A photograph of a strawberry field. The plants are arranged in rows, with black plastic mulch visible between them. In the foreground, a white cylindrical trap with a black top and a small opening is placed on the ground. The background shows more of the field and a white structure, possibly a tunnel or greenhouse, under a clear sky.

Movement and spatial distribution  
of spotted wing drosophila,  
*Drosophila suzukii*, in organic  
strawberries in Florida

Elena M. Rhodes, Carlene A. Chase, Xin Zhao,  
and Oscar E. Liburd  
University of Florida

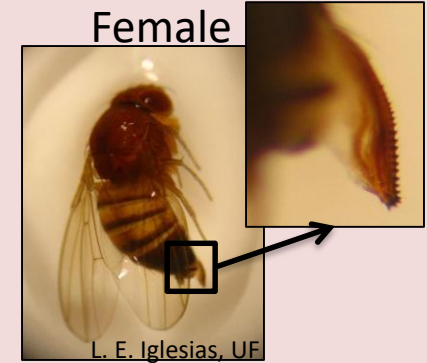
# Strawberry pests



- Twospotted spider mite, *Tetranychus urticae*
- Thrips: *Frankliniella occidentalis*, *Scirtothrips dorsalis*
- Pamera seed bug, *Neopamera bilobata*
- Sap beetles (Nitidulidae)
- Aphids, armyworms, etc.

# Spotted wing drosophila

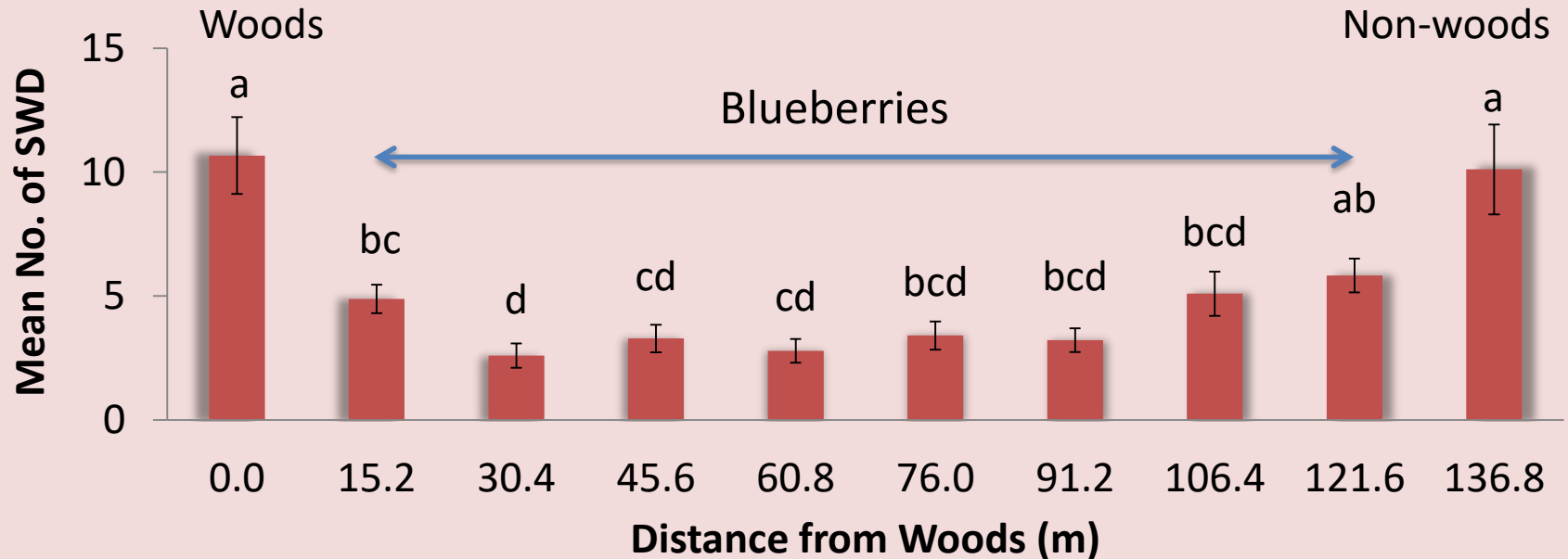
- *Drosophila suzukii*
- Lay eggs in ripening and ripe fruit



- The presence of one larva can cause an entire shipment of fruit to be rejected

# Edge effects

- Seen in blueberries (Iglesias et al. 2017)



# Objective

- Examine the spatial distribution and movement of SWD in an organic strawberry plot
  - 2016/17: Citra PSREU
  - 2017/18 and 2018/19: organic strawberry farm

# Methods: adult monitoring

- Scentry traps with lure and water + dish soap drowning solution
- Lures replaced every 4 weeks; water + dish soap changed weekly
- Numbers of SWD males and females were counted and recorded



# Citra PSREU

## Legend

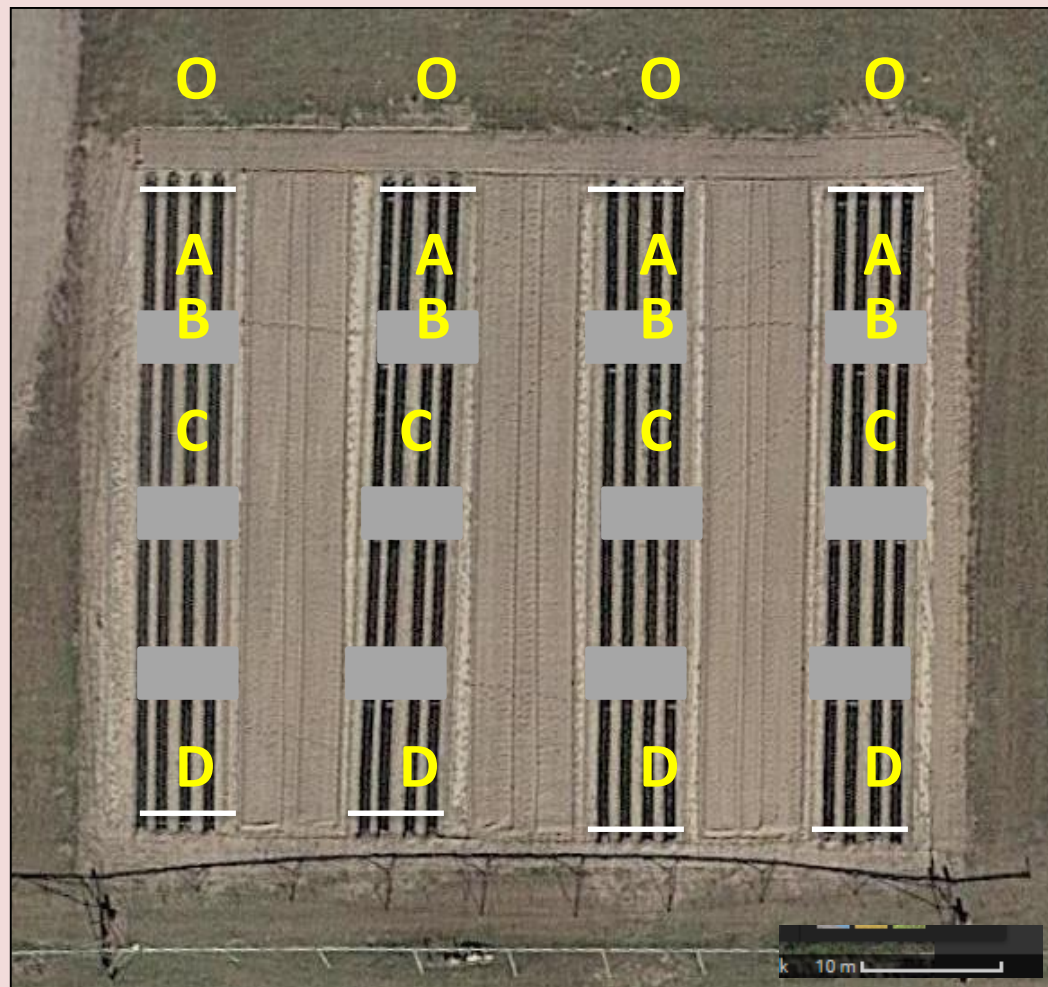
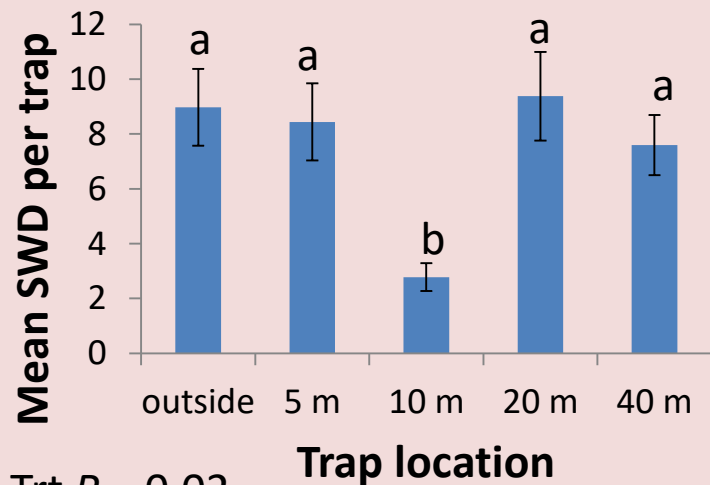
O = 5 m (outside)

A = 5 m

B = 10 m

C = 20 m

D = 40 m



# Methods: On farm

- 3 reps of 6 treatments
  - W: at edge of woods
  - O: 5 m outside plot from N end
  - A: 5 m into plot from N end
  - B: 10 m into plot from N end
  - C: 20 m into plot from N end
  - D: 40 m into plot from N end
- 6 Dec, 2017 – 21 Mar, 2018
- 19 Dec, 2018 – 27 Mar, 2019





## Legend

W = woods (edge)

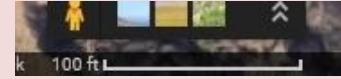
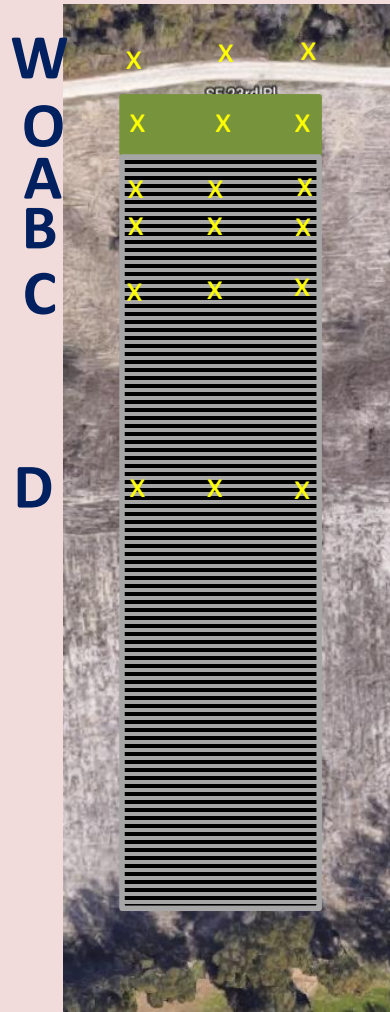
O = 5 m (outside)

A = 5 m

B = 10 m

C = 20 m

D = 40 m

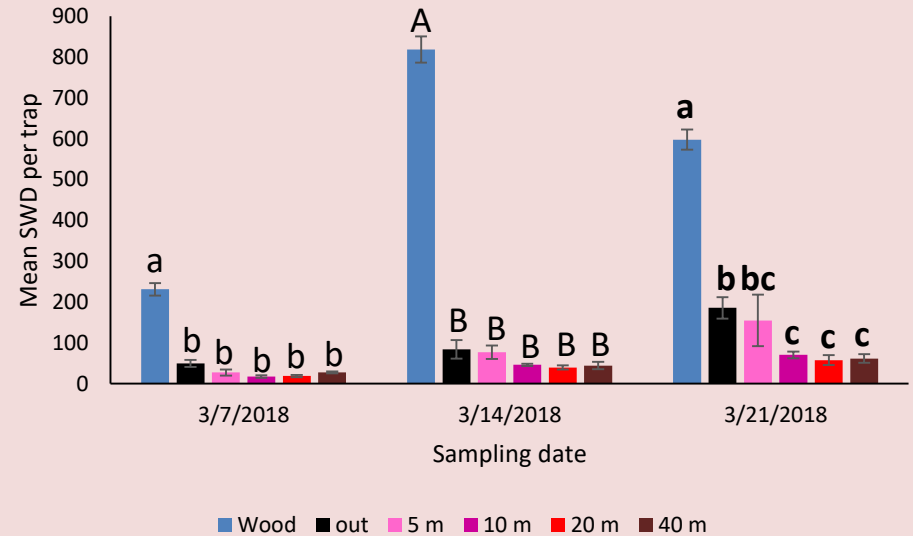
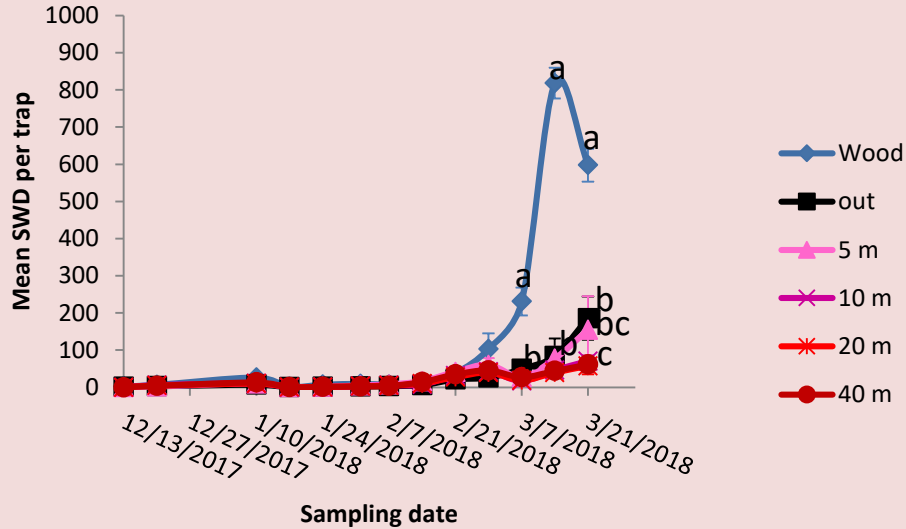


# On farm 2017/18

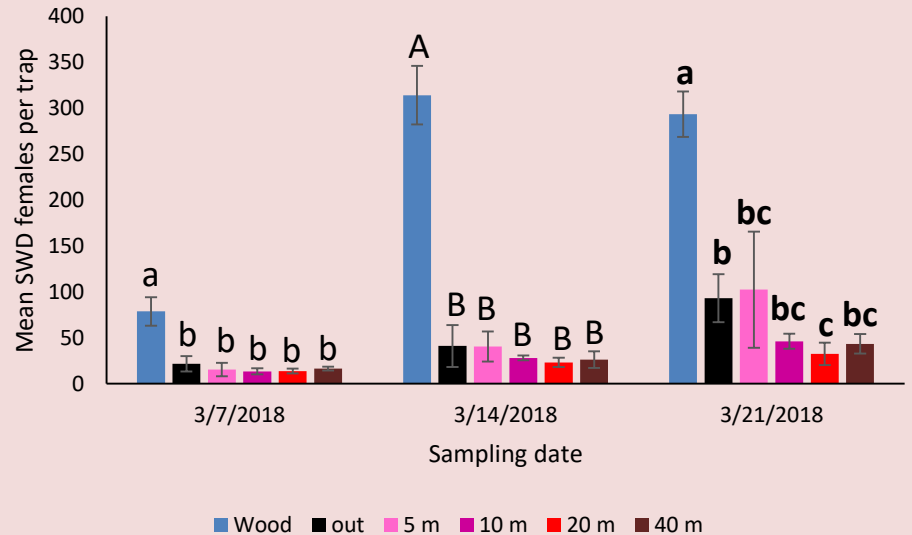
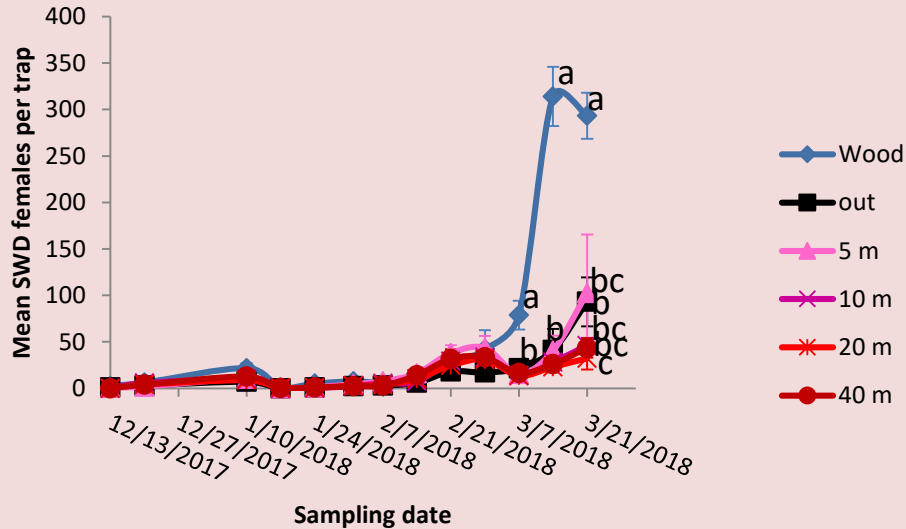


SWD females			
	F	df	P
trt	2.65	5, 10	0.08
trt*week	2.76	35, 70	<0.0004
SWD males			
	F	df	P
trt	14.13	5, 10	0.0003
trt*week	3.89	35, 70	<0.0001
SWD			
	F	df	P
trt	5.6	5, 10	0.01
trt*week	3.62	35, 70	<0.0001

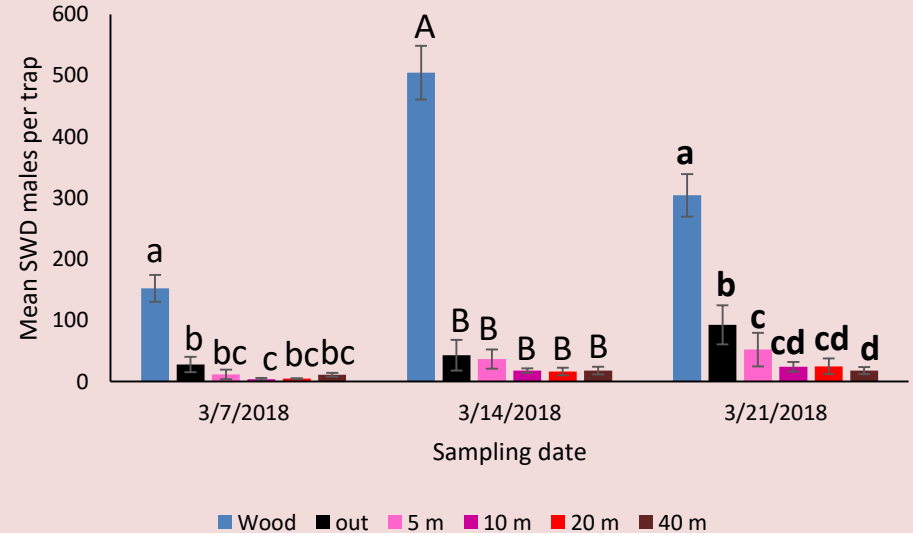
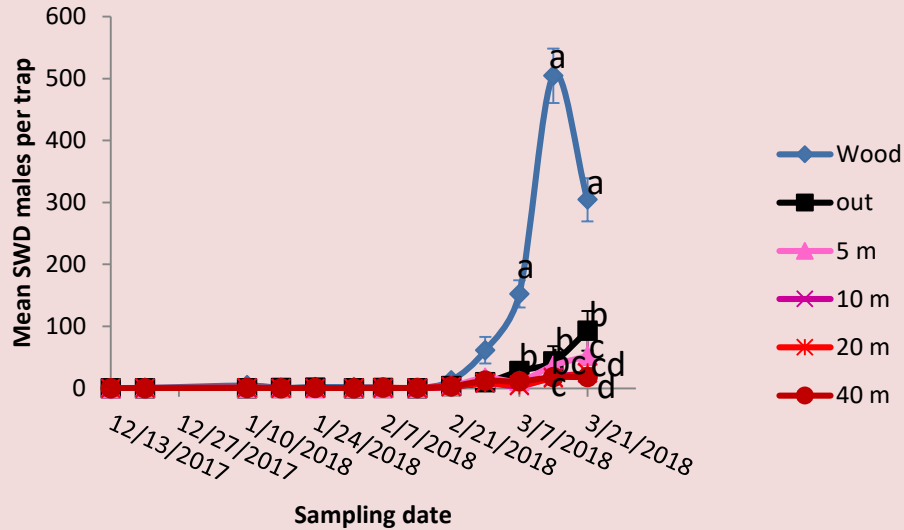
# On farm 2017/18 (fem + male)



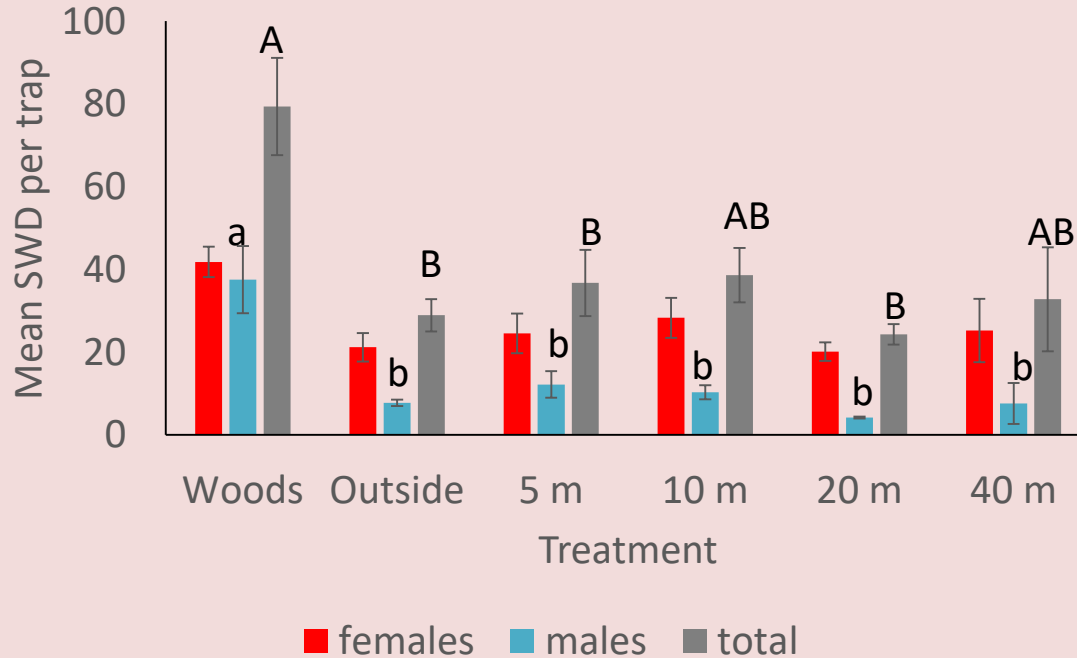
# On farm 2017/18 (females)



# On farm 2017/18 (males)

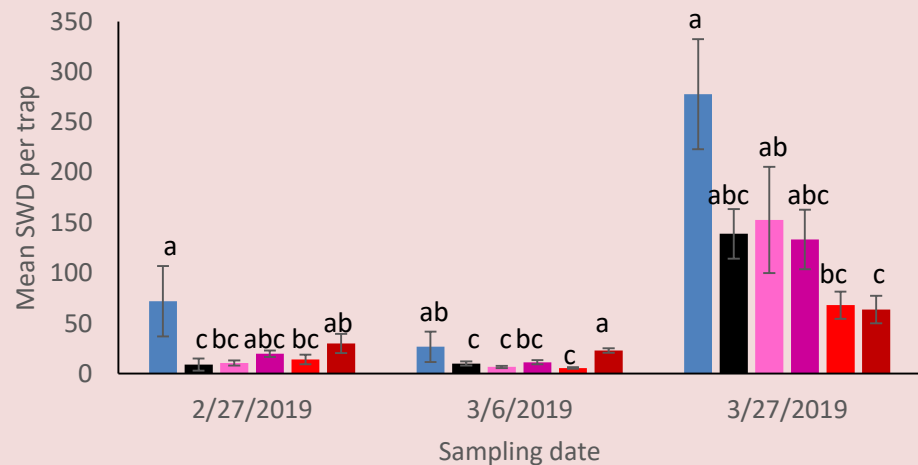
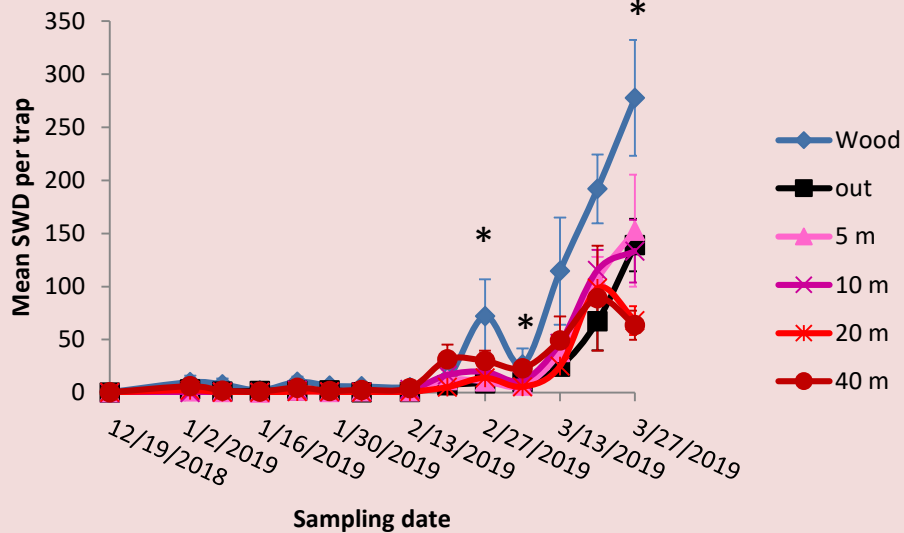


# On farm 2018/19



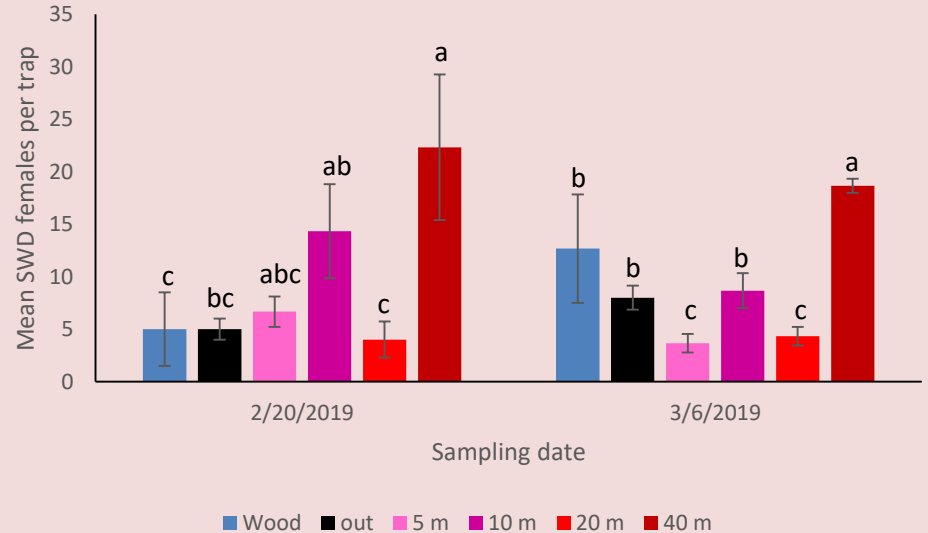
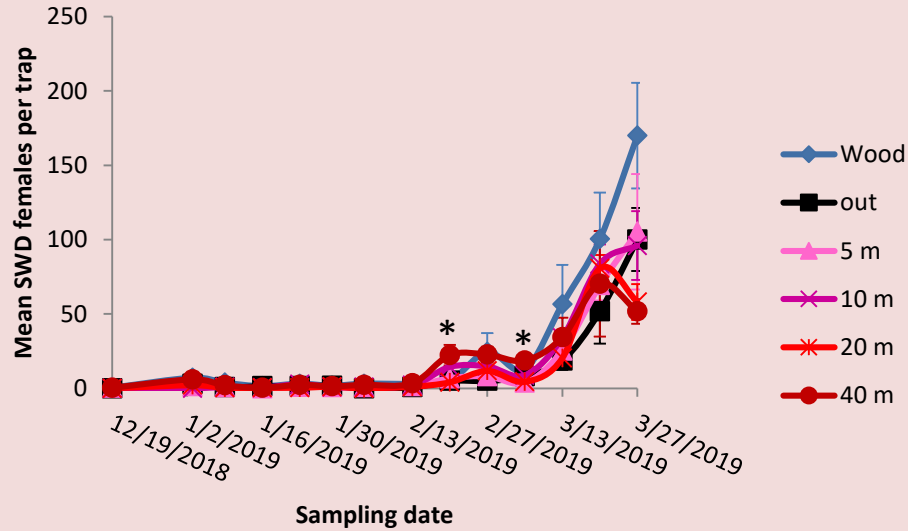
SWD females			
	F	df	P
trt	2.84	5, 10	0.08
trt*week	1.94	40, 80	0.008
SWD males			
	F	df	P
trt	5.55	5, 10	0.01
trt*week	2	40, 80	0.005
SWD			
	F	df	P
trt	4.4	5, 10	0.02
trt*week	1.94	40, 80	0.008

# On farm 2018/19 (fem + male)



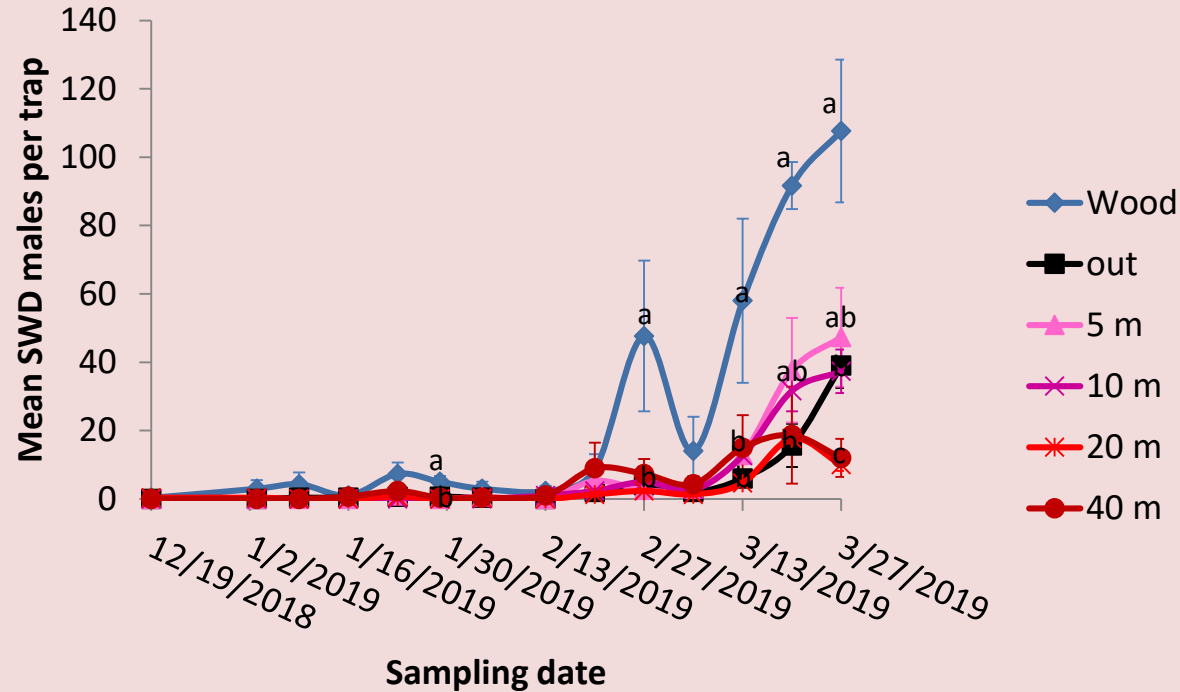
■ Wood ■ out ■ 5 m ■ 10 m ■ 20 m ■ 40 m

# On farm 2018/19 (females)





# On farm 2018/19 (males)



# Summary



- Research farm
  - Trap 10 m into plot caught significantly less than other traps
- On farm
  - Significantly higher numbers of SWD caught in woods traps
  - Males remain in woods and on edge of field while females move throughout the field
  - Populations in the woods in 2018/19 were much lower than in 2017/18
  - Populations in the strawberry field in 2018/19 were higher compared with 2017/18

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- Small Fruit and Vegetable IPM lab staff and students
- Chase lab staff and students
- Citra PSREU staff
- Strawberry farm
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