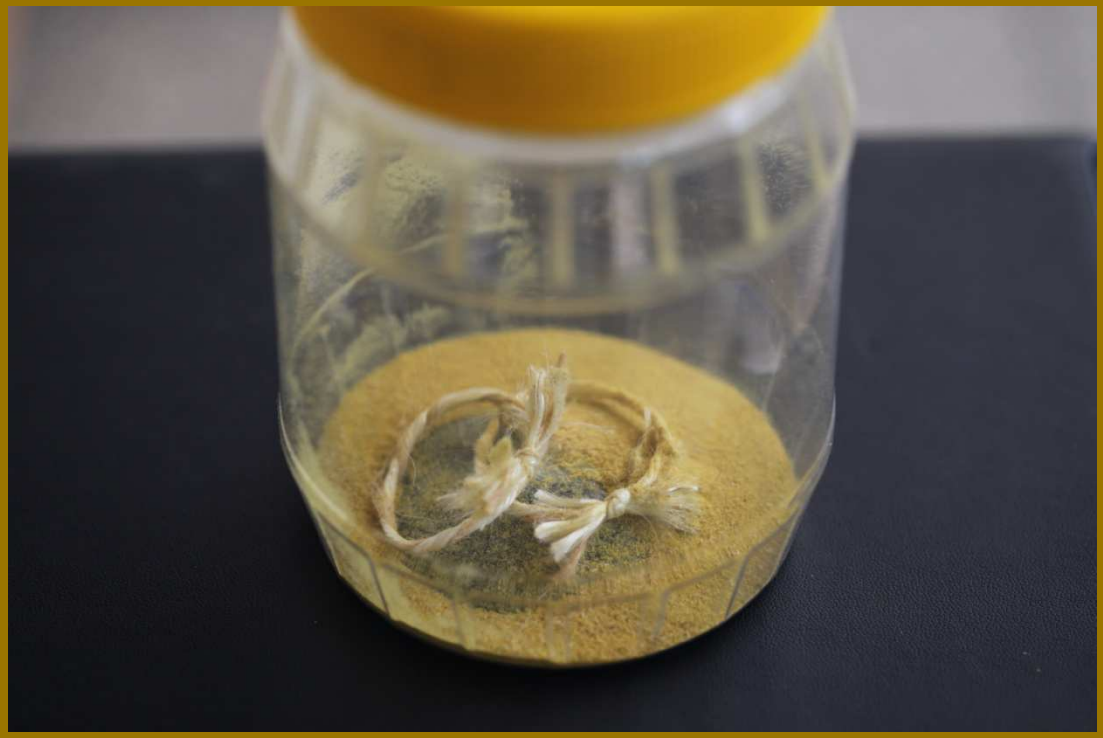
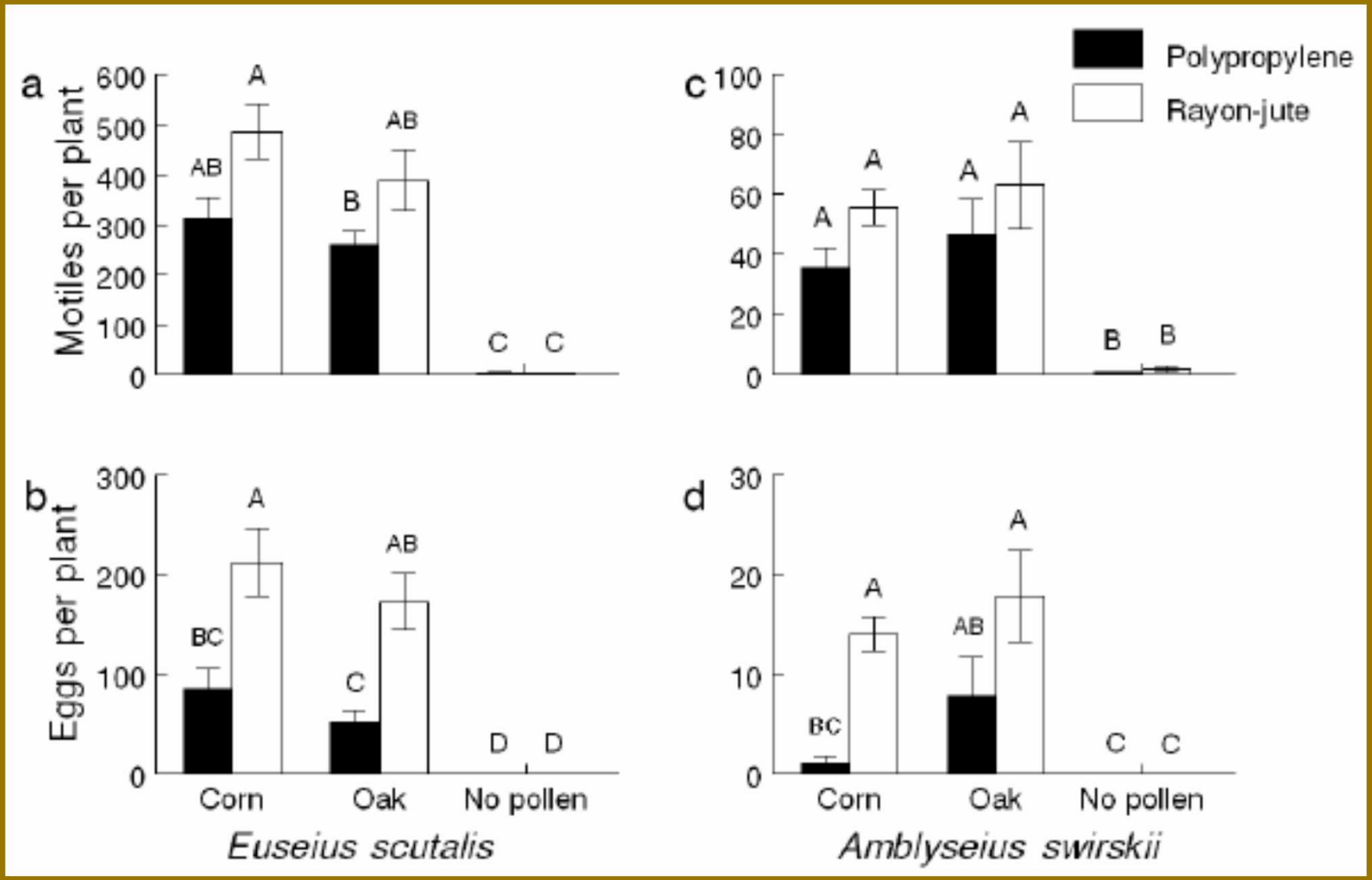
A ring of twine composed of rayon and jute fibers, loaded with pollen on pepper plants

A simple method for loading corn pollen on twine

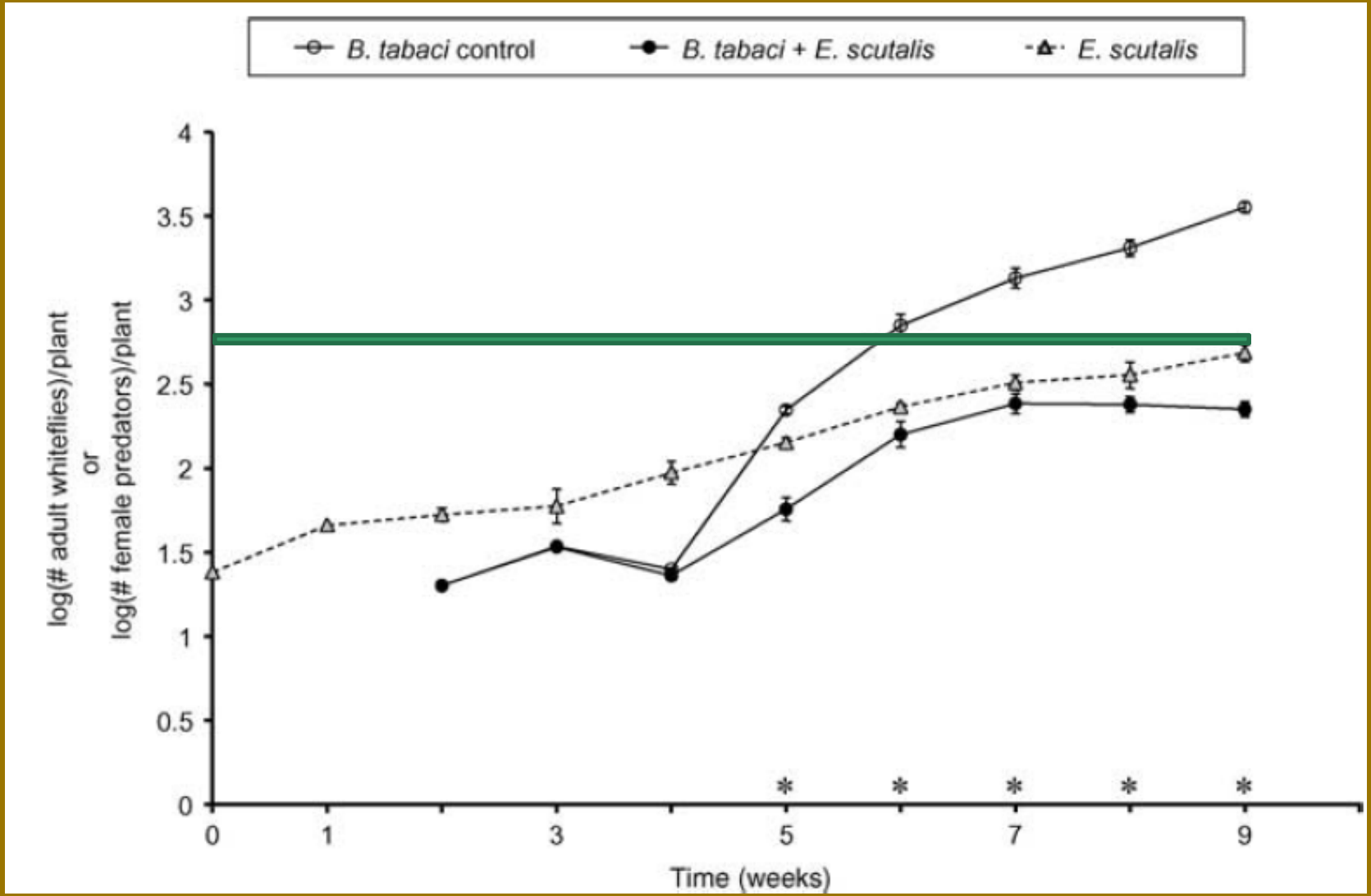


Adar et al. 2014

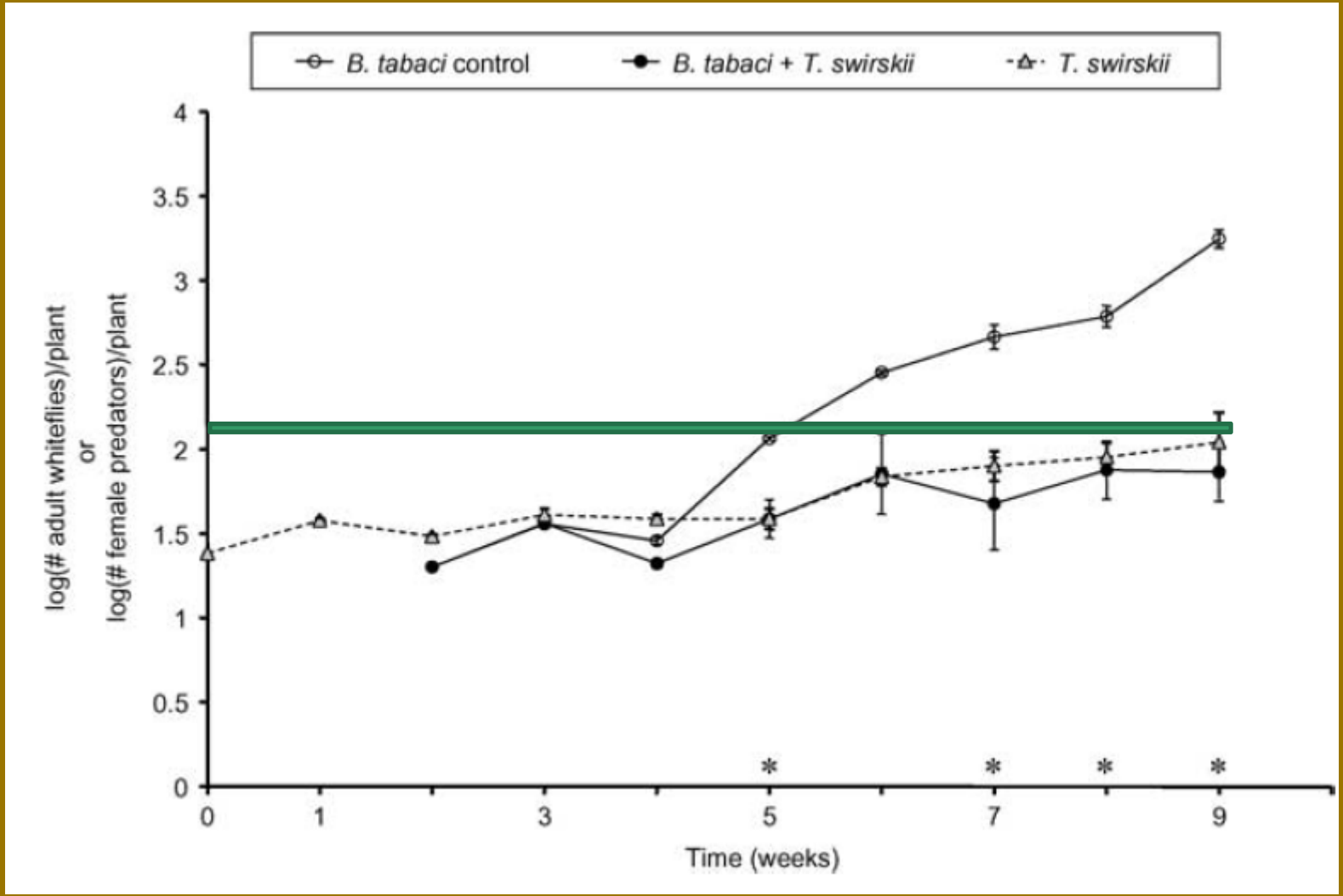
The effect of pollen on twine on motiles and eggs of *E. scutalis* and *A. swirskii*



Population dynamics of adult *B. tabaci* and adult females *E. scutalis (*Nomikou *et al. 2002)*

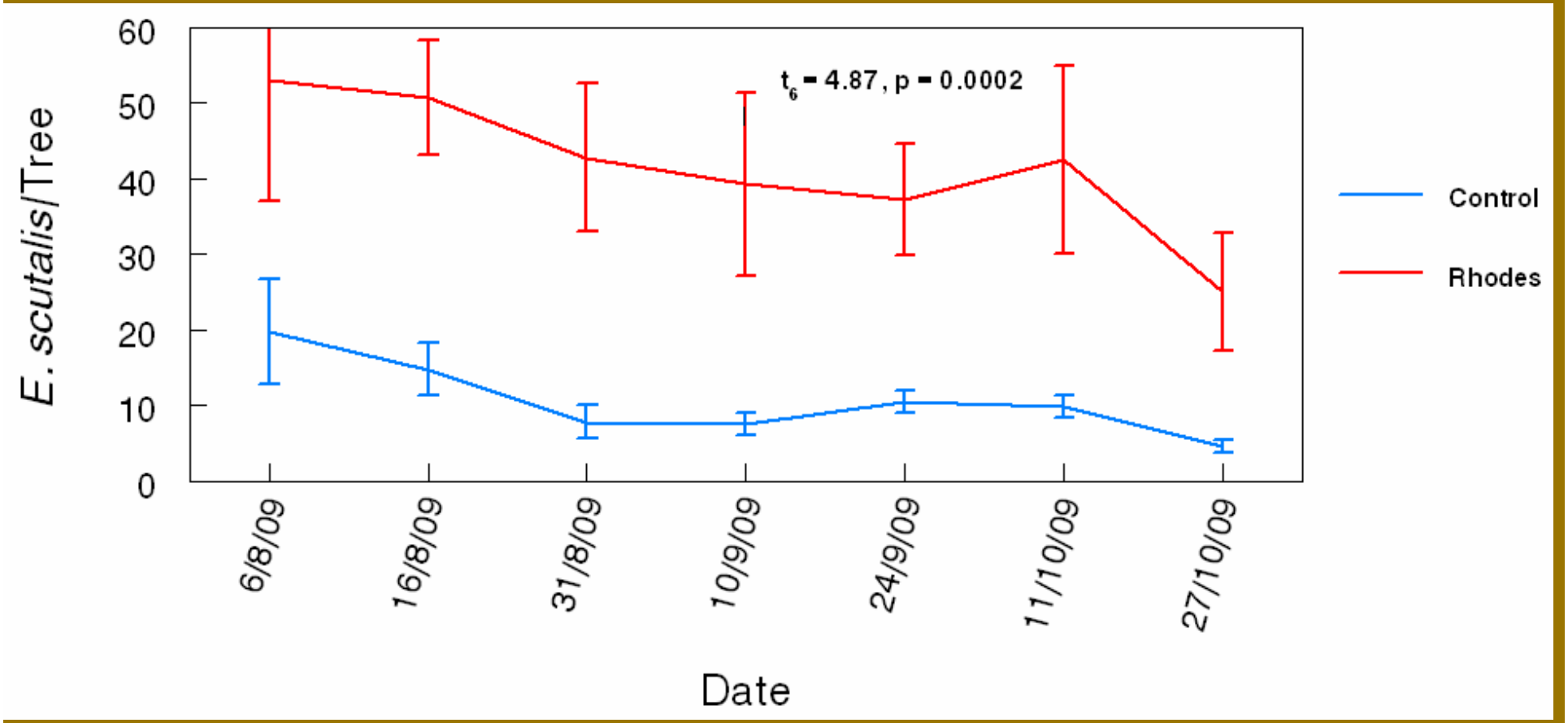


Population dynamics of adult *B. tabaci* and adult females *A. swirskii (*Nomikou *et al. 2002)*

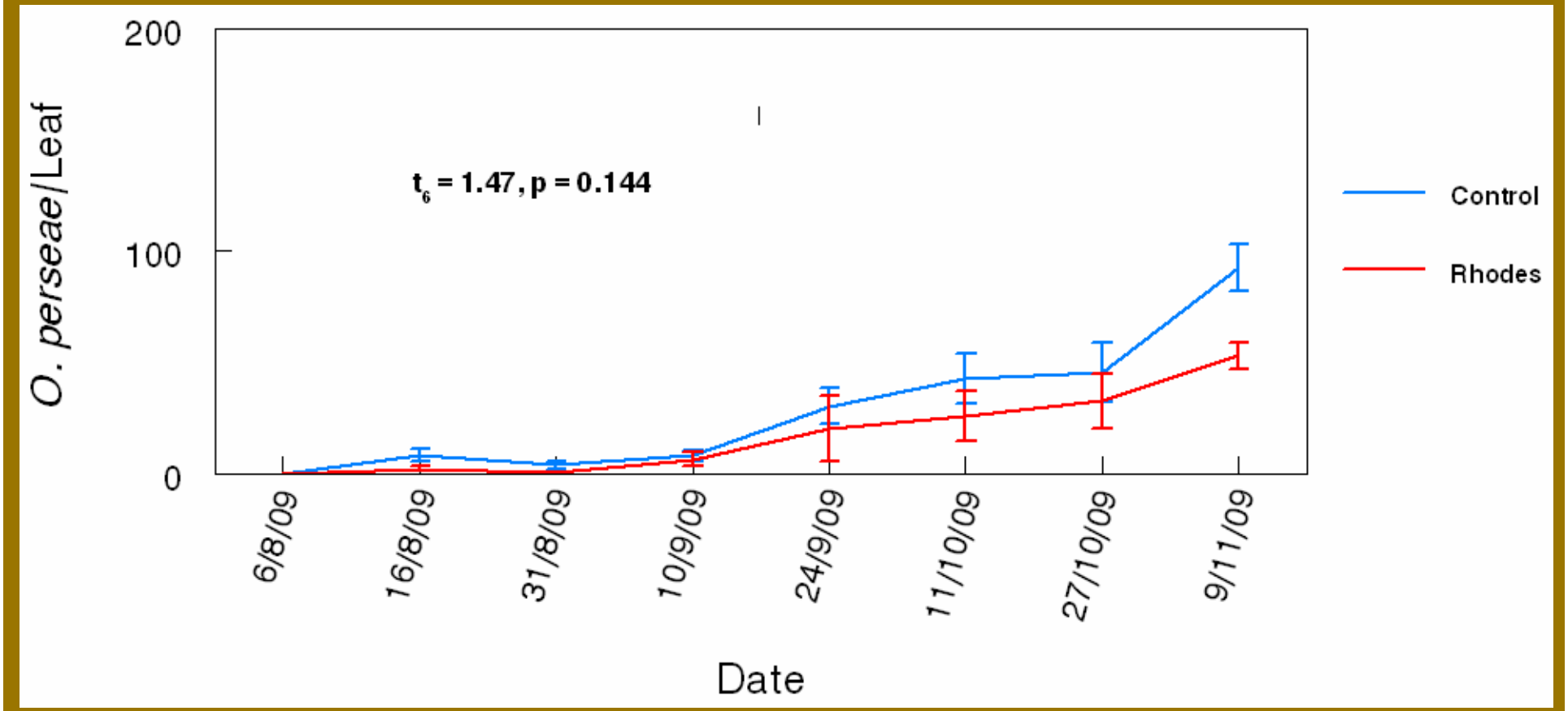


Pollen provision with Rhodes grass in avocado

Promotion of *E. scutalis* with pollen provision using Rhodes grass-2009

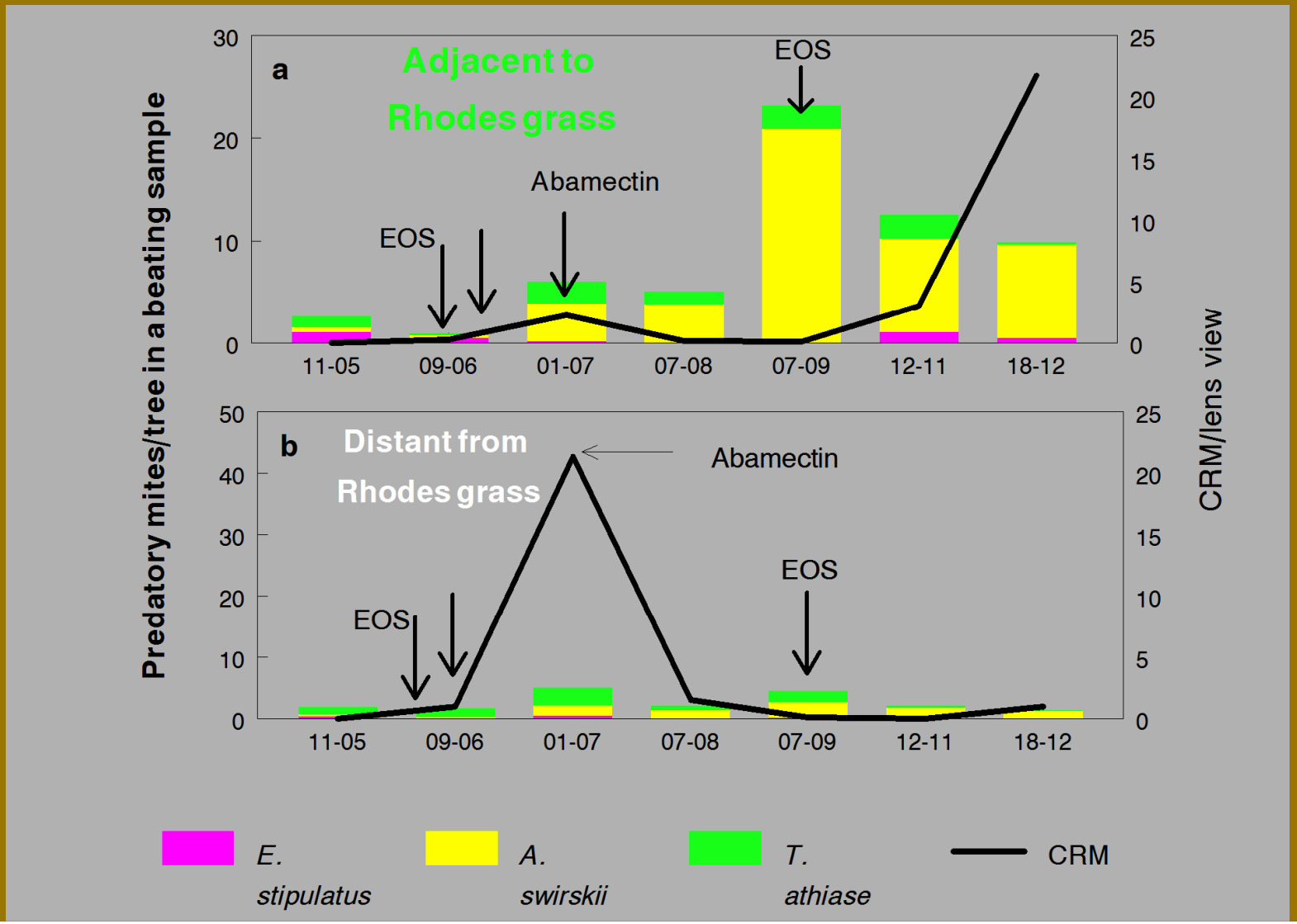


Effect of pollen provisioning on persea mite populations - 2009

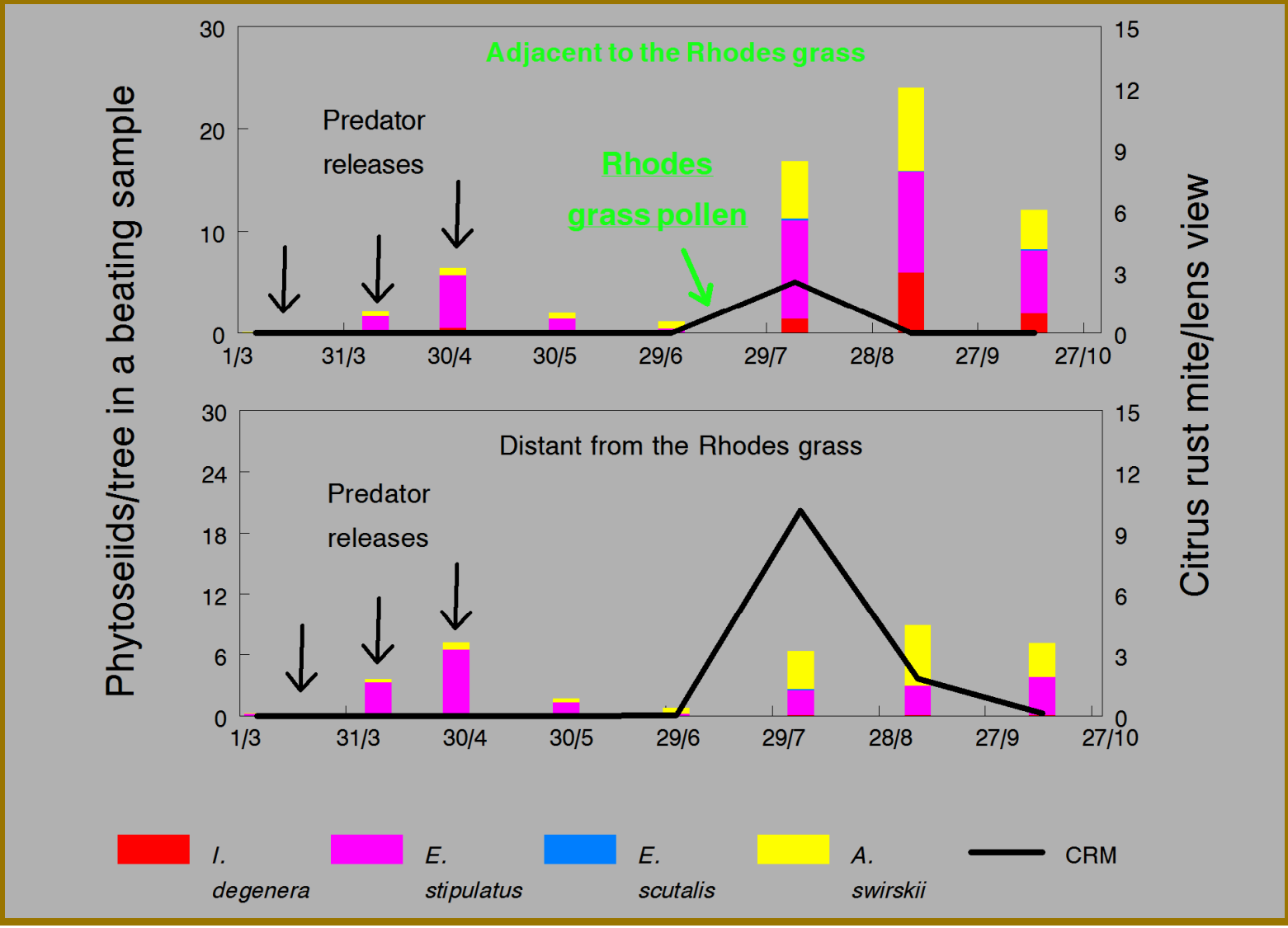


Maoz et al. 2011

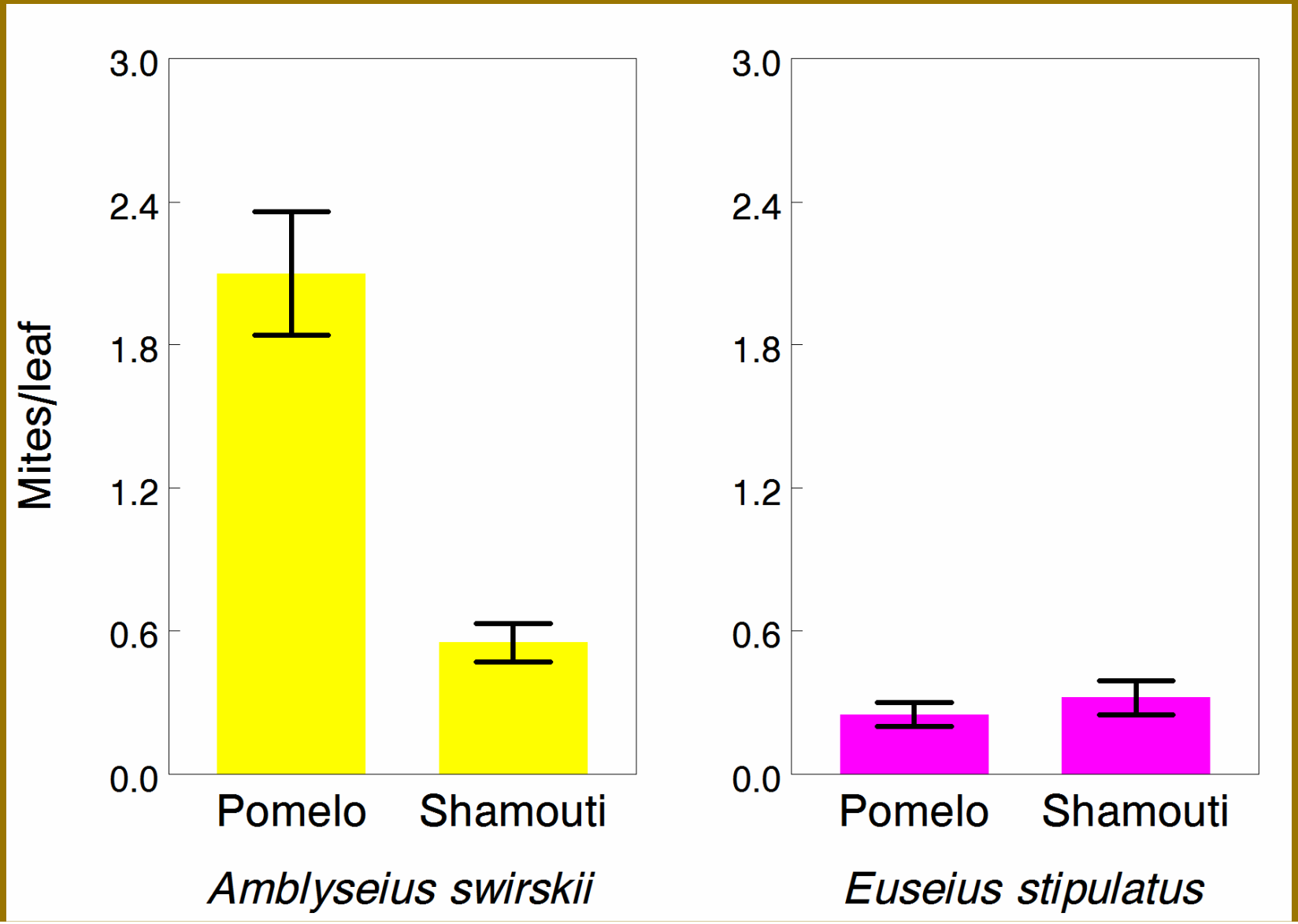
Effect of pollen on predator species on pomelo trees



Effect of pollen on predator species on ‘Shamouti’ orange trees



Cultivar effect on predator species establishment on seedlings



Take home messages

- Pollen provisioning and host plant differentially affect plant-feeding and non-plant-feeding predator establishment and biocontrol.
- Enhancing populations of a highly competitive predator such as *A. swirskii* may not always be a good thing as it may prevent a more effective predator from establishing and controlling the pest.
- Empirical studies need to be conducted on specific cultivars to determine the contribution of pollen provisioning to predator establishment and subsequent pest control.

Work Conducted by/in collaboration with

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5. ARO- Agricultural Engineering Shmuel Gan-Mor, Benny Ronen

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