Avocado Cafe

Welcome!

March 29, 2022

Thank you to:

Hofshi Foundation
for posting the video and
pdf of the talks on
www.avocadosource.com

DataHarvest
for hosting this meeting

Videos are now available on the Avocado Café YouTube Channel or www.avocadosource.com (also has additional content)

We will notify you via cafeavos@gmail.com regarding the posting of the videos and scheduling of the April meeting:

Avocado Productivity: Plant Nutrition and Decision Support Tools – David Crowley

Avocado productivity:

Understanding pollinators and their importance for avocado fruit set

Speakers:

Arnon Dag
Institute of Plant Sciences, The Volcani Institute, Israel

Raffi Stern
MIGAL- Galilee Research Institute, Israel

Gordon Frankie
Department of Environmental Science, Policy, & Management, UC Berkeley

Introductory Comments:

Why do we need pollinators?

The ultimate crop that one harvests is dependent upon many factors:

- Overall tree health
- On/Off status – alternate bearing
- Floral Induction
- Conditions during flowering and fruit set
- Conditions during subsequent fruit development

Conditions during flowering and fruit set that influence yield:

Pollination and Fertilization

Timing of female and males flower phases

Pollinator activity

Presence of pollinizers

Environmental conditions (i.e. Temperature)

Terminology and a Review of Avocado Flowering Behavior

Pollination Terms:

Pollination – *the transfer of pollen from the anther to the stigma*

Fertilization – the fusion of the male gamete with the female gamete forming the zygote

Pollination Terms:

Pollination – the transfer of pollen from the anther to the stigma

- *Cross pollination* – the pollen deposited on the stigma is from another cultivar
- *Close pollination* – the pollen deposited on the stigma is from another flower of the same tree or cultivar
- *Self pollination* – the pollen deposited on the stigma is from the same flower

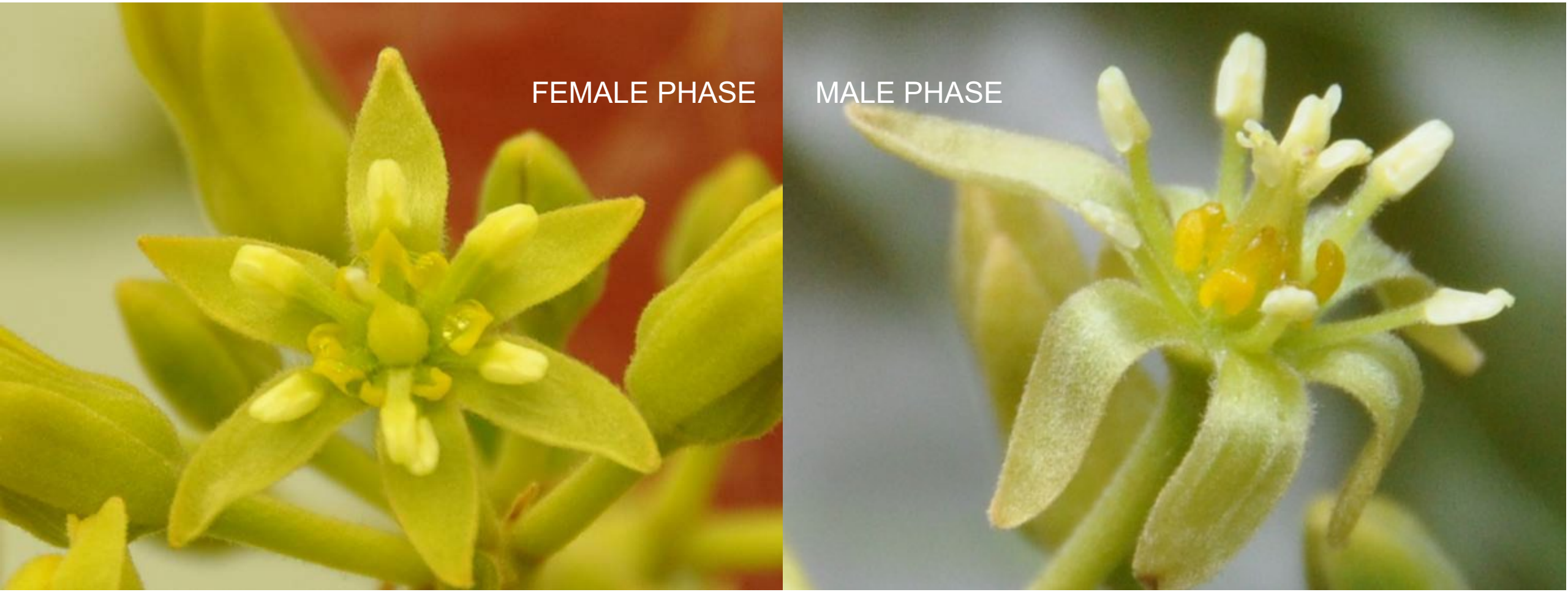
Pollination Terms:

Pollinator: The agent which transfers pollen from the male to the female floral organ

Pollinated Tree: A cultivar that receives the pollen *(i.e. Hass)*

Pollinizer: A cultivar that donates pollen to another cultivar (*Common Hass pollinizers: Bacon, Zutano, Ettinger, Edranol)*

There are 2 phases to avocado flowering
This is called *Synchronous Dichogamy*



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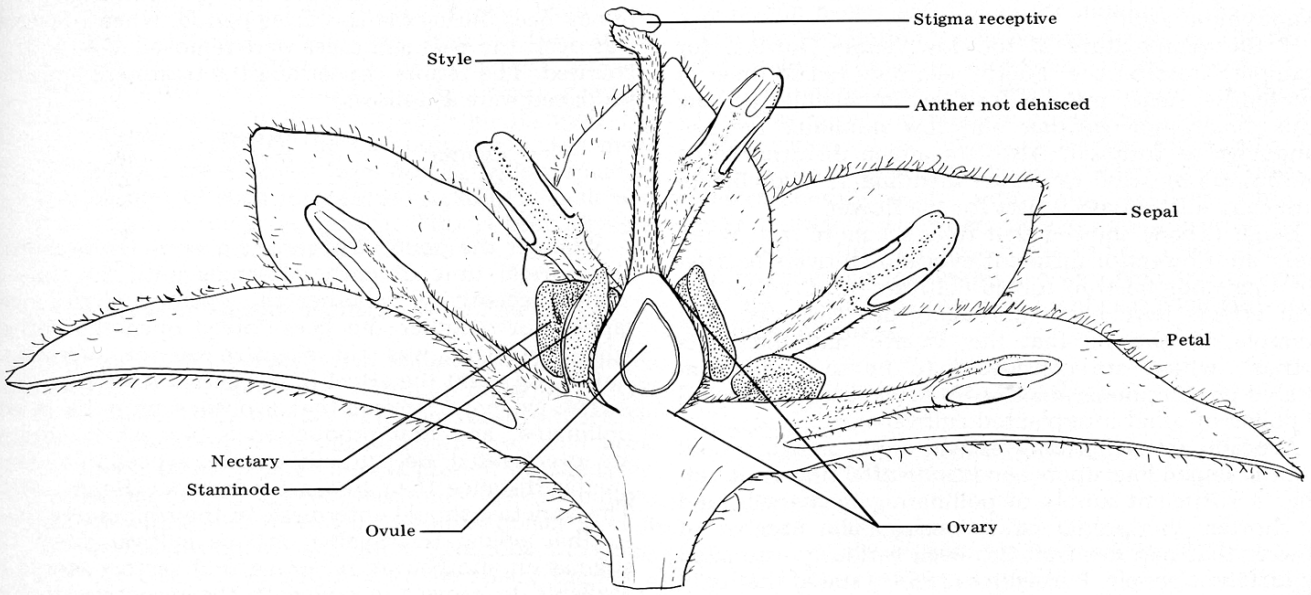
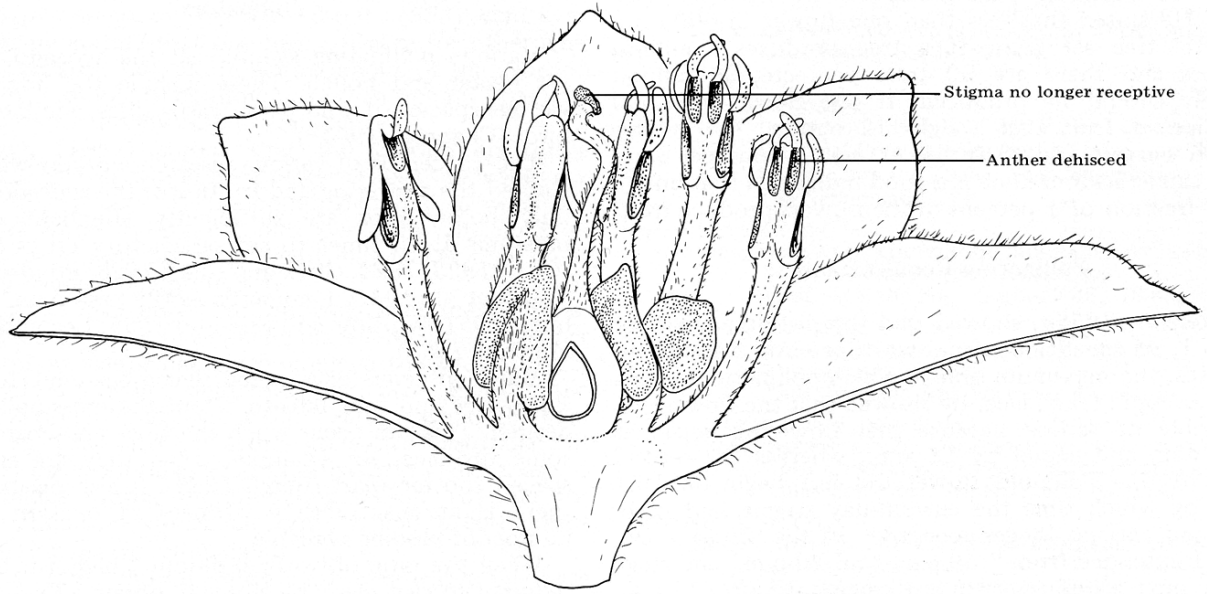


A



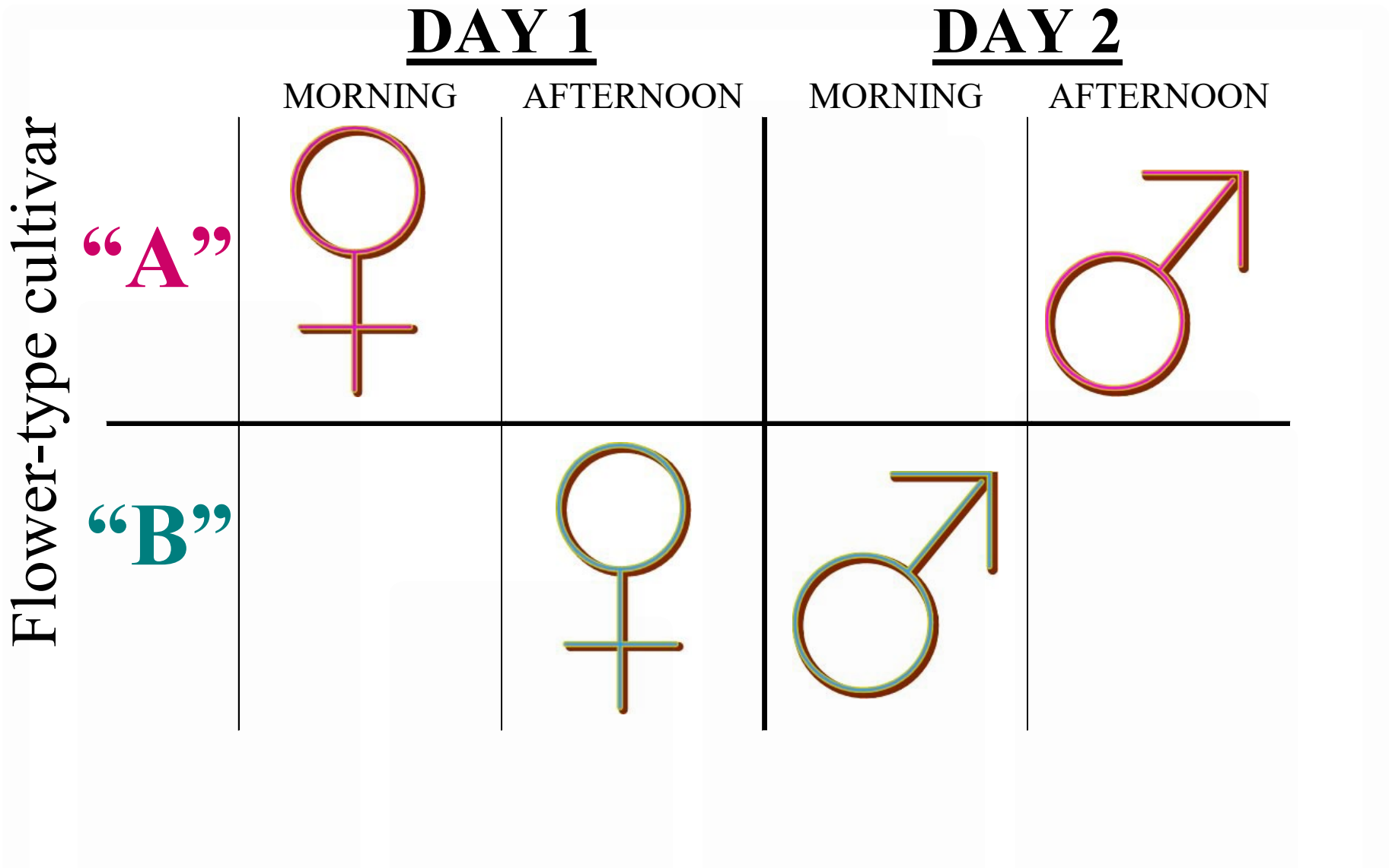
B

Female Phase

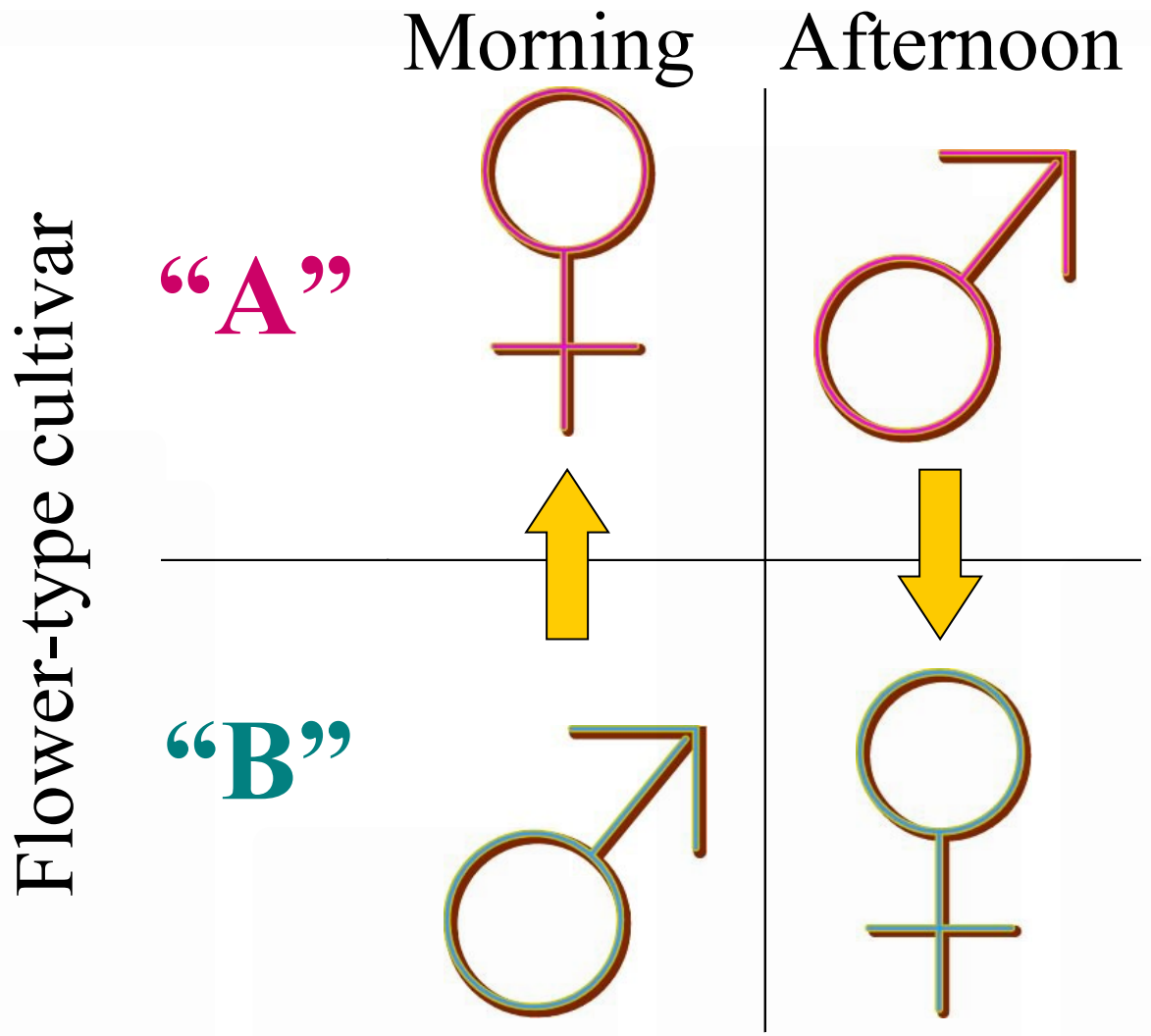
The avocado flower
Synchronous Dichogamy

Male Phase

Timing of flowering for “A” and “B” flower types.



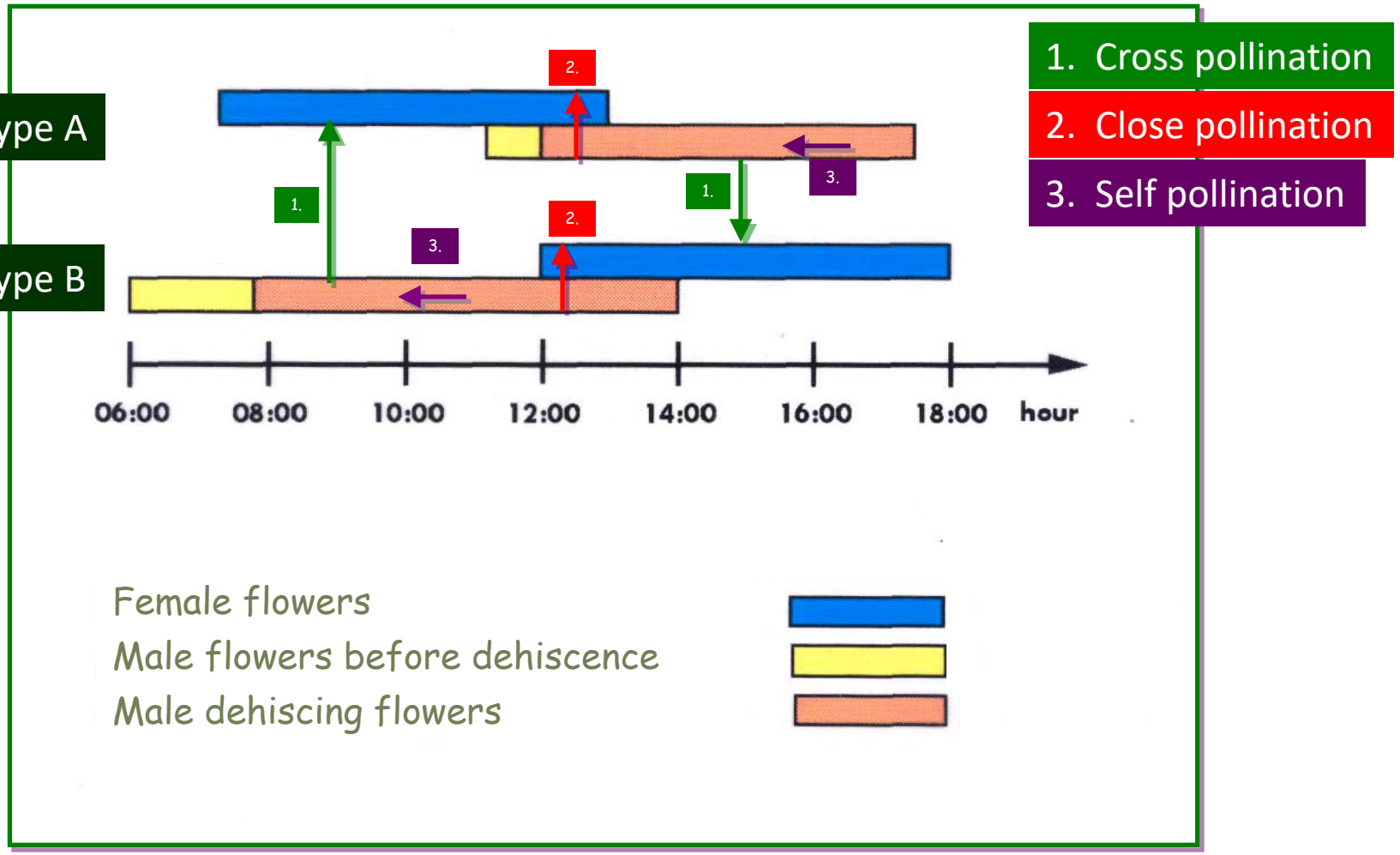
The sequence of timing for “A” and “B” flower types under field conditions.



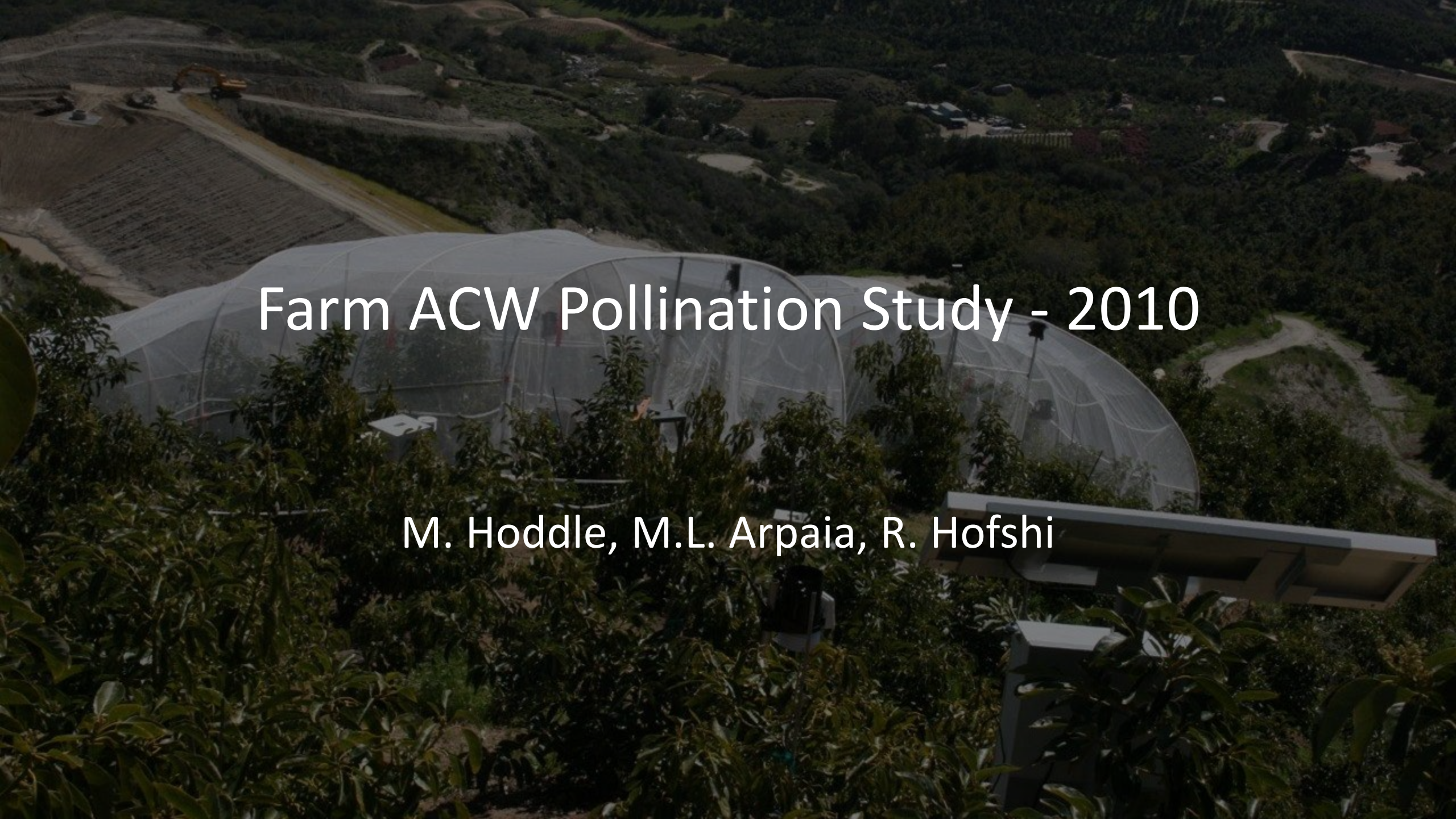
Avocado flower pollination routes

The amount of time in a given day for **close pollination** may be very limited due to temperature

The potential for **self pollination** is dependent on many factors including stigma receptivity



Do we need a vector to get the pollen to the stigma?



Farm ACW Pollination Study - 2010

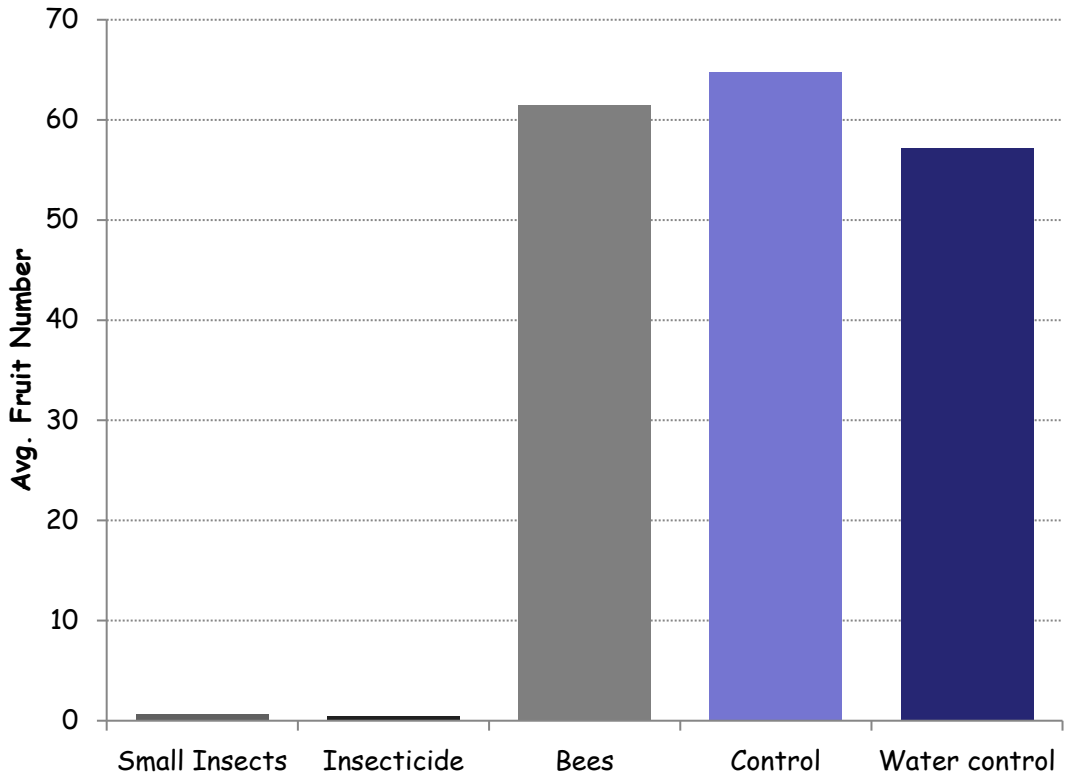
M. Hoddle, M.L. Arpaia, R. Hofshi

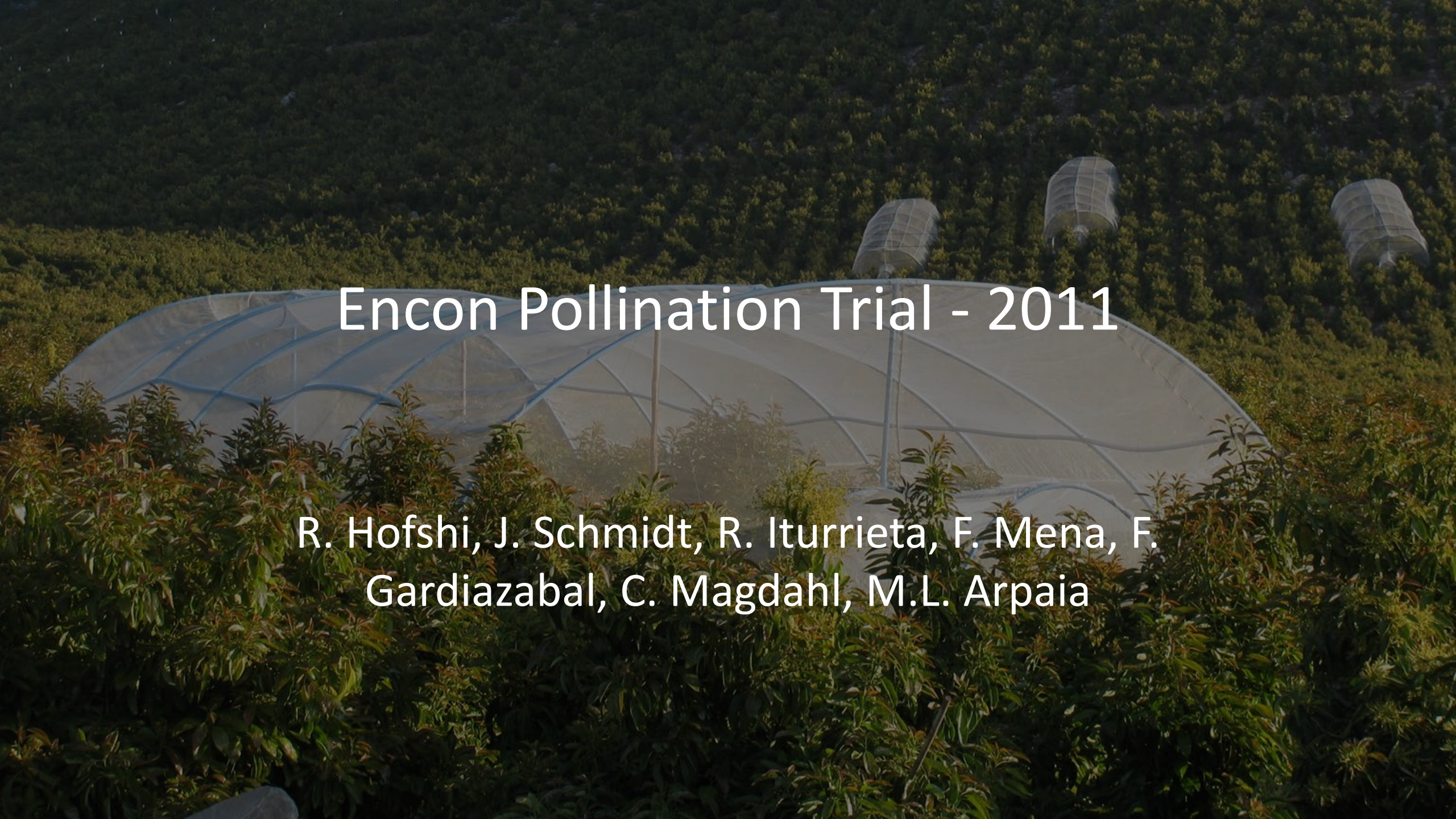
5 Treatments:

1. Net house where bees were not allowed so only “small” insects were present
2. Net house were all trees sprayed to eliminate insects
3. Net house with honey bees
4. Outside control
5. Outside water control (trees were sprayed with water when insecticide was applied)

1 field replication
12 trees per net house

Yield Data (avg fruit per tree)





Encon Pollination Trial - 2011

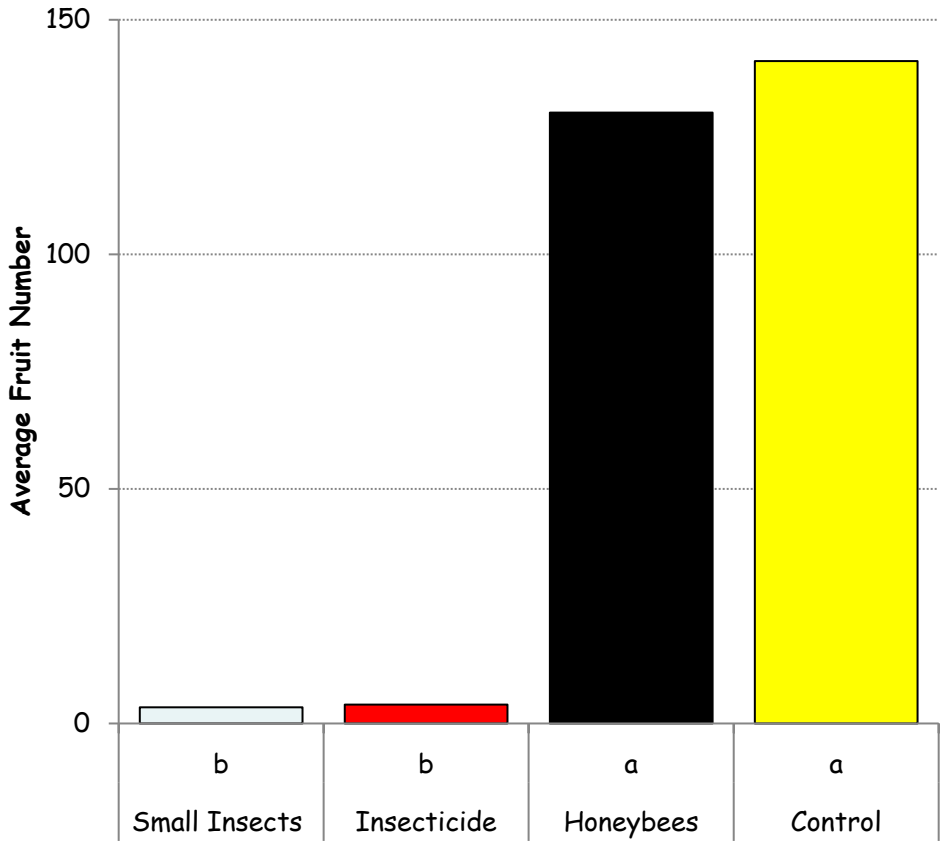
R. Hofshi, J. Schmidt, R. Iturrieta, F. Mena, F. Gardiazabal, C. Magdahl, M.L. Arpaia

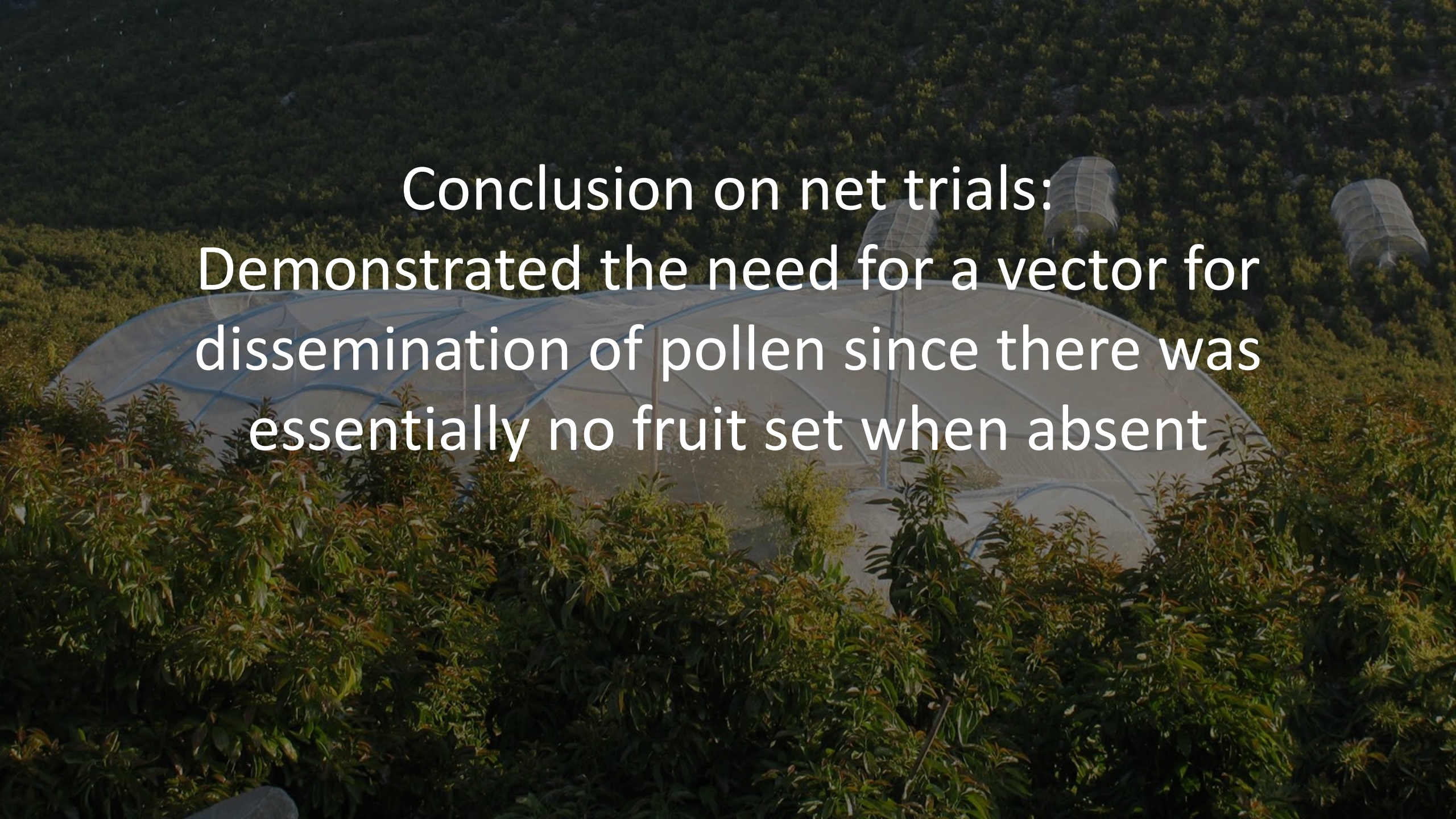
4 Treatments:

1. Net house where bees were not allowed so only “small” insects were present
2. Net house were all trees sprayed to eliminate insects
3. Net house with honey bees
4. Outside control

5 Field Replications
12 trees per net house

Yield Data (avg fruit per tree)





Conclusion on net trials:
Demonstrated the need for a vector for dissemination of pollen since there was essentially no fruit set when absent

Probable pollinators for avocado

Insects such as honey bees, bumble bees, flies

This will be further discussed by our speakers