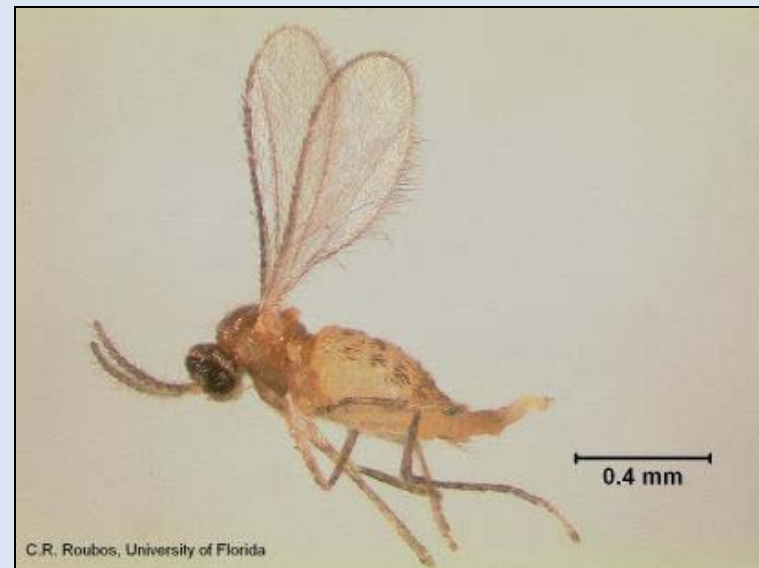


A trap and lure for monitoring  
blueberry gall midge (*Dasineura  
oxycoccana* Johnson) in Florida  
blueberries

Elena M. Rhodes, Shweta  
Sharma, Hans Alborn, Nicole  
Benda, and Oscar E. Liburd  
University of Florida Entomology  
and Nematology Department

# Blueberry gall midge

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



# Injury



# Monitoring

- Bucket emergence trap
  - Roubos 2009
- Clear panel trap
  - Cook et al. 2011



# Monitoring cont.



# Volatiles

- Active compounds found in electro-antennogram studies using volatile collections of intact blueberry flower bud
  - Camphene
  - Hexanal
  - E- $\beta$ -Ocimene
  - $\beta$ -Cubebene

# Objectives

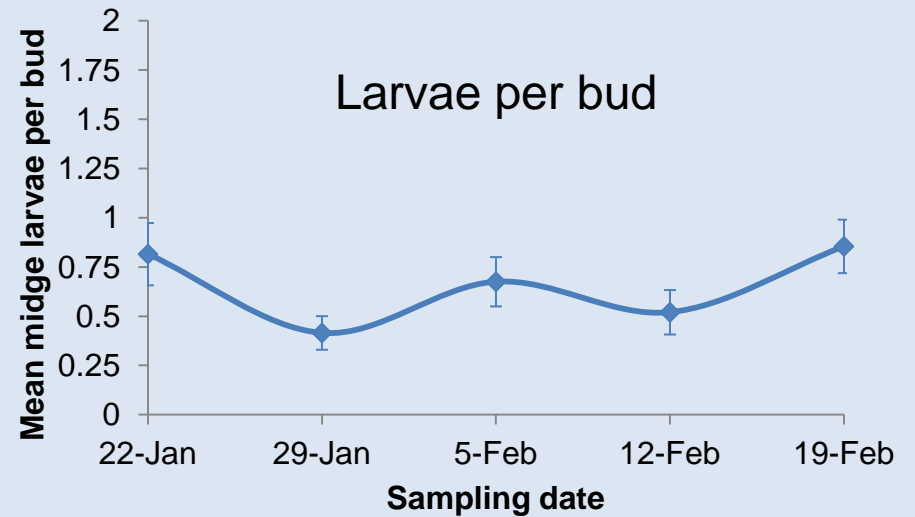
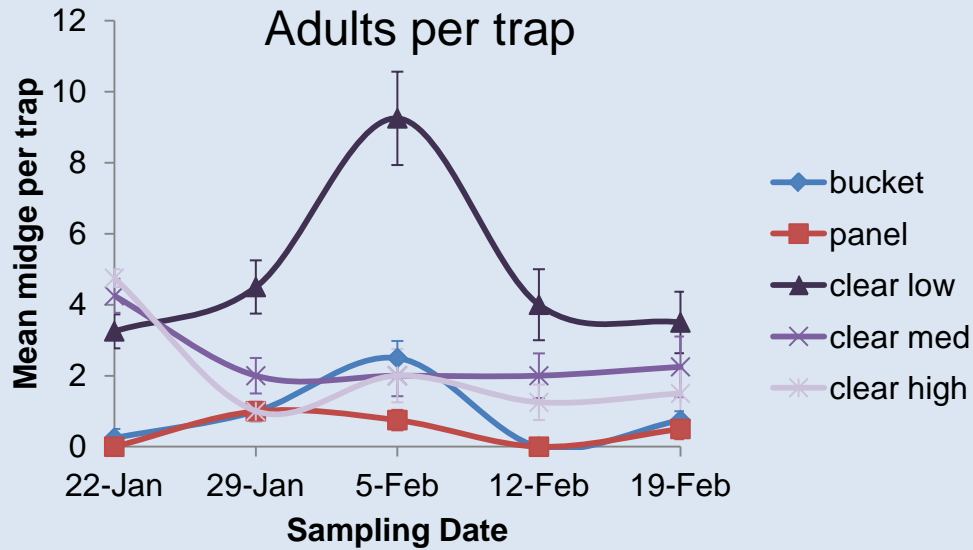
- To determine the optimum trap height for the clear sticky trap
  - Hypothesis: Traps hung low in the bush will perform best because they will behave similarly to bucket traps
- To determine which concentration of volatile blend works best in the field
  - Hypothesis: Based on lab studies, one of the dilutions of the 200  $\mu$ l attractant will perform the best

# Methods: trap height

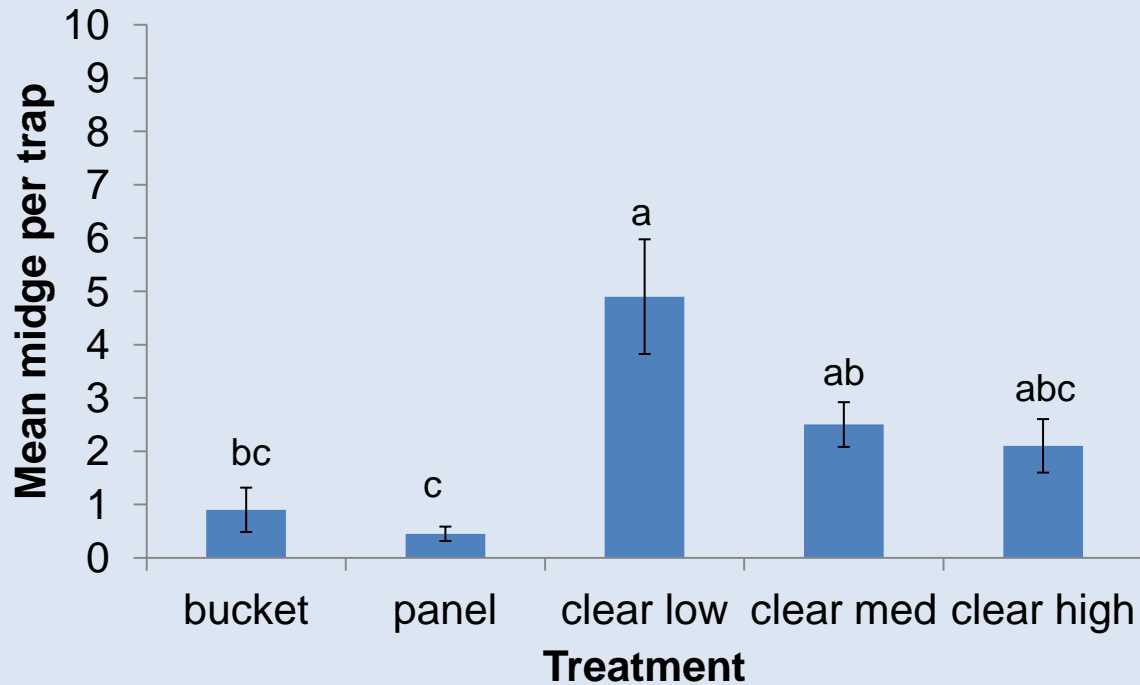
- Gainesville FL blueberry farm in rabbiteye blueberries
- 4 replicates of 5 treatments in RCBD
  - Bucket emergence trap
  - Clear panel trap
  - Clear sticky sheet low (bottom ~ 5 cm from ground)
  - Clear sticky sheet medium (middle of bush)
  - Clear sticky sheet high (top of trap at top of bush)
- Traps changed out weekly
- Buds collected weekly to monitor larval population



# Results: trap height



# Results: trap height



Week\*trt  $P = 0.28$

Trt  $P < 0.0001$

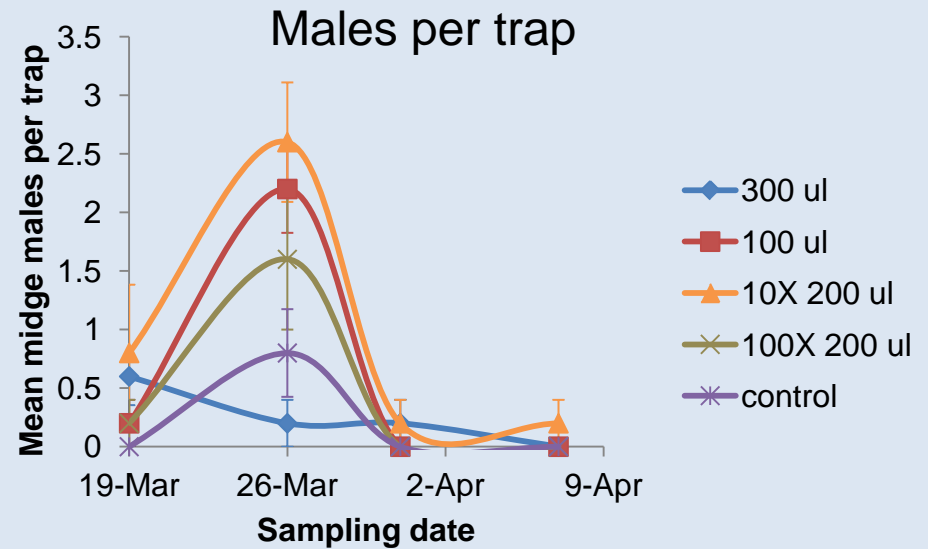
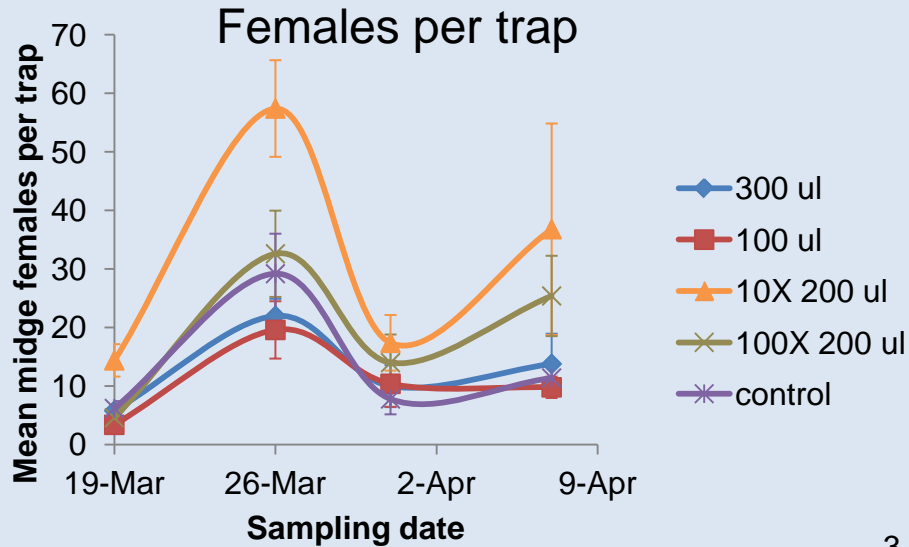
# Conclusions: trap height

- The clear sticky sheet hung with the bottom ~ 5 cm from the ground performed the best
- High variation in blueberry bush height may have masked differences in trap height
- Low counts from bucket emergence traps could be due to the overgrown field making proper placement difficult

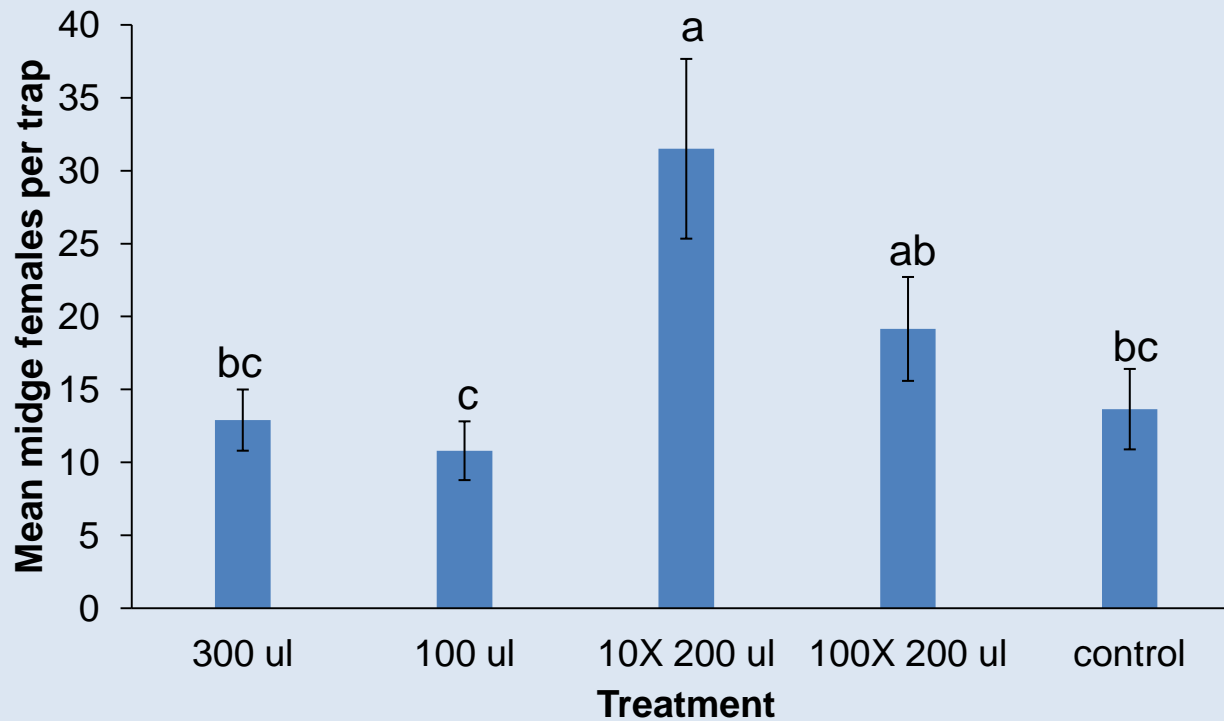
# Methods: volatiles

- Blueberry farm in Waldo, FL in rabbiteye blueberries
- Attractant was a combination of 15 mg camphene, 15 mg hexanal, 30 mg racemic ocimene (50% E- $\beta$ -Ocimene), and 45 mg of the terpene fraction of ylang ylang oil (30%  $\beta$ -Cubebene) in 15 ml of pentane.
- 5 replicates of 5 treatments in RCBD
  - 300  $\mu$ l attractant in pentane
  - 100  $\mu$ l attractant in pentane
  - 10x dilution of 200  $\mu$ l attractant in pentane
  - 100x dilution of 200  $\mu$ l attractant in pentane
  - Control (pentane only)
- Traps checked and lures changed weekly

# Results: volatiles



# Results: volatiles



Week\*trt  $P = 0.67$

Trt  $P < 0.0001$

# Conclusions: volatiles

- Volatile baited traps caught ~ 30X more females than males
- The 10X dilution of the 200  $\mu$ l concentration captured the highest number of female midges

# Summary

- Clear sticky sheets hung with their bottoms ~ 5 cm above the ground captured the most midges
- Volatile baited clear sticky sheets caught much higher numbers of females than males and the 10X dilution of the 200  $\mu$ l concentration caught the highest number of females



# Acknowledgements

- Small Fruits IPM Lab staff and students
- Gainesville organic blueberry farm
- Straughn Farms
- USDA ARS in Gainesville, FL
- SSARE for funding



Fraulo, A. UF