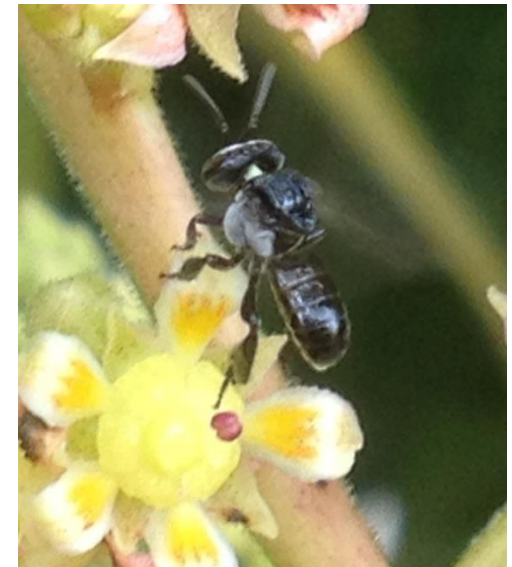


# Mango Pollination update:

Projects coordinated by:  
Romina Rader (UNE)  
Andrew Robson (UNE)  
Saul Cunningham (ANU)



Funded by:



...and an Australian Research Council Discovery Early Career Researcher Award

# Objectives:

- Assess pollinator density, efficiency and relation to crop yields and tree condition
- Determine responsiveness of crops to pollination
- Movement distances for selected pollinators
- Develop mobile phone app to identify pollinators
- Liaise with growers to identify strategies to improve pollination services

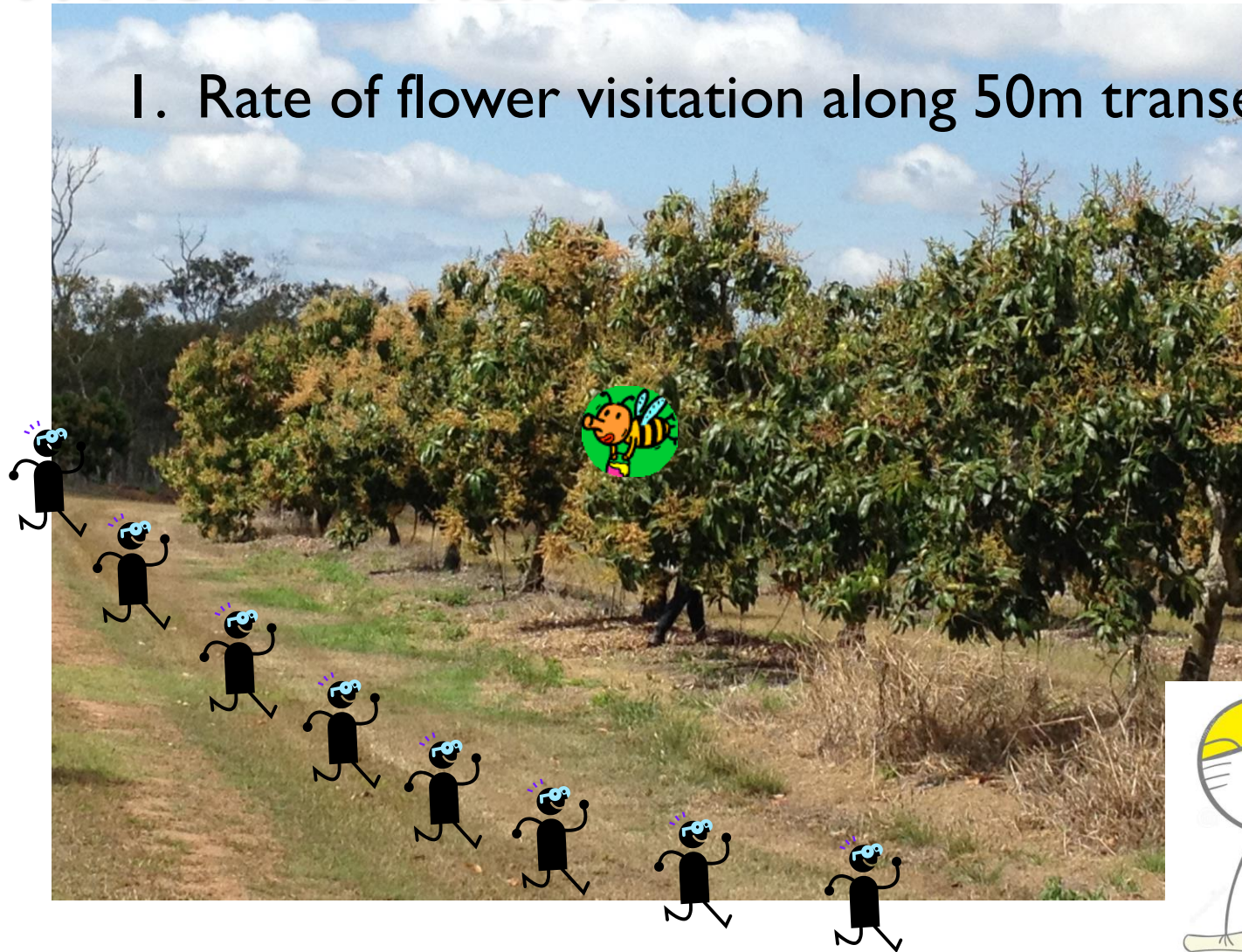
# Summary of approach

1. Flower visits
2. Pollinator efficiency
3. Hand pollination experiments
4. Foraging behaviour
5. Understand pollinator resource needs
6. Technologies to identify pollinators



# I. Flower visits:

## I. Rate of flower visitation along 50m transect





	<b>Native bees %</b>	<b>Blowflies %</b>	<b>Rhiniid Flies %</b>	<b>Bibionid Flies %</b>	<b>Honey Bees %</b>	<b>Hoverflies %</b>
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<b>Mareeba Region</b>	18	17.6	17.3	14.4	11.7	8.9
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<b>Farm I</b>	0.4	10	24.1	0.7	20.4	27.8
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**Other Insects**

<b>Other Flies %</b>	<b>Other Bees %</b>	<b>Hairy Beetles %</b>	<b>Ant</b>	<b>Wasp</b>	<b>Moth</b>	<b>Beetles</b>	<b>Bug</b>	<b>Butterflies</b>
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<b>4.1</b>	3.1	1.9	1.4	0.8	0.4	0.3	0.1	0.1
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<b>8.1</b>	1.5	3.7	0	2.2	0	1.1	0	0
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# Rhiniid flies



# Syrphid flies



# Bibionid flies

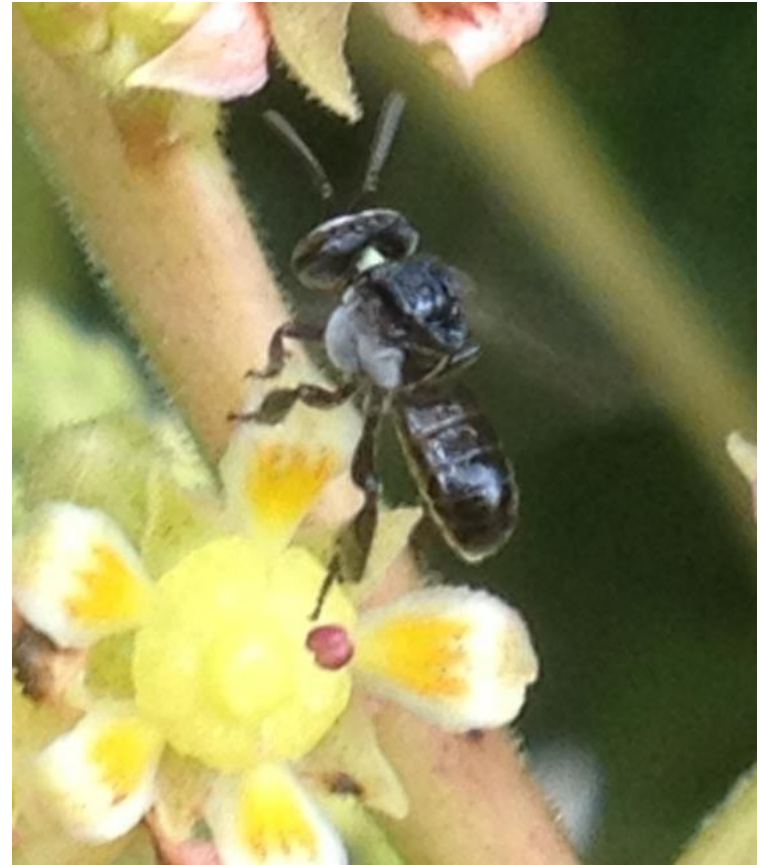




# Blowflies



# Stingless bee



# Raspberry data multiple visits

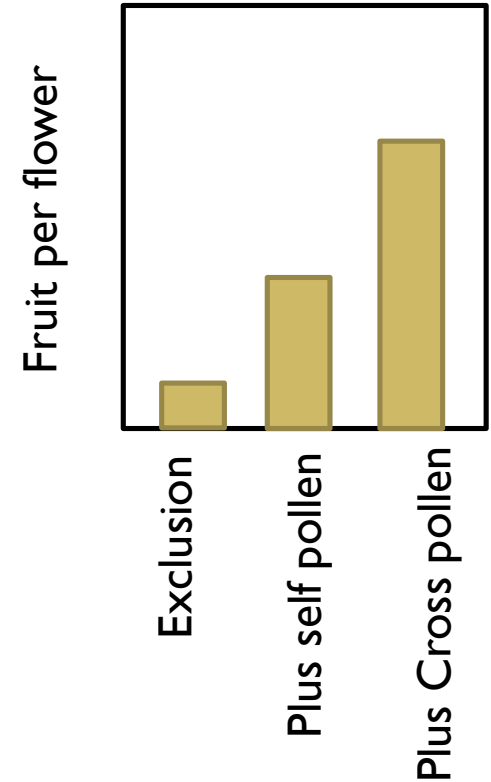
Number of visits	Average of WEIGHT	Average of WIDTH	Average of CRUMBLINESS	Average of LENGTH
0	3.279347826	20.8347619	1.891304348	19.10690476
1	3.2575	20.16	2	19.9
2	2.4075	21.49166667	2.166666667	19.91666667
3	3.118	20.01666667	1.5	18.46666667
4	3.937777778	21.19230769	2.818181818	22.26538462
5	3.673333333	21.25	2.538461538	22.00833333
6	4.04	21.34705882	2.533333333	22.64117647
7	4.2875	21.56	2.333333333	23.82
8	4.325	21.05	3	25.05
9	3.815	21.25	2.5	22.3
10	3.995	21.3	2.5	22.8
11				

# 2. Pollinator efficiency

## Single visit to virgin stigma

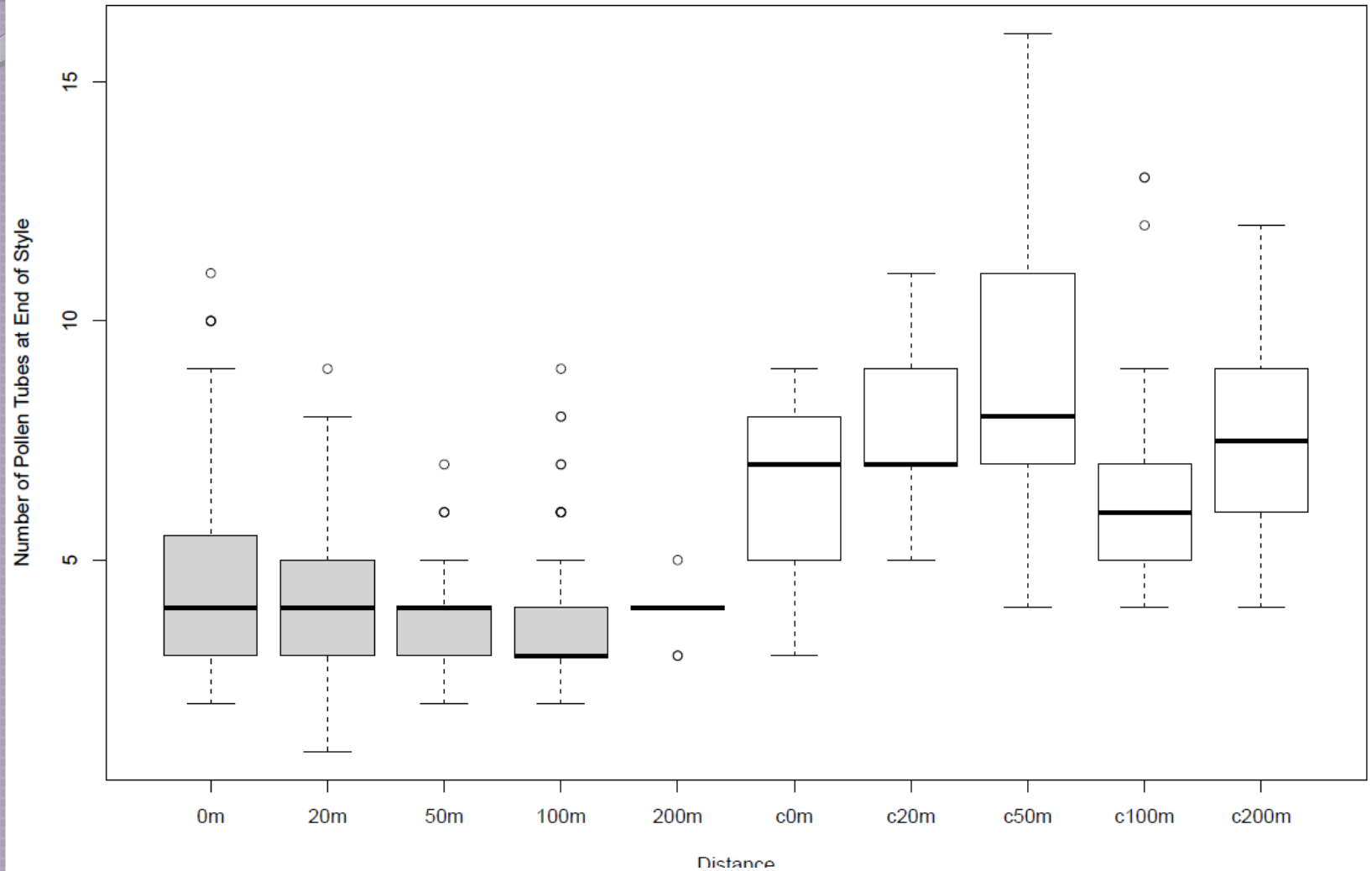


# 3. Hand pollination experiments

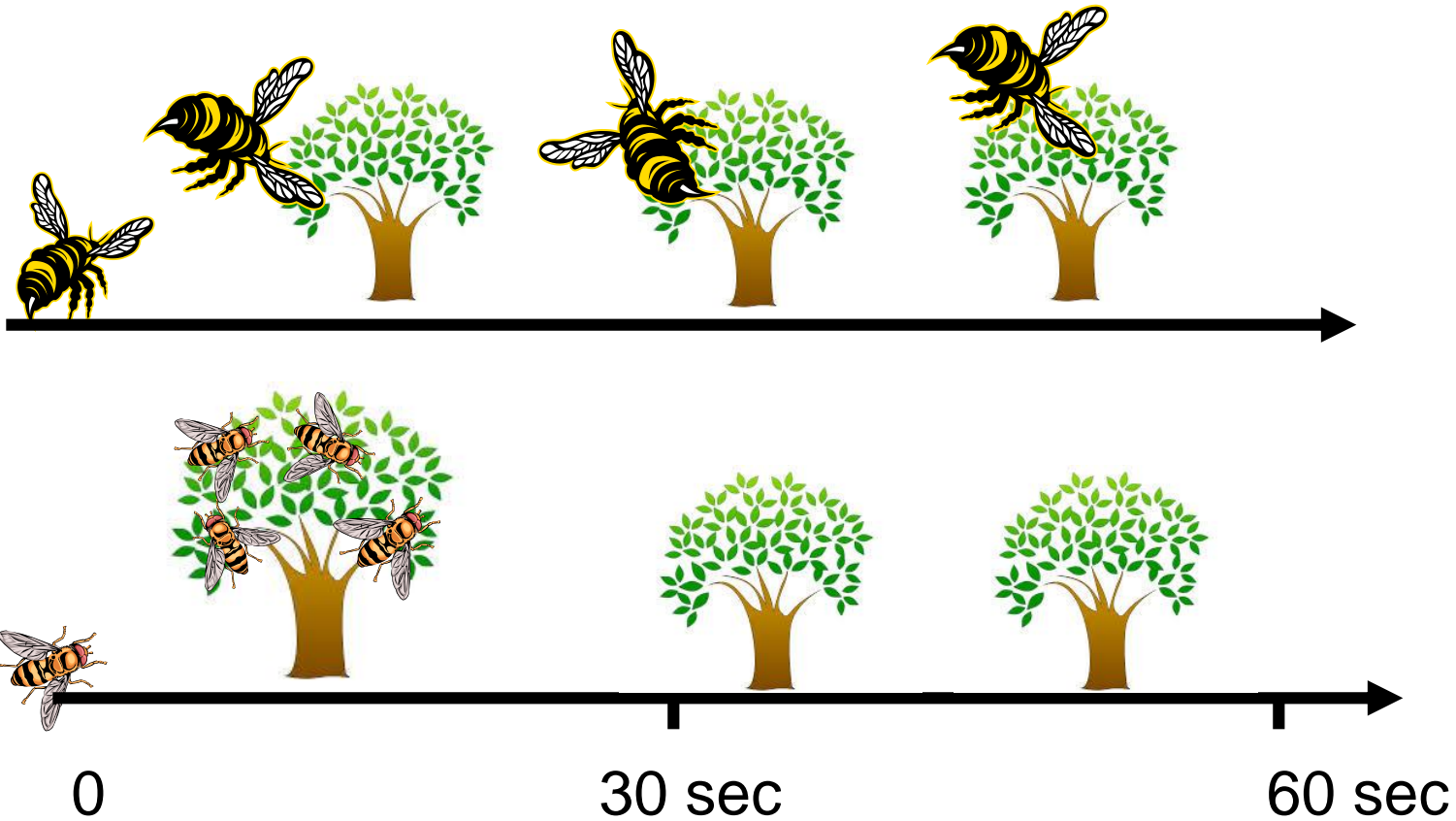


# Open versus closed bags...

Pollen Tube Growth Mango (24hrs), Mareeba

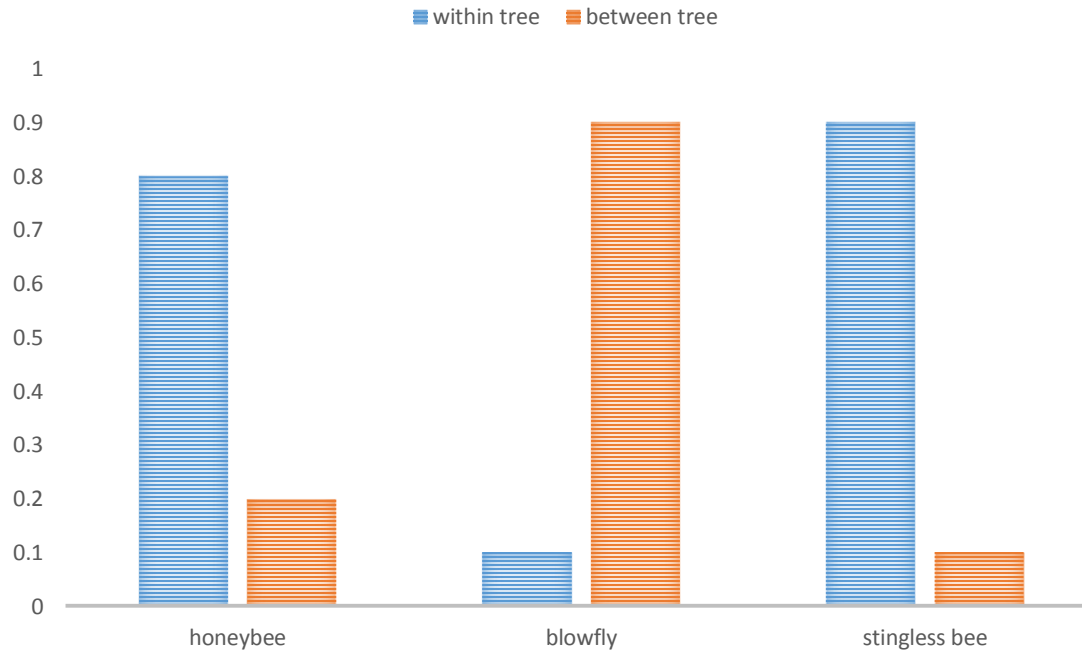


# 4. Foraging behaviour



# What will results look like?

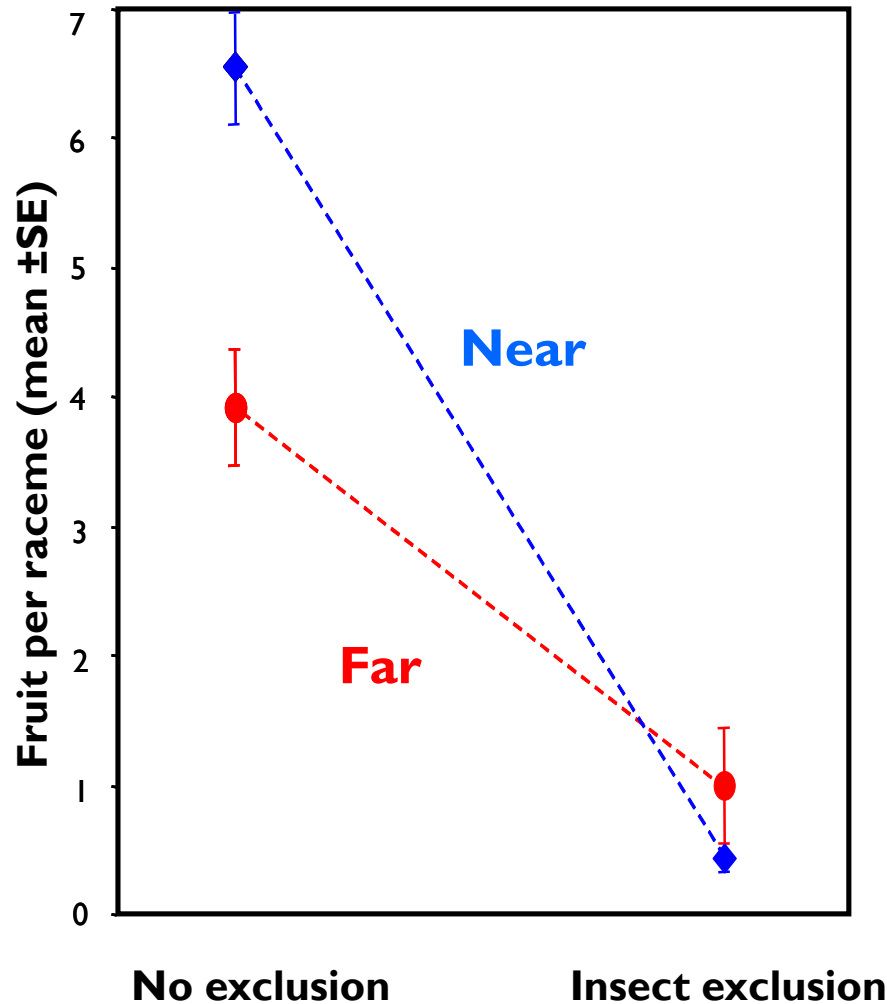
## MOVEMENT WITHIN ORCHARD





# 5. Pollinator resource needs

## How important is bush?

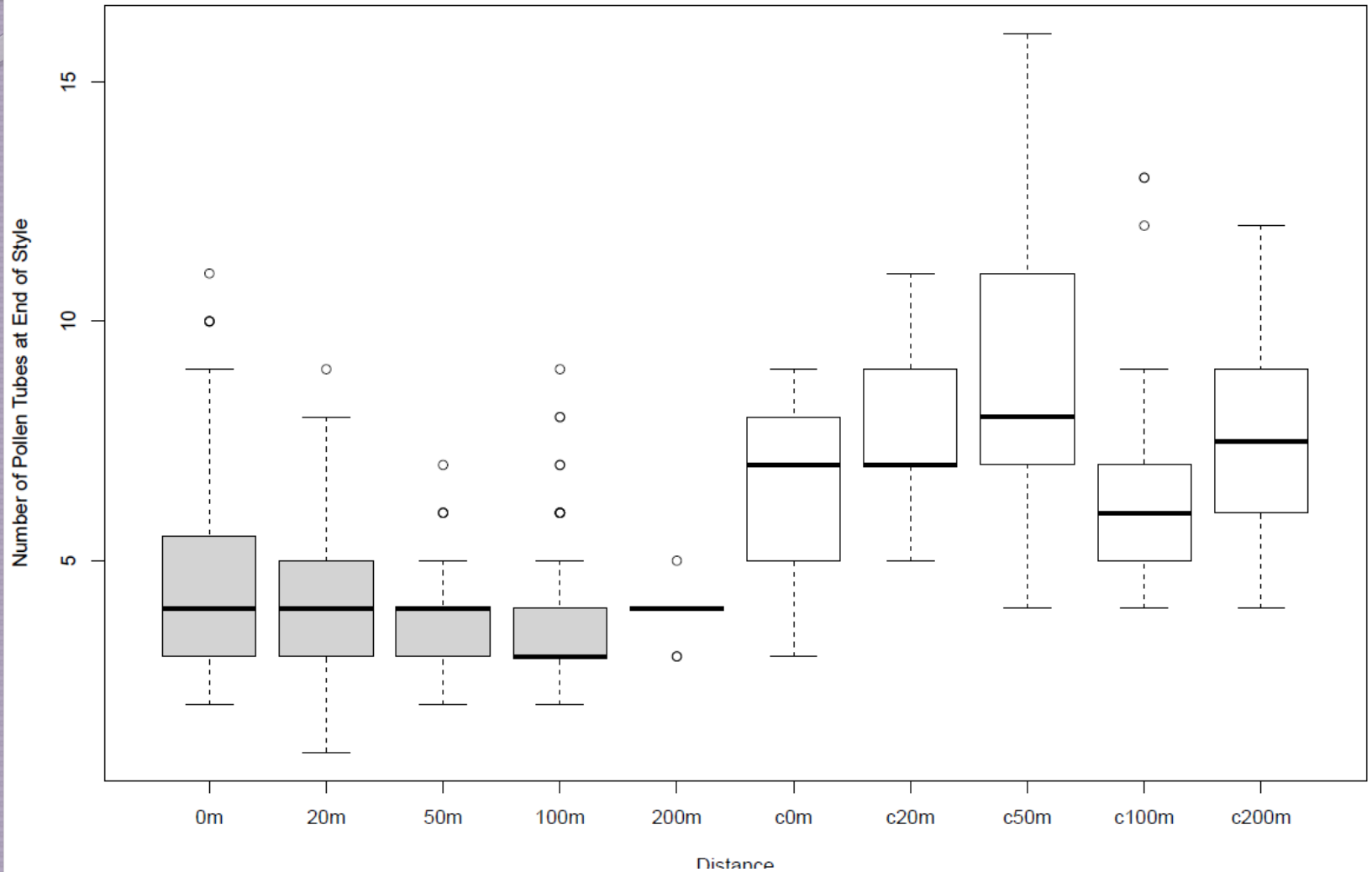


e.g. Pollinator benefit to fruit production, relative to position in the orchard (near vs far from non ag. habitat)

# Bryony Willcox

## Distance from centre of orchard...

Pollen Tube Growth Mango (24hrs), Mareeba



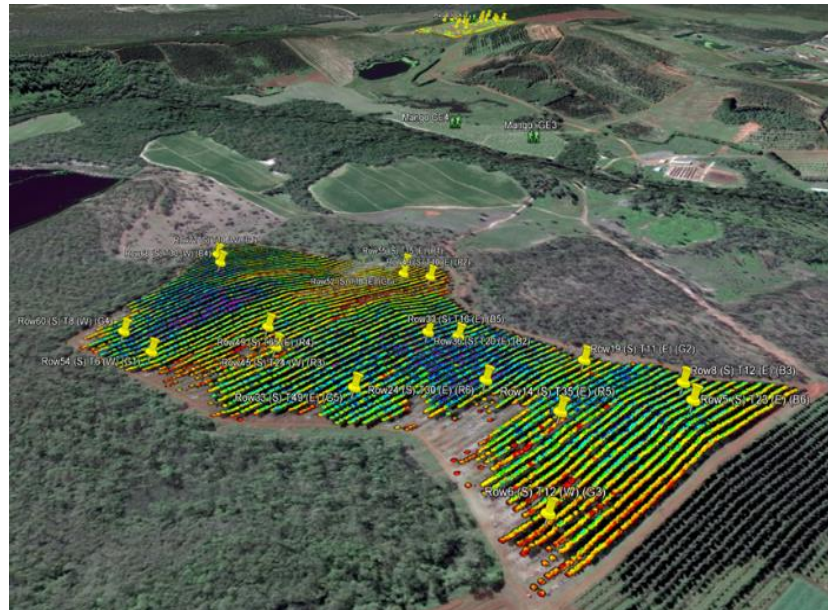
# 5. Pollinator resource needs

## How important is tree condition/vigour?

### Landscape



### Block

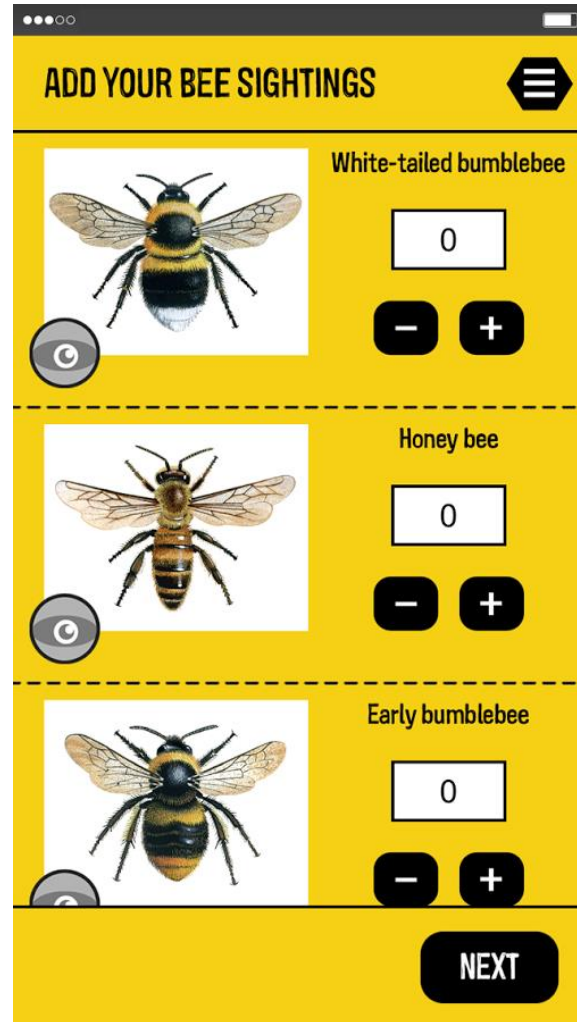


### Tree



(Above photos courtesy of Andrew Robson)

# 6. Technologies to Id pollinators



# Where to from here?

## 2017

- July – Katherine
- August- Mareeba
- September-Bundaberg

## 2018

- Bowen
- Mareeba
- Bundaberg

# Thank you ...

- Have a look at the insects pollinating your crops here!

