The effect of cover crop and variety on twospotted spider mites, *Tetranychus urticae*, and its natural enemies in organic strawberries

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

Strawberries in Florida

- Valued at ~450 million USD in 2016
- 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


L. E. Iglesias, UF


L. E. Iglesias, UF


Entnemdept.ufl.edu


https://jmrlab.wordpress.com /tag/pamera-seed-bug/


extension.umaine.edu

- Spotted wing drosophila, *Drosophila suzukii*
- Thrips: *Frankliniella occidentalis*, *Scirtothrips dorsalis*
- Pamera seed bug, *Neopamera bilobata*
- Sap beetles (Nitidulidae)
- Aphids, armyworms, etc.

Twospotted spider mites (TSM)

- *Tetranychus urticae*

Spider mite predators

- Predatory mite *Neoseiulus californicus*

- Six-spotted thrips, *Scolothrips sexmaculatus*

Objectives

- Determine if summer cover crops have any effects on TSM or its predators

- Examine the effect of variety on TSM and predator populations

Methods: sampling

- Citra PSREU
- Split plot: main plots = cover crops, subplots = varieties
- Weekly leaf samples: 3 per subplot
- 6 Dec 2016 – 28 Mar 2017
- TSM motiles and eggs, predatory mite motiles and eggs, and Six-spotted thrips per leaf counted and recorded

Legend (main plots)
HI = Hairy Indigo
M = Mix (sun hemp, hairy indigo, American jointvetch, and slenderleaf rattlebox)
SH = Sun Hemp
WC = Weedy Control

Legend (subplots)

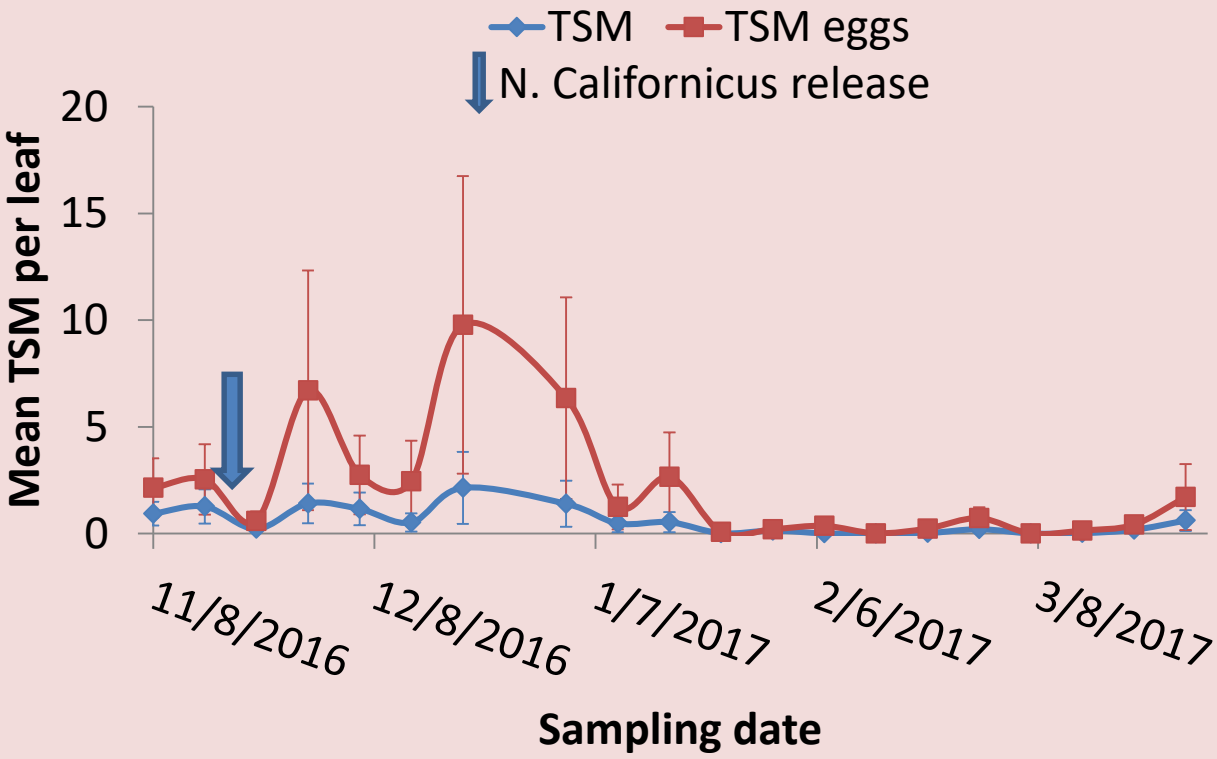
Festival

Radiance

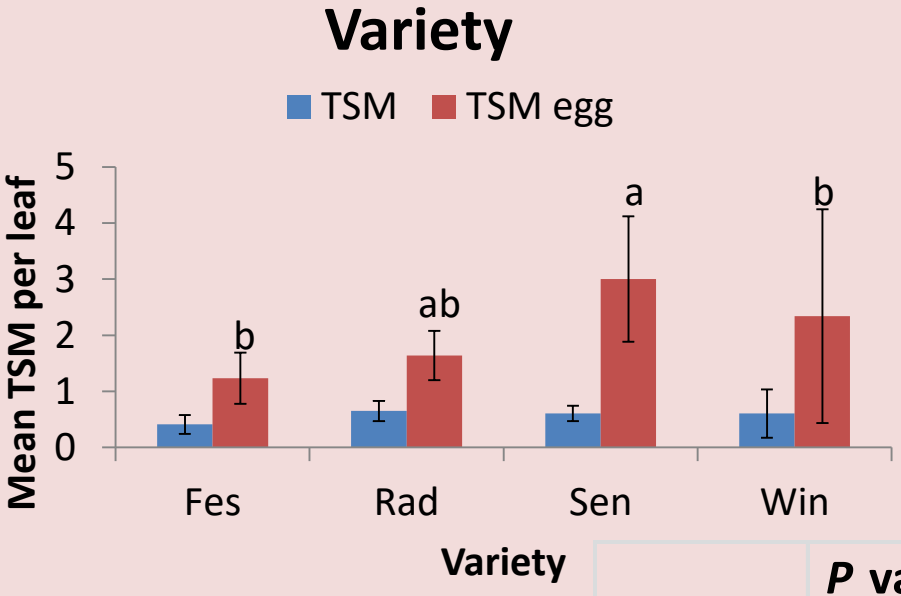
Sensation

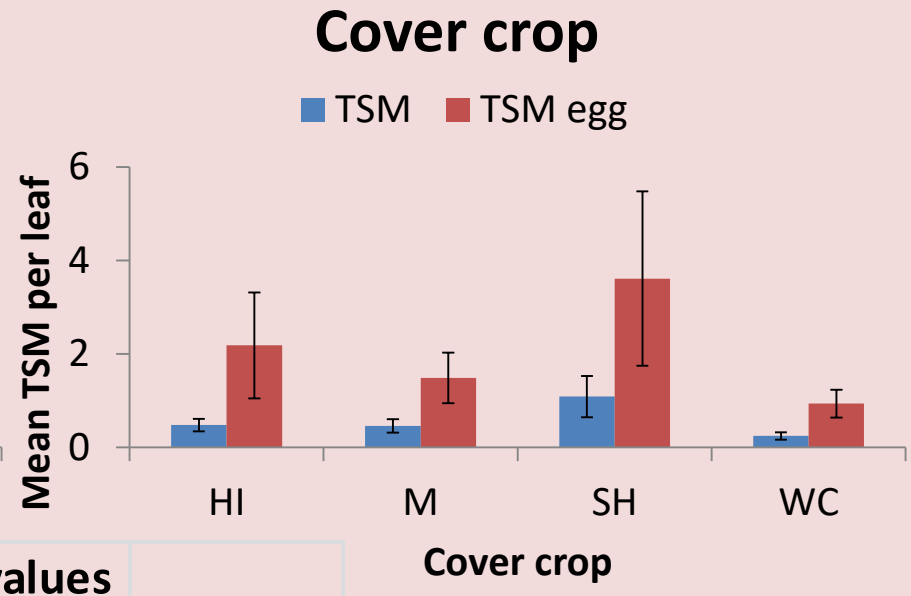
Winterstar

Results: TSM


TSM
TSM eggs
N. Californicus release
Mean TSM per leaf
20
15
10
5
0
11/8/2016
12/8/2016
1/7/2017
2/6/2017
3/8/2017
Sampling date

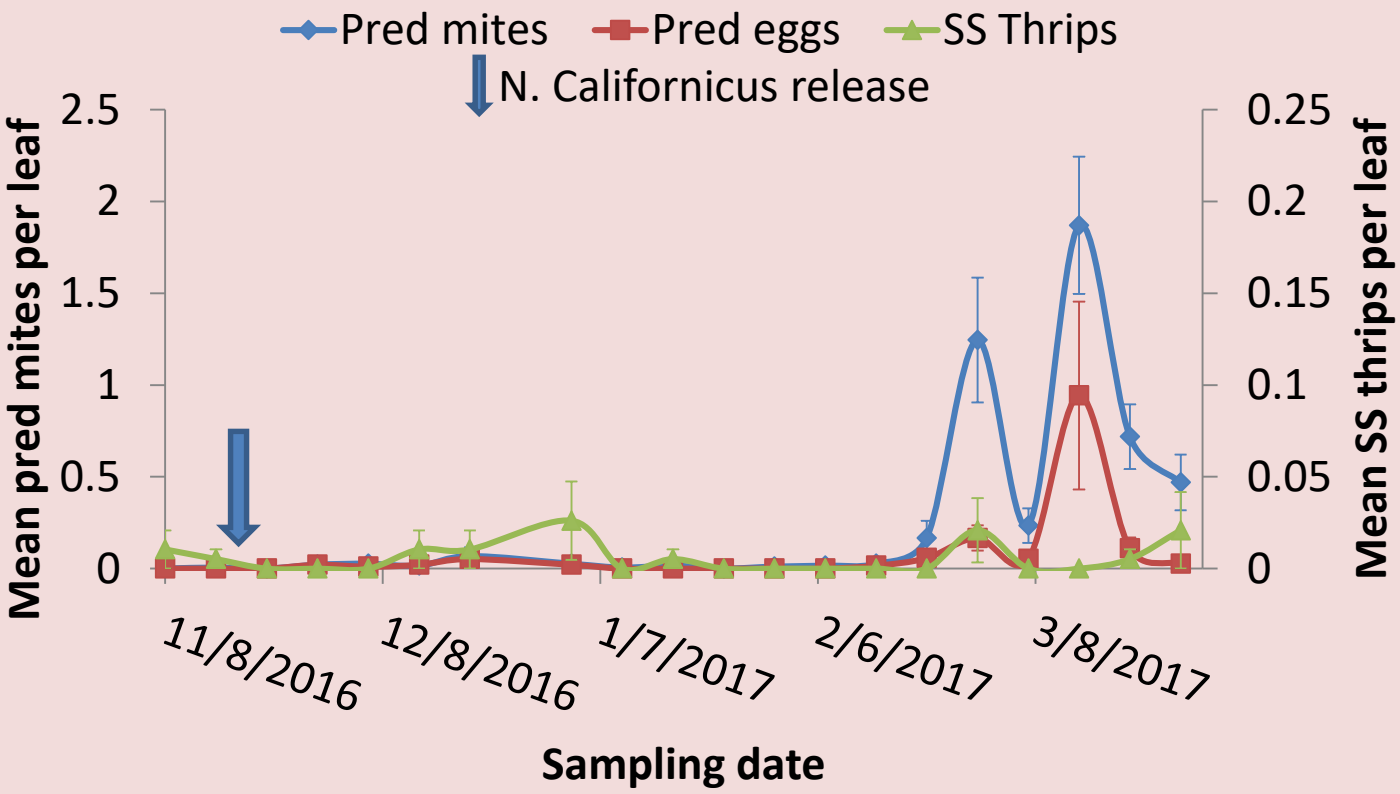
Results: TSM



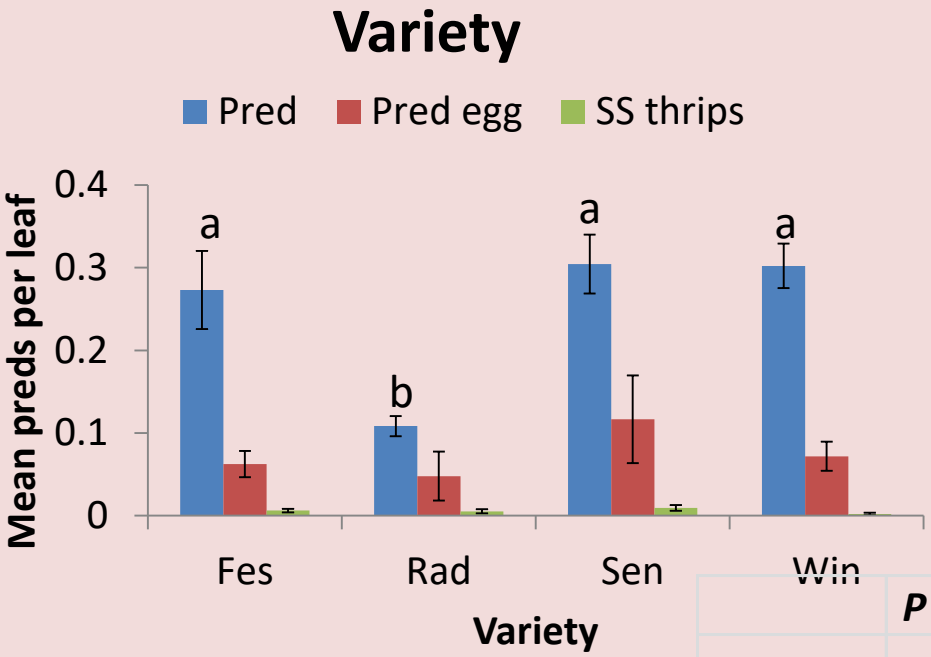


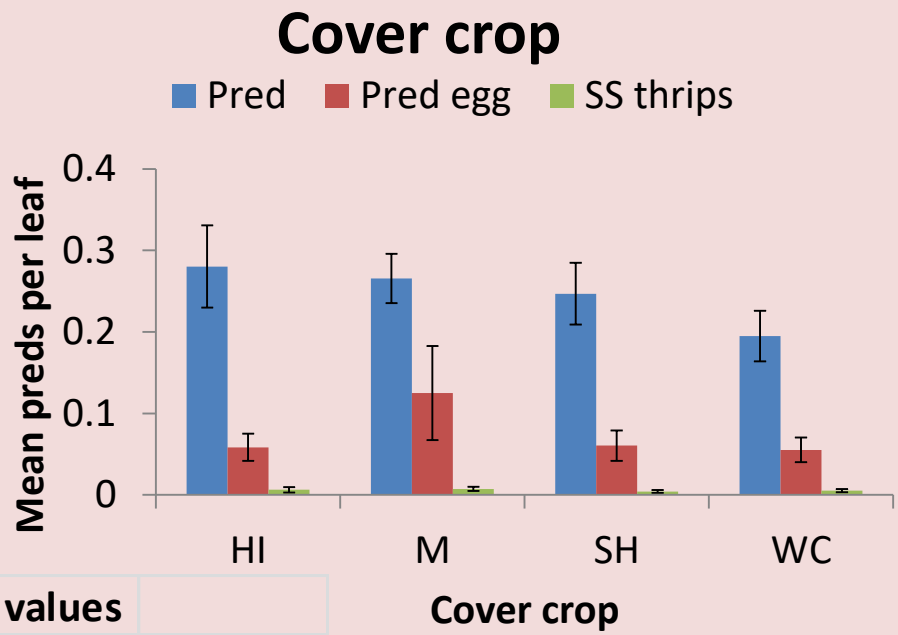
	P values	
	TSM	TSM egg
var	0.1	0.03
CC	0.36	0.24
CC*var	0.39	0.12

Results: TSM Predators



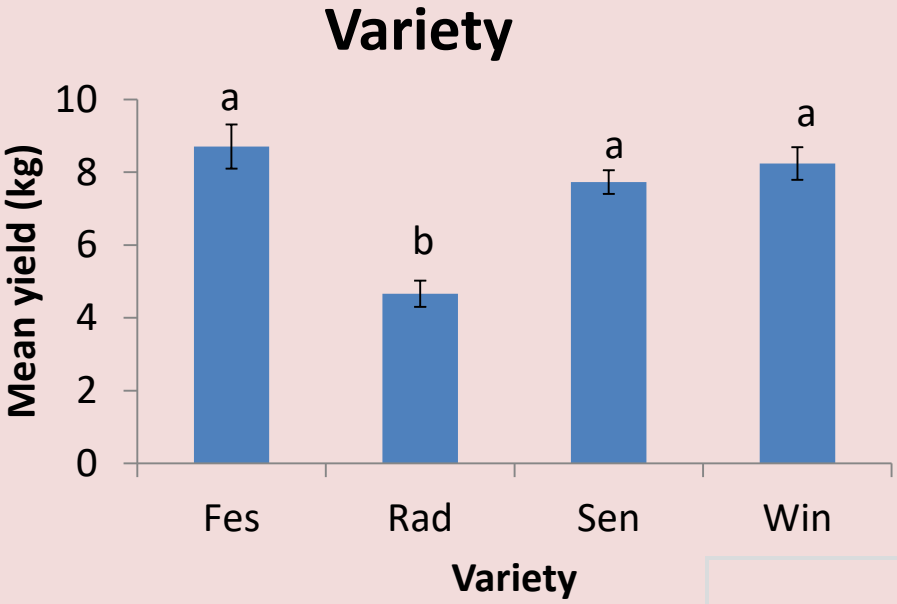
Results: TSM Predators

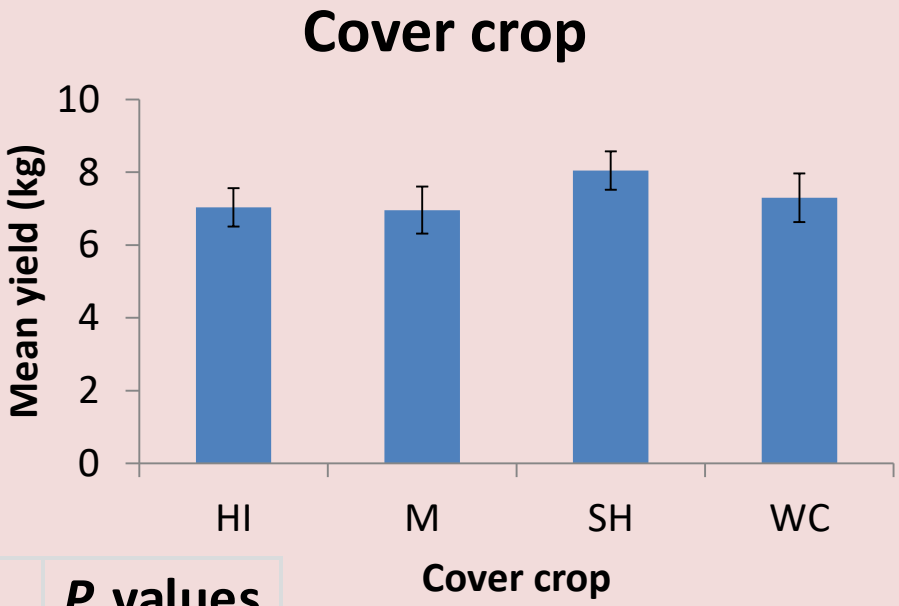




	P values	
	Pred	Pred egg
var	<0.0001	0.2
CC	0.35	0.82
CC*var	0.44	0.95

Results: Yield





	P values
var	<0.0001
CC	0.64
CC*var	0.74

Summary

- TSM and predatory mite populations low
- Higher TSM eggs in ‘Sensation’
- Lower predatory mites and yield in ‘Radiance’
- No effect of cover crop on TSM, Predatory mites, or yield

Acknowledgements

- Small Fruit and Vegetable IPM lab staff and students
- Chase lab staff and students
- Citra PSREU staff
- USDA NIFA for funding