



Spotted wing drosophila spatial distribution and movement on an organic strawberry farm in Florida

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Strawberries in Florida



- Valued at ~337 million USD in 2017
- 2nd largest producer in the U.S. and primary producer of winter strawberries
- Grown as an annual crop on raised beds
- Growing market for organic strawberries

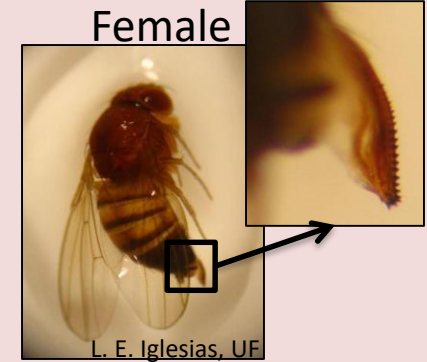
Strawberry pests



- 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

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



Methods: Citra 2016/17

- 4 reps of 5 treatments
 - 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 (5 m from S end)
- 4 Jan, 2017 – 28 Mar, 2017

Legend

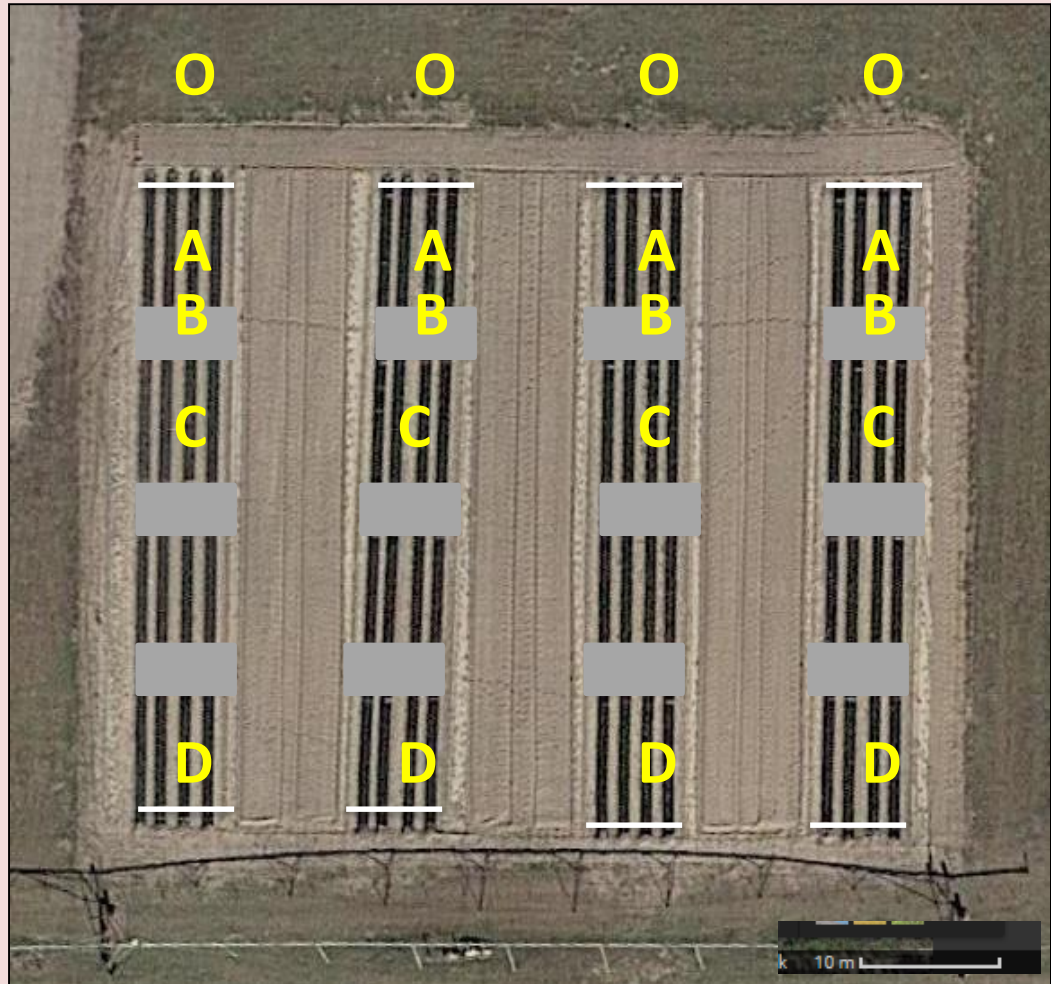
O = 5 m (outside)

A = 5 m

B = 10 m

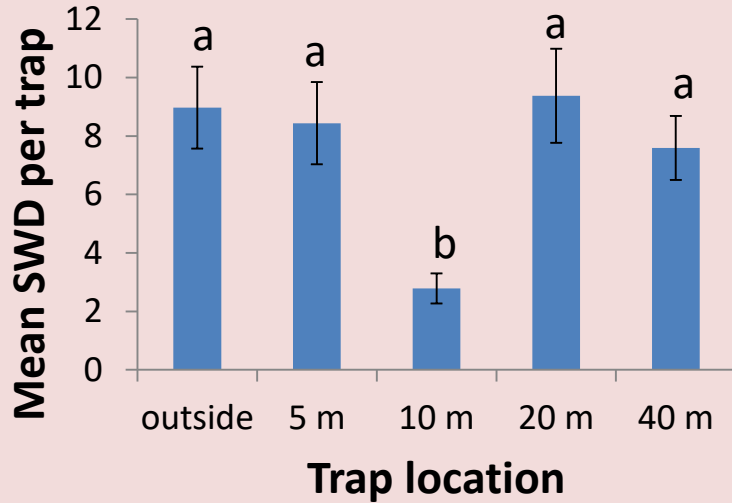
C = 20 m

D = 40 m



Results: Citra 2016/17

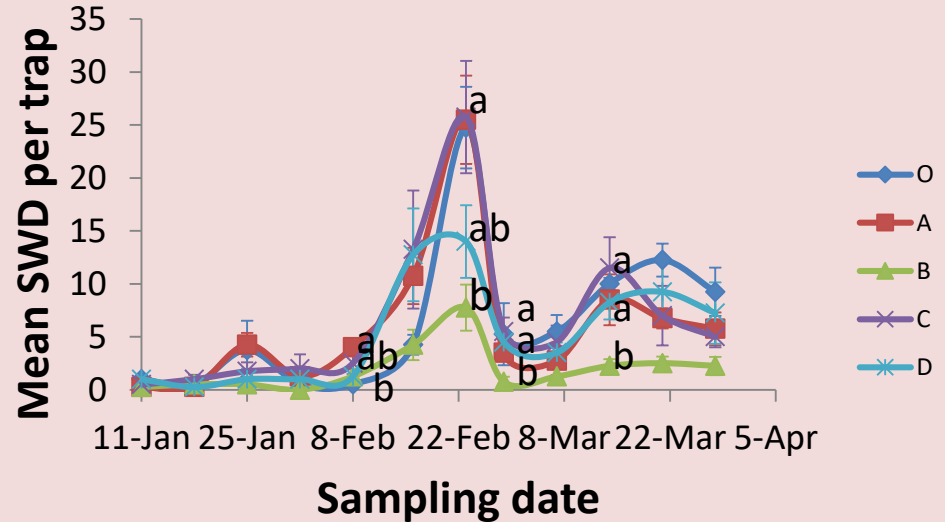
Overall SWD per trap



Trt $P = 0.02$

Trt*time $P = 0.05$

SWD per trap each sampling date



Methods: On farm 2017/18

- 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



Legend

W = woods (edge)

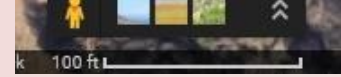
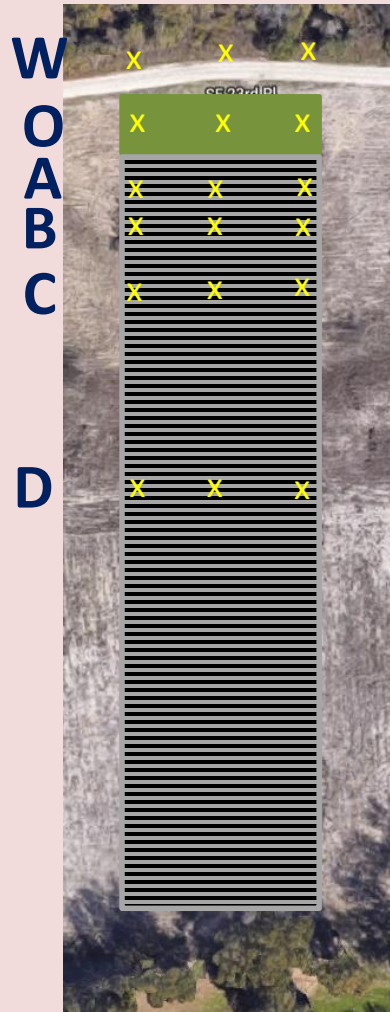
O = 5 m (outside)

A = 5 m

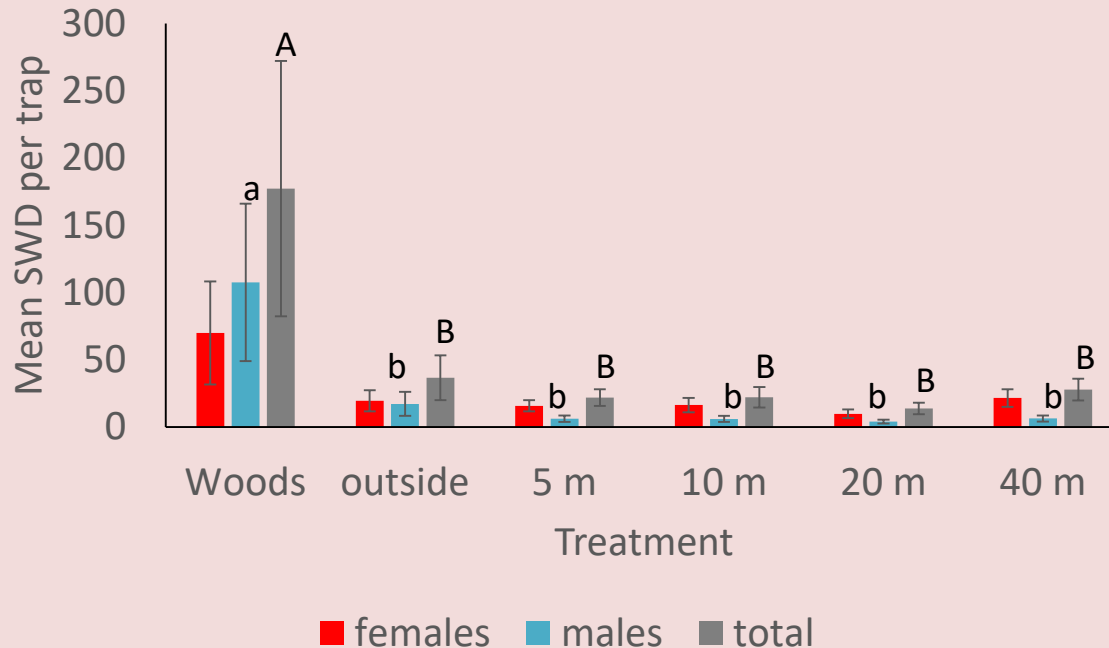
B = 10 m

C = 20 m

D = 40 m

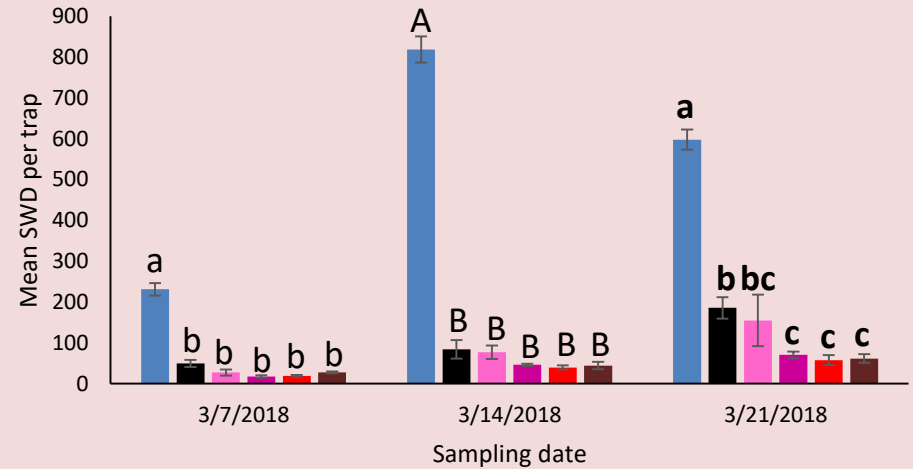
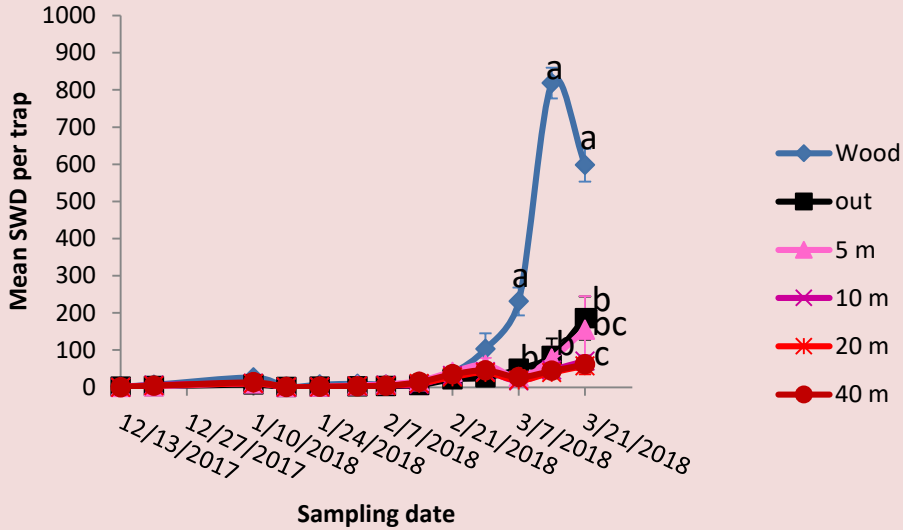


Results: On farm 2017/18



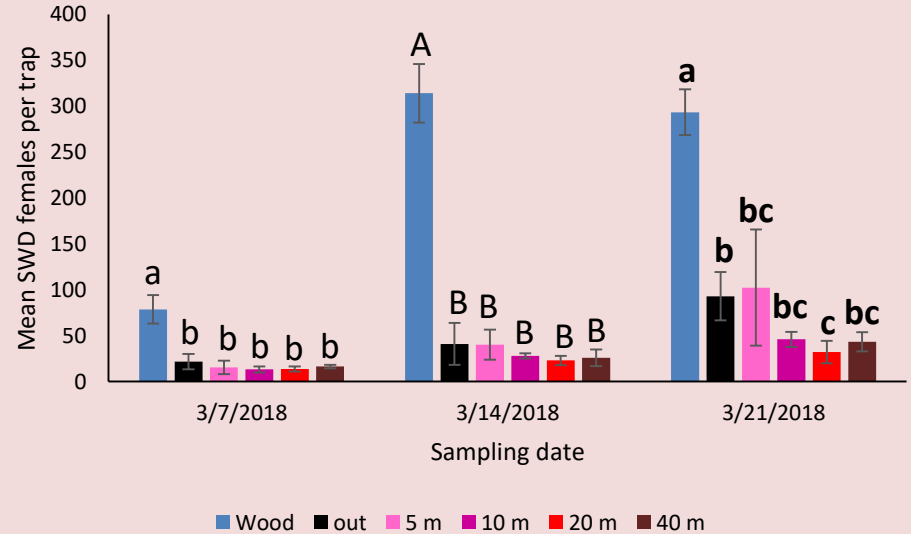
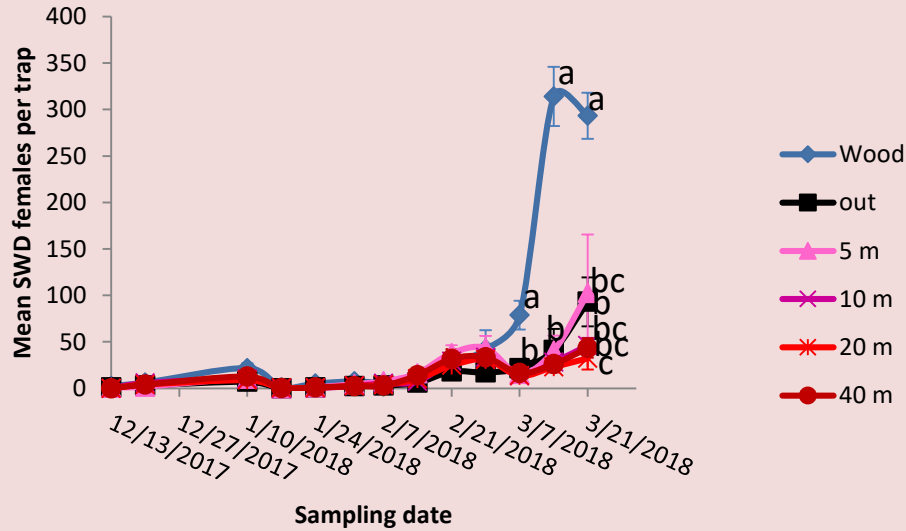
SWD females			
	F	df	P
trt	2.65	5, 10	0.08
trt*week	2.76	35, 70	<0.0004
SWD males			
	F	df	P
trt	14.13	5, 10	0.0003
trt*week	3.89	35, 70	<0.0001
SWD			
	F	df	P
trt	5.6	5, 10	0.01
trt*week	3.62	35, 70	<0.0001

Results: On farm 2017/18 (fem + male)

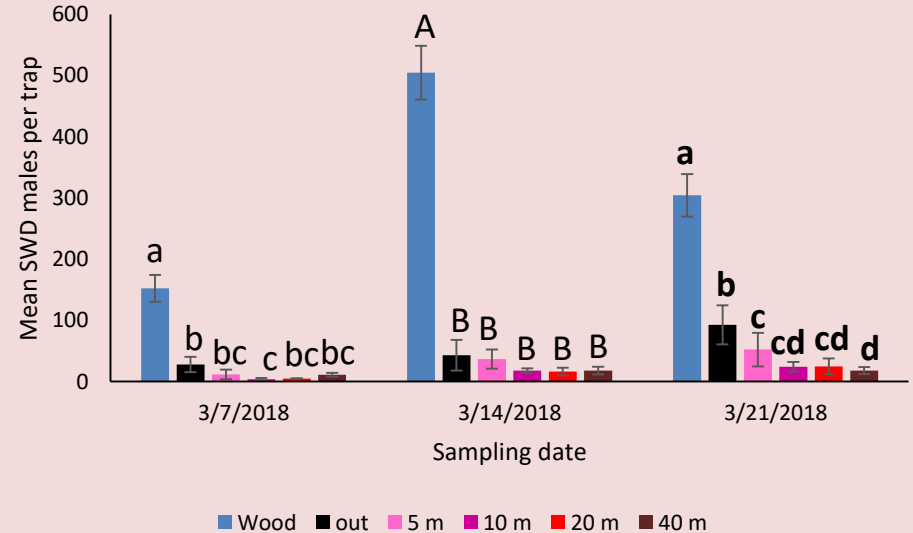
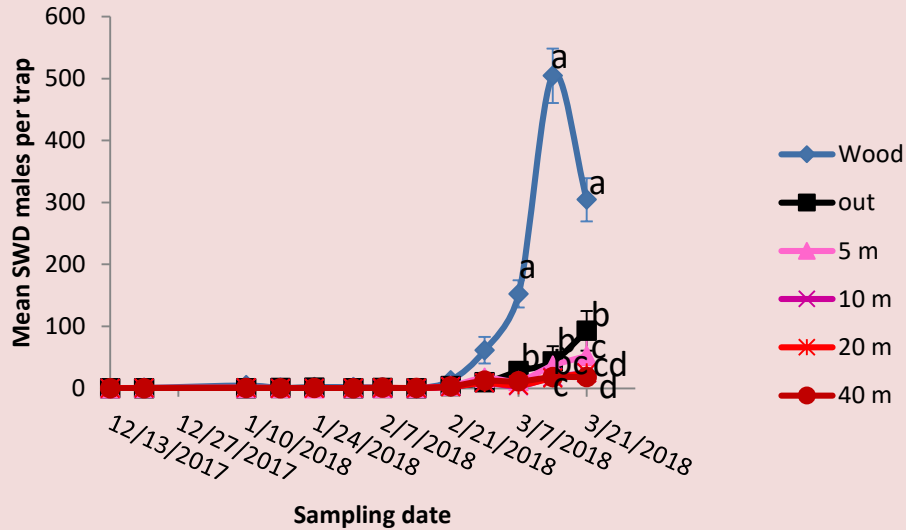


Wood out 5 m 10 m 20 m 40 m

Results: On farm 2017/18 (females)



Results: On farm 2017/18 (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

Acknowledgements

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- Citra PSREU staff
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