

Update on Bud Mites, Blueberry Gall Midge & Chilli Thrips

Oscar E. Liburd

Professor of Small Fruits and Vegetable Entomology

University of Florida

Gainesville, FL 32611

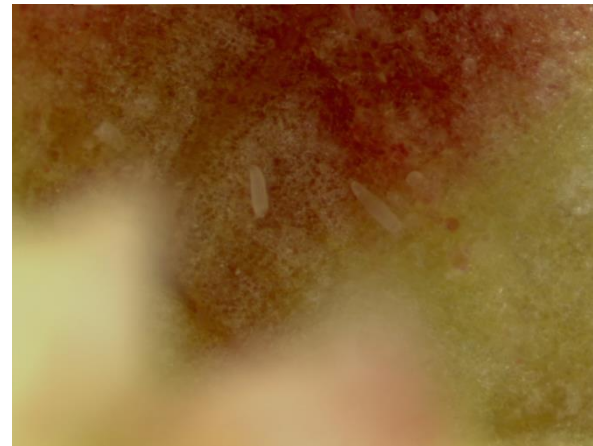
Blueberry bud mite (BBM)

- Eriophyid mite
- 2 pairs of legs close to the head
- Microscopic (200 μm)
- Tapers toward the dorsal part of the abdomen
- Transparent /colorless to whitish
- Attack primarily *Vaccinium* spp.



Life History & Description

- Mites overwinter under bud scales or in protected sites near the host plant
- Adults emerge at bud break during spring
- Eggs, Protonymphs, Deutonymphs, & Adults
- A female can lay up to 200 eggs during its lifetime.
- In north-central Florida population peaks around February-March



Symptoms of BBM Infestations

- Swollen bud scales
- Buds appear reddened & rosetted
- Reduced fruit set



Symptoms of BBM Infestations

Cont'd



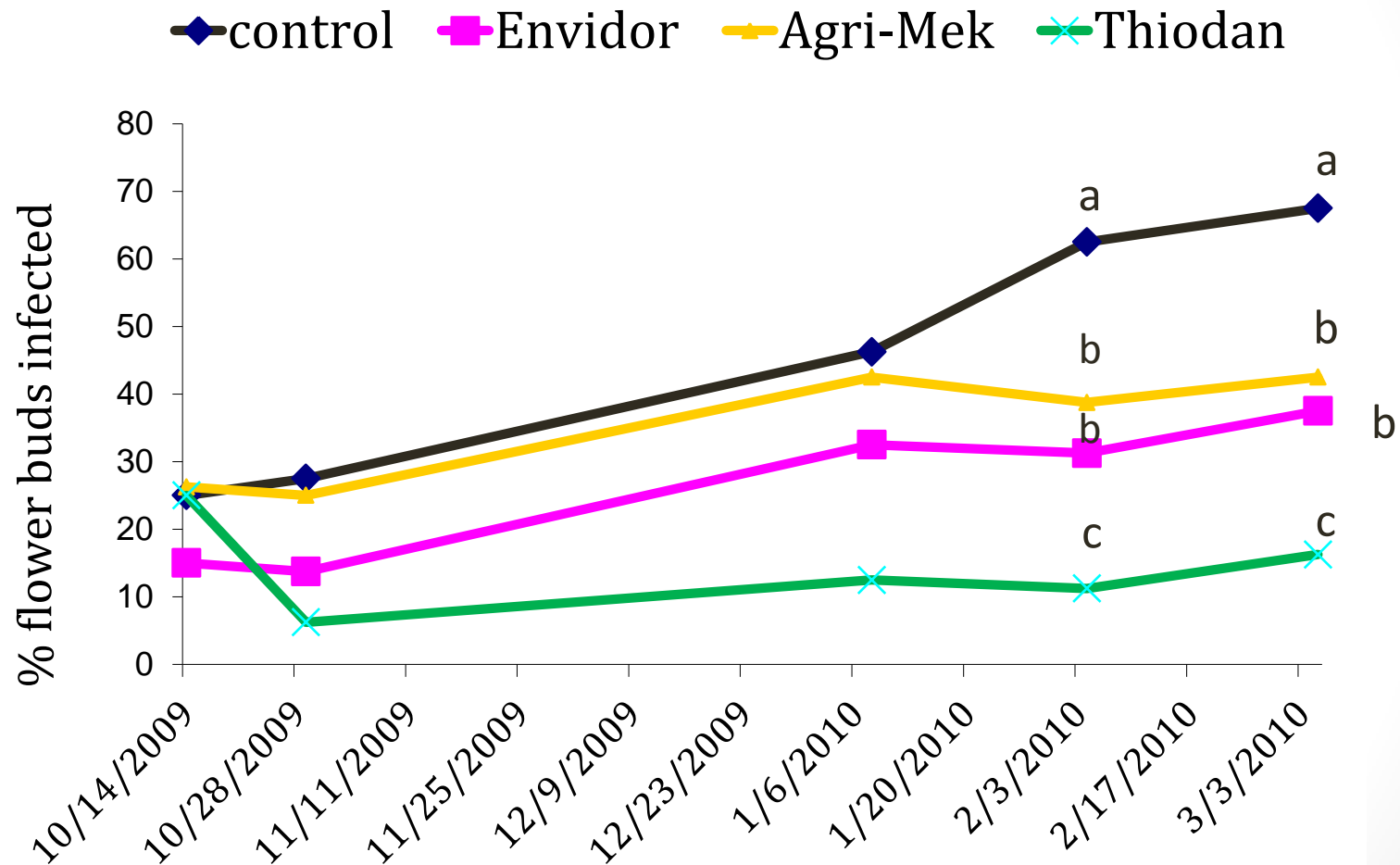
Evaluation of Post-harvest Acaricides for Control of BBM

- Envidor[®] 2 CS (Spirodiclofen)
- Agri-Mek[®] 1.8 EC (Abamectin)
- Thionex[®] 3 EC (Endosulfan)
- Water (Control)
 - Southern highbush cv Farthing
 - RCBD with 4 reps
 - CO2 sprayer, application date Oct 14

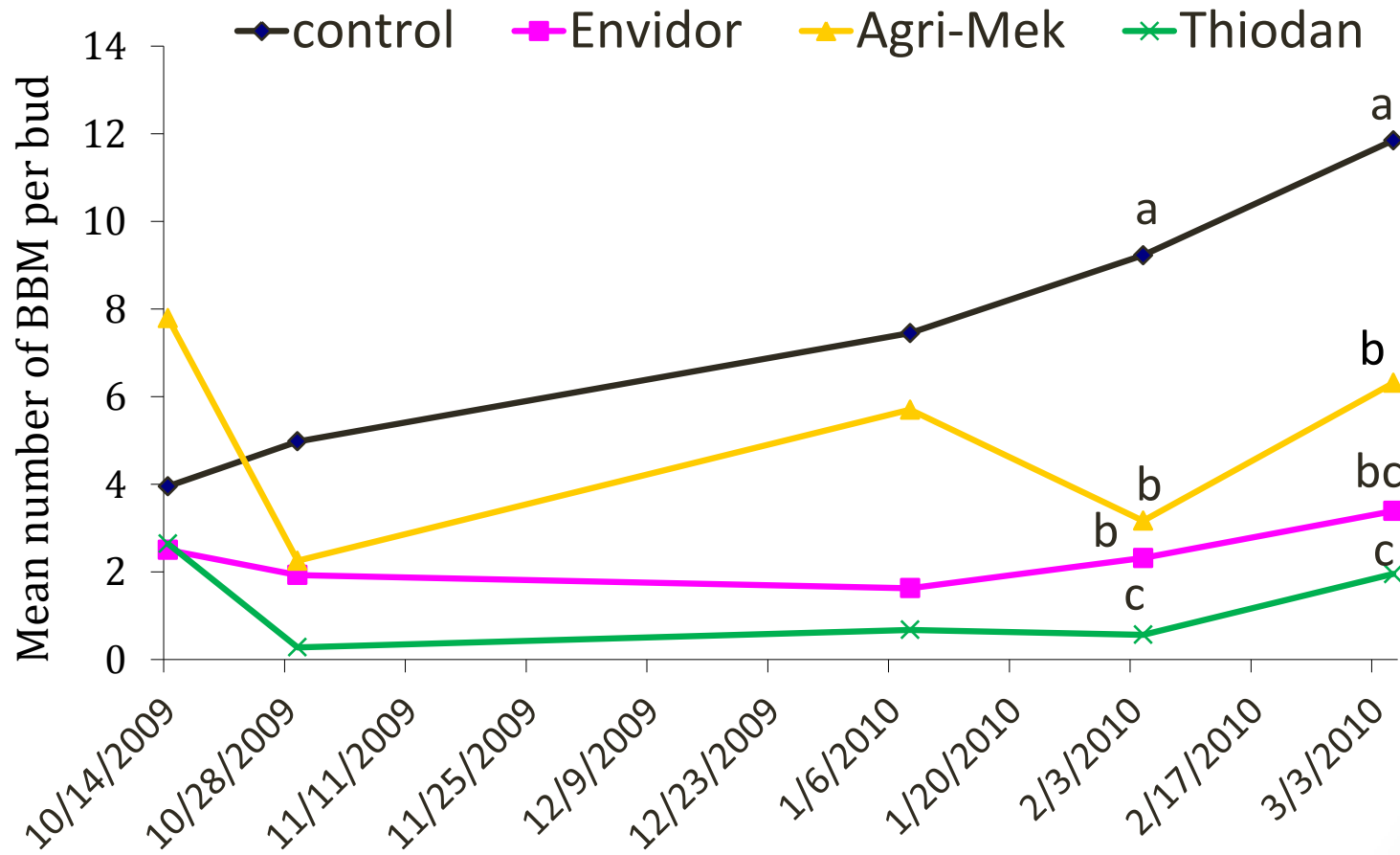


* Observation of flower bud damage & BBM density during 2009/10 season

Effect of Acaricides on the Percentage of Flower buds Infected with BBM



Effect of Acaricides on the Population of BBM



Findings and Assessment of Miticides

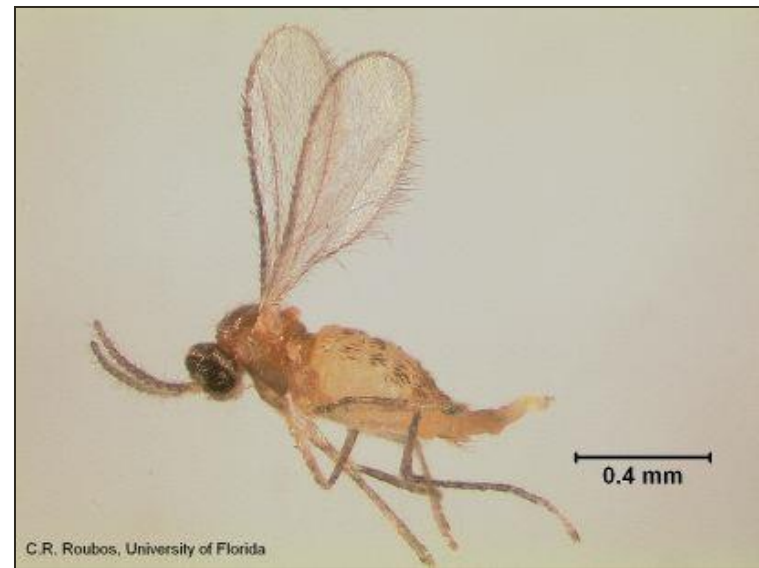
- All of the miticides reduced the population of BBM and the number of flower buds infected compared with the control
- Overall Endosulfan was the most effective acaricide in reducing the percentage of flower buds infected with BBM
- Envidor was the second most effective acaricide in reducing BBM infestation
- Agri-Mek performance was not significantly different to Envidor in reducing BBM infestation

Management of BBM

- Pruning and removal of older infected branches
- Post-harvest application of acaricides - Endosulfan and horticultural oils,
- Envidor was evaluated through the IR-4 program ~ 3-4 yrs ago and registration is pending.
- Endosulfan will be phased out globally 2015
- **Portal (78)** (fenpyroximate) is a miticide that will be going through the IR-4 program during 2014-2015 [Nichino America Inc.]

Blueberry gall midge

- *Dasineura oxycoccana* Johnson
- Pupae overwinter in soil
- Adult females lay eggs in developing buds
- Up to 80% yield loss

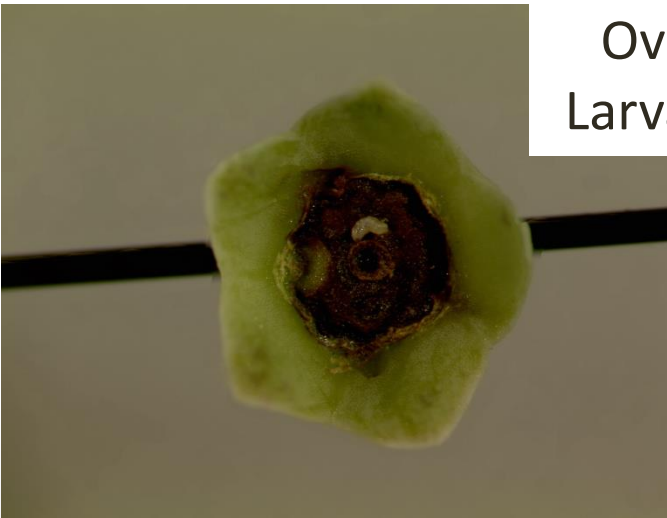


Injury resulting from blueberry gall midge

New shoot damage



Ovary necrosis & Larvae in flower bud



Monitoring for BGM

- Bucket emergence trap



- Clear panel trap

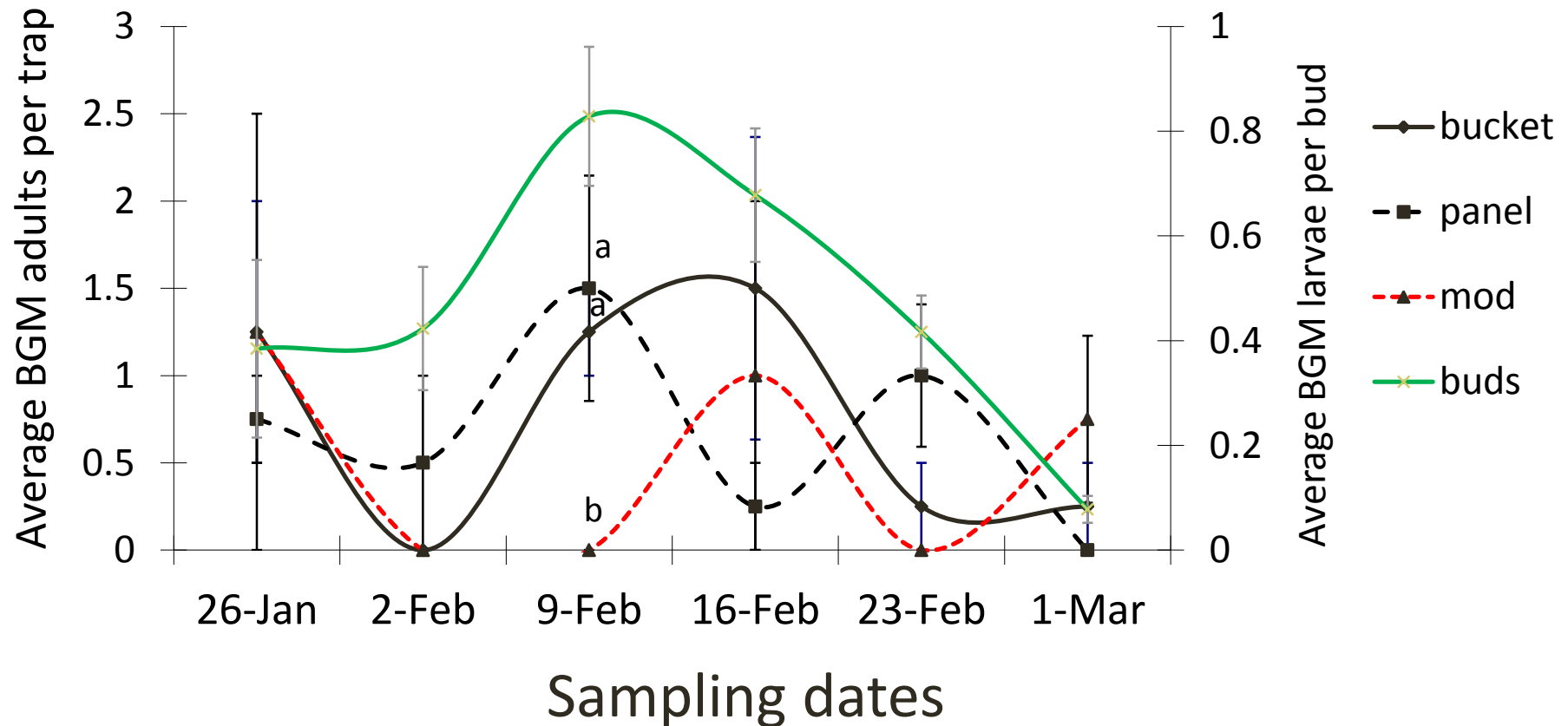
Cook et al. 2011



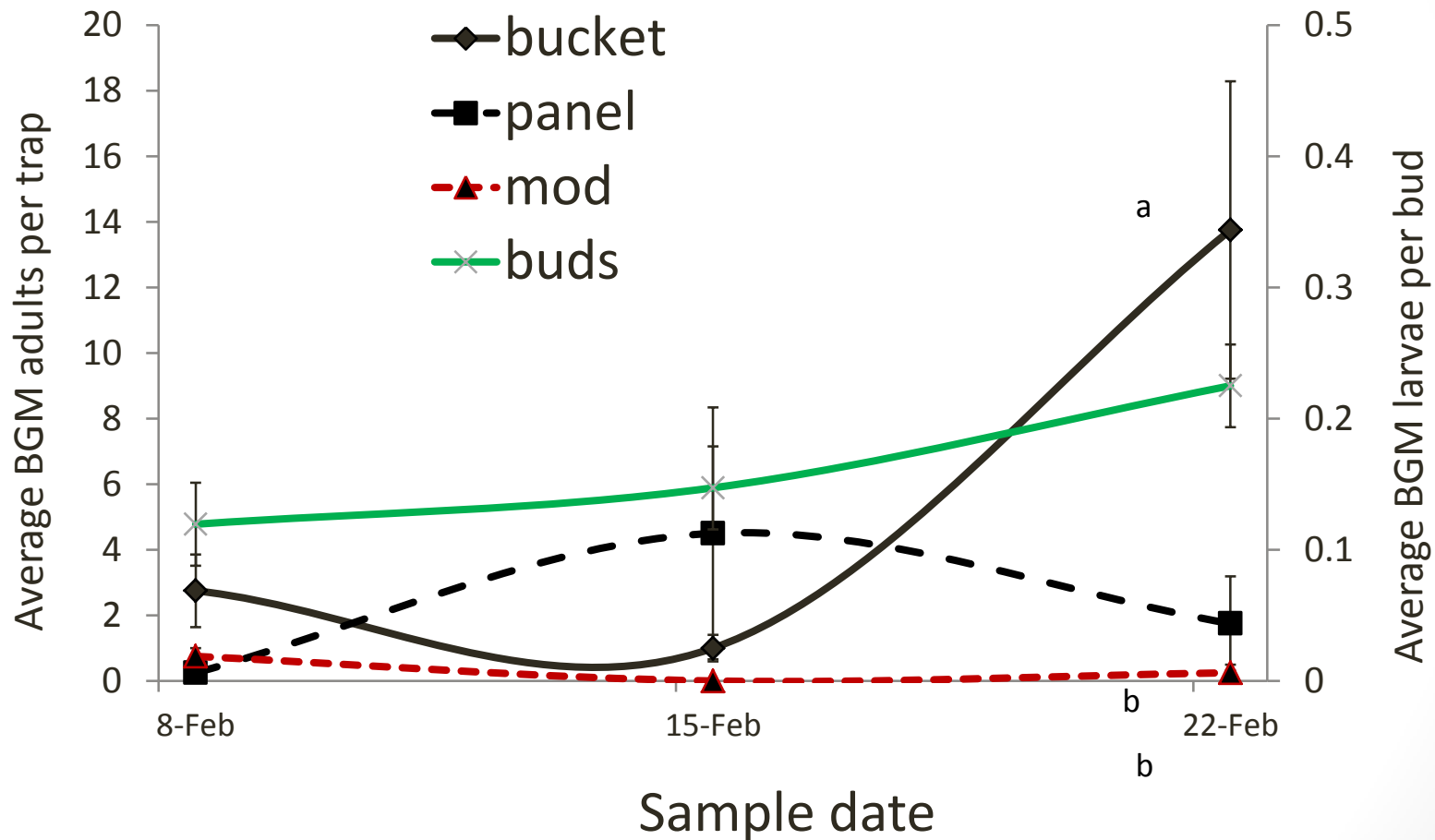
Modified panel trap



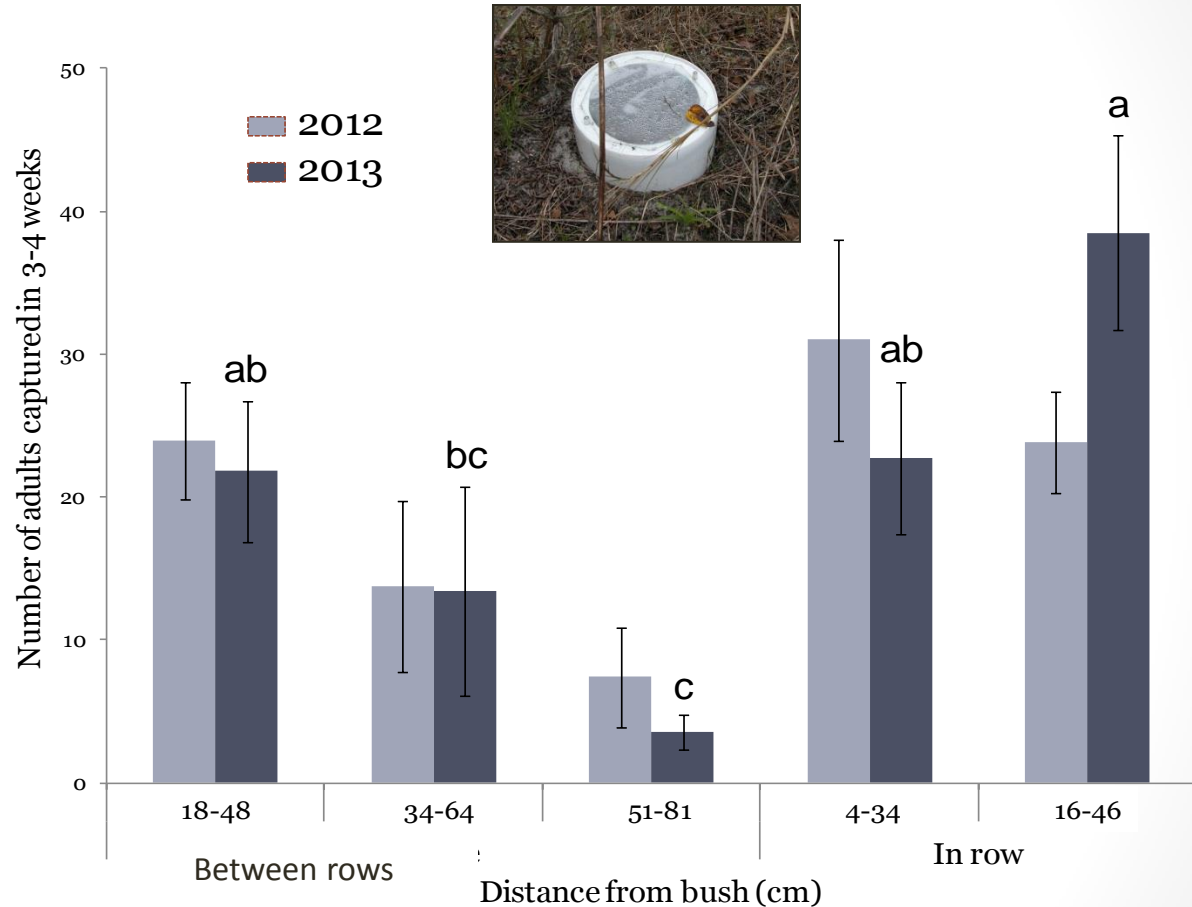
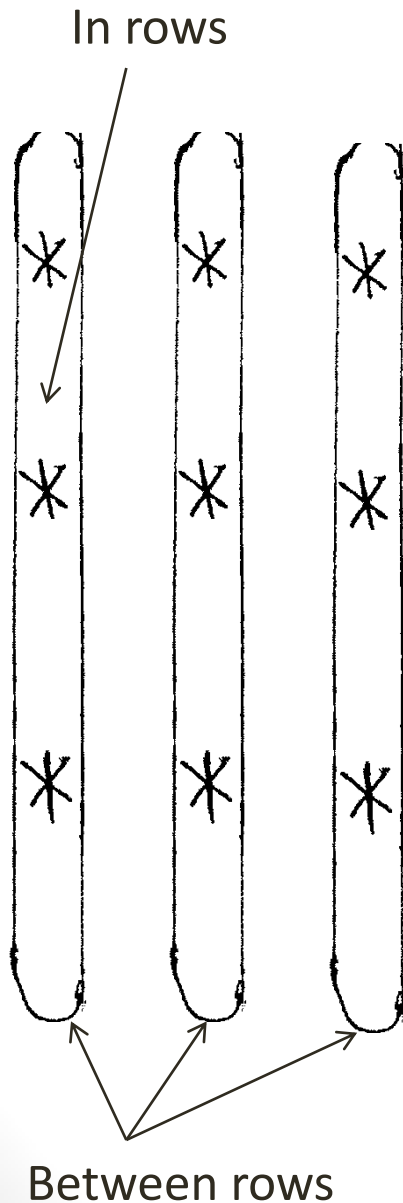
Mean Number of Blueberry Gall Midge per Trap & Larvae per Bud (2012)



Mean Number of Blueberry Gall Midge per Trap & Larvae per Bud (2013)



Captures of BGM in Bucket traps in Rabbiteye Blueberries



Management of BGM

- Weekly monitoring of BGM population in the field
- Application of Insecticides
 - Delegate (Spinetoram)
 - Malathion
 - Entrust (Spinosad)
- Parasitoids
 - Most common genera:
 - *Platygaster* (flower buds)
 - *Aprostocetus* (leaf buds)

Chilli Thrips (Adult & Larvae)

Adults are about 1.2 mm (0.05) inches long



Flower
thrips

Symptoms of Chilli Thrips Infestation



- Severe leaf curling in heavy infestation
- Implicated in transmission of a few virus diseases
- Tomato Spotted Wilt Virus (TSWV) and Yellow Spot Virus in peanuts

Symptoms of Chilli Thrips Infestation



Bronzing



Shoot Die-back



Insecticide Management Program

Weekly monitoring (scouting of blueberry planting)

- Spinosyns

Delegate	3.5
----------	-----

Entrust (organic)	3.0
-------------------	-----

- Neonicotinoids

Assail (Acetamiprid)	4.0
----------------------	-----

Imidacloprid (Admire)	3.5 – 4.0
-----------------------	-----------

- Organophosphates

Malathion	2.5 – 3.0
-----------	-----------

Imidan (Phosmet)	2.5 – 3.0
------------------	-----------

Acknowledgements

- Florida Blueberry Growers Association
- Staff (post-Docs & Graduate Students)
- USDA-NIFA Pest Management Program
- Florida growers that allowed us to conduct research on their farms

Oscar E. Liburd

<http://liburd/fruitnvegipm/index.htm>

oeliburd@ufl.edu